TOOL COMMUNICATION

OSG

TAPS

DRILLS

END MILLS

INDEXABLE TOOLS



VOL III

www.osgeurope.com


INTRODUCTION


CUTTING & FORMING TAPS


DRILLS & REAMERS


CARBIDE END MILLS


INDEXABLE TOOLS


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Tool Communication



OSG sees a tight link between tools and communication.
In order to establish sound business relationships, many regard communication as a requirement. OSG advances this view on communication by adding another definitive factor, tools that deliver. What is communicated is
difficult to realize without the means to execute the message in the communication. Our tools are what completes communication.
Our tools encourage those involved in our business to walk the talk.

Let our tools walk the talk.

Sammenhængen mellem værktøj og kommunikation prioriteres højt af OSG. Det er almindelig kendt at kommunikation er en vigtig faktor for at kunne opnå gode forretningsrelationer. OSG udvider og fuldender kommunikationen ved at tilføje yderligere en dimension; "værktøj som leverer". Det som kommunikeres er vanskeligt at realisere, med mindre man formår at virkeliggøre selve budskabet. Vore værktøjer fuldender kommunikationen ved at gøre det , der siges, de vil gøre.

OSG værktøj – fra tale til handling!

Kopplingen mellan verktyg och kommunikation prioriteras högt av OSG.
Det är allmänt känt att kommunikation är en viktig faktor för att uppnå framgångsrika affärsrelationer. OSG utvidgar kommunikationen genom att lägga till ytterligare en dimension "verktyg som levererar". Det som kommuniceras är svårt att realiseras om man inte har verktyg att uppnå själva budskapet med. Våra verktyg uppfyller de budskapen.

OSG verktyg - från ord till handling!

"OSG sieht eine enge Verbindung zwischen den Werkzeugen und der Kommunikation. Um eine erfolgreiche Geschäftsbeziehung aufzubauen betrachten wir die Kommunikation als Voraussetzung einer guten Partnerschaft. Die Funktionalität der Werkzeuge gehört für OSG auch zum Ergebnis einer erfolgreichen Kommunikation. Denn nur wenn die speziellen Anforderungen exakt vermittelt werden ist es auch möglich diese mit Erfolg zu erfüllen.OSG Werkzeuge sind somit das Ergebnis einer korrekten, ehrlichen Kommunikation zwischen Kunde und Werkzeughersteller.
Lassen Sie also unsere Werkzeuge für uns sprechen.

OSG takımla iletişim arasında sıkı bir bağ olduğunu görüyor.İyi bir iş ilişkisi için birçok iletişim noktaları gereklidir.
OSG sevkedilen takımla bu iletişim bilgilerini göndermektedir.Bu iletişim bilgilerini değerlendirmek iletişim mesajını anlamadan çok zordur.
Bizim takımlarımız iletişimi tamamlar.Bizim takımlarımız konuşmaları aşmamızı sağlar.

Bırakın takımlarımız konuşmayı aşsın.



OSG vede uno stretto legame tra utensili e comunicazione. Al fine di stabilire solide relazioni commerciali, la comunicazione è requisito determinante. OSG fissa questo punto di vista sulla comunicazione con l'aggiunta di un altro fattore determinante, gli utensili che offre. Ciò che viene comunicato è difficile da realizzare senza i mezzi per eseguire il messaggio nella comunicazione. I nostri utensili sono ciò che completa la comunicazione. I nostri utensili incoraggiano coloro che sono coinvolti nel nostro business e percorrono il nostro cammino.

Lasciatevi coinvolgere dai nostri utensili.

OSG ve un eslabón apretado entre instrumentos y comunicación. Para establecer relaciones sanas de negocio, mucha comunicación de respeto como una exigencia. OSG avanza esta vistaa la comunicación por añadiendo otro factor definitivo, instrumentos que entregan. Que es comunicado es difícil de realizarsin el medio de ejecutar el mensaje en el comunicación. Nuestros instrumentos son que completa la comunicación. Nuestros instrumentos animan aquellos complicados en nuestro negocio a andar la conversación.
Deje a nuestro paseo de instrumentos la conversación.

OSG widzi ścisły związek pomiędzy narzędziami a komunikacją. Aby zbudować, odnoszący sukces związek biznesowy traktujemy komunikację jako założenie i konieczny warunek dobrej współpracy. Również funkcjonalność narzędzi jest dla OSG punktem wyjścia do efektywnej komunikacji. Wymagania specjalne zostaną spełnione i zrealizowane z sukcesem tylko wtedy gdy zostaną właściwie i dokładnie przekazane. Narzędzia OSG są wynikiem prawidłowej i uczciwej komunikacji pomiędzy klientem a producentem narzędzi. Pozwólmy zatem, aby narzędzi mówiły w naszym imieniu.

OSG voit un lien étroit entre les outils et la communication.Pour établir de solides relations d'affaires avec la communication que beaucoup considèrent comme une exigence, OSG progresse sur le point de vue de la communication en ajoutant un facteur décisif, les outils qui fonctionnent. Communiqué est tres difficile à réaliser sans les moyens d'exécuter la communication. Nos outils sont notre complément de communication. Nos outils encouragent ceux qui participent à nos activités afin de faire passer les messages.

Laissez nos outils montrer l'exemple.

OSG видит тесную связь между инструментами и коммуникацией. Для того, чтобы установить прочные деловые отношения, многие считают общение необходимым.OSG развивает эту точку зрения добавляя новый фактор – режущий инструмент, как средство общения. Мы рассматриваем наш инструмент в качестве "моста" между нашими клиентами и нами.Этот "мост" помогает донести смысл сказанного в общении. Мы стараемся поставить себя на место клиента. Это помогает разрабатывать и производить для наших клиентов такую продукцию, которую они действительно хотят. Наши инструменты поощряют тех, кто вовлечен в наш бизнес, на то, чтобы подкрепить слова действиями. Пусть наши инструменты подкрепят наши слова в действии.

The Group of Experts

OSG is the only tool manufacturer with its own material production, R&D for coating and development of grinding machines

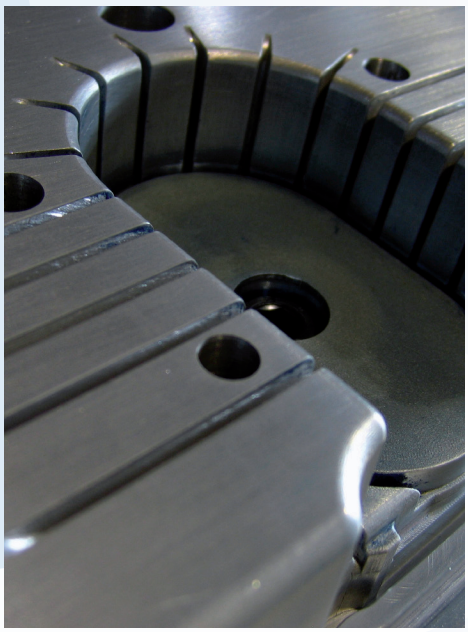


Actively involved Industries

OSG prides itself as the all-in-one round shank tool supplier. No other competitor has ever succeeded in developing its own HSS taps, Carbide taps, Rolling Dies, HSS Endmills, Carbide Endmills, HSS drills and Carbide drills.

OSG's one-of-a-kind cutting tools help sharpen the cutting edge in manufacturing.







Automotive

OSG knows what is expected from the Automotive Industry. Reliable delivery, consistent quality and tool designs that increase productivity are the keys to success in the automotive industry.

OSG's involvement with the Autmotive Industry goes back to its inception. Since 1938, OSG has served the ever-changing Automotive Industry with its taps & drills. The development of hole making tools has always been and will be OSG's speciality.



VPO-DC-MT

Synchro taps when speed can be > 30m/min, for cast iron and aluminium
Page B.118-B.162



OIL-S-XPF

The new generation forming tap. Designed for tapping up to 35HRC
Page B.139-B.169



TRS-HO-3D & 5D

Three-fluted Carbide drills to dramatically improve productivity
Page C.41-C.42



P5D

Facilities stable drilling depth of 5xD. A process that is originally difficult to achieve with a double fluted, single edge indexable tool.
Page C.106-C.107



WDO-30D

Carbide drills for deep hole operation required in different automotive parts
Page C.49



Aerospace

The Aerospace Industry's mission is to manufacture more environmentally progressive, longer-range and faster aircrafts that require lower operating costs. OSG's cutting tools share the same mission.

The Aerospace Industry, almost always, encounters world's cutting edge materials. They are the world's toughest materials to machine. This is when your experience becomes your best asset. OSG has accumulated machining experiences from all over the world ranging from aluminium alloys to Inconel alloys and from Titanium alloys to CFRP.



VPH-GDS

Drill; ideal for alloy steel
Page C.65



NEO-PHS

Endmill with variable leads for exotic materials tapping up to 35HRC
Page D.29



WHR-NI Series

Specially designed taps for heat resistance materials
Page B.84-B.111-B.179-B.190-B.200-B.209



DIA-HBC

Patented cutting tools for CFRP (Carbon Fiber Re-enforced Plastic)
Page D.28



D-STAD

Patented cutting tools for CFRP (Carbon Fiber Re-enforced Plastic)
Page C.44



D-DAD

Patented cutting tools for CFRP (Carbon Fiber Re-enforced Plastic)
Leaflet "Composite Solution Vol II" - Page 13



Energy

Recycleable energy is a big global agenda. Needless to say, their parts are just as big and consequently very expensive. Reduce any risk of part damage by applying OSG's cutting edge taps and drills.

Large wind mill parts are not only expensive but also sensitive. To add to the mix, drilling and thread making are the last processes in finishing the part. In order to make sure that the last machining process operates seamlessly, OSG has a variety of drills and taps to control machining torque and minimize work hardening.

OSG offers a series of large taps designed for machining low carbon steel, 42CrMo and ductile cast iron which are all used in the wind mill industry. These taps are designed for smoother chip evacuation and are equiped with extended flute length to meet the specific nature of the wind mill industry.



PXD

Indexable Drill
Page E.49



HXL-SFT

Tap
Page B.93-B.184



VXL-SFT

Tap
Page B.95-B.185



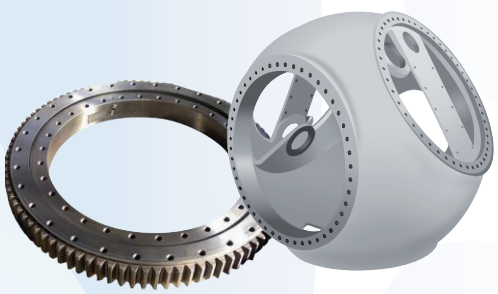
OIL-TXL-MT

Tap
Page B.117

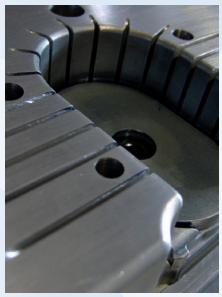


OIL-S-XPF

Forming tap, internal coolant
Page B.139-B.169



Mold & Die



Keeping up with the changes in the Mold and Die industy is a difficult task, but to be successful, one needs to stay ahead of the game. OSG provides the industry with tomorrow's technologies.

With the introduction of 5 axis machines and the increasing demand for more complicated molds, speed is the key success factor in the Mold and Die Industry. OSG's End Mills encourages speed with size variation and unrivaled quality. This is made possible with OSG's relentless test cuts with materials of all types.

OSG's End Mills series are available in various sizes and shapes with numerous coatings.



WXL-3D-DE

End Mill
Page D.36



WXS-LN-EBD

Long Neck Ball Nose End Mill
Page D.65~D.68



CBN-SXB

End Mill, CBN
Page D.134



DG-EBD

DG Series, End Mills with OSG's own Diamond Coating Technology for Graphite
Page D.55



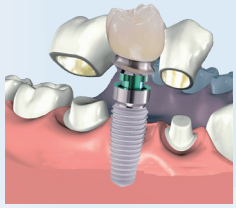
PFB

Phoenix
Page E.26~E.28



WDO-30D

Carbide drills (internal coolant) for deep holes in Mold & Die
Page C.49



Medical

OSG's cutting tools are able to achieve high precision and accuracy in the machining of titanium alloy, cobalt-chrome and stainless steel, all of which are common materials used in the processing of medical equipment components, in dentistry and in prosthetics/bone-, joint replacement.



WXS-LN-EBD

Long Neck Ball Nose End mill
Page D.65~D.68



WXL-LN-EBD

Long Neck Ball Nose End mill
Page D.45~D.50



MRS-GDL

Solid Carbide Drill
Page C.35



WXS-CRE

Super Radius End Mill
Page D.60



WXS-CPR

Long Neck Corner Radius End Mill
Page D.69~D.74



General Engineering

Our field of operation is diverse.

OSG had invested time and recources in reflecting its vast experiences from round shank tools to its indexable serie; Phoenix. The result has exceed even our own expectations.

OSG's experience is as diverse as manufacturing. Our knowhow is based on the accumulation of experiences and communication with our users. Communicate your needs to us, and our tools will deliver.
This is 'Tool Communication'. Insist on OSG's expertise!

Round Shank Tools



EX-SUS-GDS
Page C.71~C.77

VA series
Page B.68-69-86-87-153-156-173-174-181-182-194-195-202-203-240

Z series
Page B.127-128-133-166-167-134

CC-NEO series
Page B.100~B.102-159-186-205-217-224-243

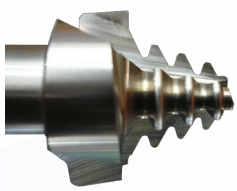
R-XPF
Page B.145

WDO-SUS-5D
Page C.40

Phoenix Indexable Tools



Christmas cutters for heavy electrical industry



Rolling Dies



Web Tools to realize Tool Communication

Our vast experience and expertise in the production of Special Taps since 1969 has made OSG UK a leading force in the special tap market. Together with our parent company OSG Corporation of Japan, we are able to offer exceptional technical support and production capability.

OSG UK are probably the largest stockist of specials in the UK. Our stocked range includes: Fine Pitch - Hand, Spiral Point & Spiral Flute, Oversize Threads - 4H, 5H, Class 1, 3B - Wire Insert - Left Hand

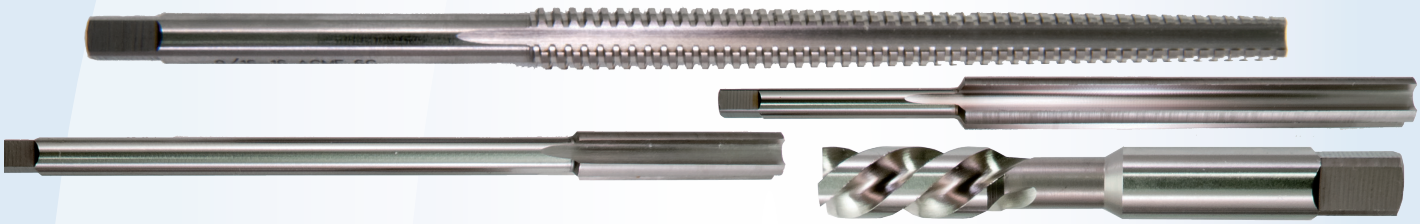
All styles and specifications of taps can be considered and our comprehensive stock of pre-prepared blanks gives us the ability to offer a quick turnaround on many designs.

All thread grinding on you prepared components can be considered.

Upon receiving an order, OSG can generally deliver in 5 working days depending on the availability of materials. If a coating is required then allow up to 5 additional days.



How to make your Special Tap & Thread grinding request:



1 **Go to:** www.osgeurope.com

2 **Choose your country and click**



3 **Fill in and submit the form**

4 **We will submit you our quotation**

TAPS

CARBIDE HSS-Co HSSE XPM

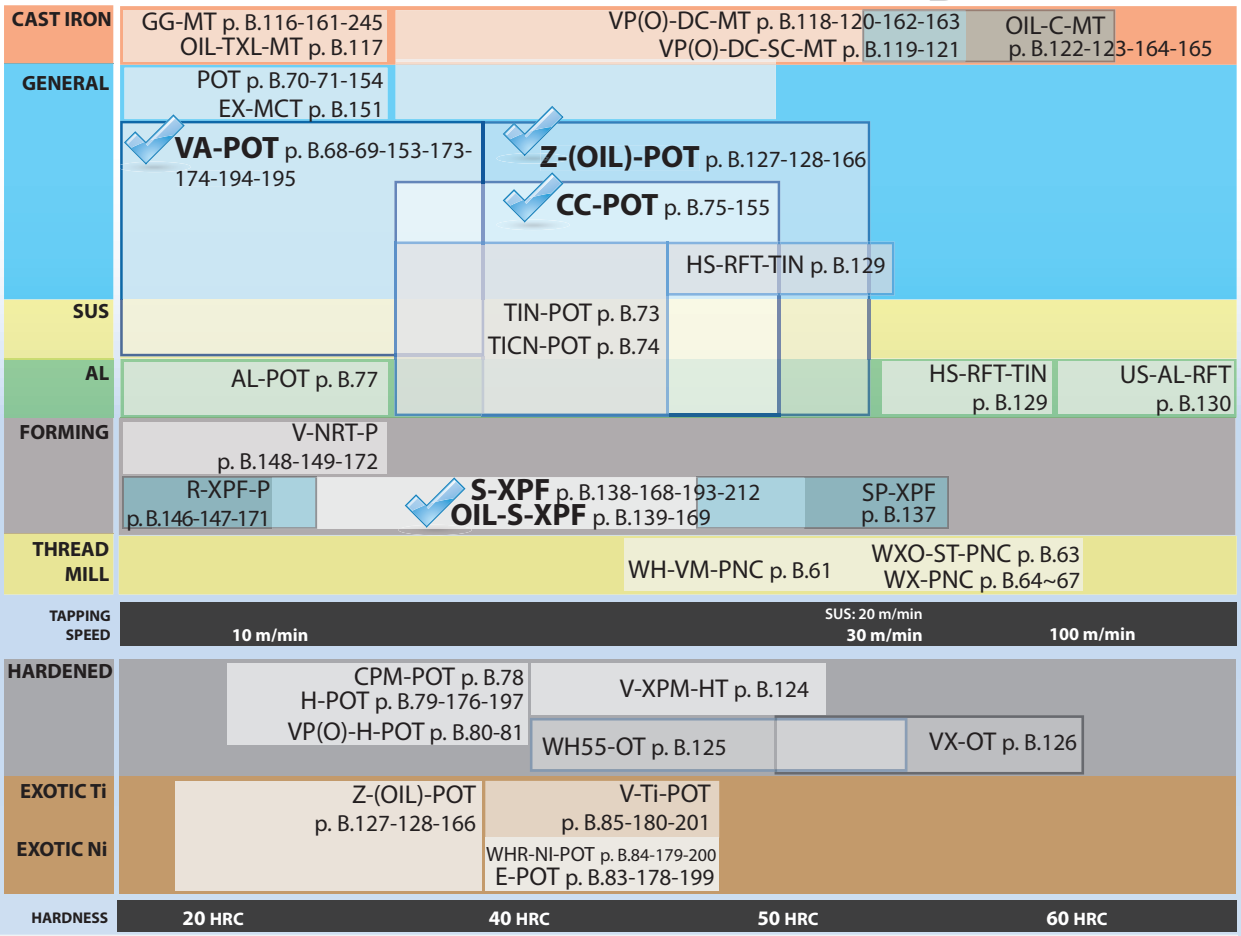


TOOL COMMUNICATION
OSG

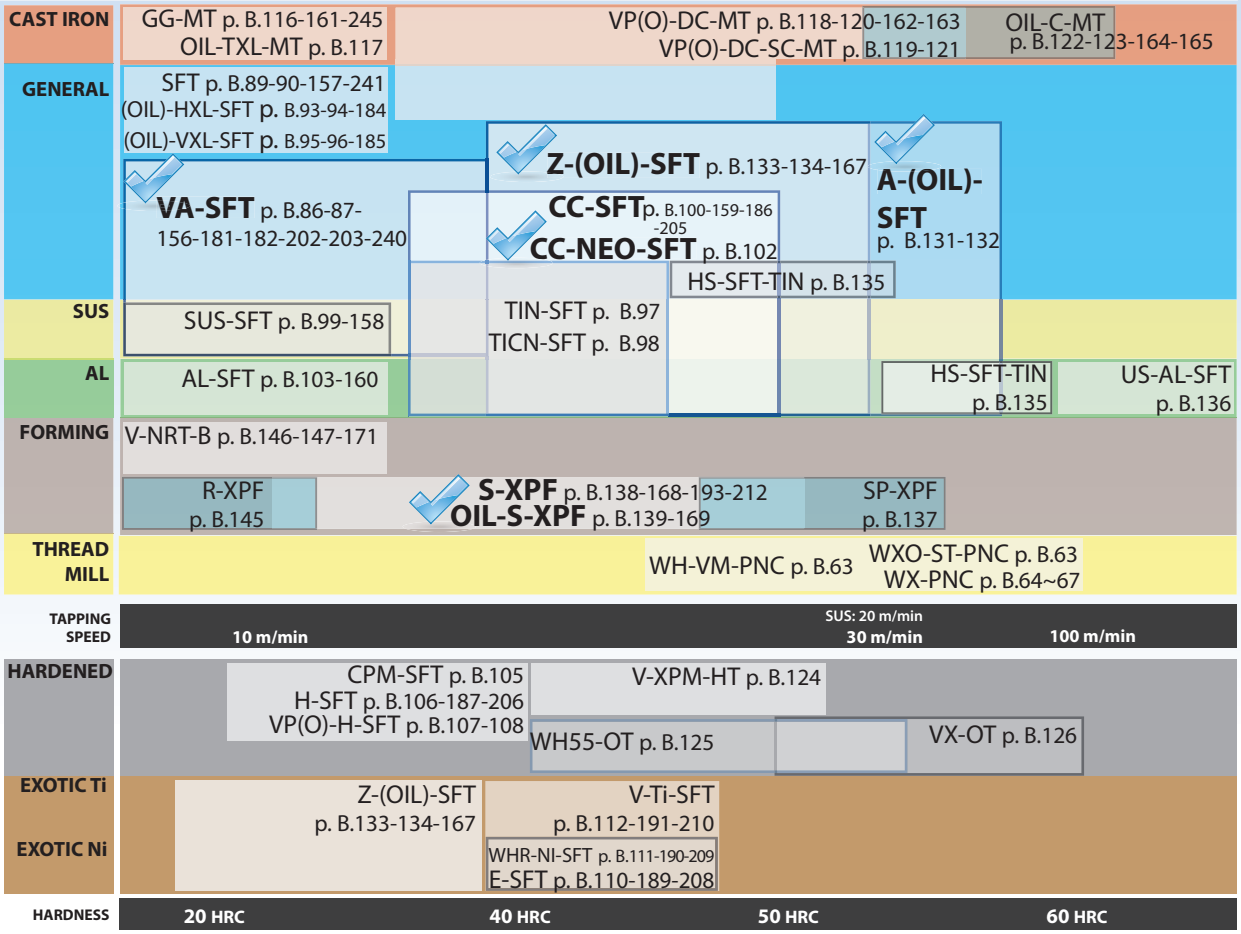
TOKO-TON SPIRIT
Total Commitment

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TAPS PRODUCT MAP - Through Hole



TAPS PRODUCT MAP - Blind Hole



Carbide drills for pilot hole WDO-3D/5D (for speed operations) p. C.38-39
HSS drills for pilot hole NEXUS GDS (for speed operations) p. C.69/EX-SUS-GDS (for general materials) p. 71~77 VPH-GDS p. C.65
Remove broken tap EX-H-DRL (broken tap remove drill) p. C.64

OSG's 1st choice recommended

TYPE	DESCRIPTIONS	
HSSE-V3	High speed steel with 3% Vanadium, giving better wear resistance	HSSE Stahl mit 3% Vanadium, für eine scharfe, verscheißfeste Schneide
	Acciaio superrapido con 3% Vanadio per una miglior resistenza all'usura	Acier rapide avec 3% de Vanadium, donne une meilleure résistance à l'usure
	High speed stål med 3% Vanadium for højere slidstyrke	HSS med 3% Vanadin, för bättre slitstyrka
	Acero rápido al 3% de Vanadio para mayor resistencia al desgaste.	Быстрорежущая сталь с добавкой 3% ванадия для большей износостойкости
	%3 Vanadyum'lu Yüksek Hız Çelikleri, daha iyi aşınma direnci sağlar	Stal szybkotnąca z 3% zawartością Wanadu, daje lepszą odporność na ścieranie
CPM	High performance material selected for use with high cutting speeds Also for dry applications	High performance Pulvermetall für sehr hohe Schnittgeschwindigkeiten Auch für Trockenbearbeitung geeignet
	Materiali alta performance per lavorazioni ad alta velocità Anche per lavorazioni a secco	Matière de haute performancesélectionnée pour de hautes vitesses de coupe Prévu également pour usinage à sec
	High performance materiale gør høje skærehastigheder opnåelig Også velegnet til tørbearbejdning	High Performance material möjliggör hög skärhastighet Även bra utan kylvätska
	Material de altas prestaciones seleccionado para emplear a altas velocidades de corte También para operaciones en seco	Высокопроизводительный материал для работы с высокой скоростью резания Также для работы без СОЖ
	Yüksek performanslı malzeme yüksek kesme hızlarında kullanılmak için seçilmiştir.	Wysoka jakość zastosowanego materiału do pracy z dużymi prędkościami skrawania
XPM	Specially developped by OSG for all alloyed steels up to 52 HRC and for cast iron	Speziell von OSG entwickeltes Pulvermetall für legierte Stähle bis 52 HRC und Guss
	Materiali sviluppati da OSG per lavorazioni di acciai oltre 52 HRC e ghise	Matière développée par OSG pour tous les aciers alliés jusqu'à 52 HRC et les fontes
	Specielt udviklet af OSG til alle typer rustfrit stål, titanium leg., stål leg., eksotiske materialer, støbejern samt stål op til 52 HRC	Special utvecklat till alla rostfria stål, titanium leg., stål leg., exotiska leg,. gjutjärn och stål up til 52 HRC
	Especialmente desarrollado por OSG para aceros inoxidables, titanio aleado, aceros aleados, aceros exoticos y fundiciones hasta 52HRC	Специально разработано OSG для всех нержавеющих сталей, титана, легированных сталей, экзотических сплавов стали, чугуна до 52 HRC
	OSG tarafından özel geliştirilmiştir, 52 HRC'ye kadar bütün alaşımlı çelikler ve döküm için uygundur	Specjalna stal proszkowa OSG dla wszystkich stali stopowych do 52 HRC i żeliw

WORK MATERIAL

C ≤ 0,2%	Low carbon steel	Kohlenstoffstahl	Acciaio a basso contenuto di carbonio	Aciers bas carbone	Kulstofstål	Kolstål	Aceros bajos en carbono	Низкоуглеродистая сталь	Düşük karbonlu çelikler	Stale niskowęglowe
0,25 < C ≤ 0,4%	Medium carbon steel	Kohlenstoffstahl	Acciaio a medio contenuto di carbonio	Aciers médium carbone	Kulstofstål	Kolstål	Aceros medios en carbono	Среднеуглеродистая сталь	Orta karbonlu çelikler	Stale węglowe
C ≥ 0,45%	High carbon steel	Kohlenstoffstahl	Acciaio ad alto contenuto di carbonio	Aciers haut carbone	Kulstofstål	Kolstål	Aceros altos en carbono	Высокоуглеродистая сталь	Yüksek karbonlu çelikler	Stale węglowe
SCM	Alloy steel	Leg. Stahl	Acciaio legato	Aciers alliés	Legeret stål	Legerat stål	Aceros aleados	Легированная сталь	Alaşımlı çelikler	Stale stopowe
25~45 HRC	Hardened steel	Gehärteter Stahl	Acciaio temprato	Aciers trempé	Hærdet stål	Härdat stål	Aceros endurecidos	Закаленная сталь	Sertleştirilmiş çelikler	Stale hartowane
35~45 HRC	Hardened steel	Gehärteter Stahl	Acciaio temprato	Aciers trempé	Hærdet stål	Härdat stål	Aceros endurecidos	Закаленная сталь	Sertleştirilmiş çelikler	Stale hartowane
45 ~ 52 HRC	Hardened steel	Gehärteter Stahl	Acciaio temprato	Aciers trempé	Hærdet stål	Härdat stål	Aceros endurecidos	Закаленная сталь	Sertleştirilmiş çelikler	Stale hartowane
50 ~ 70 HRC	Hardened steel	Gehärteter Stahl	Acciaio temprato	Aciers trempé	Hærdet stål	Härdat stål	Aceros endurecidos	Закаленная сталь	Sertleştirilmiş çelikler	Stale hartowane
SC	Cast steel	Stahlguss	Acciaio colato	Aciers coulés	Støbt stål	gjutjärn stål	Fundición de hierro	Чугун	Çelik döküm	Staliwa
Bs	Brass	Messing	Ottone	Laiton	Messing	Mässing	Latón	Латунь	Pirinç	Mosiądz
Bsc	Cast brass	Messinglegierung	Ottone colato	Laiton coulé	Støbt messing	Gjuten mässing	Latón fundido	Медное литье	Pirinç döküm	Odlewy mosiądzu
PB	Bronze	Bronze	Bronzo	Bronze	Bronze	Brons	Bronce	Бронза	Bronz	Brąz
MC	Cast Magne. alloys	Magnesiumguss-legierung	Leghe di magnesio colato	Alliages de Magnésium coulé	Støbt magnesium legering	Gjuten magnesium legering	Fundición de Magnesio aleado	Литевые магниевые сплавы	Döküm Magne.alaşımları	Odlewnicze stopy magnezu
ZDC	Cast zinc alloys	Zinkgusslegierung	Leghe di zinco	Alliages de zinc coulé	Støbt zink legering	Gjuten zink legering	Fundición de cinc aleado	Литевые цинковые сплавы	Döküm Zink alaşımları	Odlewnicze stopy cynku
SUS	Stainless steel	VA Stahl	Acciaio inossidabili	Inox	Rustfrit stål	Rostfria stål	Aceros inoxidables	Нержавеющая сталь	Paslanmaz çelik	Stale nierdzewne
SKD	Tool steel	Werkzeustahl	Acciaio da utensili	Aciers d'outillage	Værktøjsstål	Verktygs stål	Aceros de herramientas	Инструментальная сталь	Takım çeliği	Stale narzędziowe
GG	Cast iron	Grauguss	Ghisa grigia	Fonte	Støbejern	Gjutjärn	Aceros fundidos ~ 350 HB	Чугун ~ 350 HB	Pik döküm	Żeliwo
GGG	Ductile cast iron	Kugelgraphitguss	Ghisa malleabile	Fonte maléable	Støbejern	Segjärn	Funditiones ductiles	Высокопрочный чугун	Sfero döküm	Żeliwo sferoidalne
Cu	Copper	Kupferlegierung	Rame	Cuivre	Kobber	Koppar	Aleaciones de cobre	Медь	Bakır	Miedź
Al	Aluminium	Aluminium	Alluminio	Aluminium	Aluminium	Aluminium	Aluminio	Алюминий	Alüminyum	Aluminium
AC	Cast aluminium alloys	Aluminiumlegierung	Leghe di alluminio	Alliages d'alu coulé	Aluminium leg.	Gjut Aluminium	Aluminio aleado fundido	Литейные алюминиевые сплавы	Döküm alüminyum alaşımı	Odlewnicze stopy aluminium
Ni	Nickel alloys	Nickellegierung	Leghe esotiche e a base di nickel	Alliages de nickel	Nikkel	Nickel	Níquel	Никель	Nikel alaşımı	Stopy niklu
Ti	Titanium	Titanium	Titanio	Titane	Titanium	Titanium	Titanio	Титан	Titanyum	Tytan
Tiall	Titanium alloys	Titaniumlegierung	Leghe di titanio	Alliages de Titane	Titanium leg.	Titanium leg.	Titanio aleado	Титановые сплавы	Titanyum alaşımı	Stopy tytanu
Inc	Inconel	Inconel	Inconel	Inconel	Inconel	Inconel	Inconel	Inconel	İnkonel	Inconel
Plast.	Plastics	Kunststoff	Plastiche	Plastiques	Plast	Plast	Plasticos	пластики	Plastik	Tworzywa sztuczne
Vinyl	Thermoplastics	Thermoplastik	Thermoplastica	Thermoplastiques	Vinyl	Vinyl	Vinilo	Термопластики	Termoplastik	Termoplasty
○	Good	Gut	Buono	Bon	God	Bra	Utilizable	Хороший	İyi	Dobry
◎	Excellent	Sehr gut	Ottimo	Excellent	Meget god	Mycket bra	Excelente	Превосходный	Mükemmel	Bardzo dobry

SELECTION

Type	Product Name		Surface finish	No. of pitches	Hole Type								
					<1.5D	>1.5D	<1.5D	>1.5D	C≤0.2%	0.25% C≤0.4%	C≥0.45%	SCM	
Thread mill	WH-VM-PNC	B.61	WXS	3					○	○	○	○	
	WXO-ST-PNC	B.63	WX	-	◎	◎	◎	◎	○	◎	◎	◎	
	WX-PNC	B.64 ~ B.67	WX	-	◎	◎	◎	◎	○	○	○	○	
POT	VA-POT	B.68-B.69-B.153-B.173-B.174-B.194-B.195	OX	4	◎	◎			◎	◎	◎	◎	
	POT	B.70-B.71-B.154		4	◎	◎			○	○	○	○	
	1066-POT	B.72-B.175-B.196-B.227-B.230-B.233-B.239-B.248-B.250	OX	4	◎	◎			◎	◎	◎	◎	
	TIN-POT	B.73	TIN	4	◎	◎			○	○	◎	○	
	TICN-POT	B.74	V	4	◎	◎			○	○	◎	◎	
	CC-POT	B.75-B.155	CrN	4	◎	◎			◎	◎	◎	○	
	CC-LT-POT NEW	B.76	CrN	4	◎	◎			◎	◎	◎	○	
	AL-POT	B.77		4	◎	◎							
	CPM-POT	B.78		5	◎	◎					◎		
	H-POT	B.79-B.176-B.197	OX	5	◎	◎					◎		
	VP-H-POT	B.80	V	2/4	◎	◎					◎		
	VPO-H-POT	B.81	V	2/4	◎	◎					◎		
	H-HL-POT	B.213-B.218-B.222	OX	5	◎	◎					◎		
	1066-POT-PLUS	B.82-B.177-B.198-B.234	OX	4	◎	◎					◎		
	E-POT	B.83-B.178-B.199		3	◎	◎							
	WHR-NI-POT	B.84-B.179-B.200	HR	5									
	E-HL-POT	B.214-B.219-B.223		5	◎	◎							
	V-TI-POT	B.85-B.180-B.201	V	5	◎	◎							
SFT	VA-SFT	B.86-B.87-B.156-B.181-B.182-B.202-B.203-B.240	OX	2,5			◎	◎	◎	◎	◎	◎	
	VA-SC-SFT	B.88	OX	1,5			◎	◎	◎	◎	◎	◎	
	SFT	B.89-B.90-B.157-B.241		2,5			◎	◎	○	○	○	○	
	WM-SFT	B.91	OX	2,5			◎	◎	◎	◎	○	○	
	1066-SFT	B.92-B.183-B.204-B.228-B.231-B.235-B.242-B.249-B.251	OX	2,5			◎	◎	◎	◎	◎	◎	
	HXL-SFT	B.93-B.184	OX	2,5			◎	◎	○	○	◎	◎	
	OIL-HXL-SFT	B.94	OX	2,5			◎	◎	○	○	◎	◎	
	VXL-SFT	B.95-B.185	OX	2,5			◎	◎	○	○	◎	◎	
	OIL-VXL-SFT	B.96	OX	2,5			◎	◎	○	○	◎	◎	
	TIN-SFT	B.97	TIN	2,5			◎	◎	○	○	◎	○	
	TICN-SFT	B.98	V	2,5			◎	◎	○	○	◎	◎	
	SUS-SFT	B.99-B.158	OX	2,5			◎	◎					
	CC-SFT	B.100-B.159-B.186-B.205	CrN	2,5			◎	◎	◎	◎	◎	○	
	CC-LT-SFT NEW	B.101	CrN	2,5			◎	◎	◎	◎	◎	○	
	CC-NEO-SFT	B.102	TIN	2/3			◎	◎	◎	○	◎	○	
	CC-HL-SFT	B.217-B.224	CrN	2,5			◎	◎		○		○	
	CC-SFT-SPT	B.243	CrN	2,5			◎	◎		○		○	
	AL-SFT	B.103-B.160		2,5			◎	◎					
	SH-SFT	B.104-B.244		3			◎	◎		○	○	○	
	CPM-SFT	B.105		3			◎	◎			◎	○	
	H-SFT	B.106-B.187-B.206	OX	3			◎	◎			◎	○	
	VP-H-SFT	B.107	V	2/4			◎	◎			◎	○	
	VPO-H-SFT	B.108	V	2/4			◎	◎			◎	○	
	H-HL-SFT	B.215-B.220-B.225	OX	3			◎	◎			◎	○	
	1066-SFT-PLUS	B.109-B.188-B.207-B.236	OX	2,5			◎	◎			◎	○	
	E-SFT	B.110-B.189-B.208		2,5			◎	◎					
	WHR-NI-SFT	B.111-B.190-B.209	HR	3			◎	◎					
	E-HL-SFT	B.216-B.221-B.226		2,5			◎	◎					
	V-TI-SFT	B.112-B.191-B.210	V	2,5			◎	◎					
MT	1066-HT	B.113-B.114-B.192-B.211-B.229-B.232-B.237		2,5/4/8	◎	◎	◎	◎		○			
	1066-TIN-HT	B.115	TIN	2,5/4	◎	◎	◎	◎	○	○	○	○	
	GG-MT	B.116-B.161-B.245	NIOX	2,5	◎	◎	◎	◎					
	OIL-TXL-MT	B.117	OX	2,5	◎	◎	◎	◎	○	○	◎	◎	
	VP-DC-MT	B.118-B.162	V	2,5	◎	◎	◎	◎			○	○	
	VP-DC-SC-MT	B.119	V	1,5	◎	◎	◎	◎			○	○	
	VPO-DC-MT	B.120-B.163	V	2,5	◎	◎	◎	◎			○	○	
	VPO-DC-SC-MT	B.121	V	1,5	◎	◎	◎	◎			○	○	

Work material - Werkstoff - Materiale - Matière - Materiale - Material - Material de pieza - обрабатываемый материал - İş parçası malzemesi - Materiał

◎ Excellent - Sehr gut - Ottimo - Excellent - Meget god - Mycket bra - Excelente - Превосходный - Mükemmel - Bardzo dobry | ○ Good - Gut - Buono - Bon - God - Bra - Utilizable - Хороший - İyi - Dobry

25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG	Cu	Bs	BsC	PB	Al	AC, ADC	MC	ZDC	Ti	Ni	Bakelite Phenol	Vinyl Chloride Nylon
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SELECTION

Type	Product Name		Surface finish	No. of pitches	Hole Type								
					<1.5D	>1.5D	<1.5D	>1.5D	C≤0.2%	0.25% C≤0.4%	C≥0.45%	SCM	
MT	OIL-C-MT NEW	B.122-B.123-B.164-B.165	FX	1,5-2/2,5-3									
	V-XPM-HT	B.124	V	2,5/5	◎		◎						
	WH55-OT	B.125	V	2,5/5	◎		◎						
	VX-OT	B.126	V	2,5	◎		◎						
SPT	VX-OT-SPT	B.246	V										
	S-XPF-SPT	B.247	V		◎	◎	◎	◎	◎	◎	◎	◎	
Synchro Tap	Z-POT	B.127-B.166	V	4	◎	◎			◎	◎	◎	○	
	Z-OIL-POT	B.128	V	4	◎	◎			◎	◎	◎	○	
	HS-RFT-TIN	B.129	TIN	6	◎	◎			◎	◎	◎	◎	
	US-AL-RFT	B.130	V	6	◎	◎							
	A-SFT NEW	B.131	V	2,5			◎	◎	◎	◎	◎	◎	
	A-OIL-SFT NEW	B.132	V	2,5			◎	◎	◎	◎	◎	◎	
	Z-SFT	B.133-B.167	V	2,5			◎	◎	◎	◎	◎	○	
	Z-OIL-SFT	B.134	V	2,5			◎	◎	◎	◎	◎	○	
	HS-SFT-TIN	B.135	TIN	3	◎	◎	◎	◎	◎	◎	◎	◎	
	US-AL-SFT	B.136	V	3	◎	◎	◎	◎					
Forming Tap	SP-XPF NEW	B.137	V	2	◎	◎	◎	◎	◎	◎	◎	◎	
	S-XPF New sizes	B.138-B.168-B.193-B.212	V	2	◎	◎	◎	◎	◎	◎	◎	◎	
	OIL-S-XPF	B.139-B.169	V	2	◎	◎	◎	◎	◎	◎	◎	◎	
	S-XPF-6GX	B.140	V	2	◎	◎	◎	◎	◎	◎	◎	◎	
	S-XPF-7GX	B.141	V	2	◎	◎	◎	◎	◎	◎	◎	◎	
	S-XPF-P	B.142-B.170	V	4	◎	◎			◎	◎	◎	◎	
	S-SC-XPF	B.143	V	1,5	◎	◎	◎	◎	◎	◎	◎	◎	
	S-LT-XPF NEW	B.144	V	2	◎	◎	◎	◎	◎	◎	◎	◎	
	R-XPF NEW	B.145	V	2,5/4	◎	◎	◎	◎		◎	◎	○	
	V-NRT-B	B.146-B.147-B.171	V	2	◎	◎	◎	◎	◎	◎	○	○	
	V-NRT-P	B.148-B.149-B.172	V	4	◎	◎			◎	◎	○	○	
	1066-NRT-PLUS	B.150	TIN	2	◎	◎	◎	◎	◎	◎	○	○	
Other Taps	EX-MCT	B.151	OX	3	◎	◎	◎	◎	◎	◎	○	○	
	V-EM-SFT	B.152	V	2,5			◎	◎					
	NPT	B.252		2,5	◎	◎	◎	◎	○	◎	◎	◎	
	PG	B.253		2,5	◎	◎	◎	◎	○	○	○		
	HT	B.254		-	◎	◎	◎	◎		○	○		
	HT-VA-OX	B.255	OX	-	◎	◎	◎	◎		○	○		

Work material - Werkstoff - Materiale - Matière - Materiale - Material - Material de pieza - обрабатываемый материал - İş parçası malzemesi - Materiał

◎ Excellent - Sehr gut - Ottimo - Excellent - Meget god - Mycket bra - Excelente - Превосходный - Mükemmel - Bardzo dobry | ○ Good - Gut - Buono - Bon - God - Bra - Utilizable - Хороший - İyi - Dobry

	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG	Cu	Bs	BsC	PB	Al	AC, ADC	MC	ZDC	Ti	Ni	Bakelite Phenol	Vinyl Chloride
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ICONS										
Material - Material - Materiale - Matière outil - Materiale - Material - Material - Обрабатываемый материал - Malzemesi - Materiał										
CARBIDE	Carbide	Vollhartmetall	Carburo	Carbure	Hårdmetal	Hårdmetall	Metal duro	Карбид	Karbür	Węglik
HSS-Co	HSS Cobalt (Co8)	HSS Cobalt (Co8)	Cobalto HSS (Co8)	HSS Cobalt (Co8)	HSS kobolt (Co8)	HSS kobolt (Co8)	HSS al cobalto (Co8)	быстрорежущая сталь с 8% кобальта	HSS Kobalt (Co8)	HSS kobaltowe (Co8)
XPM	High grade Powder Metallurgy HSS (XPM) (Co10 + V5)	Spezial Pulvermetall HSS (XPM) (Co10 + 5)	Alto livello di metallurgia delle polveri sinterizzate (XPM) (Co10 + 5)	Haut niveau de métallurgie des poudres HSS (XPM) (Co10 + 5)	XPM OSG patp. Pulverstål 10%Co 5%V	XPM: HSS extra fin pullver metall	XPM: HSS sinterizado de alto grado (XPM) (Co10 + V5)	Высококачественный порошковый HSS	Yüksek kaliteli Toz Metalurjisi HSS (XPM) (Co10+V5)	Wysokiej klasy metalurgia proszków HSS (XPM) (Co10 + V5)
HSSE	High Vanadium HSS-E V3	HSSE (3% Vanadium) (V3)	HSS-E alto contenuto di vanadio (V3)	HSSE haute teneur en vanadium (V3)	3% vanadium HSS-E V3	HSSE: HSS-E V3 med vanadin 3%	HSSE: HSS-E V3 alto en Vanadio	быстрорежущая сталь с высоким содержанием ванадия HSS-E V3	Yüksek Vanadyum	Wysoko wanadowa
PM	Powder Metallurgy HSS (PM-T15) (Co5 + V5)	Pulvermetall HSS (PM-T15) (Co5 + V5)	Metallurgia delle polveri sinterizzate HSS (PM-T15) (Co5 + V5)	Métallurgie des poudres HSS (PM-T15) (Co5 + V5)	Pulvermetal HSS (PM-T15) (Co5 + V5)	PM: Pullver metall HSS (PM-T15) (Co5 + V5)	PM: HSS sinterizado HSS (PM-T15) (Co5 + V5)	PM: порошковая металлургия HSS (PM-T15) (Co5 + V5)	Toz Metalurjisi Metalurjisi HSS (XPM) (Co10+V5)	Metalurgia proszków HSS (PM-T15) (Co5 + V5)
HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS быстрорежущая сталь	HSS	HSS
Coating - Beschichtung - Rivestimento - Revêtement - Belægning- Beläggning - Recubrimiento - Покрытие - Kaplama -Powłoka										
TiN	Coating Tin	Beschichtung TiN	Rivestimento TiN	Revêtement TiN	TiN Belægning	TiN: Beläggning med TiN	Recubrimiento TiN	Покрытие TiN	Tin Kaplama	Powłoka TiN
NI-OX	Nitride	Nitrid	Nitrurazione	Nitruration	Nitrid	Nitride	Nitrurado y Vaporizado	Нитрид	Nitrit	Azotowane
V	Multilayer coating TiCN	Mehrlagen-beschichtung TiCN	Multistrato composito TiCN	Revêtement multicouches TiCN	Multilayer belægning TiCN	Multilayer beläggning med TiCN	Recubrimiento TiCN, multicapa	многослойное покрытие TiCN	Çok katmanlı TiCN kaplama	Wielowarstwowa powłoka TiCN
OX	Steam Oxide	Dampfangelassen	Trattamento al vapore	Traitement vapeur	Damp oxideret	Ångoxiderad	Vaporizado	паровой оксид	Oksidasyon	Oksydowane
WX	Multi layered composite TiAlN	Mehrlagen-beschichtung TiAlN	Multistrato composito TiAlN	Revêtement multicouches composite TiAlN	Multilayer komposit belægning TiALN	Multilayer med TiAlN	Recubrimiento TiAlN multicapa	многослойное покрытие TiAlN	Çok katmanlı TiAlN kompozit	Wielowarstwowa powłoka TiAlN
CrN	Chromium nitride	Chromnitrit	Nitruro di cromo	Nitrure de chrome	Crom nitrid	Krom nitride	Recubrimiento Nitruro de Cromo	Хром нитрид	Krom nitrür	Azotek chromu
HR	Coating HR	Beschichtung HR	Rivestimento HR	Revêtement HR	HR Belægning	HR: Beläggning med HR	Recubrimiento HR	Покрытие HR	HR kaplama	Powłoka HR
Helix Angle - Drallwinkel - Angolo d'elica - Angle d'hélice - Spiralvinkel - Spiral vinkel - Angulo de helice- Угол спирали - Helis açısı - Kąt spirali										
30°	Helix Angle	Helix Drall Winkel	Angolo d'elica	Angle d'hélice	Spiralvinkel	Spiral vinkel	Angulo de helice	Угол спирали	Helis açısı	Kąt spirali
Tool tolerance - Werkzeugtoleranz - Tolleranza del diametro - Tolérance outil - Værktøjs tolerance - Verktygs tolerans - Tolerancia de herramienta- точность инструмента Takım toleransı - Tolerancja narzędzia										
ISO 2 6H	Tool tolerance	Werkzeugtoleranz	Tolleranza del diametro	Tolérance outil	Værktøjs tolerance	Verktygs tolerans	Tolerancia de herramienta	точность инструмента	Takım toleransı	Tolerancja narzędzia
Chamfer lead - Schälanschnitt - Imbocco - Entrée gun - Styrefas - Fas ingång - Chaflán de entrada - заходная фаска - Ağızlama boyu - zwoja nakroju										
1,5	1,5 pitch chamfer lead	1,5 Gang. Anschnittlänge	1,5 filetti	1,5 Entrée gun	1,5 x stigning på opløb	Fasingång 1,5 x stigning	Chaflán de entrada 1,5 pasos	заходная фаска 1.5 витка	Ağızlama boyu 1.5 hatve	1,5 zwoja nakroju
2,5 BTG	2,5 pitch chamfer lead	2,5 Gang. Anschnittlänge	2,5 filetti	2,5 Entrée gun	2,5 x stigning på opløb	Fasingång 2,5 x stigning	Chaflán de entrada 2,5 pasos	заходная фаска 2.5 витка	Ağızlama boyu 2.5 hatve	2,5 zwoja nakroju
4 SEC	4 pitch chamfer lead	4 Gang. Anschnittlänge	4 filetti	4 Entrée gun	4 x stigning på opløb	Fasingång 4 x stigning	Chaflán de entrada 4 pasos	заходная фаска 4 витка	Ağızlama boyu 4 hatve	4 zwoja nakroju
6	6 pitch chamfer lead	6 Gang. Anschnittlänge	6 filetti	6 Entrée gun	6 x stigning på opløb	Fasingång 6 x stigning	Chaflán de entrada 6 pasos	заходная фаска 6 витка	Ağızlama boyu 6 hatve	6 zwoja nakroju
8 THDS	8 pitch chamfer lead	8 Gang. Anschnittlänge	8 filetti	8 Entrée gun	8 x stigning på opløb	Fasingång 8 x stigning	Chaflán de entrada 8 pasos	заходная фаска 8 витка	Ağızlama boyu 8 hatve	8 zwoja nakroju
Shank - Schaft - Gambo - Queue - Skaft - Skaft - Mango- Хвостовик - Şaft - Chwyt										
h7	Shank diameter tolerance	Schaftdurchmesser Toleranz	Tolleranza del diametro del gambo	Tolérance du diamètre de queue	Skaft diameter tolerance	Tolerans på skaft diameter	Tolerancia en diametro de mango	точность диаметра хвостовика	Şaft çapı toleransı	Tolerancja średnicy chwytu
SHRINK FIT	All shanks are suitable for Hypro Shrink Fit system	Zum Einschrumpfen geeignet	Adatto al sistema di serraggio a caldo	Toutes les queues des fraises OSG sont adaptées pour le sys. de frettage	Alle OSG skafter passer til Hypro krympe system	Alla skaft kan användas till OSG Hypro-krymp system	Todos los mangos de metal duro OSG son aptos para fijación térmica	хвостовики пригодны для Hypro термозажимной системы	Bütün şaftlar Hypro-Shrink Fit sistemi için uygundur	Wszystkie chwyty są odpowiednie dla systemu termokurczliwego Hypro-Shrink
	Straight shank	Überlaufschaft	Gambo passante	Queue cylindrique	Lige skaft	Rakt skaft	Mango sencillo	Прямой хвостовик	Düz Şaft	Chwyt walcowy
	Reinforced shank	Verstärkter Schaft	Gambo rinforzato	Queue renforcée	Forstærket skaft	Förstärkt skaft	Mango reforzado	Усиленный хвостовик	Takviyeli şaft	Chwyt wzmocniony

ICONS

ICONS										
Threading - Gewinde - Filettatura - Taraudage - Gevindskæring - Gängning - Roscado - Нарезка резьбы - Diş - Głębokość gwintu										
	For blind holes	Für Sacklöcher	Per fori ciechi	Pour trous borgnes	Til bundhuller	För bottenhål	Para agujeros ciegos	для глухих отверстий	Kör delikler için	Do otworów nieprzelotowych
	For through holes	Für Durchgangs-löcher	Per fori passanti	Pour trous débouchants	Til gennemgående huller	För genomgående hål	Para agujeros pasantes	для сквозных отверстий	Açık delikler için	Do otworów przelotowych
Threading depth - Gewindetiefe - Profondità di filettatura - Profondeur taraudage - Gevinddybde - Gäng djup -Profundidad de roscado - Глубина нарезки резьбы - Diş derinliği - Głębokość gwintu										
	Threading depth < 1,5 D	Gewindetiefe < 1,5 D	Profondità di filettatura < 1,5 D	Profondeur taraudage < 1,5 D	Gevinddybde < 1,5 D	Gäng djup < 1,5 D	Profundidad de roscado < 1,5 D	Глубина нарезки резьбы < 1,5 D	Diş derinliği <1,5D	Głębokość gwintu < 1,5 D
	Threading depth ≥ 2 D	Gewindetiefe ≥ 2 D	Profondità di filettatura ≥ 2 D	Profondeur taraudage ≥ 2 D	Gevinddybde ≥ 2 D	Gäng djup ≥ 2 D	Profundidad de roscado ≥ 2 D	Глубина нарезки резьбы ≥ 2 D	Diş derinliği ≥ 2 D	Głębokość gwintu ≥ 2 D
Internal cooling - Innere Kühlmittelzuführung - Con fori di lubrificazione centrali - Arosage central - Indvendig køling - Invädig spolning - Refrigeración interna - Внутреннее охлаждение - İçten soğutma - Chłodzenie wewętrzne										
	Through Coolant	Innere Kühlmittelzuführung	Con fori di lubrificazione centrali	Arosage central	Indvendig køling	Invädig spolning	Refrigeración interna	внутреннее охлаждение	İçten soğutma	Chłodzenie wewętrzne
Standard DIN - Standard DIN - Standard DIN - Standard DIN - Standard DIN - Standard DIN - Estándar DIN - Стандартное для DIN - Standart DIN - Standard DIN										
DIN 371	Standard DIN	Standard DIN	Standard DIN	Standard DIN	Standard DIN	Standard DIN	Estándar DIN	Стандартное для DIN	Standart DIN	Standard DIN
Cutting Conditions - Schnittwerte - Velocità di taglio - Conditions de coupe - Skæredata - Skärdata - Condiciones de corte - Условия резания - Kesme Şatları - Parametry obróbki										
min^{-1}	Cutting Condition	Schnittwerte	Velocità di taglio	Conditions de coupe	Skæredata	Skärdata	Condiciones de corte	условия резания	Kesme Şatları	Parametry obróbki
Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania										
P	Steel	Stahl	Acciai	Acier	Stål	Stål	Aceros	сталей	çelikler için	Stali
M	Stainless Steel	VA - Stahl	Inox e acciai dolci	Aciers Inox	Rustfrit stål	Rostfritt stål	Aceros inoxidables	нержавеющих сталей	Ayrıca paslanmaz çelik için	Stali nierdzewnych
K	Cast Iron	Grauguss	Ghisa	Fonte	Støbejern	Gjutjärn	fundición de hierro	для чугуна и алюминия	Döküm	żeliw
N	non Ferrous Material	NE-Material	Materiali non ferroso	Matériel non ferreux	Ikke-jernholdige materialer	Icke järnhaltiga material	Materiales no ferrosos	цветных металлов	Demir dışı malzemeler	Materiał nieżelaznych
S	Super Alloys	Super legierungen	Super leghe	Super Alliage	Super legeringer	Super legeringar	Super aleaciones	жаропрочных сплавов	Süper alaşımlar	Süper alaşımlar
H	Hardened Material	gehärtete Materialien	Acciai temprati fino	Matériaux Supérieur	Hærdede materialer	härdat stål	Aceros templados	закаленных материалов	Kadar sertleştirilmiş malzemeler için	Super stopy

X PERFORMER FORMING TAPS

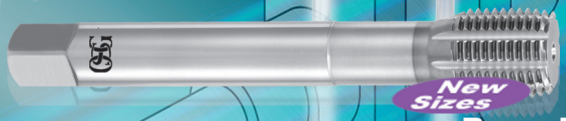
Exceptional performance in alloy steels, forged steels, and hardened steels up to 35 HRC !

S-XPF



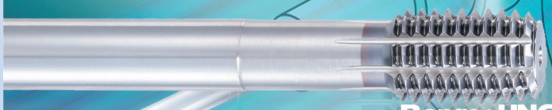
New Sizes

Range : MF8~MF24



New Sizes

Range : M1~M30

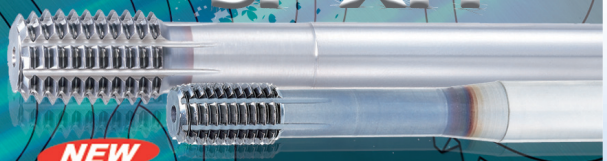


Range : UNC N°5~1''



Range UNF N°6~1"

SP-XPF



NEW

Range : M3~M16

OIL-S-XPF



Range : MF8~MF24

New Sizes



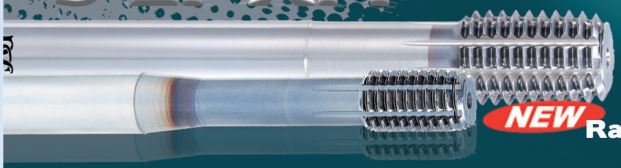
Range : M6~M45

S-XPF-SPT



Range : G1/8~G1/2

S-LT-XPF



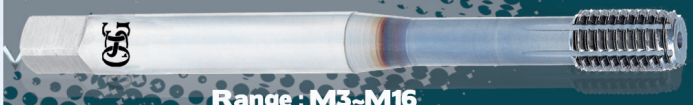
NEW Range M3~M12

S-XPF-P



Range : M3~M20 - MF8~MF20

S-XPF-6GX



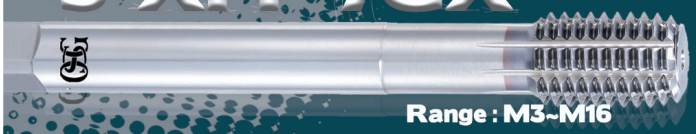
Range : M3~M16

S-SC-XPF



Range : M3~M16

S-XPF-7GX



Range : M3~M16

R-XPF



NEW Range : M3~M6

Tools	POT							
								
	VA-POT	VA-POT	POT	POT	IO66-POT	TIN-POT	TiCN-POT	CC-POT
METRIC	Page B.68	Page B.69	Page B.70	Page B.71	Page B.72	Page B.73	Page B.74	Page B.75
Tolerance	ISO 2 6H	ISO 3 6G	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H
Coating / Material	OX HSSE	OX HSSE	HSSE	HSSE	OX HSSE	TIN HSSE	TiCN HSSE	CrN HSSE
Chamfer	B/4	B/4	B/4	B/4	B/4	B/4	B/4	B/4
Internal Coolant & Helix Angle								
Thread depth & Hole type								
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H

M	P	Hole	DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376	DIN 352	ISO 529	DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376
1	0,25	0,75								○						
1,2	0,25	0,95								○						
1,4	0,3	1,1								○						
1,6	0,35	1,25								○						
1,8	0,35	1,45								○						
2	0,4	1,6	●		●		●			○	●		●		●	
2,2	0,45	1,75	●							○						
2,5	0,45	2,05	●		●		●			○	●				●	
3	0,5	2,5	●	●	●		●	●	●	○	●	●	●		●	●
3,5	0,6	2,9	●				●			○	●					
4	0,7	3,3	●	●	●		●	●	●	○	●	●	●		●	●
4,5	0,75	3,7								○						
5	0,8	4,2	●	●	●		●	●	●	○	●	●	●		●	●
6	1	5	●	●	●		●	●	●	○	●	●	●		●	●
7	1	6								○						
8	1,25	6,8	●	●	●		●	●	●	○	●	●	●		●	●
9	1,25	7,8								○						
10	1,5	8,5	●	●	●		●	●	●	○	●	●	●		●	●
11	1,5	9,5								○						
12	1,75	10,2		●		●		●		○		●		●		●
14	2	12		●		●		●		○		●		●		●
16	2	14		●		●		●		○		●		●		●
18	2	15,5		●				●		○		●		●		●
20	2,5	17,5		●				●		○		●		●		●
22	2,5	19,5		●				●		○		●		●		●
24	3	21		●				●		○		●		●		●
27	3	24		●				●		○		●				●
30	3,5	26,5		●				●		○		●				●
33	3,5	29,5		●				●		○						
36	4	32		●				●		○						
39	4	35								○						
42	4,5	37,5								○						
48	5	43														
52	5	47														
56	5,5	50,5														

M

Tools	POT							
								
	CC-LT-POT	AL-POT	CPM-POT	H-POT	VP-H-POT	VPO-H-POT	I066-POT-PLUS	E-POT
METRIC	Page B.76	Page B.77	Page B.78	Page B.79	Page B.80	Page B.81	Page B.82	Page B.83
Tolerance	ISO 2 6HX	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6HX	ISO 2 6H	ISO 2 6H	ISO 2 6H
Coating / Material	CrN HSSE	HSSE	PM	OX PM	V PM	V PM	OX PM	PM
Chamfer	B/4	B/4	B/5	B/5	B/5	B/5	B/5	B/5
Internal Coolant & Helix Angle								
Thread depth & Hole type								
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H

M	P	Hole			DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376	ISO 529	DIN 371	DIN 376
1	0,25	0,75															
1,2	0,25	0,95															
1,4	0,3	1,1															
1,6	0,35	1,25															
1,8	0,35	1,45															
2	0,4	1,6	●		●				●		●						
2,2	0,45	1,75															
2,5	0,45	2,05	●		●				●		●						
3	0,5	2,5	●		●		●		●		●				○	●	
3,5	0,6	2,9															
4	0,7	3,3	●		●		●		●		●				○	●	
4,5	0,75	3,7															
5	0,8	4,2	●		●		●		●		●				○	●	
6	1	5	●		●		●	●	●		●		●		○	●	
7	1	6															
8	1,25	6,8	●		●		●	●	●		●		●		○	●	
9	1,25	7,8															
10	1,5	8,5	●		●		●	●	●		●		●		○	●	
11	1,5	9,5															
12	1,75	10,2		●		●		●		●		●		●	○		●
14	2	12				●		●		●		●		●			
16	2	14				●		●		●		●		●			
18	2	15,5				●		●		●		●		●			
20	2,5	17,5				●		●		●		●		●			
22	2,5	19,5								●		●		●			
24	3	21								●		●		●			
27	3	24								●		●		●			
30	3,5	26,5								●		●		●			
33	3,5	29,5								●		●		●			
36	4	32								●		●		●			
39	4	35															
42	4,5	37,5															
48	5	43															
52	5	47															
56	5,5	50,5															

POT				SYNCHRO TAPS		SFT			
									
WHR-NI-POT	V-TI-POT	Z-POT	Z-OIL-POT	HS-RFT-TIN	US-AL-RFT	VA-SFT	VA-SFT	VA-SC-SFT	SFT
Page B.84	Page B.85	Page B.127	Page B.128	Page B.129	Page B.130	Page B.86	Page B.87	Page B.88	Page B.89
ISO 2 6HX	ISO 2 6H	ISO 2 6HX	ISO 2 6HX	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 3 6G	ISO 2 6H	ISO 2 6H
HR PM	V PM	V PM	V PM	TIN HSSE	V HSSE	OX HSSE	OX HSSE	OX HSSE	HSSE
B/5	B/5	B/4	B/4	A/6	A/6	C/2,5	C/2,5	E/1,5	C/2,5
				20°	20°	40°	40°	40°	40°
P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
DIN 371 / DIN 376	DIN 371 / DIN 376	DIN 371 / DIN 376	DIN 371 / DIN 376			DIN 371 / DIN 376	DIN 371 / DIN 376	DIN 371 / DIN 376	DIN 371 / DIN 376

SFT



	SFT	WM-SFT	IO66-SFT	HXL-SFT	OIL-HXL-SFT	VXL-SFT	OIL-VXL-SFT	TIN-SFT
METRIC	Page B.90	Page B.91	Page B.92	Page B.93	Page B.94	Page B.95	Page B.96	Page B.97
Tolerance	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6H
Coating / Material	HSSE	OX HSSE	OX HSSE	OX HSSE	OX HSSE	OX HSSE	OX HSSE	TIN HSSE
Chamfer	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5
Internal Coolant & Helix Angle	40°	40°	40°	15°	15°	45°	45°	40°
Thread depth & Hole type								
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H

M	P	Hole	DIN 352	DIN 371	DIN 376	ISO 529					DIN 371	DIN 376		
1	0,25	0,75												
1,2	0,25	0,95												
1,4	0,3	1,1												
1,6	0,35	1,25												
1,8	0,35	1,45												
2	0,4	1,6				○					●			
2,2	0,45	1,75				○								
2,5	0,45	2,05				○					●			
3	0,5	2,5	●			○					●	●		
3,5	0,6	2,9				○					●			
4	0,7	3,3	●	●		○					●	●		
4,5	0,75	3,7				○								
5	0,8	4,2	●	●		○					●	●		
6	1	5	●	●		○					●	●		
7	1	6				○								
8	1,25	6,8	●	●		○					●	●		
9	1,25	7,8				○								
10	1,5	8,5	●	●		○					●	●		
11	1,5	9,5				○								
12	1,75	10,2			●	○						●		
14	2	12			●	○						●		
16	2	14			●	○						●		
18	2	15,5			●	○						●		
20	2,5	17,5			●	○	●	●	●	●		●		
22	2,5	19,5				○						●		
24	3	21				○	●	●	●	●		●		
27	3	24				○	●	●	●	●		●		
30	3,5	26,5				○	●	●	●	●		●		
33	3,5	29,5				○	●	●	●	●				
36	4	32				○	●	●	●	●				
39	4	35				○	●	●	●	●				
42	4,5	37,5				○	●	●	●	●				
48	5	43					●	●	●	●				
52	5	47					●	●	●	●				
56	5,5	50,5					●	●	●	●				

SFT



TICN-SFT	SUS-SFT	CC-SFT	CC-LT-SFT	CC-NEO-SFT	AL-SFT	SH-SFT	CPM-SFT	H-SFT	VP-H-SFT
Page B.98	Page B.99	Page B.100	Page B.101	Page B.102	Page B.103	Page B.104	Page B.105	Page B.106	Page B.107
ISO 2 6H	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6HX
V HSSE	OX HSSE	CrN HSSE	CrN HSSE	TiN HSSE	HSSE	HSSE	PM	OX PM	V PM
C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	C/3	C/3	C/3	C/3
40°	50°	45°	45°	45°	50°	15°	15°	15°	15°
	<1,5D	≥2D	≥2D	≥2D					
P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
DIN 371 / DIN 376	DIN 371 / DIN 376	DIN 371 / DIN 376		DIN 371 / DIN 376	DIN 371 / DIN 376	DIN 371 / DIN 376	DIN 371 / DIN 376	DIN 371 / DIN 376	DIN 371 / DIN 376
					●				
●	●	●	●	●	●			●	●
	●				●				
	●	●	●	●	●			●	●
●	●	● ●	●	●	●	●	●	●	●
	●				●				
●	●	● ●	●	●	●	●	●	●	●
●	●	● ●	●	●	●	●	●	●	●
●	●	● ●	●	●	●	●	●	●	●
●	●	● ●	●	●	●	●	● ●	●	●
●	●	● ●	●	●	●	●	● ●	●	●
● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●
● ●	● ●	● ●		● ●	● ●	● ●	● ●	● ●	● ●
● ●	● ●	● ●		●	● ●	● ●	● ●	● ●	● ●
● ●	● ●	● ●			● ●	● ●	● ●	● ●	● ●
● ●	● ●	● ●			● ●	● ●	● ●	● ●	● ●
● ●	● ●	● ●							● ●
● ●	● ●	● ●							● ●
		● ●							● ●
		●							● ●
									●

M

Tools	SFT							
								
	VPO-H-SFT	IO66-SFT-PLUS	E-SFT	WHR-NI-SFT	V-TI-SFT	A-SFT	A-OIL-SFT	Z-SFT
METRIC	Page B.108	Page B.109	Page B.110	Page B.111	Page B.112	Page B.131	Page B.132	Page B.133
Tolerance	ISO 2 6HX	ISO 2 6H	ISO 2 6H	ISO 2 6HX	ISO 2 6H	ISO 2 6HX	ISO 2 6HX	ISO 2 6H
Coating / Material	V PM	OX PM	PM	HR PM	V PM	V PM	V PM	V PM
Chamfer	C/3	C/3	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5
Internal Coolant & Helix Angle	15°	15°	10°	11°	10°	45°	45°	50°
Thread depth & Hole type								
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H

M	P	Hole	DIN 371	DIN 376	ISO 529	DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376
1	0,25	0,75													
1,2	0,25	0,95													
1,4	0,3	1,1													
1,6	0,35	1,25								●					
1,8	0,35	1,45													
2	0,4	1,6								●				●	
2,2	0,45	1,75													
2,5	0,45	2,05								●				●	
3	0,5	2,5			○	●		●		●		●		●	●
3,5	0,6	2,9													
4	0,7	3,3			○	●		●		●		●		●	●
4,5	0,75	3,7													
5	0,8	4,2			○	●		●		●		●		●	●
6	1	5	●		○	●		●		●		●		●	●
7	1	6													
8	1,25	6,8	●		○	●		●		●		●		●	●
9	1,25	7,8													
10	1,5	8,5	●		○	●		●		●		●		●	●
11	1,5	9,5													
12	1,75	10,2		●	○		●		●		●		●		●
14	2	12		●									●		●
16	2	14		●									●		●
18	2	15,5		●											●
20	2,5	17,5		●											●
22	2,5	19,5		●											●
24	3	21		●											●
27	3	24		●											●
30	3,5	26,5		●											●
33	3,5	29,5		●											
36	4	32		●											
39	4	35													
42	4,5	37,5													
48	5	43													
52	5	47													
56	5,5	50,5													

SYNCHRO TAPS			MT						
									
Z-OIL-SFT	HS-SFT-TIN	US-AL-SFT	IO66-HT	IO66-TIN-HT	GG-MT	OIL-TXL-MT	VP-DC-MT	VP-DC-SC-MT	VPO-DC-MT
Page B.134	Page B.135	Page B.136	Page B.113-114	Page B.115	Page B.116	Page B.117	Page B.118	Page B.119	Page B.120
ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6H	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX
V PM	TIN HSSE	V HSSE	HSSE	TIN HSSE	NI-OX HSSE	OX HSSE	V PM	V PM	V PM
C/2,5	C/3	C/3	C/2,5 D/4 A/8	C/2,5 D/4	C/2,5	C/2,5	C/2,5	E/1,5	C/2,5
50°	45°	45°							
P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
DIN 371 DIN 376			ISO 529	ISO 529	DIN 371 DIN 376	ISO 529	DIN 371 DIN 376	DIN 371 DIN 376	DIN 371 DIN 376
			○						
			○						
			○						
			○						
			○						
			○						
			○						
			○						
	●	●	○	○			●	●	
			○						
	●	●	○	○	● ●		●	●	
			○						
	●	●	○	○	● ●		●	●	
●	●	●	○	○	● ●		●	●	●
			○	○					
●	●	●	○	○	● ●		●	●	●
			○						
●	●	●	○	○	● ●		●	●	●
			○						
	●	●	○	○	● ●		● ●	● ●	● ●
			○	○	● ●		● ●	● ●	● ●
			○		● ●		● ●	● ●	● ●
			○		● ●		● ●		● ●
			○		● ●	●	● ●		● ●
			○			●			
			○			●			
						●			
						●			
						●			
						●			
						●			
						●			
						●			

Tools	MT							OTHER TAPS
								
	VPO-DC-SC-MT	V-XPM-HT	OIL-C-MT (Form E)	OIL-C-MT (Form C)	OIL-C-MT (Form C)	WH55-OT	VX-OT	EX-MCT
METRIC	Page B.121	Page B.124	Page B.122	Page B.123	Page B.123	Page B.125	Page B.126	Page B.151
Tolerance	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX		ISO 2 6HX	ISO 2 6H
Coating / Material	V PM	V XPM	FX CARBIDE	FX CARBIDE	FX CARBIDE	V CARBIDE	V CARBIDE	OX HSSE
Chamfer	E/1,5	C/2,5	E/1,5	C/2,5	C/2,5	C/2,5 D/5	C/3	C/3
Internal Coolant & Helix Angle								8°
Thread depth & Hole type	≥2D							
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H

M	P	Hole	DIN 371	DIN 376		DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376				
1	0,25	0,75													
1,2	0,25	0,95													
1,4	0,3	1,1													
1,6	0,35	1,25													
1,8	0,35	1,45													
2	0,4	1,6													
2,2	0,45	1,75													
2,5	0,45	2,05													
3	0,5	2,5			●							●	●		
3,5	0,6	2,9													
4	0,7	3,3			●							●	●		
4,5	0,75	3,7													
5	0,8	4,2			●							●	●		
6	1	5	●		●	●		●				●	●	●	
7	1	6													
8	1,25	6,8	●		●	●		●		●		●	●	●	
9	1,25	7,8													
10	1,5	8,5	●		●	●		●		●		●	●	●	
11	1,5	9,5													
12	1,75	10,2		●	●		●		●		●	●	●	●	
14	2	12		●										●	
16	2	14		●										●	
18	2	15,5												●	
20	2,5	17,5												●	
22	2,5	19,5													
24	3	21													
27	3	24													
30	3,5	26,5													
33	3,5	29,5													
36	4	32													
39	4	35													
42	4,5	37,5													
45	4,5	40,5													
48	5	43													
52	5	47													
56	5,5	50,5													

FORMING TAPS

	V-EM-SFT	SP-XPF	S-XPF	OIL-S-XPF	S-XPF-6GX	S-XPF-7GX	S-XPF-P	S-SC-XPF	S-LT-XPF	R-XPF	R-XPF(-P)
											
	Page B.152	Page B.137	Page B.138	Page B.139	Page B.140	Page B.141	Page B.142	Page B.143	Page B.144	Page B.145	Page B.145
	ISO 2 6H	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 3 6GX	ISO 3 7GX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 3 6GX	ISO 2 6HX
	V HSSE	V CPM	V HSS-Co	V HSS-Co	V HSS-Co	V HSS-Co	V HSS-Co	V HSS-Co	V HSS-Co	V HSS	V HSS
	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	D/4	E/1,5	C/2,5	C/2,5	C/2,5 D/4
	45°									15°	15°
	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
		DIN 371 DIN 376	DIN 371 DIN 376	DIN 371 DIN 376	DIN 371 DIN 376	DIN 371 DIN 376	DIN 371 DIN 376	DIN 371 DIN 376		DIN 371	DIN 371
			●								
			●								
			●								
			●								
			●						●		
			●						●		
		●	●		●	●	●	●	●	●	●
●		●	●		●	●	●	●	●	●	●
●		●	●		●	●	●	●	●	●	●
●		●	●	●	●	●	●	●	●	●	●
●		●	●	●	●	●	●	●	●		
●		●	●	●	●	●	●	●	●		
●	●		●		●		●		●		
●	●		●		●		●				
●	●		●		●		●				
			●								
			●								
			●								
			●								
			●								
			●								
			●								

M

Tools	FORMING TAPS				
					
	V-NRT-B	V-NRT-P	V-NRT-B	V-NRT-P	IO66-NRT-PLUS
METRIC	Page B.146	Page B.148	Page B.147	Page B.149	Page B.150
Tolerance	ISO 2 6HX	ISO 2 6HX	ISO 3 6GX	ISO 3 6GX	ISO 2 6HX
Coating / Material	V HSS-Co	V HSS-Co	V HSS-Co	V HSS-Co	TIN HSSE
Chamfer	C/2,5	D/4	C/2,5	D/4	C/2,5
Internal Coolant & Helix Angle					
Thread depth & Hole type					
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H

M	P	Hole	DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 371	ISO 529
1	0,25	0,75	●						
1,2	0,25	0,95	●						
1,4	0,3	1,1	●						
1,6	0,35	1,25	●						
1,8	0,35	1,45							
2	0,4	1,6	●		●		●	●	●
2,2	0,45	1,75	●		●		●	●	
2,5	0,45	2,05	●		●		●	●	●
3	0,5	2,5	●		●		●	●	●
3,5	0,6	2,9	●		●		●	●	●
4	0,7	3,3	●		●		●	●	●
4,5	0,75	3,7							
5	0,8	4,2	●		●		●	●	●
6	1	5	●		●		●	●	●
7	1	6							
8	1,25	6,8	●		●		●	●	●
9	1,25	7,8							
10	1,5	8,5	●		●		●	●	●
11	1,5	9,5							
12	1,75	10,2		●		●			●
14	2	12							
16	2	14							
18	2	15,5							
20	2,5	17,5							
22	2,5	19,5							
24	3	21							
27	3	24							
30	3,5	26,5							
33	3,5	29,5							
36	4	32							
39	4	35							
42	4,5	37,5							
48	5	43							
52	5	47							
56	5,5	50,5							

Tools	POT
	
	VA-POT
METRIC FINE	Page B.153
Tolerance	ISO 2 6H
Coating / Material	OX HSSE
Chamfer	B/4
Internal Coolant & Helix Angle	
Thread depth & Hole type	
Applications	P M K N S H

MF	P	Hole	DIN 374
3	0,35	2,65	●
3,5	0,35	3,15	
4	0,5	3,5	●
4,5	0,5	4	
5	0,35	4,65	
5	0,5	4,5	●
5	0,75	4,2	
6	0,5	5,5	●
6	0,75	5,25	●
7	0,5	6,5	
7	0,75	6,25	
8	0,5	7,5	
8	0,75	7,25	●
8	1	7	●
9	0,75	8,25	
9	1	8	
10	0,5	9,5	
10	0,75	9,25	
10	1	9	●
10	1,25	8,75	●
11	1	10	
12	0,5	11,5	
12	1	11	●
12	1,25	10,75	●
12	1,5	10,5	●
13	1	12	
14	0,75	13,2	
14	1	13	
14	1,25	12,75	
14	1,5	12,5	●
15	1	14	
15	1,5	13,5	
16	0,75	15,2	
16	1	15	
16	1,25	14,8	
16	1,5	14,5	●
18	1	17	
18	1,5	16,5	●
18	2	16	
20	1	19	
20	1,5	18,5	●
20	2	18	
22	1,5	20,5	●
22	2	20	
24	1,5	22,5	●
24	2	22	
30	2	28	

POT			SFT						MT
									
POT	CC-POT	Z-POT	VA-SFT	SFT	SUS-SFT	CC-SFT	AL-SFT	Z-SFT	GG-MT
Page B.154	Page B.155	Page B.166	Page B.156	Page B.157	Page B.158	Page B.159	Page B.160	Page B.167	Page B.161
ISO 2 6H	ISO 2 6HX	ISO 2 6HX	ISO 2 6H	ISO 2 6H	ISO 2 6HX	ISO 2 6HX	ISO 2 6H	ISO 2 6H	ISO 2 6HX
HSSE	CrN HSSE	V PM	OX HSSE	HSSE	OX HSSE	CrN HSSE	HSSE	V PM	NI-OX HSSE
B/4	B/4	B/4	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5
			40°	40°	50°	45°	50°	50°	
					<1,5D	≥2D			
P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
DIN 374	DIN 374	DIN 374	DIN 374	DIN 374	DIN 374	DIN 374	DIN 374	DIN 374	DIN 374
		●	●					●	●
									●
●		●	●	●				●	●
●		●	●	●				●	●
		●	●			●		●	●
●	●	●	●	●		●		●	●
●	●	●	●	●	●	●		●	●
●	●	●	●	●	●	●	●	●	●
●				●					
●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●	●
●				●					●
●				●					
●	●	●	●	●	●	●		●	●
●				●					●
●	●	●	●	●	●	●		●	●
●				●					
●	●	●	●	●	●	●		●	●
●				●					●
●				●					
●	●	●	●	●	●	●		●	●
●				●					
●	●	●	●		●	●		●	●
●				●					
●	●	●	●	●	●	●		●	●
●				●					
●				●					

MF

Tools	MT				FORMING TAPS			
								
	VP-DC-MT	VPO-DC-MT	OIL-C-MT (Form E)	OIL-C-MT (Form C)	S-XPF	OIL-S-XPF	S-XPF-P	V-NRT-B
METRIC FINE	Page B.162	Page B.163	Page B.164	Page B.165	Page B.168	Page B.169	Page B.170	Page B.171
Tolerance	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX	ISO 2 6HX
Coating / Material	V PM	V PM	FX CARBIDE	FX CARBIDE	V HSS-Co	V HSS-Co	V HSS-Co	V HSS-Co
Chamfer	C/2,5	C/2,5	E/1,5	E/1,5	C/2,5	C/2,5	D/4	C/2,5
Internal Coolant & Helix Angle								
Thread depth & Hole type								
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H

MF	P	Hole	DIN 374	DIN 374			DIN 374	DIN 374	DIN 374	DIN 374
3	0,35	2,65								
3,5	0,35	3,15								
4	0,5	3,5								
4,5	0,5	4								
5	0,35	4,65								
5	0,5	4,5								
5	0,75	4,2								
6	0,5	5,5								
6	0,75	5,25								
7	0,5	6,5								
7	0,75	6,25								
8	0,5	7,5								
8	0,75	7,25								
8	1	7	●	●			●	●	●	●
9	0,75	8,25								
9	1	8								
10	0,5	9,5								
10	0,75	9,25								
10	1	9	●	●			●	●	●	●
10	1,25	8,75	●	●	●	●	●	●	●	●
11	1	10								
12	0,5	11,5								
12	1	11					●		●	●
12	1,25	10,75	●	●	●	●	●	●	●	●
12	1,5	10,5	●	●	●	●	●	●	●	●
13	1	12								
14	0,75	13,2								
14	1	13								
14	1,25	12,75					●	●		
14	1,5	12,5	●	●	●	●	●	●	●	
15	1	14								
15	1,5	13,5								
16	0,75	15,2								
16	1	15								
16	1,25	14,8								
16	1,5	14,5	●	●			●	●	●	
18	1	17								
18	1,5	16,5	●	●			●	●	●	
18	2	16								
20	1	19								
20	1,5	18,5	●	●			●	●	●	
20	2	18								
22	1,5	20,5					●	●		
22	2	20								
24	1,5	22,5					●	●		
24	2	22								
30	2	28								

	V-NRT-P	VA-POT	VA-POT	IO66-POT	H-POT	IO66-POT-PLUS	E-POT	WHR-NI-POT
Tools		POT						
	Page B.172	Page B.173	Page B.174	Page B.175	Page B.176	Page B.177	Page B.178	Page B.179
UNC/UNJC								
Tolerance	ISO 2 6HX	ANSI 2B	ANSI 3B	ANSI 2B	ANSI 3B	ANSI 2B	ANSI 3B	ANSI 3B
Coating / Material	V HSS-Co	OX HSSE	OX HSSE	OX HSSE	OX PM	OX PM	PM	HR PM
Chamfer	D/4	B/4	B/4	B/4	B/5	B/5	B/5	B/5
Internal Coolant & Helix Angle								
Thread depth & Hole type								
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H

Inch	P	Hole	DIN 374	DIN 2182	DIN 2183	DIN 2182	ISO 529	DIN 2182	ISO 529	DIN 2182	DIN 2182
N°.1	64	1,55					○				
N°.2	56	1,85					○				
N°.3	48	2					○				
N°.4	40	2,35		●		●	○	●	○	●	●
N°.5	40	2,65		●			○		○		
N°.6	32	2,7		●		●	○	●	○	●	●
N°.8	32	3,5		●		●	○	●	○	●	●
N°.10	24	3,8		●			○		○		
N°.12	24	4,5					○				
1/4	20	5,1		●			○		○		
5/16	18	6,5		●			○		○		
3/8	16	7,9		●			○		○		
7/16	14	9,3			●		○				
1/2	13	10,7	●		●		○		○		
9/16	12	12,3			●		○				
5/8	11	13,5			●		○				
3/4	10	16,5			●		○				
7/8	9	19,3			●		○				
1	8	22,25	●		●		○				
1 1/8	7	25	●				○				
1 1/4	7	28					○				
1 3/8	6	30									
1 1/2	6	34	●								
1 5/8	8	38	●								
1 3/4	5	39,5	●								
1 7/8	8	44,5									
2	4,5	45									
2 1/2	8	60,4									

UNC
UNJC

Tools	POT	SFT						
								
	V-TI-POT	VA-SFT	VA-SFT	I066-SFT	HXL-SFT	VXL-SFT	CC-SFT	H-SFT
UNC/UNJC	Page B.180	Page B.181	Page B.182	Page B.183	Page B.184	Page B.185	Page B.186	Page B.187
Tolerance	ANSI 3B	ANSI 2B	ANSI 3B	ANSI 2B	ANSI 2B	ANSI 2B	ANSI 2B / ANSI 3B	ANSI 2B
Coating / Material	V / PM	OX / HSSE	OX / HSSE	OX / HSSE	OX / HSSE	OX / HSSE	CrN / HSSE	OX / PM
Chamfer	B/5	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5
Internal Coolant & Helix Angle		40°	40°	40°	15°	45°	45°	15°
Thread depth & Hole type							≥2D	
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H

Inch	P	Hole	DIN 2182	DIN 2182	DIN 2183	DIN 2182	ISO 529			DIN 2182	DIN 2183	DIN 2182
N°.1	64	1,55										
N°.2	56	1,85					○					
N°.3	48	2					○					
N°.4	40	2,35	●	●		●	○			●		●
N°.5	40	2,65		●			○					
N°.6	32	2,7	●	●		●	○			●		●
N°.8	32	3,5	●	●		●	○			●		●
N°.10	24	3,8		●			○			●		
N°.12	24	4,5					○					
1/4	20	5,1		●			○			●		
5/16	18	6,5		●			○			●		
3/8	16	7,9		●			○			●		
7/16	14	9,3			●		○				●	
1/2	13	10,7			●		○				●	
9/16	12	12,3			●		○				●	
5/8	11	13,5			●		○				●	
3/4	10	16,5			●		○	●	●		●	
7/8	9	19,3			●		○	●	●		●	
1	8	22,25			●		○	●	●		●	
1 1/8	7	25					○	●	●			
1 1/4	7	28					○	●	●			
1 3/8	6	30						●	●			
1 1/2	6	34						●	●			
1 5/8	8	38						●	●			
1 3/4	5	39,5						●	●			
1 7/8	8	44,5						●	●			
2	4,5	45						●	●			
2 1/2	8	60,4						●	●			

	SFT				MT	FORMING TAP	
							
	I066-SFT-PLUS	E-SFT	WHR-NI-SFT	V-TI-SFT	I066-HT	S-XPF	
	Page B.188	Page B.189	Page B.190	Page B.191	Page B.192	Page B.193	
	ANSI 2B	ANSI 3B	ANSI 3B	ANSI 3B	ANSI 2B	ANSI 2BX	
	OX PM	PM	HR PM	V PM	HSSE	V HSS-Co	
	C/3	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	
	15°	10°	11°	10°			
	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	
	ISO 529		DIN 2182	DIN 2182	ISO 529	DIN 2182	DIN 2183
					○		
					○		
					○		
	○	●	●	●	○		
	○				○	●	
	○	●	●	●	○	●	
	○	●	●	●	○	●	
	○				○	●	
					○		
	○				○	●	
	○				○	●	
	○				○	●	
					○		●
	○				○		●
					○		●
					○		●
					○		●
					○		●
					○		●

Tools	POT	
		
	VA-POT	VA-POT
UNF/UNJF	Page B.194	Page B.195
Tolerance	ANSI 2B	ANSI 3B
Coating / Material	OX HSSE	OX HSSE
Chamfer	B/4	B/4
Internal Coolant & Helix Angle		
Thread depth & Hole type		
Applications	P M K N S H	P M K N S H

Inch	P	Hole	DIN 2182	DIN 2183	DIN 2182	DIN 2183
N°.0	80	1,25				
N°.1	72	1,55				
N°.2	64	1,85				
N°.3	56	2,15				
N°.4	48	2,4				
N°.5	44	2,7				
N°.6	40	2,95	●			
N°.8	36	3,5				
N°.10	32	4,1	●		●	
N°.12	28	4,6				
1/4	28	5,5	●		●	
5/16	24	6,9	●		●	
3/8	24	8,5	●		●	
7/16	20	9,9		●		●
1/2	20	11,5		●		●
9/16	18	12,9		●		
5/8	18	14,5		●		
3/4	16	17,5		●		
7/8	14	20,4		●		
1	12	23,25		●		
1 1/8	12	26,5				
1 1/4	12	29,5				
1 3/8	12	32,75				
1 1/2	12	36				

INDEX

UNF
UNJF

Tools	POT						SFT	
								
	I066-POT	H-POT	I066-POT-PLUS	E-POT	WHR-NI-POT	V-TI-POT	VA-SFT	VA-SFT
UNF/UNJF	Page B.196	Page B.197	Page B.198	Page B.199	Page B.200	Page B.201	Page B.202	Page B.203
Tolerance	ANSI 2B	ANSI 3B	ANSI 2B	ANSI 3B	ANSI 3B	ANSI 3B	ANSI 2B	ANSI 3B
Coating / Material	OX HSSE	OX PM	OX PM	PM	HR PM	V PM	OX HSSE	OX HSSE
Chamfer	B/4	B/5	B/5	B/5	B/5	B/5	C/2,5	C/2,5
Internal Coolant & Helix Angle							40°	40°
Thread depth & Hole type								
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H

Inch	P	Hole	ISO 529	DIN 2182	DIN 2183	ISO 529	DIN 2182	DIN 2183	DIN 2182	DIN 2183	DIN 2182	DIN 2183	DIN 2182	DIN 2183	DIN 2182	DIN 2183
N°.0	80	1,25	○													
N°.1	72	1,55	○													
N°.2	64	1,85	○													
N°.3	56	2,15	○													
N°.4	48	2,4	○													
N°.5	44	2,7	○													
N°.6	40	2,95	○										●			
N°.8	36	3,5	○													
N°.10	32	4,1	○	●		○	●		●		●		●		●	
N°.12	28	4,6	○													
1/4	28	5,5	○	●		○	●		●		●		●		●	
5/16	24	6,9	○	●		○	●		●		●		●		●	
3/8	24	8,5	○	●		○	●		●		●		●		●	
7/16	20	9,9	○		●	○		●		●		●		●		●
1/2	20	11,5	○		●	○		●		●		●		●		●
9/16	18	12,9	○											●		
5/8	18	14,5	○											●		
3/4	16	17,5	○											●		
7/8	14	20,4	○											●		
1	12	23,25	○											●		
1 1/8	12	26,5	○													
1 1/4	12	29,5	○													
1 3/8	12	32,75														
1 1/2	12	36														

									
I066-SFT	CC-SFT	H-SFT	I066-SFT-PLUS	E-SFT	WHR-NI-SFT	V-TI-SFT	I066-HT	S-XPF	
Page B.204	Page B.205	Page B.206	Page B.207	Page B.208	Page B.209	Page B.210	Page B.211	Page B.212	
ANSI 2B	ANSI 2B / ANSI 3B	ANSI 3B	ANSI 2B	ANSI 3B	ANSI 3B	ANSI 3B	ANSI 2B	ANSI 2BX	
OX / HSSE	CrN / HSSE	OX / PM	OX / PM	PM	HR / PM	V / PM	HSSE	V / HSS-Co	
C/2,5	C/2,5	C/2,5	C/3	C/2,5	C/2,5	C/2,5	C/2,5	C/2,5	
40°	45°	15°	15°	10°	11°	10°			
	≥2D								
P M K	P M K N	P K N S H	P M K N S H	M K N S H	M K N S H	M K N S H	P M N	P M N	
ISO 529	DIN 2182 / DIN 2183	DIN 2182 / DIN 2183		DIN 2182 / DIN 2183	DIN 2182 / DIN 2183	DIN 2182 / DIN 2183	ISO 529	DIN 2182 / DIN 2183	
○							○		
							○		
○							○		
○							○		
○							○		
○							○		
○							○	●	
○							○		
○	●	●	○	●	●	●	○	●	
○							○		
○	●	●	○	●	●	●	○	●

Helocoil EG-M-MJ (STI)

Tools	POT		SFT	
				
	H-HL-POT	E-HL-POT	H-HL-SFT	E-HL-SFT
Helicoil EG-MJ (STI)	Page B.213	Page B.214	Page B.215	Page B.216
Tolerance	ISO 1 4H	ISO 1 4H	ISO 1 4H	ISO 1 4H
Coating / Material	OX PM	PM	OX PM	PM
Chamfer	B/5	B/5	C/3	C/2,5
Internal Coolant & Helix Angle			15°	10°
Thread depth & Hole type				
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H

MJ	P	Hole	DIN 371	DIN 371	DIN 371	DIN 371
2	0,4	1,6	●	●	●	●
2,5	0,45	2,05	●	●	●	●
3	0,5	2,5	●	●	●	●
4	0,7	3,3	●	●	●	●
5	0,8	4,2	●	●	●	●
6	1	5	●	●	●	●
8	1,25	6,8	●	●	●	●
10	1,5	8,5	●	●	●	●
12	1,75	10,2				

Tools	SFT
	
	CC-HL-SFT
Helicoil EG-M (STI)	Page B.217
Tolerance	ISO 2 6H
Coating / Material	CrN HSSE
Chamfer	C/2,5
Internal Coolant & Helix Angle	45°
Thread depth & Hole type	
Applications	P M K N S H

MJ	P	Hole	DIN 371	DIN 376
2	0,4	1,6		
2,5	0,45	2,05		
3	0,5	2,5	●	
4	0,7	3,3	●	
5	0,8	4,2	●	
6	1	5	●	
8	1,25	6,8	●	
10	1,5	8,5	●	
12	1,75	10,2		●

Tools	POT		SFT	
				
	H-HL-POT	E-HL-POT	H-HL-SFT	E-HL-SFT
Helicoil EG-UNJC (STI)	Page B.218	Page B.219	Page B.220	Page B.221
Tolerance	ANSI 3B	ANSI 3B	ANSI 3B	ANSI 3B
Coating / Material	OX PM	PM	PM	PM
Chamfer	B/5	B/5	C/3	C/2,5
Internal Coolant & Helix Angle			15°	10°
Thread depth & Hole type				
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H

Inch	P	Hole	DIN 2182	DIN 2182	DIN 2182	DIN 2182
2	0,4	1,6				
2,5	0,45	2,05				
3	0,5	2,5				
4	0,7	3,3	●	●	●	●
5	0,8	4,2				
6	1	5	●	●	●	●
8	1,25	6,8	●	●	●	●
10	1,5	8,5				
12	1,75	10,2				

Tools	POT	
		
	H-HL-POT	E-HL-POT
Helicoil EG-UNJF (STI)	Page B.222	Page B.223
Tolerance	ANSI 3B	ANSI 3B
Coating / Material	OX PM	PM
Chamfer	B/5	B/5
Internal Coolant & Helix Angle		
Thread depth & Hole type		
Applications	P M K N S H	P M K N S H

Inch	P	Hole	DIN 2182	DIN 2183	DIN 2182	DIN 2183
10	32	4,1	●		●	
1/4	28	5,5	●		●	
5/16	24	6,9	●		●	
3/8	24	8,5	●		●	
7/16	20	9,9		●		●
1/2	20	11,5		●		●

Helocoil EG-UNJF (STI)

BSW

Tools	SFT		
			
	CC-HL-SFT	H-HL-SFT	E-HL-SFT
Helicoil EG-UNJF (STI)	Page B.224	Page B.225	Page B.226
Tolerance	ANSI 2B, ANSI 3B	ANSI 3B	ANSI 3B
Coating / Material	CrN, HSSE	OX, PM	PM
Chamfer	C/2,5	C/2,5	C/2,5
Internal Coolant & Helix Angle	45°	15°	10°
Thread depth & Hole type	≥2D		
Applications	P, M, K, N, S, H	P, M, K, S, H	P, M, K, S, H

Inch	P	Hole	DIN 2182	DIN 2182	DIN 2183	DIN 2182	DIN 2183
10	32	4,1	●	●		●	
1/4	28	5,5	●	●		●	
5/16	24	6,9	●	●		●	
3/8	24	8,5	●	●		●	
7/16	20	9,9			●		●
1/2	20	11,5			●		●

Tools	POT	SFT	MT
			
	IO66-POT	IO66-SFT	IO66-HT
BSW	Page B.227	Page B.228	Page B.229
Tolerance	MED	MED	MED
Coating / Material	OX, HSSE	OX, HSSE	HSSE
Chamfer	B/4	C/2,5	C/2,5
Internal Coolant & Helix Angle		40°	
Thread depth & Hole type			
Applications	P, M, K, N, S, H	P, M, K, N, S, H	P, M, K, N, S, H

BSW	P	Hole	ISO 529	ISO 529	ISO 529
1/16	60	1,15			○
3/32	48	1,85	○		○
1/8	40	2,55	○	○	○
5/32	32	3,2	○	○	○
3/16	24	3,7	○	○	○
7/32	24	4,5	○	○	○
1/4	20	5,1	○	○	○
5/16	18	6,5	○	○	○
3/8	16	7,9	○	○	○
7/16	14	9,25	○	○	○
1/2	12	10,5	○	○	○
9/16	12	12	○	○	○
5/8	11	13,5	○	○	○
11/16	11		○	○	○
3/4	10	16,4	○	○	○
7/8	9	19,25	○	○	○
1	8	22	○	○	○
1 1/8	7	24,75	○	○	
1 1/4	7	24,75	○	○	

Tools	POT	SFT	MT
			
	IO66-POT	IO66-SFT	IO66-HT
BSF	Page B.230	Page B.231	Page B.232
Tolerance	MED	MED	MED
Coating / Material	OX HSSE	OX HSSE	HSSE
Chamfer	B/4	C/2,5	C/2,5
Internal Coolant & Helix Angle		40°	
Thread depth & Hole type			
Applications	P M K N S H	P M K N S H	P M K N S H

BSF	P	Hole	ISO 529	ISO 529	ISO 529
3/16	32	4	○	○	○
7/32	28	4,6	○	○	○
1/4	26	5,3	○	○	○
9/32	26	6,1	○		○
5/16	22	6,8	○	○	○
3/8	20	8,3	○	○	○
7/16	18	9,7	○	○	○
1/2	16	11	○	○	○
9/16	16	12,7	○	○	○
5/8	14	14	○	○	○
11/16	14	15,6	○	○	○
3/4	12	16,8	○	○	○
7/8	11	19,8	○	○	○
1	10	22,7	○	○	○
1 1/8	9	25,5	○	○	
1 1/4	9	28,5	○	○	

Tools	POT		SFT
			
	IO66-POT	IO66-POT-PLUS	IO66-SFT
BA	Page B.233	Page B.234	Page B.235
Tolerance			
Coating / Material	OX HSSE	OX PM	OX HSSE
Chamfer	B/4	B/5	C/2,5
Internal Coolant & Helix Angle			40°
Thread depth & Hole type			
Applications	P M K N S H	P M K N S H	P M K N S H

BA	P	Hole	ISO 529	ISO 529	ISO 529
0	1	5	○		○
1	0,9	4,4	○		○
2	0,81	3,9	○	○	○
3	0,73	3,4	○		○
4	0,66	3	○	○	○
5	0,59	2,6	○		○
6	0,53	2,3	○	○	○
7	0,48	2	○		○
8	0,43	1,8	○		○
9	0,39	1,5	○		○
10	0,35	1,3	○		○
11	0,31	1,2	○		
12	0,28	1	○		
13	0,25	0,95	○		
14	0,23	0,75	○		

BA
G
(BSP)

Tools	SFT	MT
		
	IO66-SFT-PLUS	IO66-HT
BA	Page B.236	Page B.237
Tolerance		
Coating / Material	OX PM	HSSE
Chamfer	C/3	C/2,5
Internal Coolant & Helix Angle	15°	
Thread depth & Hole type		
Applications	P M K N S H	P M K N S H

BA	P	Hole	ISO 529	ISO 529
0	1	5		○
1	0,9	4,4		○
2	0,81	3,9	○	○
3	0,73	3,4		○
4	0,66	3	○	○
5	0,59	2,6		○
6	0,53	2,3	○	○
7	0,48	2		○
8	0,43	1,8		○
9	0,39	1,5		○
10	0,35	1,3		○
11	0,31	1,2		○
12	0,28	1		○
13	0,25	0,95		○
14	0,23	0,75		○
15	0,21	0,7		○
16	0,19	0,6		○

Tools	POT		SFT	
				
	POT	IO66-POT	VA-SFT	SFT
G (BSP)	Page B.238	Page B.239	Page B.240	Page B.241
Tolerance				
Coating / Material	HSSE	HSSE	OX HSSE	HSSE
Chamfer	B/4	B/4	C/2,5	C/2,5
Internal Coolant & Helix Angle			40°	40°
Thread depth & Hole type				
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H

G	P	Hole	DIN 259 - DIN 5156	ISO 2284	DIN 259 - DIN 5156	DIN 259 - DIN 5156
1/8	28	8,7	●	●	●	●
1/4	19	11,8	●	●	●	●
3/8	19	15,25	●	●	●	●
1/2	14	19	●	●	●	●
5/8	14	21	●	●	●	●
3/4	14	24,5	●	●	●	●
7/8	14	28,25	●		●	●
1	11	30,75	●	●	●	●

	SFT			MT	SPT	
						
	1066-SFT	**CC-SFT-SPT**	**SH-SFT**	**GG-MT**	**VX-OT-SPT**	**S-XPF-SPT**
	Page B.242	Page B.243	Page B.244	Page B.245	Page B.246	Page B.247
	HSSE	CrN HSSE	HSSE	NI-OX HSSE	V CARBIDE	V HSS-Co
	C/2,5	C/2,5	C/3	C/2,5	C/3	C/2,5
	40°	45°	15°			
		≥2D				
	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
		DIN 5156	DIN 259 - DIN 5156	DIN 259 - DIN 5156	DIN 5156	DIN 2189
	○	●	●	●	●	●
	○	●	●	●	●	●
	○	●	●	●	●	●
	○	●	●	●	●	●
	○					
	○					
	○					

Tools	POT	SFT
		
	1066-POT	**1066-SFT**
RC (BSPT)	Page B.248	Page B.249
Tolerance		
Coating / Material	OX HSSE	OX HSSE
Chamfer	C/2,5	C/2,5
Internal Coolant & Helix Angle		
Thread depth & Hole type		
Applications	P M K N S H	P M K N S H

RC	P	Hole		
1/8	28	8,3	○	○
1/4	19	11	○	○
3/8	19	14,5	○	○
1/2	14	18,1	○	○
3/4	14	23,5	○	○
1	11	29,6	○	○

NPT
PG

Tools	POT	SFT	MT
			
	I066-POT	I066-SFT	NPT
NPT	Page B.250	Page B.251	Page B.252
Tolerance			
Coating / Material	OX HSSE	OX HSSE	HSSE
Chamfer	C/2,5	C/2,5	C/2,5
Internal Coolant & Helix Angle		30°	
Thread depth & Hole type			
Applications	P M K N S H	P M K N S H	P M K N S H

NPT	P	Hole			DIN 2181
1/16	27	6,15			●
1/8	27	8,4	○	○	●
1/4	18	11,1	○	○	●
3/8	18	14,3	○	○	●
1/2	14	17,9	○	○	●
3/4	14	23,3	○	○	●
1	11 1/2	29	○	○	●

Tools	MT
	
	PG
PG	Page B.253
Tolerance	
Coating / Material	HSSE
Chamfer	C/2,5
Internal Coolant & Helix Angle	
Thread depth & Hole type	
Applications	P M K N S H

NPT	P	Hole	DIN 374
7	20	11,4	●
9	18	14	●
11	18	17,25	●
13,5	18	19	●
16	18	21,25	●
21	16	27	●
29	16	35,5	●
36	16	45,5	●
42	16	52,5	●
48	16	58	●

Tools		MT	
			
		HT	HT-VA-OX
SF		Page B.254	Page B.255
Tolerance		ISO 2 6H	ISO 2 6H
Coating / Material		HSS	OX HSSE
Chamfer			
Internal Coolant & Helix Angle			
Thread depth & Hole type			
Applications		P M K N S H	P M K N S H
M	**P**	**Hole**	DIN 352	DIN 352
2	0,4	1,6	●	●
3	0,5	2,5	●	●
3,5	0,6	2,9	●	
4	0,7	3,3	●	●
5	0,8	4,2	●	●
6	1	5	●	●
8	1,25	6,8	●	●
10	1,5	8,5	●	●
12	1,75	10,2	●	●
14	2	12	●	●
16	2	14	●	●
18	2,5	15,5	●	●
20	2,5	17,5	●	●

Tools			
			
		DIN 223B	DIN 223B
Solid Circular Dies		Page B.256	Page B.257
Tolerance		ISO 2 6G	ISO 228
Coating / Material		HSS	HSS
Chamfer			
Internal Coolant & Helix Angle			
Thread depth & Hole type			
Applications		P M K N S H	P M K N S H
M	**P**		DIN 259
3	0,5	●	
4	0,7	●	
5	0,8	●	
6	1	●	
8	1,25	●	
10	1,5	●	
12	1,75	●	
14	2	●	
16	2	●	
18	2,5	●	
20	2,5	●	
G	**P**		
1/8	28		●
1/4	19		●
3/8	19		●
1/2	14		●

NAME		SPECIFICATION	
THREAD MILL			
 WH-VM-PNC New Sizes	M,U, UNJ	Thread milling	Gewindefräser
	WXS	Frese a filettare	Fraise à fileter
 WXO-ST-PNC	M,MF	Thread milling	Gewindefräser
	WX	Frese a filettare	Fraise à fileter
 WX-PNC	M,MF, UNC, UNF,G, NPT	Thread milling	Gewindefräser
	WX	Frese a filettare	Fraise à fileter
METRIC			
 VA-POT	M	DIN 371, DIN 376, general purpose, also for stainless steel	DIN 371, DIN 376, für universelle Anwendungen und für VA - Stahl
	OX	DIN 371, DIN 376, per applicazioni generali e per inox	DIN 371, DIN 376, pour applications générales et pour des aciers inox
 VA-POT	M	DIN 371, DIN 376 6G general purpose, also for stainless steel	DIN 371, DIN 376 6G für universelle Anwendungen und für VA - Stahl
	OX	DIN 371, DIN 376 6G per applicazioni generali e per inox	DIN 371, DIN 376 6G pour applications générales et pour des aciers inox
 POT	M	DIN 371, DIN 376 for general purpose	DIN 371, DIN 376 für universelle Anwendungen
		DIN 371, DIN 376 per applicazioni generali	DIN 371, DIN 376 pour applications générales
 POT	M	DIN 352 for general purpose	DIN 352 für universelle Anwendungen
		DIN 352 per applicazioni generali	DIN 352 pour applications générales
 IO66-POT	M	ISO 529, for general purpose	ISO 529, für universelle Anwendungen
	OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
 TIN-POT	M	DIN 371, DIN 376 for steel ≤ 850N/mm²	DIN 371, DIN 376 für Stahl ≤ 850N/mm²
	TIN	DIN 371, DIN 376 per acciai ≤ 850N/mm²	DIN 371, DIN 376 pour aciers ≤ 850N/mm²
 TICN-POT	M	DIN 371, DIN 376 for steel ≤ 1000N/mm²	DIN 371, DIN 376 für Stahl ≤ 1000N/mm²
	V	DIN 371, DIN 376 per acciai ≤ 1000N/mm²	DIN 371, DIN 376 pour aciers ≤ 1000N/mm²
 CC-POT	M	DIN 371, DIN 376 for stainless steel aluminium and steel	DIN 371, DIN 376 für VA - Stahl und Aluminium und Stahl
	CrN	DIN 371, DIN 376 per acciai inox e alluminio, acciai	DIN 371, DIN 376 pour inox et aluminium at aciers
 CC-LT-POT NEW	M	For stainless steel aluminium and steel	Für VA - Stahl und Aluminium und Stahl
	CrN	Per acciai inox e alluminio, acciai	Pour inox et aluminium at aciers
 AL-POT	M	DIN 371, DIN 376 for aluminium	DIN 371, DIN 376 für Aluminium
		DIN 371, DIN 376 per alluminio	DIN 371, DIN 376 pour aluminium
 CPM-POT	M	DIN 371, DIN 376 for steel ≥ 900N/mm² & cast iron	DIN 371, DIN 376 füt Stahl ≥ 900N/mm² & Gusseisen
		DIN 371, DIN 376 per acciai ≥ 900N/mm² & ghisa	DIN 371, DIN 376 pour aciers ≥ 900N/mm² & fontes
 H-POT	M	DIN 371, DIN 376 for steel 25~45 HRC	DIN 371, DIN 376 für Stahl 25~45 HRC
	OX	DIN 371, DIN 376 per acciai 25~45 HRC	DIN 371, DIN 376 pour acier : dureté 25~45 HRC
 VP-H-POT	M	DIN 371, DIN 376 for steel 25~45 HRC	DIN 371, DIN 376 für Stahl 25~45 HRC
	V	DIN 371, DIN 376 per acciai 25~45 HRC	DIN 371, DIN 376 pour acier : dureté 25~45 HRC
 VPO-H-POT	M	DIN 371, DIN 376 for steel 25~45 HRC, coolant through	DIN 371, DIN 376 für Stahl 25~45 HRC, Innere Kühlmittelzuführung
	V	DIN 371, DIN 376 per acciai 25~45 HRC, lubrificazione centrali	DIN 371, DIN 376 pour acier : dureté 25~45 HRC, arrosage central

POT

SPECIFICATION			RANGE	PAGE
THREAD MILL				
Gevind fræsning	Gängfräsning	Diş frezeleme	0,72 ~ 4	B.61
Fresas de roscar	Для нержавеющих сталей	Frez do gwintów		
Gevind fræsning	Gängfräsning	Diş frezeleme	4,5 ~ 20	B.63
Fresas de roscar	Для нержавеющих сталей	Frez do gwintów		
Gevind fræsning	Gängfräsning	Diş frezeleme	4,5 ~ 20	B.64 ~ B.67
Fresas de roscar	Для нержавеющих сталей	Frez do gwintów		
METRIC				
DIN 371, DIN 376, for generelt brug, også til rustfrit stål	DIN 371, DIN 376, för allround bearbetning och för rostfritt stål	DIN 371, DIN 376, genel kullanım, ayrıca paslanmaz çelik için	M 2 ~ M 36	B.68
DIN 371, DIN 376, para aplicación general, para aceros inoxidables	DIN 371, DIN 376, общего назначения и для нержавеющих сталей	DIN 371, DIN 376, uniwersalne, także do stali nierdzewnych		
DIN 371, DIN 376 6G for generelt brug, også til rustfrit stål	DIN 371, DIN 376 6G, för allround bearbetning och för rostfritt stål	DIN 371, DIN 376, genel kullanım, ayrıca paslanmaz çelik için	M 2 ~ M 16	B.69
DIN 371, DIN 376 6G para aplicación general, para aceros inoxidables	DIN 371, DIN 376 6G общего назначения и для нержавеющих сталей	DIN 371, DIN 376, uniwersalne, także do stali nierdzewnych		
DIN 371, DIN 376 til generelt brug	DIN 371, DIN 376 För allround bearbetning	DIN 371, DIN 376, genel kullanım	M 2 ~ M 36	B.70
DIN 371, DIN 376 para aplicación general	DIN 371, DIN 376 общего назначения	DIN 371, DIN 376, uniwersalne		
DIN 352 til generelt brug	DIN 352, För allround bearbetning	DIN 352, DIN 376, genel kullanım	M 3 ~ M 10	B.71
DIN 352 para aplicación general	DIN 352 para aplicación general	DIN 352, uniwersalne		
ISO 529, til generelt brug	ISO 529, för diverse applikationer	ISO 529, genel kullanım	M 1 ~ M 42	B.72
ISO 529, para aplicación general	ISO 529, общего назначения	ISO 529, uniwersalne		
DIN 371, DIN 376 til ståltyper ≤ 850N/mm²	DIN 371, DIN 376 för stål ≤ 850N/mm²	DIN 371, DIN 376, ≤ 850N/mm² çelikler için	M 2 ~ M 30	B.73
DIN 371, DIN 376 para aceros ≤ 850N/mm²	DIN 371, DIN 376 для сталей ≤ 850H/MM²	DIN 371, DIN 376 do stali ≤ 850N/mm²		
DIN 371, DIN 376 til ståltyper ≤ 1000N/mm²	DIN 371, DIN 376 för stål ≤ 1000N/mm²	DIN 371, DIN 376, ≤ 1000N/mm² çelikler için	M 2 ~ M 24	B.74
DIN 371, DIN 376 para aceros ≤ 1000N/mm²	DIN 371, DIN 376 для сталей ≤ 1000H/MM²	DIN 371, DIN 376 do stali ≤ 1000N/mm²		
DIN 371, DIN 376 til rustfrit stål og aluminium, og stål	DIN 371, DIN 376 för rostfritt stål och aluminium, stål	DIN 371, DIN 376, paslanmaz çelikler, alüminyum ve çelik için	M 2 ~ M 30	B.75
DIN 371, DIN 376 para aceros inoxidables y aluminio, aceros	DIN 371, DIN 376 для нержавеющих сталей и алюминия, нержавеющих	DIN 371, DIN 376 do stali nierdzewych, aluminium i stali		
Til rustfrit stål og aluminium, og stål	För rostfritt stål och aluminium, stål	Paslanmaz çelikler, alüminyum ve çelik için	M 2 ~ M 12	B.76
Para aceros inoxidables y aluminio, aceros	для нержавеющих сталей и алюминия, нержавеющих	Do stali nierdzewych, aluminium i stali		
DIN 371, DIN 376 til aluminium	DIN 371, DIN 376 för aluminium	DIN 371, DIN 376 alüminyum için	M 2 ~ M 20	B.77
DIN 371, DIN 376 para aluminio	DIN 371, DIN 376 для нержавеющих сталей и алюминия, нержавеющих	DIN 371, DIN 376 do aluminium		
DIN 371, DIN 376 til ståltyper ≥ 900N/mm² & til støbejern	DIN 371, DIN 376 för stål ≥ 900N/mm² & för gjutjärn	DIN 371, DIN 376, çelikler ≥ 900N/mm² & döküm için	M 3 ~ M 20	B.78
DIN 371, DIN 376 para aceros ≥ 900N/mm² & fundición de hierro	DIN 371, DIN 376 для сталей ≥ 900H/MM2 и для чугуна	DIN 371, DIN 376 do stali ≥ 900N/mm ² i żeliw		
DIN 371, DIN 376 til ståltyper 25~45 HRC	DIN 371, DIN 376 för stål 25~45 HRC	DIN 371, DIN 376 , 25~45 HRC çelikler için	M 2 ~ M 20	B.79
DIN 371, DIN 376 para aceros 25~45 HRC	DIN 371, DIN 376 для сталей 25~45 HRC	DIN 371, DIN 376 do stali 25 ~ 45 HRC		
DIN 371, DIN 376 til ståltyper 25~45 HRC	DIN 371, DIN 376 för stål 25~45 HRC	DIN 371, DIN 376 , 25~45 HRC çelikler için	M 2 ~ M 36	B.80
DIN 371, DIN 376 para aceros 25~45 HRC	DIN 371, DIN 376 для сталей 25~45 HRC	DIN 371, DIN 376 do stali 25 ~ 45 HRC		
DIN 371, DIN 376 til ståltyper 25~45 HRC, indvendig køling	DIN 371, DIN 376 för stål 25~45 HRC, kylkanaler	DIN 371 ,DIN 376, 25~45 HRC çelikler için ,içten soğutma	M 6 ~ M 36	B.81
DIN 371, DIN 376 para aceros 25~45 HRC, refrigeración interna	DIN 371, DIN 376 для сталей 25~45 HRC, Центральный ирригации	DIN 371, DIN 376 do stali 25 ~ 45 HRC chłodzenie wewnętrzne		

METRIC

	NAME		SPECIFICATION	
POT	 I066-POT-PLUS	M	ISO 529, for general purpose, powdered metal	ISO 529, für universelle Anwendungen, Pulvermetall
		OX	ISO 529, per applicazioni generali, metallurgia delle polveri sinterizzate	ISO 529, pour applications générales, métallurgie des poudres
	 E-POT	M	DIN 371, DIN 376 for nickel based alloys including Inconel 718	DIN 371, DIN 376 für Nickellegierungen, Inconel 718
			DIN 371, DIN 376 per inconel 718	DIN 371, DIN 376 pour inconel 718 et autres alliages à base de nickel
	 WHR-NI-POT	M	DIN 371, DIN 376 for nickel based alloys including Inconel 718	DIN 371, DIN 376 für Nickellegierungen, Inconel 718
		HR	DIN 371, DIN 376 per inconel 718	DIN 371, DIN 376 pour inconel 718 et autres alliages à base de nickel
	 V-TI-POT	M	DIN 371, DIN 376 for titanium alloys (Ti-6Al-4V), 40~45 HRC	DIN 371, DIN 376 für Titanlegierungen inkl. (Ti-6Al-V) : 40~45 HRC
		V	DIN 371, DIN 376 per leghe di titanio (Ti-6Al-4V), 40~45 HRC	DIN 371, DIN 376 pour alliages de titane (Ti-6Al-4V) : dureté 40~45 HRC
SFT	 VA-SFT	M	DIN 371, DIN 376, general purpose, also for stainless steel	DIN 371, DIN 376 für universelle Anwendungen und für VA - Stahl
		OX	DIN 371, DIN 376 per applicazioni generali e per inox	DIN 371, DIN 376 pour applications générales et pour des aciers inox
	 VA-SFT	M	DIN 371, DIN 376 6G, general purpose, also for stainless steel	DIN 371, DIN 376 6G für universelle Anwendungen und für VA - Stahl
		OX	DIN 371, DIN 376 6G per applicazioni generali e per inox	DIN 371, DIN 376 6G pour applications générales et pour des aciers inox
	 VA-SC-SFT	M	DIN 371, DIN 376, short chamfer, general purpose, also for stainless steel	DIN 371, DIN 376, kurzer Anschnitt, für universelle Anwendungen und für VA - Stahl
		OX	DIN 371, DIN 376, Imbocco corto, per applicazioni generali e per inox	DIN 371, DIN 376, entrée courte, pour applications générales et pour des aciers inox
	 SFT	M	DIN 371, DIN 376, for general purpose	DIN 371, DIN 376 für universelle Anwendungen
			DIN 371, DIN 376 per applicazioni generali	DIN 371, DIN 376 pour applications générales
	 SFT	M	DIN 352 for general purpose	DIN 352, für universelle Anwendungen
			DIN 352, per applicazioni generali	DIN 352, pour applications générales
	 WM-SFT	M	DIN 371, DIN 376 for mild steel ≤ 850N/mm²	DIN 371, DIN 376 für unlegierten Stahl ≤ 850N/mm²
		OX	DIN 371, DIN 376 per acciai dolci ≤ 850N/mm²	DIN 371, DIN 376 pour aciers doux ≤ 850N/mm²
	 I066-SFT	M	ISO 529, for general purpose	ISO 529, für universelle Anwendungen
		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
	 HXL-SFT	M	Horizontal applications, oil and energy industry	Für horizontale Bearbeitung, für Öl- und Schwerindustrie
		OX	Per lavorazioni orizzontali, per Industria Petrolifera & Industria Pesante	Pour des opérations horzontales, pour l'industrie lourde et l'énergie
	 OIL-HXL-SFT	M	Horizontal applications, coolant through, for oil and energy industry	Für horizontale Bearbeitung, mit innere Kühlmittezuführung, für Öl- und Schwerindustrie
		OX	Per lavorazioni orizzontali, lubrificazioni centrali, per Industria Petrolifera & Industria Pesante	Pour des opérations horzontales, avec arrosage cenral, pour l'industrie lourde et l'énergie
	 VXL-SFT	M	Vertical applications, oil and energy industry	Für vertikale Bearbeitung, für Öl- und Schwerindustrie
		OX	Per lavorazioni verticali, per Industria Petrolifera & Industria Pesante	Pour des opérations verticales, pour l'industrie lourde et l'énergie
	 OIL-VXL-SFT	M	Vertical applications, coolant through, for oil and energy industry	Für vertikale Bearbeitung, mit innere Kühlmittezuführung, für Öl- und Schwerindustrie
		OX	Per lavorazioni verticali, lubrificazioni centrali, per Industria Petrolifera & Industria Pesante	Pour des opérations verticales, avec arrosage cenral, pour l'industrie lourde et l'énergie
	 TIN-SFT	M	DIN 371, DIN 376 for steel ≤ 850N/mm²	DIN 371, DIN 376 für Stahl ≤ 850N/mm²
		TIN	DIN 371, DIN 376 per acciai ≤ 850N/mm²	DIN 371, DIN 376 pour aciers ≤ 850N/mm²
	 TICN-SFT	M	DIN 371, DIN 376 for steel ≤ 850N/mm²	DIN 371, DIN 376 für Stahl ≤ 850N/mm²
		V	DIN 371, DIN 376 per acciai ≤ 850N/mm²	DIN 371, DIN 376 pour aciers ≤ 850N/mm²

SPECIFICATION			RANGE	PAGE
			METRIC	
ISO 529, til generelt brug, pulvermetal	ISO 529, för diverse applikationer, pullver metall	ISO 529, genel kullanım için, toz metal	M 3 ~ M 12	B.82
ISO 529, para aplicación general, HSS sinterizado	ISO 529, общего назначения, порошковая металлургия	ISO 529, uniwersalne, wykonane ze stali proszkowej		
DIN 371, DIN 376 til nikkellegeringer inklusiv Inconel 718	DIN 371, DIN 376 för nickel legeringar inklusive Inconel 718	DIN 371, DIN 376 ,inkonel 718 barındıran nikel bazlı alaşımlar için	M 3 ~ M 12	B.83
DIN 371, DIN 376 para aleaciones de níquel incluido, Inconel 718	DIN 371, DIN 376 для никелевых сплавов, включая Inconel 718	DIN 371, DIN 376 do stopów na bazie niklu , w tym Inconel 718		
DIN 371, DIN 376 til nikkellegeringer inklusiv Inconel 718	DIN 371, DIN 376 för nickel legeringar inklusive Inconel 718	DIN 371, DIN 376 ,inkonel 718 barındıran nikel bazlı alaşımlar için	M 3 ~ M 12	B.84
DIN 371, DIN 376 para aleaciones de níquel incluido, Inconel 718	DIN 371, DIN 376 для никелевых сплавов, включая Inconel 718	DIN 371, DIN 376 do stopów na bazie niklu , w tym Inconel 718		
DIN 371, DIN 376 til Titanium legeringer (Ti-6Al-4V): 40~45 HRC	DIN 371, DIN 376 för Titanlegeringar (Ti-6Al-4V), 40~45 HRC	DIN 371, DIN 376 ,Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için	M 3 ~ M 12	B.85
DIN 371, DIN 376 para aleaciones de Titanio (Ti-6Al-4V) : 40~45 HRC	DIN 371, DIN 376 для титановых сплавов (Ti-6Al-4V) : 40~45 HRC	DIN 371, DIN 376 do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC		
DIN 371, DIN 376 til generelt brug, til rustfrit stål	DIN 371, DIN 376, för allround bear-betning och för rostfritt stål	DIN 371, DIN 376, genel kullanım, ayrıca paslanmaz çelik için	M 2 ~ M 36	B.86
DIN 371, DIN 376 para aplicación general, para aceros inoxidables	DIN 371, DIN 376 общего назначения и для нержавеющих сталей	DIN 371, DIN 376, uniwersalne, także do stali nierdzewnych		
DIN 371, DIN 376 6G til generelt brug, til rustfrit stål	DIN 371, DIN 376 6G för allround bear-betning och för rostfritt stål	DIN 371, DIN 376 6G, genel kullanım, ayrıca paslanmaz çelik için	M 2 ~ M 16	B.87
DIN 371, DIN 376 6G para aplicación general, para aceros inoxidables	DIN 371, DIN 376 6G общего назначения и для нержавеющих сталей	DIN 371, DIN 376 6G, uniwersalne, także do stali nierdzewnych		
DIN 371, DIN 376, Kort indløb, til generelt brug, til rustfrit stål	DIN 371, DIN 376, Kort faslängd, Allround, Också för rostfritt stål	DIN 371, DIN 376, kısa pah, genel kullanım, ayrıca paslanmaz çelik için	M 3 ~ M 16	B.88
DIN 371, DIN 376, chaflàn corto, para aplicación general, para aceros inoxidables	DIN 371, DIN 376, Короткий заход, общегоназначения и для нержавеющих сталей	DIN 371, DIN 376, z krótkim nakrojem, uniwersalne, także do stali nierdzewnych		
DIN 371, DIN 376 til generelt brug	DIN 371, DIN 376, för allround bear-betning	DIN 371, DIN 376, genel kullanım	M 2 ~ M 36	B.89
DIN 371, DIN 376 para aplicación general	DIN 371, DIN 376 общего назначения	DIN 371, DIN 376, uniwersalne		
DIN 352 til generelt brug	DIN 352 för allround bearbetning	DIN 352, genel kullanım	M 3 ~ M 10	B.90
DIN 352 para aplicación general	DIN 352 общего назначения	DIN 352,uniwersalne		
DIN 371, DIN 376 blødt stål ≤ 850N/mm²	DIN 371, DIN 376, För mjukt stål ≤ 850N/mm²	DIN 371, DIN 376 , ≤ 850N/mm² orta çelikler için	M 4 ~ M 20	B.91
DIN 371, DIN 376 para aceros suaves ≤ 850N/mm²	DIN 371, DIN 376 для мягкой стали ≤ 850N/MM²	DIN 371, DIN 376 do zwykłych stali ≤ 850N/mm ²		
ISO 529, til generelt brug	ISO 529, för allround bearbetning	DIN 529, genel kullanım	M 2 ~ M 42	B.92
ISO 529, para aplicación general	ISO 529, Общего назначения	ISO 529, uniwersalne		
Til horisontale operationer, til enegisek-toren & svær industri	För horisontala applikationer För olje och energi industrin	Yatay uygulamalar, yağ ve enerji endüstrisi için	M 20 ~ M 56	B.93
Para roscado horizontal, para Industria Energetica y Pesada	Для вертикального нарезания резьбы. Для нефтегазовой и энергетической отраслей	Do aplikacji poziomych, przemysł naftowy i energetyka		
Til horisontale operationer, med indvendig køling, til enegisektoren & svær industri	För horisontala applikationer, kylkanaler för olje och energi industrin	Yatay uygulamalar, içten soğutma, yağ ve enerji endüstrisi için	M 20 ~ M 56	B.94
Para roscado horizontal, para refrigeración interna, para Industria Energetica y Pesada	Для горизонтальной нарезки резьбы, внутреннее охлаждение, Для нефтегазовой и энергетической отраслей	Do aplikacji poziomych, chłodzenie wewnętrzne, przemysł naftowy i energetyka		
Vertikale operationer, til enegisektoren & svær industri	För vertikala applikationer, för olje och energi industrin	Dikey uygulamalar, yağ ve enerji endüstrisi için	M 20 ~ M 56	B.95
Para roscado vertical, para Industria Energetica y Pesada	Для вертикальной нарезки резьбы, Для нефтегазовой и энергетической отраслей	Do aplikacji pionowych, przemysł naftowy i energetyka		
Vertikale operationer, til indvendig køling, til enegisektoren & svær industri	För vertikala applikationer, kylkanaler för olje och energi industrin	Dikey uygulamalar, içten soğutma, yağ ve enerji endüstrisi için	M 20 ~ M 56	B.96
Para roscado verticall, para refrgeración interna, para Industria Energetica y Pesada	Для вертикальной нарезки резьбы, внутреннее охлаждение	Do aplikacji pionowych, chłodzenie wewnętrzne, przemysł naftowy i energetyka		
DIN 371, DIN 376 til stål ≤ 850N/mm²	DIN 371, DIN 376 för stål ≤ 850N/mm²	DIN 371, DIN 376 ,çelikler ≤ 850N/mm² & döküm	M 2 ~ M 30	B.97
DIN 371, DIN 376 para aceros ≤ 850N/mm²	DIN 371, DIN 376 для сталей ≤ 850H/MM²	DIN 371, DIN 376 do stali ≤ 850N/mm ²		
DIN 371, DIN 376 til stål ≤ 850N/mm²	DIN 371, DIN 376 för stål ≤ 850N/mm²	DIN 371, DIN 376 ,çelikler ≤ 850N/mm² & döküm	M 2 ~ M 24	B.98
DIN 371, DIN 376 para aceros ≤ 850N/mm²	DIN 371, DIN 376 для сталей ≤ 850H/MM²	DIN 371, DIN 376 do stali ≤ 850N/mm ²		

NAME		SPECIFICATION	
METRIC			
SFT			
 SUS-SFT	OX	DIN 371, DIN 376 6HX for stainless steel DIN 371, DIN 376 6HX per inox e acciai dolci	DIN 371, DIN 376 6HX für VA - Stahl DIN 371, DIN 376 6HX également pour inox
 CC-SFT	CrN	DIN 371, DIN 376 for stainless steel aluminium and steel DIN 371, DIN 376 per acciai inox e alluminio, acciai	DIN 371, DIN 376 für VA - Stahl und Aluminium und Stahl DIN 371, DIN 376 pour inox et aluminium at aciers
 CC-LT-SFT NEW	CrN	For stainless steel aluminium and steel Per acciai inox e alluminio, acciai	Für VA - Stahl und Aluminium und Stahl Pour inox et aluminium at aciers
 CC-NEO-SFT	M TIN	DIN 371, DIN 376 for stainless steel aluminium and steel DIN 371, DIN 376 per acciai inox e alluminio, acciai	DIN 371, DIN 376 für VA - Stahl und Aluminium und Stahl DIN 371, DIN 376 pour inox et aluminium at aciers
 AL-SFT	M	DIN 371, DIN 376 for aluminium DIN 371, DIN 376 per alluminio	DIN 371, DIN 376 für Aluminium DIN 371, DIN 376 pour pour aluminium
 SH-SFT	M	DIN 371, DIN 376, low helix, for alloy steel ≥ 1100N/mm² DIN 371, DIN 376, elica bassa torsione, per acciai legati ≥ 1100N/mm²	DIN 371, DIN 376, Leichte Spirale, für legierten Stahl ≥ 1100N/mm² DIN 371, DIN 376, élice réduite, pour aciers alliés ≥ 1100N/mm²
 CPM-SFT	M	DIN 371, DIN 376 for steel ≥ 900/mm² & cast iron,forming short chips DIN 371, DIN 376 per acciai ≥ 900N/mm² e ghisa, formano trucioli corti	DIN 371, DIN 376 per acciai ≥ 900N/mm² e ghisa, formano trucioli corti DIN 371, DIN 376 pour aciers ≥ 900N/mm² et fonte, formant des copeaux courts
 H-SFT	M OX	DIN 371, DIN 376, for steel 25~45 HRC DIN 371, DIN 376, per acciai 25~45 HRC	DIN 371, DIN 376, für Stahl 25~45 HRC DIN 371, DIN 376, pour acier : dureté 25~45 HRC
 VP-H-SFT	M V	DIN 371, DIN 376, for steel 25~45 HRC DIN 371, DIN 376, per acciai 25~45 HRC	DIN 371, DIN 376, für Stahl 25~45 HRC DIN 371, DIN 376, pour acier : dureté 25~45 HRC
 VPO-H-SFT	M V	DIN 371, DIN 376, for steel 25~45 HRC,coolant through DIN 371, DIN 376 per acciai 25~45 HRC,lubrificazione centrali	DIN 371, DIN 376 für Stahl 25~45 HRC, Innere Kühlmittelzuführung DIN 371, DIN 376 pour acier : dureté 25~45 HRC,arrosage central
 IO66-SFT-PLUS	M OX	ISO 529, general purpose, powdered metal ISO 529, per applicazioni generali, metallurgia delle polveri sinterizzate	ISO 529, für universelle Anwendungen, Pulvermetall ISO 529, pour applications générales, métallurgie des poudres
 E-SFT	M	DIN 371, DIN 376, for nickel based alloys including Inconel 718 DIN 371, DIN 376, per inconel 718 ed altre leghe a base di nickel	DIN 371, DIN 376, für Nickellegierungen, Inconel 718 DIN 371, DIN 376, pour inconel 718 et autres alliages à base de nickel
 WHR-NI-SFT	M HR	DIN 371, DIN 376, for nickel based alloys including Inconel 718 DIN 371, DIN 376, per inconel 718 ed altre leghe a base di nickel	DIN 371, DIN 376, für Nickellegierungen, Inconel 718 DIN 371, DIN 376, pour inconel 718 et autres alliages à base de nickel
 V-TI-SFT	M V	DIN 371, DIN 376, for titanium alloys (Ti-6Al-4V),40~45 HRC DIN 371, DIN 376, per leghe di titanio (Ti-6Al-4V),40~45 HRC	DIN 371, DIN 376, für Titanlegierungen inkl. (Ti-6Al-4V) : 40~45 HRC DIN 371, DIN 376, pour alliages de titane(Ti-6Al-4V) : dureté 40~45 HRC
MT			
 IO66-HT	M	ISO 529, general purpose ISO 529, per applicazioni generali	ISO 529, für universelle Anwendungen ISO 529, pour applications générales
 IO66-TIN-HT	M TIN	ISO 529, general purpose ISO 529, per applicazioni generali	ISO 529, für universelle Anwendungen ISO 529, pour applications générales
 GG-MT	M NI-OX	DIN 371, DIN 376, for grey cast iron & cast aluminium < 11 % Si DIN 371, DIN 376, per ghisa grigia, ghisa d'alluminio < 11 % Si	DIN 371, DIN 376, für Grauguss und Aluminiumguss < 11 % Si DIN 371, DIN 376, pour fonte grise, fonte d'aluminium < 11 % Si
 OIL-TXL-MT	NI-OX	Through hole applications, coolant through, for oil and energy industry Per fori passanti,con fori di lubrificazione, per industria petrolifera ed energetica	Durchgangslochbearbeitungen, mit innerer Kühlmittelzufuhr, für Öl und Kraftwerksindustrie pour trou débouchant, avec arrosage central, pour industrie de l'énergie et du pétrole
 VP-DC-MT	V	DIN 371, DIN 376 for stainless steel and aluminium DIN 371, DIN 376 per acciai inox e alluminio	DIN 371, DIN 376 für VA - Stahl und Aluminium DIN 371, DIN 376 pour inox et aluminium

SPECIFICATION			RANGE	PAGE
			METRIC	
DIN 371, DIN 376 6HX til rustfrit stål	DIN 371, DIN 376 6HX för rostfritt stål	DIN 371, DIN 376 6HX paslanmaz çelikler için	M 2 ~ M 24	B.99
DIN 371, DIN 376 6HX para aceros inoxidables	DIN 371, DIN 376 6HX для нержавеющих сталей	DIN 371, DIN 376 6HX do stali nierdzewnych		
DIN 371, DIN 376 til rustfrit stål og aluminium, og stål	DIN 371, DIN 376 för rostfritt stål och aluminium, stål	DIN 371, DIN 376 ,paslanmaz çelikler, alüminyum ve çelik için	M 2 ~ M 36	B.100
DIN 371, DIN 376 para aceros inoxidables y aluminio, aceros	DIN 371, DIN 376 для нержавеющих сталей и алюминия, нержавеющих	DIN 371, DIN 376 do stali nierdzewnych, aluminium i stali		
Til rustfrit stål og aluminium, og stål	För rostfritt stål och aluminium, stål	Paslanmaz çelikler, alüminyum ve çelik için	M 2 ~ M 12	B.101
Para aceros inoxidables y aluminio,aceros	для нержавеющих сталей и алюминия, нержавеющих	Do stali nierdzewnych, aluminium i stali		
DIN 371, DIN 376 til rustfrit stål og aluminium, og stål	DIN 371, DIN 376 för rostfritt stål och aluminium, stål	DIN 371, DIN 376 ,paslanmaz çelikler, alüminyum ve çelik için	M 2 ~ M 16	B.102
DIN 371, DIN 376 para aceros inoxidables y aluminio,aceros	DIN 371, DIN 376 для нержавеющих сталей и алюминия, нержавеющих	DIN 371, DIN 376 do stali nierdzewnych, aluminium i stali		
DIN 371, DIN 376 til aluminium	DIN 371, DIN 376 för aluminium	DIN 371, DIN 376 alüminyum için	M 1,6 ~ M 20	B.103
DIN 371, DIN 376 para aluminio	DIN 371, DIN 376 Для алюминия	DIN 371, DIN 376 do aluminium		
DIN 371, DIN 376, lav helix, til legeret stål ≥ 1100N/mm²	DIN 371, DIN 376, liten helix, för legerat stål ≥ 1100N/mm²	DIN 371, DIN 376, düşük helis açısı, alaşımlı çelikler ≥ 1100N/mm² için	M 3 ~ M 20	B.104
DIN 371, DIN 376, helice lenta, para aceros ≥ 1100N/mm²	DIN 371, DIN 376, Пологая спираль, для легированных сталей, ≥ 1100N/mm²	DIN 371, DIN 376, mała spirala, dla stali stopowych ≥ 1100N/mm²		
DIN 371, DIN 376 til stål ≥ 900N/mm2 & kortspånet støbejern	DIN 371, DIN 376 för stål ≥ 900N/mm2 & gjutjärn, gör små spånor	DIN 371, DIN 376 ,çelikler ≥ 900/mm² & döküm, kısa talaş kaldıran malzemeler için	M 3 ~ M 20	B.105
DIN 371, 376 para aceros ≥ 900 N/mm2 formando virutas cortas.	DIN 371, DIN 376 для стали ≥ 900 H/MM² и чугуна,Формирует короткую стружку	DIN 371, DIN 376 dostali ≥ 900/mm ² i żeliw, tworzący krótkie wióry		
DIN 371, 376 för stål 25~45 HRC	DIN 371, DIN 376, För mjukt stål ≤ 850N/mm²	DIN 371, DIN 376, 25~45 HRC çelikler için	M 2 ~ M 20	B.106
DIN 371, DIN 376 для стали 25~45 HRC	DIN 371, DIN 376 для мягкой стали ≤ 850N/MM²	DIN 371, DIN 376, do stali 25 ~ 45 HRC		
DIN 371, 376 för stål 25~45 HRC	DIN 371, DIN 376, För mjukt stål ≤ 850N/mm²	DIN 371, DIN 376, 25~45 HRC çelikler için	M 2 ~ M 36	B.107
DIN 371, DIN 376 для стали 25~45 HRC	DIN 371, DIN 376 для мягкой стали ≤ 850N/MM²	DIN 371, DIN 376, do stali 25 ~ 45 HRC		
DIN 371, DIN 376 til ståltyper 25~45 HRC, indvendig køling	DIN 371, DIN 376 för stål 25~45 HRC, kylkanaler	DIN 371, DIN 376, 25~45 HRC çelikler için, içten sağutma	M 6 ~ M 36	B.108
DIN 371, DIN 376 para aceros 25~45 HRC, refrigeración interna	DIN 371, DIN 376 для сталей 25~45 HRC, Центральный ирригации	DIN 371, DIN 376, do stali 25 ~ 45 HRC chłodzenie wewnętrzne		
ISO 529, til generelt brug, pulvermetal	ISO 529, för diverse applikationer, pullver metall	ISO 529, genel kullanım için, toz metal	M 3 ~ M 12	B.109
ISO 529, para aplicación general, HSS sinterizado	ISO 529, Общего назначения, порошковая металлургия	ISO 529, uniwersalne, wykonane ze stali proszkowej		
DIN 371, DIN 376 til nikkellegeringer inklusiv Inconel 718	DIN 371, DIN 376 för nickelbaserade legeringar inklusive Inconel 718	DIN 371, DIN 376, inkonel 718 barındıran nikel bazlı alaşımlar için	M 3 ~ M 12	B.110
DIN 371, DIN 376 para aleaciones de níquel incluido Inconel 718	DIN 371, DIN 376 для никелевых сплавов, включая Inconel 718	DIN 371, DIN 376, do stopów na bazie niklu, w tym Inconel 718		
DIN 371, DIN 376 til nikkellegeringer inklusiv Inconel 718	DIN 371, DIN 376 för nickelbaserade legeringar inklusive Inconel 718	DIN 371, DIN 376, inkonel 718 barındıran nikel bazlı alaşımlar için	M 3 ~ M 12	B.111
DIN 371, DIN 376 para aleaciones de níquel incluido Inconel 718	DIN 371, DIN 376 для никелевых сплавов, включая Inconel 718	DIN 371, DIN 376, do stopów na bazie niklu, w tym Inconel 718		
DIN 371, DIN 376 til Titanium legeringer (Ti-6Al-4V) : 40~45 HRC	DIN 371, DIN 376 för titanium legeringar (Ti-6Al-4V) : 40~45 HRC	DIN 371, DIN 376, Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için	M 1,6 ~ M 12	B.112
DIN 371, DIN 376 para aleaciones de Titanio (Ti-6AL-4V) : 40~45 HRC	DIN 371, DIN 376 для титановых сплавов (Ti-6Al-4V) :40~45 HRC	DIN 371, DIN 376, do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC		
ISO 529, til generelt brug	ISO 529, för diverse applikationer	ISO 529, genel kullanım için	M 1 ~ M 24	B.113 - B.114
ISO 529, para aplicación general	ISO 529, Общего назначения	ISO 529, uniwersalne		
ISO 529, til generelt brug	ISO 529, för diverse applikationer	ISO 529, genel kullanım için	M 3 ~ M 14	B.115
ISO 529, para aplicación general	ISO 529, Общего назначения	ISO 529, uniwersalne		
DIN 371, DIN 376 til støbejern & støbt aluminium < 11 % Si	DIN 371, för gråjärn & gjuten aluminium < 11 % Si	DIN 371, DIN 376, sfero döküm & dökme alüminyum < 11 % Si için	M 4 ~ M 20	B.116
DIN 371, DIN 376 para fundición de hierro y aluminio fundido < 11 % Si	DIN 371, DIN 376 для серого чугуна и литейныхалюминиевых сплавов < 11 % Si	DIN 371, DIN 376, do żeliwa szarego i aluminium odlewanego <11% Si		
Til gennemgående huller, indvendig køling, Til oile- og energi industrien	För genomgående hål, kylkanaler, för olje och energi industrin	Açık delik uygulamaları, içten soğutma, yağ ve enerji endüstrisi için	M 20 ~ M 56	B.117
Para agujeros pasantes aplicación, refrigeración interna para industria Energetica y Pesada	Для сквозных отверстий, с охлаждением через инструмент, для нефтегазовой и энергетической отраслей	Do otworów przelotowych, chłodzenie wewnętrzne promieniowe, przemysł naftowy i energetyka		
DIN 371, DIN 376 til rustfrit stål og aluminium	DIN 371, DIN 376 för rostfritt stål och aluminium	DIN 371, DIN 376, paslanmaz çelikler, alüminyum için	M 3 ~ M 20	B.118
DIN 371, DIN 376 para aceros inoxidables y aluminio	DIN 371, DIN 376 для нержавеющих сталей и алюминия	DIN 371, DIN 376 do stali nierdzewnej i aluminium		

NAME		SPECIFICATION	
METRIC			
MT			
 **VP-DC-SC-MT**	M	DIN 371, DIN 376, synchro taps, for cast iron & aluminium,short chamfer	DIN 371, DIN 376, Synchro Bohrer für Grauguss und Aluminium, kurzer Anschnitt
	V	DIN 371, DIN 376, maschi Synchro per ghisa & alluminio,Imbocco corto	DIN 371, DIN 376, tarauds synchro, pour fonte et aluminium, entrée courte
 **VPO-DC-MT**	M	DIN 371, DIN 376, synchro taps, coolant through, for cast iron & aluminium	DIN 371, DIN 376, Synchro Bohrer für Grauguss und Aluminium, Innere Kühlmittelzuführung
	V	DIN 371, DIN 376, maschi Synchro per ghisa & alluminio,lubrificazione centrali	DIN 371, DIN 376, tarauds synchro, pour fonte et aluminium, arrosage central
 **VPO-DC-SC-MT**	M	DIN 371, DIN 376, synchro taps, coolant through, for cast iron & aluminium, short chamfer	DIN 371, DIN 376, Synchro Bohrer für Grauguss und Aluminium, Innere Kühlmittelzuführung, kurzerAnschnitt
	V	DIN 371, DIN 376, maschi Synchro per ghisa & alluminio,lubrificazione centrali	DIN 371, DIN 376, tarauds synchro, pour fonte et aluminium, arrosage central, entrée courte
 **OIL-C-MT** NEW	M	DIN 371, DIN 376, synchro taps, coolant through, for cast iron.	DIN 371, DIN 376, Synchro Bohrer für Grauguss, Innere Kühlmittelzuführung,
	FX	DIN 371, DIN 376, maschi Synchro per ghisa, lubrificazione centrali	DIN 371, DIN 376, tarauds synchro, pour fonte, arrosage central
 **V-XPM-HT**	M	For hardened steel 42~52 HRC	Für gehärteten Stahl HRC 42~52
	V	Per acciai trattati 42~52 HRC	Pour aciers traités à 42~52 HRC
 **WH55-OT**	M	For hardened steel 40~55 HRC	Für gehärteten Stahl HRC 40~55
	V	Per acciai trattati 40~55 HRC	Pour aciers traités à 40~55 HRC
 **VX-OT**		For hardened steel <62 HRC	Für gehärteten Stahl HRC <62
	V	Per acciai trattati <62 HRC	Pour aciers traités à <62 HRC
SYNCHRO TAP			
 **Z-POT**	M	DIN 371, DIN 376 for high speed tapping in aluminium, mild steel, die steel & stainless steel	DIN 371, DIN 376 für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA - Stahl
	V	DIN 371, DIN 376 alta velocità per alluminio, acciaio dolce, acciai per stampi e inox	DIN 371, DIN 376 pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox
 **Z-OIL-POT**	M	DIN 371, DIN 376 for high speed tapping in aluminium, mild steel, die steel & stainless steel, coolant through	DIN 371, DIN 376 für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA - Stahl, innere Kühlmittelzuführung
	V	DIN 371, DIN 376 alta velocità per alluminio, acciaio dolce, acciai per stampi e inox, lubrificazione centrali	DIN 371, DIN 376 pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox, arrosage central
 **HS-RFT-TIN**	M	Synchro taps, left hand spiral, for a wide range of materials	Gewindebohrer für synchronisierte Spindeln geeignet für Allroundeinsatz, Linksspirale
	TIN	Maschi Synchro, elica sinistra, per applicazioni generali	Tarauds synchro, pour toutes les matières, élice gauche
 **US-AL-RFT**	M	Synchro taps, left hand spiral, for aluminium	Synchro Bohrer, Gewindeschneiden in Aluminium, Linksspirale
	V	Maschi synchro, elica sinistra, per alluminio	Tarauds synchro, élice gauche, pour aluminium
 **A-SFT** NEW	M	DIN 371, DIN 376 for high speed tapping in aluminium, mild steel, die steel & stainless steel	DIN 371, DIN 376 für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA - Stahl
	V	DIN 371, DIN 376 alta velocità per alluminio, acciaio dolce, acciai per stampi e inox	DIN 371, DIN 376 pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox
 **A-OIL-SFT** NEW	M	DIN 371, DIN 376 for high speed tapping in aluminium, mild steel, die steel & stainless steel	DIN 371, DIN 376 für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA - Stahl
	V	DIN 371, DIN 376 alta velocità per alluminio, acciaio dolce, acciai per stampi e inox	DIN 371, DIN 376 pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox
 **Z-SFT**	M	DIN 371, DIN 376 for high speed tapping in aluminium, mild steel, die steel & stainless steel	DIN 371, DIN 376 für HSC Gewindeschneiden in Aluminium,unlegierten Stählen, Werkzeugstahl und VA - Stahl
	V	DIN 371, DIN 376 alta velocità per alluminio, acciaio dolce,acciai per stampi e inox	DIN 371, DIN 376 pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox
 **Z-OIL-SFT**	M	DIN 371, DIN 376 for high speed tapping in aluminium, mild steel, die steel & stainless steel	DIN 371, DIN 376 für HSC Gewindeschneiden in Aluminium,unlegierten Stählen, Werkzeugstahl und VA - Stahl, innere Kühlmittelzuführung
	V	DIN 371, DIN 376 alta velocità per alluminio, acciaio dolce,acciai per stampi e inox, lubrificazioni centrali	DIN 371, DIN 376 pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox, arrosage central
 **HS-SFT-TIN**	M	Synchro taps, for a wide range of materials	Gewindebohrer für synchronisierte Spindeln geeignet für Allroundeinsatz
	TIN	Maschi Synchro, per applicazioni generali	Tarauds synchro, pour toutes les matières
 **US-AL-SFT**	M	Synchro taps, for aluminium	Synchro Bohrer - Gewindeschneiden in Aluminium
	V	Maschi synchro, per alluminio	Tarauds synchro, pour aluminium

SPECIFICATION			RANGE	PAGE
			METRIC	
DIN 371, DIN 376, syncro tappe, til støbejern & aluminium, kort indløb	DIN 371, DIN 376, synchro gängtappar för gjutjärn & aluminium, kort faslängd	DIN 371, DIN 376, sekronize kılavuzlar, döküm & alüminyum, kısa pah için	M 3 ~ M 16	B.119
DIN 371, DIN 376, Machos Synchro para fundición de hierro y aluminio, chaflán corto	DIN 371, DIN 376, Синхро метчики для чугуна и алюминия с коротким заходом	DIN 371, DIN 376, gwintowniki SYNCHRO z krótkim nakrojem do żeliwa i aluminium		
DIN 371, DIN 376, syncro tappe, til støbejern & aluminium, indvendig køling	DIN 371, synchro gängtappar, kylkanaler, för gjutjärn & aluminium	DIN 371, DIN 376, sekronize kılavuzlar, içten soğutma, döküm & alüminyum için	M 6 ~ M 20	B.120
DIN 371, DIN 376, Machos Synchro para fundición de hierro y aluminio, refrigeración interna	DIN 371, DIN 376, Synchro метчики, для чугуна и алюминия, внутреннее охлаждение	DIN 371, DIN 376, gwintowniki SYNCHRO, chłodzenie wewnętrzne, do żeliw i aluminium		
DIN 371, DIN 376, syncro tappe, til støbejern & aluminium, indvendig køling, kort indløb	DIN 371, DIN 376, synchro gängtapparkort, faslängd, för gjutjärn & aluminium, kort faslängd	DIN 371, DIN 376, sekronize kılavuzlar, içten soğutma, döküm & alüminyum, kısa pah için	M 6 ~ M 16	B.121
DIN 371, DIN 376, Machos Synchro para fundición de hierro y aluminio, refrigeración interna, chaflán corto	DIN 371, DIN 376, Синхро метчики для чугуна и алюминия с внутренним охлаждением	DIN 371, DIN 376, gwintowniki SYNCHRO z krótkim nakrojem,chłodzenie wewnętrzne, do żeliw i aluminium, krótki wiór		
DIN 371, DIN 376, syncro tappe, til støbejern, indvendig køling	DIN 371, DIN 376, synchro gängtapparkort, faslängd, för gjutjärn,	DIN 371, DIN 376, sekronize kılavuzlar, içten soğutma, döküm	M 6 ~ M 12	B.122 - B.123
DIN 371, DIN 376, Machos Synchro para fundición de hierro, refrigeración interna	DIN 371, DIN 376, Синхро метчики для чугуна и алюминия с внутренним охлаждением	DIN 371, DIN 376, gwintowniki SYNCHRO z krótkim nakrojem,chłodzenie wewnętrzne, do żeliw		
Til varmebehandlet stål 42~52 HRC	För härdat stål 42~52 HRC	Sertleştirilmiş 42~52 HRC çelikler için	M 3 ~ M 12	B.124
Para aceros tratados 42~52 HRC	Для улучшенных сталей 42~52 HRC	Do stali hartowanych 42 ~ 52 HRC		
Til varmebehandlet stål 40~55 HRC	För härdat stål 40~55 HRC	Sertleştirilmiş 40~55 HRC çelikler için	M 3 ~ M 12	B.125
Para aceros tratados 40~55 HRC	Для улучшенных сталей 40~55 HRC	Do stali hartowanych 40~55 HRC		
Til varmebehandlet stål <62 HRC	För härdat stål <62 HRC	Sertleştirilmiş <62 HRC çelikler için	M 3 ~ M 12	B.126
Para aceros tratados <62 HRC	Для улучшенных сталей <62 HRC	Do stali hartowanych <62 HRC		
DIN 371, DIN 376 til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål	DIN 371, DIN 376, för high speed gängning i aluminium, mjuktstål,verktygsstål & rostfritt stål	DIN 371, DIN 376, alüminyum, orta çelik, kalıp çeliği & paslanmaz çelikte yüksek hızla diş açmak	M 2 ~ M 30	B.127
DIN 371, DIN 376 para roscado a alta velocidad en aluminio,aceros suaves, aceros de herramientas y aceros inoxidables	DIN 371, DIN 376 для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях	DIN 371, DIN 376 do dużych prędkości gwintowania w aluminium, stali miękkiej, stali narzędziowej i stali nierdzewnej		
DIN 371, DIN 376 til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål, indvendig køling	DIN 371, DIN 376, för high speed gängning i aluminium, mjukt stål, verktygsstål & rostfritt stål, kylkanaler	DIN 371, DIN 376, alüminyum, orta çelik, kalıp çeliği & paslanmaz çelikte yüksek hızla diş açmak, içten soğutma	M 6 ~ M 20	B.128
DIN 371, DIN 376 para roscado a alta velocidad en aluminio, aceros suaves, aceros de herramientas y aceros inoxidables, refrigeración interna	DIN 371, DIN 376 для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях	DIN 371, DIN 376 do dużych prędkości gwintowania w aluminium, stali miękkiej, stali narzędziowej i stali nierdzewnej, chłodzenie wewnętrzne		
Synkro tappe, til flere forskellige materialer	Machos Synchro para un abanico amplio de materiales, ranura helicoidal izquierda	Sekronize kılavuz, sol helis, geniş malzeme aralığı için	M 3 ~ M 12	B.129
Machos Synchro para un abanico amplio de materiales, ranura helicoidal izquierda	Синхро метчики для широкого спектра материалов. Левая спираль	Gwintowniki SYNCHRO, lewa spirala, do szerokiej gamy materiałów		
Synkro tappe, venstresnoet, til aluminium	Synchro gängtappar, vänster spiral för high speed gängning i varierande material	Sekronize kılavuz, sol helis, alüminyum için	M 3 ~ M 12	B.130
Machos Synchro, ranura helicoidal izquierda, para aluminio	Синхро метчики для широкого спектра материалов. Левая спираль. Для алюминия	Gwintowniki SYNCHRO, lewa spirala, do aluminium		
DIN 371, DIN 376 til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål	DIN 371, DIN 376, för high speed gängning i aluminium,mjuktstål,verktygsstål & rostfritt stål	DIN 371, DIN 376, alüminyum, orta çelik, kalıp çeliği & paslanmaz çelikte yüksek hızla diş açmak	M 3 ~ M 16	B.131
DIN 371, DIN 376 para roscado a alta velocidad en aluminio,aceros suaves, aceros de herramientas y aceros inoxidables	DIN 371, DIN 376 для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях	DIN 371, DIN 376 do dużych prędkości gwintowania w aluminium, stali miękkiej, stali narzędziowej i stali nierdzewnej		
DIN 371, DIN 376 til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål	DIN 371, DIN 376, för high speed gängning i aluminium, mjuktstål,verktygsstål & rostfritt stål	DIN 371, DIN 376, alüminyum, orta çelik, kalıp çeliği & paslanmaz çelikte yüksek hızla diş açmak	M 6 ~ M 16	B.132
DIN 371, DIN 376 para roscado a alta velocidad en aluminio,aceros suaves, aceros de herramientas y aceros inoxidables	DIN 371, DIN 376 для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях	DIN 371, DIN 376 do dużych prędkości gwintowania w aluminium, stali miękkiej, stali narzędziowej i stali nierdzewnej		
DIN 371, DIN 376 til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål	DIN 371, DIN 376, för high speed gängning i aluminium, mjukt stål, verktygsstål & rostfritt stål	DIN 371, DIN 376, alüminyum, orta çelik, kalıp çeliği & paslanmaz çelikte yüksek hızla diş açmak	M 2 ~ M 30	B.133
DIN 371, DIN 376 para roscado a alta velocidad en aluminio, aceros suaves, aceros de herramientas y aceros inoxidables	DIN 371, DIN 376 для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях	DIN 371, DIN 376 do dużych prędkości gwintowania w aluminium, stali miękkiej, stali narzędziowej i stali nierdzewnej		
DIN 371, DIN 376 til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål, indvendig køling	DIN 371, DIN 376, för high speed gängning i aluminium, mjukt stål, verktygsstål & rostfritt stål, kylkanaler	DIN 371, DIN 376, alüminyum, orta çelik, kalıp çeliği & paslanmaz çelikte yüksek hızla diş açmak	M 6 ~ M 20	B.134
DIN 371, DIN 376 para roscado a alta velocidad en aluminio, aceros suaves, aceros de herramientas y aceros inoxidables, refrigeración interna	DIN 371, DIN 376 для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях	DIN 371, DIN 376 do dużych prędkości gwintowania w aluminium, stali miękkiej, stali narzędziowej i stali nierdzewnej		
Synkro tappe, til flere forskellige materialer	Synchro gängtappar,för de flesta material	Sekronize kılavuz, geniş malzeme aralığı için	M 3 ~ M 12	B.135
Machos Synchro para un abanico amplio de materiales	Синхро метчики для широкого спектра материалов	Gwintowniki SYNCHRO, do szerokiej gamy materiałów		
Synkro tappe, til aluminium	Synchro gängtappar,för aluminium	Sekronize kılavuz, alüminyum için	M 3 ~ M 12	B.136
Machos Synchro para aluminio	Синхро метчики для алюминия	Gwintowniki SYNCHRO, do aluminium		

NAME		SPECIFICATION	
METRIC			
FORMING TAP			
 SP-XPF NEW	M	DIN 371, DIN 376, high performance, forming taps	DIN 371, DIN 376, high performance, allgemeine Anwendungen Gewindeformen
	V	DIN 371, DIN 376, alta prestazione, applicazioni generali di rullatura	DIN 371, DIN 376, haute performance, pour des applications universelles de refoulement
 S-XPF New Sizes	M	DIN 371, DIN 376, high performance, forming taps	DIN 371, DIN 376, high performance, allgemeine Anwendungen Gewindeformen
	V	DIN 371, DIN 376, alta prestazione, applicazioni generali di rullatura	DIN 371, DIN 376, haute performance, pour des applications universelles de refoulement
 OIL-S-XPF	M	DIN 371, DIN 376, high performance, forming taps, coolant through	DIN 371, DIN 376, high performance, allgemeine Anwendungen Gewindeformen, innere Kühlmittelzuführung
	V	DIN 371, DIN 376, alta prestazione, applicazioni generali di rullatura, lubrificazione centrali	DIN 371, DIN 376, haute performance, pour des applications universelles de refoulement, arrosage centrale
 S-XPF-6GX	M	DIN 371, DIN 376, high performance forming tap **6GX**	DIN 374, Hochleistungsgewindeformer **6GX**
	V	DIN 374, maschi a rullare ad Alta Performance **6GX**	DIN 374, tarauds à refouler haute performance 6GX
 S-XPF-7GX	M	DIN 371, DIN 376, high performance forming tap **7GX**	DIN 374, Hochleistungsgewindeformer **7GX**
	V	DIN 374, maschi a rullare ad Alta Performance **7GX**	DIN 374, tarauds à refouler haute performance **7GX**
 S-XPF-P	M	DIN 371, DIN 376, high performance forming tap, **4p chamfer**	DIN 374, Hochleistungsgewindeformer, **4 Gang**. Anschnittlänge
	V	DIN 374, maschi a rullare ad Alta Performance, **4 filleti**	DIN 374, tarauds à refouler haute performance, **4 entrée gun**
 S-SC-XPF	M	DIN 371, DIN 376, high performance forming tap**1,5p chamfer**	DIN 371, DIN 376, Hochleistungsgewindeformer,**1,5 Gang**. Anschnittlänge
	V	DIN 371, DIN 376, maschi a rullare ad Alta Performance, **1,5 filleti**	DIN 371, DIN 376, tarauds à refouler haute performance, **1,5 entrée gun**
 S-LT-XPF NEW	M	High performance forming tap, **Long shank**	Hochleistungsgewindeformer, **Langt Schaft**
	V	Maschi a rullare ad Alta Performance, **Gambo lungo**	Tarauds à refouler haute performance, **queue longue**
 R-XPF NEW	M	DIN 371, high performance forming tap.	DIN 371, Hochleistungsgewindeformer
	V	DIN 371, maschi a rullare ad Alta Performance.	DIN 371, tarauds à refouler haute performance
 V-NRT-B	M	DIN 371, DIN 376, for blind holes, for stainless steel & steel ≤ 850N/mm²	DIN 371, DIN 376, für Sacklöcher, für Stähl ≤ 850N/mm² und VA Stähle
	V	DIN 371, DIN 376 per fori ciechi, per inox e acciai ≤ 850N/mm²	DIN 371, DIN 376, pour trous bornes, pour aciers ≤ 850N/mm² et pour aciers inox
 V-NRT-B	M	DIN 371, 6GX, for blind holes, for stainless steel & steel ≤ 850N/mm²	DIN 371, 6GX, für Sacklöcher, für Stähl ≤ 850N/mm² und VA Stähle
	V	DIN 371, 6GX , per fori ciechi, per inox e acciai ≤ 850N/mm²	DIN 371, 6GX, pour trous bornes, pour aciers ≤ 850N/mm² et pour aciers inox
 V-NRT-P	M	DIN 371, DIN 376, for through holes, for aluminium, stainless steel and steel ≤ 850N/mm²	DIN 371, DIN 376 für Durchgangslöcher, für Aluminium, VA Stähle und für Stähl ≤ 850N/mm²
	V	DIN 371, DIN 376, per fori passanti, per alluminio, inox e acciai ≤ 850N/mm²	DIN 371, DIN 376 pour trous débouchants, pour aluminium, aciers inox et aciers ≤ 850N/mm²
 V-NRT-P	M	DIN 371, 6GX, for through holes, for aluminium, stainless steel and steel ≤ 850N/mm²	DIN 371, 6GX, für Durchgangslöcher, für Aluminium, VA Stähle und für Stähl ≤ 850N/mm²
	V	DIN 371, 6GX , per fori passanti, per alluminio, inox e acciai ≤ 850N/mm²	DIN 371, 6GX, pour trous débouchants, pour aluminium, aciers inox et aciers ≤ 850N/mm²
 1066-NRT-PLUS	M	ISO 529, for general forming applications	ISO 529, allgemeine Anwendungen Gewindeformen
	TIN	ISO 529, applicazioni generali di rullatura	ISO 529, pour des applications universelles de refoulement
OTHER TAPS			
 EX-MCT	M	For cast iron & steel ≤ 850N/mm², low lefthand helix, long shank, forming short chips	Leichte Linksspirale, langer Schaft, für Stahlguss und normale Stähle ≤ 850N/mm², guter Spanbruch
	OX	Per ghisa e acciai ≤ 850N/mm², elica sinistra bassa torsione, gambo lungo, producono trucioli corti	Pour fonte et acier ≤ 850N/mm², hélice faible à gauche, queue longue, pour former des copeaux courts.
 V-EM-SFT	M	Synchro taps, with front cut allowing calibration of tapered pilot holes, for cast aluminium	Kombigewindebohrer zum Aufbohren von Kernlöchern mit synchronisierter Spindel in legiertem Aluminium
	V	Maschi con fresa per calibrare fori conici, per aluminio da fusione	Tarauds synchro, coupe frontale pour calibrer les avant-trous coniques, pour alliage d'aluminium
METRIC FINE			
POT			
 VA-POT	MF	DIN 374, general purpose, also for stainless steel	DIN 374, für universelle Anwendungen und für VA - Stahll
	OX	DIN 374, per applicazioni generali e per inox	DIN 374, pour applications générales, également pour inox
 POT	MF	DIN 374, general purpose	DIN 374, für universelle Anwendungen
		DIN 374, per applicazioni generali	DIN 374, pour applications générales

SPECIFICATION			RANGE	PAGE
METRIC				
DIN 371, DIN 376, high performance, rulletappe	DIN 371, DIN 376, high performance	DIN 371, DIN 376, yüksek performans ovalama kılavuzu	M 3 ~ M 16	B.137
DIN 371, DIN 376, altas prestaciones, macho de laminación	DIN 371, DIN 376, высокопроизводительные накатные метчики	DIN 371, DIN 376, wydajne gniotowniki		
DIN 371, DIN 376, high performance, rulletappe	DIN 371, DIN 376, high performance	DIN 371, DIN 376, yüksek performans ovalama kılavuzu	M 1 ~ M 30	B.138
DIN 371, DIN 376, altas prestaciones, macho de laminación	DIN 371, DIN 376, высокопроизводительные накатные метчики	DIN 371, DIN 376, wydajne gniotowniki		
DIN 371, DIN 376, high performance, rulletappe, indvendig køling	DIN 371, DIN 376, high performance, rullgängtappar	DIN 371, DIN 376, yüksek performans ovalama kılavuzu, İçten soğutma	M 6 ~ M 45	B.139
DIN 371, DIN 376, altas prestaciones, macho de laminación, refrigeración interna	DIN 371, DIN 376, высокопроизводительные накатные метчики, охлаждением	DIN 371, DIN 376, wydajne gniotowniki, chłodzenie wewętrzne		
DIN 374, high performance rulletap **6GX**	DIN 374, High performance rullgängtap-par **6GX**	DIN 371, DIN 376, yüksek performans ovalama kılavuzu, **6GX**	M 3 ~ M 16	B.140
DIN 374, altas prestaciones, macho de laminación **6GX**	DIN 374, Высокопроизводительные накатные метчики **6GX**	DIN 371, DIN 376, wydajne gniotowniki, **6GX**		
DIN 374, high performance rulletap **7GX**	DIN 374, High performance rullgängtap-par **7GX**	DIN 371, DIN 376, yüksek performans ovalama kılavuzu, **7GX**	M 3 ~ M 16	B.141
DIN 374, altas prestaciones, macho de laminación **7GX**	DIN 374, Высокопроизводительные накатные метчики **7GX**	DIN 371, DIN 376, wydajne gniotowniki, **7GX**		
DIN 374, high performance rulletap, **4 x stigning** på opløb	DIN 374, High performance rullgängtappar, Fasingång 4 x stigning	DIN 371, DIN 376, yüksek performans ovalama kılavuzu, **4p pah**	M 3 ~ M 16	B.142
DIN 374, altas prestaciones, macho de laminación, chaflàn de entrada **4 pasos**	DIN 374, Высокопроизводительные накатные метчики, заходная фаска **4 витка**	DIN 371, DIN 376, wydajne gniotowniki, **Nakrój - 4p**		
DIN 371, DIN 376, high performance rulletap, **1,5 x stigning** på opløb	DIN 371, DIN 376, High performance rullgängtappar, Fasingång **1,5 x stigning**	DIN 371, DIN 376, yüksek performans ovalama kılavuzu, **1,5p pah**	M 3 ~ M 16	B.143
DIN 371, DIN 376, altas prestaciones, macho de laminación, chaflàn de entrada **1,5 pasos**	DIN 371, DIN 376, Высокопроизводительные накатные метчики, заходная фаска **1,5 витка**	DIN 371, DIN 376, wydajne gniotowniki, **Nakrój - 1,5p**		
High performance rulletap, **Langt skaft**	High performance rullgängtappar, Fasingång **Långt skaft**	Yüksek performans ovalama kılavuzu, **uzun şaft**	M 2 ~ M 12	B.144
Altas prestaciones, macho de laminación, chaflàn de entrada **mango larga**	Высокопроизводительные накатные метчики, заходная фаска **короткая длина**	Wydajne gniotowniki, **długi chwyt**		
DIN 371, high performance rulletap	DIN 371, High performance rullgängtappar,	DIN 371, yüksek performans ovalama kılavuzu	M 3 ~ M 6	B.145
DIN 371, altas prestaciones, macho de laminación,	DIN 371, Высокопроизводительные накатные метчики, заходная фаска	DIN 371, wydajne gniotowniki,		
DIN 371, DIN 376, til bundhuller, til rustfrit stål og alle ståltyper ≤ 850N/mm²	DIN 371, DIN 376, För bottenhål, i rostfritt stål & stål ≤ 850N/mm²	DIN 371, DIN 376, kör delikler için, paslanmaz çelik & ≤ 850N/mm² çelikler için	M 1 ~ M 12	B.146
DIN 371, DIN 376, para agujeros ciegos, para aceros inoxidables y todos los aceros hasta ≤ 850N/mm²	DIN 371, DIN 376, для глухих отверстий, для нержавеющих сталей и всех сталей ≤ 850Н/мм²	DIN 371, DIN 376, do otworów nieprzelotowych, do stali nierdzewnych i stali ≤ 850N/mm ²		
DIN 371, 6GX til bundhuller, til rustfrit stål og alle ståltyper ≤ 850N/mm²	DIN 371, 6GX, För bottenhål, i rostfritt stål & stål ≤ 850N/mm²	DIN 371, 6GX, kör delikler için, paslanmaz çelik & ≤ 850N/mm² çelikler için	M 2 ~ M 10	B.147
DIN 371, 6GX para agujeros ciegos, para aceros inoxidables y todos los aceros hasta ≤ 850N/mm²	DIN 371, 6GX для глухих отверстий, для нержавеющих сталей и всех сталей ≤ 850Н/мм²	DIN 371, 6GX, do otworów nieprzelotowych, do stali nierdzewnych i stali ≤ 850N/mm ²		
DIN 371, DIN 376 til gennemgående huller, til Aluminium, rustfrit stål og alle ståltyper ≤ 850N/mm²	DIN 371, DIN 376, För genomgående hål, i aluminium, rostfritt stål och stål ≤ 850N/mm²	DIN 371, DIN 376, açık delikler, alüminyum, paslanmaz çelik ve ≤ 850N/mm² çelikler için	M 2~ M 12	B.148
DIN 371, DIN 376 para agujeros pasantes, para aceros inoxidables y todos los aceros hasta ≤ 850N/mm²	DIN 371, DIN 376 для сквозных отверстий, для нержавеющих сталей и всех сталей ≤ 850Н/мм²	DIN 371, DIN 376, do otworów przelotowych, aluminium, stali nierdzewnych i stali ≤ 850N/mm ²		
DIN 371, 6GX til gennemgående huller, til Aluminium, rustfrit stål og alle ståltyper ≤ 850N/mm²	DIN 371, 6GX, För genomgående hål, i aluminium, rostfritt stål och stål ≤ 850N/mm²	DIN 371, 6GX, açık delikler, alüminyum, paslanmaz çelik ve ≤ 850N/mm² çelikler için	M 2 ~ M 10	B.149
DIN 371, 6GX para agujeros pasantes, para aceros inoxidables y todos los aceros hasta ≤ 850N/mm²	DIN 371, 6GX для сквозных отверстий, для нержавеющих сталей и всех сталей ≤ 850Н/мм²	DIN 371, 6GX, do otworów przelotowych, aluminium, stali nierdzewnych i stali ≤ 850N/mm ²		
til generelle rulle operationer	ISO 529, rullgängor, allround	ISO 529, Genel ovalama uygulamaları	M 2 ~ M 12	B.150
ISO 529, aplicación general laminación	ISO 529, накатные метчики общего назначения	ISO 529, gniotownik do ogólnych zastosowań		
Til støbejern & stål ≤ 850N/mm², svag venstresnoning, langt skaft, giver korte spåner	Machos Synchro para un abanico amplio de materiales, ranura helicoidal izquierda	Döküm & çelikler için ≤ 850N/mm², düşük açılı sol helis, uzun şaft, kısa talaş	M 6 ~ M 20	B.151
Para fundición de hierro y aceros ≤ 850N/mm², elice lenta a izquierdas, mango larga, formación de virutas cortas	для чугуна и сталей ≤ 850Н/ММ², левая пологая спираль, длинный хвостовик, Формирует короткую стружку	Do żeliwa i stali ≤ 850N/mm ², mała lewa spirala, długi chwyt, tworzący krótkie wióry		
Syncro tap med endeskær til gevindskæring i forstøbte huller, til legeret aluminium	Synchro gängtappar, med främre skär för uppstyrning av gjutna koniska hål, för Aluminium legeringar	Sekronize kılavuzlar, ön kesme ile konik pilot deliğin kalibrasyonuna izin verir, alüminyum döküm için	M 4 ~ M 16	B.152
Machos Synchro, con corte frontal que calibra el agujero previo de roscado, para aluminio aleado	Синхро метчики с передней режущей частью позволяющей калибровать конические пилотные отверстия, для литьевых алюминиевых сплавов	Gwintownik SYNCHRO, z pilotem kalibrującym stożkowe otwory w czasie gwintowania, odlewy aluminium		
METRIC FINE				
DIN 374, til generelt brug, også til rustfrit stål	DIN 374, All-round, också för rostfritt	DIN 374, genel kullanım, ayrıca paslanmaz çelik için	M 3 ~ M 24	B.153
DIN 374, para aplicación general, para aceros inoxidables	DIN 374, Общего назначения, и для нержавеющих сталей	DIN 374, uniwersalne, także do stali nierdzewnych		
DIN 374, til generelt brug	DIN 374, All-round	DIN 374, genel kullanım	M 4 ~ M 30	B.154
DIN 374, para aplicación general	DIN 374, Общего назначения	DIN 374, uniwersalne		

METRIC FINE

	NAME		SPECIFICATION	
POT	 CC-POT	MF	DIN 371, DIN 376 for stainless steel aluminium and steel	DIN 371, DIN 376 für VA - Stahl und Aluminium und Stahl
		CrN	DIN 371, DIN 376 per acciai inox e alluminio, acciai	DIN 371, DIN 376 pour inox et aluminium at aciers
SFT	 VA-SFT	MF	DIN 374, general purpose, also for stainless steel	DIN 374, für universelle Anwendungen und für VA - Stahll
		OX	DIN 374, per applicazioni generali e per inox	DIN 374, pour applications générales, également pour inox
	 SFT	MF	DIN 374, general purpose	DIN 374, für universelle Anwendungen
			DIN 374, per applicazioni generali	DIN 374, pour applications générales
	 SUS-SFT	MF	DIN 374, for stainless steel	DIN 374, für VA-Stahl
		OX	DIN 374, per inox e acciai dolci	DIN 374, également pour inox
	 CC-SFT	MF	DIN 374, for stainless steel aluminium and steel	DIN 374, für VA-Stahl, Aluminium und Stahl
		CrN	DIN 374, per acciai inox, alluminio e acciai	DIN 374, pour inox, aluminium et aciers
	 AL-SFT	MF	DIN 374, for aluminium	DIN 374, für Aluminium
			DIN 374, per alluminio	DIN 374, pour aluminium
MT	 GG-MT	MF	DIN 374, for grey cast iron & cast aluminium < 11 % Si	DIN 374, für Grauguss und Aluminiumguss < 11 % Si
		NI-OX	DIN 374, per ghisa grigia, ghisa d'alluminio < 11 % S	DIN 374, pour fonte grise, fonte d'aluminium < 11 % Si
	 VP-DC-MT	MF	DIN 374, synchro taps, for cast iron & aluminium	DIN 374, Synchro Bohrer für Grauguss und Aluminium
		V	DIN 374, Maschi Synchro per ghisa	DIN 374, tarauds synchro, pour fonte et aluminium
	 VPO-DC-MT	MF	DIN 374, synchro taps, coolant through, for cast iron and aluminium	DIN 374, Synchro Bohrer, innere Kühlmittelzuführung, für Grauguss und Aluminium
		V	DIN 374, alta velocità per alluminio, acciaio dolce, acciai per stampi e inox	DIN 374, für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA - Stahl
	 OIL-C-MT NEW	MF	DIN 371, DIN 376, synchro taps, coolant through, for cast iron.	DIN 371, DIN 376, Synchro Bohrer für Grauguss, Innere Kühlmittelzuführung,
		V	DIN 371, DIN 376, maschi Synchro per ghisa, lubrificazione centrali	DIN 371, DIN 376, tarauds synchro, pour fonte, arrosage central
SYNCHRO TAP	 Z-POT	MF	DIN 374, for high speed tapping in aluminium, mild steel, die steel & stainless steel	DIN 374, für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA - Stahl
		V	DIN 374, alta velocità per alluminio, acciaio dolce, acciai per stampi e inox	DIN 374, pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox
	 Z-SFT	MF	DIN 374, for high speed tapping in aluminium, mild steel, die steel & stainless steel	DIN 374, für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA - Stahl
		V	DIN 374, alta velocità per alluminio, acciaio dolce, acciai per stampi e inox	DIN 374, pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox
FORMING TAP	 S-XPF New Sizes	MF	DIN 374, high performance forming tap	DIN 374, Hochleistungsgewindeformer
		V	DIN 374, maschi a rullare ad Alta Performance	DIN 374, tarauds à refouler haute performance
	 OIL-S-XPF New Sizes	MF	DIN 374, high performance forming tap, coolant through	DIN 374, Hochleistungsgewindeformer, mit innerer Kühlmittelzufuhr
		V	DIN 374, maschi a rullare ad Alta Performance, con fori di lubrificazione	DIN 374, tarauds à refouler haute performance, avec arrosage central
	 S-XPF-P	MF	DIN 374, high performance forming tap, **4p chamfer**	DIN 374, Hochleistungsgewindeformer, **4 Gang. Anschnittlänge**
		V	DIN 374, maschi a rullare ad Alta Performance, **4 filleti**	DIN 374, tarauds à refouler haute performance, **4 entrée gun**
	 V-NRT-B	MF	DIN 374, for blind holes, for aluminium, stainless and steel ≤ 850N/mm²	DIN 374, für Sachlöcher, für Stahl ≤ 850 N/mm², Aluminiumund VA - Stahl
		V	DIN 374, per fori ciechi, per alluminio, inox e acciai ≤ 850N/mm²	DIN 374, pour trous bornes, pour aciers ≤ 850N/mm², aluminium et inox
	 V-NRT-P	MF	DIN 374, for blind holes, for aluminium, stainless and steel ≤ 850N/mm²	DIN 374, für Sachlöcher, für Stahl ≤ 850 N/mm², Aluminiumund VA - Stahl
		V	DIN 374, per fori ciechi, per alluminio, inox e acciai ≤ 850N/mm²	DIN 374, pour trous bornes, pour aciers ≤ 850N/mm², aluminium et inox

SPECIFICATION			RANGE	PAGE
METRIC FINE				
DIN 371, DIN 376 til rustfrit stål og aluminium, og stål	DIN 371, DIN 376 för rostfritt stål och aluminium, stål	DIN 371, DIN 376, paslanmaz çelikler, alüminyum ve çelik için	M 6 ~ M 24	B.155
DIN 371, DIN 376 para aceros inoxidables y aluminio, aceros	DIN 371, DIN 376 для нержавеющих сталей и алюминия, нержавеющих	DIN 371, DIN 376 do stali nierdzewych, aluminium i stali		
DIN 374, til generelt brug, også til rustfrit stål	DIN 374, All-round, också för rostfritt	DIN 374, genel kullanım, ayrıca paslanmaz çelik için	M 3 ~ M 24	B.156
DIN 374, para aplicación general, para aceros inoxidables	DIN 374, Общего назначения, и для нержавеющих сталей	DIN 374, uniwersalne, także do stali nierdzewnych		
DIN 374, til generelt brug	DIN 374, All-round	DIN 374, genel kullanım	M 4 ~ M 30	B.157
DIN 374, para aplicación general	IN 374, Общего назначения	DIN 374, uniwersalne		
DIN 374, til rustfrit stål	DIN 374, också för rostfritt	DIN 374, paslanmaz çelikler için	M 8 ~ M 24	B.158
DIN 374, para aceros inoxidables	DIN 374, для нержавеющих сталей	DIN 374, do stali nierdzewnych		
DIN 374, til rustfrit stål, aluminium og stål	DIN 374, för rostfritt stål och aluminium	DIN 374, paslanmaz çelikler, alüminyum ve çelik için	M 6 ~ M 24	B.159
DIN 374, para aceros inoxidables, aluminio y aceros	DIN 374, для нержавеющих сталей и алюминия	DIN 374, do stali nierdzewych, aluminium i stali		
DIN 374, til aluminium	DIN 374, för rostfritt stål, aluminium och stål	DIN 374, alüminyum için	M 8 ~ M 12	B.160
DIN 374, para aluminio	DIN 374, Для нержавеющих сталей и алюминия	DIN 374 do aluminium		
DIN 374, til støbejern & støbt aluminium < 11 % Si	DIN 374, för gråjärn & gjuten aluminium < 11 % Si	DIN 374, sfero döküm & dökme alüminyum < 11 % Si için	M 3 ~ M 24	B.161
DIN 374, para fundición de hierro y aluminio fundido < 11 % Si	DIN 374, для серого чугуна и литейных алюминиевых сплавов < 11 % Si	DIN 374, do żeliwa szarego i aluminium odlewanego <11% Si		
DIN 374, Syncro tap til støbejern & til aluminium	DIN 374, synchro gängtappar för gjutjärn & aluminium	DIN 374, sekronize kılavuzlar, döküm & alüminyum	M 8 ~ M 20	B.162
DIN 374, Machos Synchro, fundición de hierro y de aluminio	DIN 374, Синхро метчики, для серого чугуна и литейных алюминиевых сплавов	DIN 374, gwintowniki SYNCHRO z krótkim nakrojem do żeliwa i aluminium		
DIN 374, tarauds synchro, arrosage central, pour fonte et aluminium	DIN 374, för genomgående hål, kylkanaler, för gjutjärn & aluminium	DIN 374, sekronize kılavuzlar, içten soğutma, döküm & alüminyum için	M 8 ~ M 20	B.163
DIN 374, Machos Synchro, refrigeración interna, fundición de hierro y de aluminio	DIN 374, Синхро метчики с внутренним охлаждением для серого чугуна и литейных алюминиевых сплавов	DIN 374, gwintowniki SYNCHRO, chłodzenie wewnętrzne, do żeliw i aluminium		
DIN 371, DIN 376, syncro tappe, til støbejern, indvendig køling	DIN 371, DIN 376, synchro gängtapparkort, fаslängd, för gjutjärn,	DIN 371, DIN 376, sekronize kılavuzlar, içten soğutma, döküm	M 10 ~ M 14	B.164 - B.165
DIN 371, DIN 376, Machos Synchro para fundición de hierro, refrigeración interna	DIN 371, DIN 376, Синхро метчики для чугуна и алюминия с внутренним охлаждением	DIN 371, DIN 376, gwintowniki SYNCHRO z krótkim nakrojem,chłodzenie wewnętrzne, do żeliw		
DIN 374, til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål	DIN 371, for high speed tapping in aluminium, mild steel, die steel & stainless steel	DIN 371, DIN 376, alüminyum, orta çelik, kalıp çeliği & paslanmaz çelikte yüksek hızla diş açmak	M 3 ~ M 24	B.166
DIN 374, para roscado a alta velocidad en aluminio, aceros suaves, aceros de herramientas y aceros inoxidables	DIN 374, для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях	DIN 374 do dużych prędkości gwintowania w aluminium, stali miękkiej, stali narzędziowej i stali nierdzewnej		
DIN 374, til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål	DIN 371, for high speed tapping in aluminium, mild steel, die steel & stainless steel	DIN 371, DIN 376, alüminyum, orta çelik, kalıp çeliği & paslanmaz çelikte yüksek hızla diş açmak	M 3 ~ M 24	B.167
DIN 374, para roscado a alta velocidad en aluminio, aceros suaves, aceros de herramientas y aceros inoxidables	DIN 374, для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях	DIN 374 do dużych prędkości gwintowania w aluminium, stali miękkiej, stali narzędziowej i stali nierdzewnej		
DIN 374, high performance rulletap	DIN 374, High performance rullgängtappar	DIN 374, yüksek performans ovalama kılavuzu	M 8 ~ M 24	B.168
DIN 374, altas prestaciones, macho de laminación	DIN 374, Высокопроизводительные накатные метчики	DIN 374, wydajne gniotowniki		
DIN 374, high performance rulletap, indvendig køling	DIN 374, High performance rullgängtappar, kylkanaler	DIN 374, yüksek performans ovalama kılavuzu, içten soğutma	M 8 ~ M 24	B.169
DIN 374, altas prestaciones, macho de laminación, refrigeración interna	DIN 374, Высокопроизводительные накатные метчики с внутренним охлаждением	DIN 374, wydajne gniotowniki, chłodzenie wewnętrzne		
DIN 374, high performance rulletap, **4 x stigning på opløb**	DIN 374, High performance rullgängtappar, Fasingång **4 x stigning**	DIN 374, yüksek performans ovalama kılavuzu, **4p pah**	M 8 ~ M 20	B.170
DIN 374, altas prestaciones, macho de laminación, chaflàn de entrada **4 pasos**	DIN 374, Высокопроизводительные накатные метчики заходная фаска **4 витка**	DIN 374, wydajne gniotowniki, **Nakrój - 4p**		
DIN 374, indvendig køling, til stål ≤ 850N/mm², til aluminium & rustfrit stål	DIN 374, för botten hål, i aluminium, rostfritt stål och stål ≤ 850N/mm²	DIN 374, kör delikler için, alüminyum için, paslanmaz çelik & ≤ 850N/mm² çelikler için	M 8 ~ M 12	B.171
DIN 374, para aceros inoxidable y aluminio	DIN 374, с внутренним охлаждением. Для сталей ≤ 850H/MM², алюминия и нержавеющих сталей	DIN 374, do otworów nieprzelotowych, do aluminium,do stali nierdzewnych i stali ≤ 850N/mm ²		
DIN 374, indvendig køling, til stål ≤ 850N/mm², til aluminium & rustfrit stål	DIN 374, för botten hål, i aluminium, rostfritt stål och stål ≤ 850N/mm²	DIN 374, kör delikler için, alüminyum için, paslanmaz çelik & ≤ 850N/mm² çelikler için	M 8 ~ M 12	B.172
DIN 374, para aceros inoxidable y aluminio	DIN 374, с внутренним охлаждением. Для сталей ≤ 850H/MM², алюминия и нержавеющих сталей	DIN 374, do otworów nieprzelotowych, do aluminium,do stali nierdzewnych i stali ≤ 850N/mm ²		

NAME		SPECIFICATION	
UNC / UNJC			
POT			
 VA-POT	UNC	DIN 2182, DIN 2183, for general purpose, also for stainless steel	DIN 2182, DIN 2183, für universelle Anwendungen und für VA - Stahl
	OX	DIN 2182, DIN 2183, per applicazioni generali e per inox	DIN 2182, DIN 2183, pour applications générales également pour inox
 VA-POT	UNJC	DIN 2182, 3B, for general purpose, also for stainless steel	DIN 2182, 3B, für universelle Anwendungen und für VA - Stahl
	OX	DIN 2182, 3B, per applicazioni generalli e per inox	DIN 2182, 3B,pour applications générales également pour inox
 I066-POT	UNC	ISO 529, for general purpose	ISO 529, für universelle Anwendungen
	OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
 H-POT	UNJC	DIN 2182, for steel 25~45 HRC	DIN 2182, per acciai 25~45 HRC
	OX	DIN 2182, per acciai 25~45 HRC	DIN 2182, pour acier : dureté 25~45 HRC
 I066-POT-PLUS	UNC	ISO 529, general purpose, powdered metal	ISO 529, für universelle Anwendungen, Pulvermetall
	OX	ISO 529, per applicazioni generali, metallurgia delle polveri sinterizzate	ISO 529, pour applications générales, métallurgie des poudres
 E-POT	UNJC	DIN 2182, for nickel based alloys including Inconel 718	DIN 2182, für Inconel 718 und andere Legierungen aus Nickel
		DIN 2182, per inconel e altre leghe a base di nichel	DIN 2182, pour inconel 718 et autres alliages à base de nickel
 WHR-NI-POT	UNC	DIN 2182, for nickel based alloys including Inconel 718	DIN 2182, für Inconel 718 und andere Legierungen aus Nickel
	HR	DIN 2182, per inconel e altre leghe a base di nichel	DIN 2182, pour inconel 718 et autres alliages à base de nickel
 V-TI-POT	UNJC	DIN 2182, for titanium alloys (Ti-6Al-4V), 40~45 HRC	DIN 2182, für Titanlegierungen inkl. (Ti-6Al-V) : 40~45 HRC
	V	DIN 2182, per leghe di titanio (Ti-6Al-4V), 40~45 HRC	DIN 2182, pour alliages de titane (Ti-6Al-4V) : dureté 40~45 HRC
SFT			
 VA-SFT	UNC	DIN 2182, DIN 2183, for general purpose, also for stainless steel	DIN 2182, DIN 2183, für universelle Anwendungen und für VA - Stahl
	OX	DIN 2182, DIN 2183, per applicazioni generali e per inox	DIN 2182, DIN 2183, pour applications générales également pour inox
 VA-SFT	UNJC	DIN 2182, 3B, for general purpose, also for stainless steel	DIN 2182, 3B, für universelle Anwendungen und für VA - Stahl
	OX	DIN 2182, 3B, per applicazioni generali e per inox	DIN 2182, 3B, pour applications générales également pour inox
 I066-SFT	UNC	ISO 529, general purpose	ISO 529, für universelle Anwendungen
	OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
 HXL-SFT	UNC	Horizontal applications, oil and energy industry	Für horizontale Bearbeitung, für Öl- und Schwerindustrie
	OX	Per lavorazioni orizzontali, per Industria Petrolifera & Industria Pesante	Pour des opérations horizontales, pour l'industrie lourde et l'énergie
 VXL-SFT	UNC	Vertical applications, oil and energy industry	Für vertikale Bearbeitung, für Öl- und Schwerindustrie
	OX	Per lavorazioni verticali, per Industria Petrolifera & Industria Pesante	Pour des opérations verticales, pour l'industrie lourde et l'énergie
 CC-SFT	UNC	DIN 2182, DIN 2183, for stainless steel and aluminium	DIN 2182, DIN 2183, für VA - Stahl und Aluminium
	CrN	DIN 2182, DIN 2183, per acciai inox e alluminio	DIN 2182, DIN 2183, pour inox et aluminium
 H-SFT	UNJC	DIN 2182, for steel 25~45 HRC	DIN 2182, für Stahl 25~45 HRC
	OX	DIN 2182, per inox a acciai dolci 25~45 HRC	DIN 2182, pour acier : dureté 25~45 HRC
 I066-SFT-PLUS	UNC	ISO 529, general purpose, powdered metal	ISO 529, für universelle Anwendungen, Pulvermetall
	OX	ISO 529, per applicazioni generali, metal-lurgia delle polveri sinterizzate	ISO 529, für universelle Anwendungen, métallurgie des poudres
 E-SFT	UNJC	DIN 2182, for nickel based alloys including Inconel 718	DIN 2182, für Inconel 718 und andere Legierungen aus Nickel
		DIN 2182, per inconel e altre leghe a base di nichel	DIN 2182, pour inconel 718 et autres alliages à base de nickel
 WHR-NI-SFT	UNC	DIN 2182, for nickel based alloys including Inconel 718	DIN 2182, für Inconel 718 und andere Legierungen aus Nicke
	HR	DIN 2182, per inconel e altre leghe a base di nichel	DIN 2182, pour inconel 718 et autres alliages à base de nickel

SPECIFICATION			RANGE	PAGE
			UNC / UNJC	
DIN 2182, DIN 2183, til generelt brug også til rustfrit stål DIN 2182, DIN 2183, para aplicación general y para aceros inoxidables	DIN 2182, DIN 2183, allround och rostfritt stål DIN 2182, DIN 2183, Общего назначения и для нержавеющих сталей	DIN 2182, DIN 2183, genel kullanım için, ayrıca paslanmaz çelik için DIN 2182, DIN 2183, ogólnego przeznaczenia, także do stali nierdzewnych	N° 4 ~ 1″	B.173
DIN 2182, 3B, til generelt brug også til rustfrit stål DIN 2182, 3B, para aplicación general y para aceros inoxidables	DIN 2182, 3B, allround och rostfritt stål DIN 2182, 3B, Общего назначения и для нержавеющих сталей	DIN 2182, 3B, genel kullanım için, ayrıca paslanmaz çelik için DIN 2182, 3B, ogólnego przeznaczenia, także do stali nierdzewnych	N° 4 ~ 8	B.174
ISO 529, til generelt brug ISO 529, para aplicación general	ISO 529, allround ISO 529, Общего назначения	ISO 529, genel kullanım için ISO 529, ogólnego przeznaczenia	N° 1 ~ 1¼″	B.175
DIN 2182, til stål 25~45 HRC DIN 2182, для сталей 25~45 HRC	DIN 2182, för stål 25~45 HRC DIN 2182, для сталей 25~45 HRC	DIN 2182, 25~45 HRC çelik DIN 2182, do stali 25 ~45 HRC	N° 4 ~ 8	B.176
ISO 529, til generelt brug, Pulvermetall ISO 529, para aplicación general, HSS sinterizado	ISO 529, för diverse applikationer, pullver metall ISO 529, общего назначения, порошковая металлургия	ISO 529, genel kullanım için, toz metal ISO 529, uniwersalne, wykonane ze stali proszkowej	N° 4 ~ ½″	B.177
DIN 2182, til nikkellegeringer inklusiv Inconel 718 DIN 2182, para aleaciones de níquel incluido Inconel 718	DIN 2182, för nickelbaserade legeringar inklusive Inconel 718 DIN 2182, Для никелевых сплавов, включая Inconel 718	DIN 2182 ,inkonel 718 barındıran nikel bazlı alaşımlar için DIN 2182 do stopów na bazie niklu , w tym Inconel 718	N° 4 ~ 8	B.178
DIN 2182, til nikkellegeringer inklusiv Inconel 718 DIN 2182, para aleaciones de níquel incluido Inconel 718	DIN 2182, för nickelbaserade legeringar inklusive Inconel 718 DIN 2182, Для никелевых сплавов, включая Inconel 718	DIN 2182 ,inkonel 718 barındıran nikel bazlı alaşımlar için DIN 2182 do stopów na bazie niklu , w tym Inconel 718	N° 4 ~ 8	B.179
DIN 2182, til Titanium legeringer (Ti6Al-4V) : 40~45 HRC DIN 2182, para aleaciones de Titanio (Ti6Al-4V) : 40~45 HRC	DIN 2182, för titanium legeringar (Ti-6Al-4V), 40~45 HRC DIN 2182, для титановых сплавов (Ti6Al-4V) : 40~45 HRC	DIN 371, DIN 376 ,Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için DIN 2182 do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC	N° 4 ~ 8	B.180
DIN 2182, DIN 2183, til generelt brug også til rustfrit stål DIN 2182, DIN 2183, para aplicación general y para aceros inoxidables	DIN 2182, DIN 2183, allround och rostfritt stål DIN 2182, DIN 2183, Общего назначения и для нержавеющих сталей	DIN 2182, DIN 2183, genel kullanım için, ayrıca paslanmaz çelik için DIN 2182, DIN 2183, ogólnego przeznaczenia, także do stali nierdzewnych	N° 4 ~ 1″	B.181
DIN 2182, 3B, til generelt brug også til rustfrit stål DIN 2182, 3B, para aplicación general y para aceros inoxidables	DIN 2182, 3B, allround och rostfritt stål DIN 2182, 3B, Общего назначения и для нержавеющих сталей	DIN 2182, DIN 2183, genel kullanım için, ayrıca paslanmaz çelik için DIN 2182, DIN 2183, ogólnego przeznaczenia, także do stali nierdzewnych	N° 4 ~ 8	B.182
ISO 529, til generelt brug ISO 529, para aplicación general	ISO 529, för diverse applikationer ISO 529, общего назначения	ISO 529, genel kullanım için ISO 529, ogólnego przeznaczenia	N° 2 ~ 1¼″	B.183
Til horisontale operationer, til enegisektoren & svær industri Para roscado horizontal, para Industria Energetica y Pesada	För horizontale applikationer För olje och energi industrin Для горизонтальной нарезки резьбы, Для нефтегазовой и энергетической отраслей	Yatay uygulamalar, yağ ve enerji endüstrisi için Do aplikacji poziomych, przemysł naftowy i energetyka	¾″ ~2½″	B.184
Til vertikale operationer, til enegisektoren & svær industri Para roscado vertical, para Industria Energetica y Pesada	För vertikale applikationer, För olje och energi industrin Для вертикальной нарезки резьбы, Для нефтегазовой и энергетической отраслей	Dikey uygulamalar, yağ ve enerji endüstrisi için Do aplikacji pionowych, przemysł naftowy i energetyka	¾″ ~ 2½″	B.185
DIN 2182, DIN 2183, til rustfrit stål & aluminium DIN 2182, DIN 2183, para aceros inoxidables y aluminio	DIN 2182, DIN 2183, för rostfritt stål och aluminium DIN 2182, DIN 2183, для нержавеющих сталей и алюминия	DIN 2182, DIN 2183, paslanmaz çelikler, alüminyum için DIN 2182, DIN 2183, do stali nierdzewnych i aluminium	N° 4 ~ 1″	B.186
DIN 2182, til stål 25~45 HRC DIN 2182, para aceros 25~45 HRC	DIN 2182, för stål 25~45 HRC DIN 2182, для сталей 25~45 HRC	DIN 2182, 25~45 HRC çelik DIN 2182, do stali 25 ~45 HRC	N° 4 ~ 8	B.187
ISO 529, til generelt brug, Pulvermetalll ISO 529, para aplicación general, HSS sinterizado	ISO 529, för diverse applikationer, pullver metall ISO 529, общего назначения, порошковая металлургия	ISO 529, genel kullanım için, toz metal ISO 529, uniwersalne, wykonane ze stali proszkowej	N° 4 ~ ½″	B.188
DIN 2182, til nikkellegeringer inklusiv Inconel 718 DIN 2182, para aleaciones de níquel incluido Inconel 718	DIN 2182, för nickelbaserade legeringar inklusive Inconel 718 DIN 2182, для никелевых сплавов, включая Inconel 718	DIN 2182 ,inkonel 718 barındıran nikel bazlı alaşımlar için DIN 2182 do stopów na bazie niklu , w tym Inconel 718	N° 4 ~ 8	B.189
DIN 2182, til nikkellegeringer inklusiv Inconel 718 DIN 2182, para aleaciones de níquel incluido Inconel 718	DIN 2182, för nickelbaserade legeringar inklusive Inconel 718 DIN 2182, для никелевых сплавов, включая Inconel 718	DIN 371, DIN 376 ,inkonel 718 barındıran nikel bazlı alaşımlar için DIN 2182 do stopów na bazie niklu , w tym Inconel 718	N° 4 ~ 8	B.190

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	NAME		SPECIFICATION	
UNC / UNJC				
SFT	 V-TI-SFT	UNJC	DIN 2182, for titanium alloys (Ti-6Al-4V), 40~45 HRC	DIN 2182, für Titanlegierungen inkl. (Ti-6Al-V) : 40~45 HRC
		V	DIN 2182, per leghe di titanio (Ti-6Al-4V), 40~45 HRC	DIN 2182, pour alliages de titane (Ti-6Al-4V) : dureté 40~45 HRC
MT	 IO66-HT	UNC	ISO 529, general purpose	ISO 529, für universelle Anwendungen
			ISO 529, per applicazioni generali	ISO 529, pour applications générales
FORM. TAP	 S-XPF	UNC	DIN 2182, DIN 2183, high performance forming tap	DIN 2182, DIN 2183, Hochleistungs-gewindeformer
		V	DIN 2182, DIN 2183, maschi a rullare ad Alta Performance	DIN 2182, DIN 2183, tarauds à refouler haute performance
UNF / UNJF				
POT	 VA-POT	UNF	DIN 2182, DIN 2183, for general purpose also for stainless steel	DIN 2182, DIN 2183, für universelle Anwendungen und für VA - Stahl
		OX	DIN 2182, DIN 2183, per applicazioni generali e per inox	DIN 2182, DIN 2183, pour applications générales également pour inox
	 VA-POT	UNJF	DIN 2182, DIN 2183, 3B, for general purpose also for stainless steel	DIN 2182, DIN 2183, 3B, für universelle Anwendungen und für VA - Stahl
		OX	DIN 2182, DIN 2183, 3B, per applicazioni generali e per inox	DIN 2182, DIN 2183, 3B, pour applications générales également pour inox
	 IO66-POT	UNF	ISO 529, general purpose	ISO 529, für universelle Anwendungen
		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
	 H-POT	UNJF	DIN 2182, DIN 2183, for steel 25~45 HRC	DIN 2182, DIN 2183, für Stahl 25~45 HRC
		OX	DIN 2182, DIN 2183, per acciai 25~45 HRC	DIN 2182, DIN 2183, pour acier : dureté 25~45 HRC
	 IO66-POT-PLUS	UNF	ISO 529, general purpose, powdered metal	ISO 529, für universelle Anwendungen, Pulvermetall
		OX	ISO 529, per applicazioni generali, metallurgia delle polveri sinterizzate	ISO 529, métallurgie des poudres
	 E-POT	UNJF	DIN 2182, DIN 2183, for nickel based alloys including Inconel 718	DIN 2182, DIN 2183, für Inconel 718 und andere Legierungen aus Nickel
			DIN 2182, DIN 2183, per inconel e altre leghe a base di nickel	DIN 2182, DIN 2183, pour inconel 718 et autres alliages à base de nickel
	 WHR-NI-POT	UNJF	DIN 2182, DIN 2183, for nickel based alloys including Inconel 718	DIN 2182, DIN 2183, für Inconel 718 und andere Legierungen aus Nickel
		HR	DIN 2182, DIN 2183, per inconel e altre leghe a base di nicke	DIN 2182, DIN 2183, pour inconel 718 et autres alliages à base de nickel
	 V-TI-POT	UNJF	DIN 2182, DIN 2183, for titanium alloys (Ti-6Al-4V), 40~45 HRC	DIN 2182, DIN 2183, für Titanlegierungen inkl. (Ti-6Al-V) : 40~45 HRC
		V	DIN 2182, DIN 2183, per leghe di titanio (Ti-6Al-4V), 40~45 HRC	DIN 2182, DIN 2183, pour alliages de titane (Ti-6Al-4V) : dureté 40~45 HRC
SFT	 VA-SFT	UNF	DIN 2182, DIN 2183, for general purpose also for stainless steel	DIN 2182, DIN 2183, für universelle Anwendungen und für VA - Stahl
		OX	DIN 2182, DIN 2183, per applicazioni generali e per inox	DIN 2182, DIN 2183, pour applications générales également pour inox
	 VA-SFT	UNJF	DIN 2182, DIN 2183, 3B, for general purpose also for stainless steel	DIN 2182, DIN 2183, 3B, für universelle Anwendungen und für VA - Stahl
		OX	DIN 2182, DIN 2183, 3B, per applicazioni generali e per inox	DIN 2182, DIN 2183, 3B, pour applications générales également pour inox
	 IO66-SFT	UNF	ISO 529, general purpose	ISO 529, für universelle Anwendungen
		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
	 CC-SFT	UNJF	DIN 2182, DIN 2183, for stainless steel and aluminium	DIN 2182, DIN 2183, für VA - Stahl und Aluminium
		CrN	DIN 2182, per acciai inox e alluminio	DIN 2182, DIN 2183, pour inox et aluminium
	 H-SFT	UNJF	DIN 2182, DIN 2183, for steel 25~45 HRC	DIN 2182, DIN 2183, für Stahl 25~45 HRC
		OX	DIN 2182, DIN 2183, per acciai 25~45 HRC	DIN 2182, DIN 2183, pour acier : dureté 25~45 HRC
	 IO66-SFT-PLUS	UNF	ISO 529, general purpose, powdered metal	ISO 529, für universelle Anwendungen, Pulvermetall
		OX	ISO 529, per applicazioni generali, metallurgia delle polveri sinterizzate	ISO 529, métallurgie des poudres

SPECIFICATION			RANGE	PAGE
UNC / UNJC				
DIN 2182, til Titanium legeringer & (Ti-6Al-V) :40~45 HRC	DIN 2182, för titanium legeringar (Ti-6Al-4V), 40~45 HRC	DIN 2182 ,Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için	N° 4 ~ 8	B.191
DIN 2182, para aleaciones de Titanio & (Ti-6Al-V) : 40~45 HRC	DIN 2182, для титановых сплавов & (Ti-6Al-V) : 40~45 HRC	DIN 2182 do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC		
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ISO 529, para aplicación general	ISO 529, общего назначения	ISO 529, uniwersalne		
DIN 2182, DIN 2183, high performance rulletap	DIN 2182, DIN 2183, High performance rullgängtappar	DIN 2182, DIN 2183, yüksek performans ovalama kılavuzu	N° 5 ~ 1″	B.193
DIN 2182, DIN 2183, altas prestaciones, macho de laminación	DIN 2182, DIN 2183, Высокопроизводительные накатные метчики	DIN 2182, DIN 2183, wydajne gniotowniki		
UNF / UNJF				
DIN 2182, DIN 2183, til generelt brug også til rustfrit stål	DIN 2182, DIN 2183, allround och rostfritt stål	DIN 2182, DIN 2183, genel kullanım için, ayrıca paslanmaz çelik için	N° 6 ~ 1″	B.194
DIN 2182, DIN 2183, para aplicación general y para aceros inoxidables	DIN 2182, DIN 2183, Общего назначения и для нержавеющих сталей	DIN 2182, DIN 2183, ogólnego przeznaczenia, także do stali nierdzewnych		
DIN 2182, DIN 2183, 3B til generelt brug også til rustfrit stål	DIN 2182, DIN 2183, 3B allround och rostfritt stål	DIN 2182, DIN 2183,3B, genel kullanım için, ayrıca paslanmaz çelik için	N° 10 ~ ½″	B.195
DIN 2182, DIN 2183, 3B para aplicación general y para aceros inoxidables	DIN 2182, DIN 2183, 3B Общего назначения и для нержавеющих сталей	DIN 2182, DIN 2183, 3B, ogólnego przeznaczenia, także do stali nierdzewnych		
ISO 529, til generelt brug	ISO 529, för diverse applikationer	ISO 529, genel kullanım için	N° 0 ~ 1¼″	B.196
ISO 529, para aplicación general	ISO 529, общего назначения	ISO 529, ogólnego przeznaczenia		
DIN 2182, DIN 2183, til stål 25~45 HRC	DIN 2182, för stål 25~45 HRC	DIN 2182, 25~45 HRC çelik	N° 10 ~ ½″	B.197
DIN 2182, DIN 2183, para aceros 25~45 HRC	DIN 2182, DIN 2183, для сталей 25~45 HRC	DIN 2182, do stali 25 ~45 HRC		
ISO 529, til generelt brug, Pulvermetalll	ISO 529, för diverse applikationer, pullver metall	ISO 529, genel kullanım için, toz metal	N° 10 ~ ½″	B.198
ISO 529, para aplicación general, HSS sinterizado	ISO 529, общего назначения, порошковая металлургия	ISO 529, uniwersalne, wykonane ze stali proszkowej		
DIN 2182, DIN 2183, til nikkellegeringer inklusiv Inconel 718	DIN 2182, för nickelbaserade legeringar inklusive Inconel 718	DIN 2182 ,DIN 2183, inkonel 718 barındıran nikel bazlı alaşımlar için	N° 10 ~ ½″	B.199
DIN 2182, DIN 2183, para aleaciones de níquel incluido Inconel 718	DIN 2182, DIN 2183, для никелевых сплавов, включая Inconel 718	DIN 2182,DIN 2183, do stopów na bazie niklu , w tym Inconel 718		
DIN 2182, DIN 2183, til nikkellegeringer inklusiv Inconel 718	DIN 2182, för nickelbaserade legeringar inklusive Inconel 718	DIN 2182 ,DIN 2183, inkonel 718 barındıran nikel bazlı alaşımlar için	N° 10 ~ ½″	B.200
DIN 2182, DIN 2183, para aleaciones de níquel incluido Inconel 718	DIN 2182, DIN 2183, для никелевых сплавов, включая Inconel 718	DIN 2182,DIN 2183, do stopów na bazie niklu , w tym Inconel 718		
DIN 2182, DIN 2183, til Titanium legeringer 40~45 HRC	DIN 2182, DIN 2183, för titanium legeringar (Ti-6Al-4V), 40~45 HRC	DIN 2182 ,DIN 2183, Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için	N° 10 ~ ½″	B.201
DIN 2182, DIN 2183, para aleaciones de Titanio 40~45 HRC	DIN 2182, DIN 2183, для титановых сплавов 40~45 HRC	DIN 2182, DIN 2183, do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC		
DIN 2182, DIN 2183, til generelt brug også til rustfrit stål	DIN 2182, DIN 2183, allround och rostfritt stål	DIN 2182, DIN 2183, genel kullanım için, ayrıca paslanmaz çelik için	N° 6 ~ 1″	B.202
DIN 2182, DIN 2183, para aplicación general y para aceros inoxidables	DIN 2182, DIN 2183, Общего назначения и для нержавеющих сталей	DIN 2182, DIN 2183, ogólnego przeznaczenia, także do stali nierdzewnych		
DIN 2182, DIN 2183, 3B til generelt brug også til rustfrit stål	DIN 2182, DIN 2183, 3B allround och rostfritt stål	DIN 2182, DIN 2183, genel kullanım için, ayrıca paslanmaz çelik için	N° 10 ~ ½″	B.203
DIN 2182, DIN 2183, 3B para aplicación general y para aceros inoxidables	DIN 2182, DIN 2183, 3B Общего назначения и для нержавеющих сталей	DIN 2182, DIN 2183, ogólnego przeznaczenia, także do stali nierdzewnych		
ISO 529, til generelt brug	ISO 529, för diverse applikationer	ISO 529, genel kullanım için	N° 2 ~ 1¼″	B.204
ISO 529, para aplicación general	ISO 529, общего назначения	ISO 529, uniwersalne		
DIN 2182, DIN 2183, til rustfrit stål, stål & aluminium	DIN 2182, DIN 2183, för rostfritt stål och aluminium	DIN 2182, DIN 2183, paslanmaz çelikler, alüminyum için	N° 10 ~ 1″	B.205
DIN 2182, DIN 2183, para aceros inoxidables, para aceros y aluminio	DIN 2182, DIN 2183, för rostfritt stål och aluminium	DIN 2182, DIN 2183, do stali nierdzewnych i aluminium		
DIN 2182, DIN 2183, til stål 25~45 HRC	DIN 2182, för stål 25~45 HRC	DIN 2182, 25~45 HRC çelik	N° 10 ~ ½″	B.206
DIN 2182, DIN 2183, para aceros 25~45 HRC	DIN 2182, DIN 2183, для сталей 25~45 HRC	DIN 2182, do stali 25 ~45 HRC		
ISO 529, til generelt brug, Pulvermetalll	ISO 529, för diverse applikationer, pullver metall	ISO 529, genel kullanım için, toz metal	N° 10 ~ ½″	B.207
ISO 529, para aplicación general, HSS sinterizado	ISO 529, общего назначения, порошковая металлургия	ISO 529, uniwersalne, wykonane ze stali proszkowej		

	NAME		SPECIFICATION	
UNF / UNJF				
SFT	 E-SFT	UNJF	DIN 2182, DIN 2183, for nickel based alloys including Inconel 718 DIN 2182, DIN 2183, per inconel e altre leghe a base di nickel	DIN 2182, DIN 2183, für Inconel 718 und andere Legierungen aus Nickel DIN 2182, DIN 2183, pour inconel 718 et autres alliages à base de nickel
SFT	 WHR-NI-SFT	UNJF HR	DIN 2182, DIN 2183, for nickel based alloys including Inconel 718 DIN 2182, DIN 2183, per inconel e altre leghe a base di nickel	DIN 2182, DIN 2183, für Inconel 718 und andere Legierungen aus Nickel DIN 2182, DIN 2183, pour inconel 718 et autres alliages à base de nickel
SFT	 V-TI-SFT	UNJF V	DIN 2182, DIN 2183, for titanium alloys (Ti-6Al-4V), 40~45 HRC DIN 2182, DIN 2183, per leghe di titanio (Ti-6Al-4V), 40~45 HRC	DIN 2182, DIN 2183, für Titanlegierungen inkl. (Ti-6Al-V) : 40~45 HRC DIN 2182, DIN 2183, pour alliages de titane (Ti-6Al-4V) : dureté 40~45 HRC
MT	 I066-HT	UNF	ISO 529, general purpose ISO 529, per applicazioni generali	ISO 529, für universelle Anwendungen ISO 529, pour applications générales
FORM. TAP	 S-XPF	UNF V	DIN 2182, DIN 2183, high performance forming tap DIN 2182, DIN 2183, maschi a rullare ad Alta Performance	DIN 2182, DIN 2183, Hochleistungs-gewindeformer DIN 2182, DIN 2183, tarauds à refouler haute performance
UN				
SFT	 HXL-SFT	UN OX	Horizontal applications, oil and energy industry Per lavorazioni orizzontali, per Industria Petrolifera & Industria Pesante	Für horizontale Bearbeitung, für Öl- und Schwerindustrie Pour des opérations horzontales, pour l'industrie lourde et l'énergie
SFT	 VXL-SFT	UN OX	Vertical applications, oil and energy industry Per lavorazioni verticali, per Industria Petrolifera & Industria Pesante	Für vertikale Bearbeitung, für Öl- und Schwerindustrie Pour des opérations verticales, pour l'industrie lourde et l'énergie
Helicoil - EG MJ (STI)				
POT	 H-HL-POT	MJ OX	DIN 371, for steel 25~45 HRC DIN 371, per acciai 25~45 HRC	DIN 371, für Stahl 25~45 HRC DIN 371, pour acier : dureté 25~45 HRC
POT	 E-HL-POT	MJ	DIN 371, for nickel based alloys including Inconel 718 DIN 371, per inconel e altre leghe a base di nickel	DIN 371, für Inconel 718 und andere Legierungen aus Nickel DIN 371, pour inconel 718 et autres alliages à base de nickel
SFT	 H-HL-SFT	MJ OX	DIN 371, for steel 25~45 HRC DIN 371, per acciai 25~45 HRC	DIN 371, für Stahl 25~45 HRC DIN 371, pour acier : dureté 25~45 HRC
SFT	 E-HL-SFT	MJ	DIN 371, for nickel based alloys including Inconel 718 DIN 371, per inconel e altre leghe a base di nickel	DIN 371, für Inconel 718 und andere Legierungen aus Nickel DIN 371, pour inconel 718 et autres alliages à base de nickel
Helicoil - EGM (STI)				
SFT	 CC-HL-SFT	M CrN	DIN 371, DIN 376, for stainless steel and aluminium DIN 371, DIN 376, per acciai inox e alluminio	DIN 371, DIN 376, für VA - Stahl und Aluminium DIN 371, DIN 376, pour inox et aluminium

SPECIFICATION			RANGE	PAGE
UNF / UNJF				
DIN 2182, DIN 2183, til nikkellegeringer inklusiv Inconel 718	DIN 2182, för nickelbaserade legeringar inklusive Inconel 718	DIN 2182 ,DIN 2183, inkonel 718 barındıran nikel bazlı alaşımlar için	N° 10 ~ ½"	B.208
DIN 2182, DIN 2183, para aleaciones de níquel incluido Inconel 718	DIN 2182, DIN 2183, для никелевых сплавов, включая Inconel 718	DIN 2182,DIN 2183, do stopów na bazie niklu , w tym Inconel 718		
DIN 2182, DIN 2183, til nikkellegeringer inklusiv Inconel 718	DIN 2182, för nickelbaserade legeringar inklusive Inconel 718	DIN 2182 ,DIN 2183, inkonel 718 barındıran nikel bazlı alaşımlar için	N° 10 ~ ½"	B.209
DIN 2182, DIN 2183, para aleaciones de níquel incluido Inconel 718	DIN 2182, DIN 2183, для никелевых сплавов, включая Inconel 718	DIN 2182,DIN 2183, do stopów na bazie niklu , w tym Inconel 718		
DIN 2182, DIN 2183, til Titanium legeringer 40~45 HRC	DIN 2182, DIN 2183, för titanium legeringar (Ti-6Al-4V), 40~45 HRC	DIN 2182 ,DIN 2183, Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için	N° 10 ~ ½"	B.210
DIN 2182, DIN 2183, para aleaciones de Titanio 40~45 HRC	DIN 2182, DIN 2183, для титановых сплавов 40~45 HRC	DIN 2182, DIN 2183, do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC		
ISO 529, til generelt brug	ISO 529, för diverse applikationer	ISO 529, genel kullanım için	N° 0 ~ 1"	B.211
ISO 529, para aplicación general	ISO 529, общего назначения	ISO 529, ogólnego przeznaczenia		
DIN 2182, DIN 2183, high performance rulletap	DIN 2182, DIN 2183, High performance rullgängtappar	DIN 2182, DIN 2183, yüksek performans ovalama kılavuzu	N° 6 ~ 1"	B.212
DIN 2182, DIN 2183, altas prestaciones, macho de laminación	DIN 2182, DIN 2183, Высокопроизводительные накатные метчики	DIN 2182, DIN 2183, wydajne gniotowniki		
UN				
Til horisontale operationer, til enegisektoren & svær industri	För horisontala applikationer För olje och energi industrin	Dikey uygulamalar, yağ ve enerji endüstrisi için	11/8" ~ 2 ½"	B.184
Para roscado horizontal, para Industria Energetica y Pesada	Для горизонтальной нарезки резьбы, Для нефтегазовой и энергетической отраслей	Do aplikacji poziomych, przemysł naftowy i energetyka		
Til vertikale operationer, til enegisektoren & svær industri	För vertikala applikationer, För olje och energi industrin	Dikey uygulamalar, yağ ve enerji endüstrisi için	11/8" ~ 2 ½"	B.185
Para roscado vertical, para Industria Energetica y Pesada	Для горизонтальной нарезки резьбы, Для нефтегазовой и энергетической отраслей	Do aplikacji pionowych, przemysł naftowy i energetyka		
Helicoil - EG MJ (STI)				
DIN 371, til stål 25~45 HRC	DIN 371, för stål 25~45 HRC	DIN 371, 25~45 HRC çelik	MJ 2 ~ MJ 10	B.213
DIN 371, para aceros 25~45 HRC	DIN 371, Для стали 25~45 HRC	DIN 371, do stali 25 ~45 HRC		
DIN 371, til nikkellegeringer inklusiv Inconel 718	DIN 371, för nickelbaserade legeringar inklusive Inconel 718	DIN 371, inkonel 718 barındıran nikel bazlı alaşımlar için	MJ 2 ~ MJ 10	B.214
DIN 371, para aleaciones de níquel incluido Inconel 718	DIN 371, для никелевых сплавов, включая Inconel 718,	DIN 371, do stopów na bazie niklu , w tym Inconel 718		
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DIN 371, para aleaciones de níquel incluido Inconel 718	DIN 371, для никелевых сплавов, включая Inconel 718,	DIN 371, do stopów na bazie niklu , w tym Inconel 718		
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		OX	DIN 2182, per acciai 25~45 HRC	DIN 2182, pour acier : dureté 25~45 HRC
	 E-HL-POT	UNJC	DIN 2182, for nickel based alloys including Inconel 718	DIN 2182, für Inconel 718 und andere Legierungen aus Nickel
			DIN 2182, per inconel e altre leghe a base di nickel	DIN 2182, pour inconel 718 et autres alliages à base de nickel
SFT	 H-HL-SFT	UNJC	DIN 2182, for steel 25~45 HRC	DIN 2182, für Stahl 25~45 HRC
		OX	DIN 2182, per acciai 25~45 HRC	DIN 2182, pour acier : dureté 25~45 HRC
	 E-HL-SFT	UNJC	DIN 2182, for nickel based alloys including Inconel 718	DIN 2182, für Inconel 718 und andere Legierungen aus Nickel
			DIN 2182, per inconel e altre leghe a base di nickel	DIN 2182, pour inconel 718 et autres alliages à base de nickel
Helicoil - EG UNJF (STI)				
POT	 H-HL-POT	UNJF	DIN 2182, DIN 2183, for steel 25~45 HRC	DIN 2182, DIN 2183, für Stahl 25~45 HRC
		OX	DIN 2182, DIN 2183, per acciai 25~45 HRC	DIN 2182, DIN 2183, pour acier : dureté 25~45 HRC
	 E-HL-POT	UNJF	DIN 2182, DIN 2183 for nickel based alloys including Inconel 718	DIN 2182, DIN 2183 für Inconel 718 und andere Legierungen aus Nickel
			DIN 2182, DIN 2183 per inconel e altre leghe a base di nickel	DIN 2182, DIN 2183 pour inconel 718 et autres alliages à base de nickel
SFT	 CC-HL-SFT	UNJF	DIN 2182, DIN 2183, for stainless steel and aluminium	DIN 2182, DIN 2183, für VA - Stahl und Aluminium
		CrN	DIN 2182, DIN 2183, per acciai inox e alluminio	DIN 2182, DIN 2183, pour inox et aluminium
	 H-HL-SFT	UNJF	DIN 2182, DIN 2183, for steel 25~45 HRC	DIN 2182, DIN 2183, für Stahl 25~45 HRC
		OX	DIN 2182, DIN 2183, per acciai 25~45 HRC	DIN 2182, DIN 2183, pour acier : dureté 25~45 HRC
	 E-HL-SFT	UNJF	DIN 2182, DIN 2183 for nickel based alloys including Inconel 718	DIN 2182, DIN 2183, für Inconel 718 und andere Legierungen aus Nickel
			DIN 2182, DIN 2183, per inconel e altre leghe a base di nickel	DIN 2182, DIN 2183,pour inconel 718 et autres alliages à base de nickel
BSW				
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		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
SFT	 IO66-SFT	BSW	ISO 529, general purpose	ISO 529, für universelle Anwendungen
		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
MT	 IO66-HT	BSW	ISO 529, general purpose	ISO 529, für universelle Anwendungen
			ISO 529, per applicazioni generali	ISO 529, pour applications générales
BSF				
POT	 IO66-POT	BSF	ISO 529, general purpose	ISO 529, für universelle Anwendungen
		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
SFT	 IO66-SFT	BSF	ISO 529, general purpose	ISO 529, für universelle Anwendungen
		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
MT	 IO66-HT	BSF	ISO 529, general purpose	ISO 529, für universelle Anwendungen
			ISO 529, per applicazioni generali	ISO 529, pour applications générales

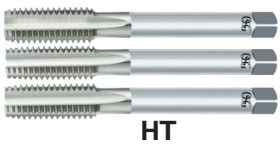
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DIN 2182, para aleaciones de níquel incluido Inconel 718	DIN 2182, для никелевых сплавов, включая Inconel 718,	DIN 2182, do stopów na bazie niklu , w tym Inconel 718		
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DIN 2182, til nikkellegeringer inklusiv Inconel 718	DIN 2182, för nickelbaserade legeringar inklusive Inconel 718	DIN 2182, inkonel 718 barındıran nikel bazlı alaşımlar için	N° 4 ~ 8	B.221
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Helicoil - EG UNJF (STI)				
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		OX	ISO 529, per applicazioni generali, metallurgia delle polveri sinterizzate	ISO 529, pour applications générales, métallurgie des poudres
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		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
	 I066-SFT-PLUS	BA	SO 529, general purpose	ISO 529, für universelle Anwendungen
		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
MT	 I066-HT	BA	ISO 529, general purpose	ISO 529, für universelle Anwendungen
			ISO 529, per applicazioni generali	ISO 529, pour applications générales
G (BSP)				
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			DIN 5156, per applicazioni generali	DIN 5156, pour applications générales
	 I066-POT	G	ISO 529, general purpose	ISO 529, für universelle Anwendungen
		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
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		OX	DIN 5156, per applicazioni generali,e per inox	DIN 5156, pour applications générales également pour inox
	 SFT	G	DIN 5156, general purpose	DIN 5156, für universelle Anwendungen
			DIN 5156, per applicazioni generali	DIN 5156, pour applications générales
	 I066-SFT	G	ISO 529, general purpose	ISO 529, für universelle Anwendungen
		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
	 CC-SFT-SPT	G	DIN 5156, for stainless steel aluminium and steel	DIN 5156, für VA-Stahl, Aluminium und Stahl
		CrN	DIN 5156, per acciai inox, alluminio e acciai	DIN 5156, pour inox, aluminium et aciers
	 SH-SFT	G	DIN 5156, low helix, for steel ≥ 1100N/mm²	DIN 5156,Leichte Spirale, für Stahl ≥ 1100N/mm²
			DIN 5156, elica bassa torsione, per acciai ≥ 1100N/mm²	DIN 5156, élice réduite, pour aciers ≥ 1100N/mm²
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		OX	DIN 5156 , per ghise grige, ghise d'alluminio < 11 % si	DIN 5156 , pour fonte grise, fonte d'aluminium < 11 % si
SPT	 VX-OT-SPT	G	DIN 5156, for hardened steel < 62 HRC	DIN 5156, für gehärtete Stähle < 62HRC
		V	DIN 5156, per acciai temprati < 62 HRC	Din 5156 pour les aciers supérieur à 62Hrc
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ISO 529, til generelt brug	ISO 529, för diverse applikationer	ISO 529, genel kullanım için	BA 2 ~ BA 6	B.236
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ISO 529, til generelt brug	ISO 529, för diverse applikationer	ISO 529, genel kullanım için	BA 0 ~ BA 16	B.237
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		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
NPT				
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		OX	ISO 529, per applicazioni generali	ISO 529, pour applications générales
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		OX	DIN 352, HSSE-V3, per applicazioni generali	DIN 352, HSSE-V3, pour applications générales
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		M	DIN 352, HSS, general purpose	DIN 352, HSS, für universelle Anwendungen
			DIN 352, HSS, per applicazioni generali	DIN 352, HSS, pour applications générales
		G	DIN 352, HSSE-V3, general purpose	DIN 352, HSSE-V3, für universelle Anwendungen
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			Carburo micrograna-distruggi - maschi	Carbure, pour extraction de tarauds cassés

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DIN 352, HSSE-V, para aplicación general	DIN 352, HSSE-V, общего назначения	DIN 352, HSSE-V3, ogólnego przeznaczenia		
Drills for removing broken taps				
Til fjernelse af brudte gevindtappe	För borttagning av brutna gängtappar	Karbür, kırılmış kılavuzları çıkarmak için	2 ~ 12 (≤ 2 D)	C.64
Para extraer machos rotos	Для удаления сломанных метчиков	VHM do usuwania złamanych gwintowników		

Diversification of work materials

Due to use of high-hardness materials exceeding 50HRC,heat resistant steel, and even brittle materials, small-diameter internal threads are becoming increasingly difficult to machine.

Machining equipment constaints

Along with the need for ultra-high speed and high precision operations, small machining centers without reverse function (tap cycles) have emerged.

High precision and high quality of internal threads

The demands for internal threads are becoming increasingly difficult, such as "no room in pilot holes", "high quality with no burrs", and "high precision internal threads".

Coolant constaints

Standard taps have difficulty machining nickel-based alloys with water-soluble coolant.



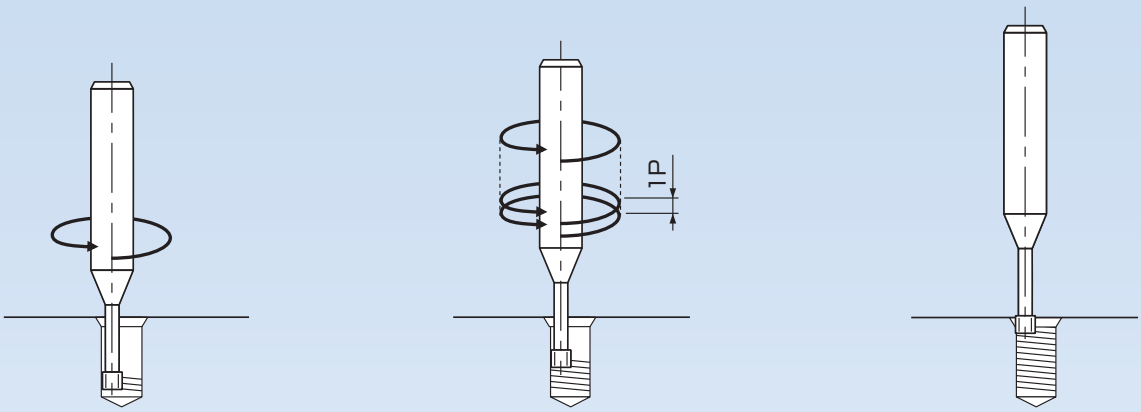
WH-VM-PNC

OSG'S answer to couter these various problems is WH-VM-PNC.

1. **The 3-crest thread lenght reduces cutting forces and applies a low load to the tool and equipment**
2. **A short overall lenght of 40mm for superb ease of use.**
3. **It use WXS Coating, with a proven track record on end mills for high hardness materials, and a exclusive carbide base material.**

Here is a new lineup of products that you can trust for machining operations that ordinary taps are unable to satisfy.

Machining method (Heat resistant alloys/High hardness materials)



1. **Machine three pitches at the bottom of the hole**
2. **Repeat arc cutting movement only 1P in the Z axial direction for each rotation.**
2. **To finish, machine the entrance of the hole.**

Recommended Cutting Conditions

WORK MATERIAL		TAPPING SPEED (m/mm)	FEED (mm/t)
NICKEL ALLOYS	Inconel®	20~60	0,01~0,03
TITANIUM ALLOYS	Ti-6Al-4V	20~60	0,01~0,03

WH-VM-PNC

METRIC, U & UNC
- Thread mill for small size
- M2 - M5

METRISCH, U & UNC
- Gewindefräser für kleine Abmessungen
- M2 - M5

METRICO, U & UNC
- Micro Frese a filettare
- M2 - M5

METRIQUE, U & UNC
- Fraises à fileter de petites dimensions
- M2 - M5

METRIK, U & UNC
- Küçük ölçüler için diş frezesi
- M2 - M5

METRISK, U & UNC
- Gevindfræser for små størrelser
- M2 - M5

METRISK, U & UNC
- Gängfräsar för små diametrar
- M2 - M5

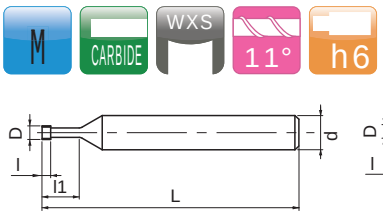
METRICO, U & UNC
- Fresado de roscas pequeñas
- M2 - M5

МЕТРИЧЕСКИЙ, U & UNC
- Резьбофреза для малых серий
- M2 - M5

METRYCZNY, U & UNC
- Frez do małych wymiarów gwintów
- M2 - M5

GO TO LIVE STOCK CHECK

M,S U,UNJ





	EDP	Thread	Min. Cutting bore dia.	P	L	l	l1	D	d	ZΔ	Stock	Price
New sizes	3900495	M	M1	0,25	40	0,25	2,75	0,72	3	3	●	
New sizes	3900496	M	M1,2	0,25	40	0,25	3,25	0,92	3	3	●	
New sizes	3900497	M	M1,4	0,3	40	0,3	3,8	1,05	3	3	●	
New sizes	3900498	M	M1,6	0,35	40	0,35	4,35	1,2	3	3	●	
New sizes	3900499	M	M1,7 ~ M1,8	0,35	40	0,35	4,85	1,3	3	3	●	
	3900500	M	M2	0,4	40	1,2	4,4	1,5	6	3	●	
	3900501	M	M2,5 ~ M2,6	0,45	40	1,4	5,6	1,9	6	3	●	
	3900502	M	M3	0,5	40	1,5	6,5	2,4	6	3	●	
	3900503	M	M4	0,7	40	2,1	8,7	3,1	6	3	●	
	3900504	M	M5	0,8	40	2,4	10,8	4	6	3	●	

	EDP	Thread	Min. Cutting bore dia.	P	L	l	l1	D	d	ZΔ	Stock	Price
New sizes	3900495	S	S1	0,25	40	0,25	2,75	0,72	3	3	●	
New sizes	3900496	S	S1,2	0,25	40	0,25	3,25	0,92	3	3	●	
New sizes	3900497	S	S1,4	0,3	40	0,3	3,8	1,05	3	3	●	

	EDP	Thread	Min. Cutting bore dia.	P	L	l	l1	D	d	ZΔ	Stock	Price
	3900513	U, UNJ	N°8	32	40	2,4	9,1	3,2	6	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

WH-VM-PNC

WORK MATERIAL		TAPPING SPEED (m/min)	FEED (mm/tooth)
LOW TENSILE STRENGTH Steel	C~0,25%	60~90	0,02~0,08
MEDIUM TENSILE STRENGTH Steel	C~0,25% ~ 0,45%	60~90	0,02~0,08
HIGH TENSILE STRENGTH Steel	C0,45%~	60~90	0,02~0,08
ALLOY Steel	SCM	30~60	0,01~0,03
HARDENED Steel	25~45 HRC	30~60	0,01~0,03
	45~55 HRC	30~60	0,01~0,03
	50~60 HRC	-	-
STAINLESS Steel	SUS	60~90	0,02~008
TOOL Steel	SKD	-	-
CAST Steel	SC	40~65	0,02~0,09
CAST IRON	FC	50~100	0,03~0,1
DUCTILE CAST IRON	FCD	50~70	0,03~0,1
COPPER	Cu	-	-
BRASS	Bs	-	-
BRASS CASTING	BsC	50~100	0,02~0,06
BRONZE	PB	50~100	0,02~0,06
ALUMUNIUM ROLLED Steel	AL	50~100	0,02~0,06
ALUMINIUM ALLOY CASTING	AC, ADC	50~100	0,02~0,06
MAGNESIUM ALLOY CASTING	MC	50~100	0,02~0,06
ZINC ALLOY CASTING	ZDC	50~100	0,02~0,06
TITANIUM ALLOYS	Ti-6AL-4V	20~60	0,01~0,03
NICKEL ALLOYS	Inconel®	20~60	0,01~0,03
THERMO SETTING PLASTIC	-	50~100	0,02~0,06
THERMO PLASTIC	-	50~100	0,02~0,06

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

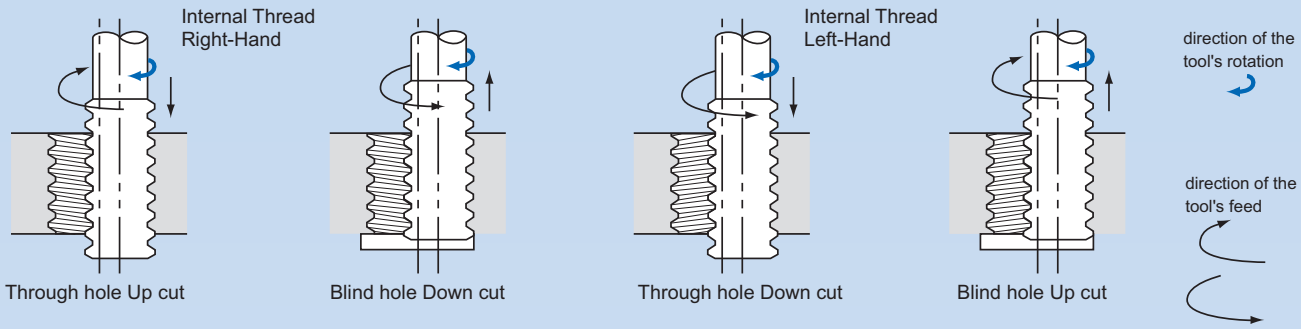
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 60~90 m/min	○ 60~90 m/min	○ 60~90 m/min	○ 30~60 m/min	◎ 30~60 m/min	◎ 30~60 m/min	◎ 30~60 m/min		○ 60~90 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~70 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
		○ 50~100 m/min		○ 50~100 m/min	○ 50~100 m/min	○ 50~100 m/min	○ 50~100 m/min	◎ 20~60 m/min	◎ 20~60 m/min	○ 50~100 m/min	○ 50~100 m/min	

● Delivery from stock
○ Available on short notice

Machining Technique

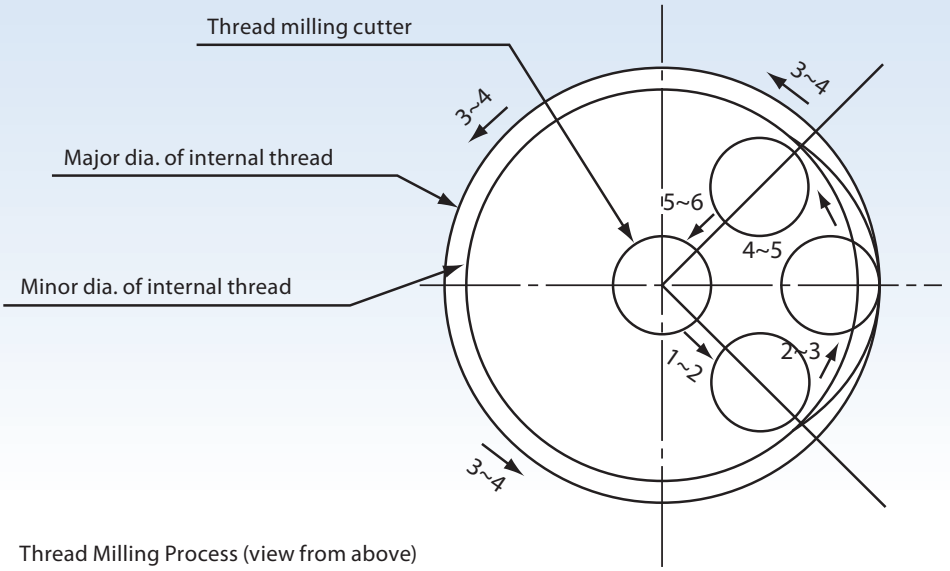
OSG's Thread Mills are developed for thread milling on a 3-Axis CNC controlled machine tool.
Threads are produced by advancing one pitch feed per revolution in the axial direction, utilizing the planet-like rotation and revolution movements of the tool. Internal/external and right/left hand threads can all be produced with this one tool by simply changing the direction of rotation and/or feed.



Threading Process

1-2 Move to edge (maintain clearance)
2-3 Cut with helical milling
3-4 Mill the circumference of the circle
4-5 Pull away from the edge
5-6 Remove tool

The transition between the start and finish of the milling operation must be smooth and the appropriate amount of feed is essential for minimizing milling resistance. There are many different methods for using this tool, but our research has shown that this technique provides the most precise and efficient operation.



Thread Milling Process (view from above)

WXO-ST-PNC

METRIC & METRIC FINE
- Higher speed due to spiral
- Threaded LG 2 x D
- d1 = min. hole diameter
- For use with standard collet chuck
- For making thread until bottom of blind hole
- For internal thread to left and right.

METRISCH & METRISCH FEIN
- Höhere Schnittgeschwindigkeit durch gedrallte Spannut
- Max. Gewindetiefe : 2 x D
- d1 = min. dia. des Gewindes
- Geeignet für den Einsatz auch mit Spannzangen
- Bearbeitung bis auf Kernlochgrund möglich
- Geeignet für Rechts- und Linksgewinde

METRICO & METRICO FINE
- Maggiore velocità di taglio grazie all'inclinazione dell'elica
- Filettatura : 2 x D
- d1= diametro minimo di filettatura
- Si utilizza con un mandrino a pinza
- Esecuzione di filetti senza imbocco
- Filettature destre e sinistre

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- Vitesse de coupe plus élevée par l'hélice
- Longueur filetée 2 x D
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- Permet de faire un filet jusqu'au fond du trou borgne
- Pour filets intérieurs à gauche et à droite

METRİK & METRİK İNCE
- Spiral nedeni ile yüksek hız
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- Standart pensli tutucular için
- Kör deliğin sonuna kadar diş açmak için
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METRISK & METRISK FINGEVIND
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- Til gevindskæring til bunden af bundhul
- Til indvendigt gevind til højre og venstre

METRISK & METRISK FIN
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- För gängdjup < 2D
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- För användning med standard hylschuckar
- Vid gänging av bottenhål
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METRICO Y METRICO FINO
- Mayor velocidad debido a la hélice.
- Longitud roscada 2 x D
- d1= diametro de nucleo
- Para usar con porta-pinzas
- Para producir rosca hasta el fondo de agujero ciego
- Para roscado interior a derecha e izquierda

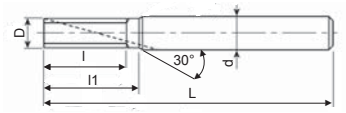
МЕТРИЧЕСКИЙ & МЕТРИЧЕСКАЯ МЕЛКАЯ
- Более высокая скорость благодаря спирали
- Резьба LG 2 x D
- d1 — минимальный диаметр отверстия
- Для использования с цанговым патроном
- Для нарезания резьбы до дна глухого отверстия
- Для внутренней, левой и правой резьб

METRYCZNY & METRYCZNY DROBNOZWOJNY
- Większe prędkości obróbki dzięki spirali
- Maksymalna długość gwintu 2 x D
- d1=min. średnica otworu
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- Do gwintów wewnetrznych prawych i lewych

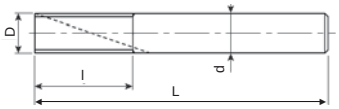
GO TO LIVE STOCK CHECK

M MF





Type 1



Type 2


Type 1

Type 2

EDP	d1	P	L	l	l1	D	d	ZΔ	Type	Stock	Price
8304700	6	0,75	60	12,8	15	4,5	6	4	1	●	
8304701	6	1	60	13	15	4,5	6	4	1	●	
8304710	8	0,5	65	16,5	-	6	6	4	2	●	
8304711	8	1	65	17	-	6	6	4	2	●	
8304712	8	1,25	65	17,5	-	6	6	4	2	●	
8304721	10	1	70	21	26	7,5	8	4	1	●	
8304723	10	1,5	70	22,5	26	7,5	8	4	1	●	
8304732	12	1,25	85	26,3	28	9,5	10	5	1	●	
8304733	12	1,5	85	25,5	28	9,5	10	5	1	●	
8304734	12	1,75	85	26,3	28	9,5	10	5	1	●	
8304740	14	0,5	85	28,5	-	10	10	5	2	●	
8304741	14	0,75	85	29,3	-	10	10	5	2	●	
8304742	14	1	85	29	-	10	10	5	2	●	
8304743	14	1,5	85	30	-	10	10	5	2	●	
8304744	14	2	85	30	-	10	10	5	2	●	
8304752	16	1	95	33	-	12	12	5	2	●	
8304753	16	1,5	95	34	-	12	12	5	2	●	
8304754	16	2	95	34	-	12	12	5	2	●	
8304773	20	1,5	105	42	-	16	16	5	2	●	
8304775	20	2,5	105	42,5	-	16	16	5	2	●	
8304783	27	1,5	120	49,5	-	20	20	6	2	●	
8304784	27	2	120	50	-	20	20	6	2	●	
8304786	27	3	120	51	-	20	20	6	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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WXO-ST-PNC			
WORK MATERIAL		**TAPPING SPEED (m/min)**	**FEED (mm/tooth)**
LOW TENSILE STRENGTH Steel	C~0,25%	80~120	0,04~0,1
MEDIUM TENSILE STRENGTH Steel	C~0,25% ~ 0,45%	80~120	0,04~0,1
HIGH TENSILE STRENGTH Steel	C0,45%~	80~120	0,04~0,1
ALLOY Steel	SCM	80~120	0,02~0,08
HARDENED Steel	25~45 HRC	60~100	0,02~0,08
	45~55 HRC	-	-
	50~60 HRC	-	-
STAINLESS Steel	SUS	40~80	0,02~0,06
TOOL Steel	SKD	-	-
CAST Steel	SC	40~65	0,02~0,09
CAST IRON	FC	50~100	0,03~0,1
DUCTILE CAST IRON	FCD	50~65	0,03~0,1
COPPER	Cu	65~130	0,03~0,1
BRASS	Bs	65~130	0,03~0,1
BRASS CASTING	BsC	65~130	0,03~0,1
BRONZE	PB	65~130	0,03~0,1
ALUMUNIUM ROLLED Steel	AL	50~70	0,03~0,1
ALUMINIUM ALLOY CASTING	AC, ADC	65~130	0,03~0,1
MAGNESIUM ALLOY CASTING	MC	65~130	0,03~0,1
ZINC ALLOY CASTING	ZDC	65~130	0,03~0,1
TITANIUM ALLOYS	Ti-6AL-4V	20~60	0,02~0,06
NICKEL ALLOYS	Inconel®	20~60	0,01~0,03
THERMO SETTING PLASTIC	-	65~130	0,03~0,13
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Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 80~120 m/min	◎ 80~120 m/min	◎ 80~120 m/min	◎ 80~120 m/min	◎ 60~100 m/min	◎ 60~100 m/min			○ 40~80 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~65 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 50~70 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min			○ 65~130 m/min	○ 65~130 m/min	

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WX-PNC

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- Higher speed due to spiral
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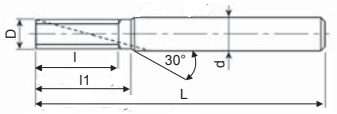
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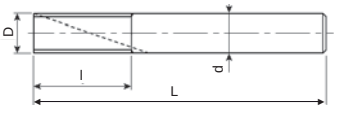
GO TO LIVE STOCK CHECK

M MF





Type 1



Type 2



EDP	d1	P	L	l	l1	D	d	ZΔ	Type	Stock	Price
3900001	6	1	60	13	15	4,5	6	3	1	●	
3900011	8	1	65	17	-	6	6	3	2	●	
3900012	8	1,25	65	17,5	-	6	6	3	2	●	
3900021	10	1	70	21	26	7,5	8	3	1	●	
1004470640	10	1,25	70	21,3	26	7,5	8	3	1	●	
3900023	10	1,5	70	22,5	26	7,5	8	3	1	●	
3900032	12	1,25	85	26,3	28	9,5	10	4	1	●	
3900033	12	1,5	85	25,5	28	9,5	10	4	1	●	
3900034	12	1,75	85	26,3	28	9,5	10	4	1	●	
3900042	14	1	85	29	-	10	10	4	2	●	
3900043	14	1,5	85	30	-	10	10	4	2	●	
3900044	14	2	85	30	-	10	10	4	2	●	
3900052	16	1	95	33	-	12	12	4	2	●	
3900053	16	1,5	95	34,5	-	12	12	4	2	●	
3900054	16	2	95	34	-	12	12	4	2	●	
3900073	20	1,5	105	42	-	16	16	4	2	●	
3900075	20	2,5	105	42,5	-	16	16	4	2	●	
3900083	27	1,5	120	49,5	-	20	20	5	2	●	
3900084	27	2	120	50	-	20	20	5	2	●	
3900086	27	3	120	51	-	20	20	5	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

WX-PNC			
WORK MATERIAL		**TAPPING SPEED (m/min)**	**FEED (mm/tooth)**
LOW TENSILE STRENGTH STEELS	C~0,25%	50~75	0,01~0,11
MEDIUM TENSILE STRENGTH STEELS	C~0,25% ~ 0,45%	40~70	0,01~0,11
HIGH TENSILE STRENGTH STEELS	C0,45%~	40~70	0,01~0,01
ALLOY STEELS	SCM	15~30	0,01~0,03
HARDENED STEELS	25~45 HRC	15~30	0,01~0,03
	45~55 HRC	-	-
	50~60 HRC	-	-
STAINLESS STEELS	SUS	20~40	0,01~0,06
TOOL STEELS	SKD	-	-
CAST STEELS	SC	40~65	0,02~0,09
CAST IRON	FC	50~100	0,03~0,1
DUCTILE CAST IRON	FCD	50~65	0,03~0,1
COPPER	Cu	65~130	0,03~0,1
BRASS	Bs	65~130	0,03~0,1
BRASS CASTING	BsC	65~130	0,03~0,1
BRONZE	PB	65~130	0,03~0,1
ALUMUNIUM ROLLED STEELS	AL	50~70	0,03~0,1
ALUMINIUM ALLOY CASTING	AC, ADC	65~130	0,03~0,1
MAGNESIUM ALLOY CASTING	MC	65~130	0,03~0,1
ZINC ALLOY CASTING	ZDC	65~130	0,03~0,1
TITANIUM ALLOYS	Ti-6AL-4V	20~60	0,02~0,06
NICKEL ALLOYS	Inconel®	20~60	0,01~0,03
THERMO SETTING PLASTIC	-	65~130	0,03~0,13
THERMO PLASTIC	-	65~130	0,03~0,13

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 50~75 m/min	○ 40~70 m/min	○ 40~70 m/min	○ 15~30 m/min	○ 15~30 m/min	○ 15~30 m/min			○ 20~40 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~65 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 50~70 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	◎ 20~60 m/min	◎ 20~60 m/min	○ 65~130 m/min	○ 65~130 m/min	

● Delivery from stock
○ Available on short notice

WX-PNC

UN
- Higher speed due to spiral
- Threaded LG 2 x D
- d1 = min. hole diameter
- For use with standard collet chuck
- For making thread until bottom of blind hole
- For internal thread to left and right.

UN
- Höhere Schnittgeschwindigkeit durch gedrallte Spannut
- Max. Gewindetiefe : 2 x D
- d1 = min. dia. des Gewindes
- Geeignet für den Einsatz auch mit Spannzangen
- Bearbeitung bis auf Kernlochgrund möglich
- Geeignet für Rechts- und Linksgewinde

UN
- Maggiore velocità di taglio grazie all'inclinazione dell'elica
- Filettatura : 2 x D
- d1= diametro minimo di filettatura
- Si utilizza con un mandrino a pinza
- Esecuzione di filetti senza imbocco
- Filettature destre e sinistre

UN
- Vitesse de coupe plus élevée par l'hélice
- Longueur filetée 2 x D
- d1 = diamètre min. de trou
- La fraise à fileter s'utilise dans un mandrin standard à pinces
- Permet de faire un filet jusqu'au fond du trou borgne
- Pour filets intérieurs à gauche et à droite

UN
- Spiral nedeni ile yüksek hız
- Dişli LG 2 x D
- d1 = min. delik çapı
- Standart pensli tutucular için
- Kör deliğin sonuna kadar diş açmak için
- İç çap için sol ve sağ diş

UN
- Højere hastighed grundet spiral
- Gevind LG 2 x D
- d1 = min hul diameter
- Bruges med standard spændetænger
- Til gevindskæring til bunden af bundhul
- Til indvendigt gevind til højre og venstre

UN
- Högre varvtal på grund av spiralen
- För gängdjup < 2D
- d1 = mil hål diameter
- För användning med standard hylschuckar
- Vid gänging av bottenhål
- Höger och vänster gänga vid invändig gänging

UN
- Mayor velocidad debido a la hélice.
- Longitud roscada 2 x D
- d1= diametro de nucleo
- Para usar con porta-pinzas
- Para producir rosca hasta el fondo de agujero ciego
- Para roscado interior a derecha e izquierda

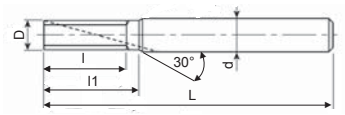
UN
- Более высокая скорость благодаря спирали
- Резьба LG 2 x D
- d1 — минимальный диаметр отверстия
- Для использования с цанговым патроном
- Для нарезания резьбы до дна глухого отверстия
- Для внутренней, левой и правой резьб

UN
- Większe prędkości obróbki dzięki spirali
- Maksymalna długość gwintu 2 x D
- d1=min. średnica otworu
- Do zastosowania ze standardowymi oprawkami zaciskowymi
- Możliwe wykonanie gwintu do dna otworu
- Do gwintów wewnetrznych prawych i lewych

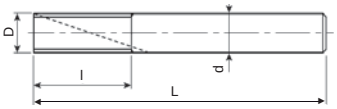
GO TO LIVE STOCK CHECK

UNC UNF

UNF UNC CARBIDE WX 30° h6



Type 1



Type 2



EDP	d1	P	L	l	l1	D	d	ZΔ	Type	Stock	Price
3900350	1/4	20	60	10,2	11,4	4,55	6	3	1	●	
3900351	1/4	28	60	10	10,9	4,55	6	3	1	●	
3900355	5/16	18	65	12,7	14,1	6,2	8	3	1	●	
3900356	5/16	24	65	12,7	14,1	6,2	8	3	1	●	
3900360	3/8	16	65	14,3	-	7,6	8	3	2	●	
3900361	3/8	24	65	14,8	-	7,6	8	3	2	●	
3900365	7/16	14	75	18,1	19,9	8,8	10	3	1	●	
3900366	7/16	20	75	17,8	19,1	8,8	10	3	1	●	
3900370	1/2	13	75	19,5	21,5	9,4	10	4	1	●	
3900371	1/2	20	75	19,1	20,4	9,4	10	4	1	●	
3900375	9/16	12	85	23,3	25,4	10,9	12	4	1	●	
3900380	9/16	18	85	22,6	24	11,4	12	4	1	●	
3900390	7/8	12	110	33,9	36	18,9	20	4	1	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

WX-PNC			
WORK MATERIAL		**TAPPING SPEED (m/min)**	**FEED (mm/tooth)**
LOW TENSILE STRENGTH STEELS	C~0,25%	50~75	0,01~0,11
MEDIUM TENSILE STRENGTH STEELS	C~0,25% ~ 0,45%	40~70	0,01~0,11
HIGH TENSILE STRENGTH STEELS	C0,45%~	40~70	0,01~0,01
ALLOY STEELS	SCM	15~30	0,01~0,03
HARDENED STEELS	25~45 HRC	15~30	0,01~0,03
	45~55 HRC	-	-
	50~60 HRC	-	-
STAINLESS STEELS	SUS	20~40	0,01~0,06
TOOL STEELS	SKD	-	-
CAST STEELS	SC	40~65	0,02~0,09
CAST IRON	FC	50~100	0,03~0,1
DUCTILE CAST IRON	FCD	50~65	0,03~0,1
COPPER	Cu	65~130	0,03~0,1
BRASS	Bs	65~130	0,03~0,1
BRASS CASTING	BsC	65~130	0,03~0,1
BRONZE	PB	65~130	0,03~0,1
ALUMUNIUM ROLLED STEELS	AL	50~70	0,03~0,1
ALUMINIUM ALLOY CASTING	AC, ADC	65~130	0,03~0,1
MAGNESIUM ALLOY CASTING	MC	65~130	0,03~0,1
ZINC ALLOY CASTING	ZDC	65~130	0,03~0,1
TITANIUM ALLOYS	Ti-6AL-4V	20~60	0,02~0,06
NICKEL ALLOYS	Inconel®	20~60	0,01~0,03
THERMO SETTING PLASTIC	-	65~130	0,03~0,13
THERMO PLASTIC	-	65~130	0,03~0,13

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 50~75 m/min	○ 40~70 m/min	○ 40~70 m/min	○ 15~30 m/min	○ 15~30 m/min	○ 15~30 m/min			○ 20~40 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~65 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 50~70 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	◎ 20~60 m/min	◎ 20~60 m/min	○ 65~130 m/min	○ 65~130 m/min	

● Delivery from stock
○ Available on short notice

WX-PNC

RC (PT)
- Higher speed due to spiral
- Threaded LG 2 x D
- d1 = min. hole diameter
- For use with standard collet chuck
- For making thread until bottom of blind hole
- For internal thread to left and right.

RC (PT)
- Höhere Schnittgeschwindigkeit durch gedrallte Spannut
- Max. Gewindetiefe : 2 x D
- d1 = min. dia. des Gewindes
- Geeignet für den Einsatz auch mit Spannzangen
- Bearbeitung bis auf Kernlochgrund möglich
- Geeignet für Rechts- und Linksgewinde

RC (PT)
- Maggiore velocità di taglio grazie all'inclinazione dell'elica
- Filettatura : 2 x D
- d1= diametro minimo di filettatura
- Si utilizza con un mandrino a pinza
- Esecuzione di filetti senza imbocco
- Filettature destre e sinistre

RC (PT)
- Vitesse de coupe plus élevée par l'hélice
- Longueur filetée 2 x D
- d1 = diamètre min. de trou
- La fraise à fileter s'utilise dans un mandrin standard à pinces
- Permet de faire un filet jusqu'au fond du trou borgne
- Pour filets intérieurs à gauche et à droite

RC (PT)
- Spiral nedeni ile yüksek hız
- Dişli LG 2 x D
- d1 = min. delik çapı
- Standart pensli tutucular için
- Kör deliğin sonuna kadar diş açmak için
- İç çap için sol ve sağ diş

RC (PT)
- Højere hastighed grundet spiral
- Gevind LG 2 x D
- d1 = min hul diameter
- Bruges med standard spændetænger
- Til gevindskæring til bunden af bundhul
- Til indvendigt gevind til højre og venstre

RC (PT)
- Högre varvtal på grund av spiralen
- För gängdjup < 2D
- d1 = mil hål diameter
- För användning med standard hylschuckar
- Vid gänging av bottenhål
- Höger och vänster gänga vid invändig gänging

RC (PT)
- Mayor velocidad debido a la hélice.
- Longitud roscada 2 x D
- d1= diametro de nucleo
- Para usar con porta-pinzas
- Para producir rosca hasta el fondo de agujero ciego
- Para roscado interior a derecha e izquierda

RC (PT)
- Более высокая скорость благодаря спирали
- Резьба LG 2 x D
- d1 — минимальный диаметр отверстия
- Для использования с цанговым патроном
- Для нарезания резьбы до дна глухого отверстия
- Для внутренней, левой и правой резьб

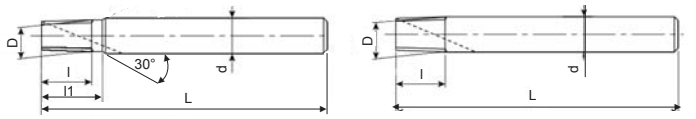
RC (PT)
- Większe prędkości obróbki dzięki spirali
- Maksymalna długość gwintu 2 x D
- d1=min. średnica otworu
- Do zastosowania ze standardowymi oprawkami zaciskowymi
- Możliwe wykonanie gwintu do dna otworu
- Do gwintów wewnetrznych prawych i lewych

GO TO LIVE STOCK CHECK

RC (PT)

RC (PT)







EDP	d1	P	L	l	l1	D	d	ZΔ	Type	Stock	Price
3900201	1/8	28	60	9,1	12,7	7,5	8	3	1	●	
3900211	1/4~3/8	19	75	14,7	-	10	10	4	2	●	
3900214	1/2~3/4	14	85	20	-	12	12	4	2	●	
3900218	1~2	11	95	27,7	-	20	20	5	2	●	

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Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

WX-PNC			
WORK MATERIAL		**TAPPING SPEED (m/min)**	**FEED (mm/tooth)**
LOW TENSILE STRENGTH STEELS	C~0,25%	50~75	0,01~0,11
MEDIUM TENSILE STRENGTH STEELS	C~0,25% ~ 0,45%	40~70	0,01~0,11
HIGH TENSILE STRENGTH STEELS	C0,45%~	40~70	0,01~0,01
ALLOY STEELS	SCM	15~30	0,01~0,03
HARDENED STEELS	25~45 HRC	15~30	0,01~0,03
	45~55 HRC	-	-
	50~60 HRC	-	-
STAINLESS STEELS	SUS	20~40	0,01~0,06
TOOL STEELS	SKD	-	-
CAST STEELS	SC	40~65	0,02~0,09
CAST IRON	FC	50~100	0,03~0,1
DUCTILE CAST IRON	FCD	50~65	0,03~0,1
COPPER	Cu	65~130	0,03~0,1
BRASS	Bs	65~130	0,03~0,1
BRASS CASTING	BsC	65~130	0,03~0,1
BRONZE	PB	65~130	0,03~0,1
ALUMUNIUM ROLLED STEELS	AL	50~70	0,03~0,1
ALUMINIUM ALLOY CASTING	AC, ADC	65~130	0,03~0,1
MAGNESIUM ALLOY CASTING	MC	65~130	0,03~0,1
ZINC ALLOY CASTING	ZDC	65~130	0,03~0,1
TITANIUM ALLOYS	Ti-6AL-4V	20~60	0,02~0,06
NICKEL ALLOYS	Inconel®	20~60	0,01~0,03
THERMO SETTING PLASTIC	-	65~130	0,03~0,13
THERMO PLASTIC	-	65~130	0,03~0,13

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 50~75 m/min	○ 40~70 m/min	○ 40~70 m/min	○ 15~30 m/min	○ 15~30 m/min	○ 15~30 m/min			○ 20~40 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~65 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 50~70 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	◎ 20~60 m/min	◎ 20~60 m/min	○ 65~130 m/min	○ 65~130 m/min	

● Delivery from stock
○ Available on short notice

WX-PNC

NPT
- Higher speed due to spiral
- Threaded LG 2 x D
- d1 = min. hole diameter
- For use with standard collet chuck
- For making thread until bottom of blind hole
- For internal thread to left and right.

NPT
- Höhere Schnittgeschwindigkeit durch gedrallte Spannut
- Max. Gewindetiefe : 2 x D
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- Geeignet für den Einsatz auch mit Spannzangen
- Bearbeitung bis auf Kernlochgrund möglich
- Geeignet für Rechts- und Linksgewinde

NPT
- Maggiore velocità di taglio grazie all'inclinazione dell'elica
- Filettatura : 2 x D
- d1= diametro minimo di filettatura
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- Højere hastighed grundet spiral
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- Til indvendigt gevind til højre og venstre

NPT
- Högre varvtal på grund av spiralen
- För gängdjup < 2D
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- Vid gänging av bottenhål
- Höger och vänster gänga vid invändig gänging

NPT
- Mayor velocidad debido a la hélice.
- Longitud roscada 2 x D
- d1= diametro de nucleo
- Para usar con porta-pinzas
- Para producir rosca hasta el fondo de agujero ciego
- Para roscado interior a derecha e izquierda

NPT
- Более высокая скорость благодаря спирали
- Резьба LG 2 x D
- d1 — минимальный диаметр отверстия
- Для использования с цанговым патроном
- Для нарезания резьбы до дна глухого отверстия
- Для внутренней, левой и правой резьб

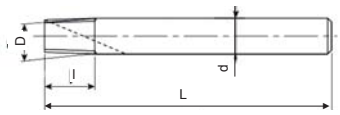
NPT
- Większe prędkości obróbki dzięki spirali
- Maksymalna długość gwintu 2 x D
- d1=min. średnica otworu
- Do zastosowania ze standardowymi oprawkami zaciskowymi
- Możliwe wykonanie gwintu do dna otworu
- Do gwintów wewnetrznych prawych i lewych

GO TO LIVE STOCK CHECK

NPT

NPT







EDP	d1	P	L	l	D	d	ZΔ	Stock	Price
3900259	1/16~1/8	27	60	10,3	5,9	6	3	●	
3900261	1/4~3/8	18	75	15,5	10	10	4	●	
3900265	1/2~3/4	14	85	20	16	16	4	●	
3900268	1~2	11 1/2	95	24,3	20	20	5	●	

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Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

WX-PNC			
WORK MATERIAL		**TAPPING SPEED (m/min)**	**FEED (mm/tooth)**
LOW TENSILE STRENGTH STEELS	C~0,25%	50~75	0,01~0,11
MEDIUM TENSILE STRENGTH STEELS	C~0,25% ~ 0,45%	40~70	0,01~0,11
HIGH TENSILE STRENGTH STEELS	C0,45%~	40~70	0,01~0,01
ALLOY STEELS	SCM	15~30	0,01~0,03
HARDENED STEELS	25~45 HRC	15~30	0,01~0,03
	45~55 HRC	-	-
	50~60 HRC	-	-
STAINLESS STEELS	SUS	20~40	0,01~0,06
TOOL STEELS	SKD	-	-
CAST STEELS	SC	40~65	0,02~0,09
CAST IRON	FC	50~100	0,03~0,1
DUCTILE CAST IRON	FCD	50~65	0,03~0,1
COPPER	Cu	65~130	0,03~0,1
BRASS	Bs	65~130	0,03~0,1
BRASS CASTING	BsC	65~130	0,03~0,1
BRONZE	PB	65~130	0,03~0,1
ALUMUNIUM ROLLED STEELS	AL	50~70	0,03~0,1
ALUMINIUM ALLOY CASTING	AC, ADC	65~130	0,03~0,1
MAGNESIUM ALLOY CASTING	MC	65~130	0,03~0,1
ZINC ALLOY CASTING	ZDC	65~130	0,03~0,1
TITANIUM ALLOYS	Ti-6AL-4V	20~60	0,02~0,06
NICKEL ALLOYS	Inconel®	20~60	0,01~0,03
THERMO SETTING PLASTIC	-	65~130	0,03~0,13
THERMO PLASTIC	-	65~130	0,03~0,13

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 50~75 m/min	○ 40~70 m/min	○ 40~70 m/min	○ 15~30 m/min	○ 15~30 m/min	○ 15~30 m/min			○ 20~40 m/min		○ 40~65 m/min	○ 50~100 m/min	○ 50~65 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 50~70 m/min	○ 65~130 m/min	○ 65~130 m/min	○ 65~130 m/min	◎ 20~60 m/min	◎ 20~60 m/min	○ 65~130 m/min	○ 65~130 m/min	

● Delivery from stock
○ Available on short notice

METRIC
- General purpose, also for stainless steel

METRISCH
- Für universelle Anwendungen und für VA - Stahl

METRICO
- Per applicazioni generali e per inox

METRIQUE
- Pour applications générales et pour des aciers inox

METRIK
- Genel kullanım, ayrıca paslanmaz çelik için

METRISK
- Til generelt brug, også til rustfrit stål

METRISK
- För allround bearbetning och för rostfritt stål

METRICO
- Para aplicación general, para aceros inoxidables

МЕТРИЧЕСКИЙ
- Общего назначения и для нержавеющих сталей

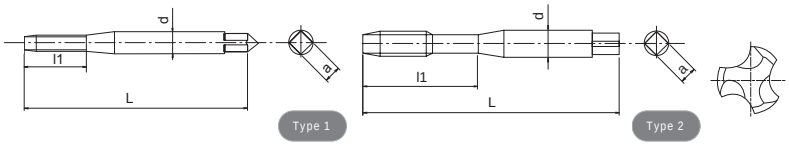
METRYCZNY
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

M

M

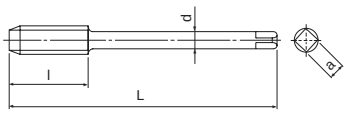
M | HSSE | OX | ISO 2 6H | B/4 | DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
63812560	2	0,4	45	8	2,8	2,1	2	1	●	
63812860	2,2	0,45	45	9	2,8	2,1	2	1	●	
63813360	2,5	0,45	50	9	2,8	2,1	2	1	●	
63813860	3	0,5	56	18	3,5	2,7	3	2	●	
63814060	3,5	0,6	56	20	4	3	3	2	●	
63814460	4	0,7	63	21	4,5	3,4	3	2	●	
63814960	5	0,8	70	25	6	4,9	3	2	●	
63815560	6	1	80	30	6	4,9	3	2	●	
63816160	8	1,25	90	35	8	6,2	3	2	●	
63816960	10	1,5	100	39	10	8	3	2	●	

M | HSSE | OX | ISO 2 6H | B/4 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
63913860	3	0,5	56	11	2,2	-	3	●	
63914460	4	0,7	63	13	2,8	2,1	3	●	
63914960	5	0,8	70	16	3,5	2,7	3	●	
63915560	6	1	80	19	4,5	3,4	3	●	
63916160	8	1,25	90	22	6	4,9	3	●	
63916960	10	1,5	100	24	7	5,5	3	●	
63917960	12	1,75	110	29	9	7	3	●	
63919160	14	2	110	30	11	9	3	●	
63920260	16	2	110	32	12	9	3	●	
63921460	18	2,5	125	34	14	11	3	●	
63922860	20	2,5	140	34	16	12	3	●	
63923860	22	2,5	140	34	18	14,5	3	●	
63924760	24	3	160	38	18	14,5	3	●	
63926260	27	3	160	38	20	16	4	●	
63927160	30	3,5	180	45	22	18	4	●	
63928160	33	3,5	180	50	25	20	4	●	
63929460	36	4	200	56	28	22	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min					◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 12~17 m/min											○ 10~20 m/min	

● Delivery from stock
○ Available on short notice

METRIC
- General purpose, also for stainless steel

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METRICO
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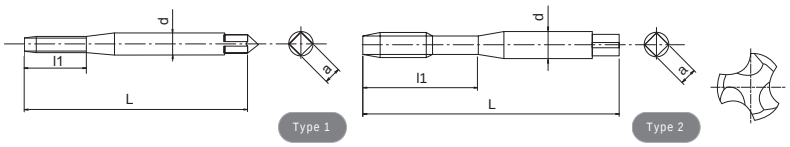
МЕТРИЧЕСКИЙ
- Общего назначения и для нержавеющих сталей

METRYCZNY
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

M

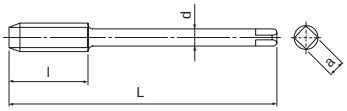






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
63812599	2	0,4	45	8	2,8	2,1	2	1	●	
63813399	2,5	0,45	50	9	2,8	2,1	2	1	●	
63813899	3	0,5	56	18	3,5	2,7	3	2	●	
63814499	4	0,7	63	21	4,5	3,4	3	2	●	
63814999	5	0,8	70	25	6	4,9	3	2	●	
63815599	6	1	80	30	6	4,9	3	2	●	
63816199	8	1,25	90	35	8	6,2	3	2	●	
63816999	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
63917999	**12**	**1,75**	**110**	**29**	**9**	**7**	**3**	●	
63919199	**14**	**2**	**110**	**30**	**11**	**9**	**3**	●	
63920299	**16**	**2**	**110**	**32**	**12**	**9**	**3**	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min					◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 12~17 m/min											○ 10~20 m/min	

METRIC
- For general purposes application

METRISCH
- Für universelle Anwendungen

METRICO
- Per applicazioni generali

METRIQUE
- Pour applications générales

METRIK
- Genel kullanım

METRISK
- Til generelt brug

METRISK
- För diverse applikationer

METRICO
- Para aplicación general

МЕТРИЧЕСКИЙ
- Общего назначения

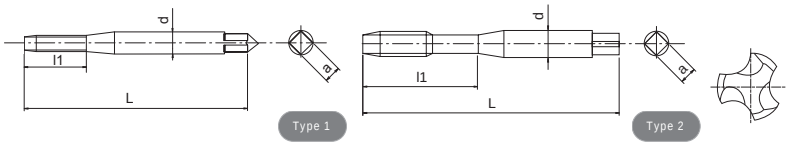
METRYCZNY
- Uniwersalne

GO TO LIVE STOCK CHECK

M

M

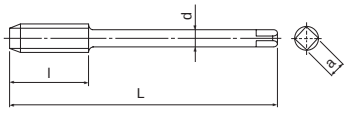
M HSSE ISO 2 6H B/4 DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
60712560	2	0,4	45	8	2,8	2,1	2	1	●	
60713360	2,5	0,45	50	9	2,8	2,1	2	1	●	
60713860	3	0,5	56	18	3,5	2,7	3	2	●	
60714060	3,5	0,6	56	20	4	3	3	2	●	
60714460	4	0,7	63	21	4,5	3,4	3	2	●	
60714960	5	0,8	70	25	6	4,9	3	2	●	
60715560	6	1	80	30	6	4,9	3	2	●	
60716160	8	1,25	90	35	8	6,2	3	2	●	
60716960	10	1,5	100	39	10	8	3	2	●	

M HSSE ISO 2 6H B/4 DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
60813860	3	0,5	56	11	2,2	-	3	●	
60814460	4	0,7	63	13	2,8	2,1	3	●	
60814960	5	0,8	70	16	3,5	2,7	3	●	
60815560	6	1	80	19	4,5	3,4	3	●	
60816160	8	1,25	90	22	6	4,9	3	●	
60816960	10	1,5	100	24	7	5,5	3	●	
60817960	12	1,75	110	29	9	7	3	●	
60819160	14	2	110	30	11	9	3	●	
60820260	16	2	110	32	12	9	3	●	
60821460	18	2,5	125	34	14	11	3	●	
60822860	20	2,5	140	34	16	12	3	●	
60823860	22	2,5	140	34	18	14,5	3	●	
60824760	24	3	160	38	18	14,5	3	●	
60826260	27	3	160	38	20	16	4	●	
60827160	30	3,5	180	45	22	18	4	●	
60828160	33	3,5	180	50	25	20	4	●	
60829460	36	4	200	56	28	22	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 12~20 m/min	○ 8~12 m/min	○ 7~12 m/min	○ 8~12 m/min							○ 8~12 m/min		○ 8~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 10~15 m/min	○ 15~25 m/min	○ 15~25 m/min	○ 10~20 m/min	○ 15~25 m/min	◎ 15~20 m/min	○ 10~15 m/min	◎ 10~15 m/min				○ 8~16 m/min	

● Delivery from stock
○ Available on short notice

METRIC
- For general purposes application

METRISCH
- Für universelle Anwendungen

METRICO
- Per applicazioni generali

METRIQUE
- Pour applications générales

METRIK
- Genel kullanım

METRISK
- Til generelt brug

METRISK
- För diverse applikationer

METRICO
- Para aplicación general

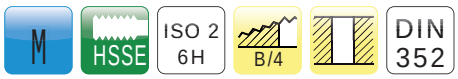
МЕТРИЧЕСКИЙ
- Общего назначения

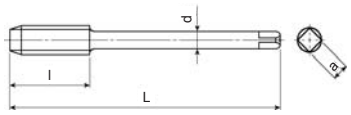
METRYCZNY
- Uniwersalne

GO TO LIVE STOCK CHECK

M

M









EDP	M	P	L	l	d	a	ZΔ	Stock	Price
60513860	3	0,5	40	11	3,5	2,7	3	●	
60514460	4	0,7	45	13	4,5	3,4	3	●	
60514960	5	0,8	50	24	6	4,9	3	●	
60515560	6	1	50	27	6	4,9	3	●	
60516160	8	1,25	63	22	6	4,9	3	●	
60516960	10	1,5	70	24	7	5,5	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 12~20 m/min	○ 8~12 m/min	○ 7~12 m/min	○ 8~12 m/min							○ 8~12 m/min		○ 8~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 10~15 m/min	○ 15~25 m/min	○ 15~25 m/min	○ 10~20 m/min	○ 15~25 m/min	◎ 15~20 m/min	○ 10~15 m/min	◎ 10~15 m/min				○ 8~16 m/min	

● Delivery from stock
○ Available on short notice

1066-POT

METRIC
- For general purposes application

METRISCH
- Für universelle Anwendungen

METRICO
- Per applicazioni generali

METRIQUE
- Pour applications générales

METRIK
- Genel kullanım

METRISK
- Til generelt brug

METRISK
- För diverse applikationer

METRICO
- Para aplicación general

МЕТРИЧЕСКИЙ
- Общего назначения

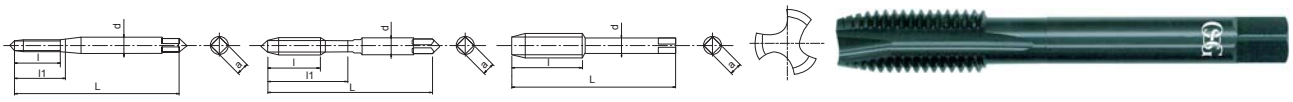
METRYCZNY
- Uniwersalne

GO TO LIVE STOCK CHECK

M

M





EDP	M	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22101114	1	0,25	38,5	8	-	2,5	2	2	1	○	
22101134	1,2	0,25	38,5	8	-	2,5	2	2	1	○	
22101154	1,4	0,3	38,5	8	-	2,5	2	2	1	○	
22101184	1,6	0,35	38,5	8	-	2,5	2	2	1	○	
22101234	1,8	0,35	41	8	-	2,5	2	2	1	○	
22101254	2	0,4	41	8	-	2,5	2	2	1	○	
T101022045	2,2	0,45	41	8	-	2,8	2,24	2	1	○	
22101334	2,5	0,45	44,5	9,5	-	2,8	2,24	2	1	○	
22101384	3	0,5	48	11	18	3,15	2,5	3	2	○	
22101404	3,5	0,6	50	13	20	3,55	2,8	3	2	○	
22101444	4	0,7	53	13	21	4	3,15	3	2	○	
22101464	4,5	0,75	53	13	21	4,5	3,55	3	2	○	
22101494	5	0,8	58	16	25	5	4	3	2	○	
22101554	6	1	66	19	30	6,3	5	3	2	○	
22101584	7	1	66	19	30	7,1	5	3	2	○	
22101614	8	1,25	72	22	35	8	6,3	3	2	○	
22101654	9	1,25	72	22	36	9	7,1	3	2	○	
22101694	10	1,5	80	24	39	10	8	3	2	○	
22101744	11	1,5	85	25	-	8	6,3	3	3	○	
22101794	12	1,75	89	29	-	9	7,1	3	3	○	
22101914	14	2	95	30	-	11,2	9	3	3	○	
22102024	16	2	102	32	-	12,5	10	3	3	○	
22102144	18	2,5	112	37	-	14	11,2	3	3	○	
22102284	20	2,5	112	37	-	14	11,2	3	3	○	
22102384	22	2,5	118	38	-	16	12,5	3	3	○	
22102474	24	3	130	45	-	18	14	3	3	○	
22102624	27	3	135	45	-	20	16	4	3	○	
22102714	30	3,5	151	51	-	22,4	18	4	3	○	
22102814	33	3,5	151	51	-	22,4	18	4	3	○	
22102944	36	4	162	57	-	25	20	4	3	○	
22103044	39	4	170	60	-	28	22,4	4	3	○	
22103144	42	4,5	187	67	-	31,5	28	4	3	○	

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◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min	○ 7~11 m/min				◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

TIN-POT

METRIC
- For steel ≤ 850 N/mm²

METRISCH
- Für Stähl ≤ 850 N/mm²

METRICO
- Per acciai ≤ 850 N/mm²

METRIQUE
- Pour aciers ≤ 850 N/mm²

METRIK
- ≤ 850N/mm² çelikler için

METRISK
- Til stål ≤ 850 N/mm²

METRISK
- För stål ≤ 850 N/mm²

METRICO
- Para aceros ≤ 850 N/mm²

МЕТРИЧЕСКИЙ
- Для сталей ≤ 850 Н/ММ²

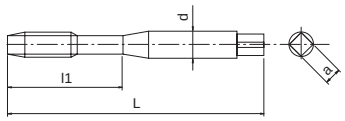
METRYCZNY
- Do stali ≤ 850N/mm²

GO TO LIVE STOCK CHECK

M

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M | HSSE | TIN | ISO 2 6H | B/4 | DIN 371

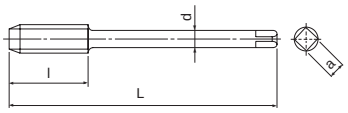






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
6071256001	2	0,4	45	-	2,8	2,1	2	●	
6071336001	2,5	0,45	50	-	2,8	2,1	2	●	
6071386001	3	0,5	56	18	3,5	2,7	3	●	
6071406001	3,5	0,6	56	20	4	3	3	●	
6071446001	4	0,7	63	21	4,5	3,4	3	●	
6071496001	5	0,8	70	25	6	4,9	3	●	
6071556001	6	1	80	30	6	4,9	3	●	
6071616001	8	1,25	90	35	8	6,2	3	●	
6071696001	10	1,5	100	39	10	8	3	●	

M | HSSE | TIN | ISO 2 6H | B/4 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
6081386001	3	0,5	56	11	2,2	-	3	●	
6081446001	4	0,7	63	13	2,8	2,1	3	●	
6081496001	5	0,8	70	16	3,5	2,7	3	●	
6081556001	6	1	80	19	4,5	3,4	3	●	
6081616001	8	1,25	90	22	6	4,9	3	●	
6081696001	10	1,5	100	24	7	5,5	3	●	
6081796001	12	1,75	110	29	9	7	3	●	
6081916001	14	2	110	30	11	9	3	●	
6082026001	16	2	110	32	12	9	3	●	
6082146001	18	2,5	125	34	14	11	3	●	
6082286001	20	2,5	140	34	16	12	3	●	
6082386001	22	2,5	140	34	18	14,5	3	●	
6082476001	24	3	160	38	18	14,5	3	●	
6082626001	27	3	160	38	20	16	4	●	
6082716001	30	3,5	180	45	22	18	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 15~24 m/min	○ 10~15 m/min	◎ **8~13 m/min**	○ 10~15 m/min					◎ 8~16 m/min	○ 8~12 m/min	○ 8~12 m/min		○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 12~17 m/min	○ 15~25 m/min	○ 15~25 m/min	○ 10~20 m/min	○ 15~25 m/min	○ 15~20 m/min	○ 10~15 m/min	○ 10~15 m/min	○ 6~9 m/min			○ 10~20 m/min	

● Delivery from stock
○ Available on short notice

TICN-POT

METRIC
- For steel ≤ 1000 N/mm²

METRISCH
- Für Stähl ≤ 1000 N/mm²

METRICO
- Per acciai ≤ 1000 N/mm²

METRIQUE
- Pour aciers ≤ 1000 N/mm²

METRIK
- ≤ 1000N/mm² çelikler için

METRISK
- Til stål ≤ 1000 N/mm²

METRISK
- För stål ≤ 1000 N/mm²

METRICO
- Para aceros ≤ 1000 N/mm²

МЕТРИЧЕСКИЙ
- Для сталей ≤ 1000 Н/ММ²

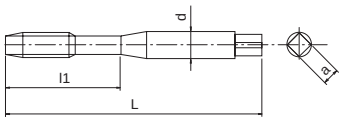
METRYCZNY
- Do stali ≤ 1000N/mm²

GO TO LIVE STOCK CHECK

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M HSSE TiCN ISO 2 6H B/4 DIN 371

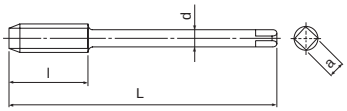






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
6071256002	2	0,4	45	-	2,8	2,1	2	●	
6071386002	3	0,5	56	18	3,5	2,7	3	●	
6071446002	4	0,7	63	21	4,5	3,4	3	●	
6071496002	5	0,8	70	25	6	4,9	3	●	
6071556002	6	1	80	30	6	4,9	3	●	
6071616002	8	1,25	90	35	8	6,2	3	●	
6071696002	10	1,5	100	39	10	8	3	●	

M HSSE TiCN ISO 2 6H B/4 DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
6081796002	**12**	**1,75**	**110**	**29**	**9**	**7**	**3**	●	
6081916002	**14**	**2**	**110**	**30**	**11**	**9**	**3**	●	
6082026002	**16**	**2**	**110**	**32**	**12**	**9**	**3**	●	
6082146002	**18**	**2,5**	**125**	**34**	**14**	**11**	**3**	●	
6082286002	**20**	**2,5**	**140**	**34**	**16**	**12**	**3**	●	
6082386002	**22**	**2,5**	**140**	**34**	**18**	**14,5**	**3**	●	
6082476002	**24**	**3**	**160**	**38**	**18**	**14,5**	**3**	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 15~24 m/min	○ 10~15 m/min	◎ **8~13 m/min**	◎ 10~15 m/min					○ 8~16 m/min	○ 8~12 m/min	○ 8~12 m/min		○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 12~17 m/min	○ 15~25 m/min	○ 15~25 m/min	○ 10~20 m/min	○ 15~25 m/min	○ 15~20 m/min	○ 10~15 m/min	○ 10~15 m/min	○ 6~9 m/min			○ 10~20 m/min	

● Delivery from stock
○ Available on short notice

METRIC
- For stainless steel, aluminium and steel
- Developed for CNC machines equipped with rigid tapping
- For pilot hole use OSG EX-SUS-GDS (p.C.71~77)

METRISCH
- Für Va-Stahl, Aluminium und Stahl
- Für CNC Maschinen mit Synchronspindeln
- Für die Kernlochbearbeitung EX-SUS-GDS verwenden(p.C.71~77)

METRICO
- Per acciai inox, alluminio, e acciai
- Per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Utilizzate OSG EX-SUS-GDS per foro pilota (p.C.71~77)

METRIQUE
- Pour inox, aluminium et aciers
- Développé pour les machines CNC qui ont le "taraudage rigide"
- Pour trou pilote utilisez OSG EX-SUS-GDS (p.C.71~77)

METRIK
- Paslanmaz çelikler, alüminyum ve çelik için
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Pilot deliği için OSG EX-SUS-GDS kullanın (sayfa C.71~77)

METRISK
- Til rustfrit stål, aluminium og stål
- Udviklet til CNC maskine udstyret med fast tapholder
- For boring af pilot hul brug OSG EX-SUS-GDS (p.C.71~77)

METRISK
- För rostfritt stål, aluminium och stål
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- För pilot hål använd OSG EX-SUS-GDS (p.C.71~77)

METRICO
- Para aceros inoxidables, aluminio y aceros
- Desarrollados para máquinas CNC aptas para roscado rígido
- Para agujero previo use EX-SUS-GDS (p.C.71~77)

МЕТРИЧЕСКИЙ
- Для нержавеющих сталей и алюминия
- Разработаны для ЧПУ станков имеющих циклы жесткой нарезки резьбы
- пилотного отверстияиспользуйте OSG EX-SUS-GDS (p.C.71~77)

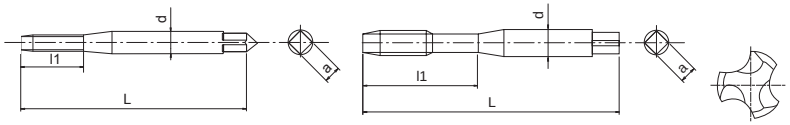
METRYCZNY
- Do stali nierdzewych, aluminium i stali
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Do wykonania otworu zastosuj OSG EX-SUS-GDS ust (p.C.71~77)

GO TO LIVE STOCK CHECK

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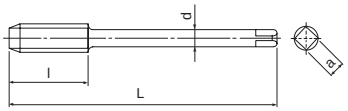
M | HSSE | CrN | ISO 2 6HX | B/4 | DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48059125	2	0,4	45	8	2,8	2,1	2	1	●	
48059133	2,5	0,45	50	9	2,8	2,1	2	1	●	
48059138	3	0,5	56	18	3,5	2,7	3	2	●	
48059144	4	0,7	63	21	4,5	3,4	3	2	●	
48059149	5	0,8	70	25	6	4,9	3	2	●	
48059155	6	1	80	30	6	4,9	3	2	●	
48059161	8	1,25	90	35	8	6,2	3	2	●	
48059169	10	1,5	100	39	10	8	3	2	●	

M | HSSE | CrN | ISO 2 6H | B/4 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48060138	3	0,5	56	11	2,2	-	3	●	
48060144	4	0,7	63	13	2,8	2,1	3	●	
48060149	5	0,8	70	16	3,5	2,7	3	●	
48060155	6	1	80	19	4,5	3,4	3	●	
48060161	8	1,25	90	22	6	4,9	3	●	
48060169	10	1,5	100	24	7	5,5	3	●	
48060179	12	1,75	110	29	9	7	3	●	
48060191	14	2	110	30	11	9	3	●	
48060202	16	2	110	32	12	9	3	●	
48060214	18	2,5	125	34	14	11	3	●	
48060228	20	2,5	140	34	16	12	3	●	
48060238	22	2,5	140	34	18	14,5	3	●	
48060247	24	3	160	38	18	14,5	3	●	
48060262	27	3	160	38	20	16	4	●	
48060271	30	3,5	180	45	22	18	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~25 m/min	◎ 15~25 m/min	◎ 10~25 m/min	○ 10~25 m/min					◎ 6~15 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~25 m/min				○ 20~40 m/min								

CC-LT-POT

METRIC
- For stainless steel and aluminium
- Long shank

METRISCH
- Für Va-Stahl und Aluminium
- Langt Schaft

METRICO
- Per acciai inox e alluminio
- Gambo lungo

METRIQUE
- Pour inox et aluminium
- Queue longue

METRIK
- Paslanmaz çelikler ve alüminyum için
- Uzun şaft

METRISK
- Til rustfrit stål og aluminium
- Langt skaft

METRISK
- För rostfritt stål och aluminium
- Långt skaft

METRICO
- Para aceros inoxidables y aluminio
- Mango larga

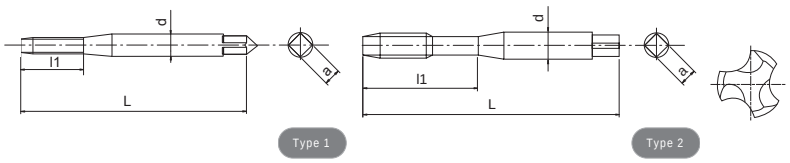
МЕТРИЧЕСКИЙ
- Для нержавеющих сталей и алюминия
- Длинный хвостовик

METRYCZNY
- Do stali nierdzewnych i aluminium
- Długi chwyt

GO TO LIVE STOCK CHECK

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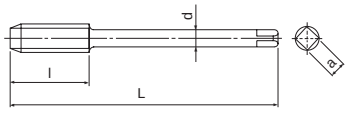






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48114125	2	0,4	80	8	2,8	2,1	2	1	●	
48114133	2,5	0,45	100	9	2,8	2,1	2	1	●	
48114138	3	0,5	100	18	3,5	2,7	3	2	●	
48114144	4	0,7	125	21	4,5	3,4	3	2	●	
48114149	5	0,8	145	25	6	4,9	3	2	●	
48114155	6	1	160	30	6	4,9	3	2	●	
48114161	8	1,25	180	35	8	6,2	3	2	●	
48114169	10	1,5	200	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48114179	12	1,75	200	29	9	7	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~25 m/min	◎ 15~25 m/min	◎ 10~25 m/min	○ 10~25 m/min					◎ 6~15 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~25 m/min				○ 20~40 m/min								

● Delivery from stock
○ Available on short notice

METRIC
- For aluminium

METRISCH
- Für Aluminium

METRICO
- Per alluminio

METRIQUE
- Pour aluminium

METRIK
- Alüminyum için

METRISK
- Til aluminium

METRISK
- För aluminium

METRICO
- Para aluminio

МЕТРИЧЕСКИЙ
- Для алюминия

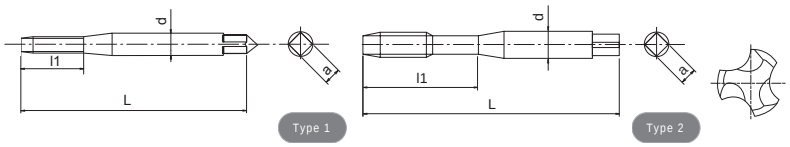
METRYCZNY
- Do aluminium

GO TO LIVE STOCK CHECK

M

M

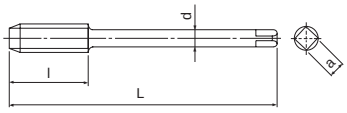
M | HSSE | ISO 2 6H | B/4 | DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48019125	2	0,4	45	8	2,8	2,1	2	1	●	
48019133	2,5	0,45	50	9	2,8	2,1	2	1	●	
66113860	3	0,5	56	18	3,5	2,7	3	2	●	
66114460	4	0,7	63	21	4,5	3,4	3	2	●	
66114960	5	0,8	70	25	6	4,9	3	2	●	
66115560	6	1	80	30	6	4,9	3	2	●	
66116160	8	1,25	90	35	8	6,2	3	2	●	
66116960	10	1,5	100	39	10	8	3	2	●	

M | HSSE | ISO 2 6H | B/4 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48019179	12	1,75	110	29	9	7	3	●	
48019191	14	2	110	30	11	9	3	●	
48019202	16	2	110	32	12	9	3	●	
48019214	18	2,5	125	34	14	11	3	●	
48019228	20	2,5	140	34	16	12	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 10~15 m/min				◎ 15~25 m/min	◎ 15~20 m/min	○ 10~15 m/min	◎ 10~15 m/min					

● Delivery from stock
○ Available on short notice

CPM-POT

METRIC
- For steel ≥ 900 N/mm² & cast iron

METRISCH
- Für Stahl ≥ 900 N/mm² & Guss

METRICO
- Per acciai ≥ 900 N/mm² e ghisa

METRIQUE
- Pour acier ≥ 900 N/mm² & fonte

METRIK
- Çelik ≥ 900 N/mm2 & döküm

METRISK
- Til stål ≥ 900 N/mm² & støbejern

METRISK
- För stål ≥ 900 N/mm² & gjutjärn

METRICO
- Para aceros ≥ 900 N/mm² y fundiciones

МЕТРИЧЕСКИЙ
- Для стали ≥ 900 Н/мм² и чугуна

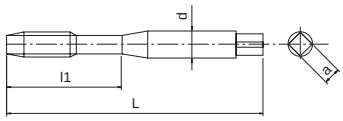
METRYCZNY
- Do stali ≥ 900 N/mm2 i żeliw

GO TO LIVE STOCK CHECK

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M | PM | ISO 2 6H | B/5 | DIN 371

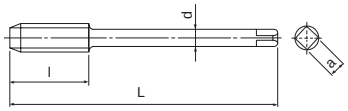






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
80713860	3	0,5	56	11	3,5	2,7	3	●	
80714460	4	0,7	63	13	4,5	3,4	3	●	
80714960	5	0,8	70	16	6	4,9	3	●	
80715560	6	1	80	19	6	4,9	3	●	
80716160	8	1,25	90	22	8	6,2	3	●	
80716960	10	1,5	100	24	10	8	3	●	

M | PM | ISO 2 6H | B/5 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
80815560	6	1	80	19	4,5	3,4	3	●	
80816160	8	1,25	90	22	6	4,9	3	●	
80816960	10	1,5	100	24	7	5,5	3	●	
80817960	12	1,75	110	29	9	7	3	●	
80819160	14	2	110	30	11	9	3	●	
80820260	16	2	110	32	12	9	4	●	
80821460	18	2,5	125	34	14	11	4	●	
80822860	20	2,5	140	34	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				○ 7~10 m/min			○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

H-POT

METRIC
- High performance
- **Serie H :** for steel 25~45 HRC

METRISCH
- High performance
- **Serie H :** Für Stahl 25~45 HRC

METRICO
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

METRIQUE
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

METRIK
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

METRISK
- High performance
- **Serie H :** Til stål 25~45 HRC

METRISK
- High performance
- **Serie H :** för stål 25~45 HRC

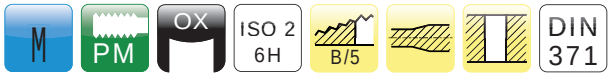
METRICO
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

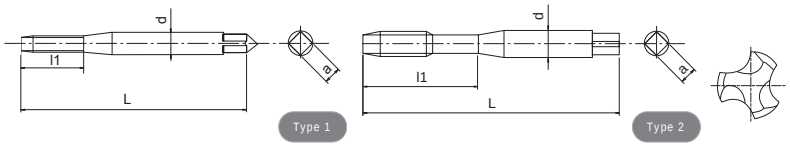
МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

METRYCZNY
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

M

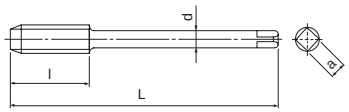






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
88412560	2	0,4	45	8	2,8	2,1	2	1	●	
88413360	2,5	0,45	50	9	2,8	2,1	2	1	●	
88413860	3	0,5	56	18	3,5	2,7	3	2	●	
88414460	4	0,7	63	21	4,5	3,4	3	2	●	
88414960	5	0,8	70	25	6	4,9	3	2	●	
88415560	6	1	80	30	6	4,9	3	2	●	
88416160	8	1,25	90	35	8	6,2	3	2	●	
88416960	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
88517960	12	1,75	110	29	9	7	3	●	
88519160	14	2	110	30	11	9	3	●	
88520260	16	2	110	32	12	9	4	●	
88521460	18	2,5	125	34	14	11	4	●	
88522860	20	2,5	140	34	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◎ 7~10 m/min			○ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 4~6 m/min	○ 2~4 m/min			

VP-H-POT

METRIC
- High performance
- **Serie H :** for steel 25~45 HRC

METRISCH
- High performance
- **Serie H :** Für Stahl 25~45 HRC

METRICO
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

METRIQUE
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

METRIK
- Yüksek performans
- Seri H : 25~45 HRC çelikler için

METRISK
- High performance
- **Serie H :** Til stål 25~45 HRC

METRISK
- High performance
- **Serie H :** för stål 25~45 HRC

METRICO
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

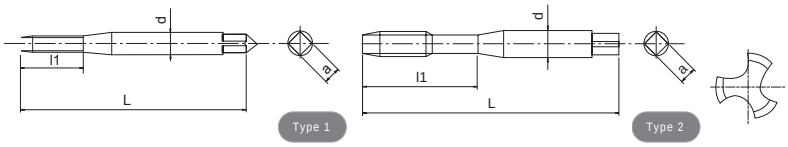
METRYCZNY
- Wysoka wydajność
- Seria H: do stali 25 ~ 45 HRC

GO TO LIVE STOCK CHECK

M

M

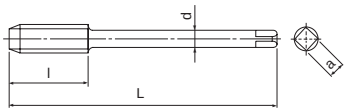
M PM V ISO 2 6HX B/5 DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48084125	2	0,4	45	8	2,8	2,1	2	1	●	
48084133	2,5	0,45	50	9	2,8	2,1	2	1	●	
48084138	3	0,5	56	18	3,5	2,7	3	2	●	
48084144	4	0,7	63	21	4,5	3,4	3	2	●	
48084149	5	0,8	70	25	6	4,9	3	2	●	
48084155	6	1	80	30	6	4,9	3	2	●	
48084161	8	1,25	90	35	8	6,2	3	2	●	
48084169	10	1,5	100	39	10	8	3	2	●	

M PM V ISO 2 6HX B/5 DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48084179	12	1,75	110	29	9	7	3	●	
48084191	14	2	110	30	11	9	3	●	
48084202	16	2	110	32	12	9	4	●	
48084214	18	2,5	125	34	14	11	4	●	
48084228	20	2,5	140	34	16	12	4	●	
48084238	22	2,5	140	34	18	14,5	4	●	
48084247	24	3	160	38	18	14,5	4	●	
48084262	27	3	160	38	20	16	4	●	
48084271	30	3,5	180	45	22	18	4	●	
48084281	33	3,5	180	50	25	20	4	●	
48084294	36	4	200	56	28	22	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◎ 7~10 m/min			○ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 4~6 m/min	○ 2~4 m/min			

● Delivery from stock
○ Available on short notice

VPO-H-POT

METRIC
- High performance
- **Serie H :** for steel 25~45 HRC

METRISCH
- High performance
- **Serie H :** Für Stahl 25~45 HRC

METRICO
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

METRIQUE
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

METRIK
- Yüksek performans
- Seri H : 25~45 HRC çelikler için

METRISK
- High performance
- **Serie H :** Til stål 25~45 HRC

METRISK
- High performance
- **Serie H :** för stål 25~45 HRC

METRICO
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

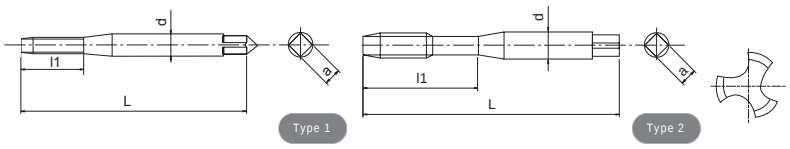
МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

METRYCZNY
- Wysoka wydajność
- Seria H: do stali 25 ~ 45 HRC

GO TO LIVE STOCK CHECK

M

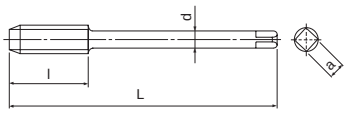






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48085155	6	1	80	30	6	4,9	3	2	●	
48085161	8	1,25	90	35	8	6,2	3	2	●	
48085169	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48085179	12	1,75	110	29	9	7	3	●	
48085191	14	2	110	30	11	9	3	●	
48085202	16	2	110	32	12	9	4	●	
48085214	18	2,5	125	34	14	11	4	●	
48085228	20	2,5	140	34	16	12	4	●	
48085238	22	2,5	140	34	18	14,5	4	●	
48085247	24	3	160	38	18	14,5	4	●	
48085262	27	3	160	38	20	16	4	●	
48085271	30	3,5	180	45	22	18	4	●	
48085281	33	3,5	180	50	25	20	4	●	
48085294	36	4	200	56	28	22	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◎ 7~10 m/min			○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 4~6 m/min	○ 2~4 m/min			

1066-POT-PLUS

METRIC
- For steel 25~45 HRC

METRISCH
- Für Stahl 25~45 HRC

METRICO
- Per acciai 25~45 HRC

METRIQUE
- Pour acier 25~45 HRC

METRIK
- 25~45 HRC çelikler için

METRISK
- Til stål 25~45 HRC

METRISK
- För stål 25~45 HRC

METRICO
- Para aceros 25~45 HRC

МЕТРИЧЕСКИЙ
- для сталей 25 ~ 45 HRC

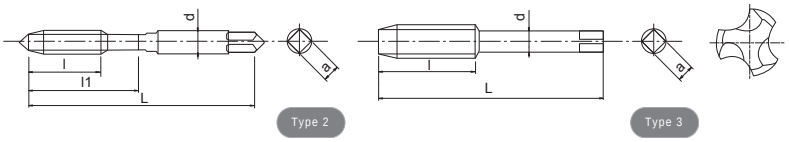
METRYCZNY
- Do stali 25 ~ 45 HRC

GO TO LIVE STOCK CHECK

M

M

M | PM | OX | ISO 2 6H | B/5 | ISO 529





EDP	M	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
23101384	3	0,5	48	11	18	3,15	2,5	3	2	○	
23101444	4	0,7	53	13	21	4	3,15	3	2	○	
23101494	5	0,8	58	16	25	5	4	3	2	○	
23101554	6	1	66	19	30	6,3	5	3	2	○	
23101614	8	1,25	72	22	35	8	6,3	3	2	○	
23101694	10	1,5	80	24	39	10	8	3	2	○	
23101794	12	1,75	89	29	-	9	7,1	3	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◯ 7~10 m/min			◯ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

METRIC
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

METRISCH
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

METRICO
- Alta prestazione
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

METRIQUE
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

METRIK
- Yüksek performans
- **Seri E:** İnkonel 718 barındıran nikel bazlı alaşımlar için

METRISK
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

METRISK
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

METRICO
- Altas prestaciones
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

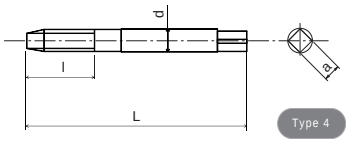
МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

METRYCZNY
- Wysoka wydajność
- **Seria E:** do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

M

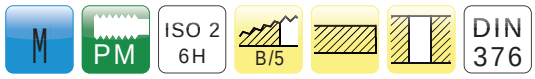


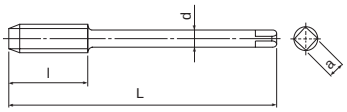






EDP	M	P	L	l	d	a	ZΔ	Stock	Price
89313860	3	0,5	56	12	3,5	2,7	3	●	
89314460	4	0,7	63	16	4,5	3,4	3	●	
89314960	5	0,8	70	19	6	4,9	3	●	
89315560	6	1	80	23	6	4,9	3	●	
89316160	8	1,25	90	30	8	6,2	3	●	
89316960	10	1,5	100	38	10	8	3	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
89417960	12	1,75	110	29	10	8	3	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 2~4 m/min			

● Delivery from stock
○ Available on short notice

WHR-NI-POT

METRIC
- High performance
- For nickel based alloys including Inconel 718

METRISCH
- High performance
- Für Nickelbasislegierungen inkl. Inconel 718

METRICO
- Alta prestazione
- Per Inconel 718 ed altre leghe a base di Nickel

METRIQUE
- Haute performance
- Pour Inconel 718 et autres alliages sur base de Nickel

METRIK
- Yüksek performans
- İnkonel 718 barındıran nikel bazlı alaşımlar için

METRISK
- High performance
- Til nikkellegeringer inklusiv Inconel 718

METRISK
- High performance
- För nickel legeringar inklusive Inconel 718

METRICO
- Altas prestaciones
- Para aleaciones de níquel incluido Inconel 718

МЕТРИЧЕСКИЙ
- Высокая производительность
- для никелевых сплавов, включая Inconel 718

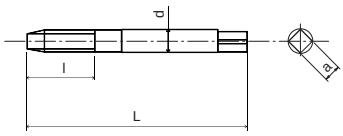
METRYCZNY
- Wysoka wydajność
- Do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

M

M

M | PM | HR | ISO 2 6HX | B/5 | DIN 371

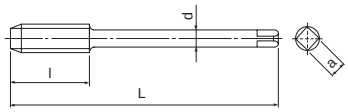






EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48079138	3	0,5	56	12	3,5	2,7	3	●	
48079144	4	0,7	63	16	4,5	3,4	3	●	
48079149	5	0,8	70	19	6	4,9	3	●	
48079155	6	1	80	23	6	4,9	3	●	
48079161	8	1,25	90	30	8	6,2	3	●	
48079169	10	1,5	100	38	10	8	3	●	

M | PM | HR | ISO 2 6HX | B/5 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48079179	12	1,75	110	29	10	8	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 2~4 m/min			

● Delivery from stock
○ Available on short notice

V-TI-POT

METRIC
- High performance
- For titanium alloys (Ti-6Al-4V), 40~45 HRC

METRISCH
- High performance
- Für Titanlegierungen inkl. (Ti-6Al-4V), 40~45 HRC

METRICO
- Alta prestazione
- Per leghe di Titanio (Ti-6Al-4V) di durezza tra 40~45 HRC

METRIQUE
- Haute performance
- Pour alliages de Titane (Ti-6Al-4V) : dureté 40~45 HRC

METRIK
- Yüksek performans
- Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için

METRISK
- High performance
- Til Titanium legeringer (Ti-6Al-4V), 40~45 HRC

METRISK
- High performance
- För Titanlegeringar (Ti-6Al-4V), 40~45 HRC

METRICO
- Altas prestaciones
- Para aleaciones de Titanio (Ti-6Al-4V), 40~45 HRC

МЕТРИЧЕСКИЙ
- Высокая производительность
- Для титановых сплавов (Ti-6Al-4V), 40~45 HRC

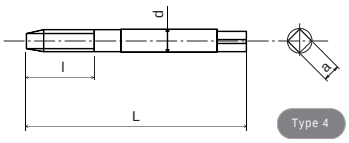
METRYCZNY
- Wysoka wydajność
- do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC

GO TO LIVE STOCK CHECK

M

M

M | PM | V | ISO 2 6H | B/5 | DIN 371

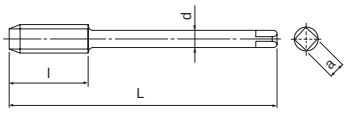






EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48012138	3	0,5	56	12	3,5	2,7	3	●	
48012144	4	0,7	63	16	4,5	3,4	3	●	
48012149	5	0,8	70	19	6	4,9	3	●	
48012155	6	1	80	23	6	4,9	3	●	
48012161	8	1,25	90	30	8	6,2	3	●	
48012169	10	1,5	100	38	10	8	3	●	

M | PM | V | ISO 2 6H | B/5 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48012179	12	1,75	110	29	10	8	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								◎ 4~6 m/min				

● Delivery from stock
○ Available on short notice

METRIC
- General purpose, also for stainless steel

METRISCH
- Für universelle Anwendungen und für VA - Stahl

METRICO
- Per applicazioni generali e per inox

METRIQUE
- Pour applications générales et pour des aciers inox

METRIK
- Genel kullanım, ayrıca paslanmaz çelik için

METRISK
- Til generelt brug, også til rustfrit stål

METRISK
- För allround bearbetning och för rostfritt stål

METRICO
- Para aplicación general, para aceros inoxidables

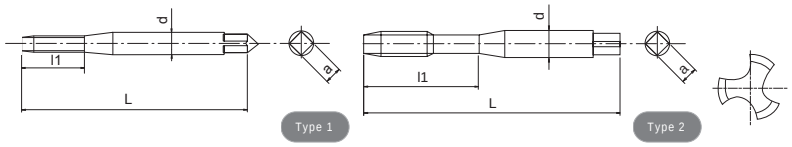
МЕТРИЧЕСКИЙ
- Общего назначения и для нержавеющих сталей

METRYCZNY
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

M

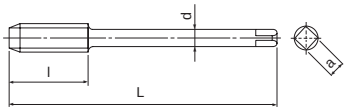






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
65312560	2	0,4	45	8	2,8	2,1	2	1	●	
65312860	2,2	0,45	45	9	2,8	2,1	2	1	●	
65313360	2,5	0,45	50	9	2,8	2,1	2	1	●	
65313860	3	0,5	56	18	3,5	2,7	3	2	●	
65314060	3,5	0,6	56	20	4	3	3	2	●	
65314460	4	0,7	63	21	4,5	3,4	3	2	●	
65314960	5	0,8	70	25	6	4,9	3	2	●	
65315560	6	1	80	30	6	4,9	3	2	●	
65316160	8	1,25	90	35	8	6,2	3	2	●	
65316960	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
65413860	3	0,5	56	5	2,2	-	3	●	
65414460	4	0,7	63	7	2,8	2,1	3	●	
65414960	5	0,8	70	8	3,5	2,7	3	●	
65415560	6	1	80	10	4,5	3,4	3	●	
65416160	8	1,25	90	13	6	4,9	3	●	
65416960	10	1,5	100	15	7	5,5	3	●	
65417960	12	1,75	110	18	9	7	4	●	
65419160	14	2	110	20	11	9	4	●	
65420260	16	2	110	20	12	9	4	●	
65421460	18	2,5	125	25	14	11	4	●	
65422860	20	2,5	140	25	16	12	4	●	
65423860	22	2,5	140	25	18	14,5	4	●	
65424760	24	3	160	30	18	14,5	4	●	
65426260	27	3	160	30	20	16	4	●	
65427160	30	3,5	180	35	22	18	5	●	
65428160	33	3,5	180	35	25	20	5	●	
65429460	36	4	200	40	28	22	5	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min					◎ 7~12 m/min	○ 7~11 m/min	○ 7~14 m/min		○ 7~14 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 7~14 m/min											◎ 10~15 m/min	

● Delivery from stock
○ Available on short notice

METRIC
- General purpose, also for stainless steel

METRISCH
- Für universelle Anwendungen und für VA - Stahl

METRICO
- Per applicazioni generali e per inox

METRIQUE
- Pour applications générales et pour des aciers inox

METRIK
- Genel kullanım, ayrıca paslanmaz çelik için

METRISK
- Til generelt brug, også til rustfrit stål

METRISK
- För allround bearbetning och för rostfritt stål

METRICO
- Para aplicación general, para aceros inoxidables

МЕТРИЧЕСКИЙ
- Общего назначения и для нержавеющих сталей

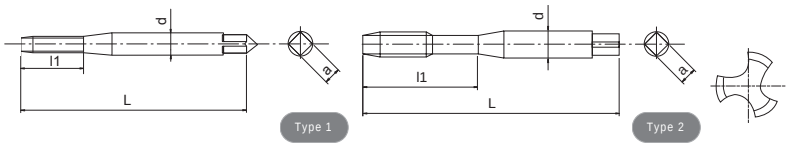
METRYCZNY
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

M

M

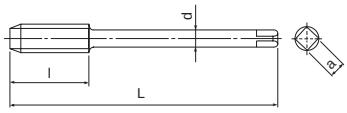
M | HSSE | OX | 40° | ISO 3 6G | C/2,5 | DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
65312599	2	0,4	45	8	2,8	2,1	2	1	●	
65313399	2,5	0,45	50	9	2,8	2,1	2	1	●	
65313899	3	0,5	56	18	3,5	2,7	3	2	●	
65314499	4	0,7	63	21	4,5	3,4	3	2	●	
65314999	5	0,8	70	25	6	4,9	3	2	●	
65315599	6	1	80	30	6	4,9	3	2	●	
65316199	8	1,25	90	35	8	6,2	3	2	●	
65316999	10	1,5	100	39	10	8	3	2	●	

M | HSSE | OX | 40° | ISO 3 6G | C/2,5 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
65417999	12	1,75	110	18	9	7	4	●	
65419199	14	2	110	20	11	9	4	●	
65420299	16	2	110	20	12	9	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min					◎ 7~12 m/min	○ 7~11 m/min	○ 7~14 m/min		○ 7~14 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 7~14 m/min											◎ 10~15 m/min	

VA-SC-SFT

METRIC
- General purpose, also for stainless steel
- Short chamfer

METRISCH
- Für universelle Anwendungen und für VA - Stahl
- kurzer Anschnitt

METRICO
- Per applicazioni generali e per inox
- Imbocco corto

METRIQUE
- Pour applications générales et pour des aciers inox
- entrée courte

METRIK
- Genel kullanım, ayrıca paslanmaz çelik için
- Kısa pah

METRISK
- Til generelt brug, også til rustfrit stål
- Kort indløb

METRISK
- För allround bearbetning och för rostfritt stål
- Kort faslängd

METRICO
- Para aplicación general, para aceros inoxidables
- Chaflán corto

МЕТРИЧЕСКИЙ
- Общего назначения и для нержавеющих сталей
- Короткий заход

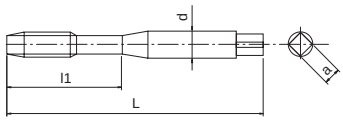
METRYCZNY
- Uniwersalne, także do stali nierdzewnych
- Krótki nakrój

GO TO LIVE STOCK CHECK

M

M

M | HSSE | OX | 40° | ISO 2 6H | E/1,5 | ≥2D | DIN 371

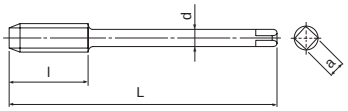






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
48036138	3	0,5	56	18	3,5	2,7	3	●	
48036144	4	0,7	63	21	4,5	3,4	3	●	
48036149	5	0,8	70	25	6	4,9	3	●	
48036155	6	1	80	30	6	4,9	3	●	
48036161	8	1,25	90	35	8	6,2	3	●	
48036169	10	1,5	100	39	10	8	3	●	

M | HSSE | OX | 40° | ISO 2 6H | E/1,5 | ≥2D | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48036179	12	1,75	110	18	9	7	3	●	
48036191	14	2	110	20	11	9	3	●	
48036202	16	2	110	20	12	9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min					◎ 7~12 m/min	○ 7~11 m/min	○ 7~14 m/min		○ 7~14 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 7~14 m/min											◎ 10~15 m/min	

● Delivery from stock
○ Available on short notice

METRIC
- For general purposes application

METRISCH
- Für universelle Anwendungen

METRICO
- Per applicazioni generali

METRIQUE
- Pour applications générales

METRIK
- Genel kullanım

METRISK
- Til generelt brug

METRISK
- För diverse applikationer

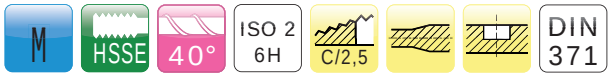
METRICO
- Para aplicación general

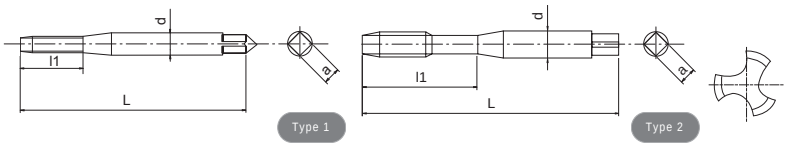
МЕТРИЧЕСКИЙ
- Общего назначения

METRYCZNY
- Uniwersalne

GO TO LIVE STOCK CHECK

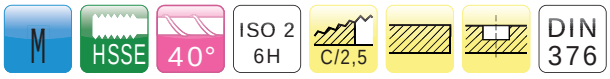
M

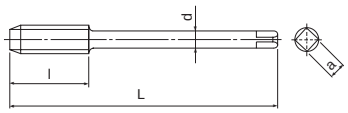






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
61312560	2	0,4	45	8	2,8	2,1	2	1	●	
61313360	2,5	0,45	50	9	2,8	2,1	2	1	●	
61313860	3	0,5	56	18	3,5	2,7	3	2	●	
61314060	3,5	0,6	56	20	4	3	3	2	●	
61314460	4	0,7	63	21	4,5	3,4	3	2	●	
61314960	5	0,8	70	25	6	4,9	3	2	●	
61315560	6	1	80	30	6	4,9	3	2	●	
61316160	8	1,25	90	35	8	6,2	3	2	●	
61316960	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
61413860	3	0,5	56	5	2,2	-	3	●	
61414460	4	0,7	63	7	2,8	2,1	3	●	
61414960	5	0,8	70	8	3,5	2,7	3	●	
61415560	6	1	80	10	4,5	3,4	3	●	
61416160	8	1,25	90	13	6	4,9	3	●	
61416960	10	1,5	100	15	7	5,5	3	●	
61417960	12	1,75	110	18	9	7	3	●	
61419160	14	2	110	20	11	9	3	●	
61420260	16	2	110	20	12	9	3	●	
61421460	18	2,5	125	25	14	11	4	●	
61422860	20	2,5	140	25	16	12	4	●	
61423860	22	2,5	140	25	18	14,5	4	●	
61424760	24	3	160	30	18	14,5	4	●	
61426260	27	3	160	30	20	16	4	●	
61427160	30	3,5	180	35	22	18	4	●	
61428160	33	3,5	180	35	25	20	4	●	
61429460	36	4	200	40	28	22	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	○ 6~9 m/min	○ 7~12 m/min							○ 6~11 m/min		○ 6~8 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 6~11 m/min	○ 10~20 m/min	○ 10~20 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min				○ 10~15 m/min	

METRIC
- For general purposes application

METRISCH
- Für universelle Anwendungen

METRICO
- Per applicazioni generali

METRIQUE
- Pour applications générales

METRIK
- Genel kullanım

METRISK
- Til generelt brug

METRISK
- För diverse applikationer

METRICO
- Para aplicación general

МЕТРИЧЕСКИЙ
- Общего назначения

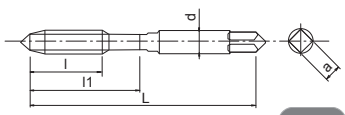
METRYCZNY
- Uniwersalne

GO TO LIVE STOCK CHECK

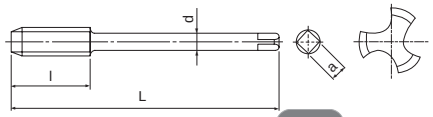
M

M





Type 2



Type 3



EDP	M	P	L	l	d	a	ZΔ	Type	Stock	Price
60413860	3	0,5	40	18	3,5	2,7	3	2	●	
60414460	4	0,7	45	21	4,5	3,4	3	2	●	
60414960	5	0,8	50	24	6	4,9	3	2	●	
60415560	6	1	50	27	6	4,9	3	2	●	
60416160	8	1,25	63	13	6	4,9	3	3	●	
60416960	10	1,5	70	15	7	5,5	3	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	○ 6~9 m/min	○ 7~12 m/min							○ 6~11 m/min		○ 6~8 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 6~11 m/min	○ 10~20 m/min	○ 10~20 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min				○ 10~15 m/min	

● Delivery from stock
○ Available on short notice

WM-SFT

METRIC
- For mild steel

METRISCH
- Für unlegierten Stahl

METRICO
- Per acciai dolci

METRIQUE
- Pour aciers doux

METRIK
- Orta Çelikler için

METRISK
- Til blødt stål

METRISK
- För mjukt stål

METRICO
- Para aceros suaves

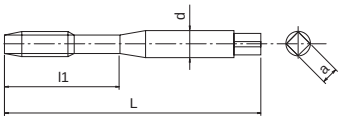
МЕТРИЧЕСКИЙ
- для мягкой стали

METRYCZNY
- Do stali miękkich

GO TO LIVE STOCK CHECK

M



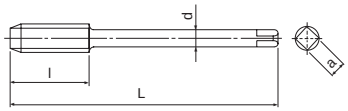






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
61614460	4	0,7	63	21	4,5	3,4	3	●	
61614960	5	0,8	70	25	6	4,9	3	●	
61615560	6	1	80	30	6	4,9	3	●	
61616160	8	1,25	90	35	8	6,2	3	●	
61616960	10	1,5	100	39	10	8	3	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
61717960	12	1,75	110	18	9	7	3	●	
61719160	14	2	110	20	11	9	3	●	
61720260	16	2	110	20	12	9	3	●	
61721460	18	2,5	125	25	14	11	4	●	
61722860	20	2,5	140	25	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 8~13 m/min	◎ 7~12 m/min	○ 6~9 m/min	○ 7~12 m/min							○ 6~11 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 6~11 m/min												

1066-SFT

METRIC
- For general purposes application

METRISCH
- Für universelle Anwendungen

METRICO
- Per applicazioni generali

METRIQUE
- Pour applications générales

METRIK
- Genel kullanım

METRISK
- Til generelt brug

METRISK
- För diverse applikationer

METRICO
- Para aplicación general

МЕТРИЧЕСКИЙ
- Общего назначения

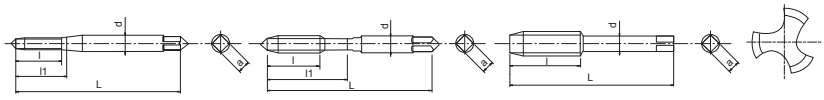
METRYCZNY
- Uniwersalne

GO TO LIVE STOCK CHECK

M

M





Type 1 Type 2 Type 3



EDP	M	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22201254	2	0,4	41	8	-	2,5	2	2	1	○	
T102022045	2,2	0,45	41	8	-	2,8	2,24	2	1	○	
22201334	2,5	0,45	44,5	9,5	-	2,8	2,24	2	1	○	
22201384	3	0,5	48	11	18	3,15	2,5	3	2	○	
22201404	3,5	0,6	50	13	20	3,55	2,8	3	2	○	
22201444	4	0,7	53	13	21	4	3,15	3	2	○	
22201464	4,5	0,75	53	13	21	4,5	3,55	3	2	○	
22201494	5	0,8	58	16	25	5	4	3	2	○	
22201554	6	1	66	19	30	6,3	5	3	2	○	
22201584	7	1	66	19	30	7,1	5,6	3	2	○	
22201614	8	1,25	72	22	35	8	6,3	3	2	○	
22201654	9	1,25	72	22	36	9	7,1	3	2	○	
22201694	10	1,5	80	24	39	10	8	3	2	○	
22201744	11	1,5	85	25	-	8	6,3	3	3	○	
22201794	12	1,75	89	29	-	9	7,1	3	3	○	
22201914	14	2	95	30	-	11,2	9	3	3	○	
22202024	16	2	102	32	-	12,5	10	3	3	○	
22202144	18	2,5	112	37	-	14	11,2	4	3	○	
22202284	20	2,5	112	37	-	14	11,2	4	3	○	
22202384	22	2,5	118	38	-	16	12,5	4	3	○	
22202474	24	3	130	45	-	18	14	4	3	○	
22202624	27	3	135	45	-	20	16	4	3	○	
22202714	30	3,5	151	51	-	22,4	18	4	3	○	
22202814	33	3,5	151	51	-	22,4	18	4	3	○	
22202944	36	4	162	57	-	25	20	4	3	○	
22203044	39	4	170	60	-	28	22,4	4	3	○	
22203144	42	4,5	187	67	-	31,5	28	4	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min	○ 7~11 m/min				◎ 7~12 m/min	○ 6~9 m/min	○ 7~14 m/min		○ 7~14 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

HXL-SFT

METRIC
- For oil and energy industry
- For horizontal operations

METRISCH
- Für Öl- und Schwerindustrie
- Für horizontale Bearbeitung

METRICO
- Per industria petrolifera ed energetica
- Per lavorazioni orizzontali

METRIQUE
- Pour l'industrie lourde et l'énergie
- Pour applications horizontales

METRIK
- Yağ ve enerji endüstrisi için
- Yatay uygulamalar

METRISK
- For olie og energy industrien
- Til horisontale operationer

METRISK
- För olje och energi industrin
- För horisontala applikationer

METRICO
- para Industria Energetica y Pesada
- Para roscado horizontal

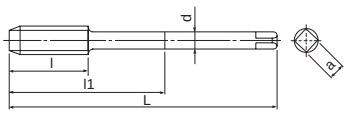
МЕТРИЧЕСКИЙ
- внутреннее охлаждение
- Роризонтального нарезки резьбы

METRYCZNY
- Dla przemysłu naftowego i energetyki
- Do aplikacji poziomych

GO TO LIVE STOCK CHECK

M









EDP	M	P	L	l	l1	d	a	ZΔ	Stock	Price
48045228	20	2,5	140	20	69	16	12	5	●	
48045247	24	3	160	24	81	18	14,5	5	●	
48045262	27	3	160	24	90	20	16	5	●	
48045271	30	3,5	250	28	161	22	18	5	●	
48045281	33	3,5	250	28	176	25	20	5	●	
48045294	36	4	250	32	174	28	22	5	●	
48045304	39	4	300	32	188	32	24	5	●	
48045314	42	4,5	300	36	203	32	24	6	●	
48045325	48	5	300	40	183	36	29	6	●	
48045337	52	5	300	40	197	40	32	6	●	
48045347	56	5,5	300	44	213	45	35	6	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	◎ 6~9 m/min	◎ 7~12 m/min	○ 3~5 m/min				○ 5~8 m/min	○ 6~9 m/min	○ 6~11 m/min	◎ 7~12 m/min	◎ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

OIL-HXL-SFT

METRIC
- Coolant through, for oil and energy industry
- For horizontal operations

METRISCH
- Mit innerer Kühlmittelzuführung für Öl - und Schwerindustrie
- Für horizontale Bearbeitung

METRICO
- Per lubrificazione centrali, per industria petrolifera ed energetica
- Per lavorazioni orizzontali

METRIQUE
- Avec arrosage centrale, pour l'industrie lourde et l'energie
- Pour applications horizontales

METRIK
- Içten soğutma, yağ ve enerji endüstrisi için
- Yatay uygulamalar

METRISK
- Kølekanaler, for olie og energy industrien
- Til horisontale operationer

METRISK
- Kylkanaler, för olje och energi industrin
- För horisontala applikationer

METRICO
- Para refrigeración interna, para industria Energetica y Pesada
- Para roscado horizontal

МЕТРИЧЕСКИЙ
- Сверло нормальной
- Коризонтального нарезки резьбы

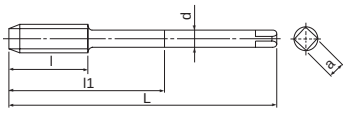
METRYCZNY
- Chłodzenie wewętrzne, dla przemysłu naftowego i energetyki
- Do aplikacji poziomych

GO TO LIVE STOCK CHECK

M

M







EDP	M	P	L	l	l1	d	a	ZΔ	Stock	Price
48048228	20	2,5	140	20	69	16	12	5	●	
48048247	24	3	160	24	81	18	14,5	5	●	
48048262	27	3	160	24	90	20	16	5	●	
48048271	30	3,5	250	28	161	22	18	5	●	
48048281	33	3,5	250	28	176	25	20	5	●	
48048294	36	4	250	32	174	28	22	5	●	
48048304	39	4	300	32	188	32	24	5	●	
48048314	42	4,5	300	36	203	32	24	6	●	
48048325	48	5	300	40	183	36	29	6	●	
48048337	52	5	300	40	197	40	32	6	●	
48048347	56	5,5	300	44	213	45	35	6	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	◎ 6~9 m/min	◎ 7~12 m/min	○ 3~5 m/min				○ 5~8 m/min	○ 6~9 m/min	○ 6~11 m/min	◎ 7~12 m/min	◎ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

METRIC
- For oil and energy industry
- For vertical operations

METRISCH
- Für Öl- und Schwerindustrie
- Für vertikale Bearbeitung

METRICO
- Per industria petrolifera ed energetica
- Per lavorazioni verticali

METRIQUE
- Pour l'industrie lourde et l'énergie
- Pour applications verticales

METRIK
- Yağ ve enerji endüstrisi için
- Dikey operasyonlar için

METRISK
- For olie og energy industrien
- Til vertikale operationer

METRISK
- För olje och energi industrin
- För vertikala applikationer

METRICO
- para Industria Energetica y Pesada
- Para roscado vertical

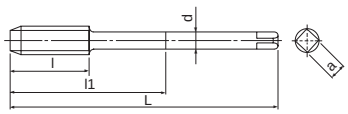
МЕТРИЧЕСКИЙ
- внутреннее охлаждение
- Горизонтального нарезания резьбы

METRYCZNY
- Dla przemysłu naftowego i energetyki
- Do pracy w pionie

GO TO LIVE STOCK CHECK

M









EDP	M	P	L	l	l1	d	a	ZΔ	Stock	Price
48046228	20	2,5	140	20	69	16	12	4	●	
48046247	24	3	160	24	81	18	14,5	4	●	
48046262	27	3	160	24	90	20	16	4	●	
48046271	30	3,5	250	28	161	22	18	5	●	
48046281	33	3,5	250	28	176	25	20	5	●	
48046294	36	4	250	32	174	28	22	5	●	
48046304	39	4	300	32	188	32	24	5	●	
48046314	42	4,5	300	36	203	32	24	6	●	
48046325	48	5	300	40	183	36	29	6	●	
48046337	52	5	300	40	197	40	32	6	●	
48046347	56	5,5	300	44	213	45	35	6	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◯ 8~13 m/min	◯ 7~12 m/min	◎ 6~9 m/min	◎ 7~12 m/min	◯ 3~5 m/min				◯ 5~8 m/min	◯ 6~9 m/min	◯ 6~11 m/min		
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

OIL-VXL-SFT

METRIC
- Coolant through, for oil and energy industry
- For vertical operations

METRISCH
- Mit innerer Kühlmittelzuführung für Öl - und Schwerindustrie
- Für vertikale Bearbeitung

METRICO
- Per lubrificazione centrali, per industria petrolifera ed energetica
- Per lavorazioni verticali

METRIQUE
- Avec arrosage centrale, pour l'industrie lourde et l'energie
- Pour applications verticales

METRIK
- Içten soğutma, yağ ve enerji endüstrisi için
- Dikey operasyonlar için

METRISK
- Kølekanaler, for olie og energy industrien
- Til vertikale operationer

METRISK
- Kylkanaler, för olje och energi industrin
- För vertikala applikationer

METRICO
- Para refrigeración interna, para industria Energetica y Pesada
- Para roscado vertical

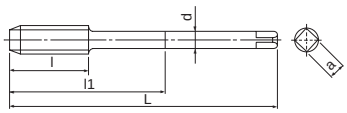
МЕТРИЧЕСКИЙ
- Сверло нормальной
- Коризонтального нарезания резьбы

METRYCZNY
- Chłodzenie wewętrzne, dla przemysłu naftowego i energetyki
- Do pracy w pionie

GO TO LIVE STOCK CHECK

M







EDP	M	P	L	l	l1	d	a	ZΔ	Stock	Price
48049228	20	2,5	140	20	69	16	12	4	●	
48049247	24	3	160	24	81	18	14,5	4	●	
48049262	27	3	160	24	90	20	16	4	●	
48049271	30	3,5	250	28	161	22	18	5	●	
48049281	33	3,5	250	28	176	25	20	5	●	
48049294	36	4	250	32	174	28	22	5	●	
48049304	39	4	300	32	188	32	24	5	●	
48049314	42	4,5	300	36	203	32	24	6	●	
48049325	48	5	300	40	183	36	29	6	●	
48049337	52	5	300	40	197	40	32	6	●	
48049347	56	5,5	300	44	213	45	35	6	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◯ 8~13 m/min	◯ 7~12 m/min	◎ 6~9 m/min	◎ 7~12 m/min	◯ 3~5 m/min				◯ 5~8 m/min	◯ 6~9 m/min	◯ 6~11 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

METRIC
- For steel ≤ 850 N/mm²

METRISCH
- Für Stähl ≤ 850 N/mm²

METRICO
- Per acciai ≤ 850 N/mm²

METRIQUE
- Pour aciers ≤ 850 N/mm²

METRIK
- ≤ 850N/mm² çelikler için

METRISK
- Til stål ≤ 850 N/mm²

METRISK
- För stål ≤ 850 N/mm²

METRICO
- Para aceros ≤ 850 N/mm²

МЕТРИЧЕСКИЙ
- Для сталей ≤ 850 Н/ММ²

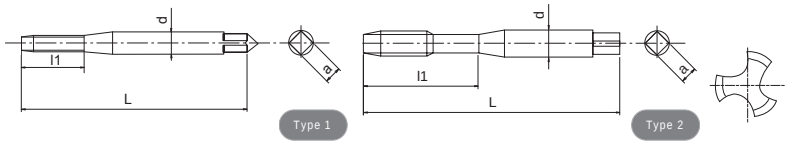
METRYCZNY
- Do stali ≤ 850 N/mm²

GO TO LIVE STOCK CHECK

M

M

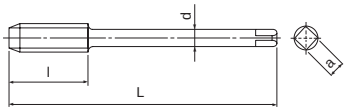
M HSSE TIN 40° ISO 2 6H C/2,5 DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
6131256001	2	0,4	45	8	2,8	2,1	2	1	●	
6131336001	2,5	0,45	50	9	2,8	2,1	2	1	●	
6131386001	3	0,5	56	18	3,5	2,7	3	2	●	
6131406001	3,5	0,6	56	20	4	3	3	2	●	
6131446001	4	0,7	63	21	4,5	3,4	3	2	●	
6131496001	5	0,8	70	25	6	4,9	3	2	●	
6131556001	6	1	80	30	6	4,9	3	2	●	
6131616001	8	1,25	90	36	8	6,2	3	2	●	
6131696001	10	1,5	100	39	10	8	3	2	●	

M HSSE TIN 40° ISO 2 6H C/2,5 DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
6141386001	3	0,5	56	5	2,2	-	3	●	
6141446001	4	0,7	63	7	2,8	2,1	3	●	
6141496001	5	0,8	70	8	3,5	2,7	3	●	
6141556001	6	1	80	10	4,5	3,4	3	●	
6141616001	8	1,25	90	13	6	4,9	3	●	
6141696001	10	1,5	100	15	7	5,5	3	●	
6141796001	12	1,75	110	18	9	7	3	●	
6141916001	14	2	110	20	11	9	3	●	
6142026001	16	2	110	20	12	9	3	●	
6142146001	18	2,5	125	25	14	11	4	●	
6142286001	20	2,5	140	25	16	12	4	●	
6142386001	22	2,5	140	25	18	14,5	4	●	
6142476001	24	3	160	30	18	14,5	4	●	
6142626001	27	3	160	30	20	16	4	●	
6142716001	30	3,5	180	35	22	18	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	◎ 6~9 m/min	○ 7~12 m/min					○ 5~8 m/min	○ 6~9 m/min	○ 6~11 m/min		○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 6~11 m/min	○ 10~20 m/min	○ 10~20 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min	○ 4~6 m/min			○ 10~15 m/min	

METRIC
- For steel ≤ 850 N/mm²

METRISCH
- Für Stähl ≤ 850 N/mm²

METRICO
- Per acciai ≤ 850 N/mm²

METRIQUE
- Pour aciers ≤ 850 N/mm²

METRIK
- ≤ 850N/mm² çelikler için

METRISK
- Til stål ≤ 850 N/mm²

METRISK
- För stål ≤ 850 N/mm²

METRICO
- Para aceros ≤ 850 N/mm²

МЕТРИЧЕСКИЙ
- Для сталей ≤ 850 Н/ММ²

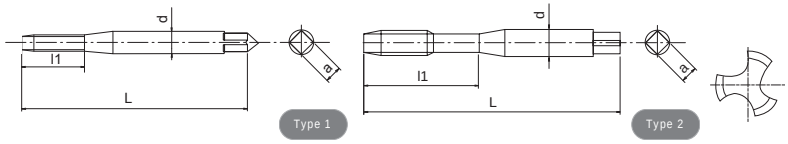
METRYCZNY
- Do stali ≤ 850 N/mm²

GO TO LIVE STOCK CHECK

M

M

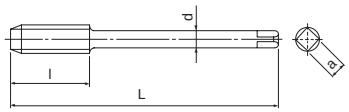






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
6131256002	2	0,4	45	8	2,8	2,1	2	1	●	
6131386002	3	0,5	56	18	3,5	2,7	3	2	●	
6131446002	4	0,7	63	21	4,5	3,4	3	2	●	
6131496002	5	0,8	70	25	6	4,9	3	2	●	
6131556002	6	1	80	30	6	4,9	3	2	●	
6131616002	8	1,25	90	36	8	6,2	3	2	●	
6131696002	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
6141796002	12	1,75	110	18	9	7	3	●	
6141916002	14	2	110	20	11	9	3	●	
6142026002	16	2	110	20	12	9	3	●	
6142146002	18	2,5	125	25	14	11	4	●	
6142286002	20	2,5	140	25	16	12	4	●	
6142386002	22	2,5	140	25	18	14,5	4	●	
6142476002	24	3	160	30	18	14,5	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	◎ 6~9 m/min	○ 7~12 m/min					○ 5~8 m/min	○ 6~9 m/min	○ 6~11 m/min		○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 6~11 m/min	○ 10~20 m/min	○ 10~20 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min	○ 4~6 m/min			○ 10~15 m/min	

● Delivery from stock
○ Available on short notice

METRIC
- For stainless steel

METRISCH
- Für VA -Stähl

METRICO
- Per inox

METRIQUE
- Pour les aciers inoxydables

METRIK
- Paslanmaz çelik için

METRISK
- Til rustfrit stål

METRISK
- För rostfritt stål

METRICO
- Para aceros inoxidables

МЕТРИЧЕСКИЙ
- Для нержавеющих сталей

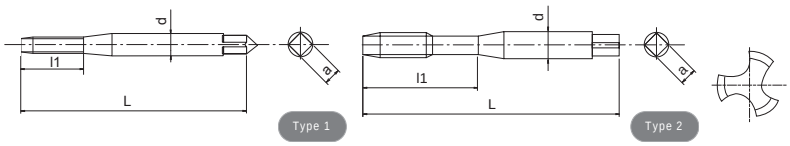
METRYCZNY
- Do stali nierdzewnych

GO TO LIVE STOCK CHECK

M

M

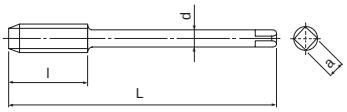






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48025125	2	0,4	45	8	2,8	2,1	2	1	●	
48025128	2,2	0,45	45	9	2,8	2,1	2	1	●	
48025133	2,5	0,45	50	9	2,8	2,1	2	1	●	
48025138	3	0,5	56	18	3,5	2,7	3	2	●	
48025140	3,5	0,6	56	20	4	3	3	2	●	
48025144	4	0,7	63	21	4,5	3,4	3	2	●	
48025149	5	0,8	70	25	6	4,9	3	2	●	
48025155	6	1	80	30	6	4,9	3	2	●	
48025161	8	1,25	90	35	8	6,2	3	2	●	
48025169	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48026179	12	1,75	110	18	9	7	3	●	
48026191	14	2	110	20	11	9	3	●	
48026202	16	2	110	20	12	9	3	●	
48026214	18	2,5	125	25	14	11	4	●	
48026228	20	2,5	140	25	16	12	4	●	
48026238	22	2,5	140	25	18	14,5	4	●	
48026247	24	3	160	30	18	14,5	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
								◎ 7~12 m/min				
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 6~11 m/min											◎ 10~15 m/min	

METRIC
- For stainless steel, aluminium and steel
- For threading depth ≥ 2 D
- Developed for CNC machines equipped with rigid tapping
- For pilot hole use OSG EX-SUS-GDS (p.C.71~77)

METRISCH
- Für Va-Stahl, Aluminium und Stahl
- Für Gewindetiefe ≥ 2 D
- Für CNC Maschinen mit Synchronspindeln
- Für die Kernlochbearbeitung EX-SUS-GDS verwenden (p.C.71~77)

METRICO
- Per acciai inox, alluminio, e acciai
- Per profondita di filettatura ≥ 2 D
- Per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Utilizzate OSG EX-SUS-GDS per foro pilota (p.C.71~77)

METRIQUE
- Pour inox, aluminium et aciers
- Profondeur de taraudage ≥ 2 D
- Développé pour les machines CNC qui ont le "taraudage rigide"
- Pour trou pilote utiliser OSG EX-SUS-GDS (p.C.71~77)

METRİK
- Paslanmaz çelik, alüminyum ve çelik için
- Diş derinliği ≥ 2 D
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Pilot deliği için OSG EX-SUS-GDS kullanın (sayfa C.71~77)

METRISK
- Til rustfrit stål, aluminium og stål
- Til gevinddybde ≥ 2 D
- Udviklet til CNC maskine udstyret med fast tapholder
- For boring af pilot hul brug OSG EX-SUS-GDS (p.C.71~77)

METRISK
- För rostfritt stål, aluminium och stål
- För gängdjup ≥ 2 D
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- För pilot hål använd OSG EX-SUS-GDS (p.C.71~77)

METRICO
- Para aceros inoxidables, aluminio y aceros
- Para roscado ≥ 2 D
- Desarrollados para máquinas CNC aptas para roscado rígido
- Para agujero previo use EX-SUS-GDS (p.C.71~77)

МЕТРИЧЕСКАЯ
- Для нержавеющих сталей и алюминия
- Для резьб глубиной ≥ 2 D
- Разработаны для ЧПУ станков имеющих циклы жесткой нарезки
- Для пилотного отверстия используйте OSG EX-SUS-GDS

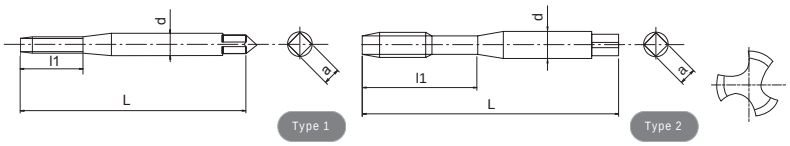
METRYCZNY
- Do stali nierdzewnych, aluminium i stali
- Do gwintowania na głębokość ≥ 2 D
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Do wykonania otworu zastosuj OSG EX-SUS-GDS ust (p.C.71~77)

GO TO LIVE STOCK CHECK

M

M

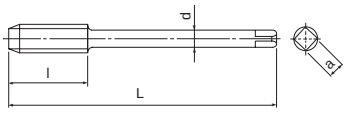






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48032125	2	0,4	45	8	2,8	2,1	2	1	●	
48032133	2,5	0,45	50	10	2,8	2,1	2	1	●	
48032138	3	0,5	56	12	3,5	2,7	3	1	●	
48032144	4	0,7	63	16	4,5	3,4	3	1	●	
48032149	5	0,8	70	20	6	4,9	3	1	●	
48032155	6	1	80	24	6	4,9	3	1	●	
48032161	8	1,25	90	35	8	6,2	3	2	●	
48032169	10	1,5	100	39	10	8	4	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48035138	3	0,5	56	5	2,2	-	3	●	
48035144	4	0,7	63	7	2,8	2,1	3	●	
48035149	5	0,8	70	8	3,5	2,7	3	●	
48035155	6	1	80	10	4,5	3,4	3	●	
48035161	8	1,25	90	11	6	4,9	3	●	
48035169	10	1,5	100	14	7	5,5	4	●	
48032179	12	1,75	110	16	9	7	4	●	
48032191	14	2	110	18	11	9	4	●	
48032202	16	2	110	18	12	9	4	●	
48032214	18	2,5	125	23	14	11	4	●	
48032228	20	2,5	140	23	16	12	4	●	
48032238	22	2,5	140	23	18	14,5	4	●	
48032247	24	3	160	27	18	14,5	4	●	
48032262	27	3	160	27	20	16	4	●	
48032271	30	3,5	180	32	22	18	4	●	
48032294	36	4	200	36	28	22	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~25 m/min	◎ 15~25 m/min	◎ 10~25 m/min	○ 10~25 m/min					◎ 6~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min				◎ 15~35 m/min								

● Delivery from stock
○ Available on short notice

CC-LT-SFT

METRIC
- For stainless steel and aluminium
- For threading depth ≥ 2 D
- Long shank

METRISCH
- Für Va-Stahl und Aluminium
- Für Gewindetiefe ≥ 2 D
- Langt Schaft

METRICO
- Per acciai inox e alluminio
- Per profondità di filettatura ≥ 2 D
- Gambo lungo

METRIQUE
- Pour inox et aluminium
- Profondeur de taraudage ≥ 2 D
- Queue longue

METRIK
- Paslanmaz çelikler ve alüminyum için
- Diş derinliği ≥ 2 D
- Uzun şaft

METRISK
- Til rustfrit stål og aluminium
- Til gevinddybde ≥ 2D
- Langt skaft

METRISK
- För rostfritt stål och aluminium
- För gängdjup ≥ 2D
- Långt skaft

METRICO
- Para aceros inoxidables y aluminio
- Para roscado ≥ 2D
- Mango larga

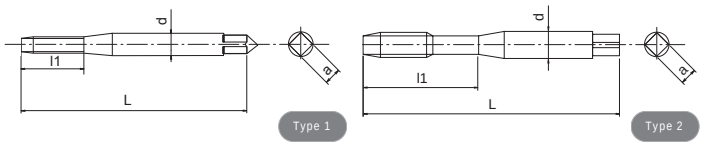
МЕТРИЧЕСКИЙ
- Для нержавеющих сталей и алюминия
- Для резьб глубиной ≥ 2D
- Длинный хвостовик

METRYCZNY
- Do stali nierdzewnych i aluminium
- Do gwintowania na głębokość ≥ 2 D
- Długi chwyt

GO TO LIVE STOCK CHECK

M

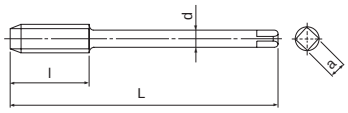






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48113125	2	0,4	80	8	2,8	2,1	2	1	●	
48113133	2,5	0,45	100	10	2,8	2,1	2	1	●	
48113138	3	0,5	100	12	3,5	2,7	3	1	●	
48113144	4	0,7	125	16	4,5	3,4	3	1	●	
48113149	5	0,8	140	20	6	4,9	3	1	●	
48113155	6	1	160	24	6	4,9	3	1	●	
48113161	8	1,25	180	35	8	6,2	3	2	●	
48113169	10	1,5	200	39	10	8	4	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48113179	12	1,75	200	16	9	7	4	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~25 m/min	◎ 15~25 m/min	◎ 10~25 m/min	○ 10~25 m/min					◎ 6~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min				◎ 15~35 m/min								

CC-NEO-SFT

METRIC
- Variable lead spiral flute for better chip evacuation
- For stainless steel aluminium and steel
- For threading depth ≥ 2D
- For pilot hole use OSG EX-SUS-GDS (p.C.71~77)

METRISCH
- Ungleich gedrallter Spiralwinkel für eine bessere Spanabfuhr
- Für Va-Stahl und Aluminium und Stahl
- Für Gewindetiefe ≥ 2D
- Für die Kernlochbearbeitung EX-SUS-GDS verwenden (p.C.71~77)

METRICO
- Elica variabile per una migliore evacuazione dei trucioli
- Per acciai inox e alluminio
- Per profondità di filettatura ≥ 2D
- Utilizzate OSG EX-SUS-GDS per foro pilota (p.C.71~77)

METRIQUE
- Hélice variable pour une meilleure évacuation des copeaux
- Pour inox, aluminium et aciers
- Profondeur de taraudage ≥ 2D
- Pour trou pilote utiliser OSG EX-SUS (p.C.71~77)

METRİK
- Daha iyi talaş tahliyesi için değişken spiral kanallar
- Paslanmaz çelikler, alüminyum ve çelik için
- Diş derinliği ≥ 2 D
- Pilot deliği için OSG EX-SUS-GDS kullanın (sayfa C.71~77)

METRISK
- Variabel snoning for bedre spånafgang
- Til rustfrit stål og aluminium, og stål
- Til gevinddybde ≥ 2D
- For boring af pilot hul brug OSG EX-SUS-GDS (p.C.71~77)

METRISK
- Variabel helix för bättre spånevakuering
- För rostfritt stål och aluminium, stål
- För gängdjup ≥ 2D
- För pilot hål använd OSG EX-SUS-GDS (p.C.71~77)

METRICO
- Ranura helicoidal de paso variable para mejor evacuación de virutas
- Para aceros inoxidables y aluminio, aceros
- Para roscado ≥ 2D
- Para agujero previo use EX-SUS-GDS (p.C.71~77)

МЕТРИЧЕСКИЙ
- Переменная спиральная канавка для лучшего удаления стружки
- Для нержавеющих сталей и алюминия
- Для резьб глубиной ≥ 2D
- Для пилотного отверстия используйте OSG EX-SUS-GDS (p.C.71~77)

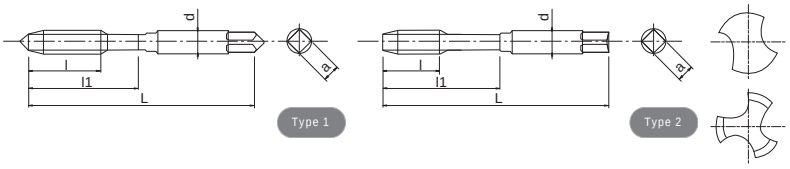
METRYCZNY
- Zmienny kąt spirali rowka dla lepszgo odprowadzania wiórów
- Do stali nierdzewych, aluminium i stali
- Do gwintowania na głębokość ≥ 2 D
- Do wykonania otworu zastosuj OSG EX-SUS-GDS ust p.C.71~77)

GO TO LIVE STOCK CHECK

M

M
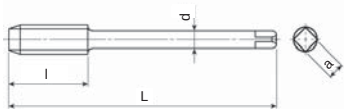






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48081125	2	0,4	45	8	2,8	2,1	2	1	●	
48081133	2,5	0,45	50	9	2,8	2,1	2	1	●	
48081138	3	0,5	56	18	3,5	2,7	2	2	●	
48081144	4	0,7	63	21	4,5	3,4	2	2	●	
48081149	5	0,8	70	25	6	4,9	2	2	●	
48081155	6	1	80	30	6	4,9	2	2	●	
48081161	8	1,25	90	35	8	6,2	3	2	●	
48081169	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48081179	12	1,75	110	13	9	7	3	●	
48081191	14	2	110	14	11	9	3	●	
48081202	16	2	110	14	12	9	3	●	

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Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~25 m/min	◎ 15~25 m/min	◎ 10~25 m/min	○ 10~25 m/min					◎ 6~10 m/min				
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min				◎ 15~35 m/min								

● Delivery from stock
○ Available on short notice

METRIC
- For aluminium

METRISCH
- Für Aluminium

METRICO
- Per alluminio

METRIQUE
- Pour aluminium

METRİK
- Alüminyum için

METRISK
- Til aluminium

METRISK
- För aluminium

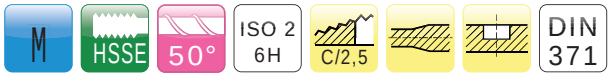
METRICO
- Para aluminio

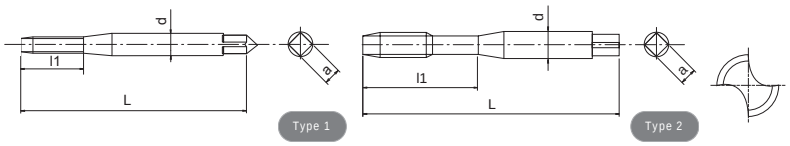
МЕТРИЧЕСКИЙ
- Для алюминия

METRYCZNY
- Do aluminium

GO TO LIVE STOCK CHECK

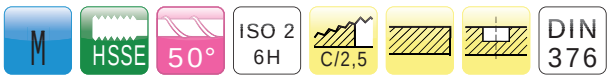
M

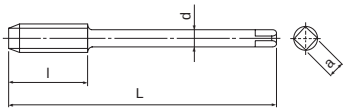






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
70211860	1,6	0,35	40	8	2,5	2,1	2	1	●	
70212560	2	0,4	45	8	2,8	2,1	2	1	●	
70212860	2,2	0,45	45	9	2,8	2,1	2	1	●	
70213360	2,5	0,45	50	9	2,8	2,1	2	1	●	
70213860	3	0,5	56	18	3,5	2,7	2	2	●	
70214060	3,5	0,6	56	20	4	3	2	2	●	
70214460	4	0,7	63	21	4,5	3,4	2	2	●	
70214960	5	0,8	70	25	6	4,9	2	2	●	
70215560	6	1	80	30	6	4,9	2	2	●	
70216160	8	1,25	90	35	8	6,2	2	2	●	
70216960	10	1,5	100	39	10	8	2	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
70317960	12	1,75	110	18	9	7	2	●	
70319160	14	2	110	20	11	9	2	●	
70320260	16	2	110	20	12	9	2	●	
70321460	18	2,5	125	25	14	11	2	●	
70322860	20	2,5	140	25	16	12	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
				◎ 10~20 m/min	◎ 10~15 m/min	○ 7~12 m/min						

● Delivery from stock
○ Available on short notice

METRIC
- For alloyed steel ≥ 1100 N/mm²
- Forming short chips

METRISCH
- Für legierten Stahl ≥ 1100 N/mm²
- Für kurzspanende Werkstoffe

METRICO
- Per acciai legati ≥ 1100 N/mm²
- Formano trucioli corti

METRIQUE
- Pour aciers alliés ≥ 1100 N/mm²
- Formant des copeaux courts

METRİK
- Alaşımlı çelikler ≥ 1100 N/mm²
- Kısa talaş oluşturur

METRISK
- Til legeret stål ≥ 1100 N/mm
- Giver korte spåner

METRISK
- För legerade stål ≥ 1100 N/mm²
- Formar korta spånor

METRICO
- Para aceros aleados ≥ 1100 N/mm²
- Formación de virutas cortas

МЕТРИЧЕСКИЙ
- для легированных сталей ≥ 1100Н/мм²
- Формирует короткую стружку

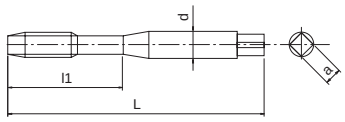
METRYCZNY
- Stale stopowe ≥ 1100 N/mm²
- Tworzy krótkie wióry

GO TO LIVE STOCK CHECK

M

M

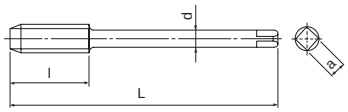
M | HSSE | 15° | ISO 2 6H | C/3 | DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
72313860	3	0,5	56	18	3,5	2,7	3	●	
72314460	4	0,7	63	21	4,5	3,4	3	●	
72314960	5	0,8	70	25	6	4,9	3	●	
72315560	6	1	80	30	6	4,9	3	●	
72316160	8	1,25	90	35	8	6,2	3	●	
72316960	10	1,5	100	39	10	8	3	●	

M | HSSE | 15° | ISO 2 6H | C/3 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
72017960	12	1,75	110	18	9	7	3	●	
72019160	14	2	110	20	11	9	3	●	
72020260	16	2	110	20	12	9	3	●	
72021460	18	2,5	125	25	14	11	4	●	
72022860	20	2,5	140	25	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 7~12 m/min	○ 6~9 m/min	○ 7~12 m/min								○ 7~12 m/min	○ 6~8 m/min
Cu	**BS**	**BsC**	**PB**	**Al**	**AC,ADC**	**MC**	**ZDC**	**Ti**	**Ni**	**Plast.**	**Vinyl**	
	○ 10~20 m/min	○ 10~20 m/min	○ 6~11 m/min		○ 10~15 m/min		○ 7~12 m/min				○ 7~12 m/min	

● Delivery from stock
○ Available on short notice

CPM-SFT

METRIC
- For alloyed steel ≥ 900 N/mm² & cast iron
- Forming short chips

METRISCH
- Für legierten Stahl ≥ 900 N/mm² & Guss
- Für kurzspanende Werkstoffe

METRICO
- Per acciai legati ≥ 900 N/mm² e ghisa
- Formano trucioli corti

METRIQUE
- Pour aciers alliés ≥ 900 N/mm² & fonte
- Formant des copeaux courts

METRİK
- Alaşımlı çelikler ≥ 900 N/mm² & Pik döküm
- Kısa talaş oluşturur

METRISK
- Til legeret stål ≥ 900 N/mm & støbejern
- Giver korte spåner

METRISK
- För legerade stål ≥ 900 N/mm² & gjutjärn
- Formar korta spånor

METRICO
- Para aceros aleados ≥ 900 N/mm² y fundiciones
- Formación de virutas cortas

МЕТРИЧЕСКИЙ
- для легированных сталей ≥ 900 Н/мм² и чугуна
- Формирует короткую стружку

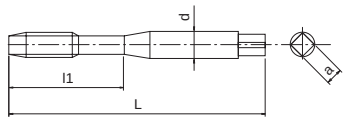
METRYCZNY
- Do stali ≥ 900 N/mm² i żeliw
- Tworzy krótkie wióry

GO TO LIVE STOCK CHECK

M

M

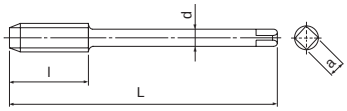
M | PM | 15° | ISO 2 6H | C/3 | DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
81913860	3	0,5	56	18	3,5	2,7	3	●	
81914460	4	0,7	63	21	4,5	3,4	3	●	
81914960	5	0,8	70	25	6	4,9	3	●	
81915560	6	1	80	30	6	4,9	3	●	
81916160	8	1,25	90	35	8	6,2	3	●	
81916960	10	1,5	100	39	10	8	3	●	

M | PM | 15° | ISO 2 6H | C/3 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
82016160	8	1,25	90	13	6	4,9	3	●	
82016960	10	1,5	100	15	7	5,5	3	●	
82017960	12	1,75	110	18	9	7	3	●	
82019160	14	2	110	20	11	9	3	●	
82020260	16	2	110	20	12	9	3	●	
82021460	18	2,5	125	25	14	11	4	●	
82022860	20	2,5	140	25	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				○ 6~12 m/min	○ 7~15 m/min	○ 7~12 m/min	○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

METRIC
- High performance
- **Serie H :** for steel 25~45 HRC

METRISCH
- High performance
- **Serie H :** Für Stahl 25~45 HRC

METRICO
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

METRIQUE
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

METRİK
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

METRISK
- High performance
- **Serie H :** Til stål 25~45 HRC

METRISK
- High performance
- **Serie H :** för stål 25~45 HRC

METRICO
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

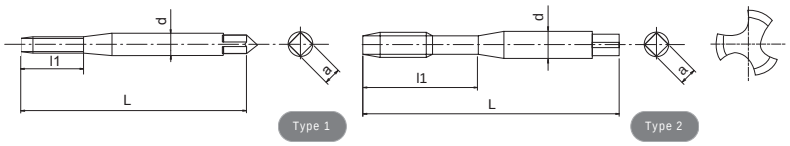
METRYCZNY
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

M

M

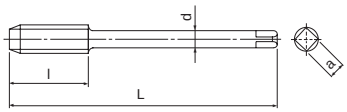
M | PM | OX | 15° | ISO 2 6H | C/3 | DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
83212560	2	0,4	45	8	2,8	2,1	2	1	●	
83213360	2,5	0,45	50	9	2,8	2,1	2	1	●	
83213860	3	0,5	56	18	3,5	2,7	3	2	●	
83214460	4	0,7	63	21	4,5	3,4	3	2	●	
83214960	5	0,8	70	25	6	4,9	3	2	●	
83215560	6	1	80	30	6	4,9	3	2	●	
83216160	8	1,25	90	35	8	6,2	3	2	●	
83216960	10	1,5	100	39	10	8	3	2	●	

M | PM | OX | 15° | ISO 2 6H | C/3 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
83317960	12	1,75	110	18	9	7	3	●	
83319160	14	2	110	20	11	9	3	●	
83320260	16	2	110	20	12	9	3	●	
83321460	18	2,5	125	25	14	11	4	●	
83322860	20	2,5	140	25	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				◎ 6~12 m/min			○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 3~5 m/min	○ 1~3 m/min			

● Delivery from stock
○ Available on short notice

VP-H-SFT

METRIC
- High performance
- **Serie H :** for steel 25~45 HRC

METRISCH
- High performance
- **Serie H :** Für Stahl 25~45 HRC

METRICO
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

METRIQUE
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

METRİK
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

METRISK
- High performance
- **Serie H :** Til stål 25~45 HRC

METRISK
- High performance
- **Serie H :** för stål 25~45 HRC

METRICO
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

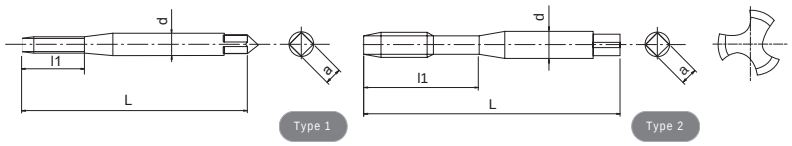
МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

METRYCZNY
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

M

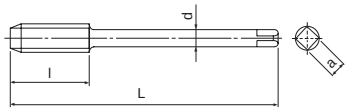






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48082125	2	0,4	45	8	2,8	2,1	2	1	●	
48082133	2,5	0,45	50	9	2,8	2,1	2	1	●	
48082138	3	0,5	56	18	3,5	2,7	3	2	●	
48082144	4	0,7	63	21	4,5	3,4	3	2	●	
48082149	5	0,8	70	25	6	4,9	3	2	●	
48082155	6	1	80	30	6	4,9	3	2	●	
48082161	8	1,25	90	35	8	6,2	3	2	●	
48082169	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48082179	12	1,75	110	18	9	7	3	●	
48082191	14	2	110	20	11	9	3	●	
48082202	16	2	110	20	12	9	3	●	
48082214	18	2,5	125	25	14	11	4	●	
48082228	20	2,5	140	25	16	12	4	●	
48082238	22	2,5	140	25	18	14,5	4	●	
48082247	24	3	160	30	18	14,5	4	●	
48082262	27	3	160	30	20	16	4	●	
48082271	30	3,5	180	35	22	18	4	●	
48082281	33	3,5	180	35	25	20	4	●	
48082294	36	4	200	40	28	22	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				◎ 6~12 m/min			○ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 3~5 m/min	○ 1~3 m/min			

VPO-H-SFT

METRIC
- High performance
- **Serie H :** for steel 25~45 HRC

METRISCH
- High performance
- **Serie H :** Für Stahl 25~45 HRC

METRICO
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

METRIQUE
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

METRİK
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

METRISK
- High performance
- **Serie H :** Til stål 25~45 HRC

METRISK
- High performance
- **Serie H :** för stål 25~45 HRC

METRICO
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

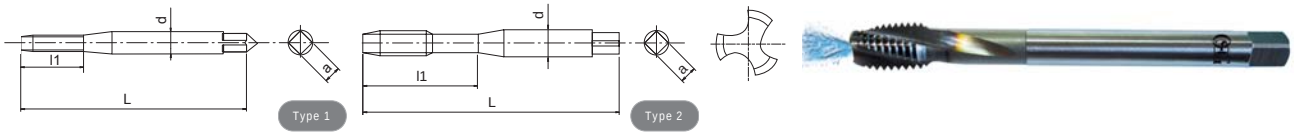
МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

METRYCZNY
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

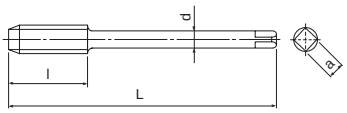
M





EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48083155	6	1	80	30	6	4,9	3	2	●	
48083161	8	1,25	90	35	8	6,2	3	2	●	
48083169	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48083179	12	1,75	110	18	9	7	3	●	
48083191	14	2	110	20	11	9	3	●	
48083202	16	2	110	20	12	9	3	●	
48083214	18	2,5	125	25	14	11	4	●	
48083228	20	2,5	140	25	16	12	4	●	
48083238	22	2,5	140	25	18	14,5	4	●	
48083247	24	3	160	30	18	14,5	4	●	
48083262	27	3	160	30	20	16	4	●	
48083271	30	3,5	180	35	22	18	4	●	
48083281	33	3,5	180	35	25	20	4	●	
48083294	36	4	200	40	28	22	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				◎ 6~12 m/min			○ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 3~5 m/min	○ 1~3 m/min			

● Delivery from stock
○ Available on short notice

1066-SFT-PLUS

METRIC
- For steel 25~45 HRC

METRISCH
- Für Stahl 25~45 HRC

METRICO
- Per acciai 25~45 HRC

METRIQUE
- Pour acier 25~45 HRC

METRİK
- 25~45 HRC çelikler için

METRISK
- Til stål 25~45 HRC

METRISK
- För stål 25~45 HRC

METRICO
- Para aceros 25~45 HRC

МЕТРИЧЕСКИЙ
- для сталей 25 ~ 45 HRC

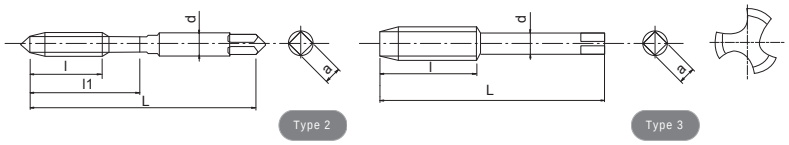
METRYCZNY
- Do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

M

M







EDP	M	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
23201384	3	0,5	48	11	18	3,15	2,5	3	2	○	
23201444	4	0,7	53	13	21	4	3,15	3	2	○	
23201494	5	0,8	58	16	25	5	4	3	2	○	
23201554	6	1	66	19	30	6,3	5	3	2	○	
23201614	8	1,25	72	22	35	8	6,3	3	2	○	
23201694	10	1,5	80	24	39	10	8	3	2	○	
23201794	12	1,75	89	29	-	9	7,1	3	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				○ 6~12 m/min	○ 7~15 m/min	○ 7~12 m/min	○ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

METRIC
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

METRISCH
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

METRICO
- Alta prestazione
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

METRIQUE
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

METRIK
- Yüksek performans
- Seri E: İnkonel 718 barındıran nikel bazlı alaşımlar için

METRISK
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

METRISK
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

METRICO
- Altas prestaciones
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

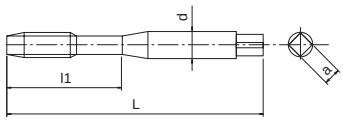
METRYCZNY
- Wysoka wydajność
- Seria E: do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

M

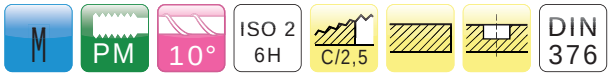
M

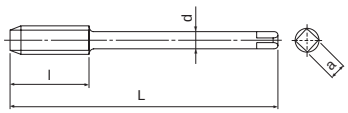






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
89513860	3	0,5	56	11	3,5	2,7	3	●	
89514460	4	0,7	63	14	4,5	3,4	3	●	
89514960	5	0,8	70	18	6	4,9	3	●	
89515560	6	1	80	21	6	4,9	3	●	
89516160	8	1,25	90	28	8	6,2	3	●	
89516960	10	1,5	100	35	10	8	3	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
89617960	12	1,75	110	18	10	8	3	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									1~3 m/min			

● Delivery from stock
○ Available on short notice

WHR-NI-SFT

METRIC
- High performance
- For nickel based alloys including Inconel 718

METRISCH
- High performance
- Für Nickelbasislegierungen inkl. Inconel 718

METRICO
- Alta prestazione
- Per Inconel 718 ed altre leghe a base di Nickel

METRIQUE
- Haute performance
- Pour Inconel 718 et autres alliages sur base de Nickel

METRIK
- Yüksek performans
- İnkonel 718 barındıran nikel bazlı alaşımlar için

METRISK
- High performance
- Til nikkellegeringer inklusiv Inconel 718

METRISK
- High performance
- För nickel legeringar inklusive Inconel 718

METRICO
- Altas prestaciones
- Para aleaciones de níquel incluido Inconel 718

МЕТРИЧЕСКИЙ
- Высокая производительность
- для никелевых сплавов, включая Inconel 718

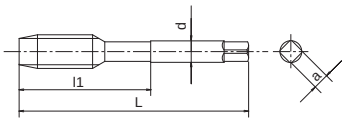
METRYCZNY
- Wysoka wydajność
- Do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

M

M

M PM 11° HR ISO 2 6HX C/2,5 DIN 371

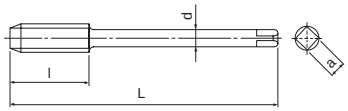






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
48078138	3	0,5	56	11	3,5	2,7	3	●	
48078144	4	0,7	63	14	4,5	3,4	3	●	
48078149	5	0,8	70	18	6	4,9	3	●	
48078155	6	1	80	21	6	4,9	3	●	
48078161	8	1,25	90	28	8	6,2	3	●	
48078169	10	1,5	100	35	10	8	3	●	

M PM 11° HR ISO 2 6HX C/2,5 DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48078179	12	1,75	110	18	10	8	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania											
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									1~3 m/min			

● Delivery from stock
○ Available on short notice

V-TI-SFT

METRIC
- High performance
- For titanium alloys (Ti-6Al-4V), 40~45 HRC

METRISCH
- High performance
- Für Titanlegierungen inkl. (Ti-6Al-4V), 40~45 HRC

METRICO
- Alta prestazione
- Per leghe di Titanio (Ti-6Al-4V) di durezza tra 40~45 HRC

METRIQUE
- Haute performance
- Pour alliages de Titane (Ti-6Al-4V) : dureté 40~45 HRC

METRIK
- Yüksek performans
- Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için

METRISK
- High performance
- Til Titanium legeringer (Ti-6Al-4V), 40~45 HRC

METRISK
- High performance
- För Titanlegeringar (Ti-6Al-4V), 40~45 HRC

METRICO
- Altas prestaciones
- Para aleaciones de Titanio (Ti-6Al-4V), 40~45 HRC

МЕТРИЧЕСКИЙ
- Высокая производительность
- Для титановых сплавов (Ti-6Al-4V), 40~45 HRC

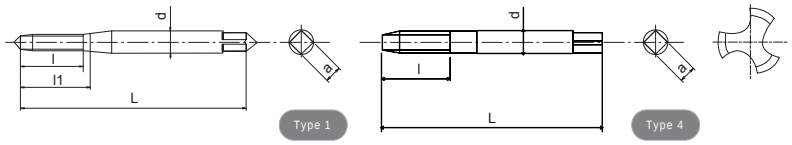
METRYCZNY
- Wysoka wydajność
- do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC

GO TO LIVE STOCK CHECK

M

M

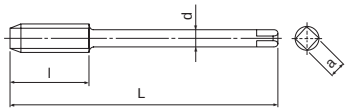
M PM V 10° ISO 2 6H C/2,5 DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48011118	1,6	0,35	40	8	2,5	2,1	2	1	●	
48011125	2	0,4	45	8	2,8	2,1	2	1	●	
48011133	2,5	0,45	50	9	2,8	2,1	2	4	●	
48011138	3	0,5	56	11	3,5	2,7	3	4	●	
48011144	4	0,7	63	14	4,5	3,4	3	4	●	
48011149	5	0,8	70	17	6	4,9	3	4	●	
48011155	6	1	80	21	6	4,9	3	4	●	
48011161	8	1,25	90	28	8	6,2	3	4	●	
48011169	10	1,5	100	35	10	8	3	4	●	

M PM V 10° ISO 2 6H C/2,5 DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48011179	12	1,75	110	18	10	8	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								3~5 m/min				

● Delivery from stock
○ Available on short notice

1066-HT

METRIC
- Handtaps
- For general purpose application

METRISCH
- Hand Gewindebohrer
- Für universelle Anwendungen

METRICO
- Maschi a mano
- Per applicazioni generali

METRIQUE
- Tarauds à main
- Pour applications générales

METRİK
- El Kılavuzu
- Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için

METRISK
- Håndtappe
- Til generelt brug

METRISK
- Manuella gängtappar
- För allround bearbetning

METRICO
- Machos de mano
- Para aplicación general

МЕТРИЧЕСКИЙ
- Ручной метчик
- Общего назначения

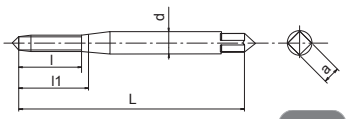
METRYCZNY
- Gwintowniki ręczne
- Do zastosowań ogólnych

GO TO LIVE STOCK CHECK

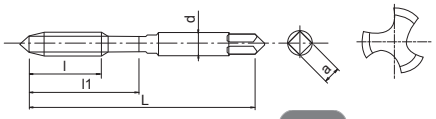
M

M





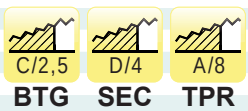
Type 1



Type 2



EDP	M	P	L	l	l1	d	a	Chamfer	ZΔ	Type	Stock	Price
22031110	1	0,25	38,5	8	-	2,5	2	BTG	3	1	○	
22031130	1,2	0,25	38,5	8	-	2,5	2	BTG	3	1	○	
22021130	1,2	0,25	38,5	8	-	2,5	2	SEC	3	1	○	
22011130	1,2	0,25	38,5	8	-	2,5	2	TPR	3	1	○	
22031150	1,4	0,3	38,5	8	-	2,5	2	BTG	3	1	○	
22021150	1,4	0,3	38,5	8	-	2,5	2	SEC	3	1	○	
22011150	1,4	0,3	38,5	8	-	2,5	2	TPR	3	1	○	
22031180	1,6	0,35	38,5	8	-	2,5	2	BTG	3	1	○	
22021180	1,6	0,35	38,5	8	-	2,5	2	SEC	3	1	○	
22011180	1,6	0,35	38,5	8	-	2,5	2	TPR	3	1	○	
22031230	1,8	0,35	41	8	-	2,5	2	BTG	3	1	○	
22021230	1,8	0,35	41	8	-	2,5	2	SEC	3	1	○	
22011230	1,8	0,35	41	8	-	2,5	2	TPR	3	1	○	
22031250	2	0,4	41	8	-	2,5	2	BTG	3	1	○	
22021250	2	0,4	41	8	-	2,5	2	SEC	3	1	○	
22011250	2	0,4	41	8	-	2,5	2	TPR	3	1	○	
T100022045B	2,2	0,45	41	8	-	2,8	2,24	BTG	3	1	○	
T100022045S	2,2	0,45	41	8	-	2,8	2,24	SEC	3	1	○	
T100022045T	2,2	0,45	41	8	-	2,8	2,24	TPR	3	1	○	
22031330	2,5	0,45	44,5	9,5	-	2,8	2,24	BTG	3	1	○	
22021330	2,5	0,45	44,5	9,5	-	2,8	2,24	SEC	3	1	○	
22011330	2,5	0,45	44,5	9,5	-	2,8	2,24	TPR	3	1	○	
22031380	3	0,5	48	11	18	3,15	2,5	BTG	3	2	○	
22021380	3	0,5	48	11	18	3,15	2,5	SEC	3	2	○	
22011380	3	0,5	48	11	18	3,15	2,5	TPR	3	1	○	
22031400	3,5	0,6	50	13	20	3,55	2,8	BTG	3	2	○	
22021400	3,5	0,6	50	13	20	3,55	2,8	SEC	3	2	○	
22011400	3,5	0,6	50	13	20	3,55	2,8	TPR	3	1	○	
22031440	4	0,7	53	13	21	4	3,15	BTG	3	2	○	
22021440	4	0,7	53	13	21	4	3,15	SEC	3	2	○	
22011440	4	0,7	53	13	21	4	3,15	TPR	3	1	○	
22031460	4,5	0,75	53	13	21	4,5	3,55	BTG	3	2	○	
22021460	4,5	0,75	53	13	21	4,5	3,55	SEC	3	2	○	
22011460	4,5	0,75	53	13	21	4,5	3,55	TPR	3	1	○	
22031490	5	0,8	58	16	25	5	4	BTG	3	2	○	
22021490	5	0,8	58	16	25	5	4	SEC	3	2	○	
22011490	5	0,8	58	16	25	5	4	TPR	3	1	○	
22031550	6	1	66	19	30	6,3	5	BTG	3	2	○	
22021550	6	1	66	19	30	6,3	5	SEC	3	2	○	
22011550	6	1	66	19	30	6,3	5	TPR	3	1	○	
22031580	7	1	66	19	30	7,1	5,6	BTG	4	2	○	



BTG **SEC** **TPR**

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 7~12 m/min											○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min					

1066-HT

METRIC
- Handtaps
- For general purpose application

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- Hand Gewindebohrer
- Für universelle Anwendungen

METRICO
- Maschi a mano
- Per applicazioni generali

METRIQUE
- Tarauds à main
- Pour applications générales

METRİK
- El Kılavuzu
- Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için

METRISK
- Håndtappe
- Til generelt brug

METRISK
- Manuella gängtappar
- För allround bearbetning

METRICO
- Machos de mano
- Para aplicación general

МЕТРИЧЕСКИЙ
- Ручной метчик
- Общего назначения

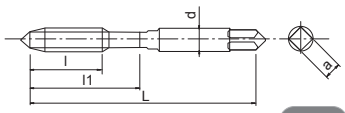
METRYCZNY
- Gwintowniki ręczne
- Do zastosowań ogólnych

GO TO LIVE STOCK CHECK

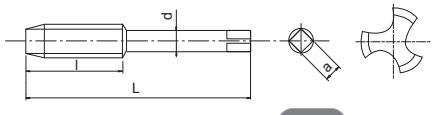
M

M





Type 2



Type 3



EDP	M	P	L	l	l1	d	a	Chamfer	ZΔ	Type	Stock	Price
22021580	7	1	66	19	30	7,1	5,6	SEC	4	2	○	
22011580	7	1	66	19	30	7,1	5,6	TPR	4	2	○	
22031610	8	1,25	72	22	35	8	6,3	BTG	4	2	○	
22021610	8	1,25	72	22	35	8	6,3	SEC	4	2	○	
22011610	8	1,25	72	22	35	8	6,3	TPR	4	2	○	
22031650	9	1,25	72	22	36	9	7,1	BTG	4	2	○	
22021650	9	1,25	72	22	36	9	7,1	SEC	4	2	○	
22011650	9	1,25	72	22	36	9	7,1	TPR	4	2	○	
22031690	10	1,5	80	24	39	10	8	BTG	4	2	○	
22021690	10	1,5	80	24	39	10	8	SEC	4	2	○	
22011690	10	1,5	80	24	39	10	8	BTR	4	2	○	
22031740	11	1,5	84	24	-	8	6,3	BTG	4	3	○	
22021740	11	1,5	84	24	-	8	6,3	SEC	4	3	○	
22011740	11	1,5	84	24	-	8	6,3	BTR	4	3	○	
22031790	12	1,75	85	25	-	9	7,1	BTG	4	3	○	
22021790	12	1,75	85	25	-	9	7,1	SEC	4	3	○	
22011790	12	1,75	85	25	-	9	7,1	TPR	4	3	○	
22031910	14	2	95	30	-	11,2	9	BTG	4	3	○	
22021910	14	2	95	30	-	11,2	9	SEC	4	3	○	
22011910	14	2	95	30	-	11,2	9	TPR	4	3	○	
22032020	16	2	102	32	-	12,5	10	BTG	4	3	○	
22022020	16	2	102	32	-	12,5	10	SEC	4	3	○	
22012020	16	2	102	32	-	12,5	10	TPR	4	3	○	
22032140	18	2	112	37	-	14	11,2	BTG	4	3	○	
22022140	18	2	112	37	-	14	11,2	SEC	4	3	○	
22012140	18	2	112	37	-	14	11,2	TPR	4	3	○	
22032280	20	2,5	112	37	-	14	11,2	BTG	4	3	○	
22022280	20	2,5	112	37	-	14	11,2	SEC	4	3	○	
22012280	20	2,5	112	37	-	14	11,2	TPR	4	3	○	
22032380	22	2,5	118	38	-	16	12,5	BTG	4	3	○	
22022380	22	2,5	118	38	-	16	12,5	SEC	4	3	○	
22012380	22	2,5	118	38	-	16	12,5	TPR	4	3	○	
22032470	24	3	130	45	-	18	14	BTG	4	3	○	
22022470	24	3	130	45	-	18	14	SEC	4	3	○	
22012470	24	3	130	45	-	18	14	TPR	4	3	○	



BTG **SEC** **TPR**

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 7~12 m/min											○ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min					

● Delivery from stock
○ Available on short notice

1066-TIN-HT

METRIC
- Handtaps
- For general purpose application

METRISCH
- Hand Gewindebohrer
- Für universelle Anwendungen

METRICO
- Maschi a mano
- Per applicazioni generali

METRIQUE
- Tarauds à main
- Pour applications générales

METRİK
- El Kılavuzu
- Genel kullanım için

METRISK
- Håndtappe
- Til generelt brug

METRISK
- Manuella gängtappar
- För allround bearbetning

METRICO
- Machos de mano
- Para aplicación general

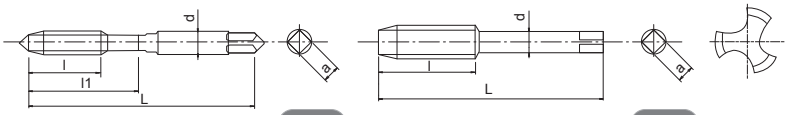
МЕТРИЧЕСКИЙ
- Ручной метчик
- Общего назначения

METRYCZNY
- Gwintowniki ręczne
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

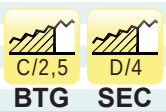
M







EDP	M	P	L	l	l1	d	a	Chamfer	ZΔ	Type	Stock	Price
22031387	3	0,5	48	11	18	3,15	2,5	BTG	3	2	○	
22021387	3	0,5	48	11	18	3,15	2,5	SEC	3	2	○	
22031447	4	0,7	53	13	21	4	3,15	BTG	3	2	○	
22021447	4	0,7	53	13	21	4	3,15	SEC	3	2	○	
22031497	5	0,8	58	16	25	5	4	BTG	3	2	○	
22021497	5	0,8	58	16	25	5	4	SEC	3	2	○	
22031557	6	1	66	19	30	6,3	5	BTG	3	2	○	
22021557	6	1	66	19	30	6,3	5	SEC	3	2	○	
22031587	7	1	66	19	30	7,1	5,6	BTG	4	2	○	
22031617	8	1,25	72	22	35	8	6,3	BTG	4	2	○	
22021617	8	1,25	72	22	35	8	6,3	SEC	4	2	○	
22031697	10	1,5	80	24	39	10	8	BTG	4	2	○	
22021697	10	1,5	80	24	39	10	8	SEC	4	2	○	
22031797	12	1,75	89	29	-	9	7,1	BTG	4	3	○	
22021797	12	1,75	89	29	-	9	7,1	SEC	4	3	○	
22031917	14	2	95	30	-	11,2	9	BTG	4	3	○	



BTG **SEC**

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	○ 6~9 m/min	○ 7~12 m/min									○ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min					

GG-MT

METRIC
- For gray cast iron & cast aluminium < 11 % Si

METRISCH
- Für Grauguss und Aluminiumguss < 11 % Si

METRICO
- Per ghisa grigia, ghisa d'alluminio < 11 % Si

METRIQUE
- Pour fonte grise, fonte d'aluminium < 11 % Si

METRİK
- Sfero döküm & dökme alüminyum < 11 % Si için

METRISK
- Til støbejern & støbt aluminium < 11 % Si

METRISK
- För gjutjärn & gjuten aluminium

METRICO
- Para fundición de hierro y aluminio fundido < 11 % Si

МЕТРИЧЕСКИЙ
- Для серого чугуна и литейных алюминиевых сплавов < 11 % Si

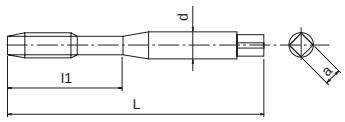
METRYCZNY
- Do żeliwa szarego i aluminium odlewanego <11% Si

GO TO LIVE STOCK CHECK

M

M

M | HSSE | NI-OX | ISO 2 6HX | C/2,5 | DIN 371

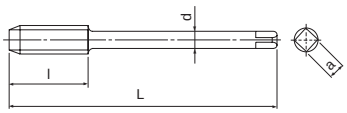






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
62214460	4	0,7	63	21	4,5	3,4	3	●	
62214960	5	0,8	70	25	6	4,9	3	●	
62215560	6	1	80	30	6	4,9	3	●	
62216160	8	1,25	90	35	8	6,2	4	●	
62216960	10	1,5	100	39	10	8	4	●	

M | HSSE | NI-OX | ISO 2 6HX | C/2,5 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
62314460	4	0,7	63	13	2,8	2,1	3	●	
62314960	5	0,8	70	16	3,5	2,7	3	●	
62315560	6	1	80	19	4,5	3,4	3	●	
62316160	8	1,25	90	22	6	4,9	4	●	
62316960	10	1,5	100	24	7	5,5	4	●	
62317960	12	1,75	110	29	9	7	4	●	
62319160	14	2	110	30	11	9	4	●	
62320260	16	2	110	32	12	9	4	●	
62321460	18	2,5	125	34	14	11	4	●	
62322860	20	2,5	140	34	16	12	4	●	

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											◎ 10~15 m/min	◎ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min									

● Delivery from stock
○ Available on short notice

OIL-TXL-MT

METRIC
- For horizontal & vertical operations
- For oil and energy industry

METRISCH
- Für horizontale und vertikale Bearbeitung
- Mit innere Kühlmittezuführung für Öl - und Schwerindustrie

METRICO
- Per lavorazioni orizzontali e verticali
- Per industria petrolifera ed energetica

METRIQUE
- Pour applications horizontales et verticales
- Avec arrosage centrale, pour l'industrie lourde et l'energie

METRİK
- Yatay & Dikey uygulamalar
- Yağ ve enerji endüstrisi için

METRISK
- Til horisontale og vertikale operationer
  Til olie og energi industrien

METRISK
- För horisontala och vertikala applikationer
  För olje och energi industrin

METRICO
- Para roscado horizontal y vertical
- Para refrigeración interna, para industria Energetica y Pesada

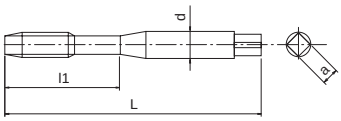
МЕТРИЧЕСКИЙ
- Для горизонтальной
- и вертикальной обработки внутреннее охлаждение

METRYCZNY
- Do aplikacji poziomych & pionowych
- Dla przemysłu naftowego i energetyki

GO TO LIVE STOCK CHECK

M









EDP	M	P	L	l	l1	d	a	ZΔ	Stock	Price
48052228	20	2,5	140	20	69	16	12	5	●	
48052247	24	3	160	24	81	18	14,5	5	●	
48052262	27	3	160	24	90	20	16	5	●	
48052271	30	3,5	250	28	161	22	18	6	●	
48052281	33	3,5	250	28	176	25	20	6	●	
48052294	36	4	250	32	174	28	22	6	●	
48052304	39	4	300	32	188	32	24	6	●	
48052314	42	4,5	300	36	203	32	24	6	●	
48052325	48	5	300	40	183	36	29	6	●	
48052337	52	5	300	40	197	40	32	6	●	
48052347	56	5,5	300	44	213	45	35	6	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	◎ 6~9 m/min	◎ 7~12 m/min	○ 3~5 m/min					○ 6~9 m/min	○ 6~11 m/min	◎ 10~15 m/min	◎ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

VP-DC-MT

METRIC
- High performance
- Synchro taps when speed can be > 30 m/min
- For cast iron and aluminium

METRISCH
- High performance
- Synchro Bohrer > 30 m/min
- Für Grauguss und Aluminium

METRICO
- Alta prestazione
- Maschi synchro. La velocità può essere > 30 m/min
- Per ghisa e alluminio

METRIQUE
- Haute performance
- Tarauds synchro où la vitesse peut être > 30 m/min
- Pour fonte et aluminium

METRİK
- Yüksek performans
- Kesme hızı > 30m/min olduğunda sekronize kılavuz
- Döküm ve alüminyum için

METRISK
- High performance
- Synkro tappe når skærehastighed kan være > 30 m/min
- Til støbejern & aluminium

METRISK
- High performance
- Synkro gängtappar när skärhastigheten är > 30 m / min
- För gjutjärn och aluminium

METRICO
- Altas prestaciones
- Machos Synchro cuando la velocidad puede ser >30 m/min.
- Para fundición de hierro y aluminio

МЕТРИЧЕСКИЙ
- Высокая производительность
- Синхро метчики со скоростью резания > 30 м/мин
- для чугуна и алюминия

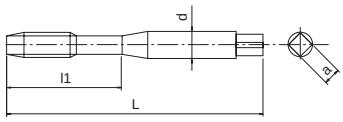
METRYCZNY
- Wysoka wydajność
- Gwintownik SYNCHRO, Vc > 30 m/min
- Do żeliw i aluminium

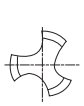
GO TO LIVE STOCK CHECK

M

M

M PM V ISO 2 6HX C/2,5 DIN 371

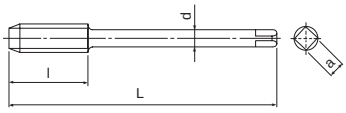






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
48020138	3	0,5	56	18	3,5	2,7	3	●	
48020144	4	0,7	63	21	4,5	3,4	3	●	
48020149	5	0,8	70	25	6	4,9	3	●	
48020155	6	1	80	30	6	4,9	3	●	
48020161	8	1,25	90	35	8	6,2	4	●	
48020169	10	1,5	100	39	10	8	4	●	

M PM V ISO 2 6HX C/2,5 DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48020179	12	1,75	110	21	9	7	4	●	
48022191	14	2	110	24	11	9	4	●	
48022202	16	2	110	24	12	9	4	●	
48022214	18	2,5	125	30	14	11	4	●	
48022228	20	2,5	140	30	16	12	4	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		○ 10~25 m/min	○ 10~20 m/min	○ 8~20 m/min	○ 8~20 m/min						◎ 15~60 m/min	◎ 15~40 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	◎ 15~60 m/min	◎ 15~60 m/min	◎ 15~60 m/min		◎ 25~70 m/min	◎ 25~70 m/min	◎ 25~70 m/min					

● Delivery from stock
○ Available on short notice

VP-DC-SC-MT

METRIC
- Synchro taps when speed can be > 30 m/min
- For cast iron and aluminium
- **Short chamfer**

METRISCH
- Synchro Bohrer > 30 m/min
- Für Grauguss und Aluminium
- **kurzer Anschnitt**

METRICO
- Maschi synchro. La velocità può essere > 30 m/min
- Per ghisa e alluminio
- **Imbocco corto**

METRIQUE
- Tarauds synchro où la vitesse peut être > 30 m/min
- Pour fonte et aluminium
- **Entrée courte**

METRİK
- Kesme hızı > 30m/min olduğunda sekronize kılavuz
- Döküm ve alüminyum için
- **Kısa pah**

METRISK
- Synkro tappe når skærehastighed kan være > 30 m/min
- Til støbejern & aluminium
- **Kort indløb**

METRISK
- Synkro gängtappar när skärhastigheten är > 30 m / min
- För gjutjärn och aluminium
- **Kort faslängd**

METRICO
- Machos Synchro cuando la velocidad puede ser >30 m/min.
- Para fundición de hierro y aluminio
- **Chaflán corto**

МЕТРИЧЕСКИЙ
- Синхро метчики со скоростью резания > 30 м/мин
- для чугуна и алюминия
- **Короткий заход**

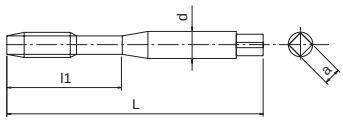
METRYCZNY
- Gwintownik SYNCHRO, Vc > 30 m/min
- Do żeliw i aluminium
- **Krótki nakrój**

GO TO LIVE STOCK CHECK

M

M



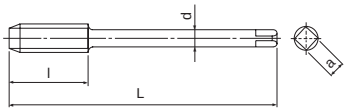






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
48037138	3	0,5	56	18	3,5	2,7	3	●	
48037144	4	0,7	63	21	4,5	3,4	3	●	
48037149	5	0,8	70	25	6	4,9	3	●	
48037155	6	1	80	30	6	4,9	3	●	
48037161	8	1,25	90	35	8	6,2	4	●	
48037169	10	1,5	100	39	10	8	4	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48037179	12	1,75	110	21	9	7	4	●	
48037191	14	2	110	24	11	9	4	●	
48037202	16	2	110	24	12	9	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		○ 10~25 m/min	○ 10~20 m/min	○ 8~20 m/min	○ 8~20 m/min						◎ 15~60 m/min	◎ 15~40 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	◎ 15~60 m/min	◎ 15~60 m/min	◎ 15~60 m/min		◎ 25~70 m/min	◎ 25~70 m/min	◎ 25~70 m/min					

VPO-DC-MT

METRIC
- High performance
- Synchro taps when speed can be > 30 m/min
- For cast iron and aluminium

METRISCH
- High performance
- Synchro Bohrer > 30 m/min
- Für Grauguss und Aluminium

METRICO
- Alta prestazione
- Maschi synchro. La velocità può essere > 30 m/min
- Per ghisa e alluminio

METRIQUE
- Haute performance
- Tarauds synchro où la vitesse peut être > 30 m/min
- Pour fonte et aluminium

METRİK
- Yüksek performans
- Kesme hızı > 30m/min olduğunda sekronize kılavuz
- Döküm ve alüminyum için

METRISK
- High performance
- Synkro tappe når skærehastighed kan være > 30 m/min
- Til støbejern & aluminium

METRISK
- High performance
- Synkro gängtappar när skärhastigheten är > 30 m / min
- För gjutjärn och aluminium

METRICO
- Altas prestaciones
- Machos Synchro cuando la velocidad puede ser >30 m/min.
- Para fundición de hierro y aluminio

МЕТРИЧЕСКИЙ
- Высокая производительность
- Синхро метчики со скоростью резания > 30 м/мин
- для чугуна и алюминия

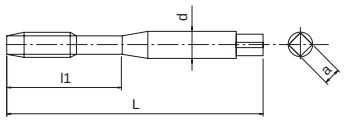
METRYCZNY
- Wysoka wydajność
- Gwintownik SYNCHRO, Vc > 30 m/min
- Do żeliw i aluminium

GO TO LIVE STOCK CHECK

M

M

M | PM | V | ISO 2 6HX | C/2,5 | ≥2D | DIN 371





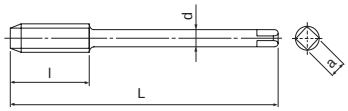
≤10

≥12



EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
48021155	6	1	80	30	6	4,9	3	●	
48021161	8	1,25	90	35	8	6,2	4	●	
48021169	10	1,5	100	39	10	8	4	●	

M | PM | V | ISO 2 6HX | C/2,5 | ≥2D | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48021179	12	1,75	110	21	9	7	4	●	
48024191	14	2	110	24	11	9	4	●	
48024202	16	2	110	24	12	9	4	●	
48024214	18	2,5	125	30	14	11	4	●	
48024228	20	2,5	140	30	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		○ 10~25 m/min	○ 10~20 m/min	○ 8~20 m/min	○ 8~20 m/min						◎ 15~60 m/min	◎ 15~40 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	◎ 15~60 m/min	◎ 15~60 m/min	◎ 15~60 m/min		◎ 25~70 m/min	◎ 25~70 m/min	◎ 25~70 m/min					

● Delivery from stock
○ Available on short notice

VPO-DC-SC-MT

METRIC
- High performance
- Synchro taps when speed can be > 30 m/min
- For cast iron and aluminium
- **Short chamfer**

METRISCH
- High performance
- Synchro Bohrer > 30 m/min
- Für Grauguss und Aluminium
- **kurzer Anschnitt**

METRICO
- **Alta prestazione**
- Maschi synchro. La velocità può essere > 30 m/min
- Per ghisa e alluminio
- **Imbocco corto**

METRIQUE
- Haute performance
- Tarauds synchro où la vitesse peut être > 30 m/min
- Pour fonte et aluminium
- **Entrée courte**

METRİK
- Yüksek performans
- Kesme hızı > 30m/min olduğunda sekronize kılavuz
- Döküm ve alüminyum için
- **Kısa pah**

METRISK
- High performance
- Synkro tappe når skærehastighed kan være > 30 m/min
- Til støbejern & aluminium
- **Kort indløb**

METRISK
- High performance
- Synkro gängtappar när skärhastigheten är > 30 m / min
- För gjutjärn och aluminium
- **Kort faslängd**

METRICO
- **Altas prestaciones**
- Machos Synchro cuando la velocidad puede ser >30 m/min.
- Para fundición de hierro y aluminio
- **Chaflán corto**

МЕТРИЧЕСКИЙ
- Высокая производительность
- Синхро метчики со скоростью резания > 30 м/мин
- для чугуна и алюминия
- **Короткий заход**

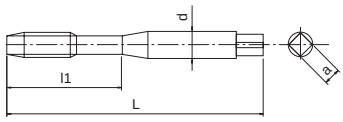
METRYCZNY
- Wysoka wydajność
- Gwintownik SYNCHRO, Vc > 30 m/min
- Do żeliw i aluminium
- **Krótki nakrój**

GO TO LIVE STOCK CHECK

M

M

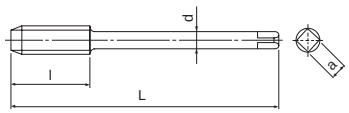
M PM V ISO 2 6HX E/1,5 ≥2D DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
48038155	6	1	80	30	6	4,9	3	●	
48038161	8	1,25	90	35	8	6,2	4	●	
48038169	10	1,5	100	39	10	8	4	●	

M PM V ISO 2 6HX E/1,5 ≥2D DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48038179	12	1,75	110	21	9	7	4	●	
48038191	14	2	110	24	11	9	4	●	
48038202	16	2	110	24	12	9	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		○ 10~25 m/min	○ 10~20 m/min	○ 8~20 m/min	○ 8~20 m/min						◎ 15~60 m/min	◎ 15~40 m/min
Cu	**BS**	**BsC**	**PB**	**Al**	**AC,ADC**	**MC**	**ZDC**	**Ti**	**Ni**	**Plast.**	**Vinyl**	
	◎ 15~60 m/min	◎ 15~60 m/min	◎ 15~60 m/min		◎ 25~70 m/min	◎ 25~70 m/min	◎ 25~70 m/min					

● Delivery from stock
○ Available on short notice

OIL-C-MT (Form E)

METRIC
- High performance
- For cast iron and aluminium

METRISCH
- High performance
- Für Grauguss und Aluminium

METRICO
- Alta prestazione
- Per ghisa e alluminio

METRIQUE
- Haute performance
- Pour fonte et aluminium

METRİK
- Yüksek performans
- Döküm ve alüminyum için

METRISK
- High performance
- Til støbejern & aluminium

METRISK
- High performance
- För gjutjärn och aluminium

METRICO
- Altas prestaciones
- Para fundición de hierro y aluminio

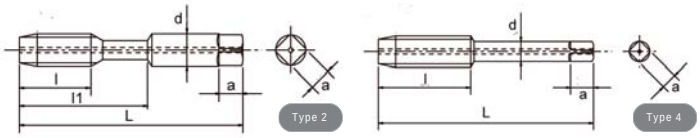
МЕТРИЧЕСКАЯ
- Высокая производительность
- для чугуна и алюминия

METRYCZNY
- Wysoka wydajność
- Do żeliw i aluminium

GO TO LIVE STOCK CHECK

M







EDP	M	P	L	l	l1	d	a	ZΔ	DIN	Type	Stock	Price
48126155	6	1	80	12	30	6	4,9	3	371	2	●	
48126161	8	1,25	90	15	35	8	6,2	4	371	2	●	
48126169	10	1,5	100	18	39	10	8	4	371	2	●	
48126179	12	1,75	110	21	-	9	7	4	376	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
											◎ 50~100 m/min	○ 30~60 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 20~60 m/min	○ 20~60 m/min	○ 20~60 m/min		◎ 20~60 m/min	◎ 20~60 m/min	◎ 20~60 m/min					

● Delivery from stock
○ Available on short notice

OIL-C-MT (Form C)

METRIC
- High performance
- For cast iron and aluminium

METRISCH
- High performance
- Für Grauguss und Aluminium

METRICO
- Alta prestazione
- Per ghisa e alluminio

METRIQUE
- Haute performance
- Pour fonte et aluminium

METRİK
- Yüksek performans
- Döküm ve alüminyum için

METRISK
- High performance
- Til støbejern & aluminium

METRISK
- High performance
- För gjutjärn och aluminium

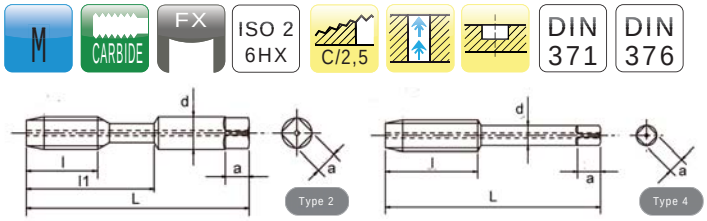
METRICO
- Altas prestaciones
- Para fundición de hierro y aluminio

МЕТРИЧЕСКАЯ
- Высокая производительность
- для чугуна и алюминия

METRYCZNY
- Wysoka wydajność
- Do żeliw i aluminium

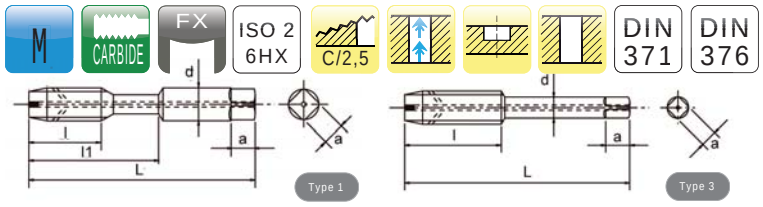
GO TO LIVE STOCK CHECK

M





EDP	M	P	L	l	l1	d	a	ZΔ	DIN	Type	Stock	Price
48130155	6	1	80	12	30	6	4,9	3	371	2	●	
48130161	8	1,25	90	15	35	8	6,2	4	371	2	●	
48130169	10	1,5	100	18	39	10	8	4	371	2	●	
48130179	12	1,75	110	21	-	9	7	4	376	4	●	





EDP	M	P	L	l	l1	d	a	ZΔ	DIN	Type	Stock	Price
48132161	8	1,25	90	15	35	8	6,2	4	371	1	●	
48132169	10	1,5	100	18	39	10	8	4	371	1	●	
48132179	12	1,75	110	21	-	9	7	4	376	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
											◎ 50~100 m/min	○ 30~60 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 20~60 m/min	○ 20~60 m/min	○ 20~60 m/min		◎ 20~60 m/min	◎ 20~60 m/min	◎ 20~60 m/min					

● Delivery from stock
○ Available on short notice

V-XPM-HT

METRIC
- High performance
- Tapping speed 1 - 3 m/min
- For heat treated steel 42~52 HRC

METRISCH
- High performance
- Schnittgeschwindigkeit 1 - 3 m/min
- Für gehärteten Stahl HRC 42~52

METRICO
- Alta prestazione
- Velocità di maschiatura tra 1 e 3 m/min
- Per acciai da 42~52 HRC

METRIQUE
- Haute performance
- Vitesse de coupe entre 1 et 3 m/min
- Pour aciers traités à HRC 42~52

METRİK
- Yüksek performans
- Kesme hızı 1 - 3 m/min
- 42~52 HRC ısıl işlemli çelikler için

METRISK
- High performance
- Skærehastighed 1 - 3 m/min
- Til hærdet stål 42~52 HRC

METRISK
- High performance
- Gänghastighet 1 - 3 m/min
- För värmebehandlat stål 42~52 HRC

METRICO
- Altas prestaciones
- Velocidad de roscado 1 - 3 m/min.
- Para aceros tratados 42~52 HRC

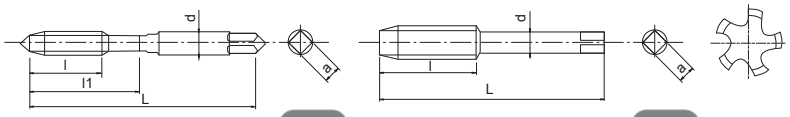
МЕТРИЧЕСКИЙ
- Высокая производительность
- Скорость резания 1 - 3 м/мин
- Для улучшенных сталей 42~52 HRC

METRYCZNY
- Wysoka wydajność
- Prędkość gwintowania 1 - 3 m/min
- Do stali po obróbce cieplnej 42 ~ 52 HRC

GO TO LIVE STOCK CHECK

M







EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
89913868	3	0,5	46	19	3,5	2,7	4	2	●	
89914468	4	0,7	52	21	4,5	3,4	4	2	●	
89914968	5	0,8	60	24	6	4,9	4	2	●	
89915568	6	1	62	29	6	4,9	5	2	●	
89916168	8	1,25	70	22	6	4,9	5	3	●	
89916968	10	1,5	75	24	7	5,5	5	3	●	
89917968	12	1,75	82	29	9	7	5	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
						1~3 m/min						
Cu	**BS**	**BsC**	**PB**	**Al**	**AC,ADC**	**MC**	**ZDC**	**Ti**	**Ni**	**Plast.**	**Vinyl**	

● Delivery from stock
○ Available on short notice

WH55-OT

METRIC
- High performance
- For heat treated steel 40~55 HRC
- With water soluble coolant

METRISCH
- High performance
- Für wärmebehandelte Stähle zwischen 40~55 HRC
- Auch für Emulsion geeignet

METRICO
- Alta prestazione
- Per acciai trattati a caldo 40~55 HRC
- Con raffreddamento ad emulsione

METRIQUE
- Haute performance
- Pour aciers traités à 40~55 HRC
- Avec huile soluble

METRİK
- Yüksek performans
- 40~55 HRC ısıl işlemli çelikler için
- Suda çözünen soğutma sıvısı ile

METRISK
- High performance
- For varmebehandlet stål 40-55 HRC
- Med vandbaseret kølemiddel

METRISK
- High performance
- För stål 40-55 HRC
- Med vattenbaserad kylvätska

METRICO
- Altas prestaciones
- Para acero tratado de 40~55 HRC
- Con taladrina

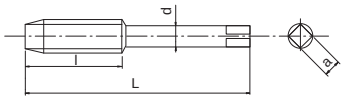
МЕТРИЧЕСКИЙ
- Высокая производительность
- Для улучшенных сталей 40~55 HRC
- С охлаждением эмульсией

METRYCZNY
- Wysoka wydajność
- Do stali po obróbce cieplnej 40 ~ 55 HRC
- Do pracy w emulsji

GO TO LIVE STOCK CHECK

M

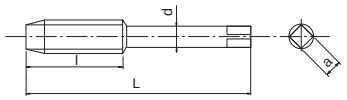






EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48100138	3	0,5	46	19	3,5	2,7	4	●	
48100144	4	0,7	52	21	4,5	3,4	4	●	
48100149	5	0,8	60	24	6	4,9	4	●	
48100155	6	1	62	29	6	4,9	4	●	
48100161	8	1,25	70	22	6	4,9	5	●	
48100169	10	1,5	75	24	7	5,5	5	●	
48100179	12	1,75	82	29	9	7	5	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48111138	3	0,5	46	19	3,5	2,7	4	●	
48111144	4	0,7	52	21	4,5	3,4	4	●	
48111149	5	0,8	60	24	6	4,9	4	●	
48111155	6	1	62	29	6	4,9	4	●	
48111161	8	1,25	70	22	6	4,9	5	●	
48111169	10	1,5	75	24	7	5,5	5	●	
48111179	12	1,75	82	29	9	7	5	●	

40~50 HRC	50~55 HRC
2~4 m/min.	1~3 m/min.

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
						1~3 m/min						
Cu	**BS**	**BsC**	**PB**	**Al**	**AC,ADC**	**MC**	**ZDC**	**Ti**	**Ni**	**Plast.**	**Vinyl**	

METRIC
- High performance
- Tapping speed 1 - 3 m/min
- Use max. possible tapping drill size
- Use oil coolant
- For hardened steel below < 62 HRC

METRISCH
- High performance
- Schnittgeschwindigkeit 1 - 3 m/min
- Max. Kernloch Durchmesser benutzen
- Schneidöl verwenden
- Für gehärteten Stahl < 62 HRC

METRICO
- Alta prestazione
- Velocità di taglio tra 1 e 3 m/min
- Preforo più grande possibile
- Lubrificazione ad olio
- Per acciai fino a < 62 HRC

METRIQUE
- Haute performance
- Vitesse de coupe entre 1 et 3 m/min
- Préforage le plus grand possible
- Arrosage à l'huile
- Pour aciers jusque 62 HRC

METRİK
- Yüksek performans
- Kesme hızı 1 - 3 m/min
- Mümkün olan en büyük kılavuz öncesi delik ölçüsü kullanın
- Kesme yağı kullanın
- < 62 HRC altındaki sertleştirilmiş çelikler için

METRISK
- High performance
- Skærehastighed 1-3 m/min
- Anvend størst muligt gevindbor
- Anvend olie køling
- Til hærdet stål < 62 HRC

METRISK
- High performance
- Gänghastighet 1-3 m/min
- Använd största möjliga hål diameter
- Använd olje kylning
- För härdat stål < 62 HRC

METRICO
- Altas prestaciones
- Velocidad de roscado 1 - 3 m/min.
- Use el mayor diametro de broca posible
- Use aceite de corte
- Para aceros endurecidos <62 HrC

МЕТРИЧЕСКИЙ
- Высокая производительность
- Скорость резания 1-3 м/мин
- Используйте максимально возможный диаметр пилотного отверстия
- используйте масло для охлаждения
- Для закаленных сталей < 62 HRC

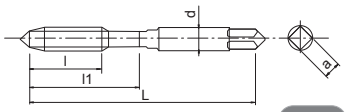
METRYCZNY
- Wysoka wydajność
- Prędkość gwintowania 1 - 3 m/min
- Użyj max. możliwej średnicy wiertła
- Do pracy w oleju
- Do stali hartowanych poniżej <62 HRC

GO TO LIVE STOCK CHECK

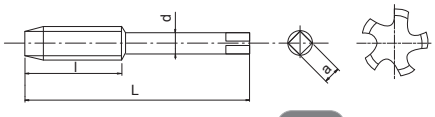
M

M





Type 2



Type 3



EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
93413868	3	0,5	46	19	3,5	2,7	4	2	●	
93414468	4	0,7	52	21	4,5	3,4	4	2	●	
93414968	5	0,8	60	24	6	4,9	4	2	●	
93415568	6	1	62	29	6	4,9	5	2	●	
93416168	8	1,25	70	22	6	4,9	5	3	●	
93416968	10	1,5	75	24	7	5,5	5	3	●	
93417968	12	1,75	82	29	9	7	5	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
							1~3 m/min					

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

Z-POT

METRIC
- High performance
- **Serie Z :** for high speed tapping in aluminium, mild steel, die steel & stainless steel

METRISCH
- High performance
- **Serie Z :** für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA-Stahl

METRICO
- Alta prestazione
- **Serie Z :** ad alta velocità per alluminio, acciai dolci, acciai per stampi e inox

METRIQUE
- Haute performance
- **Série Z :** pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox

METRİK
- Yüksek performans
- **Seri Z:** Alüminyumda yüksek kesme hızları, orta çelikler, kalıp çelikleri & paslanmaz çelikler için

METRISK
- High performance
- **Serie Z:** til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål

METRISK
- High performance
- **Serie Z:** För high speed gängning i aluminium, mjukt stål, verktygsstå & rostfritt stål

METRICO
- Altas prestaciones
- **Serie Z (V-VA-CPM, V-O-VA-CPM):** para roscado a alta velocidad en aluminio, aceros suaves y aceros inoxidables

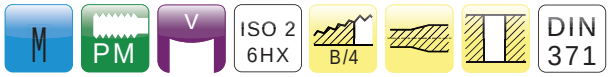
МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия Z:** для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях

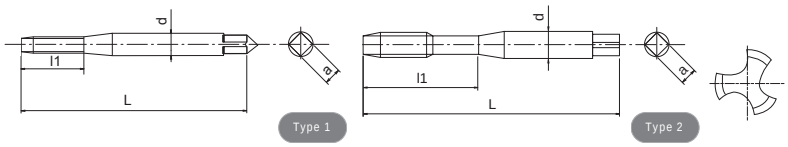
METRYCZNY
- Wysoka wydajność
- **Seria Z:** do dużych prędkości gwintowania w aluminium, stalach miękkich, narzędziowych i nierdzewnych

GO TO LIVE STOCK CHECK

M

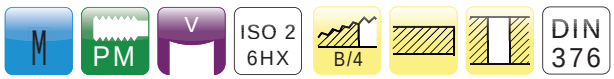
M

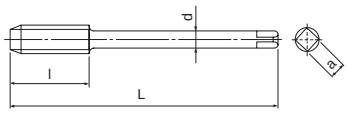






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
83812568	2	0,4	45	8	2,8	2,1	2	1	●	
83813368	2,5	0,45	50	9	2,8	2,1	2	1	●	
83813868	3	0,5	56	18	3,5	2,7	3	2	●	
83814468	4	0,7	63	21	4,5	3,4	3	2	●	
83814968	5	0,8	70	25	6	4,9	3	2	●	
83815568	6	1	80	30	6	4,9	3	2	●	
83816168	8	1,25	90	35	8	6,2	3	2	●	
83816968	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
83913868	3	0,5	56	11	2,2	-	3	●	
83914468	4	0,7	63	13	2,8	2,1	3	●	
83914968	5	0,8	70	16	3,5	2,7	3	●	
83915568	6	1	80	19	4,5	3,4	3	●	
83916168	8	1,25	90	22	6	4,9	3	●	
83916968	10	1,5	100	24	7	5,5	3	●	
83917968	12	1,75	110	29	9	7	3	●	
83919168	14	2	110	30	11	9	3	●	
83920268	16	2	110	32	12	9	3	●	
83921468	18	2,5	125	34	14	11	3	●	
83922868	20	2,5	140	34	16	12	3	●	
83923868	22	2,5	140	34	18	14,5	3	●	
83924768	24	3	160	38	18	14,5	3	●	
83926268	27	3	160	38	20	16	4	●	
83927168	30	3,5	180	45	22	18	4	●	

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◎ 15~24 m/min	◎ 15~24 m/min	◎ 15~24 m/min	○ 8~20 m/min	○ 8~15 m/min				◎ 8~20 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min		○ 16~30 m/min		○ 20~40 m/min	○ 20~40 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 10~15 m/min			○ 10~20 m/min	

● Delivery from stock
○ Available on short notice

Z-OIL-POT

METRIC
- High performance
- **Serie Z :** for high speed tapping in aluminium, mild steel, die steel & stainless steel

METRISCH
- High performance
- **Serie Z :** für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA-Stahl

METRICO
- Alta prestazione
- **Serie Z :** ad alta velocità per alluminio, acciai dolci, acciai per stampi e inox

METRIQUE
- Haute performance
- **Série Z :** pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox

METRİK
- Yüksek performans
- **Seri Z:** Alüminyumda yüksek kesme hızları, orta çelikler, kalıp çelikleri & paslanmaz çelikler için

METRISK
- High performance
- **Serie Z:** til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål

METRISK
- High performance
- **Serie Z:** För high speed gängning i aluminium, mjukt stål, verktygsstå & rostfritt stål

METRICO
- Altas prestaciones
- **Serie Z (V-VA-CPM, V-O-VA-CPM):** para roscado a alta velocidad en aluminio, aceros suaves y aceros inoxidables

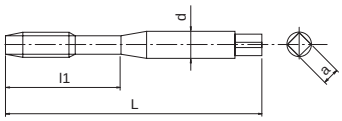
МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия Z:** для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях

METRYCZNY
- Wysoka wydajność
- **Seria Z:** do dużych prędkości gwintowania w aluminium, stalach miękkich, narzędziowych i nierdzewnych

GO TO LIVE STOCK CHECK

M

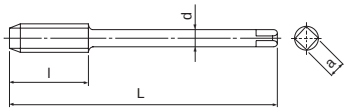






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
83815588	6	1	80	30	6	4,9	3	●	
83816188	8	1,25	90	35	8	6,2	3	●	
83816988	10	1,5	100	39	10	8	3	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
83917988	12	1,75	110	29	9	7	3	●	
83919188	14	2	110	30	11	9	3	●	
83920288	16	2	110	32	12	9	3	●	
83921488	18	2,5	125	34	14	11	3	●	
83922888	20	2,5	140	34	16	12	3	●	

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◎ 15~24 m/min	◎ 15~24 m/min	◎ 15~24 m/min	○ 8~20 m/min	○ 8~15 m/min				◎ 8~20 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min		○ 16~30 m/min		○ 20~40 m/min	○ 20~40 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 10~15 m/min			○ 10~20 m/min	

● Delivery from stock
○ Available on short notice

HS-RFT-TIN

METRIC
- Developed for CNC machines equipped with rigid tapping
- Left hand spiral
- For high speed tapping in various materials

METRISCH
- Für CNC Maschinen mit Synchronspindeln
- Linksspirale
- Für HSC - Gewindeschneiden für allgemeine Anwending

METRICO
- Studiato per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Elica sinistra
- Per maschiatura ad alta velocità materiali vari

METRIQUE
- Synchro-Tap est développé pour les machines CNC qui ont le "taraudage rigide"
- Elice gauche
- Pour taraudage haute vitesse dans des matières diverses

METRİK
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Sol helis
- Çeşitli malzemeler de yüksek kesme hızında diş açma

METRISK
- Udviklet til CNC maskine udstyret med fast tapholder
- Venstresnoet
- Til højhastigheds gevindskæring i mange forskellige materialer

METRISK
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- Vänster spiral
- För high speed gängning i varierande material

METRICO
- Desarrollados para máquinas CNC aptas para roscado rígido
- Ranura helicoidal izquierda
- Para roscado a alta velocidad en varios materiales

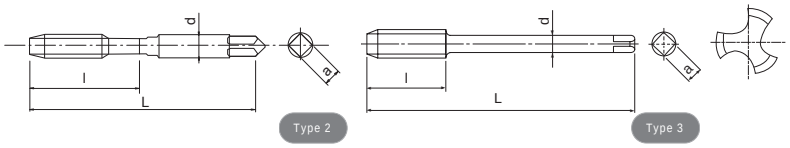
МЕТРИЧЕСКИЙ
- Разработаны для ЧПУ станков имеющих циклы жесткой нарезки резьбы
- Левая спираль
- Для высокоскоростного нарезания резьбы в алюминии

METRYCZNY
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Lewa spirala
- Do dużych prędkości gwintowania w różnorodnych materiałach

GO TO LIVE STOCK CHECK

M







EDP	M	P	L	l	d	a	ZΔ	Type	Stock	Price
20710	3	0,5	46	19	4	3,2	3	2	●	
20714	4	0,7	52	21	6	4,5	3	2	●	
20718	5	0,8	60	24	6	4,5	3	2	●	
20722	6	1	62	29	6	4,5	3	2	●	
20728	8	1,25	70	37	8	6	3	2	●	
20734	10	1,5	75	24	8	6	3	3	●	
20739	12	1,75	82	29	10	8	3	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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◎ 27~32 m/min	◎ 27~32 m/min	◎ 22~27 m/min	◎ 22~27 m/min					○ 15~20 m/min		○ 17~22 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 27~32 m/min	○ 27~32 m/min			○ 50~100 m/min	○ 40~100 m/min		○ 27~100 m/min				○ 27~32 m/min	

● Delivery from stock
○ Available on short notice

US-AL-RFT

METRIC
- Developed for CNC machines equipped with rigid tapping
- Left hand spiral
- For high speed tapping in various materials

METRISCH
- Für CNC Maschinen mit Synchronspindeln
- Linksspirale
- Für HSC - Gewindeschneiden für allgemeine Anwending

METRICO
- Studiato per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Elica sinistra
- Per maschiatura ad alta velocità materiali vari

METRIQUE
- Synchro-Tap est développé pour les machines CNC qui ont le "taraudage rigide"
- Elice gauche
- Pour taraudage haute vitesse dans des matières diverses

METRİK
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Sol helis
- Çeşitli malzemeler de yüksek kesme hızında diş açma

METRISK
- Udviklet til CNC maskine udstyret med fast tapholder
- Venstresnoet
- Til højhastigheds gevindskæring i mange forskellige materialer

METRISK
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- Vänster spiral
- För high speed gängning i varierande material

METRICO
- Desarrollados para máquinas CNC aptas para roscado rígido
- Ranura helicoidal izquierda
- Para roscado a alta velocidad en varios materiales

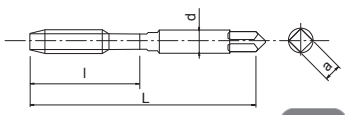
МЕТРИЧЕСКИЙ
- Разработаны для ЧПУ станков имеющих циклы жесткой нарезки резьбы
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METRYCZNY
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Lewa spirala
- Do dużych prędkości gwintowania w różnorodnych materiałach

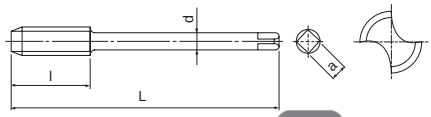
GO TO LIVE STOCK CHECK

M





Type 2



Type 3



EDP	M	P	L	l	d	a	ZΔ	Type	Stock	Price
8311269	3	0,5	46	19	4	3,2	2	2	●	
8311283	4	0,7	52	21	6	4,5	2	2	●	
8311297	5	0,8	60	24	6	4,5	2	2	●	
8311311	6	1	62	29	6	4,5	2	2	●	
8311325	8	1,25	70	37	8	6	2	2	●	
8311339	10	1,5	75	24	8	6	2	3	●	
8311357	12	1,75	82	29	10	8	2	3	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
				◎ 100~400 m/min	◎ 100~400 m/min	○ 27~100 m/min	○ 27~200 m/min					

● Delivery from stock
○ Available on short notice

METRIC
- High performance
- For high speed tapping in aluminium, mild steel, die steel & stainless steel

METRISCH
- High performance
- Für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA-Stahl

METRICO
- Alta prestazione
- Ad alta velocità per alluminio, acciai dolci, acciai per stampi e inox

METRIQUE
- Haute performance
- Pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox

METRİK
- Yüksek performans
- Alüminyumda yüksek kesme hızları, orta çelikler, kalıp çelikleri & paslanmaz çelikler için

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- High performance
- För high speed gängning i aluminium, mjukt stål, verktygsstå & rostfritt stål

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- Высокая производительность
- для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях

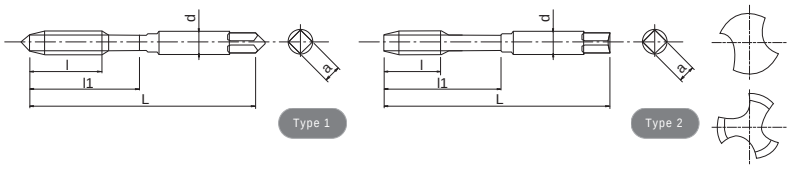
METRYCZNY
- Wysoka wydajność
- Do dużych prędkości gwintowania w aluminium, stalach miękkich, narzędziowych i nierdzewnych

GO TO LIVE STOCK CHECK

M

M

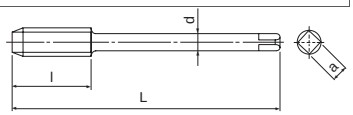
M | PM | V | 45° | ISO 2 6HX | C/2,5 | DIN 371





EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48139138	3	0,5	56	18	3,5	2,7	2	2	●	
48139144	4	0,7	63	21	4,5	3,4	2	2	●	
48139149	5	0,8	70	25	6	4,9	2	2	●	
48139155	6	1	80	30	6	4,9	2	2	●	
48139161	8	1,25	90	35	8	6,2	3	2	●	
48139169	10	1,5	100	39	10	8	3	2	●	

M | PM | V | 45° | ISO 2 6HX | C/2,5 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48139179	12	1,75	110	14	9	7	3	●	
48139191	14	2	110	16	11	9	3	●	
48139202	16	2	110	16	12	9	3	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~60 m/min	◎ 15~60 m/min	◎ 10~60 m/min	◎ 8~30 m/min	○ 8~20 m/min				◎ 8~20 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~35 m/min		○ 15~30 m/min		○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 5~10 m/min				○ 15~20 m/min

A-OIL-SFT

METRIC
- High performance
- For high speed tapping in aluminium, mild steel, die steel & stainless steel

METRISCH
- High performance
- Für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA-Stahl

METRICO
- Alta prestazione
- Ad alta velocità per alluminio, acciai dolci, acciai per stampi e inox

METRIQUE
- Haute performance
- Pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox

METRİK
- Yüksek performans
- Alüminyumda yüksek kesme hızları, orta çelikler, kalıp çelikleri & paslanmaz çelikler için

METRISK
- High performance
- Til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål

METRISK
- High performance
- För high speed gängning i aluminium, mjukt stål, verktygsstå & rostfritt stål

METRICO
- Altas prestaciones
- Para roscado a alta velocidad en aluminio, aceros suaves y aceros inoxidables

МЕТРИЧЕСКИЙ
- Высокая производительность
- для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях

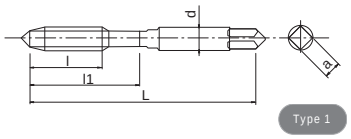
METRYCZNY
- Wysoka wydajność
- Do dużych prędkości gwintowania w aluminium, stalach miękkich, narzędziowych i nierdzewnych

GO TO LIVE STOCK CHECK

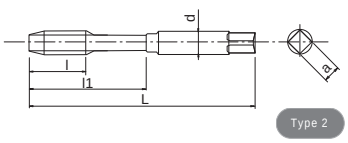
M

M

M | PM | V | 45° | ISO 2 6HX | C/2,5 | DIN 371



Type 1

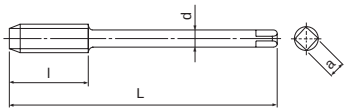


Type 2



EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
48140155	6	1	80	30	6	4,9	2	3	●	
48140161	8	1,25	90	35	8	6,2	3	3	●	
48140169	10	1,5	100	39	10	8	3	3	●	

M | PM | V | 45° | ISO 2 6HX | C/2,5 | DIN 376



EDP	M	P	L	l	d	a	ZΔ	Stock	Price
48140179	12	1,75	110	14	9	7	3	●	
48140191	14	2	110	16	11	9	3	●	
48140202	16	2	110	16	12	9	3	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~60 m/min	◎ 15~60 m/min	◎ 10~60 m/min	◎ 8~30 m/min	○ 8~20 m/min				◎ 8~20 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~35 m/min		○ 15~30 m/min		○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 5~10 m/min				○ 15~20 m/min

● Delivery from stock
○ Available on short notice

METRIC
- High performance
- **Serie Z :** for high speed tapping in aluminium, mild steel, die steel & stainless steel

METRISCH
- High performance
- **Serie Z :** für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA-Stahl

METRICO
- Alta prestazione
- **Serie Z :** ad alta velocità per alluminio, acciai dolci, acciai per stampi e inox

METRIQUE
- Haute performance
- **Série Z :** pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox

METRİK
- Yüksek performans
- **Seri Z:** Alüminyumda yüksek kesme hızları, orta çelikler, kalıp çelikleri & paslanmaz çelikler için

METRISK
- High performance
- **Serie Z:** til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål

METRISK
- High performance
- **Serie Z:** För high speed gängning i aluminium, mjukt stål, verktygsstå & rostfritt stål

METRICO
- Altas prestaciones
- **Serie Z (V-VA-CPM, V-O-VA-CPM):** para roscado a alta velocidad en aluminio, aceros suaves y aceros inoxidables

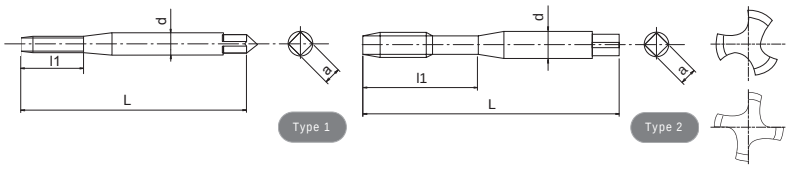
МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия Z:** для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях

METRYCZNY
- Wysoka wydajność
- **Seria Z:** do dużych prędkości gwintowania w aluminium, stalach miękkich, narzędziowych i nierdzewnych

GO TO LIVE STOCK CHECK

M

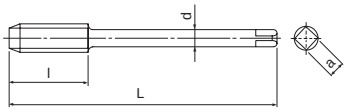






EDP	M	P	L	l1	d	a	ZΔ	Type	Stock	Price
80512568	2	0,4	45	8	2,8	2,1	2	1	●	
80513368	2,5	0,45	50	9	2,8	2,1	2	1	●	
80513868	3	0,5	56	18	3,5	2,7	3	2	●	
80514468	4	0,7	63	21	4,5	3,4	3	2	●	
80514968	5	0,8	70	25	6	4,9	3	2	●	
80515568	6	1	80	30	6	4,9	3	2	●	
80516168	8	1,25	90	35	8	6,2	3	2	●	
80516968	10	1,5	100	39	10	8	3	2	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
80613868	3	0,5	56	5	2,2	-	3	●	
80614468	4	0,7	63	7	2,8	2,1	3	●	
80614968	5	0,8	70	8	3,5	2,7	3	●	
80615568	6	1	80	10	4,5	3,4	3	●	
80616168	8	1,25	90	13	6	4,9	3	●	
80616968	10	1,5	100	15	7	5,5	3	●	
80617968	12	1,75	110	18	9	7	4	●	
80619168	14	2	110	20	11	9	4	●	
80620268	16	2	110	20	12	9	4	●	
80621468	18	2,5	125	25	14	11	4	●	
80622868	20	2,5	140	25	16	12	4	●	
81623868	22	2,5	140	25	18	14,5	4	●	
81624768	24	3	160	30	18	14,5	4	●	
81626268	27	3	160	30	20	16	4	●	
81627168	30	3,5	180	35	22	18	4	●	

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◎ 10~25 m/min	◎ 10~25 m/min	◎ 10~25 m/min	○ 8~20 m/min	○ 8~15 m/min				◎ 8~20 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~35 m/min		○ 16~30 m/min		○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 5~10 m/min			○ 15~20 m/min	

Z-OIL-SFT

METRIC
- High performance
- **Serie Z :** for high speed tapping in aluminium, mild steel, die steel & stainless steel

METRISCH
- High performance
- **Serie Z :** für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA-Stahl

METRICO
- Alta prestazione
- **Serie Z :** ad alta velocità per alluminio, acciai dolci, acciai per stampi e inox

METRIQUE
- Haute performance
- **Série Z :** pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox

METRİK
- Yüksek performans
- **Seri Z:** Alüminyumda yüksek kesme hızları, orta çelikler, kalıp çelikleri & paslanmaz çelikler için

METRISK
- High performance
- **Serie Z:** til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål

METRISK
- High performance
- **Serie Z:** För high speed gängning i aluminium, mjukt stål, verktygsstå & rostfritt stål

METRICO
- Altas prestaciones
- **Serie Z (V-VA-CPM, V-O-VA-CPM):** para roscado a alta velocidad en aluminio, aceros suaves y aceros inoxidables

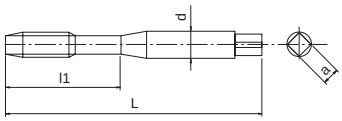
МЕТРИЧЕСКИЙ
- Высокая производительность
- **Серия Z:** для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях

METRYCZNY
- Wysoka wydajność
- **Seria Z:** do dużych prędkości gwintowania w aluminium, stalach miękkich, narzędziowych i nierdzewnych

GO TO LIVE STOCK CHECK

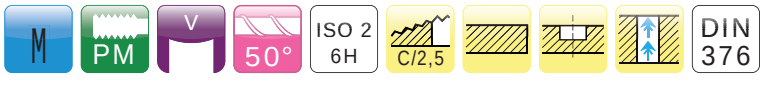
M

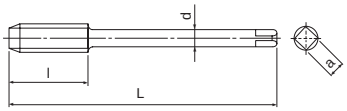






EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
80515588	6	1	80	30	6	4,9	3	●	
80516188	8	1,25	90	35	8	6,2	3	●	
80516988	10	1,5	100	39	10	8	3	●	





EDP	M	P	L	l	d	a	ZΔ	Stock	Price
80617988	12	1,75	110	18	9	7	4	●	
80619188	14	2	110	20	11	9	4	●	
80620288	16	2	110	20	12	9	4	●	
80621488	18	2,5	125	25	14	11	4	●	
80622888	20	2,5	140	25	16	12	4	●	

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◎ 10~25 m/min	◎ 10~25 m/min	◎ 10~25 m/min	○ 8~20 m/min	○ 8~15 m/min				◎ 8~20 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~35 m/min		○ 16~30 m/min		○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 5~10 m/min			○ 15~20 m/min	

● Delivery from stock
○ Available on short notice

HS-SFT-TIN

METRIC
- Developed for CNC machines equipped with rigid tapping
- For high speed tapping in various materials

METRISCH
- Für CNC Maschinen mit Synchronspindeln
- Für HSC - Gewindeschneiden für allgemeine Anwending

METRICO
- Studiato per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Per maschiatura ad alta velocità materiali vari

METRIQUE
- Synchro-Tap est développé pour les machines CNC qui ont le "taraudage rigide"
- Pour taraudage haute vitesse dans des matières diverses

METRİK
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Çeşitli malzemeler de yüksek kesme hızında diş açma

METRISK
- Udviklet til CNC maskine udstyret med fast tapholder
- Til højhastigheds gevindskæring i mange forskellige materialer

METRISK
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- För high speed gängning i varierande material

METRICO
- Desarrollados para máquinas CNC aptas para roscado rígido
- Para roscado a alta velocidad en varios materiales

МЕТРИЧЕСКИЙ
- Разработаны для ЧПУ станков имеющих циклы жесткой нарезки резьбы
- Для высокоскоростного нарезания резьбы в алюминии

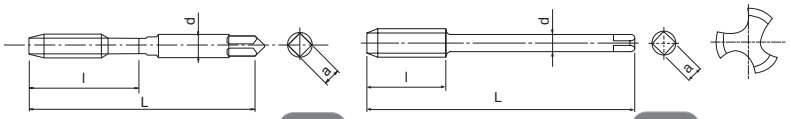
METRYCZNY
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Do dużych prędkości gwintowania w różnorodnych materiałach

GO TO LIVE STOCK CHECK

M

M







EDP	M	P	L	l	d	a	ZΔ	Type	Stock	Price
20810	3	0,5	46	19	4	3,2	3	2	●	
20814	4	0,7	52	21	6	4,5	3	2	●	
20818	5	0,8	60	24	6	4,5	3	2	●	
20822	6	1	62	29	6	4,5	3	2	●	
20828	8	1,25	70	37	8	6	3	2	●	
20834	10	1,5	75	12	8	6	3	3	●	
20839	12	1,75	82	14	10	8	3	3	●	

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◎ 27~32 m/min	◎ 27~32 m/min	◎ 22~27 m/min	◎ 22~27 m/min							○ 17~22 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 27~32 m/min				○ 50~100 m/min	○ 40~100 m/min						◎ 27~32 m/min	

● Delivery from stock
○ Available on short notice

US-AL-SFT

METRIC
- Developed for CNC machines equipped with rigid tapping
- For use with collet chuck
- For high speed tapping in aluminium

METRISCH
- Für CNC Maschinen mit Synchronspindeln
- für den Einsatz auch mit Spannzangen
- Für HSC - Gewindeschneiden für Aluminium

METRICO
- Studiato per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Si utilizza con un mandrino a pinza
- Per maschiatura ad alta velocità su alluminio

METRIQUE
- Synchro-Tap est développé pour les machines CNC qui ont le "taraudage rigide"
- S'utilise dans un mandrin à pinces
- Pour taraudage haute vitesse dans l'aluminium

METRİK
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Pensli tutucu ile kullanıma uygun
- Alüminyumda yüksek kesme hızlarında diş açmak için

METRISK
- Udviklet til CNC maskine udstyret med fast tapholder
- Til brug ved spændetangs holder
- Til højhastigheds gevindskæring i aluminium

METRISK
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- För användning med hylschuckar
- För high speed gängning i aluminium

METRICO
- Desarrollados para máquinas CNC aptas para roscado rígido
- Para usar con porta-pinzas
- Para roscado a alta velocidad en aluminio

МЕТРИЧЕСКИЙ
- Разработаны для ЧПУ станков имеющих циклы жесткой нарезки резьбы
- Для использования с цанговым патроном
- Для высокоскоростного нарезания резьбы в алюминии

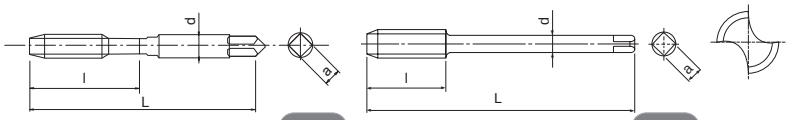
METRYCZNY
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Do pracy w oprawkach zaciskowych
- Do dużych prędkości gwintowania w aluminium

GO TO LIVE STOCK CHECK

M

M







EDP	M	P	L	l	d	a	ZΔ	Type	Stock	Price
8311669	3	0,5	46	19	4	3,2	2	2	●	
8311683	4	0,7	52	21	6	4,5	2	2	●	
8311697	5	0,8	60	24	6	4,5	2	2	●	
8311711	6	1	62	29	6	4,5	2	2	●	
8311725	8	1,25	70	37	8	6	2	2	●	
8311739	10	1,5	75	12	8	6	2	3	●	
8311757	12	1,75	82	14	10	8	2	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
				◎ 100~400 m/min	◎ 100~400 m/min	○ 27~100 m/min	○ 27~200 m/min					

● Delivery from stock
○ Available on short notice

METRIC
- High performance forming tap
- ISO 2/4HX for M≤1,6
- For longer tool life

METRISCH
- Hochleistungsgewindeformer
- ISO 2/4HX für M≤1,6
- Preisgünstig

METRICO
- Maschio a rullare ad alta performance
- ISO 2/4HX per M≤1,6
- Stabilità e durata

METRIQUE
- Taraud à refoulé à haute performance
- ISO 2/4HX pour M≤1,6
- Outil à longue durée

METRİK
- Yüksek performans ovalama kılavuzu
- ISO 2/4HX M≤1,6
- Daha uzun takım ömrü

METRISK
- High Performance rulletap
- ISO 2/4HX til M≤1,6
- Længere standtid

METRISK
- High performance pressgängtapp
- ISO 2/4HX och M≤1,6
- Livslängd

METRICO
- Alta prestaciones, macho de laminación
- ISO 2/4HX para M≤1,6
- Duración mayor

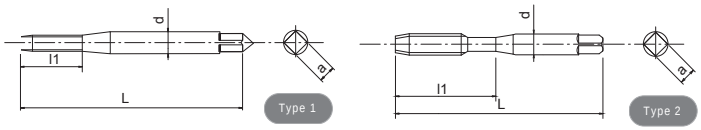
МЕТРИЧЕСКИЙ
- Высокопроизводительные накатные метчики
- ISO 2/4HX для M≤1,6
- С увеличенной стойкостью

METRYCZNY
- Wysoka wydajność wygniatania gwintów
- ISO 2/4HX do M≤1,6
- dłuższa żywotność

GO TO LIVE STOCK CHECK

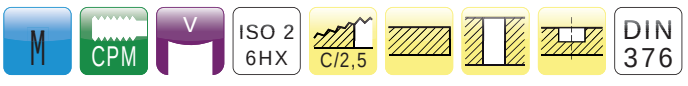
M

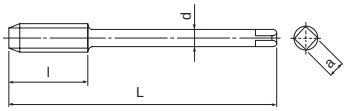






EDP	M	P	L	l1	d	a	Drill Hole Size	ZΔ	Type	Stock	Price
48133138	3	0,5	56	18	3,5	2,7	2,77~2,81	4		●	
48133144	4	0,7	63	21	4,5	3,4	3,66~3,72	4		●	
48133149	5	0,8	70	25	6	4,9	4,61~4,68	5		●	
48133155	6	1	80	30	6	4,9	5,51~5,59	5		●	
48133161	8	1,25	90	35	8	6,2	7,37~7,45	5		●	
48133169	10	1,5	100	39	10	8	9,24~9,33	8		●	





EDP	M	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48133179	12	1,75	110	17	9	7	11,10~11,20	8	●	
48133191	14	2	110	20	11	9	12,96~13,08	8	●	
48133202	16	2	110	20	12	9	14,96~15,08	8	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

METRIC
- High performance forming tap
- ISO 2/4HX for M≤1,4
- Oil groove with M ≥ 3

METRISCH
- Hochleistungsgewindeformer
- ISO 2/4HX für M≤1,4
- Mit Ölnut für M ≥ 3

METRICO
- Maschio a rullare ad alta performance
- ISO 2/4HX per M≤1,4
- Maschi con scanalatura di lubrificazione per M ≥ 3

METRIQUE
- Taraud à refoulé à haute performance
- ISO 2/4HX pour M≤1,4
- Tarauds avec rainure d'huile pour M ≥ 3

METRİK
- Yüksek performans ovalama kılavuzu
- ISO 2/4HX M≤1,4
- M ≥ 3 yağ oluğu

METRISK
- High Performance rulletap
- ISO 2/4HX til M≤1,4
- Med oliespor M ≥ 3

METRISK
- High performance pressgängtapp
- ISO 2/4HX och M≤1,4
- Oil sporr for M ≥ 3

METRICO
- Alta prestaciones, macho de laminación
- ISO 2/4HX para M≤1,4
- Ranuras de lubricación con M ≥ 3

МЕТРИЧЕСКИЙ
- Высокопроизводительные накатные метчики
- ISO 2/4HX для M≤1,4
- Канавки для смазки с M ≥ 3

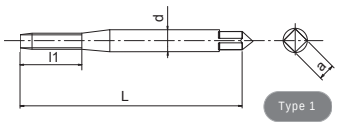
METRYCZNY
- Wysoka wydajność wygniatania gwintów
- ISO 2/4HX do M≤1,4
- Rowki olejowe od M ≥ 3

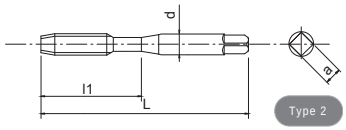
GO TO LIVE STOCK CHECK

M

M

M | HSS-Co | V | ISO 2 6HX | C/2,5 | DIN 371

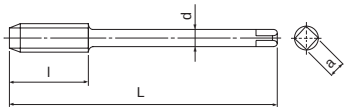






EDP	M	P	L	l1	d	a	Drill Hole Size	ZΔ	Type	Stock	Price
48030111	1	0,25	40	5,5	2,5	2,1	0,89 ~ 0,90	0	1	●	
48030113	1,2	0,25	40	5,5	2,5	2,1	1,09 ~ 1,10	0	1	●	
48030115	1,4	0,3	40	7	2,5	2,1	1,26 ~ 1,28	0	1	●	
48030118	1,6	0,35	40	8	2,5	2,1	1,45 ~ 1,48	0	1	●	
48030125	2	0,4	45	8	2,8	2,1	1,82 ~ 1,86	0	1	●	
48030133	2,5	0,45	50	9	2,8	2,1	2,29 ~ 2,33	0	1	●	
48030138	3	0,5	56	18	3,5	2,7	2,78 ~ 2,82	4	2	●	
48030144	4	0,7	63	21	4,5	3,4	3,67 ~ 3,72	4	2	●	
48030149	5	0,8	70	25	6	4,9	4,62 ~ 4,68	5	2	●	
48030155	6	1	80	30	6	4,9	5,52 ~ 5,59	5	2	●	
48030161	8	1,25	90	35	8	6,2	7,37 ~ 7,45	5	2	●	
48030169	10	1,5	100	39	10	8	9,24 ~ 9,33	8	2	●	

M | HSS-Co | V | ISO 2 6HX | C/2,5 | DIN 376



EDP	M	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48030179	12	1,75	110	17	9	7	11,10 ~ 11,20	8	●	
48030191	14	2	110	20	11	9	12,96 ~ 13,08	8	●	
48030202	16	2	110	20	12	9	14,96 ~ 15,08	8	●	
48069214	18	2,5	125	20	14	11	16,66 ~ 16,81	8	●	
48069228	20	2,5	140	20	16	12	18,66 ~ 18,81	8	●	
48069238	22	2,5	140	20	18	14,5	20,66 ~ 20,81	8	●	
48069247	24	3	160	24	18	14,5	22,39 ~ 22,56	8	●	
48069262	27	3	160	18	20	16	25,39 ~ 25,56	8	●	
48069271	30	3,5	180	21	22	18	28,09 ~ 28,28	8	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

OIL-S-XPF

METRIC
- High performance forming tap

METRISCH
- Hochleistungsgewindeformer

METRICO
- Maschio a rullare ad alta performance

METRIQUE
- Taraud à refoulé à haute performance

METRİK
- yüksek performans ovalama kılavuzu

METRISK
- High Performance rulletap

METRISK
- High performance pressgängtapp

METRICO
- Alta prestaciones, macho de laminación

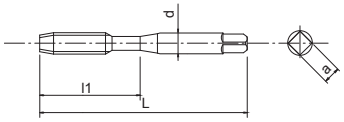
МЕТРИЧЕСКИЙ
- Высокопроизводительные накатные метчики

METRYCZNY
- Wysoka wydajność wygniatania gwintów

GO TO LIVE STOCK CHECK

M

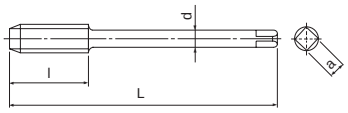
M | HSS-Co | V | ISO 2 6HX | C/2,5 | DIN 371





EDP	M	P	L	l1	d	a	Drill Hole Size	ZΔ	Stock	Price
48042155	6	1	80	30	6	4,9	5,51 ~ 5,59	5	●	
48042161	8	1,25	90	35	8	6,2	7,37 ~ 7,45	5	●	
48042169	10	1,5	100	39	10	8	9,24 ~ 9,33	8	●	

M | HSS-Co | V | ISO 2 6HX | C/2,5 | DIN 376



EDP	M	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48042179	12	1,75	110	17	9	7	11,10 ~ 11,20	8	●	
48042191	14	2	110	20	11	9	12,96 ~ 13,08	8	●	
48042202	16	2	110	20	12	9	14,96 ~ 15,08	8	●	
48071214	18	2,5	125	20	14	11	16,66 ~ 16,81	8	●	
48071228	20	2,5	140	20	16	12	18,66 ~ 18,81	8	●	
48071238	22	2,5	140	20	18	14,5	20,66 ~ 20,81	8	●	
48071247	24	3	160	24	18	14,5	22,39 ~ 22,56	8	●	
48071262	27	3	160	18	20	16	25,39 ~ 25,56	8	●	
48071271	30	3,5	180	21	22	18	28,09 ~ 28,28	8	●	
48071281	33	3,5	180	21	25	20	31,09 ~ 31,28	8	●	
48071294	36	4	200	24	28	22	33,80 ~ 34,01	8	●	
48071304	39	4	200	24	32	24	36,80 ~ 37,01	9	●	
48071314	42	4,5	200	27	32	24	39,52 ~ 39,73	9	●	
48071319	45	4,5	220	27	36	29	42,52 ~ 42,73	9	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

S-XPF-6GX

METRIC
- High performance forming tap

METRISCH
- Hochleistungsgewindeformer

METRICO
- Maschio a rullare ad alta performance

METRIQUE
- Taraud à refoulé à haute performance

METRİK
- Yüksek performans ovalama kılavuzu

METRISK
- High Performance rulletap

METRISK
- High performance pressgängtapp

METRICO
- Alta prestaciones, macho de laminación

МЕТРИЧЕСКИЙ
- Высокопроизводительные накатные метчики

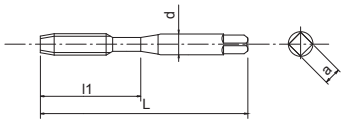
METRYCZNY
- Wysoka wydajność wygniatania gwintów

GO TO LIVE STOCK CHECK

M

M

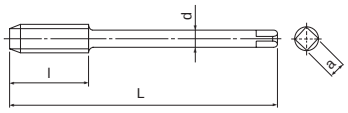
M | HSS-Co | V | ISO 3 6GX | C/2,5 | DIN 371





EDP	M	P	L	l1	d	a	Drill Hole Size	ZΔ	Stock	Price
48086138	3	0,5	56	18	3,5	2,7	2,79 ~ 2,82	4	●	
48086144	4	0,7	63	21	4,5	3,4	3,69 ~ 3,75	4	●	
48086149	5	0,8	70	25	6	4,9	4,64 ~ 4,71	5	●	
48086155	6	1	80	30	6	4,9	5,55 ~ 5,63	5	●	
48086161	8	1,25	90	35	8	6,2	7,40 ~ 7,47	5	●	
48086169	10	1,5	100	39	10	8	9,26 ~ 9,35	8	●	

M | HSS-Co | V | ISO 3 6GX | C/2,5 | DIN 376



EDP	M	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48086179	12	1,75	110	17	9	7	11,14 ~ 11,24	8	●	
48086191	14	2	110	17	11	9	13,00 ~ 13,12	8	●	
48086202	16	2	110	20	12	9	15,00 ~ 15,12	8	●	

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◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

S-XPF-7GX

METRIC
- High performance forming tap

METRISCH
- Hochleistungsgewindeformer

METRICO
- Maschio a rullare ad alta performance

METRIQUE
- Taraud à refoulé à haute performance

METRİK
- Yüksek performans ovalama kılavuzu

METRISK
- High Performance rulletap

METRISK
- High performance pressgängtapp

METRICO
- Alta prestaciones, macho de laminación

МЕТРИЧЕСКИЙ
- Высокопроизводительные накатные метчики

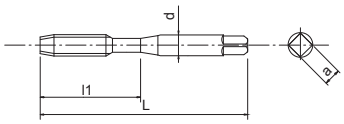
METRYCZNY
- Wysoka wydajność wygniatania gwintów

GO TO LIVE STOCK CHECK

M

M

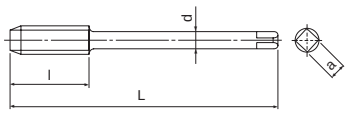
M | HSS-Co | V | ISO 3 7GX | C/2,5 | DIN 371





EDP	M	P	L	l1	d	a	Drill Hole Size	ZΔ	Stock	Price
48087138	3	0,5	56	18	3,5	2,7	2,81 ~ 2,85	4	●	
48087144	4	0,7	63	21	4,5	3,4	3,71 ~ 3,77	4	●	
48087149	5	0,8	70	25	6	4,9	4,66 ~ 4,73	5	●	
48087155	6	1	80	30	6	4,9	5,56 ~ 5,64	5	●	
48087161	8	1,25	90	35	8	6,2	7,42 ~ 7,50	5	●	
48087169	10	1,5	100	39	10	8	9,30 ~ 9,39	8	●	

M | HSS-Co | V | ISO 3 7GX | C/2,5 | DIN 376



EDP	M	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48087179	12	1,75	110	17	9	7	11,17 ~ 11,28	8	●	
48087191	14	2	110	20	11	9	13,04 ~ 13,16	8	●	
48087202	16	2	110	20	12	9	15,04 ~ 15,16	8	●	

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Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

S-XPF-P

METRIC
- High performance forming tap
- **4P chamfer**

METRISCH
- Hochleistungsgewindeformer
- **4 Gang. Anschnittlänge**

METRICO
- Maschio a rullare ad alta performance
- **4 filleti**

METRIQUE
- Taraud à refoulé à haute performance
- **4 entrée gun**

METRİK
- Yüksek performans ovalama kılavuzu
- **4p pah**

METRISK
- High Performance rulletap
- **4 x stigning på opløb**

METRISK
- High performance pressgängtapp
- **4 x stigning**

METRICO
- Alta prestaciones, macho de laminación
- **4 pasos**

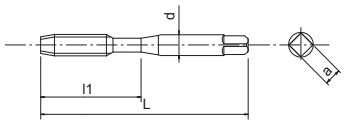
МЕТРИЧЕСКИЙ
- Высокопроизводительные накатные метчики
- **4 витка**

METRYCZNY
- Wysoka wydajność wygniatania gwintów
- **Nakrój - 4p**

GO TO LIVE STOCK CHECK

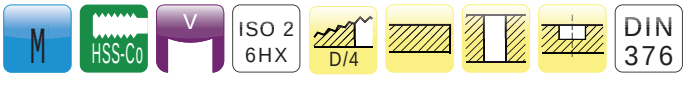
M

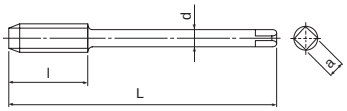






EDP	M	P	L	l1	d	a	Drill Hole Size	ZΔ	Stock	Price
48088138	3	0,5	56	18	3,5	2,7	2,77~2,81	4	●	
48088144	4	0,7	63	21	4,5	3,4	3,66~3,72	4	●	
48088149	5	0,8	70	25	6	4,9	4,61~4,68	5	●	
48088155	6	1	80	30	6	4,9	5,51~5,59	5	●	
48088161	8	1,25	90	35	8	6,2	7,37~7,45	5	●	
48088169	10	1,5	100	39	10	8	9,24~9,33	8	●	





EDP	M	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48088179	12	1,75	110	17	9	7	11,10~11,20	8	●	
48088191	14	2	110	20	11	9	12,96~13,08	8	●	
48088202	16	2	110	20	12	9	14,96~15,08	8	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

S-SC-XPF

METRIC
- High performance forming tap
- **Short chamfer**

METRISCH
- Hochleistungsgewindeformer
- **Kurzer Anschnitt**

METRICO
- Maschio a rullare ad alta performance
- **imbocco corto**

METRIQUE
- Taraud à refoulé à haute performance
- **Entrée courte**

METRİK
- Yüksek performans ovalama kılavuzu
- **Kısa pah**

METRISK
- High Performance rulletap
- **Kort indløb**

METRISK
- High performance pressgängtapp
- **Kort faslängd**

METRICO
- Alta prestaciones, macho de laminación
- **Chaflàn corto**

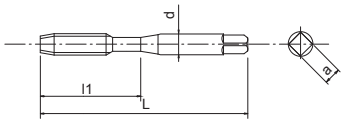
МЕТРИЧЕСКИЙ
- Высокопроизводительные накатные метчики
- **Короткий заход**

METRYCZNY
- Wysoka wydajność wygniatania gwintów
- **Krótki nakrój**

GO TO LIVE STOCK CHECK

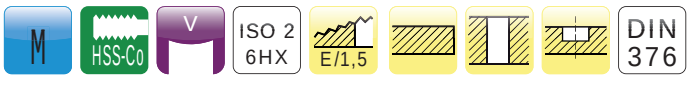
M

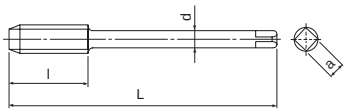






EDP	M	P	L	l1	d	a	Drill Hole Size	ZΔ	Stock	Price
48089138	3	0,5	56	18	3,5	2,7	2,77~2,81	4	●	
48089144	4	0,7	63	21	4,5	3,4	3,66~3,72	4	●	
48089149	5	0,8	70	25	6	4,9	4,61~4,68	5	●	
48089155	6	1	80	30	6	4,9	5,51~5,59	5	●	
48089161	8	1,25	90	35	8	6,2	7,37~7,45	5	●	
48089169	10	1,5	100	39	10	8	9,24~9,33	8	●	





EDP	M	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48089179	12	1,75	110	17	9	7	11,10~11,20	8	●	
48089191	14	2	110	20	11	9	12,96~13,08	8	●	
48089202	16	2	110	20	12	9	14,96~15,08	8	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

S-LT-XPF

METRIC
- High performance forming tap
- **Long shank**

METRISCH
- Hochleistungsgewindeformer
- **Langt Schaft**

METRICO
- Maschio a rullare ad alta performance
- **Gambo lungo**

METRIQUE
- Taraud à refoulé à haute performance
- **Queue longue**

METRİK
- Yüksek performans ovalama kılavuzu
- **Uzun şaft**

METRISK
- High Performance rulletap
- **Langt skaft**

METRISK
- High performance pressgängtapp
- **Långt skaft**

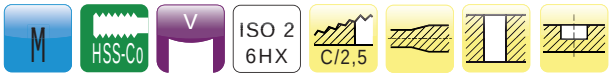
METRICO
- Alta prestaciones, macho de laminación
- **Mango larga**

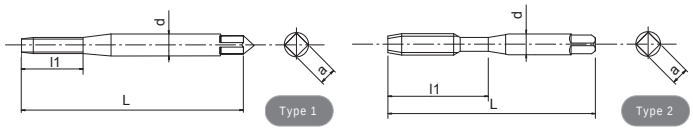
МЕТРИЧЕСКИЙ
- Высокопроизводительные накатные метчики
- **Длинный хвостовик**

METRYCZNY
- Wysoka wydajność wygniatania gwintów
- **Długi chwyt**

GO TO LIVE STOCK CHECK

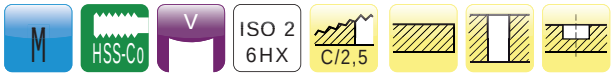
M

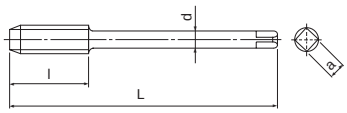






EDP	M	P	L	l1	d	a	Drill Hole Size	ZΔ	Type	Stock	Price
48115125	2	0,4	80	8	2,8	2,1	1,82 ~ 1,84	0	1	●	
48115133	2,5	0,45	100	9	2,8	2,1	2,31 ~ 2,34	0	1	●	
48115138	3	0,5	100	18	3,5	2,7	2,77 ~ 2,81	4	2	●	
48115144	4	0,7	125	21	4,5	3,4	3,66 ~ 3,72	4	2	●	
48115149	5	0,8	140	25	6	4,9	4,61 ~ 4,68	5	2	●	
48115155	6	1	160	30	6	4,9	5,51 ~ 5,59	5	2	●	
48115161	8	1,25	180	35	8	6,2	7,37 ~ 7,45	5	2	●	
48115169	10	1,5	200	39	10	8	9,24 ~ 9,33	8	2	●	





EDP	M	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48115179	12	1,75	200	17	9	7	11,10 ~ 11,20	8	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○					

● Delivery from stock
○ Available on short notice

R-XPF

METRIC
- High performance forming tap

METRISCH
- Hochleistungsgewindeformer

METRICO
- Maschio a rullare ad alta performance

METRIQUE
- Taraud à refoulé à haute performance

METRİK
- Yüksek performans ovalama kılavuzu

METRISK
- High Performance rulletap

METRISK
- High performance pressgängtapp

METRICO
- Alta prestaciones, macho de laminación

МЕТРИЧЕСКИЙ
- Высокопроизводительные накатные метчики

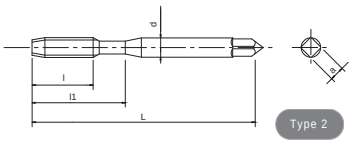
METRYCZNY
- Wysoka wydajność wygniatania gwintów

GO TO LIVE STOCK CHECK

M

M

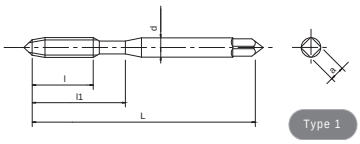
M HSS V 15° ISO 2 6HX C/2,5 DIN 371





EDP	M	P	Tap Limit	L	l	l1	d	a	Stock	Price
48116138	3	0,5	6HX	56	11	18	3,5	2,7	●	
48116144	4	0,7	6HX	63	13	21	4,5	3,4	●	
48116149	5	0,8	6HX	70	16	25	6	4,9	●	
48116155	6	1	6HX	80	19	30	6	4,9	●	

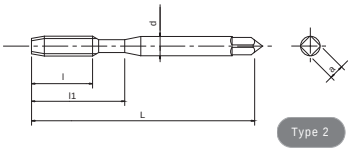
M HSS V 15° ISO 2 6HX D/4 DIN 371





EDP	M	P	Tap Limit	L	l	l1	d	a	Stock	Price
48117138	3	0,5	6HX	56	11	18	3,5	2,7	●	
48117144	4	0,7	6HX	63	13	21	4,5	3,4	●	
48117149	5	0,8	6HX	70	16	25	6	4,9	●	
48117155	6	1	6HX	80	19	30	6	4,9	●	

M HSS V 15° ISO 3 6GX C/2,5 DIN 371





EDP	M	P	Tap Limit	L	l	l1	d	a	Stock	Price
48118138	3	0,5	6GX	56	11	18	3,5	2,7	●	
48118144	4	0,7	6GX	63	13	21	4,5	3,4	●	
48118149	5	0,8	6GX	70	16	25	6	4,9	●	
48118155	6	1	6GX	80	19	30	6	4,9	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	◎ 15~40 m/min	◎ 15~30 m/min	○ 15~30 m/min					○ 5~15 m/min		○ 15~40 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 10~30 m/min	○ 10~30 m/min	○ 10~30 m/min			○ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

V-NRT-B

METRIC
- ISO 2/4HX for M1 and M1,2
- No problems associated with swarf ejection
- Oil groove with M ≥ 3
- For aluminium, stainless & steel ≤ 850 N/mm²

METRISCH
- ISO 2/4HX für M1 und M1,2
- Keine Probleme mit Spänen
- Mit Ölnut für M ≥ 3
- Für Stahl ≤ 850 N/mm², Aluminium, VA Stahl

METRICO
- ISO 2/4HX per M1 e M1,2
- Maschiatura a Rullare
- Maschi con scanalatura di lubrificazione per M ≥ 3
- Per acciai ≤ 850 N/mm², alluminio, inox

METRIQUE
- ISO 2/4HX pour M1 et M1,2
- Taraudage sans enlèvement de copeaux
- Tarauds avec rainure d'huile pour M ≥ 3
- Pour aciers ≤ 850 N/mm², aluminium, inox

METRİK
- ISO 2/4HX M1 & M1,2
- Talaş ejeksiyonunda hiçbir sorun yok
- M ≥ 3 yağ oluğu
- Alüminyum, paslanmaz çelik, ≤ 850 N/mm² çelikler için

METRISK
- ISO 2/4 HX til M1 & M 1,2
- Ingen problemer med spån evakuering
- Med oliespor M ≥ 3
- Til aluminium, rustfrit stål & stål ≤ 850 N/mm²

METRISK
- ISO 2/4 HX för M1 och M 1,2
- Inga problem med spåntransport
- Oil sporr for M ≥ 3
- För alminium, rostfritt stål & stål ≤ 850 N/mm²

METRICO
- ISO 2 (4HX para M1 y M1,2)
- Sin problemas asociados a la proyección de virutas
- Ranuras de lubricación con M ≥ 3
- Para aluminio, para aceros inoxidables y aceros ≤ 850 N/mm²

МЕТРИЧЕСКИЙ
- ISO 2/4 HX для M1 и M 1,2
- Нет проблем связанных с выводом стружки
- Канавки для смазки с M ≥ 3
- Для алюминия, нержавеющихсталей и сталей ≤ 850 Н/мм²

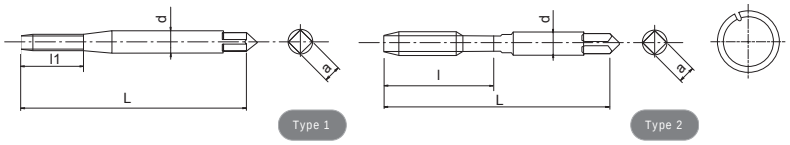
METRYCZNY
- ISO 2/4HX do M1 & M1,2
- Brak problemów z wiórami
- Rowki olejowe od M ≥ 3
- Do aluminium, stali nierdzewnych i stali ≤ 850 N/mm²

GO TO LIVE STOCK CHECK

M

M

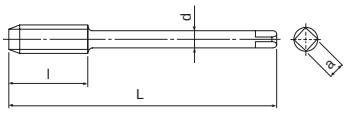
M | HSS-Co | V | ISO 2 6HX | C/2,5 | DIN 371





EDP	M	P	L	l1	d	a	Drill hole Size	ZΔ	Type	Stock	Price
48003111	1	0,25	40	5,5	2,5	2,1	0,87 ~ 0,89	0	1	●	
48003113	1,2	0,25	40	5,5	2,5	2,1	1,07 ~ 1,09	0	1	●	
66711568	1,4	0,3	40	7	2,5	2,1	1,244 ~ 1,263	0	1	●	
66711868	1,6	0,35	40	8	2,5	2,1	1,45 ~ 1,47	0	1	●	
66712568	2	0,4	45	8	2,8	2,1	1,82 ~ 1,84	0	1	●	
66712868	2,2	0,45	45	9	2,8	2,1	2,01 ~ 2,04	0	1	●	
66713368	2,5	0,45	50	9	2,8	2,1	2,31 ~ 2,34	0	1	●	
66713868	3	0,5	56	18	3,5	2,7	2,77 ~ 2,81	2	2	●	
66714068	3,5	0,6	56	20	4	3,0	3,23 ~ 3,27	2	2	●	
66714468	4	0,7	63	21	4,5	3,4	3,66 ~ 3,72	2	2	●	
66714968	5	0,8	70	25	6	4,9	4,61 ~ 4,68	2	2	●	
66715568	6	1	80	30	6	4,9	5,51 ~ 5,59	2	2	●	
66716168	8	1,25	90	35	8	6,2	7,37 ~ 7,45	3	2	●	
66716968	10	1,5	100	39	10	8	9,24 ~ 9,33	4	2	●	

M | HSS-Co | V | ISO 2 6HX | C/2,5 | DIN 376



EDP	M	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
69117968	12	1,75	110	29	9	7	11,10 ~ 11,20	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 10~15 m/min	○ 10~15 m/min	○ 8~12 m/min					◎ 5~10 m/min				
Cu	**BS**	**BsC**	**PB**	**Al**	**AC,ADC**	**MC**	**ZDC**	**Ti**	**Ni**	**Plast.**	**Vinyl**	
◎ 10~20 m/min	◎ 10~20 m/min	◎ 10~20 m/min		◎ 10~20 m/min	◎ 10~20 m/min		○ 10~15 m/min					

● Delivery from stock
○ Available on short notice

V-NRT-B

METRIC
- No problems associated with swarf ejection
- Oil groove with M ≥ 3
- For aluminium, stainless & steel ≤ 850 N/mm²
- For 6 G

METRISCH
- Keine Probleme mit Spänen
- Mit Ölnut für M ≥ 3
- Für Stahl ≤ 850 N/mm², Aluminium, VA Stahl
- Für 6 G

METRICO
- Maschiatura a Rullare
- Maschi con scanalatura di lubrificazione per M ≥ 3
- Per acciai ≤ 850 N/mm², alluminio
- Per 6 G

METRIQUE
- Taraudage sans enlèvement de copeaux
- Tarauds avec rainure d'huile pour M ≥ 3
- Pour aciers ≤ 850 N/mm², alu., Inox
- Pour 6 G

METRİK
- Talaş ejeksiyonunda hiçbir sorun yok
- M ≥ 3 yağ oluğu
- Alüminyum, paslanmaz çelik, ≤ 850 N/mm² çelikler için
- 6 G

METRISK
- Ingen problemer med spån evakuering
- Med oliespor M ≥ 3
- Til aluminium, rustfrit stål & stål ≤ 850 N/mm²
- Til 6 G

METRISK
- Inga problem med spåntransport
- Oil sporr for M ≥ 3
- För alminium, rostfritt stål & stål ≤ 850 N/mm²
- För 6 G

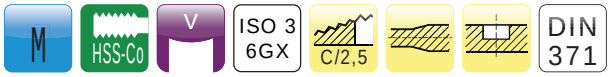
METRICO
- Sin problemas asociados a la proyección de virutas
- Ranuras de lubricación con M ≥ 3
- Para aluminio, para aceros inoxidables y aceros ≤ 850 N/mm²
- Para 6 G

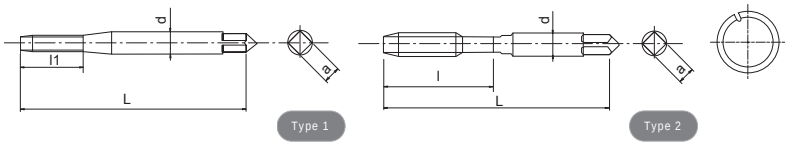
МЕТРИЧЕСКИЙ
- Нет проблем связанных с выводом стружки
- Канавки для смазки с M ≥ 3
- Для алюминия, нержавеющихсталей и сталей ≤ 850 Н/мм²
- Для 6 G

METRYCZNY
- Brak problemów z wiórami
- Rowki olejowe od M ≥ 3
- Do aluminium, stali nierdzewnych i stali ≤ 850 N/mm²
- 6G

GO TO LIVE STOCK CHECK

M







EDP	M	P	L	l1	d	a	Drill hole Size	ZΔ	Type	Stock	Price
48003125	2	0,4	45	8	2,8	2,1	1,85 ~ 1,88	0	1	●	
48003128	2,2	0,45	45	9	2,8	2,1	2,02 ~ 2,06	0	1	●	
48003133	2,5	0,45	50	9	2,8	2,1	2,32 ~ 2,36	0	1	●	
48003138	3	0,5	56	18	3,5	2,7	2,79 ~ 2,84	2	2	●	
48003140	3,5	0,6	56	20	4	3	3,24 ~ 3,30	2	2	●	
48003144	4	0,7	63	21	4,5	3,4	3,69 ~ 3,73	2	2	●	
48003149	5	0,8	70	25	6	4,9	4,65 ~ 4,71	2	2	●	
48003155	6	1	80	30	6	4,9	5,55 ~ 5,63	2	2	●	
48003161	8	1,25	90	35	8	6,2	7,40 ~ 7,47	3	2	●	
48003169	10	1,5	100	39	10	8	9,26 ~ 9,35	4	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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◎ 10~15 m/min	◎ 10~15 m/min	○ 10~15 m/min	○ 8~12 m/min					◎ 5~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~20 m/min	◎ 10~20 m/min	◎ 10~20 m/min		◎ 10~20 m/min	◎ 10~20 m/min		○ 10~15 m/min					

● Delivery from stock
○ Available on short notice

V-NRT-P

METRIC
- No problems associated with swarf ejection
- Oil groove with M ≥ 3
- For aluminium, stainless & steel ≤ 850 N/mm²

METRISCH
- Keine Probleme mit Spänen
- Mit Ölnut für M ≥ 3
- Für Stahl ≤ 850 N/mm², Aluminium, VA Stahl

METRICO
- Maschiatura a Rullare
- Maschi con scanalatura di lubrificazione per M ≥ 3
- Per acciai ≤ 850 N/mm², alluminio

METRIQUE
- Taraudage sans enlèvement de copeaux
- Tarauds avec rainure d'huile pour M ≥ 3
- Pour aciers ≤ 850 N/mm², alu., Inox

METRİK
- Talaş ejeksiyonunda hiçbir sorun yok
- M ≥ 3 yağ oluğu
- Alüminyum, paslanmaz çelik, ≤ 850 N/mm² çelikler için

METRISK
- Ingen problemer med spån evakuering
- Med oliespor M ≥ 3
- Til aluminium, rustfrit stål & stål ≤ 850 N/mm²

METRISK
- Inga problem med spåntransport
- Oil sporr for M ≥ 3
- För alminium, rostfritt stål & stål ≤ 850 N/mm²

METRICO
- Sin problemas asociados a la proyección de virutas
- Ranuras de lubricación con M ≥ 3
- Para aluminio, para aceros inoxidables y aceros ≤ 850 N/mm²

МЕТРИЧЕСКИЙ
- Нет проблем связанных с выводом стружки
- Канавки для смазки с M ≥ 3
- Для алюминия, нержавеющихсталей и сталей ≤ 850 Н/мм²

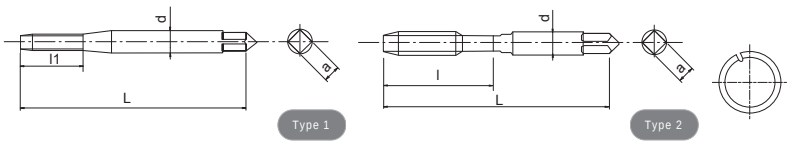
METRYCZNY
- Brak problemów z wiórami
- Rowki olejowe od M ≥ 3
- Do aluminium, stali nierdzewnych i stali ≤ 850 N/mm²

GO TO LIVE STOCK CHECK

M

M

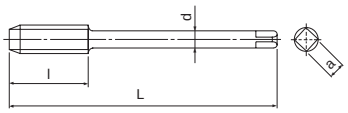
M | HSS-Co | V | ISO 2 6HX | D/4 | DIN 371





EDP	M	P	L	l1	d	a	Drill hole Size	ZΔ	Type	Stock	Price
66612568	2	0,4	45	8	2,8	2,1	1,82 ~ 1,84	0	1	●	
66612868	2,2	0,45	45	9	2,8	2,1	2,01 ~ 2,04	0	1	●	
66613368	2,5	0,45	50	9	2,8	2,1	2,31 ~ 2,34	0	1	●	
66613868	3	0,5	56	18	3,5	2,7	2,77 ~ 2,81	2	2	●	
66614068	3,5	0,6	56	20	4	3	3,23 ~ 3,27	2	2	●	
66614468	4	0,7	63	21	4,5	3,4	3,66 ~ 3,72	2	2	●	
66614968	5	0,8	70	25	6	4,9	4,61 ~ 4,68	2	2	●	
66615568	6	1	80	30	6	4,9	5,51 ~ 5,59	2	2	●	
66616168	8	1,25	90	35	8	6,2	7,37 ~ 7,45	3	2	●	
66616968	10	1,5	100	39	10	8	9,24 ~ 9,33	4	2	●	

M | HSS-Co | V | ISO 2 6HX | D/4 | DIN 376



EDP	M	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
69017968	12	1,75	110	29	9	7	11,10 ~ 11,20	4	●	

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◎ 10~15 m/min	◎ 10~15 m/min	○ 10~15 m/min	○ 8~12 m/min					◎ 5~10 m/min				
Cu	**BS**	**BsC**	**PB**	**Al**	**AC,ADC**	**MC**	**ZDC**	**Ti**	**Ni**	**Plast.**	**Vinyl**	
◎ 10~20 m/min	◎ 10~20 m/min	◎ 10~20 m/min		◎ 10~20 m/min	◎ 10~20 m/min		○ 10~15 m/min					

● Delivery from stock
○ Available on short notice

V-NRT-P

METRIC
- No problems associated with swarf ejection
- Oil groove with M ≥ 3
- For aluminium, stainless & steel ≤ 850 N/mm²
- For 6 G

METRISCH
- Keine Probleme mit Spänen
- Mit Ölnut für M ≥ 3
- Für Stahl ≤ 850 N/mm², Aluminium, VA Stahl
- Für 6 G

METRICO
- Maschiatura a Rullare
- Maschi con scanalatura di lubrificazione per M ≥ 3
- Per acciai ≤ 850 N/mm², alluminio
- Per 6 G

METRIQUE
- Taraudage sans enlèvement de copeaux
- Tarauds avec rainure d'huile pour M ≥ 3
- Pour aciers ≤ 850 N/mm², alu., Inox
- Pour 6 G

METRİK
- Talaş ejeksiyonunda hiçbir sorun yok
- M ≥ 3 yağ oluğu
- Alüminyum, paslanmaz çelik, ≤ 850 N/mm² çelikler için
- 6 G

METRISK
- Ingen problemer med spån evakuering
- Med oliespor M ≥ 3
- Til aluminium, rustfrit stål & stål ≤ 850 N/mm²
- Til 6 G

METRISK
- Inga problem med spåntransport
- Oil sporr for M ≥ 3
- För alminium, rostfritt stål & stål ≤ 850 N/mm²
- För 6 G

METRICO
- Sin problemas asociados a la proyección de virutas
- Ranuras de lubricación con M ≥ 3
- Para aluminio, para aceros inoxidables y aceros ≤ 850 N/mm²
- Para 6 G

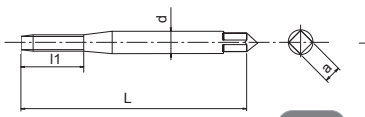
МЕТРИЧЕСКИЙ
- Нет проблем связанных с выводом стружки
- Канавки для смазки с M ≥ 3
- Для алюминия, нержавеющихсталей и сталей ≤ 850 Н/мм²
- Для 6 G

METRYCZNY
- Brak problemów z wiórami
- Rowki olejowe od M ≥ 3
- Do aluminium, stali nierdzewnych i stali ≤ 850 N/mm²
- 6G

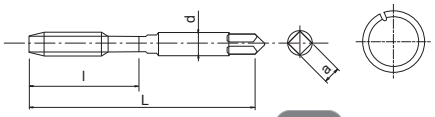
GO TO LIVE STOCK CHECK

M





Type 1



Type 2



EDP	M	P	L	l1	d	a	Drill hole Size	ZΔ	Type	Stock	Price
48004125	2	0,4	45	8	2,8	2,1	1,85 ~ 1,88	0	1	●	
48004128	2,2	0,45	45	9	2,8	2,1	2,02 ~ 2,06	0	1	●	
48004133	2,5	0,45	50	9	2,8	2,1	2,32 ~ 2,36	0	1	●	
48004138	3	0,5	56	18	3,5	2,7	2,79 ~ 2,84	0	2	●	
48004140	3,5	0,6	56	20	4	3	3,24 ~ 3,30	2	2	●	
48004144	4	0,7	63	21	4,5	3,4	3,69 ~ 3,73	2	2	●	
48004149	5	0,8	70	25	6	4,9	4,65 ~ 4,71	2	2	●	
48004155	6	1	80	30	6	4,9	5,55 ~ 5,63	2	2	●	
48004161	8	1,25	90	35	8	6,2	7,40 ~ 7,47	3	2	●	
48004169	10	1,5	100	39	10	8	9,26 ~ 9,35	4	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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◎ 10~15 m/min	◎ 10~15 m/min	○ 10~15 m/min	○ 8~12 m/min					◎ 5~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~20 m/min	◎ 10~20 m/min	◎ 10~20 m/min		◎ 10~20 m/min	◎ 10~20 m/min		○ 10~15 m/min					

● Delivery from stock
○ Available on short notice

1066-NRT-PLUS

METRIC
- Fluteless Tap
- Oil groove with M ≥ 3
- For general forming applications

METRISCH
- Gewinde Former
- Mit Ölnut für M ≥ 3
- Allgemeine Anwendungen Gewindeformen

METRICO
- Maschi a Rullare
- Maschi con scanalatura di lubrificazione per M ≥ 3
- Applicazioni generali di rullatura

METRIQUE
- Tarauds à refouler
- Tarauds avec rainure d'huile pour M ≥ 3
- Pour des applications universelles de refoulement

METRIK
- Kanalsız kılavuz
- M ≥ 3 yağ oluğu
- Genel ovalama uygulamaları

METRISK
- Rulletappe
- Med oliespor M ≥ 3
- For gevindrulning i mange materialer

METRISK
- Rullgängtapp
- Oil sporr for M ≥ 3
- Pressgängtappar för olika material

METRICO
- Machos laminadores
- Ranuras de lubricación con M ≥ 3
- Aplicación general laminación.

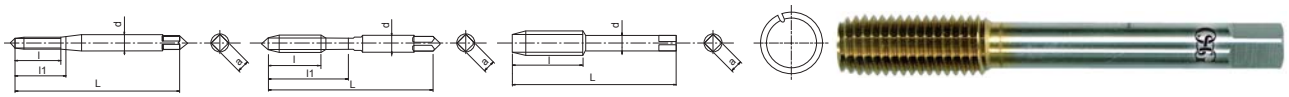
МЕТРИЧЕСКИЙ
- Накатные метчики
- Канавки для смазки с M ≥ 3
- Общего назначения

METRYCZNY
- Gniotownik
- Rowki olejowe od M ≥ 3
- Ogólnego zastosowania, uniwersalne

GO TO LIVE STOCK CHECK

M





Type 1 Type 2 Type 3

EDP	M	P	L	l	l1	d	a	Drill hole Size	ZΔ	Type	Stock	Price
22331257	2	0,4	41	8	-	2,5	2	1,82 ~ 1,84	0	1	○	
22331337	2,5	0,45	44,5	9,5	-	2,8	2,24	2,01 ~ 2,04	0	1	○	
22331387	3	0,5	48	11	18	3,15	2,5	2,31 ~ 2,34	1	2	○	
22331407	3,5	0,6	50	13	20	3,55	2,8	2,77 ~ 2,81	1	2	○	
22331447	4	0,7	53	13	21	4	3,15	3,23 ~ 3,27	1	2	○	
22331497	5	0,8	58	16	25	5	4	3,66 ~ 3,72	1	2	○	
22331557	6	1	66	19	30	6,3	5	4,61 ~ 4,68	1	2	○	
22331617	8	1,25	72	22	35	8	6,3	5,51 ~ 5,59	1	2	○	
22331697	10	1,	80	24	39	10	8	7,37 ~ 7,45	1	2	○	
22331797	12	1,75	89	29	-	9	7,1	9,24 ~ 9,33	1	3	○	

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◎ 10~15 m/min	◎ 10~15 m/min	○ 10~15 m/min	○ 8~12 m/min					◎ 5~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~20 m/min	◎ 10~20 m/min	◎ 10~20 m/min		◎ 10~20 m/min	◎ 10~20 m/min		○ 10~15 m/min					

● Delivery from stock
○ Available on short notice

EX-MCT

METRIC
- For alloyed steel ≥ 1100 N/mm²
- Forming short chips
- Left hand spiral

METRISCH
- Für legierten Stahl ≥ 1100 N/mm²
- Für kurzspanende Werkstoffe
- Linksspirale

METRICO
- Per acciai legati ≥ 1100 N/mm²
- Formano trucioli corti
- Elica sinistra

METRIQUE
- Pour aciers alliés ≥ 1100 N/mm²
- Formant des copeaux courts
- Hélice gauche

METRİK
- Alaşımlı çelikler ≥ 1100 N/mm²
- Kısa talaş oluşturur
- Sol helis

METRISK
- Til legeret stål ≥ 1100 N/mm²
- Giver korte spåner
- Venstresnoet

METRISK
- För legerade stål ≥ 1100 N/mm
- Formar korta spånor
- Vänster spiral

METRICO
- Para aceros aleados ≥ 1100 N/mm
- Formación de virutas cortas
- Ranura helicoidal izquierda

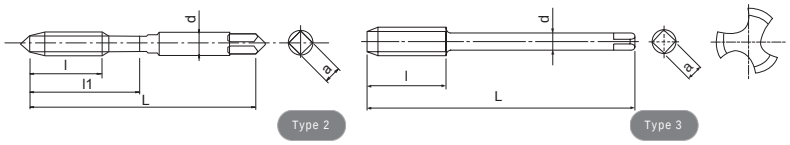
МЕТРИЧЕСКИЙ
- Для легированных сталей ≥ 1100 Н/мм²
- Формирует короткую стружку
- Левая спираль

METRYCZNY
- Stale stopowe ≥ 1100 N/mm²
- Tworzy krótkie wióry
- Lewa spirala

GO TO LIVE STOCK CHECK

M







EDP	M	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
84015560	6	1	120	-	28	6	4,9	2	2	●	
84016160	8	1,25	120	-	35	8	6,2	3	2	●	
84016960	10	1,5	150	24	-	7	5,5	3	3	●	
84017960	12	1,75	150	29	-	9	7	3	3	●	
84019160	14	2	150	30	-	11	9	3	3	●	
84020260	16	2	150	32	-	12	9	3	3	●	
84021460	18	2,5	200	34	-	14	11	4	3	●	
84022860	20	2,5	200	34	-	16	12	4	3	●	

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◎ 8~13 m/min	◎ 7~12 m/min	○ 6~9 m/min	○ 7~12 m/min							◎ 6~11 m/min	○ 10~15 m/min	○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
					◎ 10~15 m/min		○ 7~12 m/min					

● Delivery from stock
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V-EM-SFT

METRIC
- High performance
- Synchro taps, with front cut allowing calibration of tapered pilot holes
- For cast aluminium

METRISCH
- High performance
- Kombigewindebohrer mit Kernlochaufbohrer
- Für legiertem Aluminium

METRICO
- Alta prestazione
- Maschi synchro, con taglio frontale per calibrare i prefori conici
- Per alluminio da fusione

METRIQUE
- Haute performance
- Tarauds synchro, coupe frontale pour calibrer les avant-trous coniques
- Pour alliages d'aluminium

METRİK
- Yüksek performans
- Sekronize kılavuzlar,ön kesme ile konik pilot deliğin kalibrasyonuna izin verir, alüminyum döküm için
- Alüminyum döküm için

METRISK
- High performance
- Syncro tap med endeskær til gevindskæring i forstøbte huller
- Til støbt aluminium

METRISK
- High performance
- Synchro gängtappar med skärfunktion i främre änden för centrering av koniska förgjutna hål
- För gjuten aluminium

METRICO
- Altas prestaciones
- Machos Synchro, con corte frontal para calibrar el agujero previo de roscado
- Para aluminio aleado

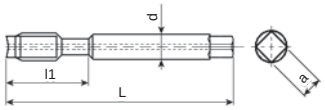
МЕТРИЧЕСКИЙ
- Высокая производительность
- Synchro метчики с передней режущей частью позволяющей калибровать конические пилотные отверстия
- Для легированного алюминия

METRYCZNY
- Wysoka wydajność
- Gwintownik SYNCHRO, z pilotem kalibrującym otwory stożkowe w czasie gwintowania,
- Odlewy aluminium

GO TO LIVE STOCK CHECK

M







EDP	M	P	L	l1	d	a	ZΔ	Stock	Price
1001480570	4	0,7	80	21	6	4,5	3	●	
1001480580	5	0,8	80	24	6	4,5	3	●	
1001480450	6	1	100	29	6	4,5	3	●	
1001480210	8	1,25	100	37	8	6	3	●	
1001480590	10	1,5	100	41	8	6	3	●	
1001480610	12	1,75	100	48	10	8	3	●	
1001480640	14	2	120	48	12	10	3	●	
1001480650	16	2	120	52	16	12	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
					◎ 10~15 m/min	○ 7~12 m/min	◎ 7~12 m/min					

● Delivery from stock
○ Available on short notice

VA-POT

METRIC FINE
- General purpose, also for stainless steel

METRISCH FEIN
- Für universelle Anwendungen und für VA - Stahl

METRICO FINE
- Per applicazioni generali e per inox

METRIQUE FIN
- Pour applications générales et pour des aciers inox

METRİK İNCE
- Genel kullanım, ayrıca paslanmaz çelik için

METRISK FINGEVIND
- Til generelt brug, også til rustfrit stål

METRISK FIN
- För allround bearbetning och för rostfritt stål

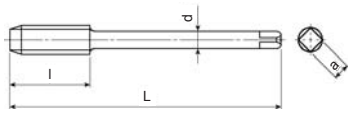
METRICO FINO
- Para aplicación general, para aceros inoxidables

МЕТРИЧЕСКАЯ МЕЛКАЯ
- Общего назначения и для нержавеющих сталей

METRYCZNY DROBNOZWOJNY
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

MF HSSE OX ISO 2 6H B/4 DIN 374







EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
63713960	3	0,35	56	9	2,2	-	3	●	
63714560	4	0,5	63	10	2,8	2,1	3	●	
63715160	5	0,5	70	12	3,5	2,7	3	●	
63715760	6	0,5	80	14	4,5	3,4	3	●	
63715660	6	0,75	80	14	4,5	3,4	3	●	
63716360	8	0,75	80	19	6	4,9	3	●	
63716260	8	1	90	22	6	4,9	3	●	
63717160	10	1	90	20	7	5,5	3	●	
63717060	10	1,25	100	24	7	5,5	3	●	
63718260	12	1	100	22	9	7	3	●	
63718160	12	1,25	100	22	9	7	3	●	
63718060	12	1,5	100	22	9	7	3	●	
63719260	14	1,5	100	22	11	9	3	●	
63720360	16	1,5	100	22	12	9	3	●	
63721660	18	1,5	110	25	14	11	3	●	
63723060	20	1,5	125	25	16	12	3	●	
63724060	22	1,5	125	25	18	14,5	3	●	
63725060	24	1,5	140	28	18	14,5	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min					◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 12~17 m/min											○ 10~20 m/min	

● Delivery from stock
○ Available on short notice

METRIC FINE
- General purpose application

METRISCH FEIN
- Für universelle Anwendungen

METRICO FINE
- Per applicazioni generali

METRIQUE FIN
- Pour applications générales

METRİK İNCE
- Genel ovalama uygulamaları

METRISK FINGEVIND
- Til generelt brug,

METRISK FIN
- För allround bearbetning
I

METRICO FINO
- Para aplicación general

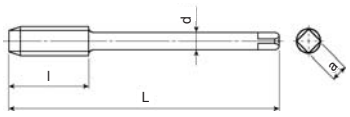
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Общего назначения

METRYCZNY DROBNOZWOJNY
- Ogólnego zastosowania, uniwersalne

GO TO LIVE STOCK CHECK

MF

MF HSSE ISO 2 6H B/4 DIN 374







EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
60614560	4	0,5	63	10	2,8	2,1	3	●	
60615160	5	0,5	70	12	3,5	2,7	3	●	
60615660	6	0,75	80	14	4,5	3,4	3	●	
60616360	8	0,75	80	19	6	4,9	3	●	
60616260	8	1	90	22	6	4,9	3	●	
60617260	10	0,75	90	18	7	5,5	3	●	
60617160	10	1	90	20	7	5,5	3	●	
60617060	10	1,25	100	24	7	5,5	3	●	
60618260	12	1	100	22	9	7	3	●	
60618160	12	1,25	100	22	9	7	3	●	
60618060	12	1,5	100	22	9	7	3	●	
60619460	14	1	100	18	11	9	3	●	
60619360	14	1,25	100	22	11	9	3	●	
60619260	14	1,5	100	22	11	9	3	●	
60620460	16	1	100	18	12	9	3	●	
60620360	16	1,5	100	22	12	9	3	●	
60621860	18	1	110	20	14	11	3	●	
60621660	18	1,5	110	25	14	11	3	●	
60621560	18	2	125	26	14	11	3	●	
60623260	20	1	125	20	16	12	3	●	
60623060	20	1,5	125	25	16	12	3	●	
60622960	20	2	140	27	16	12	3	●	
60624060	22	1,5	125	25	18	14,5	3	●	
60623960	22	2	140	27	18	14,5	3	●	
60625060	24	1,5	140	28	18	14,5	3	●	
60624960	24	2	140	27	18	14,5	3	●	
60627360	30	2	150	30	22	18	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 12~20 m/min	○ 8~12 m/min	⊙ 7~12 m/min	○ 8~12 m/min							○ 8~12 m/min		○ 8~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 10~15 m/min	○ 15~25 m/min	○ 15~25 m/min	○ 10~20 m/min	○ 15~25 m/min	◎ 15~20 m/min	○ 10~15 m/min	◎ 10~15 m/min				○ 8~16 m/min	

● Delivery from stock
○ Available on short notice

CC-POT

METRIC FINE
- For stainless steel, aluminium and steel
- Developed for CNC machines equipped with rigid tapping
- For pilot hole use OSG EX-SUS-GDS (p.C.71~77)

METRISCH FEIN
- Für Va-Stahl, Aluminium und Stahl
- Für CNC Maschinen mit Synchronspindeln
- Für die Kernlochbearbeitung EX-SUS-GDS verwenden(p.C.71~77)

METRICO FINE
- Per acciai inox, alluminio, e acciai
- Per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Utilizzate OSG EX-SUSGDS per foro pilota (p.C.71~77)

METRIQUE FIN
- Pour inox, aluminium et aciers
- Développé pour les machines CNC qui ont le "taraudage rigide"
- Pour trou pilote utiliser OSG EX-SUS-GDS (p.C.71~77)

METRİK İNCE
- Paslanmaz çelikler, alüminyum ve çelik için
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Pilot deliği için OSG EX-SUS-GDX kullanın (sayfa C.71~77)

METRISK FINGEVIND
- Til rustfrit stål, aluminium og stål
- Udviklet til CNC maskine udstyret med fast tapholder
- For boring af pilot hul brug OSG EX-SUS-GDS (p.C.71~77)

METRISK FIN
- För rostfritt stål, aluminium och stål
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- För pilot hål använd OSG EX-SUS-GDS (p.C.71~77)

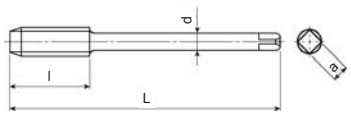
METRICO FINO
- Para aceros inoxidables, aluminio y aceros
- Desarrollados para máquinas CNC aptas para roscado rígido
- Para agujero previo use EX-SUS-GDS (p.C.71~77)

МЕТРИЧЕСКАЯ МЕЛКАЯ
- Для нержавеющих сталей и алюминия
- Разработаны для ЧПУ станков имеющих циклы жесткой нарезки резьбы
- пилотного отверстияиспользуйте OSG EX-SUS-GDS (p.C.71~77)

METRYCZNY DROBNOZWOJNY
- Do stali nierdzewych, aluminium i stali
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Do wykonania otworu zastosuj OSG EX-SUS-GDS ust (p.C.71~77)

GO TO LIVE STOCK CHECK

MF HSSE CrN ISO 2 6HX B/4 DIN 374







EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
48061156	6	0,75	80	14	4,5	3,4	3	●	
48061163	8	0,75	80	19	6	4,9	3	●	
48061162	8	1	90	22	6	4,9	3	●	
48061171	10	1	90	20	7	5,5	3	●	
48061170	10	1,25	100	24	7	5,5	3	●	
48061182	12	1	100	22	9	7	3	●	
48061181	12	1,25	100	22	9	7	3	●	
48061180	12	1,5	100	22	9	7	3	●	
48061192	14	1,5	100	22	11	9	3	●	
48061203	16	1,5	100	22	12	9	3	●	
48061216	18	1,5	110	25	14	11	3	●	
48061230	20	1,5	125	25	16	12	3	●	
48061240	22	1,5	125	25	18	14,5	3	●	
48061250	24	1,5	140	28	18	14,5	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~25 m/min	◎ 15~25 m/min	◎ 10~25 m/min	○ 10~25 m/min					◎ 8~16 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~25 m/min				◎ 20~40 m/min								

● Delivery from stock
○ Available on short notice

VA-SFT

METRIC FINE
- General purpose, also for stainless steel

METRISCH FEIN
- Für universelle Anwendungen und für VA - Stahl

METRICO FINE
- Per applicazioni generali e per inox

METRIQUE FIN
- Pour applications générales et pour des aciers inox

METRİK İNCE
- Genel kullanım, ayrıca paslanmaz çelik için

METRISK FINGEVIND
- Til generelt brug, også til rustfrit stål

METRISK FIN
- För allround bearbetning och för rostfritt stål

METRICO FINO
- Para aplicación general, para aceros inoxidables

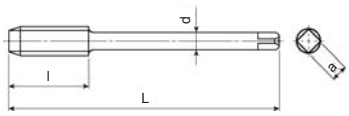
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Общего назначения и для нержавеющих сталей

METRYCZNY DROBNOZWOJNY
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

MF

MF | HSSE | OX | 40° | ISO 2 6H | C/2,5 | DIN 374







EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
65513960	3	0,35	56	4	2,2	-	3	●	
65514560	4	0,5	63	6	2,8	2,1	3	●	
65515160	5	0,5	70	7	3,5	2,7	3	●	
65515760	6	0,5	80	8	4,5	3,4	3	●	
65515660	6	0,75	80	8	4,5	3,4	3	●	
65516360	8	0,75	80	10	6	4,9	3	●	
65516260	8	1	90	10	6	4,9	3	●	
65517160	10	1	90	12	7	5,5	4	●	
65517060	10	1,25	100	12	7	5,5	4	●	
65518260	12	1	100	14	9	7	4	●	
65518160	12	1,25	100	14	9	7	4	●	
65518060	12	1,5	100	14	9	7	4	●	
65519260	14	1,5	100	16	11	9	4	●	
65520360	16	1,5	100	16	12	9	5	●	
65521660	18	1,5	110	20	14	11	5	●	
65523060	20	1,5	125	20	16	12	5	●	
65524060	22	1,5	125	20	18	14,5	5	●	
65525060	24	1,5	140	24	18	14,5	5	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min					◎ 7~12 m/min	○ 7~11 m/min	○ 7~14 m/min		○ 7~14 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 7~14 m/min											◎ 10~15 m/min	

● Delivery from stock
○ Available on short notice

METRIC FINE
- General purpose application

METRISCH FEIN
- Für universelle Anwendungen

METRICO FINE
- Per applicazioni generali

METRIQUE FIN
- Pour applications générales

METRİK İNCE
- Genel ovalama uygulamaları

METRISK FINGEVIND
- Til generelt brug,

METRISK FIN
- För allround bearbetning

METRICO FINO
- Para aplicación general

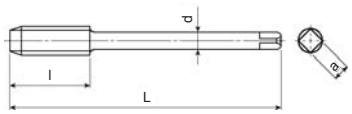
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Общего назначения

METRYCZNY DROBNOZWOJNY
- Ogólnego zastosowania, uniwersalne

GO TO LIVE STOCK CHECK

MF

MF | HSSE | 40° | ISO 2 6H | C/2,5 | DIN 374







EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
61214560	4	0,5	63	6	2,8	2,1	3	●	
61215160	5	0,5	70	7	3,5	2,7	3	●	
61215660	6	0,75	80	8	4,5	3,4	3	●	
61216360	8	0,75	80	10	6	4,9	3	●	
61216260	8	1	90	10	6	4,9	3	●	
61217260	10	0,75	90	10	7	4,9	3	●	
61217160	10	1	90	12	7	5,5	3	●	
61217060	10	1,25	100	12	7	5,5	3	●	
61218260	12	1	100	14	9	7	3	●	
61218160	12	1,25	100	14	9	7	3	●	
61218060	12	1,5	100	14	9	7	3	●	
61219460	14	1	100	11	11	9	3	●	
61219360	14	1,25	100	15	11	9	3	●	
61219260	14	1,5	100	16	11	9	3	●	
61220460	16	1	100	12	12	9	3	●	
61220360	16	1,5	100	16	12	9	3	●	
61221860	18	1	110	13	14	11	4	●	
61221660	18	1,5	110	20	14	11	4	●	
61221560	18	2	125	20	14	11	4	●	
61223260	20	1	125	14	16	12	4	●	
61223060	20	1,5	125	20	16	12	4	●	
61222960	20	2	140	20	16	12	4	●	
61224060	22	1,5	125	20	18	14,5	4	●	
61223960	22	2	140	20	18	14,5	4	●	
61225060	24	1,5	140	20	18	14,5	4	●	
61224960	24	2	140	20	18	14,5	4	●	
61227360	30	2	150	22	22	18	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	○ 6~9 m/min	○ 7~12 m/min							○ 6~11 m/min		○ 6~8 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 6~11 m/min	○ 10~20 m/min	○ 10~20 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min				○ 10~15 m/min	

SUS-SFT

METRIC FINE
- For stainless steel

METRISCH FEIN
- Für VA -Stähl

METRICO FINE
- Per inox

METRIQUE FIN
- Pour les aciers inoxydables

METRİK İNCE
- Paslanmaz çelik için

METRISK FINGEVIND
- Til rustfrit stål

METRISK FIN
- För rostfritt stål

METRICO FINO
- Para aceros inoxidables

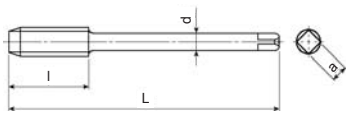
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Для нержавеющих сталей

METRYCZNY DROBNOZWOJNY
- Do stali nierdzewnych

GO TO LIVE STOCK CHECK

MF

MF HSSE OX 50° ISO 2 6HX C/2,5 <1,5D DIN 374







EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
48027163	8	0,75	80	10	6	4,9	3	●	
48027162	8	1	90	10	6	4,9	3	●	
48027171	10	1	90	12	7	5,5	3	●	
48027170	10	1,25	100	12	7	5,5	3	●	
48027182	12	1	100	9	9	7	3	●	
48027181	12	1,25	100	14	9	7	3	●	
48027180	12	1,5	100	14	9	7	3	●	
48027192	14	1,5	100	16	11	9	3	●	
48027203	16	1,5	100	16	12	9	3	●	
48027216	18	1,5	110	20	14	11	4	●	
48027230	20	1,5	125	20	16	12	4	●	
48027240	22	1,5	125	20	18	14,5	4	●	
48027250	24	1,5	140	24	18	14,5	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
								◎ 7~12 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 6~11 m/min											○ 10~15 m/min	

● Delivery from stock
○ Available on short notice

METRIC FINE
- For stainless steel, aluminium and steel
- For threading depth ≥ 2 D
- Developed for CNC machines equipped with rigid tapping
- For pilot hole use OSG EX-SUS-GDS (p.C.71~77)

METRISCH FEIN
- Für Va-Stahl, Aluminium und Stahl
- Für Gewindetiefe ≥ 2 D
- Für CNC Maschinen mit Synchronspindeln
- Für die Kernlochbearbeitung EX-SUS-GDS verwenden(p.C.71~77)

METRICO FINE
- Per acciai inox, alluminio, e acciai
- Per profondita di filettatura ≥ 2 D
- Per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Utilizzate OSG EX-SUSGDS per foro pilota (p.C.71~77)

METRIQUE FIN
- Pour inox, aluminium et aciers
- Profondeur de taraudage ≥ 2 D
- Développé pour les machines CNC qui ont le "taraudage rigide"
- Pour trou pilote utiliser OSG EX-SUS-GDS (p.C.71~77)

METRİK İNCE
- Paslanmaz çelik, alüminyum ve çelik için
- Diş derinliği ≥ 2 D
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Pilot deliği için OSG EX-SUS-GDS kullanın (sayfa C.71~77)

METRISK FINGEVIND
- Til rustfrit stål, aluminium og stål
- Til gevinddybde ≥ 2 D
- Udviklet til CNC maskine udstyret med fast tapholder
- For boring af pilot hul brug OSG EX-SUS-GDS (p.C.71~77)

METRISK FIN
- För rostfritt stål, aluminium och stål
- För gängdjup ≥ 2 D
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- För pilot hål använd OSG EX-SUS-GDS (p.C.71~77)

METRICO FINO
- Para aceros inoxidables, aluminio y aceros
- Para roscado ≥ 2 D
- Desarrollados para máquinas CNC aptas para roscado rígido
- Para agujero previo use EX-SUS-GDS (p.C.71~77)

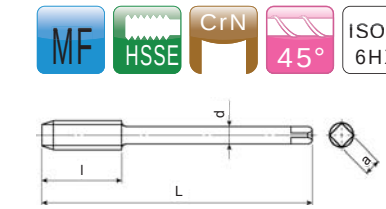
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Для нержавеющих сталей и алюминия
  Для резьб глубиной ≥ 2 D
  Разработаны для ЧПУ станков имеющих циклы жесткой нарезки
  Для пилотного отверстия используйте OSG EX-SUS-GDS

METRYCZNY DROBNOZWOJNY
- do stali nierdzewnych, aluminium i stali
- Do gwintowania na głębokość ≥ 2 D
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Do wykonania otworu zastosuj OSG EX-SUS-GDS ust (p.C.71~77)

GO TO LIVE STOCK CHECK

MF

MF







EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
48032157	6	0,5	80	7,2	4,5	3,4	3	●	
48032156	6	0,75	80	7,2	4,5	3,4	3	●	
48032163	8	0,75	80	9	6	4,9	3	●	
48032162	8	1	90	9	6	4,9	3	●	
48032170	10	1,25	100	11	7	5,5	4	●	
48032171	10	1	90	11	7	5,5	4	●	
48032180	12	1,5	100	13	9	7	4	●	
48032181	12	1,25	100	13	9	7	4	●	
48032182	12	1	100	13	9	7	4	●	
48032192	14	1,5	100	14	11	9	4	●	
48032203	16	1,5	100	14	12	9	4	●	
48032216	18	1,5	110	18	14	11	4	●	
48032230	20	1,5	125	18	16	12	4	●	
48032240	22	1,5	125	18	18	14,5	4	●	
48032250	24	1,5	140	22	18	14,5	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~25 m/min	◎ 15~25 m/min	◎ 10~25 m/min	○ 10~25 m/min					◎ 6~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min				◎ 15~35 m/min								

METRIC FINE
- For aluminium

METRISCH FEIN
- Für Aluminium

METRICO FINE
- Per alluminio

METRIQUE FIN
- Pour aluminium

METRİK İNCE
- Alüminyum için

METRISK FINGEVIND
- Til aluminium

METRISK FIN
- För aluminium

METRICO FINO
- Para aluminio

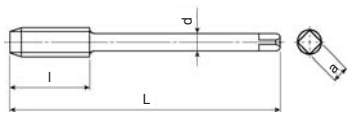
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Для алюминия

METRYCZNY DROBNOZWOJNY
- Do aluminium

GO TO LIVE STOCK CHECK

MF

MF | HSSE | 50° | ISO 2 6H | C/2,5 | DIN 374







EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
70416260	8	1	90	10	6	4,9	2	●	
70417160	10	1	90	12	7	5,5	2	●	
70417060	10	1,25	100	12	7	5,5	2	●	
70418260	12	1	100	14	9	7	2	●	
70418160	12	1,25	100	14	9	7	2	●	
70418060	12	1,5	100	14	9	7	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
				◎ 10~20 m/min	◎ 10~15 m/min	◎ 7~12 m/min						

● Delivery from stock
○ Available on short notice

GG-MT

METRIC FINE
- For gray cast iron & cast aluminium < 11 % Si

METRISCH FEIN
- Für Grauguss und Aluminiumguss < 11 % Si

METRICO FINE
- Per ghisa grigia, ghisa d'alluminio < 11 % Si

METRIQUE FIN
- Pour fonte grise, fonte d'aluminium < 11 % Si

METRİK İNCE
- Sfero döküm & dökme alüminyum < 11 % Si için

METRISK FINGEVIND
- Til støbejern & støbt aluminium < 11 % Si

METRISK FIN
- För gjutjärn & gjuten aluminium

METRICO FINO
- Para fundición de hierro y aluminio fundido < 11 % Si

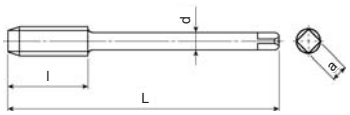
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Для серого чугуна и литейных алюминиевых сплавов < 11 % Si

METRYCZNY DROBNOZWOJNY
- Do żeliwa szarego i aluminium odlewanego <11% Si

GO TO LIVE STOCK CHECK

MF

MF | HSSE | NI-OX | ISO 2 6HX | C/2,5 | DIN 374





EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
62113960	3	0,35	56	9	2,2	-	3	●	
62114260	3,5	0,35	56	10	2,5	-	3	●	
62114560	4	0,5	63	10	2,8	2,1	3	●	
62115160	5	0,5	70	12	3,5	2,7	3	●	
62115760	6	0,5	80	14	4,5	3,4	3	●	
62115660	6	0,75	80	12	4,5	3,4	3	●	
62116360	8	0,75	80	19	6	4,9	4	●	
62116260	8	1	90	22	6	4,9	4	●	
62117160	10	1	90	20	7	5,5	4	●	
62117060	10	1,25	100	24	7	5,5	4	●	
62118260	12	1	90	20	7	7	4	●	
62118160	12	1,25	100	22	9	5	4	●	
62118060	12	1,5	100	22	9	7	4	●	
62119460	14	1	100	22	11	9	4	●	
62119260	14	1,5	100	22	11	9	4	●	
62120460	16	1	100	22	12	9	4	●	
62120360	16	1,5	100	22	12	9	4	●	
62121660	18	1,5	110	25	14	11	4	●	
62121560	18	2	125	34	14	11	4	●	
62123060	20	1,5	125	25	16	12	4	●	
62124060	22	1,5	125	25	18	14,5	4	●	
62125060	24	1,5	140	28	18	14,5	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
											◎ 10~15 m/min	◎ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min									

VP-DC-MT

METRIC FINE
- High performance
- Synchro machine taps where speed can be > 30 m/min
- For cast iron and aluminium

METRISCH FEIN
- High performance
- Synchro Bohrer > 30 m/min
- Für Grauguss und Aluminium

METRICO FINE
- Alta prestazione
- Maschi synchro. La velocità può essere > 30 m/min
- Per ghisa e alluminio

METRIQUE FIN
- Haute performance
- Tarauds synchro où la vitesse peut être > 30 m/min
- Pour fonte et aluminium

METRİK İNCE
- Yüksek performans
- Kesme hızı > 30m/min olduğunda sekronize kılavuz
- Döküm ve alüminyum için

METRISK FINGEVIND
- High performance
- Synkro tappe når skærehastighed kan være > 30 m/min
- Til støbejern & aluminium

METRISK FIN
- High performance
- Synkro gängtappar när skärhastigheten är > 30 m / min
- För gjutjärn och aluminium

METRICO FINO
- Altas prestaciones
- Machos Synchro cuando la velocidad puede ser >30 m/min.
- Para fundición de hierro y aluminio

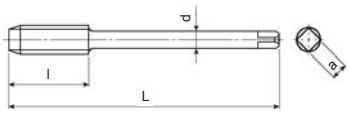
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Высокая производительность
- Синхро метчики со скоростью резания > 30 м/мин
- для чугуна и алюминия

METRYCZNY DROBNOZWOJNY
- Wysoka wydajność
- Gwintownik SYNCHRO, Vc > 30 m/min
- Do żeliw i aluminium

GO TO LIVE STOCK CHECK

MF

MF PM V ISO 2 6HX C/2,5 DIN 374







EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
48023162	8	1	90	15	6	4,9	4	●	
48023171	10	1	90	18	7	5,5	4	●	
48023170	10	1,25	100	18	7	5,5	4	●	
48023181	12	1,25	100	21	9	7	4	●	
48023180	12	1,5	100	21	9	7	4	●	
48023192	14	1,5	100	24	11	9	4	●	
48023203	16	1,5	100	24	12	9	4	●	
48023216	18	1,5	110	30	14	11	4	●	
48023230	20	1,5	125	30	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		○ 10~25 m/min	○ 10~20 m/min	○ 8~20 m/min	○ 8~20 m/min						◎ 15~60 m/min	◎ 15~40 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	◎ 15~60 m/min	◎ 15~60 m/min	◎ 15~60 m/min		◎ 25~70 m/min	◎ 25~70 m/min	◎ 25~70 m/min					

● Delivery from stock
○ Available on short notice

VPO-DC-MT

METRIC FINE
- High performance
- Synchro machine taps where speed can be > 30 m/min
- For cast iron and aluminium

METRISCH FEIN
- High performance
- Synchro Bohrer > 30 m/min
- Für Grauguss und Aluminium

METRICO FINE
- Alta prestazione
- Maschi synchro. La velocità può essere > 30 m/min
- Per ghisa e alluminio

METRIQUE FIN
- Haute performance
- Tarauds synchro où la vitesse peut être > 30 m/min
- Pour fonte et aluminium

METRİK İNCE
- Yüksek performans
- Kesme hızı > 30m/min olduğunda sekronize kılavuz
- Döküm ve alüminyum için

METRISK FINGEVIND
- High performance
- Synkro tappe når skærehastighed kan være > 30 m/min
- Til støbejern & aluminium

METRISK FIN
- High performance
- Synkro gängtappar när skärhastigheten är > 30 m / min
- För gjutjärn och aluminium

METRICO FINO
- Altas prestaciones
- Machos Synchro cuando la velocidad puede ser >30 m/min.
- Para fundición de hierro y aluminio

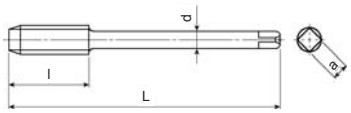
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Высокая производительность
- Синхро метчики со скоростью резания > 30 м/мин
- для чугуна и алюминия

METRYCZNY DROBNOZWOJNY
- Wysoka wydajność
- Gwintownik SYNCHRO, Vc > 30 m/min
- Do żeliw i aluminium

GO TO LIVE STOCK CHECK

MF

MF PM V ISO 2 6HX C/2,5 DIN 374





≤10



≥12



EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
48024162	8	1	90	15	6	4,9	4	●	
48024171	10	1	90	18	7	5,5	4	●	
48024170	10	1,25	100	18	7	5,5	4	●	
48024181	12	1,25	100	21	9	7	4	●	
48024180	12	1,5	100	21	9	7	4	●	
48024192	14	1,5	100	24	11	9	4	●	
48024203	16	1,5	100	24	12	9	4	●	
48024216	18	1,5	110	30	14	11	4	●	
48024230	20	1,5	125	30	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		○ 10~25 m/min	○ 10~20 m/min	○ 8~20 m/min	○ 8~20 m/min						◎ 15~60 m/min	◎ 15~40 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	◎ 15~60 m/min	◎ 15~60 m/min	◎ 15~60 m/min		◎ 25~70 m/min	◎ 25~70 m/min	◎ 25~70 m/min					

● Delivery from stock
○ Available on short notice

OIL-C-MT (Form E)

METRIC FINE
- High performance
- For cast iron and aluminium

METRISCH FEIN
- High performance
- Für Grauguss und Aluminium

METRICO FINE
- Alta prestazione
- Per ghisa e alluminio

METRIQUE FIN
- Haute performance
- Pour fonte et aluminium

METRİK İNCE
- Yüksek performans
- Döküm ve alüminyum için

METRISK FINGEVIND
- High performance
- Til støbejern & aluminium

METRISK FIN
- High performance
- För gjutjärn och aluminium

METRICO FINO
- Altas prestaciones
- Para fundición de hierro y aluminio

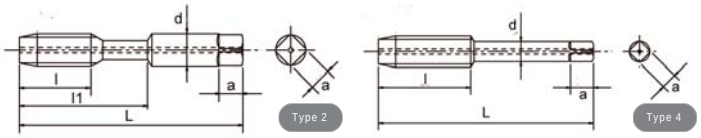
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Высокая производительность
- для чугуна и алюминия

METRYCZNY DROBNOZWOJNY
- Wysoka wydajność
- Do żeliw i aluminium

GO TO LIVE STOCK CHECK

MF







EDP	MF	P	L	l	l1	d	a	ZΔ	DIN	Type	Stock	Price
48126170	10	1,25	100	18	39	10	8	4	D374	2	●	
48126180	12	1,5	110	21	-	9	7	4	-	4	●	
48126181	12	1,25	110	21	-	9	7	4	-	4	●	
48126192	14	1,5	110	24	-	11	9	4	-	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
											◎ 50~100 m/min	○ 30~60 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 20~60 m/min	○ 20~60 m/min	○ 20~60 m/min		◎ 20~60 m/min	◎ 20~60 m/min	◎ 20~60 m/min					

● Delivery from stock
○ Available on short notice

OIL-C-MT (Form C)

METRIC FINE
- High performance
- For cast iron and aluminium

METRISCH FEIN
- High performance
- Für Grauguss und Aluminium

METRICO FINE
- Alta prestazione
- Per ghisa e alluminio

METRIQUE FIN
- Haute performance
- Pour fonte et aluminium

METRİK İNCE
- Yüksek performans
- Döküm ve alüminyum için

METRISK FINGEVIND
- High performance
- Til støbejern & aluminium

METRISK FIN
- High performance
- För gjutjärn och aluminium

METRICO FINO
- Altas prestaciones
- Para fundición de hierro y aluminio

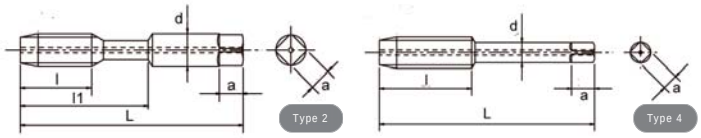
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Высокая производительность
- для чугуна и алюминия

METRYCZNY DROBNOZWOJNY
- Wysoka wydajność
- Do żeliw i aluminium

GO TO LIVE STOCK CHECK

MF

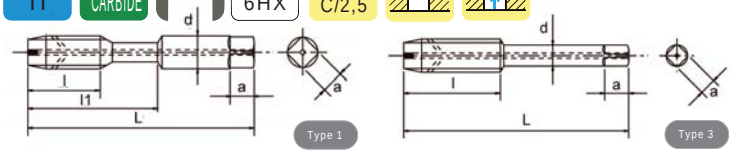
M | CARBIDE | FX | ISO 2 6HX | C/2,5





EDP	MF	P	L	l	l1	d	a	ZΔ	DIN	Type	Stock	Price
48130170	10	1,25	100	18	39	10	8	4	D374	2	●	
48130180	12	1,5	110	21	-	9	7	4	-	4	●	
48130181	12	1,25	110	21	-	9	7	4	-	4	●	
48130192	14	1,5	110	24	-	11	9	4	-	4	●	

M | CARBIDE | FX | ISO 2 6HX | C/2,5





EDP	MF	P	L	l	l1	d	a	ZΔ	DIN	Type	Stock	Price
48132170	10	1,25	100	18	39	10	8	4	D374	1	●	
48132180	12	1,5	110	21	-	9	7	4	-	3	●	
48132181	12	1,25	110	21	-	9	7	4	-	3	●	
48132192	14	1,5	110	24	-	11	9	4	-	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
											◎ 50~100 m/min	○ 30~60 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 20~60 m/min	○ 20~60 m/min	○ 20~60 m/min		◎ 20~60 m/min	◎ 20~60 m/min	◎ 20~60 m/min					

● Delivery from stock
○ Available on short notice

Z-POT

METRIC FINE
- High performance
- **Serie Z :** for high speed tapping in aluminium, mild steel, die steel & stainless steel

METRISCH FEIN
- High performance
- **Serie Z :** für HSC Gewindeschneiden in Aluminium, unlegierten Stählen, Werkzeugstahl und VA-Stahl

METRICO FINE
- Alta prestazione
- **Serie Z :** ad alta velocità per alluminio, acciai dolci, acciai per stampi e inox

METRIQUE FIN
- Haute performance
- **Série Z :** pour haute vitesse dans l'aluminium, l'acier doux, les aciers matrices et l'inox

METRİK İNCE
- Yüksek performans
- **Seri Z:** Alüminyumda yüksek kesme hızları, orta çelikler, kalıp çelikleri & paslanmaz çelikler için

METRISK FINGEVIND
- High performance
- **Serie Z:** til højhastigheds gevindskæring i aluminium, stål, værktøjsstål og rustfrit stål

METRISK FIN
- High performance
- **Serie Z:** För high speed gängning i aluminium, mjukt stål, verktygsstå & rostfritt stål

METRICO FINO
- Altas prestaciones
- **Serie Z (V-VA-CPM, V-O-VA-CPM):** para roscado a alta velocidad en aluminio, aceros suaves y aceros inoxidables

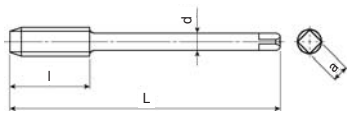
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Высокая производительность
- **Серия Z:** для высокоскоростного нарезания резьбы в алюминии, низкоуглеродистых, инструментальных и нержавеющих сталях

METRYCZNY DROBNOZWOJNY
- Wysoka wydajność
- **Seria Z:** do dużych prędkości gwintowania w aluminium, stalach miękkich, narzędziowych i nierdzewnych

GO TO LIVE STOCK CHECK

MF

MF PM V ISO 2 6HX B/4 DIN 374







EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
48028139	3	0,35	56	9	2,2	-	3	●	
48028145	4	0,5	63	10	2,8	2,1	3	●	
48028151	5	0,5	70	12	3,5	2,7	3	●	
48028157	6	0,5	80	14	4,5	3,4	3	●	
48028156	6	0,75	80	14	4,5	3,4	3	●	
48028163	8	0,75	80	19	6	4,9	3	●	
48028162	8	1	90	22	6	4,9	3	●	
48028171	10	1	90	20	7	5,5	3	●	
48028170	10	1,25	100	24	7	5,5	3	●	
48028182	12	1	100	22	9	7	3	●	
48028180	12	1,25	100	22	9	7	3	●	
48028176	12	1,5	100	22	9	7	3	●	
48028193	14	1,5	100	22	11	9	4	●	
48028204	16	1,5	100	22	12	9	4	●	
48028217	18	1,5	110	25	14	11	4	●	
48028231	20	1,5	125	25	16	12	4	●	
48028241	22	1,5	125	25	18	14,5	4	●	
48028251	24	1,5	140	28	18	14,5	4	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 15~24 m/min	◎ 15~24 m/min	○ 8~20 m/min	○ 8~15 m/min				◎ 8~20 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min		○ 16~30 m/min		○ 20~40 m/min	○ 20~40 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 10~15 m/min			○ 10~20 m/min	

● Delivery from stock
○ Available on short notice

METRIC FINE
- High performance
- **Serie Z :** for high speed tapping in aluminium, mild steel, die steel & stainless steel

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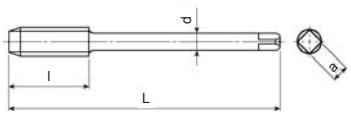
МЕТРИЧЕСКАЯ МЕЛКАЯ
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- **Seria Z:** do dużych prędkości gwintowania w aluminium, stalach miękkich, narzędziowych i nierdzewnych

GO TO LIVE STOCK CHECK

MF









EDP	MF	P	L	l	d	a	ZΔ	Stock	Price
48029139	3	0,35	56	4	2,2	-	3	●	
48029145	4	0,5	63	6	2,8	2,1	3	●	
48029151	5	0,5	70	7	3,5	2,7	3	●	
48029157	6	0,5	80	8	4,5	3,4	3	●	
48029156	6	0,75	80	8	4,5	3,4	3	●	
48029163	8	0,75	80	10	6	4,9	3	●	
48029162	8	1	90	10	6	4,9	3	●	
48029171	10	1	90	12	7	5,5	4	●	
48029170	10	1,25	100	12	7	5,5	4	●	
48029182	12	1	100	14	9	7	4	●	
48029180	12	1,25	100	14	9	7	4	●	
48029176	12	1,5	100	14	9	7	4	●	
48029192	14	1,5	100	16	11	9	4	●	
48029203	16	1,5	100	16	12	9	5	●	
48029216	18	1,5	110	20	14	11	5	●	
48029230	20	1,5	125	20	16	12	5	●	
48029240	22	1,5	125	20	18	14,5	5	●	
48029250	24	1,5	140	24	18	14,5	5	●	

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◎ 10~25 m/min	◎ 10~25 m/min	◎ 10~25 m/min	○ 8~20 m/min	○ 8~15 m/min				◎ 8~20 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~35 m/min		○ 16~30 m/min		○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 15~35 m/min	○ 5~10 m/min			○ 15~20 m/min	

S-XPF

METRIC FINE
- High performance forming tap

METRISCH FEIN
- Hochleistungsgewindeformer

METRICO FINE
- Maschio a rullare ad alta performance

METRIQUE FIN
- Taraud à refoulé à haute performance

METRİK İNCE
- Yüksek performans ovalama kılavuzu

METRISK FINGEVIND
- High Performance rulletap

METRISK FIN
- High performance pressgängtapp

METRICO FINO
- Alta prestaciones, macho de laminación

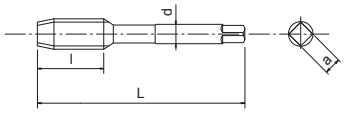
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Высокопроизводительные накатные метчики

METRYCZNY DROBNOZWOJNY
- Wysoka wydajność wygniatania gwintów

GO TO LIVE STOCK CHECK

MF







EDP	MF	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48030162	8	1	90	10	6	4,9	7,51 ~ 7,59	5	●	
48030171	10	1	90	12	7	5,5	9,51 ~ 9,59	8	●	
48030170	10	1,25	100	12	7	5,5	9,37 ~ 9,45	8	●	
48030182	12	1	100	15	9	7	11,52 ~ 11,60	8	●	
48030181	12	1,25	100	15	9	7	11,39 ~ 11,46	8	●	
48030180	12	1,5	100	15	9	7	11,25 ~ 11,34	8	●	
48030193	14	1,25	100	12	11	9	13,39 ~ 13,46	8	●	
48030192	14	1,5	100	15	11	9	13,25 ~ 13,34	8	●	
48030203	16	1,5	100	15	12	9	15,25 ~ 15,34	8	●	
48030216	18	1,5	110	15	14	11	17,25 ~ 17,34	8	●	
48030230	20	1,5	125	15	16	12	19,25 ~ 19,34	8	●	
48030240	22	1,5	125	15	18	14,5	21,25 ~ 21,34	8	●	
48030250	24	1,5	140	15	18	14,5	23,25 ~ 23,34	8	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

OSG OIL-S-XPF

METRIC FINE
- High performance forming tap

METRISCH FEIN
- Hochleistungsgewindeformer

METRICO FINE
- Maschio a rullare ad alta performance

METRIQUE FIN
- Taraud à refoulé à haute performance

METRİK İNCE
- Yüksek performans ovalama kılavuzu

METRISK FINGEVIND
- High Performance rulletap

METRISK FIN
- High performance pressgängtapp

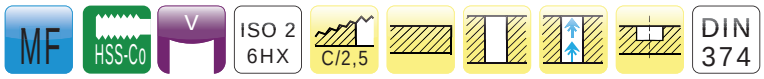
METRICO FINO
- Alta prestaciones, macho de laminación

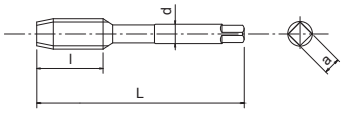
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Высокопроизводительные накатные метчики

METRYCZNY DROBNOZWOJNY
- Wysoka wydajność wygniatania gwintów

GO TO LIVE STOCK CHECK

MF







EDP	MF	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48042162	8	1	90	10	6	4,9	7,51 ~ 7,59	5	●	
48042171	10	1	90	12	7	5,5	9,51 ~ 9,59	8	●	
48042170	10	1,25	100	12	7	5,5	9,37 ~ 9,45	8	●	
48042181	12	1,25	100	15	9	7	11,39 ~ 11,46	8	●	
48042180	12	1,5	100	15	9	7	11,25 ~ 11,34	8	●	
48042193	14	1,25	100	12	11	9	13,39 ~ 13,46	8	●	
48042192	14	1,5	100	15	11	9	13,25 ~ 13,34	8	●	
48042203	16	1,5	100	15	12	9	15,25 ~ 15,34	8	●	
48042216	18	1,5	110	15	14	11	17,25 ~ 17,34	8	●	
48071230	20	1,5	125	15	16	12	19,25 ~ 19,34	8	●	
48071240	22	1,5	125	15	18	14,5	21,25 ~ 21,34	8	●	
48071250	24	1,5	140	15	18	14,5	23,25 ~ 23,34	8	●	

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◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

S-XPF-P

METRIC FINE
- High performance forming tap
- **4P chamfer**

METRISCH FEIN
- Hochleistungsgewindeformer
- **4 Gang. Anschnittlänge**

METRICO FINE
- Maschio a rullare ad alta performance
- **4 filleti**

METRIQUE FIN
- Taraud à refoulé à haute performance
- **4 entrée gun**

METRİK İNCE
- Yüksek performans ovalama kılavuzu
- **4p pah**

METRISK FINGEVIND
- High Performance rulletap
- **4 x stigning på opløb**

METRISK FIN
- High performance pressgängtapp
- **4 x stigning**

METRICO FINO
- Alta prestaciones, macho de laminación
- **4 pasos**

МЕТРИЧЕСКАЯ МЕЛКАЯ
- Высокопроизводительные накатные метчики
- **4 витка**

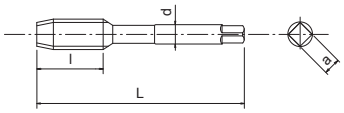
METRYCZNY DROBNOZWOJNY
- Wysoka wydajność wygniatania gwintów
- **Nakrój - 4p**

GO TO LIVE STOCK CHECK

MF

MF







EDP	MF	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48088162	8	1	90	10	6	4,9	7,51 ~ 7,59	5	●	
48088171	10	1	90	12	7	5,5	9,51 ~ 9,59	8	●	
48088170	10	1,25	100	12	7	5,5	9,37 ~ 9,45	8	●	
48088182	12	1	100	15	9	7	11,52 ~ 11,60	8	●	
48088181	12	1,25	100	15	9	7	11,39 ~ 11,46	8	●	
48088180	12	1,5	100	15	9	7	11,25 ~ 11,34	8	●	
48088192	14	1,5	100	15	11	9	13,25 ~ 13,34	8	●	
48088203	16	1,5	100	15	12	9	15,25 ~ 15,34	8	●	
48088216	18	1,5	110	15	14	11	17,25 ~ 17,34	8	●	
48088230	20	1,5	125	15	16	12	19,25 ~ 19,34	8	●	

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Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

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V-NRT-B

METRIC FINE
- No problems associated with swarf ejection
- Oil groove with M ≥ 3
- For aluminium, stainless & steel ≤ 850 N/mm²

METRISCH FEIN
- Keine Probleme mit Spänen
- Mit Ölnut für M ≥ 3
- Für Stahl ≤ 850 N/mm², Aluminium, VA Stahl

METRICO FINE
- Maschiatura a Rullare
- Maschi con scanalatura di lubrificazione per M ≥ 3
- Per acciai ≤ 850 N/mm², alluminio

METRIQUE FIN
- Taraudage sans enlèvement de copeaux
- Tarauds avec rainure d'huile pour M ≥ 3
- Pour aciers ≤ 850 N/mm², alu., Inox

METRİK İNCE
- Talaş ejeksiyonunda hiçbir sorun yok
- M ≥ 3 yağ oluğu
- Alüminyum, paslanmaz çelik, ≤ 850 N/mm² çelikler için

METRISK FINGEVIND
- Ingen problemer med spån evakuering
- Med oliespor M ≥ 3
- Til aluminium, rustfrit stål & stål ≤ 850 N/mm²

METRISK FIN
- Inga problem med spåntransport
- Oil sporr for M ≥ 3
- För alminium, rostfritt stål & stål ≤ 850 N/mm²

METRICO FINO
- Sin problemas asociados a la proyección de virutas
- Ranuras de lubricación con M ≥ 3
- Para aluminio, para aceros inoxidables y aceros ≤ 850 N/mm²

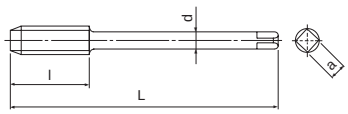
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Нет проблем связанных с выводом стружки
- Канавки для смазки с M ≥ 3
- Для алюминия, нержавеющихсталей и сталей ≤ 850 Н/мм²

METRYCZNY DROBNOZWOJNY
- Brak problemów z wiórami
- Rowki olejowe od M ≥ 3
- Do aluminium, stali nierdzewnych i stali≤ 850 N/mm²

GO TO LIVE STOCK CHECK

MF

MF HSS-Co V ISO 2 6HX C/2,5 DIN 374







EDP	MF	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
69716268	8	1	90	22	6	4,9	7,51 ~ 7,59	3	●	
69717168	10	1	90	22	7	5,5	9,51 ~ 9,59	4	●	
69717068	10	1,25	100	24	7	5,5	9,37 ~ 9,45	4	●	
69718268	12	1	100	22	9	7	11,52 ~ 11,60	4	●	
69718168	12	1,25	100	22	9	7	11,39 ~ 11,46	4	●	
69718068	12	1,5	100	22	9	7	11,25 ~ 11,34	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 10~15 m/min	○ 10~15 m/min	○ 8~12 m/min					◎ 5~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~20 m/min	◎ 10~20 m/min	◎ 10~20 m/min		◎ 10~20 m/min	◎ 10~20 m/min		○ 10~15 m/min					

● Delivery from stock
○ Available on short notice

V-NRT-P

METRIC FINE
- No problems associated with swarf ejection
- Oil groove with M ≥ 3
- For aluminium, stainless & steel ≤ 850 N/mm²

METRISCH FEIN
- Keine Probleme mit Spänen
- Mit Ölnut für M ≥ 3
- Für Stahl ≤ 850 N/mm², Aluminium, VA Stahl

METRICO FINE
- Maschiatura a Rullare
- Maschi con scanalatura di lubrificazione per M ≥ 3
- Per acciai ≤ 850 N/mm², alluminio

METRIQUE FIN
- Taraudage sans enlèvement de copeaux
- Tarauds avec rainure d'huile pour M ≥ 3
- Pour aciers ≤ 850 N/mm², alu., Inox

METRİK İNCE
- Talaş ejeksiyonunda hiçbir sorun yok
- M ≥ 3 yağ oluğu
- Alüminyum, paslanmaz çelik, ≤ 850 N/mm² çelikler için

METRISK FINGEVIND
- Ingen problemer med spån evakuering
- Med oliespor M ≥ 3
- Til aluminium, rustfrit stål & stål ≤ 850 N/mm²

METRISK FIN
- Inga problem med spåntransport
- Oil sporr for M ≥ 3
- För alminium, rostfritt stål & stål ≤ 850 N/mm²

METRICO FINO
- Sin problemas asociados a la proyección de virutas
- Ranuras de lubricación con M ≥ 3
- Para aluminio, para aceros inoxidables y aceros ≤ 850 N/mm²

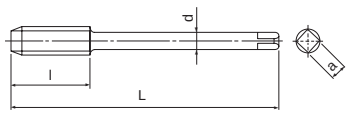
МЕТРИЧЕСКАЯ МЕЛКАЯ
- Нет проблем связанных с выводом стружки
- Канавки для смазки с M ≥ 3
- Для алюминия, нержавеющихсталей и сталей ≤ 850 Н/мм²

METRYCZNY DROBNOZWOJNY
- Brak problemów z wiórami
- Rowki olejowe od M ≥ 3
- Do aluminium, stali nierdzewnych i stali ≤ 850 N/mm²

GO TO LIVE STOCK CHECK

MF

MF | HSS-Co | V | ISO 2 6HX | D/4 | DIN 374







EDP	MF	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
69816268	8	1	90	22	6	4,9	7,51 ~ 7,59	3	●	
69817168	10	1	90	22	7	5,5	9,51 ~ 9,59	4	●	
69817068	10	1,25	100	24	7	5,5	9,37 ~ 9,45	4	●	
69818268	12	1	100	22	9	7	11,52 ~ 11,60	4	●	
69818168	12	1,25	100	22	9	7	11,39 ~ 11,46	4	●	
69818068	12	1,5	100	22	9	7	11,25 ~ 11,34	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 10~15 m/min	○ 10~15 m/min	○ 8~12 m/min					◎ 5~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~20 m/min	◎ 10~20 m/min	◎ 10~20 m/min		◎ 10~20 m/min	◎ 10~20 m/min		○ 10~15 m/min					

● Delivery from stock
○ Available on short notice

UNC
- General purpose, also for stainless steel

UNC
- Für universelle Anwendungen und für VA - Stahl

UNC
- Per applicazioni generali e per inox

UNC
- Pour applications générales et pour des aciers inox

UNC
- Genel kullanım, ayrıca paslanmaz çelik için

UNC
- Til generelt brug, også til rustfrit stål

UNC
- För allround bearbetning och för rostfritt stål

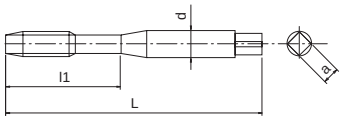
UNC
- Para aplicación general, para aceros inoxidables

UNC
- Общего назначения и для нержавеющих сталей

UNC
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

UNC HSSE OX ANSI 2B B/4 DIN 2182

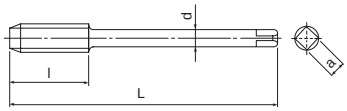






EDP	UNC	P	L	l1	d	a	ZΔ	Stock	Price
74845720	4	40	56	18	3,5	2,7	2	●	
74845920	5	40	56	18	3,5	2,7	3	●	
74846130	6	32	56	20	4	3,0	3	●	
74846430	8	32	63	21	4,5	3,4	3	●	
74846630	10	24	70	25	6	4,9	3	●	
74847150	1/4	20	80	30	7	5,5	3	●	
74847450	5/16	18	90	35	8	6,2	3	●	
74847950	3/8	16	90	35	9	7	3	●	

UNC HSSE OX ANSI 2B B/4 DIN 2183



EDP	UNC	P	L	l	d	a	ZΔ	Stock	Price
75148450	7/16	14	100	24	8	6,2	3	●	
75148950	1/2	13	110	29	9	7	3	●	
75149450	9/16	12	110	30	11	9	3	●	
75150150	5/8	11	110	32	12	9	3	●	
75151550	3/4	10	125	34	14	11	3	●	
75152660	7/8	9	140	34	18	14,5	3	●	
75153860	1	8	160	38	18	14,5	3	●	

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Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min					◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 12~17 m/min											○ 10~20 m/min	

UNJC
- General purpose, also for stainless steel

UNJC
- Für universelle Anwendungen und für VA - Stahl

UNJC
- Per applicazioni generali e per inox

UNJC
- Pour applications générales et pour des aciers inox

UNJC
- Genel kullanım, ayrıca paslanmaz çelik için

UNJC
- Til generelt brug, også til rustfrit stål

UNJC
- För allround bearbetning och för rostfritt stål

UNJC
- Para aplicación general, para aceros inoxidables

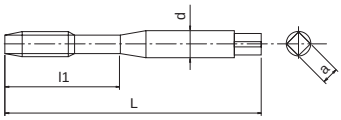
UNJC
- Общего назначения и для нержавеющих сталей

UNJC
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

UNC UNJC

UNJC | HSSE | OX | ANSI 3B | B/4 | DIN 2182







EDP	UNJC	P	L	l	d	a	ZΔ	Stock	Price
48002457	4	40	56	18	3,5	2,7	2	●	
48002461	6	32	56	20	4	3	3	●	
48002464	8	32	63	21	4,5	3,4	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min					◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 12~17 m/min											○ 10~20 m/min	

● Delivery from stock
○ Available on short notice

1066-POT

UNC
- For general purposes application

UNC
- Für universelle Anwendungen

UNC
- Per applicazioni generali

UNC
- Pour applications générales

UNC
- Genel kullanım

UNC
- Til generelt brug

UNC
- För diverse applikationer

UNC
- Para aplicación general

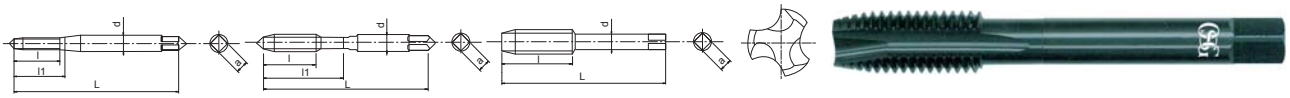
UNC
- Общего назначения

UNC
- Uniwersalne

GO TO LIVE STOCK CHECK

UNC UNJC

UNC HSSE OX ANSI 2B B/4 ISO 529



Type 1 Type 2 Type 3

EDP	UNC	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22104514	1	64	41	8	-	2,5	2	2	1	○	
22104534	2	56	44,5	9,5	-	2,8	2,24	2	1	○	
22104554	3	48	44,5	9,5	-	2,8	2,24	2	1	○	
22104574	4	40	48	11	18	3,15	2,5	2	2	○	
22104594	5	40	48	11	18	3,15	2,5	3	2	○	
22104614	6	32	50	13	20	3,55	2,8	3	2	○	
22104644	8	32	53	13	21	4,5	3,55	3	2	○	
22104664	10	24	58	16	25	5	4	3	2	○	
22104684	12	24	62	17	26	5,6	4,5	3	2	○	
22104714	1/4	20	66	19	30	6,3	5	3	2	○	
22104744	5/16	18	72	22	35	8	6,3	3	2	○	
22104794	3/8	16	80	24	39	10	8	3	2	○	
22104844	7/16	14	85	25	-	8	6,3	3	3	○	
22104894	1/2	13	89	29	-	9	7,1	3	3	○	
22104944	9/16	12	95	30		11,2	9	3	3	○	
22105014	5/8	11	102	32	-	12,5	10	3	3	○	
22105154	3/4	10	112	37	-	14	11,2	3	3	○	
22105264	7/8	9	118	38	-	16	12,5	3	3	○	
22105384	1	8	130	45	-	18	14	3	3	○	
22105514	1 1/8	7	138	48	20	20	16	4	3	○	
22105644	1 1/4	7	151	51	22,4	22	18	4	3	○	

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Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min					◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

UNJC
- High performance
- **Serie H :** for steel 25~45 HRC

UNJC
- High performance
- **Serie H :** Für Stahl 25~45 HRC

UNJC
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

UNJC
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

UNJC
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

UNJC
- High performance
- **Serie H :** Til stål 25~45 HRC

UNJC
- High performance
- **Serie H :** för stål 25~45 HRC

UNJC
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

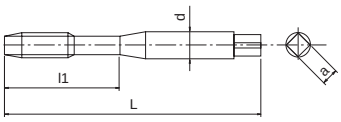
UNJC
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

UNJC
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

UNC UNJC









EDP	UNJC	P	L	l1	d	a	ZΔ	Stock	Price
48010457	4	40	56	18	3,5	2,7	2	●	
48010461	6	32	56	20	4	3	3	●	
48010464	8	32	63	21	4,5	3,4	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◎ 7~10 m/min			○ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 4~6 m/min	○ 2~4 m/min			

● Delivery from stock
○ Available on short notice

1066-POT-PLUS

UNC
- For steel 25~45 HRC

UNC
- Für Stahl 25~45 HRC

UNC
- Per acciai 25~45 HRC

UNC
- Pour acier 25~45 HRC

UNC
- Çelik 25~45 HRC için

UNC
- Til stål 25~45 HRC

UNC
- För stål 25~45 HRC

UNC
- Para aceros 25~45 HRC

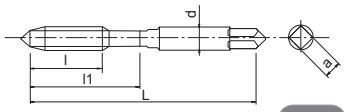
UNC
- для сталей 25 ~ 45 HRC

UNC
- Do stali 25~45 HRC

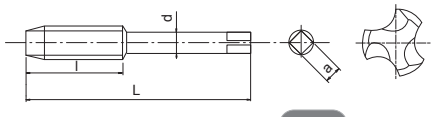
GO TO LIVE STOCK CHECK

UNC
UNJC

UNC PM OX ANSI 2B B/5 ISO 529



Type 2



Type 3



EDP	UNC	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
23104574	4	40	48	11	18	3,15	2,5	2	2	○	
23104594	5	40	48	11	18	3,15	2,5	3	2	○	
23104614	6	32	50	13	20	3,55	2,8	3	2	○	
23104644	8	32	53	13	21	4,5	3,55	3	2	○	
23104664	10	24	58	16	25	5	4	3	2	○	
23104714	1/4	20	66	19	30	6,3	5	3	2	○	
23104744	5/16	18	72	22	35	8	6,3	3	2	○	
23104794	3/8	16	80	24	39	10	8	3	2	○	
23104894	1/2	13	89	29	-	9	7,1	3	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◯ 7~10 m/min			◯ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

UNJC
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

UNJC
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

UNJC
- Alta prestazione
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

UNJC
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

UNJC
- Yüksek performans
- **Serie E:** İnkonel 718 barındıran nikel bazlı alaşımlar için

UNJC
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

UNJC
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

UNJC
- Altas prestaciones
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

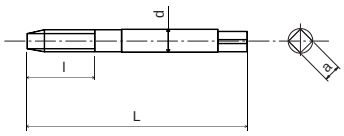
UNJC
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

UNJC
- Wysoka wydajność
- **Seria E:** do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

UNC UNJC

UNJC | PM | ANSI 3B | B/5 | DIN 2182







EDP	UNJC	P	L	l	d	a	ZΔ	Stock	Price
89345730	4	40	56	12	3,5	2,7	3	●	
89346130	6	32	56	14	4	3	3	●	
89346430	8	32	63	16	4,5	3,4	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									2~4 m/min			

● Delivery from stock
○ Available on short notice

WHR-NI-POT

UNJC
- High performance
- For nickel based alloys including Inconel 718

UNJC
- High performance
- Für Nickelbasislegierungen inkl. Inconel 718

UNJC
- Alta prestazione
- Per Inconel 718 ed altre leghe a base di Nickel

UNJC
- Haute performance
- Pour Inconel 718 et autres alliages sur base de Nickel

UNJC
- Yüksek performans
- İnkonel 718 barındıran nikel bazlı alaşımlar için

UNJC
- High performance
- Til nikkellegeringer inklusiv Inconel 718

UNJC
- High performance
- För nickel legeringar inklusive Inconel 718

UNJC
- Altas prestaciones
- Para aleaciones de níquel incluido Inconel 718

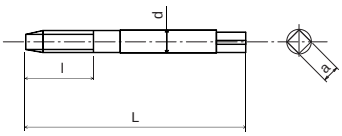
UNJC
- Высокая производительность
- для никелевых сплавов, включая Inconel 718

UNJC
- Wysoka wydajność
- Do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

UNC UNJC

UNJC | PM | HR | ANSI 3B | B/5 | DIN 2182







EDP	UNJC	P	L	l	d	a	ZΔ	Stock	Price
48079457	4	40	56	12	3,5	2,7	3	●	
48079461	6	32	56	14	4	3	3	●	
48079464	8	32	63	16	4,5	4	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 2~4 m/min			

● Delivery from stock
○ Available on short notice

V-TI-POT

UNJC
- High performance
- For titanium alloys (Ti-6Al-4V), 40~45 HRC

UNJC
- High performance
- Für Titanlegierungen inkl. (Ti-6Al-4V), 40~45 HRC

UNJC
- Alta prestazione
- Per leghe di Titanio (Ti-6Al-4V) di durezza tra 40~45 HRC

UNJC
- Haute performance
- Pour alliages de Titane (Ti-6Al-4V) : dureté 40~45 HRC

UNJC
- Yüksek performans
- Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için

UNJC
- High performance
- Til Titanium legeringer (Ti-6Al-4V), 40~45 HRC

UNJC
- High performance
- För Titanlegeringar (Ti-6Al-4V), 40~45 HRC

UNJC
- Altas prestaciones
- Para aleaciones de Titanio (Ti-6Al-4V), 40~45 HRC

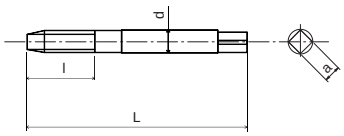
UNJC
- Высокая производительность
- Для титановых сплавов (Ti-6Al-4V), 40~45 HRC

UNJC
- Wysoka wydajność
- do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC

GO TO LIVE STOCK CHECK

UNC UNJC

UNJC | PM | V | ANSI 3B | B/5 | DIN 2182







EDP	UNJC	P	L	l	d	a	ZΔ	Stock	Price
48014457	4	40	56	12	3,5	2,7	3	●	
48014461	6	32	56	14	4	3	3	●	
48014464	8	32	63	16	4,5	3,4	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								2~4 m/min				

● Delivery from stock
○ Available on short notice

UNC
- General purpose, also for stainless steel

UNC
- Für universelle Anwendungen und für VA - Stahl

UNC
- Per applicazioni generali e per inox

UNC
- Pour applications générales et pour des aciers inox

UNC
- Genel kullanım, ayrıca paslanmaz çelik için

UNC
- Til generelt brug, også til rustfrit stål

UNC
- För allround bearbetning och för rostfritt stål

UNC
- Para aplicación general, para aceros inoxidables

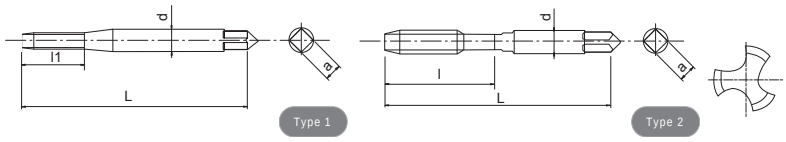
UNC
- Общего назначения и для нержавеющих сталей

UNC
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

UNC UNJC

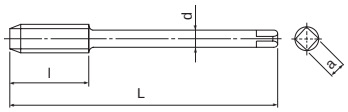
UNC HSSE OX 40° ANSI 2B C/2,5 DIN 2182





EDP	UNC	P	L	l1	d	a	ZΔ	Type	Stock	Price
74945730	4	40	56	11	3,5	2,7	2	1	●	
74945930	5	40	56	18	3,5	2,7	3	2	●	
74946130	6	32	56	20	4	3	3	2	●	
74946430	8	32	63	21	4,5	3,4	3	2	●	
74946630	10	24	70	25	6	4,9	3	2	●	
74947150	1/4	20	80	30	7	5,5	3	2	●	
74947450	5/16	18	90	35	8	6,2	3	2	●	
74947950	3/8	16	90	35	9	7	3	2	●	

UNC HSSE OX 40° ANSI 2B C/2,5 DIN 2183



EDP	UNC	P	L	l	d	a	ZΔ	Stock	Price
75248450	7/16	14	100	19	8	6,2	4	●	
75248950	1/2	13	110	20	9	7	4	●	
75249450	9/16	12	110	22	11	9	4	●	
75250150	5/8	11	110	24	12	9	4	●	
75251550	3/4	10	125	26	14	11	4	●	
75252660	7/8	9	140	29	18	14,5	4	●	
75253860	1	8	160	32	18	14,5	5	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min					◎ 7~12 m/min	○ 7~11 m/min	○ 7~14 m/min		○ 7~14 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 7~14 m/min											◎ 10~15 m/min	

● Delivery from stock
○ Available on short notice

UNJC
- General purpose, also for stainless steel

UNJC
- Für universelle Anwendungen und für VA - Stahl

UNJC
- Per applicazioni generali e per inox

UNJC
- Pour applications générales et pour des aciers inox

UNJC
- Genel kullanım, ayrıca paslanmaz çelik için

UNJC
- Til generelt brug, også til rustfrit stål

UNJC
- För allround bearbetning och för rostfritt stål

UNJC
- Para aplicación general, para aceros inoxidables

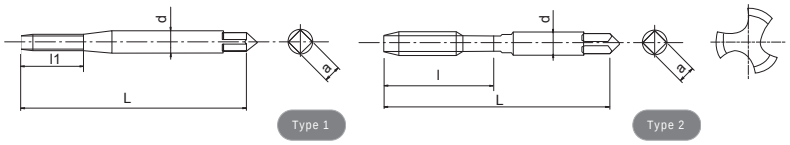
UNJC
- Общего назначения и для нержавеющих сталей

UNJC
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

UNC UNJC

UNJC | HSSE | OX | 40° | ANSI 3B | C/2,5 | DIN 2182





EDP	UNJC	P	L	l1	d	a	ZΔ	Type	Stock	Price
48001457	4	40	56	11	3,5	2,7	2	1	●	
48001461	6	32	56	20	4	3	3	2	●	
48001464	8	32	63	21	4,5	3,4	3	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min					◎ 7~12 m/min	○ 7~11 m/min	○ 7~14 m/min		○ 7~14 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 7~14 m/min											◎ 10~15 m/min	

● Delivery from stock
○ Available on short notice

1066-SFT

UNC
- For general purposes application

UNC
- Für universelle Anwendungen

UNC
- Per applicazioni generali

UNC
- Pour applications générales

UNC
- Genel kullanım

UNC
- Til generelt brug

UNC
- För diverse applikationer

UNC
- Para aplicación general

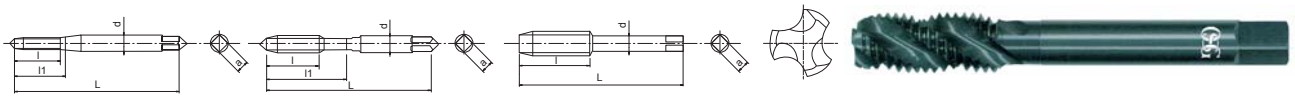
UNC
- Общего назначения

UNC
- Uniwersalne

GO TO LIVE STOCK CHECK

UNC

UNC HSSE OX 40° ANSI 2B C/2,5 ISO 529



Type 1 Type 2 Type 3

EDP	UNC	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22204534	2	56	44,5	9,5	-	2,8	2,24	2	1	○	
22204554	3	48	44,5	9,5	-	2,8	2,24	2	1	○	
22204574	4	40	48	11	18	3,15	2,5	2	2	○	
22204594	5	40	48	11	18	3,15	2,5	3	2	○	
22204614	6	32	50	13	20	3,55	2,8	3	2	○	
22204644	8	32	53	13	21	4,5	3,55	3	2	○	
22204664	10	24	58	16	25	5	4	3	2	○	
22204684	12	24	62	17	26	5,6	4,5	3	2	○	
22204714	1/4	20	66	19	30	6,3	5	3	2	○	
22204744	5/16	18	72	22	35	8	6,3	3	2	○	
22204794	3/8	16	80	24	39	10	8	3	2	○	
22204844	7/16	14	85	25	-	8	6,3	3	3	○	
22204894	1/2	13	89	29	-	9	7,1	3	3	○	
22204944	9/16	12	95	30	-	11,2	9	3	3	○	
22205014	5/8	11	102	32	-	12,5	10	3	3	○	
22205154	3/4	10	112	37	-	14	11,2	4	3	○	
22205264	7/8	9	118	38	-	16	12,5	4	3	○	
22205384	1	8	130	45	-	18	14	4	3	○	
22205514	1 1/8	7	138	48	-	20	16	4	3	○	
22205644	1 1/4	7	151	51	-	22,4	18	4	3	○	

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Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min					◎ 7~12 m/min	○ 6~9 m/min	○ 7~14 m/min		○ 7~14 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

UNC
- For oil and energy industry
- For horizontal operations

UNC
- Für Öl- und Schwerindustrie
- Für horizontale Bearbeitung

UNC
- Per industria petrolifera ed energetica
- Per lavorazioni orizzontali

UNC
- Pour l'industrie lourde et l'énergie
- Pour applications horizontales

UNC
- Yağ ve enerji endüstrisi için
- Yatay uygulamalar

UNC
- For olie og energy industrien
- Til horisontale operationer

UNC
- För olje och energi industrin
- För horisontala applikationer

UNC
- para Industria Energetica y Pesada
- Para roscado horizontal

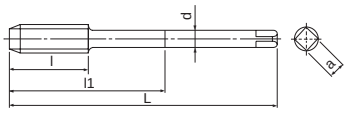
UNC
- внутреннее охлаждение
- Горизонтального нарезки резьбы

UNC
- Dla przemysłu naftowego i energetyki
- Do aplikacji poziomych

GO TO LIVE STOCK CHECK

UN UNC









EDP	Tap Size	UN	UNC	L	l	l1	d	a	ZΔ	Stock	Price
48050515	3/4	-	10	125	20,3	61,8	14	11	4	●	
48050526	7/8	-	9	140	22,6	75	18	14,5	4	●	
48050538	1	-	8	160	25,4	90	18	14,5	5	●	
48050551	1 1/8	-	7	180	29	100	22	18	5	●	
48050552	1 1/8	8	-	180	25,4	100	22	18	5	●	
48050564	1 1/4	-	7	180	29	100	22	18	5	●	
48050565	1 1/4	8	-	180	25,4	100	22	18	5	●	
48050577	1 3/8	-	6	200	33,9	115	28	22	5	●	
48050578	1 3/8	8	-	200	25,4	115	28	22	5	●	
48050591	1 1/2	-	6	200	33,9	115	32	24	5	●	
48050592	1 1/2	8	-	200	25,4	115	32	24	5	●	
48050605	1 5/8	8	-	200	25,4	110	32	24	6	●	
48050618	1 3/4	8	-	200	25,4	101	36	29	6	●	
48050628	1 7/8	8	-	225	25,4	125	36	29	6	●	
48050639	2	8	-	225	25,4	125	40	32	6	●	
48050661	2 1/2	8	-	275	25,4	150	50	39	6	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	◎ 6~9 m/min	◎ 7~12 m/min	○ 3~5 m/min				○ 5~8 m/min	○ 6~9 m/min	○ 6~11 m/min	◎ 7~12 m/min	◎ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

UNC
- For oil and energy industry
- For vertical operations

UNC
- Für Öl- und Schwerindustrie
- Für vertikale Bearbeitung

UNC
- Per industria petrolifera ed energetica
- Per lavorazioni verticali

UNC
- Pour l'industrie lourde et l'énergie
- Pour applications verticales

UNC
- Yağ ve enerji endüstrisi için
- Dikey operasyonlar için

UNC
- For olie og energy industrien
- Til vertikale operationer

UNC
- För olje och energi industrin
- För vertikala applikationer

UNC
- para Industria Energetica y Pesada
- Para roscado vertical

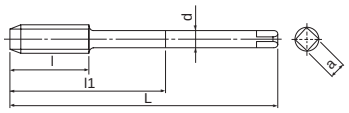
UNC
- внутреннее охлаждение
- Горизонтального нарезания резьбы

UNC
- Dla przemysłu naftowego i energetyki
- Do pracy w pionie

GO TO LIVE STOCK CHECK

UN UNC

UNC UN HSSE OX 45° C/2,5 ANSI 2B







EDP	Tap Size	UN	UNC	L	l	l1	d	a	ZΔ	Stock	Price
48051515	3/4	-	10	125	20,3	61,8	14	11	4	●	
48051526	7/8	-	9	140	22,6	75	18	14,5	4	●	
48051538	1	-	8	160	25,4	90	18	14,5	5	●	
48051551	1 1/8	-	7	180	29	100	22	18	5	●	
48051552	1 1/8	8	-	180	25,4	100	22	18	5	●	
48051564	1 1/4	-	7	180	29	100	22	18	5	●	
48051565	1 1/4	8	-	180	25,4	100	22	18	5	●	
48051577	1 3/8	-	6	200	33,9	115	28	22	5	●	
48051578	1 3/8	8	-	200	25,4	115	28	22	5	●	
48051591	1 1/2	-	6	200	33,9	115	32	24	5	●	
48051592	1 1/2	8	-	200	25,4	115	32	24	5	●	
48051605	1 5/8	8	-	200	25,4	110	32	24	6	●	
48051618	1 3/4	8	-	200	25,4	101	36	29	6	●	
48051628	1 7/8	8	-	225	25,4	125	36	29	6	●	
48051639	2	8	-	225	25,4	125	40	32	6	●	
48051661	2 1/2	8	-	275	25,4	150	50	39	6	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	◎ 6~9 m/min	◎ 7~12 m/min	○ 3~5 m/min				○ 5~8 m/min	○ 6~9 m/min	○ 6~11 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

UN(J)C
- For stainless steel, aluminium and steel
- For threading depth ≥ 2 D
- Developed for CNC machines equipped with rigid tapping
- For pilot hole use OSG EX-SUS-GDS (p.C.71~77)

UN(J)C
- Für Va-Stahl, Aluminium und Stahl
- Für Gewindetiefe ≥ 2 D
- Für CNC Maschinen mit Synchronspindeln
- Für die Kernlochbearbeitung EX-SUS-GDS verwenden(p.C.71~77)

UN(J)C
- Per acciai inox, alluminio, e acciai
- Per profondita di filettatura ≥ 2 D
- Per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Utilizzate OSG EX-SUSGDS per foro pilota (p.C.71~77)

UN(J)C
- Pour inox, aluminium et aciers
- Profondeur de taraudage ≥ 2 D
- Développé pour les machines CNC qui ont le "taraudage rigide"
- Pour trou pilote utiliser OSG EX-SUS-GDS (p.C.71~77)

UN(J)C
- Paslanmaz çelik, alüminyum ve çelik için
- Diş derinliği ≥ 2 D
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Pilot deliği için OSG EX-SUS-GDS kullanın (sayfa C.71~77)

UN(J)C
- Til rustfrit stål, aluminium og stål
- Til gevinddybde ≥ 2 D
- Udviklet til CNC maskine udstyret med fast tapholder
- For boring af pilot hul brug OSG EX-SUS-GDS (p.C.71~77)

UN(J)C
- För rostfritt stål, aluminium och stål
- För gängdjup ≥ 2 D
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- För pilot hål använd OSG EX-SUS-GDS (p.C.71~77)

UN(J)C
- Para aceros inoxidables, aluminio y aceros
- Para roscado ≥ 2 D
- Desarrollados para máquinas CNC aptas para roscado rígido
- Para agujero previo use EX-SUS-GDS (p.C.71~77)

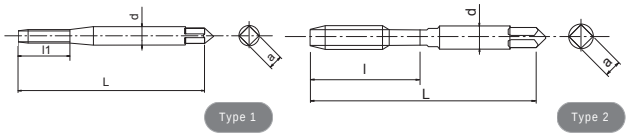
UN(J)C
- Для нержавеющих сталей и алюминия
  Для резьб глубиной ≥ 2 D
  Разработаны для ЧПУ станков имеющих циклы жесткой нарезки
  Для пилотного отверстия используйте OSG EX-SUS-GDS

UN(J)C
- do stali nierdzewnych, aluminium i stali
- Do gwintowania na głębokość ≥ 2 D
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Do wykonania otworu zastosuj OSG EX-SUS-GDS ust (p.C.71~77)

GO TO LIVE STOCK CHECK

UNC UNJC

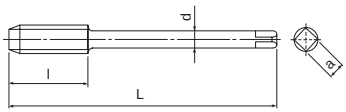






EDP	UN(J)C	P	L	l1	d	a	ZΔ	Type	Stock	Price
48032457	4	40	56	11,4	3,5	2,7	2	1	●	
48032461	6	32	56	14	4	3	3	1	●	
48032464	8	32	63	16,7	4,5	3,4	3	1	●	
48032466	10	24	70	19,3	6	4,9	3	1	●	
48032471	1/4	20	80	25,4	7	5,5	3	1	●	
48032474	5/16	18	90	13	8	6,2	3	2	●	
48032479	3/8	16	90	15	9	7	3	2	●	





EDP	UN(J)C	P	L	l	d	a	ZΔ	Stock	Price
48032484	7/16	14	100	17	8	6,2	4	●	
48032489	1/2	13	110	18	9	7	4	●	
48032494	9/16	12	110	19	11	9	4	●	
48032501	5/8	11	110	21	12	9	4	●	
48032515	3/4	10	125	23	14	11	4	●	
48032526	7/8	9	140	26	18	14,5	4	●	
48032538	1	8	160	29	18	14,5	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania											
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 15~25 m/min		○ 10~25 m/min					◎ 6~10 m/min				
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min				◎ 15~35 m/min								

● Delivery from stock
○ Available on short notice

UNJC
- High performance
- **Serie H :** for steel 25~45 HRC

UNJC
- High performance
- **Serie H :** Für Stahl 25~45 HRC

UNJC
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

UNJC
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

UNJC
- Yüksek performans
- **Seri H :** 25~45 HRC çelik için

UNJC
- High performance
- **Serie H :** Til stål 25~45 HRC

UNJC
- High performance
- **Serie H :** för stål 25~45 HRC

UNJC
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

UNJC
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

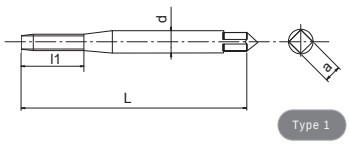
UNJC
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

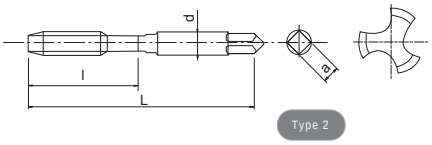
UNC UNJC

UNC UNJC

UNJC | PM | OX | 15° | ANSI 3B | C/2,5 | DIN 2182



Type 1



Type 2



EDP	UNJC	P	L	l1	d	a	ZΔ	Type	Stock	Price
48009457	4	40	56	11	3,5	2,7	2	1	●	
48009461	6	32	56	8	4	3	2	2	●	
48009464	8	32	63	21	4,5	3,4	3	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				◎ 6~12 m/min			○ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 3~5 m/min	○ 1~3 m/min			

I066-SFT-PLUS

UNC
- For steel 25~45 HRC

UNC
- Für Stahl 25~45 HRC

UNC
- Per acciai 25~45 HRC

UNC
- Pour acier 25~45 HRC

UNC
- 25~45 HRC çelik için

UNC
- Til stål 25~45 HRC

UNC
- För stål 25~45 HRC

UNC
- Para aceros 25~45 HRC

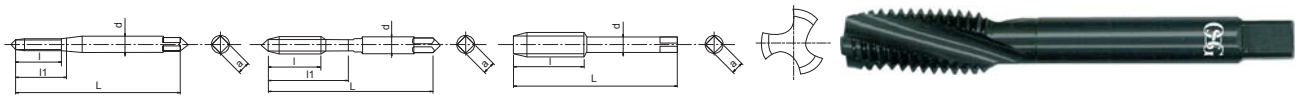
UNC
- для сталей 25 ~ 45 HRC

UNC
- Do stali 25 ~ 45 HRC

GO TO LIVE STOCK CHECK

UNC

UNC | PM | OX | 15° | ANSI 2B | C/3 | ISO 529



Type 1 Type 2 Type 3

EDP	UNC	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
23204574	4	40	48	11	18	3,15	2,5	2	2	○	
23204594	5	40	48	11	18	3,15	2,5	2	2	○	
23204614	6	32	50	13	20	3,55	2,8	2	2	○	
23204644	8	32	53	13	21	4,5	3,55	2	2	○	
23204664	10	24	58	16	25	5	4	3	2	○	
23204714	1/4	20	66	19	30	6,3	5	3	2	○	
23204744	5/16	18	72	22	35	8	6,3	3	2	○	
23204794	3/8	16	80	24	39	10	8	3	2	○	
23204894	1/2	13	89	29	-	9	7,1	3	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	◯ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				◯ 6~12 m/min	◯ 7~15 m/min	◯ 7~12 m/min	◯ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

UNJC
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

UNJC
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

UNJC
- Alta prestazione
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

UNJC
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

UNJC
- Yüksek performans
- Seri E: İnkonel 718 barındıran nikel bazlı alaşımlar için

UNJC
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

UNJC
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

UNJC
- Altas prestaciones
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

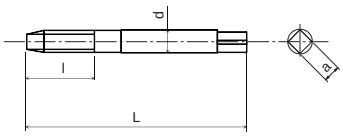
UNJC
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

UNJC
- Wysoka wydajność
- Seria E: do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

UNC UNJC

UNJC | PM | 10° | ANSI 3B | C/2,5 | DIN 2182







EDP	UNJC	P	L	l	d	a	ZΔ	Stock	Price
89545730	4	40	56	10	3,5	2,7	3	●	
89546130	6	32	56	13	4	3	3	●	
89546430	8	32	63	15	4,5	3,4	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 1~3 m/min			

WHR-NI-SFT

UNJC
- High performance
- For nickel based alloys including Inconel 718

UNJC
- High performance
- Für Nickelbasislegierungen inkl. Inconel 718

UNJC
- Alta prestazione
- Per Inconel 718 ed altre leghe a base di Nickel

UNJC
- Haute performance
- Pour Inconel 718 et autres alliages sur base de Nickel

UNJC
- Yüksek performans
- İnkonel 718 barındıran nikel bazlı alaşımlar için

UNJC
- High performance
- Til nikkellegeringer inklusiv Inconel 718

UNJC
- High performance
- För nickel legeringar inklusive Inconel 718

UNJC
- Altas prestaciones
- Para aleaciones de níquel incluido Inconel 718

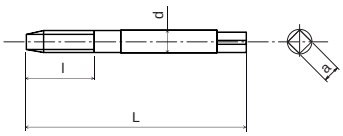
UNJC
- Высокая производительность
- для никелевых сплавов, включая Inconel 718

UNJC
- Wysoka wydajność
- Do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

UNC UNJC

UNJC | PM | HR | ANSI 3B | 11° | C/2,5 | DIN 2182







EDP	UNJC	P	L	l	d	a	ZΔ	Stock	Price
48078457	4	40	56	12	3,5	2,7	3	●	
48078461	6	32	56	14	4	3	3	●	
48078464	8	32	63	16	4,5	3,4	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania											
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 1~3 m/min			

● Delivery from stock
○ Available on short notice

V-TI-SFT

UNJC
- High performance
- For titanium alloys (Ti-6Al-4V), 40~45 HRC

UNJC
- High performance
- Für Titanlegierungen inkl. (Ti-6Al-4V), 40~45 HRC

UNJC
- Alta prestazione
- Per leghe di Titanio (Ti-6Al-4V) di durezza tra 40~45 HRC

UNJC
- Haute performance
- Pour alliages de Titane (Ti-6Al-4V) : dureté 40~45 HRC

UNJC
- Yüksek performans
- Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için

UNJC
- High performance
- Til Titanium legeringer (Ti-6Al-4V), 40~45 HRC

UNJC
- High performance
- För Titanlegeringar (Ti-6Al-4V), 40~45 HRC

UNJC
- Altas prestaciones
- Para aleaciones de Titanio (Ti-6Al-4V), 40~45 HRC

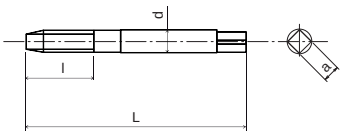
UNJC
- Высокая производительность
- Для титановых сплавов (Ti-6Al-4V), 40~45 HRC

UNJC
- Wysoka wydajność
- do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC

GO TO LIVE STOCK CHECK

UNC UNJC









EDP	UNJC	P	L	l	d	a	ZΔ	Stock	Price
48013457	4	40	56	10	3,5	2,7	3	●	
48013461	6	32	56	13	4	3	3	●	
48013464	8	32	63	15	4,5	3,4	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								◎ 3~5 m/min				

● Delivery from stock
○ Available on short notice

1066-HT

UNC
- For general purposes application

UNC
- Für universelle Anwendungen

UNC
- Per applicazioni generali

UNC
- Pour applications générales

UNC
- Genel kullanım

UNC
- Til generelt brug

UNC
- För diverse applikationer

UNC
- Para aplicación general

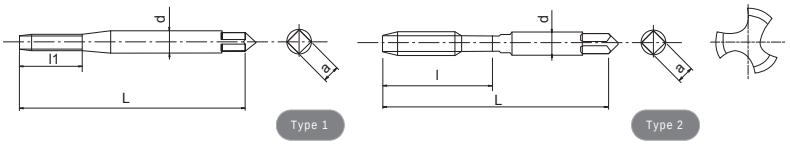
UNC
- Общего назначения

UNC
- Uniwersalne

GO TO LIVE STOCK CHECK

UNC

UNC HSSE ANSI 2B C/2,5 ISO 529





EDP	UNC	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22034510	1	64	41	8	-	2,5	2	3	1	○	
22034530	2	56	44,5	9,5	-	2,8	2,24	3	1	○	
22034550	3	48	44,5	9,5	-	2,8	2,24	3	1	○	
22034570	4	40	48	11	18	3,15	2,5	3	2	○	
22034590	5	40	48	11	18	3,15	2,5	3	2	○	
22034610	6	32	50	13	20	3,55	2,8	3	2	○	
22034640	8	32	53	13	21	4,5	3,55	3	2	○	
22034660	10	24	58	16	25	5	4	3	2	○	
22034680	12	24	62	17	26	5,6	4,5	3	2	○	
22034710	1/4	20	66	19	30	6,3	5	3	2	○	
22034740	5/16	18	72	22	35	8	6,3	4	2	○	
22034790	3/8	16	80	24	39	10	8	4	2	○	
22034840	7/16	14	85	25	-	8	6,3	4	3	○	
22034890	1/2	13	89	29	-	9	7,1	4	3	○	
22034940	9/16	12	95	30	-	11,2	9	4	3	○	
22035010	5/8	11	102	32	-	12,5	10	4	3	○	
22035150	3/4	10	112	37	-	14	11,2	4	3	○	
22035260	7/8	9	118	38	-	16	12,5	4	3	○	
22035380	1	8	130	45	-	18	14	4	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 7~12 m/min											○ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min					

● Delivery from stock
○ Available on short notice

UNC
- High performance forming tap

UNC
- Hochleistungsgewindeformer

UNC
- Maschio a rullare ad alta performance

UNC
- Taraud à refoulé à haute performance

UNC
- Yüksek performans ovalama kılavuzu

UNC
- High Performance rulletap

UNC
- High performance pressgängtapp

UNC
- Alta prestaciones, macho de laminación

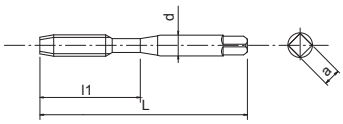
UNC
- Высокопроизводительные накатные метчики

UNC
- Wysoka wydajność wygniatania gwintów

GO TO LIVE STOCK CHECK

UNC

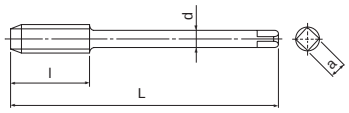
UNC HSS-Co V ANSI 2BX C/2,5 DIN 2182





EDP	UNC	P	L	l1	d	a	Drill Hole Size	ZΔ	Stock	Price
48091459	5	40	56	18	3,5	2,7	2,86 ~ 2,93	4	●	
48091461	6	32	56	20	4	3	3,09 ~ 3,17	4	●	
48091464	8	32	63	21	4,5	3,4	3,76 ~ 3,84	4	●	
48091466	10	24	70	25	6	4,9	4,26 ~ 4,35	5	●	
48091471	1/4	20	80	30	7	5,5	5,66 ~ 5,76	5	●	
48091474	5/16	18	90	35	8	6,2	7,18 ~ 7,29	5	●	
48091479	3/8	16	90	35	9	7	8,66 ~ 8,78	8	●	

UNC HSS-Co V ANSI 2BX C/2,5 DIN 2183



EDP	UNC	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48091484	7/16	14	100	18,1	8	6,2	10,12 ~ 10,27	8	●	
48091489	1/2	13	110	19,5	9	7	11,62 ~ 11,78	8	●	
48091494	9/16	12	110	21,1	11	9	13,14 ~ 13,28	8	●	
48091501	5/8	11	110	23,1	12	9	14,61 ~ 14,76	8	●	
48091515	3/4	10	125	20,3	14	11	17,65 ~ 17,80	8	●	
48091526	7/8	9	140	22,6	18	14,5	20,66 ~ 20,84	8	●	
48091538	1	8	160	25,4	18	14,5	23,63 ~ 23,84	8	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

UNF
- General purpose, also for stainless steel

UNF
- Für universelle Anwendungen und für VA - Stahl

UNF
- Per applicazioni generali e per inox

UNF
- Pour applications générales et pour des aciers inox

UNF
- Genel kullanım, ayrıca paslanmaz çelik için

UNF
- Til generelt brug, også til rustfrit stål

UNF
- För allround bearbetning och för rostfritt stål

UNF
- Para aplicación general, para aceros inoxidables

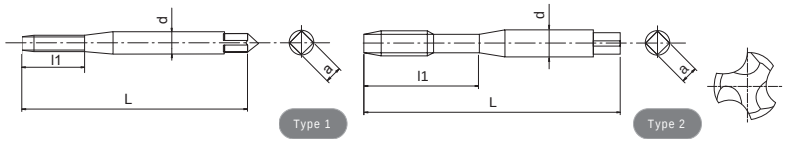
UNF
- Общего назначения и для нержавеющих сталей

UNF
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

UNF
UNJF

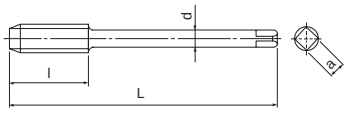
UNF HSSE OX ANSI 2B B/4 DIN 2182





EDP	UNF	P	L	l1	d	a	ZΔ	Type	Stock	Price
75146220	6	40	56	13	4	3	3	1	●	
75146730	10	32	70	25	6	4,9	3	2	●	
75147240	1/4	28	80	30	7	5,5	3	2	●	
75147640	5/16	24	90	35	8	6,2	3	2	●	
75148140	3/8	24	90	35	9	7	3	2	●	

UNF HSSE OX ANSI 2B B/4 DIN 2183



EDP	UNF	P	L	l	d	a	ZΔ	Stock	Price
75148650	7/16	20	100	20	8	6,2	3	●	
75149150	1/2	20	100	22	9	7	3	●	
75149650	9/16	18	100	22	11	9	3	●	
75150450	5/8	18	100	22	12	9	3	●	
75151750	3/4	16	110	25	14	11	3	●	
75152860	7/8	14	125	25	18	14,5	3	●	
75153960	1	12	125	25	18	14,5	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min					◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 12~17 m/min											○ 10~20 m/min	

● Delivery from stock
○ Available on short notice

UNJF
- General purpose, also for stainless steel

UNJF
- Für universelle Anwendungen und für VA - Stahl

UNJF
- Per applicazioni generali e per inox

UNJF
- Pour applications générales et pour des aciers inox

UNJF
- Genel kullanım, ayrıca paslanmaz çelik için

UNJF
- Til generelt brug, også til rustfrit stål

UNJF
- För allround bearbetning och för rostfritt stål

UNJF
- Para aplicación general, para aceros inoxidables

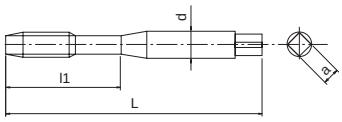
UNJF
- Общего назначения и для нержавеющих сталей

UNJF
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

UNF
UNJF

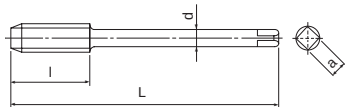






EDP	UNJF	P	L	l1	d	a	ZΔ	Stock	Price
48002467	10	32	70	25	6	4,9	3	●	
48002472	1/4	28	80	30	7	5,5	3	●	
48002476	5/16	24	90	35	8	6,2	3	●	
48002481	3/8	24	90	35	9	7	3	●	





EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48002486	7/16	20	100	20	8	6,2	3	●	
48002491	1/2	20	100	22	9	7	3	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min					◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 12~17 m/min											○ 10~20 m/min	

1066-POT

UNF
- For general purposes application

UNF
- Für universelle Anwendungen

UNF
- Per applicazioni generali

UNF
- Pour applications générales

UNF
- Genel kullanım

UNF
- Til generelt brug

UNF
- För diverse applikationer

UNF
- Para aplicación general

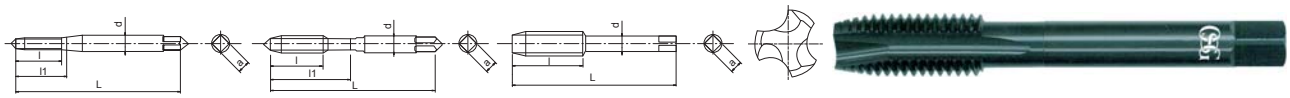
UNF
- Общего назначения

UNF
- Uniwersalne

GO TO LIVE STOCK CHECK

UNF
UNJF

UNF HSSE OX ANSI 2B B/4 ISO 529



Type 1 Type 2 Type 3

EDP	UNF	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22104504	0	80	40	8	-	2,5	2	2	1	○	
22104524	1	72	41	8	-	2,5	2	2	1	○	
22104544	2	64	44,5	9,5	-	2,8	2,24	2	1	○	
22104564	3	56	44,5	9,5	-	2,8	2,24	2	1	○	
22104584	4	48	48	11	18	3,15	2,5	2	2	○	
22104604	5	44	48	11	18	3,15	2,5	3	2	○	
22104624	6	40	50	13	20	3,55	2,8	3	2	○	
22104654	8	36	53	13	21	4,5	3,55	3	2	○	
22104674	10	32	58	16	25	5	4	3	2	○	
22104694	12	28	62	17	26	5,6	4,5	3	2	○	
22104724	1/4	28	66	19	30	6,3	5	3	2	○	
22104764	5/16	24	72	22	35	8	6,3	3	2	○	
22104814	3/8	24	80	24	39	10	8	3	2	○	
22104864	7/16	20	85	25	-	8	6,3	3	3	○	
22104914	1/2	20	89	29	-	9	7,1	3	3	○	
22104964	9/16	18	95	30		11,2	9	3	3	○	
22105044	5/8	18	102	32	-	12,5	10	3	3	○	
22105174	3/4	16	112	37	-	14	11,2	3	3	○	
22105284	7/8	14	118	38	-	16	12,5	3	3	○	
22105394	1	12	130	45	-	18	14	3	3	○	
22105534	1 1/8	12	138	48	20	20	16	4	3	○	
22105664	1 1/4	12	151	51	22,4	22	18	4	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min	◯ 7~11 m/min				◎ 8~16 m/min	◯ 10~15 m/min	◯ 10~15 m/min		◯ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

UNJF
- High performance
- **Serie H :** for steel 25~45 HRC

UNJF
- High performance
- **Serie H :** Für Stahl 25~45 HRC

UNJF
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

UNJF
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

UNJF
- Yüksek performans
- **Seri H :** 25~45 HRC çelik için

UNJF
- High performance
- **Serie H :** Til stål 25~45 HRC

UNJF
- High performance
- **Serie H :** för stål 25~45 HRC

UNJF
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

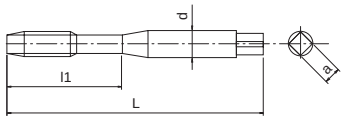
UNJF
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

UNJF
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

UNF UNJF

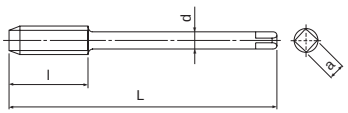
UNJF | PM | OX | ANSI 3B | B/5 | DIN 2182





EDP	UNJF	P	L	l1	d	a	ZΔ	Stock	Price
48010467	10	32	70	25	6	4,9	3	●	
48010472	1/4	28	80	30	7	5,5	3	●	
48010476	5/16	24	90	35	8	6,2	3	●	
48010481	3/8	24	90	35	9	7	3	●	

UNJF | PM | OX | ANSI 3B | B/5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48010486	7/16	20	100	20	8	6,2	3	●	
48010491	1/2	20	100	22	9	7	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◎ 7~10 m/min			○ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 4~6 m/min	○ 2~4 m/min			

1066-POT-PLUS

UNF
- For steel 25~45 HRC

UNF
- Für Stahl 25~45 HRC

UNF
- Per acciai 25~45 HRC

UNF
- Pour acier 25~45 HRC

UNF
- 25~45 HRC çelik için

UNF
- Til stål 25~45 HRC

UNF
- För stål 25~45 HRC

UNF
- Para aceros 25~45 HRC

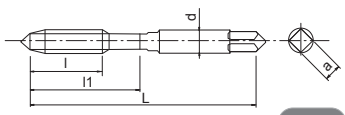
UNF
- для сталей 25 ~ 45 HRC

UNF
- Do stali 25 ~ 45 HRC

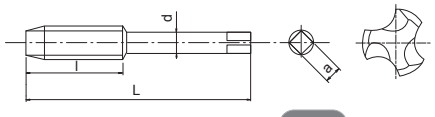
GO TO LIVE STOCK CHECK

UNF

UNF PM OX ANSI 2B B/5 ISO 529



Type 2



Type 3



EDP	UNF	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
23104674	10	32	58	16	25	5	4	3	2	○	
23104724	1/4	28	66	19	30	6,3	5	3	2	○	
23104764	5/16	24	72	22	35	8	6,3	3	2	○	
23104814	3/8	24	80	24	39	10	8	3	2	○	
23104814A	7/16	20	85	25	-	8	6,3	3	3	○	
23104814B	1/2	20	89	29	-	9	7,1	3	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◯ 7~10 m/min			◯ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

UNJF
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

UNJF
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

UNJF
- Alta prestazione
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

UNJF
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

UNJF
- Yüksek performans
- Seri E: İnkonel 718 barındıran nikel bazlı alaşımlar için

UNJF
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

UNJF
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

UNJC
- Altas prestaciones
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

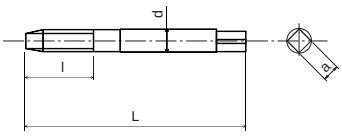
UNJF
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

UNJF
- Wysoka wydajność
- Seria E: do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

UNF UNJF

UNJF | PM | ANSI 3B | B/5 | DIN 2182

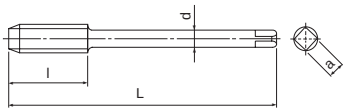






EDP	UNJF	P	L	l1	d	a	ZΔ	Stock	Price
89346730	10	32	70	20	6	4,9	3	●	
89347230	1/4	28	80	25	7	5,5	3	●	
89347630	5/16	24	90	31	8	6,2	3	●	
89348130	3/8	24	90	35	10	8	3	●	

UNJF | PM | ANSI 3B | B/5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
89448630	7/16	20	100	20	9	7	3	●	
89449130	1/2	20	100	22	10	8	3	●	

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Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania											
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 2~4 m/min			

● Delivery from stock
○ Available on short notice

WHR-NI-POT

UNJF
- High performance
- For nickel based alloys including Inconel 718

UNJF
- High performance
- Für Nickelbasislegierungen inkl. Inconel 718

UNJF
- Alta prestazione
- Per Inconel 718 ed altre leghe a base di Nickel

UNJF
- Haute performance
- Pour Inconel 718 et autres alliages sur base de Nickel

UNJF
- Yüksek performans
- İnkonel 718 barındıran nikel bazlı alaşımlar için

UNJF
- High performance
- Til nikkellegeringer inklusiv Inconel 718

UNJF
- High performance
- För nickel legeringar inklusive Inconel 718

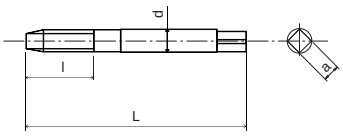
UNJF
- Altas prestaciones
- Para aleaciones de níquel incluido Inconel 718

UNJF
- Высокая производительность
- для никелевых сплавов, включая Inconel 718

UNJF
- Wysoka wydajność
- Do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

UNJF | PM | HR | ANSI 3B | B/5 | DIN 2182

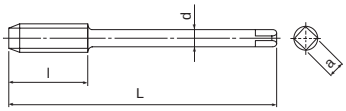






EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48079467	10	32	70	20	6	4,9	3	●	
48079472	1/4	28	80	25	7	5,5	3	●	
48079476	5/16	24	90	31	8	6,2	3	●	
48079481	3/8	24	90	35	10	8	3	●	

UNJF | PM | HR | ANSI 3B | B/5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48079486	7/16	20	100	20	9	7	3	●	
48079491	1/2	20	100	22	10	8	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								◎ 2~4 m/min				

● Delivery from stock
○ Available on short notice

V-TI-POT

UNJF
- High performance
- For titanium alloys (Ti-6Al-4V), 40~45 HRC

UNJF
- High performance
- Für Titanlegierungen inkl. (Ti-6Al-4V), 40~45 HRC

UNJF
- Alta prestazione
- Per leghe di Titanio (Ti-6Al-4V) di durezza tra 40~45 HRC

UNJF
- Haute performance
- Pour alliages de Titane (Ti-6Al-4V) : dureté 40~45 HRC

UNJF
- Yüksek performans
- Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için

UNJF
- High performance
- Til Titanium legeringer (Ti-6Al-4V), 40~45 HRC

UNJF
- High performance
- För Titanlegeringar (Ti-6Al-4V), 40~45 HRC

UNJF
- Altas prestaciones
- Para aleaciones de Titanio (Ti-6Al-4V), 40~45 HRC

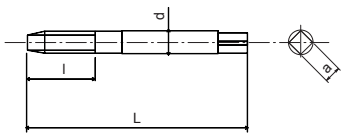
UNJF
- Высокая производительность
- Для титановых сплавов (Ti-6Al-4V), 40~45 HRC

UNJF
- Wysoka wydajność
- do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC

GO TO LIVE STOCK CHECK

UNF UNJF

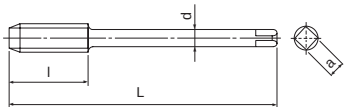
UNJF | PM | V | ANSI 3B | B/5 | DIN 2182





EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48014467	10	32	70	25	6	4,9	3	●	
48014472	1/4	28	80	30	7	5,5	3	●	
48014476	5/16	24	90	31	8	6,2	3	●	
48014481	3/8	24	90	35	10	8	3	●	

UNJF | PM | V | ANSI 3B | B/5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48014486	7/16	20	100	20	9	7	3	●	
48014491	1/2	20	100	22	10	8	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								◎ 4~6 m/min				

UNF
- General purpose, also for stainless steel

UNF
- Für universelle Anwendungen und für VA - Stahl

UNF
- Per applicazioni generali e per inox

UNF
- Pour applications générales et pour des aciers inox

UNF
- Genel kullanım, ayrıca paslanmaz çelik için

UNF
- Til generelt brug, også til rustfrit stål

UNF
- För allround bearbetning och för rostfritt stål

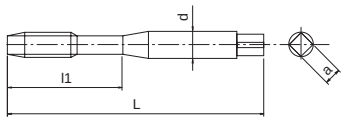
UNF
- Para aplicación general, para aceros inoxidables

UNF
- Общего назначения и для нержавеющих сталей

UNF
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

UNF | HSSE | OX | 40° | ANSI 2B | C/2,5 | DIN 2182

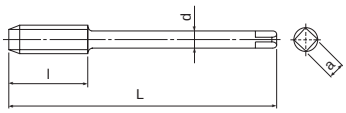






EDP	UNF	P	L	l1	d	a	ZΔ	Stock	Price
75246220	6	40	56	20	4	3	3	●	
75246730	10	32	70	25	6	4,9	3	●	
75247240	1/4	28	80	30	7	5,5	3	●	
75247640	5/16	24	90	35	8	6,2	3	●	
75248140	3/8	24	90	35	9	7	3	●	

UNF | HSSE | OX | 40° | ANSI 2B | C/2,5 | DIN 2183



EDP	UNF	P	L	l	d	a	ZΔ	Stock	Price
75248650	7/16	20	100	15	9	7	4	●	
75249150	1/2	20	100	16	9	7	4	●	
75249650	9/16	18	100	17	11	9	4	●	
75250450	5/8	18	100	18	12	9	4	●	
75251750	3/4	16	110	21	16	12	4	●	
75252860	7/8	14	125	23	18	14,5	4	●	
75253960	1	12	125	25	18	14,5	5	●	

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Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min					◎ 7~12 m/min	○ 7~11 m/min	○ 7~14 m/min		○ 7~14 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 7~14 m/min											◎ 10~15 m/min	

● Delivery from stock
○ Available on short notice

UNJF
- General purpose, also for stainless steel

UNJF
- Für universelle Anwendungen und für VA - Stahl

UNJF
- Per applicazioni generali e per inox

UNJF
- Pour applications générales et pour des aciers inox

UNJF
- Genel kullanım, ayrıca paslanmaz çelik için

UNJF
- Til generelt brug, også til rustfrit stål

UNJF
- För allround bearbetning och för rostfritt stål

UNJF
- Para aplicación general, para aceros inoxidables

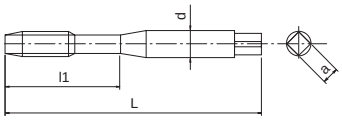
UNJF
- Общего назначения и для нержавеющих сталей

UNJF
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

UNF
UNJF

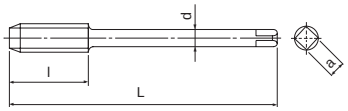






EDP	UNJF	P	L	l1	d	a	ZΔ	Stock	Price
48001467	10	32	70	25	6	4,9	3	●	
48001472	1/4	28	80	30	7	5,5	3	●	
48001476	5/16	24	90	35	8	6,2	3	●	
48001481	3/8	24	90	35	9	7	3	●	





EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48001486	7/16	20	100	15	8	6,2	4	●	
48001491	1/2	20	100	16	9	7	4	●	

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Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min					◎ 7~12 m/min	○ 7~11 m/min	○ 7~14 m/min		○ 7~14 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 7~14 m/min											◎ 10~15 m/min	

1066-SFT

UNF
- For general purposes application

UNF
- Für universelle Anwendungen

UNF
- Per applicazioni generali

UNF
- Pour applications générales

UNF
- Genel kullanım

UNF
- Til generelt brug

UNF
- För diverse applikationer

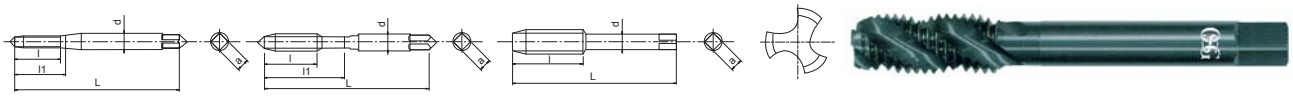
UNF
- Para aplicación general

UNF
- Общего назначения

UNF
- Uniwersalne

GO TO LIVE STOCK CHECK

UNF HSSE OX 40° ANSI 2B C/2,5 ISO 529



Type 1 Type 2 Type 3

EDP	UNJF	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22204544	2	64	44,5	9,5	-	2,8	2,24	2	1	○	
22204564	3	56	44,5	9,5	-	2,8	2,24	2	1	○	
22204584	4	48	48	11	18	3,15	2,5	2	2	○	
22204604	5	44	48	11	18	3,15	2,5	3	2	○	
22204624	6	40	50	13	20	3,55	2,8	3	2	○	
22204654	8	36	53	13	21	4,5	3,55	3	2	○	
22204674	10	32	58	16	25	5	4	3	2	○	
22204694	12	28	62	17	26	5,6	4,5	3	2	○	
22204724	1/4	28	66	19	30	6,3	5	3	2	○	
22204764	5/16	24	72	22	35	8	6,3	3	2	○	
22204814	3/8	24	80	24	39	10	8	3	2	○	
22204864	7/16	20	85	25	-	8	6,3	3	3	○	
22204914	1/2	20	89	29	-	9	7,1	3	3	○	
22204964	9/16	18	95	30	-	11,2	9	3	3	○	
22205044	5/8	18	102	32	-	12,5	10	3	3	○	
22205174	3/4	16	112	37	-	14	11,2	4	3	○	
22205284	7/8	14	118	38	-	16	12,5	4	3	○	
22205394	1	12	130	45	-	18	14	4	3	○	
22205534	1 1/8	12	138	48	-	20	16	4	3	○	
22205664	1 1/4	12	151	51	-	22,4	18	4	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min	○ 7~11 m/min				◎ 7~12 m/min	○ 6~9 m/min	○ 7~14 m/min		○ 7~14 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

UN(J)F
- For stainless steel, aluminium and steel
- For threading depth ≥ 2 D
- Developed for CNC machines equipped with rigid tapping
- For pilot hole use OSG EX-SUS-GDS (p.C.71~77)

UN(J)F
- Für Va-Stahl, Aluminium und Stahl
- Für Gewindetiefe ≥ 2 D
- Für CNC Maschinen mit Synchronspindeln
- Für die Kernlochbearbeitung EX-SUS-GDS verwenden(p.C.71~77)

UN(J)F
- Per acciai inox, alluminio, e acciai
- Per profondita di filettatura ≥ 2 D
- Per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Utilizzate OSG EX-SUSGDS per foro pilota (p.C.71~77)

UN(J)F
- Pour inox, aluminium et aciers
- Profondeur de taraudage ≥ 2 D
- Développé pour les machines CNC qui ont le "taraudage rigide"
- Pour trou pilote utiliser OSG EX-SUS-GDS (p.C.71~77)

UN(J)F
- Paslanmaz çelik, alüminyum ve çelik için
- Diş derinliği ≥ 2 D
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Pilot deliği için OSG EX-SUS-GDS kullanın (sayfa C.71~77)

UN(J)F
- Til rustfrit stål, aluminium og stål
- Til gevinddybde ≥ 2 D
- Udviklet til CNC maskine udstyret med fast tapholder
- For boring af pilot hul brug OSG EX-SUS-GDS (p.C.71~77)

UN(J)F
- För rostfritt stål, aluminium och stål
- För gängdjup ≥ 2 D
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- För pilot hål använd OSG EX-SUS-GDS (p.C.71~77)

UN(J)F
- Para aceros inoxidables, aluminio y aceros
- Para roscado ≥ 2 D
- Desarrollados para máquinas CNC aptas para roscado rígido
- Para agujero previo use EX-SUS-GDS (p.C.71~77)

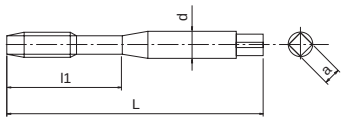
UN(J)F
- Для нержавеющих сталей и алюминия
  Для резьб глубиной ≥ 2 D
  Разработаны для ЧПУ станков имеющих циклы жесткой нарезки
  Для пилотного отверстия используйте OSG EX-SUS-GDS

UN(J)F
- do stali nierdzewnych, aluminium i stali
- Do gwintowania na głębokość ≥ 2 D
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Do wykonania otworu zastosuj OSG EX-SUS-GDS ust (p.C.71~77)

GO TO LIVE STOCK CHECK

UNF UNJF

UNF HSSE CrN 45° ANSI 2B ANSI 3B C/2,5 ≥2D DIN 2182

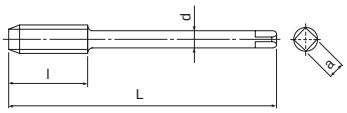






EDP	UN(J)F	P	L	l1	d	a	ZΔ	Stock	Price
48032467	10	32	70	19,3	6	4,9	3	●	
48032472	1/4	28	80	25,4	7	5,5	3	●	
48032476	5/16	24	90	11	8	6,2	3	●	
48032481	3/8	24	90	12	9	7	3	●	

UNF UNJF HSSE CrN 45° ANSI 2B ANSI 3B C/2,5 ≥2D DIN 2183



EDP	UN(J)F	P	L	l	d	a	ZΔ	Stock	Price
48032486	7/16	20	100	14	9	6,2	4	●	
48032491	1/2	20	100	15	9	7	4	●	
48032496	9/16	18	100	15	11	9	4	●	
48032504	5/8	18	100	17	12	9	4	●	
48032517	3/4	16	110	19	14	11	4	●	
48032528	7/8	14	125	21	18	14,5	4	●	
48032539	1	12	125	24	18	14,5	4	●	

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Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~25 m/min	◎ 15~25 m/min	◎ 10~25 m/min	○ 10~25 m/min					◎ 6~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min				◎ 15~35 m/min								

UNJF
- High performance
- **Serie H :** for steel 25~45 HRC

UNJF
- High performance
- **Serie H :** Für Stahl 25~45 HRC

UNJF
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

UNJF
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

UNJF
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

UNJF
- High performance
- **Serie H :** Til stål 25~45 HRC

UNJF
- High performance
- **Serie H :** för stål 25~45 HRC

UNJF
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

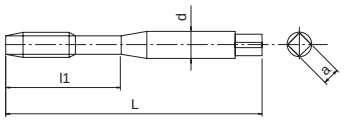
UNJF
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

UNJF
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

UNF UNJF

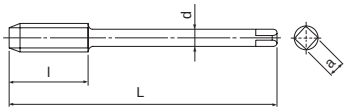
UNJF | PM | OX | 15° | ANSI 3B | C/2,5 | DIN 2182





EDP	UNJF	P	L	l1	d	a	ZΔ	Stock	Price
48009467	10	32	70	25	6	4,9	3	●	
48009472	1/4	28	80	30	7	5,5	3	●	
48009476	5/16	24	90	35	8	6,2	3	●	
48009481	3/8	24	90	35	9	7	3	●	

UNJF | PM | OX | 15° | ANSI 3B | C/2,5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48009486	7/16	20	100	15	8	6,2	3	●	
48009491	1/2	20	100	16	9	7	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				◎ 6~12 m/min			○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 3~5 m/min	○ 1~3 m/min			

● Delivery from stock
○ Available on short notice

1066-SFT-PLUS

UNF
- For steel 25~45 HRC

UNF
- Für Stahl 25~45 HRC

UNF
- Per acciai 25~45 HRC

UNF
- Pour acier 25~45 HRC

UNF
- 25 ~ 45 HRC çelikler için

UNF
- Til stål 25~45 HRC

UNF
- För stål 25~45 HRC

UNF
- Para aceros 25~45 HRC

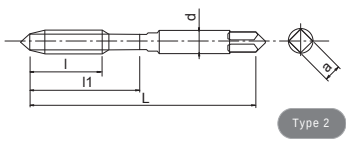
UNF
- для сталей 25 ~ 45 HRC

UNF
- Do stali 25 ~ 45 HRC

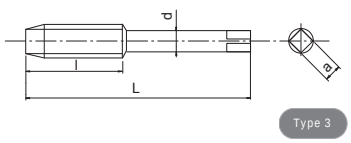
GO TO LIVE STOCK CHECK

UNF

UNF PM OX 15° ANSI 2B C/3 ISO 529



Type 2



Type 3



EDP	UNF	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
23204674	10	32	58	16	25	5	4	3	2	○	
23204724	1/4	28	66	19	30	6,3	5	3	2	○	
23204764	5/16	24	72	22	35	8	6,3	3	2	○	
23204814	3/8	24	80	24	39	10	8	3	2	○	
23204814A	7/16	20	85	25	-	8	6,3	3	3	○	
23204814B	1/2	20	89	29	-	9	7,1	3	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				○ 6~12 m/min	○ 7~15 m/min	○ 7~12 m/min	○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

UNJF
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

UNJF
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

UNJF
- Alta prestazione
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

UNJF
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

UNJF
- Yüksek performans
- Seri E: İnkonel 718 barındıran nikel bazlı alaşımlar için

UNJF
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

UNJF
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

UNJC
- Altas prestaciones
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

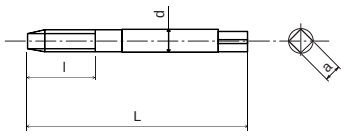
UNJF
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

UNJF
- Wysoka wydajność
- Seria E: do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

UNF UNJF

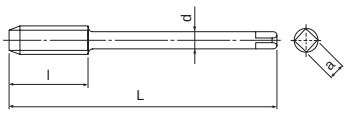
UNJF | PM | 10° | ANSI 3B | C/2,5 | DIN 2182





EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
89546730	10	32	70	18	6	4,9	3	●	
89547230	1/4	28	80	23	7	5,5	3	●	
89547630	5/16	24	90	28	8	6,2	3	●	
89548130	3/8	24	90	33	10	8	3	●	

UNJF | PM | 10° | ANSI 3B | C/2,5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
89648630	7/16	20	100	15	9	7	3	●	
89649130	1/2	20	100	16	10	8	3	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 1~3 m/min			

● Delivery from stock
○ Available on short notice

WHR-NI-SFT

UNJF
- High performance
- For nickel based alloys including Inconel 718

UNJF
- High performance
- Für Nickelbasislegierungen inkl. Inconel 718

UNJF
- Alta prestazione
- Per Inconel 718 ed altre leghe a base di Nickel

UNJF
- Haute performance
- Pour Inconel 718 et autres alliages sur base de Nickel

UNJF
- Yüksek performans
- İnkonel 718 barındıran nikel bazlı alaşımlar için

UNJF
- High performance
- Til nikkellegeringer inklusiv Inconel 718

UNJF
- High performance
- För nickel legeringar inklusive Inconel 718

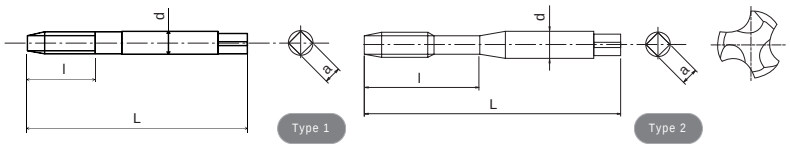
UNJF
- Altas prestaciones
- Para aleaciones de níquel incluido Inconel 718

UNJF
- Высокая производительность
- для никелевых сплавов, включая Inconel 718

UNJF
- Wysoka wydajność
- Do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

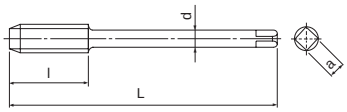
UNJF | PM | 11° | HR | ANSI 3B | C/2,5 | DIN 2182





EDP	UNJF	P	L	l	d	a	ZΔ	Type	Stock	Price
48078467	10	32	70	18	6	4,9	3	1	●	
48078472	1/4	28	80	23	7	5,5	3	1	●	
48078476	5/16	24	90	35	8	6,2	3	2	●	
48078481	3/8	24	90	35	10	8	3	2	●	

UNJF | PM | 11° | HR | ANSI 3B | C/2,5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48078486	7/16	20	100	15	9	7	3	●	
48078491	1/2	20	100	16	10	8	3	●	

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Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania											
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 1~3 m/min			

● Delivery from stock
○ Available on short notice

V-TI-SFT

UNJF
- High performance
- For titanium alloys (Ti-6Al-4V), 40~45 HRC

UNJF
- High performance
- Für Titanlegierungen inkl. (Ti-6Al-4V), 40~45 HRC

UNJF
- Alta prestazione
- Per leghe di Titanio (Ti-6Al-4V) di durezza tra 40~45 HRC

UNJF
- Haute performance
- Pour alliages de Titane (Ti-6Al-4V) : dureté 40~45 HRC

UNJF
- Yüksek performans
- Titanyum alaşımları (Ti-6Al-4V), 40~45 HRC için

UNJF
- High performance
- Til Titanium legeringer (Ti-6Al-4V), 40~45 HRC

UNJF
- High performance
- För Titanlegeringar (Ti-6Al-4V), 40~45 HRC

UNJF
- Altas prestaciones
- Para aleaciones de Titanio (Ti-6Al-4V), 40~45 HRC

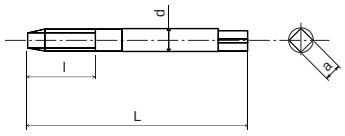
UNJF
- Высокая производительность
- Для титановых сплавов (Ti-6Al-4V), 40~45 HRC

UNJF
- Wysoka wydajność
- do stopów tytanu (Ti-6Al-4V), 40 ~ 45 HRC

GO TO LIVE STOCK CHECK

UNF UNJF

UNJF | PM | V | 10° | ANSI 3B | C/2,5 | DIN 2182

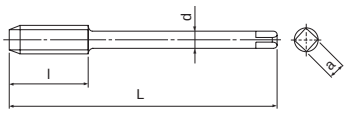






EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48013467	10	32	70	25	6	4,9	3	●	
48013472	1/4	28	80	30	7	5,5	3	●	
48013476	5/16	24	90	35	8	6,2	3	●	
48013481	3/8	24	90	35	10	8	3	●	

UNJF | PM | V | 10° | ANSI 3B | C/2,5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48013486	7/16	20	100	15	9	7	3	●	
48013491	1/2	20	100	16	10	8	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								3~5 m/min				

● Delivery from stock
○ Available on short notice

1066-HT

UNF
- For general purpose application

UNF
- Für universelle Anwendungen

UNF
- Per applicazioni generali

UNF
- Pour applications générales

UNF
- Genel ovalama uygulamaları

UNF
- Til generelt brug

UNF
- För allround bearbetning

UNF
- Para aplicación general

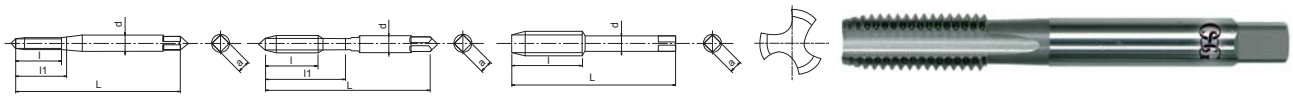
UNF
- Общего назначения

UNF
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

UNF

UNF HSSE ANSI 2B C/2,5 ISO 529



Type 1 Type 2 Type 3

EDP	UNF	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22034500	0	80	40	8	-	2,5	2	3	1	○	
22034520	1	72	41	8	-	2,5	2	3	1	○	
22034540	2	64	44,5	9,5	-	2,8	2,24	3	1	○	
22034560	3	56	44,5	9,5	-	2,8	2,24	3	1	○	
22034580	4	48	48	11	18	3,15	2,5	3	2	○	
22034600	5	44	48	11	18	3,15	2,5	3	2	○	
22034620	6	40	50	13	20	3,55	2,8	3	2	○	
22034650	8	36	53	13	21	4,5	3,55	3	2	○	
22034670	10	32	58	16	25	5	4	3	2	○	
22034690	12	28	62	17	26	5,6	4,5	3	2	○	
22034720	1/4	28	66	19	30	6,3	5	3	2	○	
22034760	5/16	24	72	22	35	8	6,3	4	2	○	
22034810	3/8	24	80	24	39	10	8	4	2	○	
22034860	7/16	20	85	25	-	8	6,3	4	3	○	
22034910	1/2	20	89	29	-	9	7,1	4	3	○	
22034960	9/16	18	95	30	-	11,2	9	4	3	○	
22035040	5/8	18	102	32	-	12,5	10	4	3	○	
22035170	3/4	16	112	37	-	14	11,2	4	3	○	
22035280	7/8	14	118	38	-	16	12,5	4	3	○	
22035390	1	12	130	45	-	18	14	4	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 7~12 m/min											○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min					

UNF
- High performance forming tap

UNF
- Hochleistungsgewindeformer

UNF
- Maschio a rullare ad alta performance

UNF
- Taraud à refoulé à haute performance

UNF
- Yüksek performans ovalama kılavuzu

UNF
- High Performance rulletap

UNF
- High performance pressgängtapp

UNF
- Alta prestaciones, macho de laminación

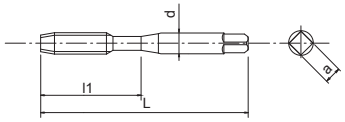
UNF
- Высокопроизводительные накатные метчики

UNF
- Wysoka wydajność wygniatania gwintów

GO TO LIVE STOCK CHECK

UNF

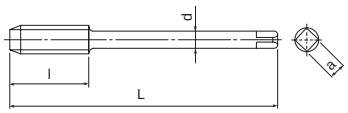
UNF | HSS-Co | V | ANSI 2BX | C/2,5 | DIN 2182





EDP	UNF	P	L	l1	d	a	Drill Hole Size	ZΔ	Stock	Price
48091462	6	40	56	20	4	3	3,19 ~ 3,26	4	●	
48091467	10	32	70	25	6	4,9	4,41 ~ 4,47	5	●	
48091472	1/4	28	80	30	7	5,5	5,87 ~ 5,94	5	●	
48091476	5/16	24	90	35	8	6,2	7,39 ~ 7,47	5	●	
48091481	3/8	24	90	35	9	7	8,98 ~ 9,06	8	●	

UNF | HSS-Co | V | ANSI 2BX | C/2,5 | DIN 2183



EDP	UNF	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48091486	7/16	20	100	12,7	9	7	10,45 ~ 10,55	8	●	
48091491	1/2	20	100	12,7	9	7	12,04 ~ 12,14	8	●	
48091496	9/16	18	100	14,1	11	9	13,56 ~ 13,64	8	●	
48091504	5/8	18	100	14,1	12	9	15,15 ~ 15,23	8	●	
48091517	3/4	16	110	12,7	14	12	18,22 ~ 18,30	8	●	
48091528	7/8	14	125	14,5	18	14,5	21,27 ~ 21,38	8	●	
48091539	1	12	125	16,9	18	14,5	24,26 ~ 24,37	8	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		
Cu	**BS**	**BsC**	**PB**	**Al**	**AC,ADC**	**MC**	**ZDC**	**Ti**	**Ni**	**Plast.**	**Vinyl**	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

H-HL-POT

EG-MJ (STI)
- High performance
- **Serie H :** for steel 25~45 HRC

EG-MJ (STI)
- High performance
- **Serie H :** Für Stahl 25~45 HRC

EG-MJ (STI)
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

EG-MJ (STI)
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

EG-MJ (STI)
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

EG-MJ (STI)
- High performance
- **Serie H :** Til stål 25~45 HRC

EG-MJ (STI)
- High performance
- **Serie H :** för stål 25~45 HRC

EG-MJ (STI)
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

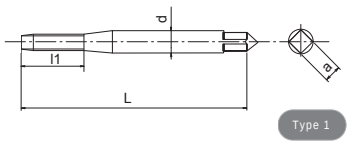
EG-MJ (STI)
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

EG-MJ (STI)
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

Helicoil EG-MJ (STI)

MJ | PM | OX | ISO 1 4H | B/5 | DIN 371





EDP	MJ	P	L	l1	d	a	ZΔ	Type	Stock	Price
48006125	2	0,4	50	9	2,8	2,1	2	1	●	
48006133	2,5	0,45	56	18	3,5	2,7	3	2	●	
48006138	3	0,5	56	20	4	3	3	2	●	
48006144	4	0,7	70	25	6	4,9	3	2	●	
48006149	5	0,8	80	30	6	4,9	3	2	●	
48006155	6	1	90	35	8	6,2	3	2	●	
48006161	8	1,25	100	39	10	8	3	2	●	
48006169	10	1,5	110	46	12	9	3	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◎ 7~10 m/min			○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 4~6 m/min	○ 2~4 m/min			

● Delivery from stock
○ Available on short notice

E-HL-POT

EG-MJ (STI)
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

EG-MJ (STI)
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

EG-MJ (STI)
- **Alta prestazione**
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

EG-MJ (STI)
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

EG-MJ (STI)
- Yüksek performans
- **Seri E:** İnkonel 718 barındıran nikel bazlı alaşımlar için

EG-MJ (STI)
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

EG-MJ (STI)
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

EG-MJ (STI)
- **Altas prestaciones**
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

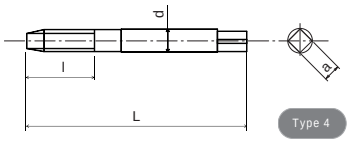
EG-MJ (STI)
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

EG-MJ (STI)
- Wysoka wydajność
- **Seria E:** do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

Helicoil EG-MJ (STI)

MJ | PM | ISO 1 4H | B/5 | DIN 371





EDP	MJ	P	L	l	d	a	ZΔ	Stock	Price
48008125	2	0,4	50	9	2,8	2,1	2	●	
48008133	2,5	0,45	56	11	3,5	2,7	3	●	
48008138	3	0,5	56	13	4	3	3	●	
48008144	4	0,7	70	17	6	4,9	3	●	
48008149	5	0,8	80	21	6	4,9	3	●	
48008155	6	1	90	25	8	6,2	3	●	
48008161	8	1,25	100	33	10	8	3	●	
48008169	10	1,5	110	41	12	9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									2~4 m/min			

● Delivery from stock
○ Available on short notice

EG-MJ (STI)
- High performance
- **Serie H :** for steel 25~45 HRC

EG-MJ (STI)
- High performance
- **Serie H :** Für Stahl 25~45 HRC

EG-MJ (STI)
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

EG-MJ (STI)
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

EG-MJ (STI)
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

EG-MJ (STI)
- High performance
- **Serie H :** Til stål 25~45 HRC

EG-MJ (STI)
- High performance
- **Serie H :** för stål 25~45 HRC

EG-MJ (STI)
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

EG-MJ (STI)
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

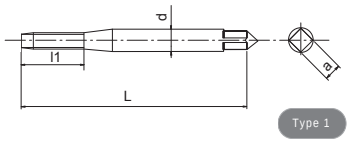
EG-MJ (STI)
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

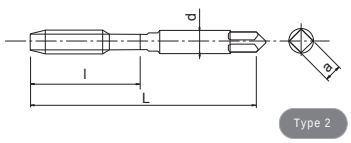
Helicoil EG-MJ (STI)

Helicoil EG-MJ (STI)

MJ | PM | OX | 15° | ISO 1 4H | C/3 | DIN 371



Type 1



Type 2



EDP	MJ	P	L	l1	d	a	ZΔ	Type	Stock	Price
48005125	2	0,4	50	9	2,8	2,1	2	1	●	
48005133	2,5	0,45	56	18	3,5	2,7	3	2	●	
48005138	3	0,5	56	20	4	3	3	2	●	
48005144	4	0,7	70	25	6	4,9	3	2	●	
48005149	5	0,8	80	30	6	4,9	3	2	●	
48005155	6	1	90	35	8	6,2	3	2	●	
48005161	8	1,25	100	39	10	8	3	2	●	
48005169	10	1,5	110	46	12	9	3	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				◎ 6~12 m/min			○ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 3~5 m/min	○ 1~3 m/min			

EG-MJ (STI)
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

EG-MJ (STI)
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

EG-MJ (STI)
- Alta prestazione
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

EG-MJ (STI)
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

EG-MJ (STI)
- Yüksek performans
- **Seri E:** İnkonel 718 barındıran nikel bazlı alaşımlar için

EG-MJ (STI)
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

EG-MJ (STI)
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

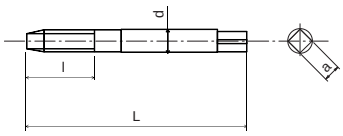
EG-MJ (STI)
- Altas prestaciones
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

EG-MJ (STI)
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

EG-MJ (STI)
- Wysoka wydajność
- **Seria E:** do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK







EDP	MJ	P	L	l	d	a	ZΔ	Stock	Price
48007125	2	0,4	50	9	2,8	2,1	2	●	
48007133	2,5	0,45	56	11	3,5	2,7	3	●	
48007138	3	0,5	56	13	4	3	3	●	
48007144	4	0,7	70	17	6	4,9	3	●	
48007149	5	0,8	80	21	6	4,9	3	●	
48007155	6	1	90	25	8	6,2	3	●	
48007161	8	1,25	100	33	10	8	3	●	
48007169	10	1,5	110	41	12	9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania											
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 1~3 m/min			

● Delivery from stock
○ Available on short notice

EG-M (STI)
- For stainless steel, aluminium and steel
- For threading depth ≥ 2 D
- Developed for CNC machines equipped with rigid tapping
- For pilot hole use OSG EX-SUS-GDS (p.C.71~77)

EG-M (STI)
- Für Va-Stahl, Aluminium und Stahl
- Für Gewindetiefe ≥ 2 D
- Für CNC Maschinen mit Synchronspindeln
- Für die Kernlochbearbeitung EX-SUS-GDS verwenden(p.C.71~77)

EG-M (STI)
- Per acciai inox, alluminio, e acciai
- Per profondita di filettatura ≥ 2 D
- Per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Utilizzate OSG EX-SUSGDS per foro pilota (p.C.71~77)

EG-M (STI)
- Pour inox, aluminium et aciers
- Profondeur de taraudage ≥ 2 D
- Développé pour les machines CNC qui ont le "taraudage rigide"
- Pour trou pilote utiliser OSG EX-SUS-GDS (p.C.71~77)

EG-M (STI)
- Paslanmaz çelik, alüminyum ve çelik için
- Diş derinliği ≥ 2 D
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Pilot deliği için OSG EX-SUS-GDS kullanın (sayfa C.71~77)

EG-M (STI)
- Til rustfrit stål, aluminium og stål
- Til gevinddybde ≥ 2 D
- Udviklet til CNC maskine udstyret med fast tapholder
- For boring af pilot hul brug OSG EX-SUS-GDS (p.C.71~77)

EG-M (STI)
- För rostfritt stål, aluminium och stål
- För gängdjup ≥ 2 D
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- För pilot hål använd OSG EX-SUS-GDS (p.C.71~77)

EG-M (STI)
- Para aceros inoxidables, aluminio y aceros
- Para roscado ≥ 2 D
- Desarrollados para máquinas CNC aptas para roscado rígido
- Para agujero previo use EX-SUS-GDS (p.C.71~77)

EG-M (STI)
- Для нержавеющих сталей и алюминия
  Для резьб глубиной ≥ 2 D
  Разработаны для ЧПУ станков имеющих циклы жесткой нарезки
  Для пилотного отверстия используйте OSG EX-SUS-GDS

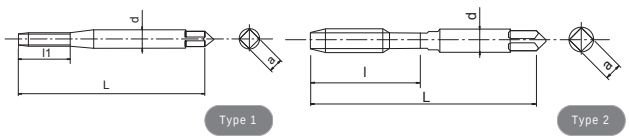
EG-M (STI)
- do stali nierdzewnych, aluminium i stali
- Do gwintowania na głębokość ≥ 2 D
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Do wykonania otworu zastosuj OSG EX-SUS-GDS ust (p.C.71~77)

GO TO LIVE STOCK CHECK

Helicoil EG-M (STI)

Helicoil EG-M (STI)

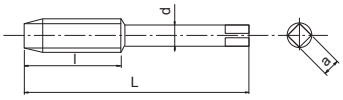
M | HSSE | CrN | 45° | ISO 2 6H | C/2,5 | DIN 371





EDP	M	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
48044138	3	0,5	56	4,5	15	4	3	3	1	●	
48044144	4	0,7	70	6,6	20	6	4,9	3	1	●	
48044149	5	0,8	80	7,2	25	6	4,9	3	1	●	
48044155	6	1	90	9	35	8	6,2	3	2	●	
48044161	8	1,25	100	12	39	10	8	3	2	●	
48044169	10	1,5	110	14	46	12	9	4	2	●	

M | HSSE | CrN | 45° | ISO 2 6H | C/2,5 | DIN 376



EDP	M	P	L	l	l1	d	a	ZΔ	Stock	Price
48044179	12	1,75	110	16	-	11	9	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~25 m/min	◎ 15~25 m/min	◎ 10~25 m/min	○ 10~25 m/min					◎ 6~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min				◎ 15~35 m/min								

EG-UNJC (STI)
- High performance
- **Serie H :** for steel 25~45 HRC

EG-UNJC (STI)
- High performance
- **Serie H :** Für Stahl 25~45 HRC

EG-UNJC (STI)
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

EG-UNJC (STI)
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

EG-UNJC (STI)
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

EG-UNJC (STI)
- High performance
- **Serie H :** Til stål 25~45 HRC

EG-UNJC (STI)
- High performance
- **Serie H :** för stål 25~45 HRC

EG-UNJC (STI)
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

EG-UNJC (STI)
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

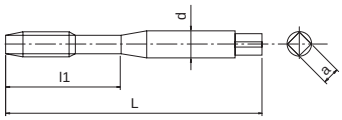
EG-UNJC (STI)
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

Helicoil EG UNJC (STI)

Helicoil EG UNJC (STI)

UNJC | PM | OX | ANSI 3B | B/5 | DIN 2182





EDP	UNJC	P	L	l1	d	a	ZΔ	Stock	Price
48018457	4	40	56	20	4	3	3	●	
48018461	6	32	63	21	4,5	3,4	3	●	
48018464	8	32	70	25	6	4,9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◎ 7~10 m/min			○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 4~6 m/min	○ 2~4 m/min			

● Delivery from stock
○ Available on short notice

EG-UNJC (STI)
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

EG-UNJC (STI)
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

EG-UNJC (STI)
- Alta prestazione
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

EG-UNJC (STI)
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

EG-UNJC (STI)
- Yüksek performans
- **Seri E:** İnkonel 718 barındıran nikel bazlı alaşımlar için

EG-UNJC (STI)
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

EG-UNJC (STI)
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

EG-UNJC (STI)
- Altas prestaciones
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

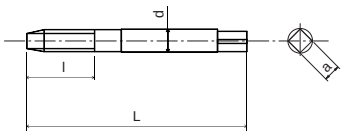
EG-UNJC (STI)
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

EG-UNJC (STI)
- Wysoka wydajność
- **Seria E:** do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

Helicoil EG UNJC (STI)

UNJC | PM | ANSI 3B | B/5 | DIN 2182





EDP	UNJC	P	L	l	d	a	ZΔ	Stock	Price
48016457	4	40	56	14	4	3	3	●	
48016461	6	32	63	18	4,5	3,4	3	●	
48016464	8	32	70	20	6	4,9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 2~4 m/min			

EG-UNJC (STI)
- High performance
- **Serie H :** for steel 25~45 HRC

EG-UNJC (STI)
- High performance
- **Serie H :** Für Stahl 25~45 HRC

EG-UNJC (STI)
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

EG-UNJC (STI)
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

EG-UNJC (STI)
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

EG-UNJC (STI)
- High performance
- **Serie H :** Til stål 25~45 HRC

EG-UNJC (STI)
- High performance
- **Serie H :** för stål 25~45 HRC

EG-UNJC (STI)
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

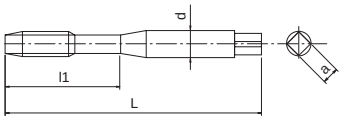
EG-UNJC (STI)
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

EG-UNJC (STI)
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

Helicoil EG UNJC (STI)







EDP	UNJC	P	L	l1	d	a	ZΔ	Stock	Price
48017457	4	40	56	20	4	3	2	●	
48017461	6	32	63	21	4,5	3,4	3	●	
48017464	8	32	70	25	6	4,9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				◎ 6~12 m/min			○ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 3~5 m/min	○ 1~3 m/min			

● Delivery from stock
○ Available on short notice

EG-UNJC (STI)
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

EG-UNJC (STI)
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

EG-UNJC (STI)
- Alta prestazione
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

EG-UNJC (STI)
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

EG-UNJC (STI)
- Yüksek performans
- **Serie E:** İnkonel 718 barındıran nikel bazlı alaşımlar için

EG-UNJC (STI)
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

EG-UNJC (STI)
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

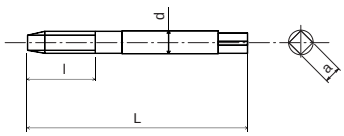
EG-UNJC (STI)
- Altas prestaciones
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

EG-UNJC (STI)
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

EG-UNJC (STI)
- Wysoka wydajność
- **Seria E:** do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK







EDP	UNJC	P	L	l	d	a	ZΔ	Stock	Price
48015457	4	40	56	13	4	3	3	●	
48015461	6	32	63	18	4,5	3,4	3	●	
48015464	8	32	70	20	6	4,9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania											
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 1~3 m/min			

EG-UNJF (STI)
- High performance
- **Serie H :** for steel 25~45 HRC

EG-UNJF (STI)
- High performance
- **Serie H :** Für Stahl 25~45 HRC

EG-UNJF (STI)
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

EG-UNJF (STI)
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

EG-UNJF (STI)
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

EG-UNJF (STI)
- High performance
- **Serie H :** Til stål 25~45 HRC

EG-UNJF (STI)
- High performance
- **Serie H :** för stål 25~45 HRC

EG-UNJF (STI)
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

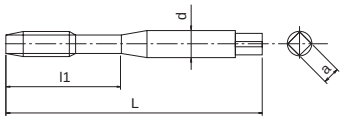
EG-UNJF (STI)
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

EG-UNJF (STI)
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

Helicoil EG UNJF (STI)

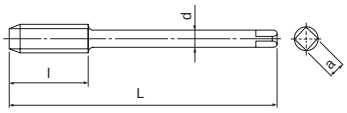
UNJF | PM | OX | ANSI 3B | B/5 | DIN 2182





EDP	UNJF	P	L	l1	d	a	ZΔ	Stock	Price
48018467	10	32	80	30	7	5,5	3	●	
48018472	1/4	28	90	35	8	6,2	3	●	
48018476	5/16	24	90	35	9	7	3	●	
48018481	3/8	24	100	39	11	9	3	●	

UNJF | PM | OX | ANSI 3B | B/5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48018486	7/16	20	100	22	9	7	3	●	
48018491	1/2	20	100	22	11	9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◎ 7~10 m/min			○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 4~6 m/min	○ 2~4 m/min			

● Delivery from stock
○ Available on short notice

E-HL-POT

EG-UNJF (STI)
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

EG-UNJF (STI)
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

EG-UNJF (STI)
- **Alta prestazione**
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

EG-UNJF (STI)
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

EG-UNJF (STI)
- Yüksek performans
- **Serie E:** İnkonel 718 barındıran nikel bazlı alaşımlar için

EG-UNJF (STI)
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

EG-UNJF (STI)
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

EG-UNJF (STI)
- **Altas prestaciones**
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

EG-UNJF (STI)
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

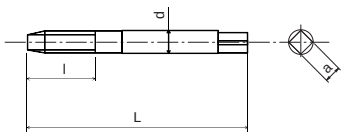
EG-UNJF (STI)
- Wysoka wydajność
- **Seria E:** do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

Helicoil EG UNJF (STI)

Helicoil EG UNJF (STI)

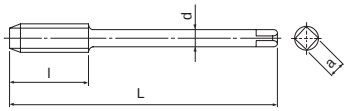
UNJF | PM | ANSI 3B | B/5 | DIN 2182





EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48016467	10	32	80	23	7	5,5	3	●	
48016472	1/4	28	90	29	8	6,2	3	●	
48016476	5/16	24	90	35	10	8	3	●	
48016481	3/8	24	100	41	12	9	3	●	

UNJF | PM | ANSI 3B | B/5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48016486	7/16	20	100	22	10	8	3	●	
48016491	1/2	20	100	22	12	9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania											
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									◎ 2~4 m/min			

● Delivery from stock
○ Available on short notice

EG-UNJF (STI)
- For stainless steel, aluminium and steel
- For threading depth ≥ 2 D
- Developed for CNC machines equipped with rigid tapping
- For pilot hole use OSG EX-SUS-GDS (p.C.71~77)

EG-UNJF (STI)
- Für Va-Stahl, Aluminium und Stahl
- Für Gewindetiefe ≥ 2 D
- Für CNC Maschinen mit Synchronspindeln
- Für die Kernlochbearbeitung EX-SUS-GDS verwenden(p.C.71~77)

EG-UNJF (STI)
- Per acciai inox, alluminio, e acciai
- Per profondita di filettatura ≥ 2 D
- Per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Utilizzate OSG EX-SUSGDS per foro pilota (p.C.71~77)

EG-UNJF (STI)
- Pour inox, aluminium et aciers
- Profondeur de taraudage ≥ 2 D
- Développé pour les machines CNC qui ont le "taraudage rigide"
- Pour trou pilote utiliser OSG EX-SUS-GDS (p.C.71~77)

EG-UNJF (STI)
- Paslanmaz çelik, alüminyum ve çelik için
- Diş derinliği ≥ 2 D
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Pilot deliği için OSG EX-SUS-GDS kullanın (sayfa C.71~77)

EG-UNJF (STI)
- Til rustfrit stål, aluminium og stål
- Til gevinddybde ≥ 2 D
- Udviklet til CNC maskine udstyret med fast tapholder
- For boring af pilot hul brug OSG EX-SUS-GDS (p.C.71~77)

EG-UNJF (STI)
- För rostfritt stål, aluminium och stål
- För gängdjup ≥ 2 D
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- För pilot hål använd OSG EX-SUS-GDS (p.C.71~77)

EG-UNJF (STI)
- Para aceros inoxidables, aluminio y aceros
- Para roscado ≥ 2 D
- Desarrollados para máquinas CNC aptas para roscado rígido
- Para agujero previo use EX-SUS-GDS (p.C.71~77)

EG-UNJF (STI)
- Для нержавеющих сталей и алюминия
  Для резьб глубиной ≥ 2 D
  Разработаны для ЧПУ станков имеющих циклы жесткой нарезки
  Для пилотного отверстия используйте OSG EX-SUS-GDS

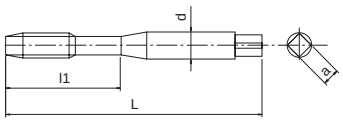
EG-UNJF (STI)
- do stali nierdzewnych, aluminium i stali
- Do gwintowania na głębokość ≥ 2 D
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Do wykonania otworu zastosuj OSG EX-SUS-GDS ust (p.C.71~77)

GO TO LIVE STOCK CHECK

Helicoil EG UNJF (STI)

Helicoil EG UNJF (STI)

UNF UNJF HSSE CrN 45° ANSI 2B ANSI 3B C/2,5 ≥2D DIN 2182





EDP	UN(J)F	P	L	l1	d	a	ZΔ	Stock	Price
48033467	10	32	80	25,4	7	5,5	3	●	
48033472	1/4	28	90	11	8	6,2	3	●	
48033476	5/16	24	90	12	9	7	3	●	
48033481	3/8	24	100	14	11	9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~25 m/min	◎ 15~25 m/min	◎ 10~25 m/min	○ 10~25 m/min					◎ 6~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min				◎ 15~35 m/min								

● Delivery from stock
○ Available on short notice

EG-UNJF (STI)
- High performance
- **Serie H :** for steel 25~45 HRC

EG-UNJF (STI)
- High performance
- **Serie H :** Für Stahl 25~45 HRC

EG-UNJF (STI)
- Alta prestazione
- **Serie H :** Per acciai di durezza tra 25~45 HRC

EG-UNJF (STI)
- Haute performance
- **Serie H :** pour acier de dureté entre 25~45 HRC

EG-UNJF (STI)
- Yüksek performans
- **Seri H :** 25~45 HRC çelikler için

EG-UNJF (STI)
- High performance
- **Serie H :** Til stål 25~45 HRC

EG-UNJF (STI)
- High performance
- **Serie H :** för stål 25~45 HRC

EG-UNJF (STI)
- Altas prestaciones
- **Serie H (H-CPM) :** para aceros 25~45 HRC

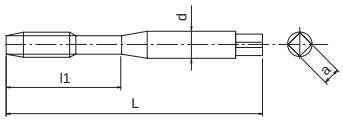
EG-UNJF (STI)
- Высокая производительность
- **Серия P:** для сталей 25 ~ 45 HRC

EG-UNJF (STI)
- Wysoka wydajność
- **Seria H:** do stali 25 ~45 HRC

GO TO LIVE STOCK CHECK

Helicoil EG UNJF (STI)

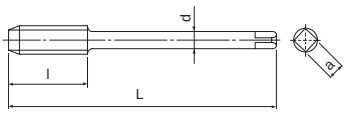
UNJF | PM | OX | 15° | ANSI 3B | C/2,5 | DIN 2182





EDP	UNJF	P	L	l1	d	a	ZΔ	Stock	Price
48017467	10	32	80	30	7	5,5	3	●	
48017472	1/4	28	90	35	8	6,2	3	●	
48017476	5/16	24	90	35	9	7	3	●	
48017481	3/8	24	100	39	11	9	3	●	

UNJF | PM | OX | 15° | ANSI 3B | C/2,5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48017486	7/16	20	100	15	9	7	3	●	
48017491	1/2	20	100	16	11	9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				◎ 6~12 m/min			○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
								○ 3~5 m/min	○ 1~3 m/min			

EG-UN(J)F (STI)
- High performance
- **Serie E :** for nickel based alloys including Inconel 718

EG-UN(J)F (STI)
- High performance
- **Serie E :** für Nickelbasislegierungen inkl. Inconel 718

EG-UN(J)F (STI)
- Alta prestazione
- **Serie E :** per Inconel 718 ed altre leghe a base di Nickel

EG-UN(J)F (STI)
- Haute performance
- **Série E :** pour Inconel 718 et autres alliages sur base de Nickel

EG-UN(J)F (STI)
- Yüksek performans
- **Serie E:** İnkonel 718 barındıran nikel bazlı alaşımlar için

EG-UN(J)F (STI)
- High performance
- **Serie E :** Til nikkellegeringer inklusiv Inconel 718

EG-UN(J)F (STI)
- High performance
- **Serie E :** för nickel legeringar inklusive Inconel 718

EG-UN(J)F (STI)
- Altas prestaciones
- **Serie E (Ni):** para aleaciones de níquel incluido Inconel 718

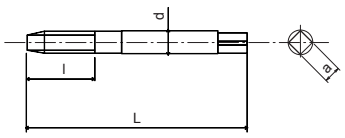
EG-UN(J)F (STI)
- Высокая производительность
- **Серия E :** для никелевых сплавов, включая Inconel 718

EG-UN(J)F (STI)
- Wysoka wydajność
- **Seria E:** do stopów na bazie niklu, w tym Inconel 718

GO TO LIVE STOCK CHECK

Helicoil EG UNJF (STI)

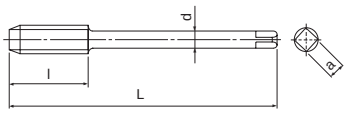
UNJF | PM | 10° | ANSI 3B | C/2,5 | DIN 2182





EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48015467	10	32	80	21	7	5,5	3	●	
48015472	1/4	28	90	27	8	6,2	3	●	
48015476	5/16	24	90	33	10	8	3	●	
48015481	3/8	24	100	38	12	9	3	●	

UNJF | PM | 10° | ANSI 3B | C/2,5 | DIN 2183



EDP	UNJF	P	L	l	d	a	ZΔ	Stock	Price
48015486	7/16	20	100	15	10	8	3	●	
48015491	1/2	20	100	16	12	9	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
									1~3 m/min			

● Delivery from stock
○ Available on short notice

1066-POT

BSW (WHITWORTH)
- For general purposes application

BSW (WHITWORTH)
- Für universelle Anwendungen

BSW (WHITWORTH)
- Per applicazioni generali

BSW (WHITWORTH)
- Pour applications générales

BSW (WHITWORTH)
- Genel uygulamalar

BSW (WHITWORTH)
- Til generelt brug

BSW (WHITWORTH)
- För diverse applikationer

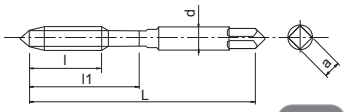
BSW (WHITWORTH)
- Para aplicación general

BSW (WHITWORTH)
- Общего назначения

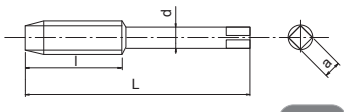
BSW (WHITWORTH)
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

BSW HSSE OX MED B/4 ISO 529



Type 2



Type 3



EDP	BSW	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
T301009348	3/32	48	44,5	9,5	-	2,8	2,24	2	2	○	
22107024	1/8	40	48	11	18	3,15	2,5	3	2	○	
22107034	5/32	32	53	13	21	4	3,15	3	2	○	
22107044	3/16	24	58	16	25	5	4	3	2	○	
22107054	7/32	24	62	17	26	5,6	7	3	2	○	
22107064	1/4	20	66	19	30	6,3	5	3	2	○	
22107074	5/16	18	72	22	35	8	6,3	3	2	○	
22107084	3/8	16	80	24	39	10	8	3	2	○	
22107094	7/16	14	85	25	-	8	6,3	3	3	○	
22107104	1/2	12	89	29	-	9	7,1	3	3	○	
22107114	9/16	12	95	30	-	11,2	9	3	3	○	
22107124	5/8	11	102	32	-	12,5	10	3	3	○	
T301068711	11/16	11	112	37	-	14	11,2	3	3	○	
22107134	3/4	10	112	37	-	14	11,2	3	3	○	
22107144	7/8	9	118	38	-	16	12,5	3	3	○	
22107154	1	8	130	45	-	18	14	3	3	○	
22107164	1 1/8	7	138	48	-	20	16	4	3	○	
22107174	1 1/4	7	151	51	-	22,4	18	4	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min	○ 7~11 m/min				◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

1066-SFT

BSW (WHITWORTH)
- For general purposes application

BSW (WHITWORTH)
- Für universelle Anwendungen

BSW (WHITWORTH)
- Per applicazioni generali

BSW (WHITWORTH)
- Pour applications générales

BSW (WHITWORTH)
- Genel uygulamalar

BSW (WHITWORTH)
- Til generelt brug

BSW (WHITWORTH)
- För diverse applikationer

BSW (WHITWORTH)
- Para aplicación general

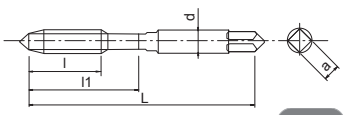
BSW (WHITWORTH)
- Общего назначения

BSW (WHITWORTH)
- Ogólnego przeznaczenia

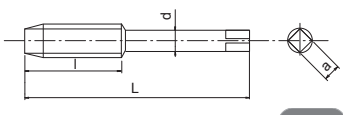
GO TO LIVE STOCK CHECK

BSW

BSW HSSE OX 40° MED C/2,5 ISO 529



Type 2



Type 3



EDP	BSW	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22207024	1/8	40	48	11	18	3,15	2,5	3	2	○	
22207034	5/32	32	53	13	21	4	3,15	3	2	○	
22207044	3/16	24	58	16	25	5	4	3	2	○	
22207054	7/32	24	62	17	26	5,6	7	3	2	○	
22207064	1/4	20	66	19	30	6,3	5	3	2	○	
22207544	9/32	20	66	19	30	7,1	5,6	3	2	○	
22207074	5/16	18	72	22	35	8	6,3	3	2	○	
22207084	3/8	16	80	24	39	10	8	3	2	○	
22207094	7/16	14	85	25	-	8	6,3	3	3	○	
22207104	1/2	12	89	29	-	9	7,1	3	3	○	
22207114	9/16	12	95	30	-	11,2	9	3	3	○	
22207124	5/8	11	102	32	-	12,5	10	3	3	○	
22207134	3/4	10	112	37	-	14	11,2	4	3	○	
22207144	7/8	9	118	38	-	16	12,5	4	3	○	
22207154	1	8	130	45	-	18	14	4	3	○	
22207164	1 1/8	7	138	48	-	20	16	4	3	○	
22207174	1 1/4	7	151	51	-	22,4	18	4	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min	○ 7~11 m/min				◎ 7~12 m/min	○ 6~9 m/min	○ 7~14 m/min		○ 7~14 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

1066-HT

BSW (WHITWORTH)
- Handtaps
- For general purpose application

BSW (WHITWORTH)
- Hand Gewindebohrer
- Für universelle Anwendungen

BSW (WHITWORTH)
- Maschi a mano
- Per applicazioni generali

BSW (WHITWORTH)
- Tarauds à main
- Pour applications générales

BSW (WHITWORTH)
- El kilavuzu
- Genel kullanimlar için

BSW (WHITWORTH)
- Håndtappe
- Til generelt brug

BSW (WHITWORTH)
- Manuella gängtappar
- För allround bearbetning

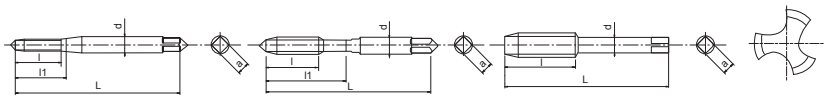
BSW (WHITWORTH)
- Machos de mano
- Para aplicación general

BSW (WHITWORTH)
- Ручной метчик
- Общего назначения

BSW (WHITWORTH)
- Gwintowniki ręczne
- Do zastosowań ogólnych

GO TO LIVE STOCK CHECK

BSW HSSE MED C/2,5 ISO 529





Type 1 Type 2 Type 3

EDP	BSW	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22037000	1/16	60	41	8	-	2,5	2	3	1	○	
22037010	3/32	48	44,5	9,5	-	2,8	2,24	3	1	○	
22037020	1/8	40	48	11	18	3,15	2,5	3	2	○	
22037030	5/32	32	53	13	21	4	3,15	3	2	○	
22037040	3/16	24	58	16	25	5	4	3	2	○	
22037050	7/32	24	62	17	26	5,6	7	3	2	○	
22037060	1/4	20	66	19	30	6,3	5	3	2	○	
22037540	9/32	20	66	19	30	7,1	5,6	4	2	○	
22037070	5/16	18	72	22	35	8	6,3	4	2	○	
22037080	3/8	16	80	24	39	10	8	4	2	○	
22037090	7/16	14	85	25	-	8	6,3	4	3	○	
22037100	1/2	12	89	29	-	9	7,1	4	3	○	
22037110	9/16	12	95	30	-	11,2	9	4	3	○	
22037120	5/8	11	102	32	-	12,5	10	4	3	○	
T300068711	11/16	11	112	37	-	14	11,2	4	3	○	
22037130	3/4	10	112	37	-	14	11,2	4	3	○	
22037140	7/8	9	118	38	-	16	12,5	4	3	○	
22037150	1	8	130	45	-	18	14	4	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 7~12 m/min											○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min					

● Delivery from stock
○ Available on short notice

1066-POT

BSF (WHITWORTH)
- For general purposes application

BSF (WHITWORTH)
- Für universelle Anwendungen

BSF (WHITWORTH)
- Per applicazioni generali

BSF (WHITWORTH)
- Pour applications générales

BSF (WHITWORTH)
- Genel uygulamalar

BSF (WHITWORTH)
- Til generelt brug

BSF (WHITWORTH)
- För diverse applikationer

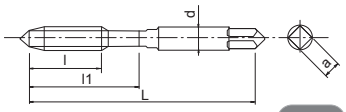
BSF (WHITWORTH)
- Para aplicación general

BSF (WHITWORTH)
- Общего назначения

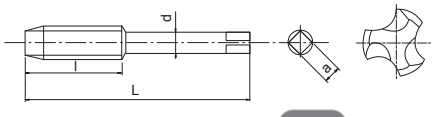
BSF (WHITWORTH)
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

BSF HSSE OX MED B/4 ISO 529



Type 2



Type 3



EDP	BSF	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22107554	3/16	32	58	16	25	5	4	3	2	○	
22107564	7/32	28	62	17	26	5,6	4,5	3	2	○	
22107314	1/4	26	66	19	30	6,3	5	3	2	○	
22107574	9/32	26	66	19	30	7,1	5,6	3	2	○	
22107324	5/16	22	72	22	35	8	6,3	3	2	○	
22107334	3/8	20	80	24	39	10	8	3	2	○	
22107344	7/16	18	85	25	-	8	6,3	3	3	○	
22107354	1/2	16	89	29	-	9	7,1	3	3	○	
22107364	9/16	16	95	30	-	11,2	9	3	3	○	
22107374	5/8	14	102	32	-	12,5	10	3	3	○	
T311068714	11/16	14	112	37	-	14	11,2	3	3	○	
22107394	3/4	12	112	37	-	14	11,2	3	3	○	
22107414	7/8	11	118	38	-	16	12,5	3	3	○	
22107424	1	10	130	45	-	18	14	3	3	○	
22107434	1 1/8	9	138	48	-	20	16	4	3	○	
22107444	1 1/4	9	151	51	-	22,4	18	4	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min	◯ 7~11 m/min				◎ 8~16 m/min	◯ 10~15 m/min			◯ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

1066-SFT

BSF (WHITWORTH)
- For general purposes application

BSF (WHITWORTH)
- Für universelle Anwendungen

BSF (WHITWORTH)
- Per applicazioni generali

BSF (WHITWORTH)
- Pour applications générales

BSF (WHITWORTH)
- Genel uygulamalar

BSF (WHITWORTH)
- Til generelt brug

BSF (WHITWORTH)
- För diverse applikationer

BSF (WHITWORTH)
- Para aplicación general

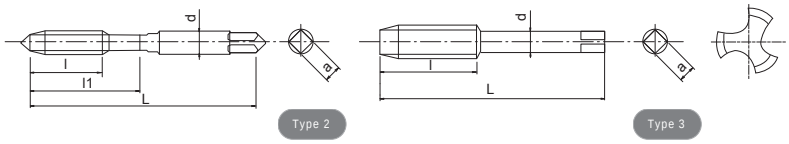
BSF (WHITWORTH)
- Общего назначения

BSF (WHITWORTH)
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

BSF

BSF HSSE OX 40° MED C/2,5 ISO 529





EDP	BSF	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22207554	3/16	32	58	16	25	5	4	3	2	○	
22207564	7/32	28	62	17	26	5,6	4,5	3	2	○	
22207314	1/4	26	66	19	30	6,3	5	3	2	○	
22207324	5/16	22	72	22	35	8	6,3	3	2	○	
22207334	3/8	20	80	24	39	10	8	3	2	○	
22207344	7/16	18	85	25	-	8	6,3	3	3	○	
22207354	1/2	16	89	29	-	9	7,1	3	3	○	
22207364	9/16	16	95	30	-	11,2	9	3	3	○	
22207374	5/8	14	102	32	-	12,5	10	3	3	○	
22207394	3/4	12	112	37	-	14	11,2	4	3	○	
22207414	7/8	11	118	38	-	16	12,5	4	3	○	
22207424	1	10	130	45	-	18	14	4	3	○	
22207434	1 1/8	9	138	48	-	20	16	4	3	○	
22207444	1 1/4	9	151	51	-	22,4	18	4	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min	○ 7~11 m/min				◎ 7~12 m/min	○ 6~9 m/min	○ 7~14 m/min		○ 7~14 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

1066-HT

BSF (WHITWORTH)
- Handtaps
- For general purpose application

BSF (WHITWORTH FINE)
- Hand Gewindebohrer
- Für universelle Anwendungen

BSF (WHITWORTH FINE)
- Maschi a mano
- Per applicazioni generali

BSF (WHITWORTH FINE)
- Tarauds à main
- Pour applications générales

BSF (WHITWORTH FINE)
- El Kılavuzu
- Genel uygulamalar

BSF (WHITWORTH FINE)
- Håndtappe
- Til generelt brug

BSF (WHITWORTH FINE)
- Manuella gängtappar
- För allround bearbetning

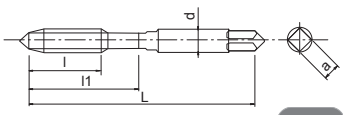
BSF (WHITWORTH FINE)
- Machos de mano
- Para aplicación general

BSF (WHITWORTH FINE)
- Ручной метчик
- Общего назначения

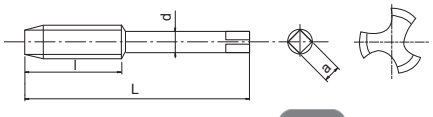
BSF (WHITWORTH FINE)
- Gwintowniki ręczne
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

BSF HSSE MED C/2,5 ISO 529



Type 2



Type 3



EDP	BSF	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22037550	3/16	32	58	16	25	5	4	3	2	○	
22037560	7/32	28	62	17	26	5,6	4,5	3	2	○	
22037310	1/4	26	66	19	30	6,3	5	4	2	○	
22037570	9/32	26	66	19	30	7,1	5,6	4	2	○	
22037320	5/16	22	72	22	35	8	6,3	4	2	○	
X310034322B	11/32	22	72	22	36	9	7,1	4	2	○	
22037330	3/8	20	80	24	39	10	8	4	2	○	
22037340	7/16	18	85	25	-	8	6,3	4	3	○	
22037350	1/2	16	89	29	-	9	7,1	4	3	○	
22037360	9/16	16	95	30	-	11,2	9	4	3	○	
22037370	5/8	14	102	32	-	12,5	10	4	3	○	
T310068714	11/16	14	112	37	-	14	11,2	4	3	○	
22037390	3/4	12	112	37	-	14	11,2	4	3	○	
22037410	7/8	11	118	38	-	16	12,5	4	3	○	
22037420	1	10	130	45	-	18	14	4	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 7~12 m/min											○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min					

● Delivery from stock
○ Available on short notice

1066-POT

BA (British Association)
- For general purposes application

BA (British Association)
- Für universelle Anwendungen

BA (British Association)
- Per applicazioni generali

BA (British Association)
- Pour applications générales

BA (British Association)
- Genel uygulamalar

BA (British Association)
- Til generelt brug

BA (British Association)
- För diverse applikationer

BA (British Association)
- Para aplicación general

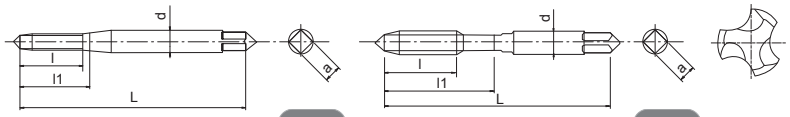
BA (British Association)
- Общего назначения

BA (British Association)
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

BA

BA HSSE OX B/4 ISO 529





EDP	BA	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22109100	0	-	66	19	30	6,3	5	3	2	○	
22109110	1	-	62	17	26	5,6	4,5	3	2	○	
22109120	2	-	58	16	25	5	4	3	2	○	
22109130	3	-	53	13	21	4,5	3,55	3	2	○	
22109140	4	-	50	13	20	3,55	2,8	3	2	○	
22109150	5	-	48	11	18	3,15	2,5	3	2	○	
22109160	6	-	44,5	9,5	-	2,8	2,24	2	1	○	
22109170	7	-	44,5	9,5	-	2,8	2,24	2	1	○	
22109180	8	-	44,5	9,5	-	2,8	2,24	2	1	○	
22109190	9	-	41	8	-	2,5	2	2	1	○	
22109200	10	-	41	8	-	2,5	2	2	1	○	
22109210	11	-	40	8	-	2,5	2	2	1	○	
22109220	12	-	40	8	-	2,5	2	2	1	○	
22109230	13	-	38,5	8	-	2,5	2	2	1	○	
22109240	14	-	38,5	8	-	2,5	2	2	1	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min	○ 7~11 m/min				◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

1066-POT-PLUS

BA (British Association)
- For steel 25~45 HRC

BA (British Association)
- Für Stahl 25~45 HRC

BA (British Association)
- Per acciai 25~45 HRC

BA (British Association)
- Pour acier 25~45 HRC

BA (British Association)
- 25~45 HRC çelikler için

BA (British Association)
- Til stål 25~45 HRC

BA (British Association)
- För stål 25~45 HRC

BA (British Association)
- Para aceros 25~45 HRC

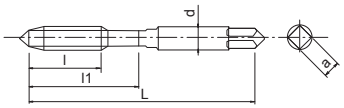
BA (British Association)
- для сталей 25 ~ 45 HRC

BA (British Association)
- Do stali 25 ~ 45 HRC

GO TO LIVE STOCK CHECK

BA

BA | PM | OX | B/5 | ISO 529







EDP	BA	P	L	l	l1	d	a	ZΔ	Stock	Price
23109120	2	-	58	16	25	5	4	3	○	
23109140	4	-	50	13	20	3,55	2,8	2	○	
23109160	6	-	44,5	9,5	-	2,8	2,24	2	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 8~13 m/min		◎ 6~10 m/min	◎ 6~10 m/min				◯ 7~10 m/min			◯ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

1066-SFT

BA (British Association)
- For general purposes application

BA (British Association)
- Für universelle Anwendungen

BA (British Association)
- Per applicazioni generali

BA (British Association)
- Pour applications générales

BA (British Association)
- Genel uygulamalar

BA (British Association)
- Til generelt brug

BA (British Association)
- För diverse applikationer

BA (British Association)
- Para aplicación general

BA (British Association)
- Общего назначения

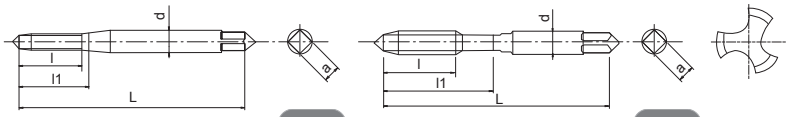
BA (British Association)
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

BA

BA







EDP	BA	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22209100	0	-	66	19	30	6,3	5	3	2	○	
22209110	1	-	62	17	26	5,6	4,5	3	2	○	
22209120	2	-	58	16	25	5	4	3	2	○	
22209130	3	-	53	13	21	4,5	3,55	3	2	○	
22209140	4	-	50	13	20	3,55	2,8	3	2	○	
22209150	5	-	48	11	18	3,15	2,5	3	2	○	
22209160	6	-	44,5	9,5	-	2,8	2,24	2	1	○	
22209170	7	-	44,5	9,5	-	2,8	2,24	2	1	○	
22209180	8	-	44,5	9,5	-	2,8	2,24	2	1	○	
22209190	9	-	41	8	-	2,5	2	2	1	○	
22209200	10	-	41	8	-	2,5	2	2	1	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min	○ 7~11 m/min				◎ 7~12 m/min	○ 6~9 m/min	○ 7~14 m/min		○ 7~14 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

1066-SFT-PLUS

BA (British Association)
- For steel 25~45 HRC

BA (British Association)
- Für Stahl 25~45 HRC

BA (British Association)
- Per acciai 25~45 HRC

BA (British Association)
- Pour acier 25~45 HRC

BA (British Association)
- 25~45 HRC çelikler için

BA (British Association)
- Til stål 25~45 HRC

BA (British Association)
- För stål 25~45 HRC

BA (British Association)
- Para aceros 25~45 HRC

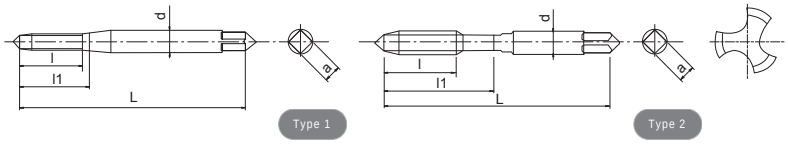
BA (British Association)
- для сталей 25 ~ 45 HRC

BA (British Association)
- Do stali 25 ~ 45 HRC

GO TO LIVE STOCK CHECK

BA

BA PM OX 15° C/3 ISO 529





EDP	BA	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
23209120	2	-	58	16	25	5	4	3	2	○	
23209140	4	-	50	13	20	3,55	2,8	2	2	○	
23209160	6	-	44,5	9,5	-	2,8	2,24	2	1	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
		◎ 6~12 m/min	○ 7~12 m/min	◎ 4~8 m/min	◎ 4~8 m/min				○ 6~12 m/min	○ 7~15 m/min	○ 7~12 m/min	○ 7~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

1066-HT

BA (British Association)
- Handtaps
- For general purpose application

BA (British Association)
- Hand Gewindebohrer
- Für universelle Anwendungen

BA (British Association)
- Maschi a mano
- Per applicazioni generali

BA (British Association)
- Tarauds à main
- Pour applications générales

BA (British Association)
- El Kılavuzu
- Genel uygulamalar

BA (British Association)
- Håndtappe
- Til generelt brug

BA (British Association)
- Manuella gängtappar
- För allround bearbetning

BA (British Association)
- Machos de mano
- Para aplicación general

BA (British Association)
- Ручной метчик
- Общего назначения

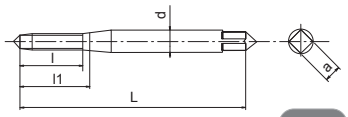
BA (British Association)
- Gwintowniki ręczne
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

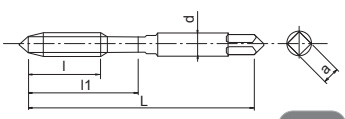
BA

BA

BA | HSSE | C/2,5 | ISO 529



Type 1



Type 2



EDP	BA	P	L	l	l1	d	a	ZΔ	Type	Stock	Price
22039100	0	-	66	19	30	6,3	5	3	2	○	
22039110	1	-	62	17	26	5,6	4,5	3	2	○	
22039120	2	-	58	16	25	5	4	3	2	○	
22039130	3	-	53	13	21	4,5	3,55	3	2	○	
22039140	4	-	50	13	20	3,55	2,8	3	2	○	
22039150	5	-	48	11	18	3,15	2,5	3	2	○	
22039160	6	-	44,5	9,5	-	2,8	2,24	3	1	○	
22039170	7	-	44,5	9,5	-	2,8	2,24	3	1	○	
22039180	8	-	44,5	9,5	-	2,8	2,24	3	1	○	
22039190	9	-	41	8	-	2,5	2	3	1	○	
22329200	10	-	41	8	-	2,5	2	3	1	○	
22039210	11	-	40	8	-	2,5	2	3	1	○	
22039220	12	-	40	8	-	2,5	2	3	1	○	
22039230	13	-	38,5	8	-	2,5	2	3	1	○	
22039240	14	-	38,5	8	-	2,5	2	3	1	○	
22039250	15	-	38,5	8	-	2,5	2	3	1	○	
22039260	16	-	38,5	8	-	2,5	2	2	1	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 7~12 m/min											○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min					

● Delivery from stock
○ Available on short notice

G (BSP)
- For general purposes application

G (BSP)
- Für universelle Anwendungen

G (BSP)
- Per applicazioni generali

G (BSP)
- Pour applications générales

G (BSP)
- Genel uygulamalar

G (BSP)
- Til generelt brug

G (BSP)
- För diverse applikationer

G (BSP)
- Para aplicación general

G (BSP)
- Общего назначения

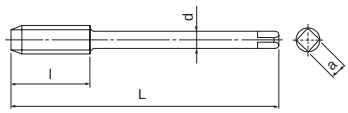
G (BSP)
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

G (BSP)

G (BSP)

G | HSSE | ISO 228 | B/4 | DIN 259 | DIN 5156







EDP	G	P	L	l	d	a	ZΔ	Stock	Price
63581900	1/8	28	90	16	7	5,5	3	●	
63582000	1/4	19	100	20	11	9	3	●	
63582100	3/8	19	100	22	12	9	3	●	
63582200	1/2	14	125	25	16	12	3	●	
63582300	5/8	14	125	25	18	14,5	4	●	
63582400	3/4	14	140	28	20	16	4	●	
63582500	7/8	14	150	28	22	18	4	●	
63582600	1	11	160	30	25	20	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 12~20 m/min	○ 8~12 m/min	○ 7~12 m/min	○ 8~12 m/min							○ 8~12 m/min		○ 8~12 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 10~15 m/min	○ 15~25 m/min	○ 15~25 m/min	○ 10~20 m/min	○ 15~25 m/min	○ 15~20 m/min	○ 10~15 m/min	◎ 10~15 m/min				○ 8~16 m/min	

● Delivery from stock
○ Available on short notice

1066-POT

G (BSP)
- For general purposes application

G (BSP)
- Für universelle Anwendungen

G (BSP)
- Per applicazioni generali

G (BSP)
- Pour applications générales

G (BSP)
- Genel kullanım

G (BSP)
- Til generelt brug

G (BSP)
- För diverse applikationer

G (BSP)
- Para aplicación general

G (BSP)
- Общего назначения

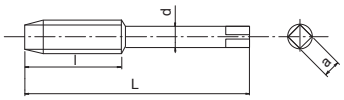
G (BSP)
- Uniwersalne

GO TO LIVE STOCK CHECK

G (BSP)

G (BSP)









EDP	G	P	L	l	d	a	ZΔ	Stock	Price
22408004	1/8	28	52	15	8	6,3	3	○	
22408014	1/4	19	67	19	10	8	3	○	
22408024	3/8	16	75	21	12,5	10	3	○	
22408034	1/2	14	87	26	16	12,5	3	○	
22408044	5/8	14	91	26	18	14	4	○	
22408054	3/4	14	96	28	20	16	4	○	
22408074	1	11	109	33	25	20	4	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min					◎ 8~16 m/min	◯ 10~15 m/min	◯ 10~15 m/min		◯ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◯ 12~17 m/min											◯ 10~20 m/min	

G (BSP)
- General purpose, also for stainless steel

G (BSP)
- Für universelle Anwendungen und für VA - Stahl

G (BSP)
- Per applicazioni generali e per inox

G (BSP)
- Pour applications générales et pour des aciers inox

G (BSP)
- Genel kullanım, ayrıca paslanmaz çelik için

G (BSP)
- Til generelt brug, også til rustfrit stål

G (BSP)
- För allround bearbetning och för rostfritt stål

G (BSP)
- Para aplicación general, para aceros inoxidables

G (BSP)
- Общего назначения и для нержавеющих сталей

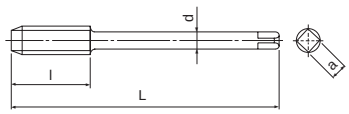
G (BSP)
- Uniwersalne, także do stali nierdzewnych

GO TO LIVE STOCK CHECK

G (BSP)

G (BSP)

G | HSSE | OX | 40° | C/2,5 | ISO 228 | DIN 259 | DIN 5156







EDP	G	P	L	l	d	a	ZΔ	Stock	Price
65881909	1/8	28	90	11	7	5,5	4	●	
65882009	1/4	19	100	16	11	9	4	●	
65882109	3/8	19	100	16	12	9	5	●	
65882209	1/2	14	125	22	16	12	5	●	
65882309	5/8	14	125	22	18	14,5	5	●	
65882409	3/4	14	140	22	20	16	5	●	
65882509	7/8	14	150	22	22	18	5	●	
65882609	1	11	160	28	25	20	5	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min					◎ 7~12 m/min	○ 7~11 m/min	○ 7~14 m/min		○ 7~14 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 10~15 m/min											◎ 10~15 m/min	

● Delivery from stock
○ Available on short notice

G (BSP)
- For general purposes application

G (BSP)
- Für universelle Anwendungen

G (BSP)
- Per applicazioni generali

G (BSP)
- Pour applications générales

G (BSP)
- Genel uygulamalar

G (BSP)
- Til generelt brug

G (BSP)
- För diverse applikationer

G (BSP)
- Para aplicación general

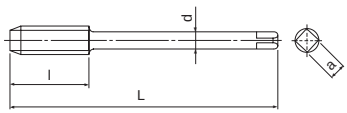
G (BSP)
- Общего назначения

G (BSP)
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

G (BSP)









EDP	G	P	L	l	d	a	ZΔ	Stock	Price
63681900	1/8	28	90	16	7	5,5	3	●	
63682000	1/4	19	100	20	11	9	3	●	
63682100	3/8	19	100	22	12	9	3	●	
63682200	1/2	14	125	25	16	12	4	●	
63682300	5/8	14	125	25	18	14,5	4	●	
63682400	3/4	14	140	28	20	16	4	●	
63682500	7/8	14	150	28	22	18	4	●	
63682600	1	11	160	30	25	20	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	○ 6~9 m/min	○ 7~12 m/min							○ 6~11 m/min		○ 6~8 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 6~11 m/min	○ 10~20 m/min	○ 10~20 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min				○ 10~15 m/min	

● Delivery from stock
○ Available on short notice

1066-SFT

G (BSP)
- For general purposes application

G (BSP)
- Für universelle Anwendungen

G (BSP)
- Per applicazioni generali

G (BSP)
- Pour applications générales

G (BSP)
- Genel uygulamalar

G (BSP)
- Til generelt brug

G (BSP)
- För diverse applikationer

G (BSP)
- Para aplicación general

G (BSP)
- Общего назначения

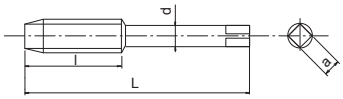
G (BSP)
- Ogólnego przeznaczenia

GO TO LIVE STOCK CHECK

G (BSP)

G (BSP)









EDP	G	P	L	l	d	a	ZΔ	Stock	Price
22418004	1/8	28	59	11	8	6,3	3	○	
22418014	1/4	19	67	19	10	8	3	○	
22418024	3/8	19	75	21	12,5	10	3	○	
22418034	1/2	14	87	26	16	12,5	4	○	
22418044	5/8	14	91	26	18	14	4	○	
22418054	3/4	14	96	28	20	16	4	○	
22418074	1	11	109	33	25	20	4	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~15 m/min	◎ 7~11 m/min	◎ 8~14 m/min	○ 7~11 m/min				◎ 7~12 m/min	○ 6~9 m/min	○ 7~14 m/min		○ 7~14 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

CC-SFT-SPT

G (BSP)
- For stainless steel, aluminium and steel
- For threading depth ≥ 2 D
- Developed for CNC machines equipped with rigid tapping
- For pilot hole use OSG EX-SUS-GDS (p.C.71~77)

G (BSP)
- Für Va-Stahl, Aluminium und Stahl
- Für Gewindetiefe ≥ 2 D
- Für CNC Maschinen mit Synchronspindeln
- Für die Kernlochbearbeitung EX-SUS-GDS verwenden(p.C.71~77)

G (BSP)
- Per acciai inox, alluminio, e acciai
- Per profondita di filettatura ≥ 2 D
- Per le macchine CNC che hanno un programma di sincronizzazione tra la velocità e l'avanzamento
- Utilizzate OSG EX-SUSGDS per foro pilota (p.C.71~77)

G (BSP)
- Pour inox, aluminium et aciers
- Profondeur de taraudage ≥ 2 D
- Développé pour les machines CNC qui ont le "taraudage rigide"
- Pour trou pilote utiliser OSG EX-SUS-GDS (p.C.71~77)

G (BSP)
- Paslanmaz çelik, alüminyum ve çelik için
- Diş derinliği ≥ 2 D
- CNC makinaları için geliştirilmiş rijit kılavuzlama
- Pilot deliği için OSG EX-SUS-GDS kullanın (sayfa C.71~77)

G (BSP)
- Til rustfrit stål, aluminium og stål
- Til gevinddybde ≥ 2 D
- Udviklet til CNC maskine udstyret med fast tapholder
- For boring af pilot hul brug OSG EX-SUS-GDS (p.C.71~77)

G (BSP)
- För rostfritt stål, aluminium och stål
- För gängdjup ≥ 2 D
- Utvecklat för CNC-maskiner som är utrustade med gängfunktion
- För pilot hål använd OSG EX-SUS-GDS (p.C.71~77)

G (BSP)
- Para aceros inoxidables, aluminio y aceros
- Para roscado ≥ 2 D
- Desarrollados para máquinas CNC aptas para roscado rígido
- Para agujero previo use EX-SUS-GDS (p.C.71~77)

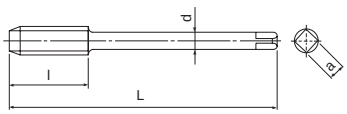
G (BSP)
- Для нержавеющих сталей и алюминия
  Для резьб глубиной ≥ 2 D
  Разработаны для ЧПУ станков имеющих циклы жесткой нарезки
  Для пилотного отверстия используйте OSG EX-SUS-GDS

G (BSP)
- do stali nierdzewnych, aluminium i stali
- Do gwintowania na głębokość ≥ 2 D
- Opracowany dla maszyn CNC z możliwością gwintowania sztywnego
- Do wykonania otworu zastosuj OSG EX-SUS-GDS ust (p.C.71~77)

GO TO LIVE STOCK CHECK

G (BSP)







EDP	G	P	L	l	d	a	ZΔ	Stock	Price
48034838	1/8	28	90	10	7	5,5	3	●	
48034839	1/4	19	100	15	11	9	4	●	
48034840	3/8	19	100	15	12	9	4	●	
48034841	1/2	14	125	20	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~25 m/min	◎ 15~25 m/min	◎ 10~25 m/min	○ 10~25 m/min					◎ 6~10 m/min				

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 15~24 m/min				◎ 15~35 m/min								

G (BSP)

- For alloyed steel ≥ 1100 N/mm²
- Forming short chips
- Low helix

G (BSP)

- Für legierten Stahl ≥ 1100 N/mm²
- Für kurzspanende Werkstoffe
- Leichte Spirale

G (BSP)

- Per acciai legati ≥ 1100 N/mm²
- Formano trucioli corti
- Elica a bassa torsione

G (BSP)

- Pour aciers alliés ≥ 1100 N/mm²
- Formant des copeaux courts
- Hélice réduite

G (BSP)

- Alaşımlı çelikler ≥ 1100 N/mm²
- Kısa talaş oluşturur
- Düşük helis

G (BSP)

- Til legeret stål ≥ 1100 N/mm
- Giver korte spåner
- Let snoet spiral

G (BSP)

- För legerade stål ≥ 1100 N/mm²
- Formar korta spånor
- Liten helix

G (BSP)

- Para aceros aleados ≥ 1100 N/mm²
- Formación de virutas cortas
- Helice lenta

G (BSP)

- для легированных сталей ≥ 1100Н/мм²
- Формирует короткую стружку
- Пологая спираль

G (BSP)

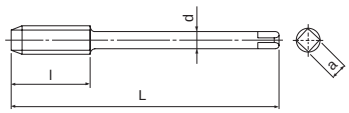
- Stale stopowe ≥ 1100 N/mm²
- Tworzy krótkie wióry
- Mała spirala

GO TO LIVE STOCK CHECK

G (BSP)

G (BSP)

G | HSSE | 15° | ISO 228 | C/3 | DIN 259 | DIN 5156







EDP	G	P	L	l	d	a	ZΔ	Stock	Price
72281900	1/8	28	90	16	7	5,5	3	●	
72282000	1/4	19	100	20	11	9	4	●	
72282100	3/8	19	100	22	12	9	4	●	
72282200	1/2	14	125	25	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 7~12 m/min	○ 6~9 m/min	○ 7~12 m/min								○ 7~12 m/min	○ 6~8 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~20 m/min	○ 10~20 m/min	○ 6~11 m/min		○ 10~15 m/min		○ 7~12 m/min				○ 7~12 m/min	

● Delivery from stock
○ Available on short notice

G (BSP)
- For gray cast iron & cast aluminium < 11 % Si

G (BSP)
- Für Grauguss und Aluminiumguss < 11 % Si

G (BSP)
- Per ghisa grigia, ghisa d'alluminio < 11 % Si

G (BSP)
- Pour fonte grise, fonte d'aluminium < 11 % Si

G (BSP)
- Sfero döküm & dökme alüminyum < 11 % Si için

G (BSP)
- Til støbejern & støbt aluminium < 11 % Si

G (BSP)
- För gjutjärn & gjuten aluminium

G (BSP)
- Para fundición de hierro y aluminio fundido < 11 % Si

G (BSP)
- Для серого чугуна и литейных алюминиевых сплавов < 11 % Si

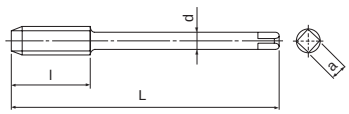
G (BSP)
- Do żeliwa szarego i aluminium odlewanego <11% Si

GO TO LIVE STOCK CHECK

G (BSP)

G (BSP)

G | HSSE | NI-OX | ISO 228 | C/2,5 | DIN 259 | DIN 5156







EDP	G	P	L	l	d	a	ZΔ	Stock	Price
67681900	1/8	28	90	16	7	5,5	4	●	
67682000	1/4	19	100	20	11	9	4	●	
67682100	3/8	19	100	22	12	9	4	●	
67682200	1/2	14	125	25	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
											◎ 10~15 m/min	◎ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min									

VX-OT-SPT

G (BSP)
- For hardened steel < 62 HRC
- Use max. possible drill size
- Use oil coolant

G (BSP)
- Für gehärtete Stähle< 62 HRC
- Bitte Kernloch größtmöglich vorbohren
- bitte Schneidöl verwenden

G (BSP)
- Per acciai temprati< 62 HRC
- Usare il diametro massimo di foratura
- Usare olio intero

G (BSP)
- Pour aciers traités à < 62 HRC
- Préforage le plus grand possible
- Arrosage à l'huile

G (BSP)
- < 62 HRC altındaki sertleştirilmiş çelikler için
- Użyj max. możliwej średnicy wiertła
- Kesme yağı kullanın

G (BSP)
- Til varmebehandlet stål < 62 HRC
- Anvend størst muligt gevindbor
- Anvend olie køling

G (BSP)
- För härdat stål < 62 HRC
- Använd största möjliga hål diameter
- Använd olje kylning

G (BSP)
- Para aceros templados hasta 62 HRC
- Utilice el mayor diametro de broca posible
- Utilice aceite de corte

G (BSP)
- Для улучшенных сталей < 62 HRC
- Используйте максимально возможный диаметр пилотного отверстия
- используйте масло для охлаждения

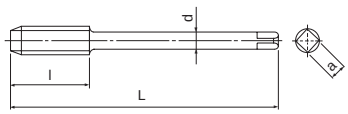
G (BSP)
- Do stali hartowanych poniżej <62 HRC
- Użyj max. możliwej średnicy wiertła
- Do pracy w oleju

GO TO LIVE STOCK CHECK

G (BSP)

G (BSP)









EDP	G	P	L	l	d	a	ZΔ	Stock	Price
48080838	1/8	28	90	11	7	5,5	5	●	
48080839	1/4	19	100	16	11	9	5	●	
48080840	3/8	19	100	16	12	9	6	●	
48080841	1/2	14	125	22	16	12	6	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
							1~3 m/min					
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

S-XPF-SPT

G (BSP)
- High performance forming tap

G (BSP)
- Hochleistungsgewindeformer

G (BSP)
- Maschio a rullare ad alta performance

G (BSP)
- Taraud à refoulé à haute performance

G (BSP)
- Yüksek performans ovalama kılavuzu

G (BSP)
- High Performance rulletap

G (BSP)
- High performance pressgängtapp

G (BSP)
- Alta prestaciones, macho de laminación

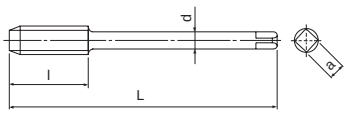
G (BSP)
- Высокопроизводительные накатные метчики

G (BSP)
- Wysoka wydajność wygniatania gwintów

GO TO LIVE STOCK CHECK

G (BSP)







EDP	G	P	L	l	d	a	Drill Hole Size	ZΔ	Stock	Price
48064838	1/8	28	90	9	7	5,5	9,24 ~ 9,35	8	●	
48064839	1/4	19	100	13	11	9	12,41 ~ 12,62	8	●	
48064840	3/8	19	100	13	12	9	15,92 ~ 16,12	8	●	
48064841	1/2	14	125	18	16	12	19,93 ~ 20,15	8	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~40 m/min	◎ 15~40 m/min	◎ 15~30 m/min	◎ 15~30 m/min	◎ 5~20 m/min				◎ 8~20 m/min		○ 15~40 m/min		

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
◎ 10~30 m/min	◎ 10~30 m/min	◎ 10~30 m/min		◎ 20~50 m/min	◎ 20~40 m/min		○ 10~30 m/min					

● Delivery from stock
○ Available on short notice

1066-POT

RC (BSPT)
- Tapered 1:16
- For general purpose application

RC (BSPT)
- Kegelform 1:16
- Für universelle Anwendungen

RC (BSPT)
- Conicità 1:16
- Per applicazioni generali

RC (BSPT)
- Conicité 1:16
- Pour applications générales

RC (BSPT)
- Konik 1:16
- Genel kullanım uygulamaları

RC (BSPT)
- Konicitet 1:16
- Til generelt brug

RC (BSPT)
- Konisk 1:16
- För diverse applikationer

RC (BSPT)
- Conicidad 1:16
- Para aplicación general

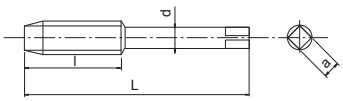
RC (BSPT)
- Уклон 1:16
- Общего назначения

RC (BSPT)
- Stożek 1:16
- Ogólnego zastosowania, uniwersalne

GO TO LIVE STOCK CHECK

RC (BSPT)

RC (PT) | HSSE | OX | C/2,5 | ISO 2284







RC (BSPT)

EDP	RC	P	L	l	d	a	ZΔ	Stock	Price
22608384	1/8	28	52	15	8	6,3	3	○	
22608394	1/4	19	67	19	10	8	4	○	
22608404	3/8	19	75	21	12,5	10	4	○	
22608414	1/2	14	87	26	16	12,5	4	○	
22608434	3/4	14	96	28	20	16	4	○	
22608454	1	11	109	33	25	20	4	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min	○ 7~11 m/min				◎ 8~16 m/min	○ 10~15 m/min	○ 10~15 m/min		○ 10~15 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

1066-SFT

RC (BSPT)
- Tapered 1:16
- For general purpose application

RC (BSPT)
- Kegelform 1:16
- Für universelle Anwendungen

RC (BSPT)
- Conicità 1:16
- Per applicazioni generali

RC (BSPT)
- Conicité 1:16
- Pour applications générales

RC (BSPT)
- Konik 1:16
- Genel kullanım uygulamaları

RC (BSPT)
- Konicitet 1:16
- Til generelt brug

RC (BSPT)
- Konisk 1:16
- För diverse applikationer

RC (BSPT)
- Conicidad 1:16
- Para aplicación general

RC (BSPT)
- Уклон 1:16
- Общего назначения

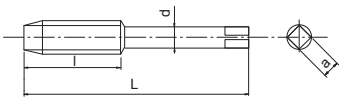
RC (BSPT)
- Stożek 1:16
- Ogólnego zastosowania, uniwersalne

GO TO LIVE STOCK CHECK

RC (BSPT)

RC (BSPT)

Rc (PT) | HSSE | OX | 30° | C/2,5 | ISO 2284







EDP	RC	P	L	l	d	a	ZΔ	Stock	Price
22618384	1/8	28	52	15	8	6,3	3	○	
22618394	1/4	19	67	19	10	8	4	○	
22618404	3/8	19	75	21	12,5	10	4	○	
22618414	1/2	14	87	26	16	12,5	4	○	
22618434	3/4	14	96	28	20	16	4	○	
22618454	1	11	109	33	25	20	4	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min	○ 7~11 m/min				◎ 7~12 m/min	○ 6~9 m/min	○ 7~14 m/min		○ 7~14 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

I066-POT

NPT
- Tapered 1:16
- For general purpose application

NPT
- Kegelform 1:16
- Für universelle Anwendungen

NPT
- Conicità 1:16
- Per applicazioni generali

NPT
- Conicité 1:16
- Pour applications générales

NPT
- Konik 1:16
- Genel kullanım uygulamaları

NPT
- Konicitet 1:16
- Til generelt brug

NPT
- Konisk 1:16
- För diverse applikationer

NPT
- Conicidad 1:16
- Para aplicación general

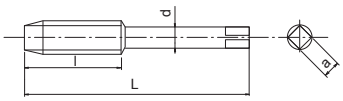
NPT
- Уклон 1:16
- Общего назначения

NPT
- Stożek 1:16
- Ogólnego zastosowania, uniwersalne

GO TO LIVE STOCK CHECK

NPT

NPT HSSE OX C/2,5 BS949 1951







EDP	NPT	P	L	l	d	a	ZΔ	Stock	Price
22628764	1/8	27	2 1/8	3/4	0,318	0,238	3	○	
22628774	1/4	18	2 7/16	1 1/16	0,429	0,322	4	○	
22628784	3/8	18	2 9/16	1 1/16	0,542	0,406	4	○	
22628794	1/2	14	3 1/8	1 3/8	0,687	0,515	4	○	
22628804	3/4	14	3 1/4	1 3/8	0,906	0,679	4	○	
22628814	1	11 1/2	3 3/4	1 3/4	1,125	0,843	4	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania												
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 15~24 m/min	◎ 10~15 m/min	◎ 8~13 m/min	◎ 10~15 m/min					◎ 8~16 m/min	◯ 10~15 m/min	◯ 10~15 m/min		◯ 10~15 m/min
Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

1066-SFT

NPT
- Tapered 1:16
- For general purpose application

NPT
- Kegelform 1:16
- Für universelle Anwendungen

NPT
- Conicità 1:16
- Per applicazioni generali

NPT
- Conicité 1:16
- Pour applications générales

NPT
- Konik 1:16
- Genel kullanım uygulamaları

NPT
- Konicitet 1:16
- Til generelt brug

NPT
- Konisk 1:16
- För diverse applikationer

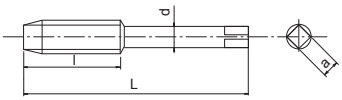
NPT
- Conicidad 1:16
- Para aplicación general

NPT
- Уклон 1:16
- Общего назначения

NPT
- Stożek 1:16
- Ogólnego zastosowania, uniwersalne

GO TO LIVE STOCK CHECK

NPT | HSSE | OX | 30° | C/2,5 | BS949 1951







EDP	NPT	P	L	l	d	a	ZΔ	Stock	Price
22638764	1/8	27	2 1/8	3/4	0,318	0,238	3	○	
22638774	1/4	18	2 7/16	1 1/16	0,429	0,322	4	○	
22638784	3/8	18	2 9/16	1 1/16	0,542	0,406	4	○	
22638794	1/2	14	3 1/8	1 3/8	0,687	0,515	4	○	
22638804	3/4	14	3 1/4	1 3/8	0,906	0,679	4	○	
22638814	1	11 1/2	3 3/4	1 3/4	1,125	0,843	4	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
◎ 10~15 m/min	◎ 8~14 m/min	◎ 7~11 m/min	◎ 8~14 m/min					◎ 7~12 m/min	○ 6~9 m/min	○ 7~14 m/min		○ 7~14 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

NPT

NPT
- Tapered 1:16
- For general purpose application

NPT
- Kegelform 1:16
- Für universelle Anwendungen

NPT
- Conicità 1:16
- Per applicazioni generali

NPT
- Conicité 1:16
- Pour applications générales

NPT
- Konik 1:16
- Genel kullanım uygulamaları

NPT
- Konicitet 1:16
- Til generelt brug

NPT
- Konisk 1:16
- För diverse applikationer

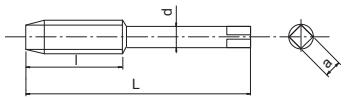
NPT
- Conicidad 1:16
- Para aplicación general

NPT
- Уклон 1:16
- Общего назначения

NPT
- Stożek 1:16
- Ogólnego zastosowania, uniwersalne

GO TO LIVE STOCK CHECK

NPT | HSSE | C/2,5 | DIN 2181







EDP	NPT	P	L	l	d	a	ZΔ	Stock	Price
60087500	1/16	27	56	14	6	4,9	4	●	
60087600	1/8	27	63	15	7	5,5	4	●	
60087700	1/4	18	63	21	11	9	4	●	
60087800	3/8	18	70	21	12	9	4	●	
60087900	1/2	14	80	27	16	12	4	●	
60088000	3/4	14	100	27	20	16	5	●	
60088100	1	11,5	110	32	25	20	5	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 3~6 m/min	◎ 3~6 m/min	◎ 2~5 m/min	◎ 2~5 m/min						○ 2~5 m/min	○ 2~5 m/min	○ 2~5 m/min	○ 4~8 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
○ 2~5 m/min	○ 5~10 m/min	○ 5~10 m/min	○ 6~11 m/min	○ 5~10 m/min	○ 10~15 m/min	○ 10~15 m/min	○ 10~15 m/min				○ 5~10 m/min	

● Delivery from stock
○ Available on short notice

PG CONDUIT
- For PG thread
- For general purpose application

STAHLPANZERROHRGE WINDE
- Für PG Gewinde
- Für universelle Anwendungen

FILETTATURA DI TUBI ELETTRICI
- Per filettatura PG
- Per applicazioni generali

FILETAGE DE TUBES ELECTRIQUES
- Pour filet PG
- Pour applications générales

PG
- PG kanal
- Genel kullanım uygulamaları

PG
- PG geving
- Til generelt brug

PG
- För PG gängor
- För diverse applikationer

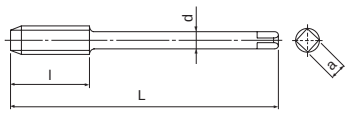
PG
- Para PG perfil
- Para aplicación general

PG
- для PG резь
- Общего назначения

PG
- PG
- Ogólnego zastosowania, uniwersalne

GO TO LIVE STOCK CHECK

PG | HSSE | C/2,5 | DIN 374







EDP	PG	P	L	l	d	a	ZΔ	Stock	Price
1089700110	7	20	100	22	9	7	4	●	
1089700060	9	18	100	22	12	9	4	●	
1089700020	11	18	110	25	14	11	4	●	
1089700120	13,5	18	125	25	16	12	4	●	
1089700220	16	18	125	25	18	14,5	4	●	
1089700030	21	16	150	30	22	18	4	●	
1089700130	29	16	170	33	28	22	6	●	
1089700140	36	16	190	36	36	29	6	●	
1089700150	42	16	220	36	40	32	6	●	
1089700160	48	16	250	36	45	35	6	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
○ 8~13 m/min	○ 7~12 m/min	○ 6~9 m/min										○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min					

● Delivery from stock
○ Available on short notice

METRIC
- Progressive thread
- Short shank
- Taps n°1 : 5 pitch chamfer lead
- Taps n°2 : 3,5 pitch chamfer lead
- Taps n°3 : 2 pitch chamfer lead

METRISCH
- Satzgewindebohrer
- Kurze Ausführung
- Gewindebohrer Nr.1 : 5 Gang Anschnittlänge
- Gewindebohrer Nr.2 : 3,5 Gang Anschnittlänge
- Gewindebohrer Nr.3 : 2 Gang Anschnittlänge

METRICO
- Filetto progressivo
- Maschi corti
- Maschi n° 1 = imbocco su 5 filetti
- Maschi n° 2 = imbocco su 3,5 filetti
- Maschi n° 3 = imbocco su 2 filetti

METRIQUE
- Filet progressif
- Tarauds courts
- Tarauds n°1 : entrée sur 5 filets
- Tarauds n°2 : entrée sur 3.5 filets
- Tarauds n°3 : entrée sur 2 filets

METRIK
- Aşamalı diş
- Kısa şaft
- 1 No'lu kılavuz: Ağızlama boyu 5 hatve
- 2 No'lu kılavuz: Ağızlama boyu 3,5 hatve
- 3 No'lu kılavuz: Ağızlama boyu 2 hatve

METRISK
- Progressivt gevind
- Kort skaft
- Tap nr.1 har 5 x stigning på opløb
- Tap nr.2 har 3,5 x stigning på opløb
- Tap nr.3 har 2 x stigning på opløb

METRISK
- Progressiv gänga
- Kort skaft
- Gängtapp n°1 har 5 x stigning på fås ingång
- Gängtapp n°2 har 3,5 x stigning på fås ingång
- Gängtapp n°3 har 2 x stigning på fås ingång

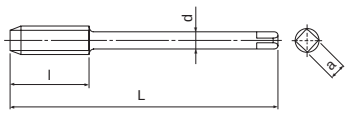
METRICO
- Perfil progresivo
- Mango corto
- Macho 1º: chaflán de 5 pasos
- Macho 2º: chaflán de 3,5 pasos
- Macho 3º: chaflán de 2 pasos

МЕТРИЧЕСКИЙ
- Набор из трех метчиков
- Короткий хвостовик
- Метчики с шагом n°1: 5
- Метчики с шагом n°2: 3,5
- Метчики с шагом n°3: 2

METRYCZNY
- Komplety gwintowników masz.
- Krótki chwyt
- Gwintowniki n°1 : 5 zwoji nakroju
- Gwintowniki n°2 : 3,5 zwoji nakroju
- Gwintowniki n°3 : 2 zwoji nakroju

GO TO LIVE STOCK CHECK

M | HSS | ISO 2 6H | DIN 352







EDP	M	P	L	l	d	a	ZΔ	Stock	Price
10212566	2	0,4	36	8	2,8	2,1	3	●	
10213866	3	0,5	40	11	3,5	2,7	3	●	
10214066	3,5	0,6	45	12	4	3	3	●	
10214466	4	0,7	45	13	4,5	3,4	3	●	
10214966	5	0,8	50	16	6	4,9	3	●	
10215566	6	1	56	19	6	4,9	3	●	
10216166	8	1,25	63	22	6	4,9	4	●	
10216966	10	1,5	70	24	7	5,5	4	●	
10217966	12	1,75	75	28	9	7	4	●	
10219166	14	2	80	30	11	9	4	●	
10220266	16	2	80	32	12	9	4	●	
10221466	18	2,5	95	34	14	11	4	●	
10222866	20	2,5	95	34	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 7~12 m/min	○ 6~9 m/min										○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min					

● Delivery from stock
○ Available on short notice

HT-VA-OX

METRIC
- Progressive thread
- Short shank
- Taps n°1 : 5 pitch chamfer lead
- Taps n°2 : 3,5 pitch chamfer lead
- Taps n°3 : 2 pitch chamfer lead

METRISCH
- Satzgewindebohrer
- Kurze Ausführung
- Gewindebohrer Nr.1 : 5 Gang Anschnittlänge
- Gewindebohrer Nr.2 : 3,5 Gang Anschnittlänge
- Gewindebohrer Nr.3 : 2 Gang Anschnittlänge

METRICO
- Filetto progressivo
- Maschi corti
- Maschi n° 1 = imbocco su 5 filetti
- Maschi n° 2 = imbocco su 3,5 filetti
- Maschi n° 3 = imbocco su 2 filetti

METRIQUE
- Filet progressif
- Tarauds courts
- Tarauds n°1 : entrée sur 5 filets
- Tarauds n°2 : entrée sur 3.5 filets
- Tarauds n°3 : entrée sur 2 filets

METRIK
- Aşamalı diş
- Kısa şaft
- 1 No'lu kılavuz: Ağızlama boyu 5 hatve
- 2 No'lu kılavuz: Ağızlama boyu 3,5 hatve
- 3 No'lu kılavuz: Ağızlama boyu 2 hatve

METRISK
- Progressivt gevind
- Kort skaft
- Tap nr.1 har 5 x stigning på opløb
- Tap nr.2 har 3,5 x stigning på opløb
- Tap nr.3 har 2 x stigning på opløb

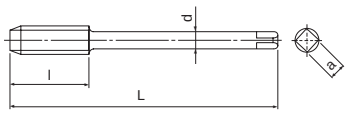
METRISK
- Progressiv gänga
- Kort skaft
- Gängtapp n°1 har 5 x stigning på fås ingång
- Gängtapp n°2 har 3,5 x stigning på fås ingång
- Gängtapp n°3 har 2 x stigning på fås ingång

METRICO
- Perfil progresivo
- Mango corto
- Macho 1º: chaflán de 5 pasos
- Macho 2º: chaflán de 3,5 pasos
- Macho 3º: chaflán de 2 pasos

МЕТРИЧЕСКИЙ
- Набор из трех метчиков
- Короткий хвостовик
- Метчики с шагом n°1: 5
- Метчики с шагом n°2: 3,5
- Метчики с шагом n°3: 2

METRYCZNY
- Komplety gwintowników masz.
- Krótki chwyt
- Gwintowniki n°1 : 5 zwoji nakroju
- Gwintowniki n°2 : 3,5 zwoji nakroju
- Gwintowniki n°3 : 2 zwoji nakroju

M | HSSE | OX | ISO 2 6H | DIN 352







EDP	M	P	L	l	d	a	ZΔ	Stock	Price
60112596	2	0,4	36	8	2,8	2,1	3	●	
60113896	3	0,5	40	11	3,5	2,7	3	●	
60114496	4	0,7	45	13	4,5	3,4	3	●	
60114996	5	0,8	50	24	6	4,9	3	●	
60115596	6	1	56	27	6	4,9	3	●	
60116196	8	1,25	63	22	6	4,9	4	●	
60116996	10	1,5	70	24	7	5,5	4	●	
60117996	12	1,75	75	28	9	7	4	●	
60119196	14	2	80	30	11	9	4	●	
60120296	16	2	80	32	12	9	4	●	
60121496	18	2,5	95	34	14	11	4	●	
60122896	20	2,5	95	34	16	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
	○ 7~12 m/min	○ 6~9 m/min										○ 7~12 m/min

Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	
	○ 10~15 m/min	○ 10~15 m/min	○ 6~11 m/min	○ 10~20 m/min	○ 10~15 m/min	○ 7~12 m/min	○ 7~12 m/min					

● Delivery from stock
○ Available on short notice

DIN 223B

METRIC
- With spiral entry for forward ejection
- Chamfer lead on both sides

METRISCH
- Drallnut für frontale Spanabfuhr
- Doppelseitige Verwendung

METRICO
- Imbocco elicoidale per evacuare il truciolo in avanti
- Imbocco su 2 filetti

METRIQUE
- Avec entrée hélicoïdale qui dégage le copeau vers l'avant
- Entrée des 2 côtés

METRIK
- Öne doğru atmak için helisel girişli
- Her iki tarafta ağızlamalı

METRISK
- Udformning af spiral skubber spåner fremad
- Indløb på begge sider

METRISK
- Med startspiral för framskjutande spånor
- Fas ingång på båda sidor

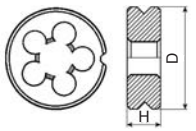
METRICO
- Con chaflán de entrada para expulsión de viruta hacia delante
- Chaflán en ambos lados

МЕТРИЧЕСКИЙ
- Со спиральным заходом
- Заходная фаска на обоих сторонах

METRYCZNY
- Skośna powierzchnia natarcia do transporu wiórów przed narzynkę
- Nakrój po obu stronach

GO TO LIVE STOCK CHECK

M | HSS | ISO 2 6G





Solid Circular Dies

EDP	M	P	D	H	Stock	Price
16213871	3	0,5	20	5	●	
16214471	4	0,7	20	5	●	
16214971	5	0,8	20	7	●	
16215571	6	1	20	7	●	
16216172	8	1,25	25	9	●	
16216973	10	1,5	30	11	●	
16217974	12	1,75	38	14	●	
16219174	14	2	38	14	●	
16220275	16	2	45	18	●	
16221475	18	2,5	45	18	●	
16222875	20	2,5	45	18	●	

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Cu	BS	BsC	PB	Al	AC,ADC	MC	ZDC	Ti	Ni	Plast.	Vinyl	

● Delivery from stock
○ Available on short notice

DIN 223B

G (BSP)
- With spiral entry for forward ejection
- Chamfer lead on both sides

G (BSP)
- Drallnut für frontale Spanabfuhr
- Doppelseitige Verwendung

G (BSP)
- Imbocco elicoidale per evacuare il truciolo in avanti
- Imbocco su 2 filetti

G (BSP)
- Avec entrée hélicoïdale qui dégage le copeau vers l'avant
- Entrée des 2 côtés

G (BSP)
- Öne doğru atmak için helisel girişli
- Her iki tarafta ağızlamalı

G (BSP)
- Udformning af spiral skubber spåner fremad
- Indløb på begge sider

G (BSP)
- Med startspiral för framskjutande spånor
- Fas ingång på båda sidor

G (BSP)
- Con chaflán de entrada para expulsión de viruta hacia delante
- Chaflán en ambos lados

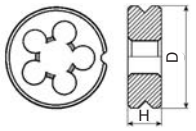
G (BSP)
- Со спиральным заходом
- Заходная фаска на обоих сторонах

G (BSP)
- Skośna powierzchnia natarcia do transporu wiórów przed narzynkę
- Nakrój po obu stronach

GO TO LIVE STOCK CHECK

Solid Circular Dies

G | HSS | ISO 228 | DIN 259





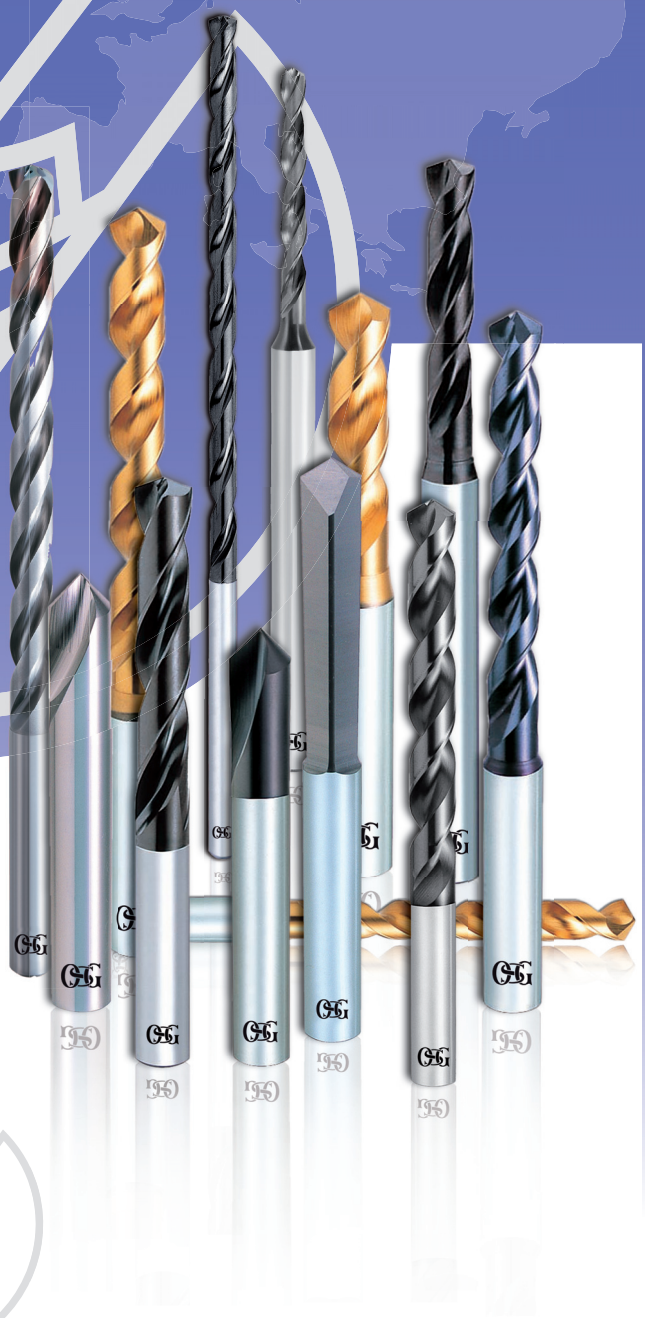
EDP	G	P	D	H	Stock	Price
16281974	1/8	28	30	11	●	
16282074	1/4	19	38	10	●	
16282175	3/8	19	45	14	●	
16282275	1/2	14	45	14	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania

C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	25~35 HRC	35~45 HRC	45~52 HRC	52~62 HRC	SUS	SKD	SC	GG	GGG
Cu	**BS**	**BsC**	**PB**	**Al**	**AC,ADC**	**MC**	**ZDC**	**Ti**	**Ni**	**Plast.**	**Vinyl**	

DRILLS

CARBIDE XPM HSS-Co HSSE



TOOL COMMUNICATION
OSG

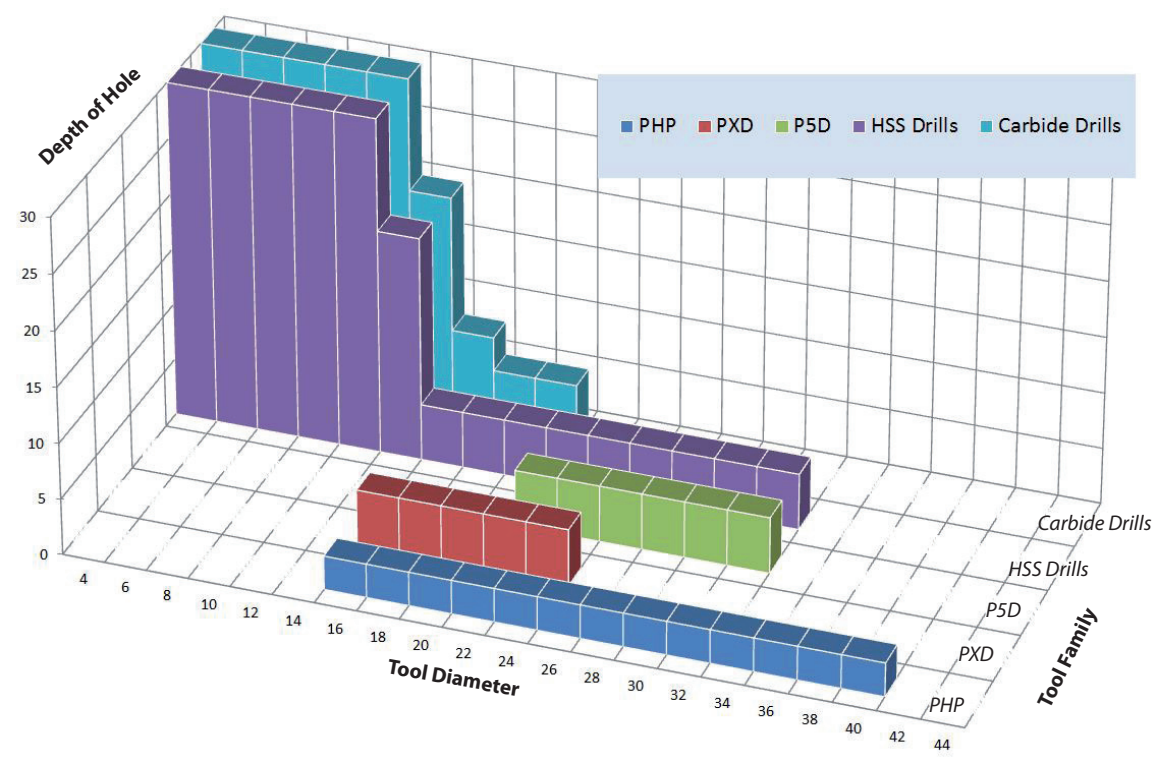
TOKO-TON SPIRIT Total Commitment

www.osgeurope.com

DRILL PRODUCT LINEUP

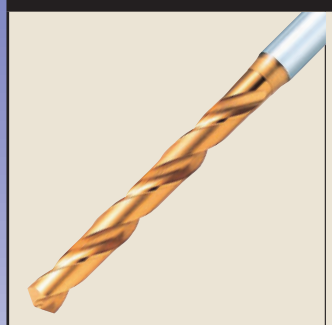
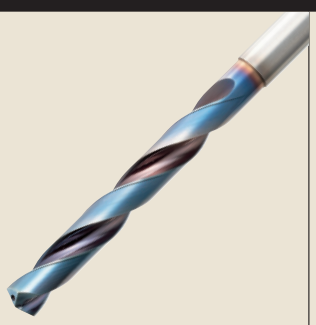
OSG's Comprehensive Product Lineup for Every Drilling Application

Product Guideline

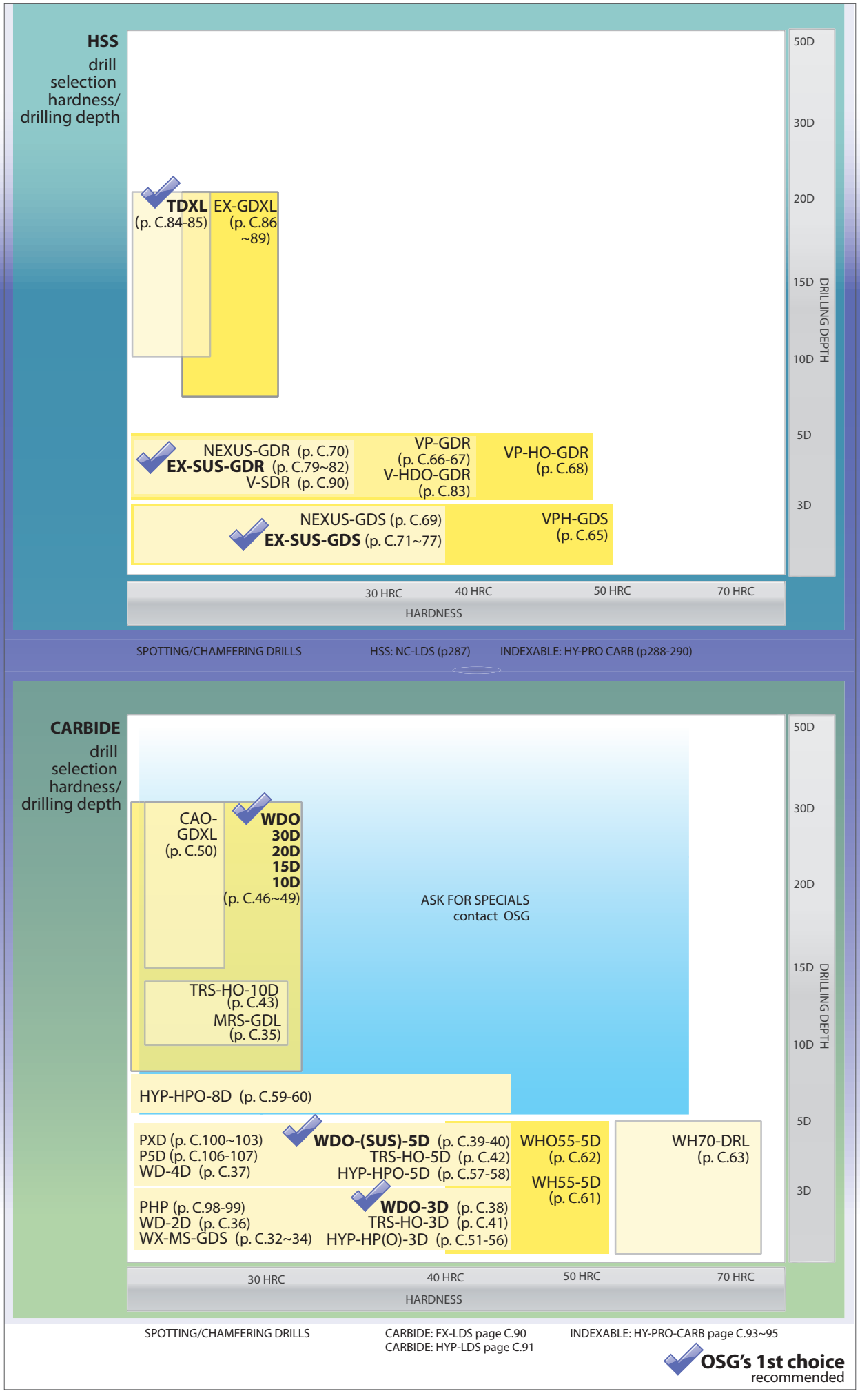


The addition of the PXD exchangeable head drill and 5D indexable drill (P5D) has further expanded the range of applications we cover.

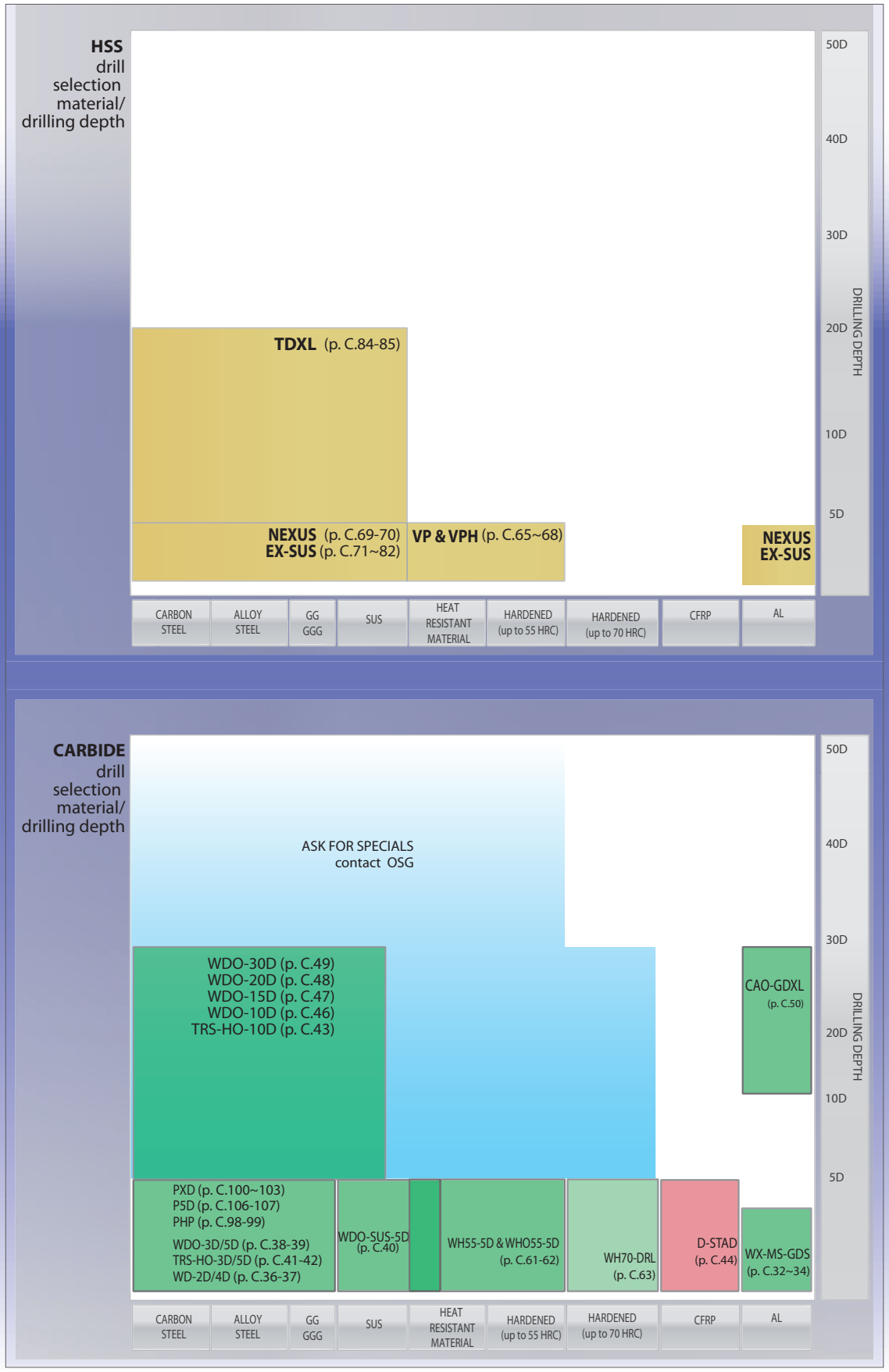
■ Drill Type by Application

			
HSS Drill	**Carbide Drill**	**Phoenix Exchangeable Head Drill PXD**	**Phoenix Indexable Drill P5D, PHP**
• For relatively stable drilling • For low horsepower machines	• Stable drilling • High speed, high efficiency • High precision drilling	• Stable drilling • High speed, high efficiency • Lower cost than large-diameter carbide drills • For relatively high precision drilling	• For low cost drilling • Economical 4-corner design • Simplified tool management with the same insert being applicable to both the center and peripheral cutting edge.

DRILL PRODUCT MAP



DRILL PRODUCT MAP



TYPE	DESCRIPTIONS	
WX	Micrograin with improved TiAlN The best ratio performance-price Preciser results, more stable, longer life time According to 21 century demands	Neues Mischkorn - Hartmetall mit verbesserter TiAlN - Mehrlagenbeschichtung Bestes Preis - Leistungs - Verhältnis Resultat: zäher, stabiler, bessere Standzeit, Preisgünstig Neueste Serie, abgestimmt auf die Bedürfnisse des 21. Jahrhunderts
	Carburo micrograna con rivestimento TiAlN Il miglior rapporto performance - prezzo Maggior precisione, stabilità e durata Risponde alla maggior richiesta del 21° secolo	Carbure micrograin avec TiAlN amélioré Le meilleur rapport performance - prix Résultat plus précis, plus stable, meilleure durée de vie Répond aux besoins du 21ème siècle
	Micrograin med forbedret TiALN belægning Det bedste forhold mellem pris og ydelse Præcise resultater, stabilitet, længere standtid Afstemt efter kravene i det 21 århundrede	Micrograin med nyutvecklad TiAlN beläggning Det bästa förhallände mellom pris och prestanda Noga bearbetning, bätre stabilitet och livslängd Prestanda för 2000 talet
	Micrograno con TiAlN mejorado La mejor relación precio-prestaciones Mayor precisón, más estable, duración mayor Responde a las requerimientos del siglo XXI	Микрозернистый твердый сплав с улучшенным TiAlN покрытием Наилучшее соотношение производительности и цены Более точный результат, более стабильный, с увеличенной стойкостью В соответствии с требованиями 21 века
	Mikro tane yapılı geliştirilmiş TiAlN En iyi fiyat-performans oranı Kesin sonuçlar, daha stabil, daha uzun takım ömrü 21. yüzyılın taleplerine göre	Mikroziarnisty z ulepszonym TiAlN Najlepszy stosunek wydajność-cena Dokladne wyniki, bardziej stabilne, dłuższa żywotność Nowa seria dostosowana do wymagań XXI to wiekn
FX	High performance material selected for use with high cutting speeds Also for dry applications	Hochleistungsvollhartmetall für sehr hohe Schnittgeschwindigkeiten Auch für Trockenbearbeitung geeignet.
	Materiali alta performance per lavorazioni ad alta velocità Adatto anche per lavorazioni a secco	Matière de haute performancesélectionnée pour de hautes vitesses de coupe Prévu également pour usinage à sec
	High performance materiale gør høje skærehastigheder opnåelige Også velegnet til tørbearbejdning	High Performance material möjliggör hög skärhastighet Även bra utan kylvätska
	Material de altas prestaciones seleccionado para altas velocidades de corte Para taladrado en seco	Высокопроизводительный материал для работы с высокой скоростью резания Также для работы без СОЖ
	Yüksek kesme hızlarında kullanılmak için seçilmiş yüksek performanslı malzeme Ayrıca kuru uygulamalar için	Wysoka jakość zastosowanego materiału do pracy z dużymi prędkościami skrawania. Również do pracy na sucho.
XPM	Specially developed by OSG for all stainless steel, Titanium alloys, steel alloys, exotic steel, cast iron up to 52 HRC	Speziell von OSG entwickelt für die Bearbeitung von VA-Stählen, legierten Stählen, Titan Legierungen, Gusseisen und exotischen Materialien bis zu 52 HRC
	Materiali sviluppati da OSG per lavorazioni di acciai oltre 52 HRC e ghise	Matière développée par OSG pour tous les aciers inox, alliages en titane, aciers alliés, aciers exotiques, fontes jusqu'à 52 HRC
	Specielt udviklet af OSG til alle typer rustfrit stål, titanium leg., stål leg., eksotiske materialer, støbejern samt stål op til 52 HRC	Special utvecklat till alla rostfria stål, titanium leg., stål leg., exotiska leg,. gjutjärn och stål up til 52 HRC
	Especialmente desarrollado por OSG para aceros inoxidables, titanio aleado, aceros aleados, aceros exoticos y fundiciones hasta 52HRC	Специально разработано OSG для всех нержавеющих сталей, титана, легированных сталей, экзотических сплавов стали, чугуна до 52 HRC
	Özellikle paslanmaz çelikler, Titanyum alaşımları, çelik alaşımları, ekzotik çelikler, 52 HRC ye kadar döküm malzemeler için OSG tarafından geliştirilmiştir	Specjalnie opracowany przez OSG dla wszystkich stali nierdzewnych, stopów tytanu, stali nierdzewnej, stali egzotycznych, żeliw do 52 HRC
HSSE-V3	High speed steel with 3% Vanadium, for better wear resistance	HSSE Stahl mit 3% Vanadium, für eine scharfe, verschleißfeste Schneide, besonders gut in der VA Zerspanung Spezielle Schneidengeometrie erhöht die Verschleißfestigkeit
	Acciaio superrapido con 3% di Vanadio per una miglior resistenza all'usura	Acier rapide avec 3% de Vanadium, donne une meilleure résistance à l'usure
	High speed stål med 3% Vanadium for højere slidstyrke	Snapstål med 3% Vanadium for hög prestanda
	Acero super-rapido con 3% de Vanadio, para mejor resistencia al desgaste	Быстрорежущая сталь с добавкой 3% ванадия для большей износостойкости
	%3 Vanadyum'lu yüksek hız çeliği, daha iyi aşınma direnci	Stal szybkotnąca z 3% zawartością Wanadu, daje lepszą odporność na ścieranie

WORK MATERIAL

C ≤ 0,2%	Low carbon steel	Kohlenstoffstahl	Acciaio a basso contenuto di carbonio	Aciers bas carbone	Kulstofstål	Kolstål	Aceros bajos en carbono	Низкоуглеродистая сталь	Düşük karbon çeliği	Stale niskowęglowe
0,25 < C ≤ 0,4%	Medium carbon steel	Kohlenstoffstahl	Acciaio a medio contenuto di carbonio	Aciers médium carbone	Kulstofstål	Kolstål	Aceros medios en carbono	Среднеуглеродистая сталь	Orta karbon çeliği	Stale węglowe
C ≥ 0,45%	High carbon steel	Kohlenstoffstahl	Acciaio ad alto contenuto di carbonio	Aciers haut carbone	Kulstofstål	Kolstål	Aceros altos en carbono	Высокоуглеродистая сталь	Yüksek karbon çeliği	Stale wysoko węglowe
SCM	Alloy steel	Leg. Stahl	Acciaio legato	Aciers alliés	Legeret stål	Legerat stål	Aceros aleados	Легированная сталь	Alaşımlı çelikler	Stale stopowe
~35 HRC	Hardened steel	Gehärteter Stahl	Acciaio temprato	Aciers trempé	Hærdet stål	Härdat stål	Aceros endurecidos	Закаленная сталь	Sertleştirilmiş çelikler	Stale hartowane
35~45 HRC	Hardened steel	Gehärteter Stahl	Acciaio temprato	Aciers trempé	Hærdet stål	Härdat stål	Aceros endurecidos	Закаленная сталь	Sertleştirilmiş çelikler	Stale hartowane
45 ~ 50 HRC	Hardened steel	Gehärteter Stahl	Acciaio temprato	Aciers trempé	Hærdet stål	Härdat stål	Aceros endurecidos	Закаленная сталь	Sertleştirilmiş çelikler	Stale hartowane
50 ~ 70 HRC	Hardened steel	Gehärteter Stahl	Acciaio temprato	Aciers trempé	Hærdet stål	Härdat stål	Aceros endurecidos	Закаленная сталь	Sertleştirilmiş çelikler	Stale hartowane
SUS	Stainless steel	VA Stahl	Acciaio inossidabile	Inox	Rustfrit stål	Rostfritt stål	Aceros inoxidables	Нержавеющая сталь	Paslanmaz çelik	Stale nierdzewne
SKD	Tool steel	Werkzeugstahl	Acciaio da utensili	Aciers d'outillage	Værktøjsstål	Verktygsstål	Aceros de herramientas	Инструментальная сталь	Takım çelikleri	Stale narzędziowe
GG	Cast iron	Grauguss	Ghisa grigia	Fonte	Støbejern	Gjutjärn	Aceros fundidos ~ 350 HB	Чугун ~ 350 HB	Döküm	Żeliwo
GGG	Ductile cast iron	Kugelgraphitguss	Ghisa malleabile	Fonte maléable	Støbejern	Segjärn	Funditiones ductiles	высокопрочный чугун	Sifero döküm	Żeliwo sferoidalne
Cu	Copper	Kupferlegierung	Rame	Cuivre	Kobber	Koppar	Aleaciones de cobre	Медь	Bakır	Miedź
Al	Aluminium	Aluminium	Alluminio	Aluminium	Aluminium	Aluminium	Aluminio	Алюминий	Alüminyum	Aluminium
AC	Cast aluminium alloys	Aluminiumlegierung	Leghe di alluminio	Alliages d'alu coulé	Aluminium leg.	Gjut Aluminium	Aluminio aleado	Литейные алюминиевые сплавы	Alüminyum döküm	Odlewnicze stopy aluminium
Ti	Titanium	Titanium	Titanio	Titane	Titanium	Titanium	Titanio	Титан	Titanyum	Tytan
Tiall	Titanium alloys	Titaniumlegierung	Leghe di titanio	Alliages de Titane	Titanium leg.	Titanium leg.	Titanio aleado	Титановые сплавы	Titanyum alaşımı	Stopy tytanu
Inc	Inconel	Inconel	Inconel	Inconel	Inconel	Inconel	Inconel	Inconel	İnkonel	Inconel
○	Good	Gut	Buono	Bon	God	Bra	Utilizable	Хороший	İyi	Dobry
◎	Excellent	Sehr gut	Ottimo	Excellent	Meget god	Mycket bra	Excelente	Превосходный	Mükemmel	Bardzo dobry

SELECTION

◎ Excellent - Sehr gut - Ottimo - Excellent - Meget god - Mycket bra - Excelente - Превосходный - Mükemmel - Bardzo dobry | ○ Good - Gut - Buono - Bon - God - Bra - Utilizable - Хороший - İyi - Dobry

Type	4 3 2 1	coating	Work material - Werkstoff - Materiale - Matière - Materiale - Material - Material de pieza - обрабатываемый материал - İş parçası malzemesi - Materiał																		
			C ≤ 0.2%	0.25% C ≤ 0.4%	C ≥ 0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS	SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc	CFRP
CAO-GDXL	C.50														○	○	◎				
D-STAD	C.44	DIA																			◎
EX-GDXL	C.86~C.89	TiN	○	◎	◎	◎	○						◎	◎			○				
EX-H-DRL	C.64							○	○	◎											
EX-SUS-GDR	C.78~C.82	TiN	◎	○							◎				◎	◎	○	◎			
EX-SUS-GDS	C.71~C.77	TiN	◎	○							◎				◎	◎	○	◎			
FX-LDS	C.91	FX	◎	◎	◎	◎	◎	○				◎	◎	◎	○		○	○	○	○	
HYP-HP-3D New Size!	C.51-C.52	TiAlN	○	◎	◎	◎	◎	○			○	○	◎	◎							
HYP-HP-5D New Size!	C.53-C.54	TiAlN	○	◎	◎	◎	◎	○			○	○	◎	◎							
HYP-HPO-3D	C.55-C.56	TiAlN	○	◎	◎	◎	◎	○			○	○	◎	◎							
HYP-HPO-5D	C.57-C.58	TiAlN	○	◎	◎	◎	◎	○			○	○	◎	◎							
HYP-HPO-8D New Size!	C.59-C.60	TiAlN	○	◎	◎	◎	◎	○			○	○	◎	◎							
HYP-LDS	C.92		◎	◎	◎	◎	◎	○				○	○	○	○		○	○	○	○	
HYP-ZDS NEW	D.104	TiAlN	◎	◎	◎	◎	◎	○			◎		◎			○	○				
HY-PRO CARB	C.95-C.97		◎	◎	○	○	○	○			○	○	◎	○		◎	◎				
MRS-GDL	C.35	SC									◎										
NEXUS-GDR	C.70	WDI	◎	◎	◎	◎	○				◎				◎	◎	◎	◎			
NEXUS-GDS	C.69	WDI	◎	◎	◎	◎	○				◎				◎	◎	◎	◎			
(TiN)-NC-LDS	C.93		◎	◎	◎	◎	○				◎	◎	◎	◎	◎		◎	◎	◎		
TDXL	C.84-C.85	WXL	○	◎	◎	◎							◎	◎			◎				
TRS-HO-3D New Size!	C.41	WDI	◎	◎	◎	◎	◎	○	○		○		◎	◎				○			
TRS-HO-5D New Size!	C.42	WDI	◎	◎	◎	◎	◎				○		◎	◎							
TRS-HO-10D NEW	C.43	WDI	◎	◎	◎	◎	◎				○		◎	◎							
V-HDO-GDR	C.83	V	◎	◎	◎	◎	◎				◎	○	○	○	○	○	◎	○	○	○	
VPH-GDS	C.65	WDI	○	○	○	○	◎	◎	◎			◎	◎	◎					◎	◎	
VP-GDR	C.66-C.67	V	◎	◎	◎	◎	◎					◎	◎	◎		○	◎	○	○	○	
VP-HO-GDR	C.68	V	◎	◎	◎	◎	◎	○			◎	◎	◎	◎	○	○	◎	◎	◎	○	
V-SDR	C.90	V	◎	◎	○	◎						○	○	○		○	○				
WD-2D New Size!	C.36	WDI	◎	◎	◎	◎	○	○				○	○	◎							
WD-4D New Size!	C.37	WDI	◎	◎	◎	◎	○	○				○	○	◎							
WDO-3D	C.38	WDI	◎	◎	◎	◎	◎	○	○		◎	○	◎	◎	○		○	○	◎		
WDO-5D	C.39	WDI	◎	◎	◎	◎	◎	○	○		◎	○	◎	◎	○		○	○	◎		
WDO-10D	C.46	WDI	◎	◎	◎	◎	○				○		◎	◎							
WDO-15D	C.47	WDI	◎	◎	◎	◎	○				○		◎	◎							

◎ Excellent - Sehr gut - Ottimo - Excellent - Meget god - Mypket bra - Excelente - Превосходный - Mükemmel - Bardzo dobry | ○ Good - Gut - Buono - Bon - God - Bra - Utilizable - Хороший - İyi - Dobry

Type		coating	Work material - Werkstoff - Materiale - Matière - Materiale - Material - Material de pieza - обрабатываемый материал - İş parçası malzemesi - Materiał																		
			C ≤ 0.2%	0.25% C ≤ 0.4%	C ≥ 0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS	SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc	CFRP
WDO-20D New Size	C.48	WDI	◎	◎	◎	◎	○				○		◎	◎							
WDO-30D New Size	C.49	WDI	◎	◎	◎	◎	○				○		◎	◎							
WDO-PLT	C.45	WDI	○	◎	◎	◎	◎	◎			○	○	◎	◎							
WDO-SUS-5D NEW	C.40	WXL	◎	◎	◎	◎	◎	○	○		◎	○	◎	◎	○		○	○	◎		
WH55-5D	C.61	WXS						◎	◎	○											
WHO55-5D	C.62	WXS						◎	◎	○											
WH70-DRL	C.63	WXS								◎										○	
WX-MS-GDS	C.32~C.34	WX	◎	◎	○	○					○		○		◎	◎	○	○			
PHP	C.98~C.99		◎	◎	◎	◎	○				◎	○	◎	◎		○	○	○	○	○	
PXD NEW	C.100~103		◎	◎	◎	○	○						◎	◎	○	◎	◎				
P5D NEW	C.106-107		◎	◎	◎	○	○				◎	◎	○	○		○	○				

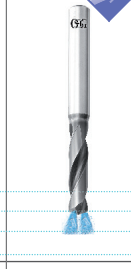
ICONS

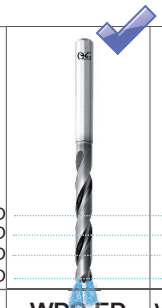
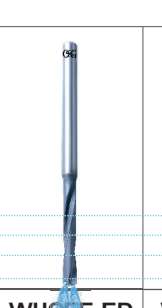
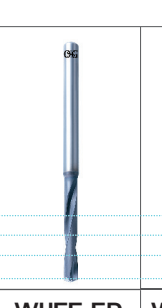
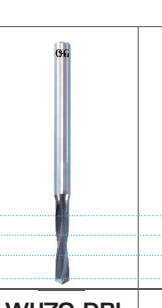
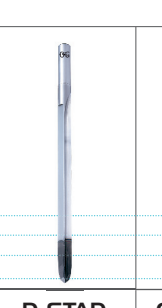
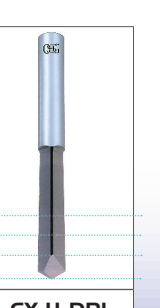
ICONS										
Material - Werkstoff - Materiale - Matière - Materiale - Verktyg materiale - Material - Обрабатываемый материал - Malzemesi - Materiał										
CARBIDE	Carbide	Vollhartmetall	Carburo	Carbure	Hårdmetal	Hårdmetall	Metal duro	Карбид	Karbür	Węglik
HSS-Co	HSS Cobalt (Co8)	HSS (Co8)	Cobalto HSS (Co8)	HSS Cobalt (Co8)	HSS (Co8)	HSS (Co8)	HSS al cobalto (Co8)	быстрорежущая сталь с 8% кобальта	HSS Kobalt (Co8)	HSS kobaltowe (Co8)
XPM	High grade Powder Metallurgy HSS (XPM) (Co10 + V5)	Spezial Pulvermetall HSS (XPM) (Co10 + V5)	Alto livello di metallurgia delle polveri sinterizzate HSS (XPM) (Co10 + V5)	Haut niveau de métallurgie des poudres HSS(XPM) (Co10 + V5)	Special pulvermetal HSS (XPM) (Co10 + V5)	Special Pulvermetall HSS (XPM) (Co10 + V5)	HSS sinterizado de alto grado	Высококачественный порошковый HSS	Yüksek kaliteli Toz Metalurjisi HSS (XPM) (Co10+V5)	Wysokiej klasy metalurgia proszków HSS (XPM) (Co10 + V5)
CPM	Powder Metallurgy Hss (PM-T15) (Co5 + V5)	Pulvermetall Hss (PM - T15) (Co5 + V5)	Metallurgia delle polveri sinterizzate (PM-T15) (Co5 + V5)	Métallurgie des poudres HSS (PM-T15) (Co5 + V5)	Pulvermetal HSS (PM - T15) (Co5 + V5)	Pulvermetall (PM-T15) (Co5 + V5)	Sinterizado (PM-T15 Co5 + V5)	Порошковая металлургия (PM-T15 Co5 + V5)	Toz Metalurjisi HSS (PM-T15 Co5 + V5)	Wysoko wanadowa
HSSE	High Vanadium HSS-E V3	HSS-E (V3)	HSS-E alto contenuto di Vanadio (V3)	HSSE haute teneur en Vanadium (V3)	HSS-E (V3)	HSSE (3V)	HSS-E v3 alto en Vanadio	быстрорежущая сталь с высоким содержанием ванадия HSS-E V3	Yüksek Vanadyum HSS-E V3	Metalurgia proszków HSS (PM-T15) (Co5 + V5)
HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS быстрорежущая сталь	HSS	HSS
Coating - Beschichtung - Rivestimento - Revêtement -Belægning - -Belægning - Recubrimiento - Покрытие - Kaplama -Powłoka										
FX	Multi layered composite TiAlN	Mehrlagenbeschichtung TiAlN	Multistrato composito TiAlN	Revêtement multicouches composite TiAlN	Flérlags TiALN belægning	Multilayer TiAlN beläggning	Recubrimiento TiAlN multicapa	Многослойное покрытие TiAlN	Çok katmanlı TiAlN kompozit	Wielowarstwowa powłoka TiAlN
WX	Multi layered composite TiAlN	Mehrlagenbeschichtung TiAlN	Multistrato composito TiAlN	Revêtement multicouches composite TiAlN	Flérlags TiALN belægning	Multilayer TiAlN beläggning	Recubrimiento TiAlN multicapa	Многослойное покрытие TiAlN	Çok katmanlı TiAlN kompozit	Wielowarstwowa powłoka TiAlN
CrN	Chromium nitride	Chromnitrit	Nitruro di cromo	Nitrure de chrome	Chromnitrid	Crom Nitrid	Recubrimiento Nitruro de Cromo	Хром нитрид	Krom nitrür	Azotek chromu
SC	Smooth coating	Gleichmäßiger Reibungskoeffizient reduzierte Beschichtung	Rivestimento lucido	Revêtement lisse	Glat belægning	Låg Firktion	Recubrimiento suave	Гладкое покрытие	Pürüzsüz kaplama	Gładka powłoka
TIN	Coating TiN	TiN Beschichtet	Rivestimento TiN	Revêtement TiN	TIN belægning	TiN Beläggning	TiN: Recubrimiento de Nitruro de Titanio	Покрытие TiN	Tin Kaplama	Powłoka TiN
WDI	Multi-Layer coating WDI	WDI Beschichtet	Rivestimento WDI	Revêtement WDI	WDI belægning	Multilayer WDI	WDI : Recubrimiento multicapa	Многослойное покрытие WDI	Çok katmanlı kaplama WDI	Wielowarstwowa powłoka WDI
TiAlN	Multi-Layer coating TiAlN	TiAlN Beschichtet	Rivestimento TiAlN	Revêtement TiAlN	TiALN belægning	Multilayer TiAlN	TiAlN: Recubrimiento multicapa	Многослойное покрытие TiAlN	Çok katmanlı kaplama TiAlN	Wielowarstwowa powłoka TiAlN
V	Multi-Layer coating TiCN	Mehrlagenbeschichtung TiCN	Multistrato composito TiCN	Revêtement multicouches TiCN	Flérlags TiCN belægn.	Multilayer TiCN	Recubrimiento de Carbo-Nitruro de Titanio	Многослойное покрытие TiCN	Çok katmanlı kaplama TiCN	Wielowarstwowa powłoka TiCN
OX	Steam Oxide	Dampfangelassen	Trattamento al vapore	Traitement vapeur	Damp oxyderet	Ånganlöpt	Vaporizado	Паровой оксид	Buhar Oksit	Oksydowane
WXL WXS	Multi-Layer coating WXL-WXS	WXL-WXS Beschichtet	Rivestimento WXL-WXS	Revêtement WXL-WXS	WXL-WXS belægning	Multilayer WXL-WXS	WXL-WXS : Recubrimiento multicapa	Многослойное покрытие WXL-WXS	Çok katmanlı kaplama WXL-WXS	Wielowarstwowa powłoka WXL-WXS
Helix Angle - Drallwinkel - Angolo d'elica - Angle d'hélice - Spiralvinkel - Spiral Vinkel - Angulo de helice - Угол спирали - Helis açısı - Kąt spirali										
30°	Helix Angle	Helix Drall Winkel	Angolo d'elica	Angle d'hélice	Spiralvinkel	Spiral Vinkel	Angulo de helice	Угол спирали	Helis açısı	Kąt spirali
Shank - Schaft - Gambo - Queue - Skaft - Skaft - Mango - Хвостовик - Şaft - Chwyt										
h6 h7	Shank diameter tolerance	Schafttoleranz	Tolleranza del diametro del gambo	Tolérance du diamètre de queue	Skaft tolerance	Skaft tolerans	Tolerancia en diametro de mango	Точность диаметра хвостовика	Şaft çapı toleransı	Tolerancja średnicy chwytu
SHRINK FIT	All shanks of OSG mills are suitable for Hypro-Shrink Fit systeme	Schrumpftauglich	Adatto al sistema di serraggio a caldo	Queues adaptées pour le système de frettage	Velegnet til krymp	Även för krymp chuckar	Todos los mangos de metal duro OSG son aptos para fijación térmica	хвостовики пригодны для Hypro термозажимной системы	OSG parmak freze şaftları Hypro-Shrink Fit sistemi için uygundur	Wszystkie chwyty są odpowiednie dla systemu termokurczliwego Hypro-Shrink
	Straight shank	Zylindrischer Schaft	Gambo cilindrico	Queue cylindrique	Cylindrisk skaft	Cylindriskt skaft	Mango sencillo	Прямой хвостовик	Düz Şaft	Chwyt walcowy
	Whistle Notch	Whistle Notch	Whistle Notch	Whistle Notch	Whistle notch	Whistle Notch	Whistle Notch	Whistle Notch	Whistle Notch	Whistle Notch
	Straight shank for flat	Zylindrischer Schaft mit Spannfläche	Gambo cilindrico con piatto	Queue cylindrique avec méplat	Whistle notch	Plan yta på skaft	Mango cilindricon con plano	Цилиндрический хвостовик с лыской	Kademeli düz gövde	Chwyt walcowy z płaską powierzchnią
Drilling depth - Gewindetiefe - Profondità di foratura - Profondeur taraudage - Boredybde Borrdjup - Profindidad de taladrado - Глубина сверления -										
≥5D	Drilling depth	Gewindetiefe	Profondità di foratura	Profondeur taraudage	Boredybde	Borrdjup	Para agujeros ciegos	Глубина сверления	Delme derinliği	Głębokość wiercenia

ICONS

ICONS										
Internal cooling - Innere Kühlmittelzuführung - Con fori di lubrificazione centrali - Arrosage central - Indvendig køling - Invändig Kylning Internal Refrigeración interna - Внутреннее охлаждение - İçten soğutma - Chłodzenie wewętrzne										
	Internal cooling	Innere Kühlmittel-zuführung	Con fori di lubrificazione centrali	Arrosage central	Indvendig køling	Invändig Kylning	Refrigeración interna	Внутреннее охлаждение	İçten soğutma	Chłodzenie wewnętrzne
Point Angle - Spitzenwinkel - Angolo delle punta - Angle de pointe - Spids vinkel - Spets Vinkel - Angulo de punto- Угол заточки - - Ze ściernicą										
	Point Angle	Spitzenwinkel	Angolo delle punta	Angle de pointe	Spids vinkel	Spets Vinkel	Angulo de punta	Угол заточки	Nokta açısı	Kąt wierzchołkowy
Tool tolerance - Werkzeugtoleranz - Tolleranza del diametro di foratura - Tolérance outil - Tolerance Tolerans - Tolerancia de herramienta - Точность инструмента - Takım toleransı - Kąt wierzchołkowy										
	Tool tolerance	Werkzeugtoleranz	Tolleranza del diametro di foratura	Tolérance outil	Værktøjs tolerance	Verktygs tolerans	Tolerancia de herramienta	Точность инструмента	Takım toleransı	Tolerancja narzędzia
High speed drilling - Hohe Schnittge-windigkeiten - Foratura ad alta velocita - Haute vitesse - Høj hastighed boring Höghastighets Borrning - Taladrado a lata velocidad - Высокоскоростное сверление - Yüksek hızlı delme - Wysoka prędkość wiercenia										
	High speed drilling	Hohe Schnittge-windigkeiten	Foratura ad alta velocita	Haute vitesse	High speed boring	Höghastighets Borrning	Taladrado a lata velocidad	Высокоскоростное сверление	Yüksek hızlı delme	Wysoka prędkość wiercenia
Thinning - - Affilatura - Affûtage - Spids slibning Spets slipning - Reducción - Подточка вершины - İnceltme - ścin										
	Four Facet point	Vier Facetten Anschliff mit Ausspitzung	Affilatura Quattro piani	Affûtage 4 faces	Facet slebet spids	Facet spets	Reducción de punta 4 facetas	Центр с 4 гранями	Dört Temas noktası	Czterościnowa geometria
	N Thinning	N Ausspitzung	N Affilatura	N Affûtage	N Udkerning	N Centrumspets	N Reducción	N Подточка вершины	N İnceltme	N ścin
	R Thinning	R Ausspitzung	R Affilatura	R Affûtage	R Udkerning	R Centrumspets	R Reducción	R Подточка вершины	R İnceltme	R ścin
	W Thinning	W Ausspitzung	W Affilatura	W Affûtage	W Udkerning	W Centrumspets	W Reducción	W Подточка вершины	W İnceltme	W ścin
	X Thinning	X Ausspitzung	X Affilatura	X Affûtage	K Udkerning	X Centrumspets	X Reducción	X Подточка вершины	X İnceltme	X ścin
	RW Thinning	RW Ausspitzung	RW Affilatura	RW Affûtage	RW Udkerning	RW Centrumspets	RW Reducción	RW Подточка вершины	RW İnceltme	RW ścin
	RX Thinning	RX Ausspitzung	RX Affilatura	RX Affûtage	RK Udkerning	RX Centrumspets	RX Reducción	RX Подточка вершины	RX İnceltme	RX ścin
Cutting Conditions - Schnittwerte - Velocità di taglio - Conditions de coupe - Skæredata - Skärdata - Condiciones de corte - условия резания - Kesme Şartları - Parametry obróbki										
	Cutting Conditions	Schnittwerte	Velocità di taglio	Conditions de coupe	Skæredata	Skärdata	Condiciones de corte	Условия резания	Kesme Şartları	Parametry obróbki
Work Material - Werkstoff - Materiale - Matière - Emne materiale - Ämne materiale - Material de pieza - Обрабатываемый материал - İş Malzemesi - Materia obrabiany										
	Work Material	Werkstoff	Materiale	Matière	Emne materiale	Ämne material	Material de pieza	Обрабатываемый материал	İş Malzemesi	Materiał obrabiany
Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania										
	Steel	Stahl	Acciai	Acier	Stål	Stål	Aceros	сталей	çelikler için	Stali
	Stainless Steel	VA - Stahl	Inox e acciai dolci	Aciers Inox	Rustfrit stål	Rostfritt stål	Aceros inoxidables	нержавеющих сталей	Ayrıca paslanmaz çelik için	Stali nierdzewnych
	Cast Iron	Grauguss	Ghisa	Fonte	Støbejern	Gjutjärn	fundición de hierro	для чугуна и алюминия	Döküm	żeliw
	non Ferrous Material	NE-Material	Materiali non ferroso	Matériel non ferreux	Ikke-jernholdige materialer	Icke järnhaltiga material	Materiales no ferrosos	цветных металлов	Demir dışı malzemeler	Materiał nieżelazny
	Super Alloys	Super legierungen	Super leghe	Super Alliage	Super legeringer	Super legeringar	Super aleaciones	жаропрочных сплавов	Süper alaşımlar	Süper alaşımlar
	Hardened Material	gehärtete Materialien	Acciai temprati fino	Matériaux Supérieur	Hærdede materialer	härdat stål	Aceros templados	закаленных материалов	Kadar sertleştirilmiş malzemeler için	Super stopy

SOLID CARBIDE ≤ 5D

Tools								
	WD-2D	HYP-HP-3D	HYP-HPO-3D	WDO-3D	TRS-HO-3D	WD-4D	HYP-HP-5D	HYP-HPO-5D
Pages	C.36	C.52	C.55-56	C.38	C.41	C.37	C.53-54	C.57-58
Tolerance / Nb. of Flutes	h8 2	m7 2	m7 2	h8 2	h8 3	h8 2	m7 2	m7 2
Coating / Material	WDI CARBIDE	TiAlN CARBIDE	TiAlN CARBIDE	WDI CARBIDE	WDI CARBIDE	WDI CARBIDE	TiAlN CARBIDE	TiAlN CARBIDE
Point Angle & Shrink Fit	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT
Internal Coolant & Helix Angle	30°	30°	30°	30°	30°	30°	30°	30°
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
Drilling Depth	≤ 2D ≤ 3D ≤ 4D ≤ 5D							
D								
1		●					●	
1,1		●					●	
1,2		●					●	
1,3		●					●	
1,4		●					●	
1,5		●					●	
1,6		●					●	
1,7		●					●	
1,8		●					●	
1,9		●					●	
2	●	●				●	●	
2,1	●	●				●	●	
2,2	●	●				●	●	
2,3	●	●				●	●	
2,4	●	●				●	●	
2,5	●	●				●	●	
2,6	●	●				●	●	
2,7	●	●				●	●	
2,76	○							
2,78	○							
2,8	●	●		●		●	●	
2,9	●	●		●		●	●	
3	●	●	●	●		●	●	●
3,1	●	●	●	●		●	●	●
3,17 (1/8)		●	●				●	●
3,2	●	●	●	●		●	●	●
3,3	●	●	●	●		●	●	●
3,4	●	●	●	●		●	●	●
3,5	●	●	●	●		●	●	●
3,57 (9/64)		●	●				●	●
3,6	●	●	●	●		●	●	●
3,66	○							
3,68	○							
3,7	●	●	●	●		●	●	●
3,8	●	●	●	●		●	●	●
3,9	●	●	●	●		●	●	●
3,97 (5/32)		●	●				●	●
4	●	●	●	●		●	●	●
4,1	●	●	●	●		●	●	●
4,15								
4,2	●	●	●	●		●	●	●
4,3	●	●	●	●		●	●	●
4,37 (11/64)		●	●				●	●
4,4	●	●	●	●		●	●	●
4,5	●	●	●	●		●	●	●
4,6	●	●	●	●		●	●	●
4,62	○							
4,64	○							
4,7	●	●	●	●		●	●	●
4,76 (3/16)		●	●				●	●
4,8	●	●	●	●		●	●	●
4,9	●	●	●	●		●	●	●
5	●	●	●	●	●	●	●	●
5,1	●	●	●	●	●	●	●	●
5,16 (13/64)		●	●				●	●
5,2	●	●	●	●	●	●	●	●
5,3	●	●	●	●	●	●	●	●
5,4	●	●	●	●	●	●	●	●
5,5	●	●	●	●	●	●	●	●
5,52	○							
5,54	○							
5,55					●			
5,56 (7/32)		●	●				●	●
5,6	●	●	●	●	●	●	●	●
5,7	●	●	●	●	●	●	●	●
5,8	●	●	●	●	●	●	●	●
5,9	●	●	●	●	●	●	●	●
5,95 (15/64)		●	●				●	●
6	●	●	●	●	●	●	●	●
6,1	●	●	●	●	●	●	●	●
6,2	●	●	●	●	●	●	●	●
6,3	●	●	●	●	●	●	●	●
6,35 (1/4)		●	●			●	●	●
6,4	●	●	●	●	●	●	●	●
6,5	●	●	●	●	●	●	●	●
6,6	●	●	●	●	●	●	●	●
6,7	●	●	●	●	●	●	●	●
6,75 (17/64)		●	●				●	●
6,8	●	●	●	●	●	●	●	●
6,9	●	●	●	●	●	●	●	●
7	●	●	●	●	●	●	●	●
7,1	●	●	●	●	●	●	●	●
7,14		●	●				●	●
7,2	●	●	●	●	●	●	●	●

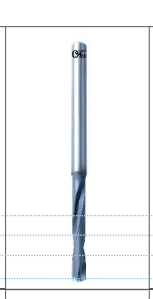
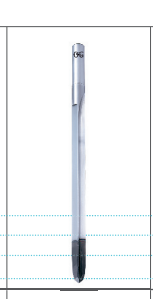
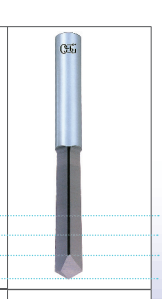
Tools								
	WDO-5D	WDO-SUS-5D	TRS-HO-5D	WHOSS-5D	WH55-5D	WH7O-DRL	D-STAD	EX-H-DRL
Pages	C.39	C.40	C.42	C.62	C.61	C.63	C.44	C.64
Tolerance / Nb. of Flutes	h8 2	h8 2	h8 3	h8 2	h8 2	h8 2	0~-0.020 2	h8 2
Coating / Material	WDI CARBIDE	WXL CARBIDE	WDI CARBIDE	WXS CARBIDE	WXS CARBIDE	WXS CARBIDE	DIA CARBIDE	CARBIDE
Point Angle & Shrink Fit	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	120° SHRINK FIT	SHRINK FIT	h7
Internal Coolant & Helix Angle	30°	30°	30°	12°~20°	12°~20°	12°		
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N H	P M K N S H
Drilling Depth	≤ 2D ≤ 3D ≤ 4D ≤ 5D							

D								
1								
1,1								
1,2								
1,3								
1,4								
1,5								
1,6								
1,7								
1,8								
1,9								
2					●	●		●
2,1						●		
2,2						●		
2,3						●		
2,4						●		
2,5					●	●		
2,6						●		
2,7						●		
2,76								
2,78								
2,8	●				●	●		
2,9	○					●		
3	●	●			●	●		●
3,1	●	●				●		
3,17								
3,2	●	●				●		
3,3	●	●		●	●	●		
3,4	●	●		●		●		
3,49				●				
3,5	●	●		●	●	●		
3,57								
3,6	●	●		●		●		
3,66	○							
3,68	○							
3,7	●	●		●		●		
3,8	●	●		●	●	●		
3,9	●	●		●		●		
3,97								
4	●	●		●	●	●	○	●
4,1	●	●		●		●		
4,15				●				
4,2	●	●		●	●	●		
4,3	●	●		●		●		
4,37								
4,4	●	●		●		●		
4,5	●	●		●	●	●		
4,6	●	●		●		●		
4,62	○							
4,64	○							
4,7	●	●		●		●		
4,76								
4,8	●	●		●	●	●		
4,9	●	●		●		●		
5	●	●	●	●	●	●		●
5,1	●	●	●	●	●	●		
5,16								
5,2	●	●	●	●		●		
5,3	●	●	●	●		●		
5,4	●	●	●	●		●		
5,5	●	●	●	●	●	●		
5,52								
5,54								
5,55			●					
5,56				●				
5,6	●	●	●	●		●		
5,7	●	●	●	●		●		
5,8	●	●	●	●	●	●		
5,9	●	●	●	●		●		
5,95								
6	●	●	●	●	●	●	○	●
6,1	●	●	●			●		
6,2	●	●	●			●		
6,3	●	●	●			●		
6,35							○	
6,4	●	●	●			●		
6,5	●	●	●	●	●	●		
6,6	●	●	●			●		
6,7	●	●	●			●		
6,75								
6,8	●	●	●	●	●	●		
6,9	●	●	●			●		
7	●	●	●	●	●	●		●
7,1	●	●	●			●		
7,14								
7,2	●	●	●			●		

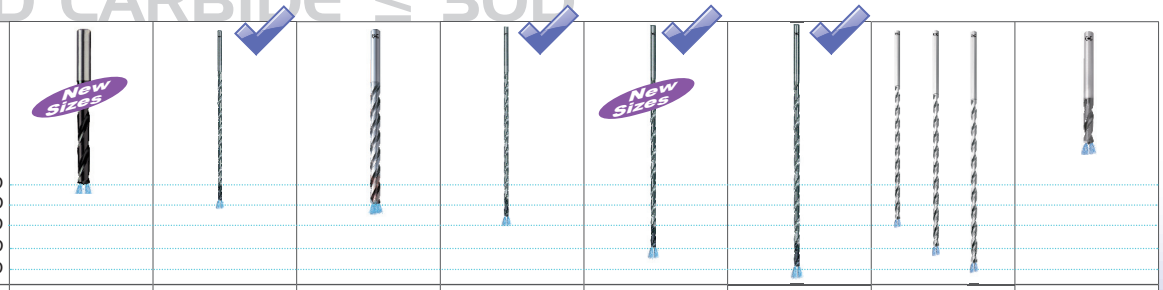
SOLID CARBIDE ≤ 5D

Tools								
	WD-2D	HYP-HP-3D	HYP-HPO-3D	WDO-3D	TRS-HO-3D	WD-4D	HYP-HP-5D	HYP-HPO-5D
Pages	C.36	C.52	C.55-56	C.38	C.41	C.37	C.53-54	C.57-58
Tolerance / Nb. of Flutes	h8 2	m7 2	m7 2	h8 2	h8 3	h8 2	m7 2	m7 2
Coating / Material	WDI CARBIDE	TiAlN CARBIDE	TiAlN CARBIDE	WDI CARBIDE	WDI CARBIDE	WDI CARBIDE	TiAlN CARBIDE	TiAlN CARBIDE
Point Angle & Shrink Fit	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT
Internal Coolant & Helix Angle	30°	30°	30°	30°	30°	30°	30°	30°
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H
Drilling Depth	≤ 2D	≤ 3D	≤ 4D	≤ 5D				

D								
7,3	●	●	●	●	●	●	●	●
7,36	○							
7,38	○							
7,4	●	●	●	●	●	●	●	●
7,5	●	●	●	●	●	●	●	●
7,54 (19/64)	○	●	●				●	●
7,55					●			
7,6	●	●	●	●	●	●	●	●
7,7	●	●	●	●	●	●	●	●
7,8	●	●	●	●	●	●	●	●
7,9	●	●	●	●	●	●	●	●
7,94 (5/16)		●	●				●	●
8	●	●	●	●	●	●	●	●
8,1	●	●	●	●	●	●	●	●
8,2	●	●	●	●	●	●	●	●
8,3	●	●	●	●	●	●	●	●
8,33 (21/64)		●	●				●	●
8,4	●	●	●	●	●	●	●	●
8,5	●	●	●	●	●	●	●	●
8,6	●	●	●	●	●	●	●	●
8,7	●	●	●	●	●	●	●	●
8,73 (11/32)		●	●				●	●
8,8	●	●	●	●	●	●	●	●
8,9	●	●	●	●	●	●	●	●
9	●	●	●	●	●	●	●	●
9,1	●	●	●	●	●	●	●	●
9,13 (23/64)		●	●				●	●
9,2	●	●	●	●	●	●	●	●
9,3	●	●	●	●	●	●	●	●
9,4	●	●	●	●	●	●	●	●
9,5	●	●	●	●	●	●	●	●
9,52 (3/8)		●	●				●	●
9,55					●			
9,6	●	●	●	●	●	●	●	●
9,7	●	●	●	●	●	●	●	●
9,8	●	●	●	●	●	●	●	●
9,9	●	●	●	●	●	●	●	●
9,92 (25/64)		●	●				●	●
10	●	●	●	●	●	●	●	●
10,1	●	●	●	●	●	●	●	●
10,2	●	●	●	●	●	●	●	●
10,3	●	●	●	●	●	●	●	●
10,32 (13/32)		●	●				●	●
10,4	●	●	●	●	●	●	●	●
10,5	●	●	●	●	●	●	●	●
10,6	●	●	●	●	●	●	●	●
10,7	●	●	●	●	●	●	●	●
10,72 (27/64)		●	●				●	●
10,8	●	●	●	●	●	●	●	●
10,9	●	●	●	●	●	●	●	●
11	●	●	●	●	●	●	●	●
11,1	●	●	●	●	●	●	●	●
11,11 (7/16)		●	●				●	●
11,2	●	●	●	●	●	●	●	●
11,3	●	●	●	●	●	●	●	●
11,4	●	●	●	●	●	●	●	●
11,5	●	●	●	●	●	●	●	●
11,51 (29/64)		●	●				●	●
11,6	●	●	●	●	●	●	●	●
11,7	●	●	●	●	●	●	●	●
11,8	●	●	●	●	●	●	●	●
11,9	●	●	●	●	●	●	●	●
11,91 (15/32)		●	●				●	●
12	●	●	●	●	●	●	●	●
12,1						●	●	●
12,3 (31/64)		●	●				●	●
12,5		●	●	●	●	●	●	●
12,7 (1/2)		●	●			●	●	●
13		●	●	●	●	●	●	●
13,5		●	●	●	●	●	●	●
14		●	●	●	●	●	●	●
14,29 (9/16)		●	●				●	●
14,5		●	●	●	●	●	●	●
15		●	●	●	●	●	●	●
15,5		●	●	●	●	●	●	●
15,87		●	●			●	●	●
16		●	●	●	●	●	●	●
16,5		●	●	●	●	●	●	●
17		●	●	●	●	●	●	●
17,5		●	●	●	●	●	●	●
18		●	●	●	●	●	●	●
18,5		●	●	●	●	●	●	●
19		●	●	●		●	●	●
19,5		●	●	●		●	●	●
20		●	●	●		●	●	●

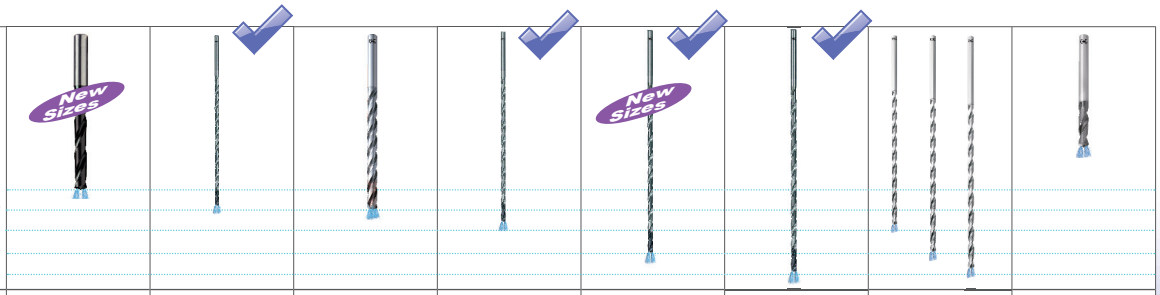
Tools								
	WDO-5D	WDO-3US-5D	TRS-HO-5D	WHO55-5D	WH55-5D	WH7O-DRL	D-STAD	EX-H-DRL
Pages	C.39	C.40	C.42	C.62	C.61	C.63	C.44	C.64
Tolerance / Nb. of Flutes	h8 2	h8 2	h8 3	h8 2	h8 2	h8 2	0~-0.020 2	h8 2
Coating / Material	WDI CARBIDE	WXL CARBIDE	WDI CARBIDE	WXS CARBIDE	WXS CARBIDE	WXS CARBIDE	DIA CARBIDE	CARBIDE
Point Angle & Shrink Fit	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	120° SHRINK FIT	SHRINK FIT	h7
Internal Coolant & Helix Angle	30°	30°	30°	12°~20°	12°~20°	12°		
Applications	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N S H	P M K N H	P M K N S H
Drilling Depth	≤ 2D ≤ 3D ≤ 4D ≤ 5D							
D								
7,3	•	•	•			•		
7,36								
7,38								
7,4	•	•	•			•		
7,5	•	•	•	•	•	•		
7,54								
7,55			•					
7,6	•	•	•			•		
7,7	•	•	•			•		
7,8	•	•	•	•	•	•		
7,9	•	•	•			•		
7,94								
8	•	•	•	•	•	•	○	•
8,1	•	•	•			•		
8,2	•	•	•			•		
8,3	•	•	•			•		
8,33								
8,4	•	•	•			•		
8,5	•	•	•	•	•	•		
8,6	•	•	•	8,58 •		•		
8,7	•	•	•	•	•	•		
8,73								
8,8	•	•	•	•	•	•		
8,9	•	•	•			•		
9	•	•	•	•	•	•		•
9,1	•	•	•			•		
9,13								
9,2	•	•	•			•		
9,3	•	•	•			•		
9,4	•	•	•			•		
9,5	•	•	•	•	•	•		
9,52								
9,55			•					
9,6	•	•	•			•		
9,7	•	•	•			•		
9,8	•	•	•	•	•	•		
9,9	•	•	•			•		
9,92				9,97 •				
10	•	•	•	•	•	•		•
10,1	•	•	•			•		
10,2	•	•	•			•		
10,3	•	•	•	•	•	•		
10,32								
10,4	•	•	•			•		
10,5	•	•	•	•	•	•		
10,6	•	•	•			•		
10,7	•	•	•			•		
10,72								
10,8	•	•	•	•	•	•		
10,9	•	•	•			•		
11	•	•	•	•	•	•		•
11,1	•	•	•			•		
11,11								
11,2	•	•	•			•		
11,3	•	•	•			•		
11,4	•	•	•			•		
11,5	•	•	•	•	•	•		
11,51								
11,6	•	•	•	11,56 •		•		
11,7	•	•	•			•		
11,8	•	•	•	•	•	•		
11,9	•	•	•			•		
11,91								
12	•	•	•	•	•	•		•
12,1 ~ 12,4			•					
12,5	•	•	•					
12,6 ~ 12,9			•					
13	•	•	•					
13,5	•	•	•					
14	•	•	•					
14,29								
14,5	•	•	•					
15	•	•	•					
15,5	•	•	•					
15,87								
16	•	•	•					
16,5	•	•	•					
17	•	•	•					
17,5	•	•	•					
18	•	•	•					
18,5	•	•	•					
19	•	•						
19,5	•	•						
20	•	•						

SOLID CARBIDE ≤ 30D



	HYP-HPO-8D	WDO-10D	TRS-HO-10D	WDO-15D	WDO-20D	WDO-30D	CAO-GDXL-15/20/30D	WDO-PLT
SOLID CARBIDE								
Pages	C.59-60	C.46	C.43	C.47	C.48	C.49	C.50	C.45
Tolerance / Nb. of Flutes	m7 2	h8 2	e8 3	h8 2	h8 2	h8 2	h8	h8 2
Coating / Material	TiAlN CARBIDE	WDI CARBIDE	WDI CARBIDE	WDI CARBIDE	WDI CARBIDE	WDI CARBIDE	CARBIDE	WDI CARBIDE
Point Angle & Shrink Fit	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	130° SHRINK FIT	160° SHRINK FIT
Internal Coolant & Helix Angle	30°	30°	30°	30°	30°	30°	30°	30°
Applications	P M K N S H	P M K N S H	P K	P M K N S H	P M K N S H	P M K N S H	K N	P M K N S H
Drilling Depth	≤ 8D ≤ 10D ≤ 15D ≤ 20D ≤ 30D							
D							15D 20D 30D	
2		●						
2,1		●						
2,2		●						
2,3		●						
2,4		●						
2,5		●						
2,6		●						
2,7		●						
2,76								
2,78								
2,8		●						
2,9		●						
3	●	●		●	●	○	●	● 3,03
3,1	●	●		○	●			
3,17 (1/8)	●							
3,2	●	●		○	●			
3,3	●	●		●	●			
3,4	●	●		○	●			
3,5	●	●		●	●	●		● 3,53
3,57 (9/64)	●							
3,6	●	●		○	●	○		
3,66	●							
3,68	●							
3,7	●	●		○	●	○		
3,8	●	●		○	●	○		
3,9	●	●		●	●	○		
3,97 (5/32)	●							
4	●	●		●	●	●	● ●	● 4,03
4,1	●	●		○	●	○		
4,15								
4,2	●	●		●	●	○		
4,3	●	●		○	●	○		
4,37 (11/64)	●							
4,4	●	●		●	●	○		
4,5	●	●		●	●	●	●	
4,6	●	●		○	●	○		
4,62								
4,64								
4,7	●	●		○	●	○		
4,76 (3/16)	●							
4,8	●	●		●	●	○		
4,9	●	●		○	●	○		
5	●	●	●	●	●	●	● ● ●	● 5,03
5,1	●	●		○	●	○		
5,16 (13/64)	●							
5,2	●	●		○	●	●		
5,3	●	●		○	●	○		
5,4	●	●		○	●	○		
5,5	●	●	●	●	●	●	● ●	
5,52								● 5,53
5,54								
5,55								
5,56 (7/32)	●							
5,6	●	●		○	●	○		
5,7	●	●		●	●	○		
5,8	●	●		○	●	○		
5,9	●	●		○	●	○		
5,95 (15/64)	●							
6	●	●	●	●	●	●	● ● ●	● 6,03
6,1	●	●		●	●	●		
6,2	●	●		○	●	○		
6,3	●	●		●	●	○		
6,35 (1/4)	●							
6,4	●	●		○	●	○		
6,5	●	●	●	●	●	●	●	● 6,53
6,6	●	●		●	●	○		
6,7	●	●		●	●	○		
6,75 (17/64)	●							
6,8	●	●		●	●	○		
6,9	●	●		●	●	○		
7	●	●	●	●	●	●	● ● ●	● 7,03
7,1	●	●		○	●	○		
7,14	●							
7,2	●	●		○	●	○		
7,3	●	●		○	●	●		
7,36								
7,38								
7,4	●	●		○	●	○		
7,5	●	●	●	●	●	●		

● Delivery from stock
○ Available on short notice

Tools								
	HYP-HPO-8D	WDO-10D	TRS-HO-10D	WDO-15D	WDO-20D	WDO-30D	CAO-GDXL-15/20/30D	WDO-PLT
SOLID CARBIDE								
Tool Number	C.59-60	C.46	C.43	C.47	C.48	C.49	C.50	C.45
Tolerance / Nb. of Flutes	m7 2	h8 2	e8 3	h8 2	h8 2	h8 2	h8	h8 2
Coating / Material	TiAlN CARBIDE	WDI CARBIDE	WDI CARBIDE	WDI CARBIDE	WDI CARBIDE	WDI CARBIDE	CARBIDE	WDI CARBIDE
Point Angle & Shrink Fit	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	140° SHRINK FIT	130° SHRINK FIT	160° SHRINK FIT
Internal Coolant & Helix Angle	30°	30°	30°	30°	30°	30°	30°	30°
Applications	P M K N S H	P M K N S H	P K	P M K N S H	P M K N S H	P M K N S H	K N	P M K N S H
Drilling Depth	≤ 8D ≤ 10D ≤ 15D ≤ 20D ≤ 30D							

D											
									15D	20D	30D	
7,54	(19/64)	●										
7,6		●	●		○	●	○					
7,7		●	●		○	●	○					
7,8		●	●		○	●	○					
7,9		●	●		○	●	○					
7,94	(5/16)	●										
8		●	●	●	●	●	●		●	●	●	● 8,03
8,1		●	●		●	●	●					
8,2		●	●		●	●	○					
8,3		●	●		○	●	○					
8,33	(21/64)	●										
8,4		●	●		○	●	○					
8,5		●	●	●	●	●	●					● 8,53
8,6		●	●		○	●	○					
8,7		●	●		●	●	○					
8,73	(11/32)	●										
8,8		●	●		○	●	○					
8,9		●	●		○	●	○					
9		●	●	●	●	●	●		●	●		● 9,03
9,1		●	●		○	●	○					
9,13	(23/64)	●										
9,2		●	●		●	●	○					
9,3		●	●		○	●	○					
9,4		●	●		○	●	○					
9,5		●	●		●	●	●					
9,52	(3/8)	●										
9,6		●	●		○	●	○					
9,7		●	●		○	●	○					
9,8		●	●		●	●	○					
9,9		●	●		○	●	○					
9,92	(25/64)	●										
10		●	●	●	●	●	●		●	●		● 10,03
10,1		●	●		○	●						
10,2		●	●		○	●						
10,3		●	●		○	●						
10,32	(13/32)	●										
10,4		●	●		○	●						
10,5		●	●		●	●						
10,6		●	●		○	●						
10,7		●	●		○	●						
10,72	(27/64)	●										
10,8		●	●		○	●						
10,9		●	●		○	●						
11		●	●		●	●						● 11,03
11,1		●	●		○	●						
11,11	(7/16)	●										
11,2		●	●		○	●						
11,3		●	●		○	●						
11,4		●	●		○	●						
11,5		●	●		●	●						
11,51	(29/64)	●										
11,6		●	●		○	●						
11,7		●	●		○	●						
11,8		●	●		○	●						
11,9		●	●		○	●						
11,91	(15/32)	●										
12		●	●	●	●	●						● 12,03
12,3	(31/64)	●										
12,5		●										
12,7	(1/2)	●										
13		●										
13,5		●										
14		●										
14,29	(9/16)	●										
14,5		●										
15		●										
15,5		●										
15,87		●										
16		●										
16,5		●										
17		●										
17,5		●										
18		●										
18,5		●										
19		●										
19,5		●										
20		●										

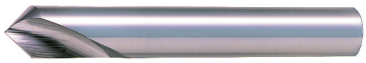
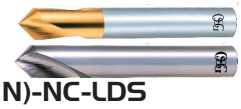
NAME		SPECIFICATION	
SOLID CARBIDE			
 WX-MS-GDS	WX	Small size for precision operation Micropunta per operazioni di precisione	Kleine Abmessungen für hochpräzise Bearbeitungen Petites dimensions pour des opérations de précision
 MRS-GDL	SC	Small size deep drilling for stainless steel Micropunta per forature profonde su acciai inossidabili	Kleine Abmessungen für Tieflochbohrungen in VA Materialien Petites dimensions pour forage profond dans des aciers inoxidables
 WD-2D New Sizes	WDI	General purpose, 2D type Per applicazioni generali, 2D foratura	Allgemeine Anwendungen, für 2D bohren Applications générales, forage 2D
 WD-4D New Sizes	WDI	General purpose, 4D type Per applicazioni generali, 4D foratura	Allgemeine Anwendungen, für 4D bohren Applications générales, forage 4D
 WDO-3D	WDI	Coolant through for 3D type Fori di lubrificazione centrali, 3D foratura	VHM - Bohrer, mit innerer Kühlmittelzufuhr für 3D bohren Avec arrosage central, forage 3D
 WDO-5D	WDI	Coolant through for 5D type Fori di lubrificazione centrali, 5D foratura	VHM - Bohrer mit innerer Kühlmittelzufuhr für 5D bohren Avec arrosage central, forage 5D
 WDO-SUS-5D NEW	WXL	Coolant through for 5D type Fori di lubrificazione centrali, 5D foratura	VHM - Bohrer mit innerer Kühlmittelzufuhr für 5D bohren Avec arrosage central, forage 5D
 TRS-HO-3D New Sizes	WDI	Coolant through, 3 flutes, high feed drill, 3D type Con foro di lubrificazione, 3 eliche, alto avanzamento, 3 D	Innenkühlung , 3 Schneiden , Hochleistungsbohrer , 3xD Arrosage interne, 3 levres, perçage haute vitesse, perçage 3D
 TRS-HO-5D New Sizes	WDI	Coolant through, 3 flutes, high feed drill, 5D type Con foro di lubrificazione, 3 eliche, alto avanzamento, 5 D	Innenkühlung , 3 Schneiden , Hochleistungsbohrer , 5xD Arrosage interne, 3 levres, perçage haute vitesse, perçage 5D
 TRS-HO-IOD NEW	WDI	Coolant through, 3 flutes, high feed drill, 10D type Con foro di lubrificazione, 3 eliche, alto avanzamento, 10 D	Innenkühlung , 3 Schneiden , Hochleistungsbohrer , 10xD Arrosage interne, 3 levres, perçage haute vitesse, perçage 10D
 D-STAD	DIA	For CFRP material, triple angle drill Per materiali compositi CFRP	für Verbundwerkstoffe (Kohlefaser / CFRP) Pour matériaux composites
 WDO-PLT	WDI	Coolant through, pilot drill for WDO-10D/15D/20D/30D, CAO-GDXL Punta pilota per WDO-10D/15D/20D/30D, CAO-GDXL	VHM Pilotbohrer für Tiefbohrer, mit innerer Kühlmittelzufuhr Pilot pour WDO-10D/15D/20D/30D, CAO-GDXL
 WDO-IOD	WDI	Coolant through, extra long non-step drill,10D Con foro di lubrificazione, extra lunga senza step 10 D	Innengekühlter Tieflochbohrer , 10xD , Bohren ohne Step Arrosage interne, foret extra long 10D sans débourage
 WDO-I5D	WDI	Coolant through, extra long non-step drill,15D Con foro di lubrificazione, extra lunga senza step 15 D	Innengekühlter Tieflochbohrer , 15xD , Bohren ohne Step Arrosage interne, foret extra long 15D sans débourage

SPECIFICATION			RANGE	PAGE
SOLID CARBIDE				
Små størrelser for præcisionsbearbejdning	Små storlekar för precisionsarbeten	Hassas operasyonları için ufak ölçüler	0,2 ~ 5	C.32 ~ C.34
Tamaño pequeño para operaciones de precisión	Маленький размер для точной обработки	Mały wymiar do pracy precyzyjnej		
Små størrelser for dybe huller i rustfrit	Små storlekar för djupborrning i rostfria stål	Paslanmaz çelikler için ufak ölçüler, derin delme	0,5 ~ 3	C.35
Tamaño pequeño para taladrado de aceros inoxidables	Глубокое сверление маленьких диаметров для нержавеющей стали	Mały wymiar do głębokiego wiercenia w stalach niedzewnych		
Universalt for 2D boring	Allround för 2D	Genel kullanım, 2D matkap	2 ~ 12	C.36
Empleo general, para taladrado 2D	Сверло длиной 2D с каналами для СОЖ	Ogólnego przeznaczenia, wiercenie 2D		
Universalt for 4D boring	Allround för 4D	Genel kullanım, 4D matkap	2 ~ 20	C.37
Empleo general, para taladrado 4D	Сверло длиной 4D с каналами для СОЖ	Ogólnego przeznaczenia, wiercenie 4D		
Kølekanaler, for 3D boring	Kylkanaler för 3D	3D tip için içten soğutmalı	2,8 ~ 20	C.38
Refrigeración interna para taladrado 3D	Сверление глубиной 3D с каналами для СОЖ	Chłodzenie wewętrzne wiercenie 3D		
Kølekanaler, for 5D boring	Kylkanaler för 5D	5D tip için içten soğutmalı	2,8 ~ 20	C.39
Refrigeración interna para taladrado 5D	Сверление глубиной 5D с каналами для СОЖ	Chłodzenie wewętrzne wiercenie 5D		
Kølekanaler, for 5D boring	Kylkanaler för 5D	5D tip için içten soğutmalı	3 ~ 20	C.40
Refrigeración interna para taladrado 5D	Сверление глубиной 5D с каналами для СОЖ	Chłodzenie wewętrzne wiercenie 5D		
Indvendig køling, 3 skær, high feed bor, 3D	Kylkanalsborr med 3-skär för hög matning, 3xD	İçten soğutmalı, 3 ağızlı, yüksek kesme hızlı delme, 3D boy	5 ~ 18,5	C.41
Refrigeración interna, 3 labios, para gran avance, tipo 3D	Трехзубые сверла с внутренними каналами и высокой подачей, 3D	Chłodzenie wewnętrze, trójostrzowe do dużych posuwów		
Indvendig køling, 3 skær, high feed bor, 5D	Kylkanalsborr med 3-skär för hög matning, 5xD	İçten soğutmalı, 3 ağızlı, yüksek kesme hızlı delme, 5D boy	5 ~ 18,5	C.42
Refrigeración interna, 3 labios, para gran avance, tipo 5D	Трехзубые сверла с внутренними каналами и высокой подачей, 5D	Chłodzenie wewnętrze, trójostrzowe do dużych posuwów		
Indvendig køling, 3 skær, high feed bor, 10D	Kylkanalsborr med 3-skär för hög matning, 10xD	İçten soğutmalı, 3 ağızlı, yüksek kesme hızlı delme, 10D boy	5 ~ 12	C.43
Refrigeración interna, 3 labios, para gran avance, tipo 10D	Трехзубые сверла с внутренними каналами и высокой подачей, 10D	Chłodzenie wewnętrze, trójostrzowe do dużych posuwów, 10D		
For CFRP materiale	För CFRP material	CFPR malzeme için, üç açılı matkap	4 ~ 8	C.44
Para CFRP	Для углепластика	Do materiałów CFRP, trójkątne ostrze		
Kølekanaler, pilotbor for WDO-10D/15D/20D/30D, CAO-GDXL	Kylkanaler, pilot borr för WDO-10D/15D/20D/30D, CAO-GDXL	İçten soğutma, FTO-GDXL ve WDO-10D/15D/20D/30D, CAO-GDXL için pilot matkap,	3,03 ~ 12,03	C.45
Refrigeración interna para taladrado de agujero piloto WDO-10D/15D/20D/30D, CAO-GDXL	Пилотное сверло с каналами для СОЖ для WDO-10D/15D/20D/30D, CAO-GDXL	Chłodzenie wewnętrzne, wiertło pilotowe do WDO-10D/15D/20D/30D, CAO-GDXL		
Kølekanaler, extra lang, step-fri boring,10D	Kylkanaler, extra långa borr för step fri borrning,10D	İçten soğutma, ekstra uzun kesintisiz delme, 10D	2 ~ 12	C.46
Refrigeración interna, extra-larga hasta 10D con avance ininterrumpido	Особо длинные сверла с внутренними каналами для непрерывного сверления 10D	Chłodzenie wewnętrzne, extra długie, wiercenie bez odwiórowywania - non-step,10D		
Kølekanaler, extra lang, step-fri boring,15D	Kylkanaler, extra långa borr för step fri borrning,15D	İçten soğutma, ekstra uzun kesintisiz delme, 15D	3 ~ 12	C.47
Refrigeración interna, extra-larga hasta 15D con avance ininterrumpido	Особо длинные сверла с внутренними каналами для непрерывного сверления 15D	Chłodzenie wewnętrzne, extra długie, wiercenie bez odwiórowywania - non-step,15D		

NAME		SPECIFICATION	
SOLID CARBIDE			
 WDO-20D New Sizes	WDI	Coolant through, extra long non-step drill, 20D Con foro di lubrificazione, extra lunga senza step 20 D	Innengekühlter Tieflochbohrer , 30xD , Bohren ohne Step Arrosage interne, foret extra long 20D sans débourage
 WDO-30D New Sizes	WDI	Coolant through, extra long non-step drill 30D Con foro di lubrificazione, extra lunga senza step 30 D	Innengekühlter Tieflochbohrer , 30xD , Bohren ohne Step Arrosage interne, foret extra long 30D sans débourage
CAO-GDXL		Coolant through, extra long non-step drilling in Cu & Al alloys Con fori di lubrificazione,serie extra lunga senza step, per fori profondi su Cu,Al	VHM Tieflochbohrer, für die Bearbeitung von Cu und Al in einem Step, mit innerer Kühlmittelzufuhr Avec trous d'huile, forage profond sans débourrage dans Cu, Al
 HYP-HP-3D New Sizes	TiAlN	General purpose 3D drill 3D senza fori raccomandato per applicazioni generali	3D, für allgemeine Anwendungen 3D, applications générales
 HYP-HP-5D New Sizes	TiAlN	General purpose 5D drill 5D senza fori raccomandato per applicazioni generali	5D Bohrer-Allgemeine Anwendungen Foret 5D application générale
 HYP-HPO-3D	TiAlN	Coolant through general 3D drill 3D con fori di lubrificazione raccomandato per applicazioni generali	VHM - Bohrer, 3D, für allgemeine Anwendungen, mit innerer Kühlmittelzufuhr Carbure micrograin, 3D, applications générales
 HYP-HPO-5D	TiAlN	Coolant through, general 5D drill 5D con fori di lubrificazione raccomandato per applicazioni generali	VHM - Bohrer, 5D, für allgemeine Anwendungen, mit innerer Kühlmittelzufuhr Carbure micrograin, 5D, applications générales
 HYP-HPO-8D New Sizes	TiAlN	Coolant through, general 8D drill 8D con fori di lubrificazione accomandato per applicazioni generali	VHM - Bohrer, 8D, für allgemeine Anwendungen, mit innerer Kühlmittelzufuhr Carbure micrograin, 8D, applications générales
 WH55-5D	WXS	For hard materials up to 55 HRC Per materiali con durezza fino a 55 HRC	Für gehärtete Materialien bis 55 HRC Pour des matériaux durs jusqu'à 55 HRC
 WHO55-5D	WXS	For hard materials up to 55 HRC Per materiali con durezza fino a 55 HRC	Für gehärtete Materialien bis 55 HRC Pour des matériaux durs jusqu'à 55 HRC
 WH70-DRL	WXS	For hard materials up to 70 HRC Per materiali con durezza fino a 70 HRC	Für gehärtete Materialien bis 70 HRC Pour des matériaux durs jusqu'à 70 HRC
 EX-H-DRL		For removing broken taps Per la rimozione di maschi rotti e bulloni danneggiati	Zum Entfernen von abgebrochenen Gewindebohrern Pour extraction de tarauds cassés
 PHP		3XD High Performance Indexable Drill, 2 flutes 3 xD alta performance punta ad inserti	3 x D Hochleistungswendeplattenbohrer Foret à plaquettes amovibles 3D haute performance
 PXD NEW		3 & 5D High Performance Indexable Drill, 2 flutes 3 & 5D alta performance punta ad inserti	3 & 5D Hochleistungswendeplattenbohrer Foret à plaquettes amovibles 3 & 5D haute performance
 P5D NEW		5X D High Performance Indexable Drill, 2 flutes 5 xD alta performance punta ad inserti	5 x D Hochleistungswendeplattenbohrer Foret à plaquettes amovibles 5D haute performance

SPECIFICATION			RANGE	PAGE
SOLID CARBIDE				
Kølekanaler, extra lang, step-fri boring, 20D	Kylkanaler, extra långa borr för step fri borrning, 20D	İçten soğutma, ekstra uzun kesintisiz delme, 20D	3 ~ 12	C.48
Refrigeración interna, extra-larga hasta 20D con avance ininterrumpido	Особо длинные сверла с внутренними каналами для непрерывного сверления 20D	Chłodzenie wewnętrzne, extra długie, wiercenie bez odwiórowywania - non-step,20D		
Kølekanaler, extra lang, step-fri boring, 30D	Kylkanaler, extra långa borr för step fri borrning, 30D	İçten soğutma, ekstra uzun kesintisiz delme, 30D	3 ~ 10	C.49
Refrigeración interna, extra-larga hasta 30D con avance ininterrumpido	Особо длинные сверла с внутренними каналами для непрерывного сверления 30D	Chłodzenie wewnętrzne, extra długie, wiercenie bez odwiórowywania - non-step,30D		
Kølekanaler for dybe huller i Kobber og aluminium, step-fri boring	Kylkanaler, extra långa borr för step fri borrning i koppar & Aluminium	İçten soğutma, ekstra uzun, Cu & Al alaşımlarını kesintisiz delme için	3 ~ 10	C.50
Refrigeración interna para taladrado pro-fundo de aleaciones de Cu y Aluminio	Сверхдлинное сверло с каналами для СОЖ для медных и алюминиевых сплавов	Chłodzenie wewnetrzne, extra długie,wiercenie non-step w stopach Cu i Al		
Generelt brug, 3D boring	Allround 3D borr	Genel kullanım, 3D matkap	1 ~ 20	C.51 - C.52
Empleo general para taladrado 3D	Сверло длиной 3D общего назначения	Wiertło 3D ogólnego zastosowania		
Universalt 5D bor	Allround 5D	Genel kullanım, 5D matkap	1 ~ 20	C.53 - C.54
Broca 5D empleo general	Многоцелевое сверло 5D	Wiertło 5D ogólnego zastosowania		
Kølekanaler, generelt brug, 3D boring	Kylkanaler, allround för 3D	İçten soğutma, genel kullanım, 3D matkap	3 ~ 20	C.55 - C.56
Refrigeración interna para taladrado general 3D	Сверло длиной 3D общего назначения с каналами для СОЖ	Chłodzenie wewętrzne wiercenie 3D		
Kølekanaler, generelt brug, 5D boring	Kylkanaler, allround för 5D	İçten soğutma, genel kullanım, 5D matkap	3 ~ 20	C.57 - C.58
Refrigeración interna para taladrado general 5D	Сверло длиной 5D общего назначения с каналами для СОЖ	Chłodzenie wewętrzne wiercenie 5D		
Kølekanaler, generelt brug, 8D boring	Kylkanaler, allround för 8D	İçten soğutma, genel kullanım, 8D matkap	3 ~ 20	C.59 - C.60
Refrigeración interna para taladrado general 8D	Сверло длиной 8D общего назначения с каналами для СОЖ	Chłodzenie wewętrzne wiercenie 8D		
For hårde materialer op til 55 HRC	För hårda material upp till 55 HRC	55HRC ye kadar sertleştirilmiş malzemeler için	2 ~ 12	C.61
Para materiales duros hasta 55 HRC	Для закаленных сталей < 55 HRC	Do twardych materiałów do 55 HRC		
For hårde materialer op til 55 HRC	För hårda material upp till 55 HRC	55HRC ye kadar sertleştirilmiş malzemeler için	3,3 ~ 12	C.62
Para materiales duros hasta 55 HRC	Для закаленных сталей < 55 HRC	Do twardych materiałów do 55 HRC		
For hårde materialer op til 70 HRC	För hårda material upp till 70 HRC	70HRC ye kadar sertleştirilmiş malzemeler için	2 ~ 12	C.63
Para materiales duros hasta 70 HRC	Для закаленных сталей < 70 HRC	Do twardych materiałów do 70 HRC		
Til udboring af knækkede gevindtappe	För borttagning av brutna gängtappar	Kırılmış kılavuzları çıkarmak için	2 ~ 12	C.64
Para extraer machos rotos	Для удаления сломанных метчиков	Do usuwania złamanych gwintowników		
3 x D High Performance bor med vendeskær	3 x D high performance borr	3 X D yüksek performansli takma uçlu matkap, 2 ağizli	14 ~ 40	C.98 - C.99
Broca insertable para altas prestaciones	3D высокопроизводительное сверло со сменными пластинками	3 X D wysokowydajne wiertła na płytki, 2 ostrzowe		
3 & 5D High Performance bor med vendeskær	3 & 5D high performance borr	3 & 5D yüksek performansli takma uçlu matkap, 2 ağizli	13,5 ~ 24,5	C.100 - 103
Broca insertable para altas prestaciones 3 & 5D	3 & 5D высокопроизводительное сверло со сменными пластинками	3 & 5D wysokowydajne wiertła na płytki, 2 ostrzowe		
5 x D High Performance bor med vendeskær	5 x D high performance borr	5 X D yüksek performansli takma uçlu matkap, 2 ağizli	21 ~ 33,5	C.106 - 107
Broca insertable para altas prestaciones 5D	5D высокопроизводительное сверло со сменными пластинками	5 X D wysokowydajne wiertła na płytki, 2 ostrzowe		

INDEX

NAME		SPECIFICATION	
XPM			
 VPH-GDS	WDI	Ideal for alloy steel, short Corta, ideale per acciai legati	Besonders geeignet für legierten Stahl, kurze Bohrungen Idéale pour des aciers alliés, court
 VP-GDR	V	Regular for high speed drilling Regolare, per forature ad alta velocità	Geeignet für Hochleistungsbohren (HSC) Normal, pour forage haute vitesse
 VP-HO-GDR	V	Coolant through, regular for high speed drilling Regolare, con fori di lubrificazione, per forature ad alta velocità	Mit Innenkühlung für Hochleistungsbohren (HSC) Avec arrosage central, normal, pour forage haute vitesse
HSSE / HSS-Co			
 NEXUS-GDS	WDI	Stub for high speed drilling Corta, per forature ad alta velocità	Kurz, für Hochleistungsbohren (HSC) Court, pour forage haute vitesse
 NEXUS-GDR	WDI	Regular for high speed drilling Regolare, per forature ad alta velocità	Geeignet für Hochleistungsbohren (HSC) Normal, pour forage haute vitesse
 EX-SUS-GDS	TIN	Ideal for stainless and Aluminium, stub Corta, ideale per acciai inossidabili e alluminio	Besonders geeignet für VA Materialien und Aluminium Idéal pour les aciers inoxydables et aluminium, court
 EX-SUS-GDR	TIN	Ideal for stainless and Aluminium, regular Regolare, ideale per acciai inossidabili e alluminio	Besonders geeignet für VA Materialien und Aluminium Idéal pour les aciers inoxydables et aluminium, normal
 V-HDO-GDR	V	Coolant through, general purpose, regular Regolare, con fori di lubrificazione, per applicazioni generali	HSS Co8, mit innerer Kühlmittelzufuhr, für allgemeine Anwendungen, normale Ausführung Avec arrosage central, pour application universelles, normal
TDXL	WXL	Non-step 10D, 15D, 20 D without coolant through Foratura continua, 10D, 15D, 20 D senza fori di lubrificazione	Ohne Step, 10D, 15D, 20 D Ohne innerer Kühlmittelzuführ Forage en contin, 10D, 15D, 20 D, sans arrosage central
 EX-GDXL	TIN	Extra long for general applications Extra lunga per applicazioni generali	Extra langer Bohrer, für allgemeine Anwendungen Extra long, pour applications universelles
DIN 338			
 V-SDR	V	For general applications Per applicazioni generali	Für allgemeine Bearbeitung Pour applications générales
SPOTTING DRILLS			
 FX-LDS	FX	Carbide, for centering and chamfering Carburo monoblocco-rivestimento FX per centratura e svasatura su centri di lavoro	Besonders geeignet für legierten Stahl, kurze Bohrungen Idéale pour des aciers alliés, court
 HYP-LDS		Carbide, for centering and chamfering Carburo monoblocco per centratura e svasatura su centri di lavoro	Besonders geeignet für legierten Stahl, kurze Bohrungen Idéale pour des aciers alliés, court
 (TIN)-NC-LDS	TIN	HSS, for centering and chamfering Standard HSS-per centratura e svasatura su centri di lavoro	Geeignet für Hochleistungsbohren (HSC) Normal, pour forage haute vitesse
 HY-PRO-CARB		Multi purpose chamfering and centering tool Utensile per scanalature, multiuso, per centri di foratura	Vielseitig einsetzbares Faswerkzeug und Zentrierwerkzeug Foret multi-fonction, pour pointage et chanfreinage

SPECIFICATION			RANGE	PAGE
XPM				
Ideel til legeret stål, kort	Perfekt för legerat stål, kort	Çelik alaşımları için ideal, kısa	2 ~ 13	C.65
Ideal para aceros aleados, corta	Идеально для легированных сталей, короткое	Idealne do stali stopowych, krótkie		
Mellemlang, til high speed boring	Normal lång, för high speed borrning	Yüksek kesme hızlı delme için uygun	2 ~ 32	C.66 - C.67
Regular para taladrado a alta velocidad	Сверло нормальной длины для скоростного сверления	Standard do wysokich prędkości wiercenia		
Kølekanaler, mellemlang, til high speed boring	Kylkanaler, normal lång, för high speed borrning	İçten soğutmalı, yüksek kesme hızlı delme için uygun	6 ~ 32	C.68
Refrigeración interna para taladrar a alta velocidad	Сверло нормальной длины для скоростного сверления с каналами для СОЖ	Chłodzenie wewnętrzne, standard do wysokich prędkości wiercenia		
HSSE / HSS-Co				
Kort, til high speed boring	Kort för high speed borring	Yüksek hızda delme için küt uç	1 ~ 12	C.69
Corta para taladrado a alta velocidad	Короткое сверло для скоростного сверления	Do wysokich prędkości wiercenia, krótkie		
Mellemlang, til high speed boring	Normal lång, för high speed drilling	Yüksek kesme hızlı delme için uygun	2 ~ 12	C.70
Regular para taladrado a alta velocidad	Сверло нормальной длины для скоростного сверления	Standard do wysokich prędkości wiercenia		
Ekstra kort, ideel til rusfrit stål og aluminium	Perfekt för rostfria stål och aluminium, kort	Paslanmaz çelik ve Alüminyum için ideal, küt	0,5 ~ 20	C.71 ~ C.77
Ideal para aceros inoxidables y aluminio, corta	Идеально для нержавеющих сталей и алюминия, короткое	Idealne do stali nierdzewnych i aluminium, krótkie		
Mellemlang, ideel til rusfrit stål og aluminium	Normal, perfekt för rostfria stål och Aluminium	Paslanmaz çelik ve Alüminyum için ideal, yüksek	2 ~ 20	C.79 ~ C.82
Regular, ideal para aceros inoxidables y aluminio	Идеально для нержавеющих сталей и алюминия, короткое	Idealne do stali nierdzewnych i aluminium, krótkie		
Kølekanaler, generelt brug, mellemlang	Kylkanaler, allround, normal lång	İçten soğutmalı, genel kullanım, yüksek	6 ~ 32	C.83
Refriferación interna, emplo general, regular	Сверло нормальной длины общего назначения с каналами для СОЖ	Chłodzenie wewnętrze, ogólnego przeznaczenia, standard		
Uden udspåning i, 10D, 15D, 20 D, uden Kølekanaler	Step fri borning, 10D, 15D, 20 D, utan Kylkanaler	Kesintisiz delme 10D, 15D, 20D içten soğutma olmadan	1,6 ~ 12	C.84 - C.85
Taladrado ininterrumpido 10D, 15D, 20 D, sin agujeros de refrigeración	Непрерывное сверление глубиной 10 D, 15 D, 20 D без внутреннего охлаждения	Wiercenie bez odwiórowywania - non step 10D, 15D, 20 D bez chłodzenia wewnętrznego		
ekstra lang, generelt brug	Extra ånga borr, allround	Genel uygulamar için extra uzun	2 ~ 13	C.86 ~ C.89
Broca extra-larga para aplicaciones generales	Особо длинное общего назначения	Extra długie, do zastosowań ogólnych		
DIN 338				
Generelt brug	Allround bearbetning	Genel uygulamar için	2 ~ 13	C.90
Para aplicaciones generales	Общего назначения	Do zastosowań ogólnych		
SPOTTING DRILLS				
Ideel til legeret stål, kort	Perfekt för legerat stål, kort	Karbür, merkezleme ve pah kırmak için	3 ~ 25	C.91
Ideal para aceros aleados, corta	Идеально для легированных сталей, короткое	Węglik, do centrowania i fazowania		
Ideel til legeret stål, kort	Perfekt för legerat stål, kort	Karbür, merkezleme ve pah kırmak için	3 ~ 20	C.92
Ideal para aceros aleados, corta	Идеально для легированных сталей, короткое	Węglik, do centrowania i fazowania		
Mellemlang, til high speed boring	Normal lång, för high speed borrning	HSS, merkezleme ve pah kırmak için	3 ~ 25	C.93
Regular para taladrado a alta velocidad	Сверло нормальной длины для скоростного сверления	HSS, do centrowania i fazowania		
Multifunktionsværktøj, til centrering og reifning	Multifunktionsverktyg för centrering och fasning osv.	Çok amaçlı merkezleme ve pah kırma takımı	8 ~ 26,6	C.95 ~ C.97
Herramienta multi-función para centrar y chaflanar	Универсальный инструмент для центровки и снятия фасок	Wielofunkcyjne narzędzie do fazowania i centrowania		

DRILL SELECTION CHART

FOR DRILLING DEPTH ≤ 2D

NAME	Appearance	Material	Surface Treatment	Range dia. (mm)	Page
WX-MS-GDS		CARBIDE	WX	0,2 ~ 5	C.32~C.34
WD-2D New Sizes		CARBIDE	WDI	2 ~ 12	C.36
WD-4D New Sizes		CARBIDE	WDI	2 ~ 20	C.37
WDO-3D		CARBIDE	WDI	2,8 ~ 20	C.38
WDO-5D		CARBIDE	WDI	2,8 ~ 20	C.39
WDO-SUS-5D NEW		CARBIDE	WXL	3 ~ 20	C.40
TRS-HO-3D New Sizes		CARBIDE	WDI	5 ~ 18	C.41
TRS-HO-5D New Sizes		CARBIDE	WDI	5 ~ 18,5	C.42
TRS-HO-IOD NEW		CARBIDE	WDI	5 ~ 12	C.43
D-STAD		CARBIDE	DIA	6 ~ 12	C.44
WDO-PLT		CARBIDE	WDI	3,03 ~ 12,03	C.45
HYP-HP-3D New Sizes		CARBIDE	TiAlN	1 ~ 20	C.51-C.52
HYP-HP-5D New Sizes		CARBIDE	TiAlN	1 ~ 20	C.53-C.54
HYP-HPO-3D		CARBIDE	TiAlN	3 ~ 20	C.55-C.56
HYP-HPO-5D		CARBIDE	TiAlN	3 ~ 20	C.57-C.58
HYP-HPO-8D New Sizes		CARBIDE	TiAlN	3 ~ 20	C.59-C.60
WH55-5D		CARBIDE	WXS	2 ~ 12	C.61
WHO55-5D		CARBIDE	WXS	3,3 ~ 12	C.62
WH70-DRL		CARBIDE	WXS	2 ~ 12	C.63
VPH-GDS		XPM	WDI	2 ~ 13	C.65
VP-GDR		XPM	V	2 ~ 32	C.66 - C.67
VP-HO-GDR		XPM	V	6 ~ 32	C.68
NEXUS-GDS		HSSE	WDI	1 ~ 12	C.69
NEXUS-GDR		HSSE	WDI	2 ~ 12	C.70
EX-SUS-GDS		HSSE	TiN	0,5 ~ 20	C.71~C.77
EX-SUS-GDR		HSSE	TiN	2 ~ 20	C.79~C.82
V-HDO-GDR		HSSE	V	6 ~ 32	C.83
V-SDR		HSSE	V	2 ~ 13	C.90
PHP				14 ~ 40	C.98~C.99
PXD NEW				13,5 ~ 24,5	C.100~103
P5D NEW				21 ~ 33,5	C.106-107

	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast iron	Copper Alloys	Aluminium	Aluminium Alloy Cast.	Titanium	Titanium Alloys	Inconel	Magnesium Alloy	CFRP
	C~ 0.25%	C 0.25% ~ 0.45%	C 0.45% ~	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~62 HRC	62~70 HRC	SUS	SKD SKS	FC	FCD	Cu	Al	AC	Ti	Tiall	Inc	AZ91D	
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DRILL SELECTION CHART

FOR DRILLING DEPTH ≤ 3D

NAME	Appearance	Material	Surface Treatment	Range dia. (mm)	Page
WX-MS-GDS		CARBIDE	WX	0,2 ~ 5	C.32~C.34
WD-4D New Sizes		CARBIDE	WDI	2 ~ 20	C.37
WDO-3D		CARBIDE	WDI	2,8 ~ 20	C.38
WDO-5D		CARBIDE	WDI	2,8 ~ 20	C.39
WDO-SUS-5D NEW		CARBIDE	WXL	3 ~ 20	C.40
TRS-HO-3D New Sizes		CARBIDE	WDI	5 ~ 18	C.41
TRS-HO-5D New Sizes		CARBIDE	WDI	5 ~ 18,5	C.42
TRS-HO-IOD NEW		CARBIDE	WDI	5 ~ 12	C.43
D-STAD		CARBIDE	DIA	6 ~ 12	C.44
HYP-HP-3D New Sizes		CARBIDE	TiAlN	1 ~ 20	C.51-C.52
HYP-HP-5D New Sizes		CARBIDE	TiAlN	1 ~ 20	C.53-C.54
HYP-HPO-3D		CARBIDE	TiAlN	3 ~ 20	C.55-C.56
HYP-HPO-5D		CARBIDE	TiAlN	3 ~ 20	C.57-C.58
HYP-HPO-8D New Sizes		CARBIDE	TiAlN	3 ~ 20	C.59-C.60
WH55-5D		CARBIDE	WXS	2 ~ 12	C.61
WHO55-5D		CARBIDE	WXS	3,3 ~ 12	C.62
WH70-DRL		CARBIDE	WXS	2 ~ 12	C.63
VPH-GDS		XPM	WDI	2 ~ 13	C.65
VP-GDR		XPM	V	2 ~ 32	C.66-C.67
VP-HO-GDR		XPM	V	6 ~ 32	C.68
NEXUS-GDS		HSSE	WDI	1 ~ 12	C.69
NEXUS-GDR		HSSE	WDI	2 ~ 12	C.70
EX-SUS-GDS		HSSE	TiN	0,5 ~ 20	C.71-C.77
EX-SUS-GDR		HSSE	TiN	2 ~ 20	C.78-C.82
V-HDO-GDR		HSSE	V	6 ~ 32	C.83
V-SDR		HSSE	V	2 ~ 13	C.90
PHP				14 ~ 40	C.98~C.99
PXD NEW				13,5 ~ 24,5	C.100~103
P5D NEW				21 ~ 33,5	C.106-107

	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast iron	Copper Alloys	Aluminium	Aluminium Alloy Cast.	Titanium	Titanium Alloys	Inconel	Magnesium Alloy	CFRP
	C~ 0.25%	C 0.25% ~ 0.45%	C 0.45% ~	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~62 HRC	62~70 HRC	SUS	SKD SKS	FC	FCD	Cu	Al	AC	Ti	Tiall	Inc	AZ91D	
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DRILL SELECTION CHART

FOR DRILLING DEPTH ≤ 4D

NAME	Appearance	Material	Surface Treatment	Range dia. (mm)	Page
WX-MS-GDS		CARBIDE	WX	0,2 ~ 5	C.32~C.34
WD-4D New Sizes		CARBIDE	WDI	2 ~ 20	C.37
WDO-5D		CARBIDE	WDI	2,8 ~ 20	C.39
WDO-SUS-5D NEW		CARBIDE	WXL	3 ~ 20	C.40
TRS-HO-5D New Sizes		CARBIDE	WDI	5 ~ 18,5	C.42
TRS-HO-IOD NEW		CARBIDE	WDI	5 ~ 12	C.43
HYP-HP-5D New Sizes		CARBIDE	TiAlN	3 ~ 20	C.53-C.54
HYP-HPO-5D		CARBIDE	TiAlN	1 ~ 20	C.57-C.58
HYP-HPO-8D New Sizes		CARBIDE	TiAlN	3 ~ 20	C.59-C.60
WH55-5D		CARBIDE	WXS	2 ~ 12	C.61
WHO55-5D		CARBIDE	WXS	3,3 ~ 12	C.62
WH7O-DRL		CARBIDE	WXS	2 ~ 12	C.63
VPH-GDS		XPM	WDI	2 ~ 13	C.65
VP-GDR		XPM	V	2 ~ 32	C.66-C.67
VP-HO-GDR		XPM	V	6 ~ 32	C.68
NEXUS-GDS		HSSE	WDI	1 ~ 12	C.69
NEXUS-GDR		HSSE	WDI	2 ~ 12	C.70
EX-SUS-GDS		HSSE	TiN	0,5 ~ 20	C.71~C.77
EX-SUS-GDR		HSSE	TiN	2 ~ 20	C.78~C.82
V-HDO-GDR		HSSE	V	6 ~ 32	C.83
V-SDR		HSSE	V	2 ~ 13	C.90
PXD NEW				13,5 ~ 24,5	C.100~103
P5D NEW				21 ~ 33,5	C.106-107

FOR DRILLING DEPTH ≤ 5D

NAME	Appearance	Material	Surface Treatment	Range dia. (mm)	Page
PXD NEW				13,5 ~ 24,5	C.100~103
P5D NEW				21 ~ 33,5	C.106-107
WDO-5D		CARBIDE	WDI	2,8 ~ 20	C.39
WDO-SUS-5D		CARBIDE	WXL	3 ~ 20	C.40
TRS-HO-5D New Sizes		CARBIDE	WDI	5 ~ 18,5	C.42
TRS-HO-IOD NEW		CARBIDE	WDI	5 ~ 12	C.43
HYP-HP-5D New Sizes		CARBIDE	TiAlN	1 ~ 20	C.53-C.54

	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast iron	Copper Alloys	Aluminium	Aluminium Alloy Cast.	Titanium	Titanium Alloys	Inconel	Magnesium Alloy	CFRP
	C~ 0.25%	C 0.25% ~ 0.45%	C 0.45% ~	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~62 HRC	62~70 HRC	SUS	SKD SKS	FC	FCD	Cu	Al	AC	Ti	Tiall	Inc	AZ91D	
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	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast iron	Copper Alloys	Aluminium	Aluminium Alloy Cast.	Titanium	Titanium Alloys	Inconel	Magnesium Alloy	CFRP
	C~ 0.25%	C 0.25% ~ 0.45%	C 0.45% ~	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~62 HRC	62~70 HRC	SUS	SKD SKS	FC	FCD	Cu	Al	AC	Ti	Tiall	Inc	AZ91D	
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DRILL SELECTION CHART

FOR DRILLING DEPTH ≤ 5D

NAME	Appearance	Material	Surface Treatment	Range dia. (mm)	Page
HYP-HPO-5D		CARBIDE	TiAlN	3 ~ 20	C.57-C.58
HYP-HPO-8D New sizes		CARBIDE	TiAlN	3 ~ 20	C.59-C.60
VP-GDR		XPM	V	2 ~ 32	C.66-C.67
VP-HO-GDR		XPM	V	6 ~ 32	C.68
NEXUS-GDR		HSSE	WDI	2 ~ 12	C.70
EX-SUS-GDR		HSSE	TiN	2 ~ 20	C.78~C.82
WH55-5D		CARBIDE	WXS	2 ~ 12	C.61
WHO55-5D		CARBIDE	WXS	3,3 ~ 12	C.62
WH7O-DRL		CARBIDE	WXS	2 ~ 12	C.63
V-HDO-GDR		HSSE	V	6 ~ 32	C.68
EX-GDXL		HSS-Co	TiN	2 ~ 13	C.86~C.89

FOR DRILLING DEPTH ≤ 8D

NAME	Appearance	Material	Surface Treatment	Range dia. (mm)	Page
EX-GDXL		HSS-Co	TiN	2 ~ 13	C.86~C.89
HYP-HPO-8D		CARBIDE	TiAlN	5 ~ 16	C.59~C.60

FOR DRILLING DEPTH ≤ 10D

NAME	Appearance	Material	Surface Treatment	Range dia. (mm)	Page
MRS-GDL		CARBIDE	SC	0,5 ~ 3	C.35
WDO-IOD		CARBIDE	WDI	2 ~ 12	C.46
TRS-HO-IOD NEW		CARBIDE	WDI	5 ~ 12	C.43
TDXL		HSS-Co	WXL	1,6 ~ 12	C.84~C.85
EX-GDXL		HSS-Co	TiN	2 ~ 13	C.86~C.89

FOR DRILLING DEPTH ≤ 15D

NAME	Appearance	Material	Surface Treatment	Range dia. (mm)	Page
WDO-I5D		CARBIDE	WDI	3 ~ 12	C.47
CAO-GDXL		CARBIDE		3 ~ 10	C.50
TDXL		HSS-Co	WXL	1,6 ~ 12	C.84-C.85
EX-GDXL		HSS-Co	TiN	2 ~ 13	C.86~C.89

	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast iron	Copper Alloys	Aluminium	Aluminium Alloy Cast.	Titanium	Titanium Alloys	Inconel	Magnesium Alloy	CFRP
	C~ 0.25%	C 0.25% ~ 0.45%	C 0.45% ~	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~62 HRC	62~70 HRC	SUS	SKD SKS	FC	FCD	Cu	Al	AC	Ti	Tiall	Inc	AZ91D	
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	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast iron	Copper Alloys	Aluminium	Aluminium Alloy Cast.	Titanium	Titanium Alloys	Inconel	Magnesium Alloy	CFRP
	C~ 0.25%	C 0.25% ~ 0.45%	C 0.45% ~	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~62 HRC	62~70 HRC	SUS	SKD SKS	FC	FCD	Cu	Al	AC	Ti	Tiall	Inc	AZ91D	
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	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast iron	Copper Alloys	Aluminium	Aluminium Alloy Cast.	Titanium	Titanium Alloys	Inconel	Magnesium Alloy	CFRP
	C~ 0.25%	C 0.25% ~ 0.45%	C 0.45% ~	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~62 HRC	62~70 HRC	SUS	SKD SKS	FC	FCD	Cu	Al	AC	Ti	Tiall	Inc	AZ91D	
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	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast iron	Copper Alloys	Aluminium	Aluminium Alloy Cast.	Titanium	Titanium Alloys	Inconel	Magnesium Alloy	CFRP
	C~ 0.25%	C 0.25% ~ 0.45%	C 0.45% ~	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~62 HRC	62~70 HRC	SUS	SKD SKS	FC	FCD	Cu	Al	AC	Ti	Tiall	Inc	AZ91D	
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DRILL SELECTION CHART

FOR DRILLING DEPTH ≤ 20D

NAME	Appearance	Material	Surface Treatment	Range dia. (mm)	Page
WDO-20D New Sizes		CARBIDE	WDI	3 ~ 12	C.48
CAO-GDXL		CARBIDE		3 ~ 10	C.50
TDXL		HSS-Co	WXL	1,6 ~ 12	C.84-C.85
EX-GDXL		HSS-Co	TiN	2 ~ 13	C.86~C.89

FOR DRILLING DEPTH ≤ 30D

NAME	Appearance	Material	Surface Treatment	Range dia. (mm)	Page
WDO-30D New Sizes		CARBIDE	WDI	3 ~ 10	C.49
CAO-GDXL		CARBIDE		3 ~ 10	C.50

	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast iron	Copper Alloys	Aluminium	Aluminium Alloy Cast.	Titanium	Titanium Alloys	Inconel	Magnesium Alloy	CFRP
	C~ 0.25%	C 0.25% ~ 0.45%	C 0.45% ~	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~62 HRC	62~70 HRC	SUS	SKD SKS	FC	FCD	Cu	Al	AC	Ti	Tiall	Inc	AZ91D	
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	Low Carbon Steel	Medium Carbon Steel	High Carbon Steel	Alloy Steel	Hardened Steel		Quenched and Tempered Steel			Stainless Steel	Tool Steel	Cast Iron	Ductile Cast iron	Copper Alloys	Aluminium	Aluminium Alloy Cast.	Titanium	Titanium Alloys	Inconel	Magnesium Alloy	CFRP
	C~ 0.25%	C 0.25% ~ 0.45%	C 0.45% ~	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~62 HRC	62~70 HRC	SUS	SKD SKS	FC	FCD	Cu	Al	AC	Ti	Tiall	Inc	AZ91D	
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WX-MS-GDS

ULTRA WX
- High performance
- Small size for precision operation

ULTRA WX
- High performance
- Kleine Abmessungen für hochpräzise Bearbeitungen

ULTRA WX
- Alta prestazione
- Micropunta per operazioni di precisione

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- Haute performance
- Petites dimensions pour des opérations de précision

ULTRA WX
- Yüksek performans
- Hassas operasyonları için ufak ölçüler

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- Små størrelser for præcisionsbearbejdning

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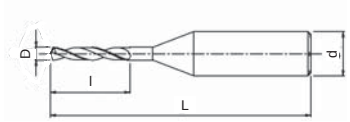
ULTRA WX
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- Маленькие диаметры для точного сверления

ULTRA WX
- Wysoka wydajność
- Mały wymiar do pracy precyzyjnej

GO TO LIVE STOCK CHECK

Ultra WX







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
3300020	0,2	38	1,5	3	●		3300072	0,72	38	4,5	3	●	
3300021	0,21	38	1,5	3	●		3300073	0,73	38	4,5	3	●	
3300022	0,22	38	1,5	3	●		3300074	0,74	38	4,5	3	●	
3300023	0,23	38	1,5	3	●		3300075	0,75	38	4,5	3	●	
3300024	0,24	38	1,5	3	●		3300076	0,76	38	5	3	●	
3300025	0,25	38	1,5	3	●		3300077	0,77	38	5	3	●	
3300026	0,26	38	1,5	3	●		3300078	0,78	38	5	3	●	
3300027	0,27	38	1,5	3	●		3300079	0,79	38	5	3	●	
3300028	0,28	38	1,5	3	●		3300080	0,8	38	5	3	●	
3300029	0,29	38	1,5	3	●		3300081	0,81	38	5	3	●	
3300030	0,3	38	1,5	3	●		3300082	0,82	38	5	3	●	
3300031	0,31	38	2	3	●		3300083	0,83	38	5	3	●	
3300032	0,32	38	2	3	●		3300084	0,84	38	5	3	●	
3300033	0,33	38	2	3	●		3300085	0,85	38	5	3	●	
3300034	0,34	38	2	3	●		3300086	0,86	38	5,5	3	●	
3300035	0,35	38	2	3	●		3300087	0,87	38	5,5	3	●	
3300036	0,36	38	2	3	●		3300088	0,88	38	5,5	3	●	
3300037	0,37	38	2	3	●		3300089	0,89	38	5,5	3	●	
3300038	0,38	38	2	3	●		3300090	0,9	38	5,5	3	●	
3300039	0,39	38	2,5	3	●		3300091	0,91	38	5,5	3	●	
3300040	0,4	38	2,5	3	●		3300092	0,92	38	5,5	3	●	
3300041	0,41	38	2,5	3	●		3300093	0,93	38	5,5	3	●	
3300042	0,42	38	2,5	3	●		3300094	0,94	38	5,5	3	●	
3300043	0,43	38	2,5	3	●		3300095	0,95	38	5,5	3	●	
3300044	0,44	38	2,5	3	●		3300096	0,96	38	6	3	●	
3300045	0,45	38	2,5	3	●		3300097	0,97	38	6	3	●	
3300046	0,46	38	2,5	3	●		3300098	0,98	38	6	3	●	
3300047	0,47	38	2,5	3	●		3300099	0,99	38	6	3	●	
3300048	0,48	38	2,5	3	●		3300100	1	38	6	3	●	
3300049	0,49	38	3	3	●		3300101	1,01	38	6	3	●	
3300050	0,5	38	3	3	●		3300102	1,02	38	6	3	●	
3300051	0,51	38	3	3	●		3300103	1,03	38	6	3	●	
3300052	0,52	38	3	3	●		3300104	1,04	38	6	3	●	
3300053	0,53	38	3	3	●		3300105	1,05	38	6	3	●	
3300054	0,54	38	3,5	3	●		3300106	1,06	38	6	3	●	
3300055	0,55	38	3,5	3	●		3300107	1,07	42	7	3	●	
3300056	0,56	38	3,5	3	●		3300108	1,08	42	7	3	●	
3300057	0,57	38	3,5	3	●		3300109	1,09	42	7	3	●	
3300058	0,58	38	3,5	3	●		3300110	1,1	42	7	3	●	
3300059	0,59	38	3,5	3	●		3300111	1,11	42	7	3	●	
3300060	0,6	38	3,5	3	●		3300112	1,12	42	7	3	●	
3300061	0,61	38	4	3	●		3300113	1,13	42	7	3	●	
3300062	0,62	38	4	3	●		3300114	1,14	42	7	3	●	
3300063	0,63	38	4	3	●		3300115	1,15	42	7	3	●	
3300064	0,64	38	4	3	●		3300116	1,16	42	7	3	●	
3300065	0,65	38	4	3	●		3300117	1,17	42	7	3	●	
3300066	0,66	38	4	3	●		3300118	1,18	42	7	3	●	
3300067	0,67	38	4	3	●		3300119	1,19	42	8	3	●	
3300068	0,68	38	4,5	3	●		3300120	1,2	42	8	3	●	
3300069	0,69	38	4,5	3	●		3300121	1,21	42	8	3	●	
3300070	0,7	38	4,5	3	●		3300122	1,22	42	8	3	●	
3300071	0,71	38	4,5	3	●		3300123	1,23	42	8	3	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	○	○					○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
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● Delivery from stock
○ Available on short notice

WX-MS-GDS

ULTRA WX
- High performance
- Small size for precision operation

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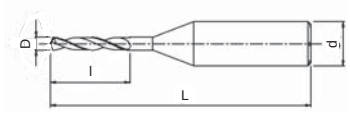
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GO TO LIVE STOCK CHECK

Ultra WX







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
3300124	1,24	42	8	3	●		3300176	1,76	42	11	3	●	
3300125	1,25	42	8	3	●		3300177	1,77	42	11	3	●	
3300126	1,26	42	8	3	●		3300178	1,78	42	11	3	●	
3300127	1,27	42	8	3	●		3300179	1,79	42	11	3	●	
3300128	1,28	42	8	3	●		3300180	1,8	42	11	3	●	
3300129	1,29	42	8	3	●		3300181	1,81	42	11	3	●	
3300130	1,3	42	8	3	●		3300182	1,82	42	11	3	●	
3300131	1,31	42	8	3	●		3300183	1,83	42	11	3	●	
3300132	1,32	42	8	3	●		3300184	1,84	42	11	3	●	
3300133	1,33	42	9	3	●		3300185	1,85	42	11	3	●	
3300134	1,34	42	9	3	●		3300186	1,86	42	11	3	●	
3300135	1,35	42	9	3	●		3300187	1,87	42	11	3	●	
3300136	1,36	42	9	3	●		3300188	1,88	42	11	3	●	
3300137	1,37	42	9	3	●		3300189	1,89	42	11	3	●	
3300138	1,38	42	9	3	●		3300190	1,9	42	11	3	●	
3300139	1,39	42	9	3	●		3300191	1,91	50	12	3	●	
3300140	1,4	42	9	3	●		3300192	1,92	50	12	3	●	
3300141	1,41	42	9	3	●		3300193	1,93	50	12	3	●	
3300142	1,42	42	9	3	●		3300194	1,94	50	12	3	●	
3300143	1,43	42	9	3	●		3300195	1,95	50	12	3	●	
3300144	1,44	42	9	3	●		3300196	1,96	50	12	3	●	
3300145	1,45	42	9	3	●		3300197	1,97	50	12	3	●	
3300146	1,46	42	9	3	●		3300198	1,98	50	12	3	●	
3300147	1,47	42	9	3	●		3300199	1,99	50	12	3	●	
3300148	1,48	42	9	3	●		3300200	2	50	12	3	●	
3300149	1,49	42	9	3	●		3300205	2,05	50	12	3	●	
3300150	1,5	42	9	3	●		3300210	2,1	50	12	3	●	
3300151	1,51	42	10	3	●		3300215	2,15	50	13	3	●	
3300152	1,52	42	10	3	●		3300220	2,2	50	13	3	●	
3300153	1,53	42	10	3	●		3300225	2,25	50	13	3	●	
3300154	1,54	42	10	3	●		3300230	2,3	50	13	3	●	
3300155	1,55	42	10	3	●		3300235	2,35	50	13	3	●	
3300156	1,56	42	10	3	●		3300240	2,4	50	14	3	●	
3300157	1,57	42	10	3	●		3300245	2,45	50	14	3	●	
3300158	1,58	42	10	3	●		3300250	2,5	50	14	3	●	
3300159	1,59	42	10	3	●		3300255	2,55	50	14	3	●	
3300160	1,6	42	10	3	●		3300260	2,6	50	14	3	●	
3300161	1,61	42	10	3	●		3300265	2,65	50	14	3	●	
3300162	1,62	42	10	3	●		3300270	2,7	50	16	3	●	
3300163	1,63	42	10	3	●		3300275	2,75	50	16	3	●	
3300164	1,64	42	10	3	●		3300280	2,8	50	16	3	●	
3300165	1,65	42	10	3	●		3300285	2,85	50	16	3	●	
3300166	1,66	42	10	3	●		3300290	2,9	50	16	3	●	
3300167	1,67	42	10	3	●		3300295	2,95	50	16	3	●	
3300168	1,68	42	10	3	●		3300300	3	50	16	3	●	
3300169	1,69	42	10	3	●		3300305	3,05	56	18	4	●	
3300170	1,7	42	10	3	●		3300310	3,1	56	18	4	●	
3300171	1,71	42	11	3	●		3300315	3,15	56	18	4	●	
3300172	1,72	42	11	3	●		3300320	3,2	56	18	4	●	
3300173	1,73	42	11	3	●		3300325	3,25	56	18	4	●	
3300174	1,74	42	11	3	●		3300330	3,3	56	18	4	●	
3300175	1,75	42	11	3	●		3300335	3,35	56	18	4	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	○	○					○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	○		◎	◎	○	○		

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ULTRA WX
- High performance
- Små storlekar för precisionsarbeten

ULTRA WX
- Altas prestaciones
- Tamaño pequeño para operaciones de precisión

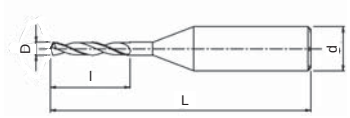
ULTRA WX
- Высокая производительность
- Маленькие диаметры для точного сверления

ULTRA WX
- Wysoka wydajność
- Mały wymiar do pracy precyzyjnej

GO TO LIVE STOCK CHECK

Ultra WX







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
3300340	3,4	56	20	4	●		3300425	4,25	64	22	5	●	
3300345	3,45	56	20	4	●		3300430	4,3	64	24	5	●	
3300350	3,5	56	20	4	●		3300435	4,35	64	24	5	●	
3300355	3,55	56	20	4	●		3300440	4,4	64	24	5	●	
3300360	3,6	56	20	4	●		3300445	4,45	64	24	5	●	
3300365	3,65	56	20	4	●		3300450	4,5	64	24	5	●	
3300370	3,7	56	20	4	●		3300455	4,55	64	24	5	●	
3300375	3,75	56	20	4	●		3300460	4,6	64	24	5	●	
3300380	3,8	56	22	4	●		3300465	4,65	64	24	5	●	
3300385	3,85	56	22	4	●		3300470	4,7	64	24	5	●	
3300390	3,9	56	22	4	●		3300475	4,75	64	24	5	●	
3300395	3,95	56	22	4	●		3300480	4,8	64	26	5	●	
3300400	4	56	22	4	●		3300485	4,85	64	26	5	●	
3300405	4,05	64	22	5	●		3300490	4,9	64	26	5	●	
3300410	4,1	64	22	5	●		3300495	4,95	64	26	5	●	
3300415	4,15	64	22	5	●		3300500	5	64	26	5	●	
3300420	4,2	64	22	5	●								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	○	○					○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	○		◎	◎	○	○		

● Delivery from stock
○ Available on short notice

MRS-GDL

SC
- High performance
- Small size deep drilling for stainless steel

SC
- High performance
- Kleine Abmessungen für Tieflochbohrungen in VA-Materialien

SC
- Alta prestazione
- Micropunta per forature profonde su acciai inossidabili

SC
- Haute performance
- Petites dimensions pour forage profond dans des aciers inoxidables

SC
- Yüksek performans
- Hassas operasyonları için ufak ölçüler

SC
- High performance
- Små størrelser for dybe huller i rustfrit

SC
- High performance
- Små storlekar för djupborrning i rostfria stål

SC
- Altas prestaciones
- Tamaño pequeño para taladrado de aceros inoxidables

SC
- Высокая производительность
- Глубокое сверление маленьких диаметров для нержавеющей стали

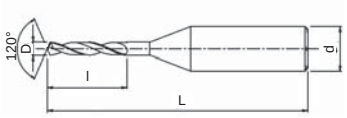
SC
- Wysoka wydajność
- Mały wymiar do głębokiego wiercenia w stalach niedzewnych

GO TO LIVE STOCK CHECK

SC

SC

CARBIDE | SC | 30° | SHRINK FIT | 0~-0.008 | F D ≤ 1,15 | X D ≥ 1,2 | min⁻¹ C.108





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8577050	0,5	42	6	3	●		8577155	1,55	54	18,6	3	●	
8577054	0,54	42	6,6	3	●		8577156	1,56	54	19,2	3	●	
8577055	0,55	42	6,6	3	●		8577157	1,57	54	19,2	3	●	
8577056	0,56	42	7,2	3	●		8577160	1,6	54	19,2	3	●	
8577060	0,6	42	7,2	3	●		8577170	1,7	58	20,4	3	●	
8577063	0,63	46	7,8	3	●		8577180	1,8	58	21,6	3	●	
8577064	0,64	46	7,8	3	●		8577181	1,81	58	22,2	3	●	
8577065	0,65	46	7,8	3	●		8577182	1,82	58	22,2	3	●	
8577070	0,7	46	8,4	3	●		8577183	1,83	58	22,2	3	●	
8577071	0,71	46	9	3	●		8577190	1,9	58	22,8	3	●	
8577072	0,72	46	9	3	●		8577198	1,98	58	24	3	●	
8577073	0,73	46	9	3	●		8577199	1,99	58	24	3	●	
8577074	0,74	46	9	3	●		8577200	2	58	24	3	●	
8577075	0,75	46	9	3	●		8577210	2,1	62	25,2	3	●	
8577080	0,8	46	9,6	3	●		8577212	2,12	62	25,8	3	●	
8577081	0,81	46	10,2	3	●		8577213	2,13	62	25,8	3	●	
8577082	0,82	46	10,2	3	●		8577214	2,14	62	25,8	3	●	
8577090	0,9	46	10,8	3	●		8577220	2,2	62	26,4	3	●	
8577091	0,91	46	11,4	3	●		8577229	2,29	62	27,6	3	●	
8577092	0,92	46	11,4	3	●		8577230	2,3	62	27,6	3	●	
8577100	1	46	12	3	●		8577231	2,31	62	28,2	3	●	
8577110	1,1	50	13,2	3	●		8577239	2,39	62	28,8	3	●	
8577111	1,11	50	13,8	3	●		8577240	2,4	62	28,8	3	●	
8577112	1,12	50	13,8	3	●		8577241	2,41	66	29,4	3	●	
8577115	1,15	50	13,8	3	●		8577242	2,42	66	29,4	3	●	
8577120	1,2	50	14,4	3	●		8577250	2,5	66	30	3	●	
8577127	1,27	50	15,6	3	●		8577255	2,55	66	30,6	3	●	
8577128	1,28	50	15,6	3	●		8577256	2,56	66	31,2	3	●	
8577129	1,29	50	15,6	3	●		8577257	2,57	66	31,2	3	●	
8577130	1,3	50	15,6	3	●		8577260	2,6	66	31,2	3	●	
8577140	1,4	54	16,8	3	●		8577270	2,7	66	32,4	3	●	
8577145	1,45	54	17,4	3	●		8577277	2,77	66	33,6	3	●	
8577146	1,46	54	18	3	●		8577278	2,78	66	33,6	3	●	
8577147	1,47	54	18	3	●		8577279	2,79	66	33,6	3	●	
8577150	1,5	54	18	3	●		8577280	2,8	66	33,6	3	●	
8577151	1,51	54	18,6	3	●		8577290	2,9	66	34,8	3	●	
8577152	1,52	54	18,6	3	●		8577300	3	66	36	3	●	
8577153	1,53	54	18,6	3	●								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
								◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc

● Delivery from stock
○ Available on short notice

WD-2D

WDI
- High performance
- General purpose 2D drill

WDI
- High performance
- 2D Bohrer-Allgemeine Anwendungen

WDI
- Alta prestazione
- 2D senza fori raccomandato per applicazioni generali

WDI
- Haute performance
- Foret 2D application générale

WDI
- Yüksek performans
- Genel kullanım, 2D matkap

WDI
- High performance
- Universalt 2D bor

WDI
- High performance
- Allround 2D

WDI
- Altas prestaciones
- Broca 2D empleo general

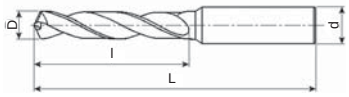
WDI
- Высокая производительность
- Многоцелевое сверло 2D

WDI
- Wysoka wydajność
- Wiertło 2D ogólnego zastosowania

GO TO LIVE STOCK CHECK

WDI

CARBIDE | WDI | 30° | SHRINK FIT | 140° | h8 | min⁻¹ C.109





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
3320200	2	62	14	4	●		3320680	6,8	79	34	8	●	
3320210	2,1	62	14	4	●		3320690	6,9	79	34	8	●	
3320220	2,2	62	14	4	●		3320700	7	79	34	8	●	
3320230	2,3	62	14	4	●		3320710	7,1	79	41	8	●	
3320240	2,4	62	14	4	●		3320720	7,2	79	41	8	●	
3320250	2,5	62	14	4	●		3320730	7,3	79	41	8	●	
3320260	2,6	62	14	4	●		3320736	7,36	79	41	8	○	
3320270	2,7	62	14	4	●		3320738	7,38	79	41	8	○	
3320276	2,76	62	14	4	○		3320740	7,4	79	41	8	●	
3320278	2,78	62	14	4	○		3320750	7,5	79	41	8	●	
3320280	2,8	62	14	4	●		3320754	7,54	79	41	8	○	
3320290	2,9	62	14	4	●		3320760	7,6	79	41	8	●	
3320300	3	66	20	4	●		3320770	7,7	79	41	8	●	
3320310	3,1	66	20	4	●		3320780	7,8	79	41	8	●	
3320320	3,2	66	20	4	●		3320790	7,9	79	41	8	●	
3320330	3,3	66	20	4	●		3320800	8	79	41	8	●	
3320340	3,4	66	20	4	●		3320810	8,1	89	47	10	●	
3320350	3,5	66	20	4	●		3320820	8,2	89	47	10	●	
3320360	3,6	66	20	4	●		3320830	8,3	89	47	10	●	
3320366	3,66	66	20	4	○		3320840	8,4	89	47	10	●	
3320368	3,68	66	20	4	○		3320850	8,5	89	47	10	●	
3320370	3,7	66	20	4	●		3320860	8,6	89	47	10	●	
3320380	3,8	66	24	4	●		3320870	8,7	89	47	10	●	
3320390	3,9	66	24	4	●		3320880	8,8	89	47	10	●	
3320400	4	66	24	4	●		3320890	8,9	89	47	10	●	
3320410	4,1	66	24	6	●		3320900	9	89	47	10	●	
3320420	4,2	66	24	6	●		3320910	9,1	89	47	10	●	
3320430	4,3	66	24	6	●		3320920	9,2	89	47	10	●	
3320440	4,4	66	24	6	●		3320930	9,3	89	47	10	●	
3320450	4,5	66	24	6	●		3320940	9,4	89	47	10	●	
3320460	4,6	66	24	6	●		3320950	9,5	89	47	10	●	
3320462	4,62	66	24	6	○		3320960	9,6	89	47	10	●	
3320464	4,64	66	24	6	○		3320970	9,7	89	47	10	●	
3320470	4,7	66	24	6	●		3320980	9,8	89	47	10	●	
3320480	4,8	66	28	6	●		3320990	9,9	89	47	10	●	
3320490	4,9	66	28	6	●		3321000	10	89	47	10	●	
3320500	5	66	28	6	●		3321010	10,1	102	55	12	●	
3320510	5,1	66	28	6	●		3321020	10,2	102	55	12	●	
3320520	5,2	66	28	6	●		3321030	10,3	102	55	12	●	
3320530	5,3	66	28	6	●		3321040	10,4	102	55	12	●	
3320540	5,4	66	28	6	●		3321050	10,5	102	55	12	●	
3320550	5,5	66	28	6	●		3321060	10,6	102	55	12	●	
3320552	5,52	66	28	6	○		3321070	10,7	102	55	12	●	
3320554	5,54	66	28	6	○		3321080	10,8	102	55	12	●	
3320560	5,6	66	28	6	●		3321090	10,9	102	55	12	●	
3320570	5,7	66	28	6	●		3321100	11	102	55	12	●	
3320580	5,8	66	28	6	●		3321110	11,1	102	55	12	●	
3320590	5,9	66	28	6	●		3321120	11,2	102	55	12	●	
3320600	6	66	28	6	●		3321130	11,3	102	55	12	●	
3320610	6,1	79	34	8	●		3321140	11,4	102	55	12	●	
3320620	6,2	79	34	8	●		3321150	11,5	102	55	12	●	
3320630	6,3	79	34	8	●		3321160	11,6	102	55	12	●	
3320640	6,4	79	34	8	●		3321170	11,7	102	55	12	●	
3320650	6,5	79	34	8	●		3321180	11,8	102	55	12	●	
3320660	6,6	79	34	8	●		3321190	11,9	102	55	12	●	
3320670	6,7	79	34	8	●		3321200	12	102	55	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎	○	○		
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	○	◎						

● Delivery from stock
○ Available on short notice

WD-4D

WDI
- High performance
- General purpose 4D drill

WDI
- High performance
- 4D Bohrer-Allgemeine Anwendungen

WDI
- Alta prestazione
- 4D senza fori raccomandato per applicazioni generali

WDI
- Haute performance
- Foret 4D application générale

WDI
- Yüksek performans
- Genel kullanım, 4D matkap

WDI
- High performance
- Universalt 4D bor

WDI
- High performance
- Allround 4D

WDI
- Altas prestaciones
- Broca 4D empleo general

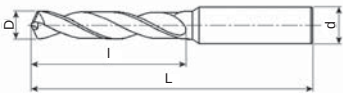
WDI
- Высокая производительность
- Многоцелевое сверло 4D

WDI
- Wysoka wydajność
- Wiertło 4D ogólnego zastosowania

GO TO LIVE STOCK CHECK

WDI

CARBIDE | WDI | 30° | SHRINK FIT | 140° | h8 | min⁻¹ C.109





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
3322200	2	66	20	4	●		3322800	8	91	53	8	●	
3322210	2,1	66	20	4	●		3322810	8,1	103	61	10	●	
3322220	2,2	66	20	4	●		3322820	8,2	103	61	10	●	
3322230	2,3	66	20	4	●		3322830	8,3	103	61	10	●	
3322240	2,4	66	20	4	●		3322840	8,4	103	61	10	●	
3322250	2,5	66	20	4	●		3322850	8,5	103	61	10	●	
3322260	2,6	66	20	4	●		3322860	8,6	103	61	10	●	
3322270	2,7	66	20	4	●		3322870	8,7	103	61	10	●	
3322280	2,8	66	20	4	●		3322880	8,8	103	61	10	●	
3322290	2,9	66	20	4	●		3322890	8,9	103	61	10	●	
3322300	3	74	28	4	●		3322900	9	103	61	10	●	
3322310	3,1	74	28	4	●		3322910	9,1	103	61	10	●	
3322320	3,2	74	28	4	●		3322920	9,2	103	61	10	●	
3322330	3,3	74	28	4	●		3322930	9,3	103	61	10	●	
3322340	3,4	74	28	4	●		3322940	9,4	103	61	10	●	
3322350	3,5	74	28	4	●		3322950	9,5	103	61	10	●	
3322360	3,6	74	28	4	●		3322960	9,6	103	61	10	●	
3322370	3,7	74	28	4	●		3322970	9,7	103	61	10	●	
3322380	3,8	74	36	4	●		3322980	9,8	103	61	10	●	
3322390	3,9	74	36	4	●		3322990	9,9	103	61	10	●	
3322400	4	74	36	4	●		3323000	10	103	61	10	●	
3322410	4,1	74	36	6	●		3323010	10,1	118	71	12	●	
3322420	4,2	74	36	6	●		3323020	10,2	118	71	12	●	
3322430	4,3	74	36	6	●		3323030	10,3	118	71	12	●	
3322440	4,4	74	36	6	●		3323040	10,4	118	71	12	●	
3322450	4,5	74	36	6	●		3323050	10,5	118	71	12	●	
3322460	4,6	74	36	6	●		3323060	10,6	118	71	12	●	
3322470	4,7	74	36	6	●		3323070	10,7	118	71	12	●	
3322480	4,8	82	44	6	●		3323080	10,8	118	71	12	●	
3322490	4,9	82	44	6	●		3323090	10,9	118	71	12	●	
3322500	5	82	44	6	●		3323100	11	118	71	12	●	
3322510	5,1	82	44	6	●		3323110	11,1	118	71	12	●	
3322520	5,2	82	44	6	●		3323120	11,2	118	71	12	●	
3322530	5,3	82	44	6	●		3323130	11,3	118	71	12	●	
3322540	5,4	82	44	6	●		3323140	11,4	118	71	12	●	
3322550	5,5	82	44	6	●		3323150	11,5	118	71	12	●	
3322560	5,6	82	44	6	●		3323160	11,6	118	71	12	●	
3322570	5,7	82	44	6	●		3323170	11,7	118	71	12	●	
3322580	5,8	82	44	6	●		3323180	11,8	118	71	12	●	
3322590	5,9	82	44	6	●		3323190	11,9	118	71	12	●	
3322600	6	82	44	6	●		3323200	12	118	71	12	●	
3322610	6,1	91	53	8	●		3323210	12,1	124	77	14	○	
3322620	6,2	91	53	8	●		3323250	12,5	124	77	14	●	
3322630	6,3	91	53	8	●		3323270	12,7	124	77	14	○	
3322640	6,4	91	53	8	●		3323300	13	124	77	14	●	
3322650	6,5	91	53	8	●		3323350	13,5	124	77	14	●	
3322660	6,6	91	53	8	●		3323400	14	124	77	14	●	
3322670	6,7	91	53	8	●		3323450	14,5	133	83	16	●	
3322680	6,8	91	53	8	●		3323500	15	133	83	16	●	
3322690	6,9	91	53	8	●		3323550	15,5	133	83	16	●	
3322700	7	91	53	8	●		3323600	16	133	83	16	●	
3322710	7,1	91	53	8	●		3323650	16,5	143	93	18	●	
3322720	7,2	91	53	8	●		3323700	17	143	93	18	●	
3322730	7,3	91	53	8	●		3323750	17,5	143	93	18	●	
3322740	7,4	91	53	8	●		3323800	18	143	93	18	●	
3322750	7,5	91	53	8	●		3323850	18,5	153	101	20	●	
3322760	7,6	91	53	8	●		3323900	19	153	101	20	●	
3322770	7,7	91	53	8	●		3323950	19,5	153	101	20	●	
3322780	7,8	91	53	8	●		3324000	20	153	101	20	●	
3322790	7,9	91	53	8	●								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎	○	○		
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	○	◎						

WDO-3D

WDI
- High performance
- Coolant through
- 3D drilling

WDI
- High performance
- Mit innerer Kühlmittelzufuhr
- 3xD effektive Bearbeitungstiefe

WDI
- Alta prestazione
- Fori di lubrificazione centrali
- 3 D foratura

WDI
- Haute performance
- Avec arrosage central
- Forage 3 D

WDI
- Yüksek performans
- Içten sağutmali
- 3D matkap

WDI
- High performance
- Kølekanaler
- 3 D boring

WDI
- High performance
- Kylkanaler
- 3 D borrning

WDI
- Altas prestaciones
- Refrigeración interna
- Taladrado 3 D

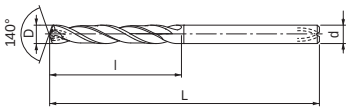
WDI
- Высокая производительность
- С каналами для СОЖ
- Сверление глубиной 3 D

WDI
- Wysoka wydajność
- Chłodzenie wewnętrzne
- Wiercenie 3D

GO TO LIVE STOCK CHECK

WDI







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8630280	2,8	66	17	3	●		48152082	8,2	101	41	10	●	
8630290	2,9	66	18	3	●		48152083	8,3	101	42	10	●	
8630300	3	66	18	3	●		48152084	8,4	101	42	10	●	
8630310	3,1	74	19	4	●		48152085	8,5	101	43	10	●	
8630320	3,2	74	20	4	●		48152086	8,6	101	43	10	●	
8630330	3,3	74	20	4	●		48152087	8,7	101	43	10	●	
8630340	3,4	74	21	4	●		48152088	8,8	101	44	10	●	
8630350	3,5	74	21	4	●		48152089	8,9	101	45	10	●	
8630360	3,6	74	22	4	●		48152090	9	101	45	10	●	
8630370	3,7	74	23	4	●		8630910	9,1	106	46	10	●	
8630380	3,8	74	23	4	●		8630920	9,2	106	46	10	●	
8630390	3,9	74	24	4	●		8630930	9,3	106	47	10	●	
8630400	4	74	24	4	●		8630940	9,4	106	47	10	●	
8630410	4,1	80	25	5	●		8630950	9,5	106	48	10	●	
8630420	4,2	80	26	5	●		8630960	9,6	106	48	10	●	
8630430	4,3	80	26	5	●		8630970	9,7	106	49	10	●	
8630440	4,4	80	27	5	●		8630980	9,8	106	49	10	●	
8630450	4,5	80	27	5	●		8630990	9,9	106	50	10	●	
8630460	4,6	80	28	5	●		8631000	10	106	50	10	●	
8630470	4,7	80	29	5	●		48152101	10,1	113	51	12	●	
8630480	4,8	80	29	5	●		48152102	10,2	113	51	12	●	
8630490	4,9	80	30	5	●		48152103	10,3	113	52	12	●	
8630500	5	80	25	5	●		48152104	10,4	113	52	12	●	
8630510	5,1	82	26	6	●		48152105	10,5	113	53	12	●	
8630520	5,2	82	26	6	●		48152106	10,6	113	53	12	●	
8630530	5,3	82	27	6	●		48152107	10,7	113	54	12	●	
8630540	5,4	82	27	6	●		48152108	10,8	113	54	12	●	
8630550	5,5	82	28	6	●		48152109	10,9	113	55	12	●	
8630560	5,6	82	28	6	●		48152110	11	113	55	12	●	
8630570	5,7	82	29	6	●		8631110	11,1	120	56	12	●	
8630580	5,8	82	29	6	●		8631120	11,2	120	56	12	●	
8630590	5,9	82	30	6	●		8631130	11,3	120	57	12	●	
8630600	6	82	30	6	●		8631140	11,4	120	57	12	●	
48152061	6,1	88	31	8	●		8631150	11,5	120	58	12	●	
48152062	6,2	88	31	8	●		8631160	11,6	120	58	12	●	
48152063	6,3	88	32	8	●		8631170	11,7	120	59	12	●	
48152064	6,4	88	32	8	●		8631180	11,8	120	59	12	●	
48152065	6,5	88	33	8	●		8631190	11,9	120	60	12	●	
48152066	6,6	88	33	8	●		8631200	12	120	60	12	●	
48152067	6,7	88	34	8	●		48152125	12,5	128	63	14	●	
48152068	6,8	88	34	8	●		48152130	13	128	65	14	●	
48152069	6,9	88	35	8	●		8631350	13,5	134	68	14	●	
48152070	7	88	35	8	●		8631400	14	134	70	14	●	
8630710	7,1	94	36	8	●		48152145	14,5	140	73	16	●	
8630720	7,2	94	36	8	●		48152150	15	140	75	16	●	
8630730	7,3	94	37	8	●		8631550	15,5	145	78	16	●	
8630740	7,4	94	37	8	●		8631600	16	145	80	16	●	
8630750	7,5	94	38	8	●		48152165	16,5	150	83	18	●	
8630760	7,6	94	38	8	●		48152170	17	150	85	18	●	
8630770	7,7	94	39	8	●		8631750	17,5	155	88	18	●	
8630780	7,8	94	39	8	●		8631800	18	155	90	18	●	
8630790	7,9	94	40	8	●		48152185	18,5	160	93	20	●	
8630800	8	94	40	8	●		48152190	19	160	95	20	●	
48152081	8,1	101	41	10	●		8631950	19,5	165	98	20	●	
							8632000	20	165	100	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎	○	○		◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎	○		○	○	◎	

● Delivery from stock
○ Available on short notice

WDO-5D

WXL
- High performance
- Coolant through
- 5D drilling

WXL
- High performance
- Mit innerer Kühlmittelzufuhr
- 5xD effektive Bearbeitungstiefe

WXL
- Alta prestazione
- Fori di lubrificazione centrali
- 5 D foratura

WXL
- Haute performance
- Avec arrosage central
- Forage 5 D

WXL
- Yüksek performans
- Içten sağutmali
- 5D matkap

WXL
- High performance
- Kølekanaler
- 5 D boring

WXL
- High performance
- Kylkanaler
- 5 D borrning

WXL
- Altas prestaciones
- Refrigeración interna
- Taladrado 5 D

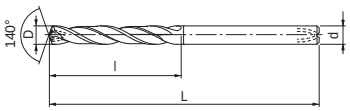
WXL
- Высокая производительность
- С каналами для СОЖ
- Сверление глубиной 5 D

WXL
- Wysoka wydajność
- Chłodzenie wewnętrzne
- Wiercenie 5D

GO TO LIVE STOCK CHECK

WDI

CARBIDE | WDI | 30° | SHRINK FIT | 140° | h8 | min⁻¹ C.108





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8632280	2,8	78	26	3	●		48153081	8,1	128	65	10	●	
8632290	2,9	78	27	3	○		48153082	8,2	128	66	10	●	
8632300	3	78	27	3	●		48153083	8,3	128	67	10	●	
8632310	3,1	86	28	4	●		48153084	8,4	128	68	10	●	
8632320	3,2	86	29	4	●		48153085	8,5	128	68	10	●	
8632330	3,3	86	30	4	●		48153086	8,6	128	69	10	●	
8632340	3,4	86	31	4	●		48153087	8,7	128	70	10	●	
8632350	3,5	86	32	4	●		48153088	8,8	128	71	10	●	
8632360	3,6	86	33	4	●		48153089	8,9	128	72	10	●	
8632366	3,66	86	33	4	○		48153090	9	128	72	10	●	
8632368	3,68	86	34	4	○		8632910	9,1	136	73	10	●	
8632370	3,7	86	34	4	●		8632920	9,2	136	74	10	●	
8632380	3,8	86	35	4	●		8632930	9,3	136	75	10	●	
8632390	3,9	86	36	4	●		8632940	9,4	136	76	10	●	
8632400	4	86	36	4	●		8632950	9,5	136	76	10	●	
8632410	4,1	95	37	5	●		8632960	9,6	136	77	10	●	
8632420	4,2	95	38	5	●		8632970	9,7	136	78	10	●	
8632430	4,3	95	39	5	●		8632980	9,8	136	79	10	●	
8632440	4,4	95	40	5	●		8632990	9,9	136	80	10	●	
8632450	4,5	95	41	5	●		8633000	10	136	80	10	●	
8632460	4,6	95	42	5	●		48153101	10,1	146	81	12	●	
8632462	4,62	95	42	5	○		48153102	10,2	146	82	12	●	
8632464	4,64	95	42	5	○		48153103	10,3	146	83	12	●	
8632470	4,7	95	43	5	●		48153104	10,4	146	84	12	●	
8632480	4,8	95	44	5	●		48153105	10,5	146	84	12	●	
8632490	4,9	95	45	5	●		48153106	10,6	146	85	12	●	
8632500	5	95	45	5	●		48153107	10,7	146	86	12	●	
8632510	5,1	100	41	6	●		48153108	10,8	146	87	12	●	
8632520	5,2	100	42	6	●		48153109	10,9	146	88	12	●	
8632530	5,3	100	43	6	●		48153110	11	146	88	12	●	
8632540	5,4	100	44	6	●		8633110	11,1	156	89	12	●	
8632550	5,5	100	44	6	●		8633120	11,2	156	90	12	●	
8632560	5,6	100	45	6	●		8633130	11,3	156	91	12	●	
8632570	5,7	100	46	6	●		8633140	11,4	156	92	12	●	
8632580	5,8	100	47	6	●		8633150	11,5	156	92	12	●	
8632590	5,9	100	48	6	●		8633160	11,6	156	93	12	●	
8632600	6	100	48	6	●		8633170	11,7	156	94	12	●	
48153061	6,1	109	49	8	●		8633180	11,8	156	95	12	●	
48153062	6,2	109	50	8	●		8633190	11,9	156	96	12	●	
48153063	6,3	109	51	8	●		8633200	12	156	96	12	●	
48153064	6,4	109	52	8	●		48153125	12,5	167	100	14	●	
48153065	6,5	109	52	8	●		48153130	13	167	104	14	●	
48153066	6,6	109	53	8	●		8633350	13,5	176	108	14	●	
48153067	6,7	109	54	8	●		8633400	14	176	112	14	●	
48153068	6,8	109	55	8	●		48153145	14,5	185	116	16	●	
48153069	6,9	109	56	8	●		48153150	15	185	120	16	●	
48153070	7	109	56	8	●		8633550	15,5	193	124	16	●	
8632710	7,1	118	57	8	●		8633600	16	193	128	16	●	
8632720	7,2	118	58	8	●		48153165	16,5	201	132	18	●	
8632730	7,3	118	59	8	●		48153170	17	201	136	18	●	
8632740	7,4	118	60	8	●		8633750	17,5	209	140	18	●	
8632750	7,5	118	60	8	●		8633800	18	209	144	18	●	
8632760	7,6	118	61	8	●		48153185	18,5	217	148	20	●	
8632770	7,7	118	62	8	●		48153190	19	217	152	20	●	
8632780	7,8	118	63	8	●		8633950	19,5	225	156	20	●	
8632790	7,9	118	64	8	●		8634000	20	225	160	20	●	
8632800	8	118	64	8	●								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎	○	○		◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎	○		○	○	◎	

● Delivery from stock
○ Available on short notice

WDO-SUS-5D

WXL
- High performance
- Coolant through
- 5D drilling

WXL
- High performance
- Mit innerer Kühlmittelzufuhr
- 5xD effektive Bearbeitungstiefe

WXL
- Alta prestazione
- Fori di lubrificazione centrali
- 5 D foratura

WXL
- Haute performance
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WXL
- Yüksek performans
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WXL
- High performance
- Kølekanaler
- 5 D boring

WXL
- High performance
- Kylkanaler
- 5 D borrning

WXL
- Altas prestaciones
- Refrigeración interna
- Taladrado 5 D

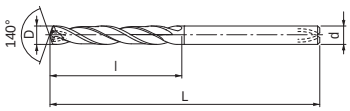
WXL
- Высокая производительность
- С каналами для СОЖ
- Сверление глубиной 5 D

WXL
- Wysoka wydajność
- Chłodzenie wewnętrzne
- Wiercenie 5D

GO TO LIVE STOCK CHECK

WXL







EDP	D	L	l	d	Stock	Price
5512056960	3	78	27	3	●	
5512056970	3,1	86	28	4	●	
5512056980	3,2	86	29	4	●	
5512056990	3,3	86	30	4	●	
5512057000	3,4	86	31	4	●	
5512057010	3,5	86	32	4	●	
5512057020	3,6	86	33	4	●	
5512057030	3,7	86	34	4	●	
5512057040	3,8	86	35	4	●	
5512057050	3,9	86	36	4	●	
5512057060	4	86	36	4	●	
5512057070	4,1	95	37	6	●	
5512057080	4,2	95	38	6	●	
5512057090	4,3	95	39	6	●	
5512057100	4,4	95	40	6	●	
5512057110	4,5	95	41	6	●	
5512057120	4,6	95	42	6	●	
5512057130	4,7	95	43	6	●	
5512057140	4,8	95	44	6	●	
5512057150	4,9	95	45	6	●	
5512057160	5	95	45	6	●	
5512057170	5,1	100	41	6	●	
5512057180	5,2	100	42	6	●	
5512057190	5,3	100	43	6	●	
5512057200	5,4	100	44	6	●	
5512057210	5,5	100	44	6	●	
5512057220	5,6	100	45	6	●	
5512057240	5,7	100	46	6	●	
5512057250	5,8	100	47	6	●	
5512057260	5,9	100	48	6	●	
5512057270	6	100	48	6	●	
5512057280	6,1	109	49	8	●	
5512057290	6,2	109	50	8	●	
5512057300	6,3	109	51	8	●	
5512057310	6,4	109	52	8	●	
5512057320	6,5	109	52	8	●	
5512057330	6,6	109	53	8	●	
5512057340	6,7	109	54	8	●	
5512057350	6,8	109	55	8	●	
5512057360	6,9	109	56	8	●	
5512057370	7	109	56	8	●	
5512057380	7,1	118	57	8	●	
5512057390	7,2	118	58	8	●	
5512057400	7,3	118	59	8	●	
5512057410	7,4	118	60	8	●	
5512057420	7,5	118	60	8	●	
5512057430	7,6	118	61	8	●	
5512057440	7,7	118	62	8	●	
5512057450	7,8	118	63	8	●	
5512057460	7,9	118	64	8	●	
5512057470	8	118	64	8	●	
5512057480	8,1	128	65	10	●	
5512057490	8,2	128	66	10	●	
5512057510	8,3	128	67	10	●	

EDP	D	L	l	d	Stock	Price
5512057520	8,4	128	68	10	●	
5512057530	8,5	128	68	10	●	
5512057540	8,6	128	69	10	●	
5512057550	8,7	128	70	10	●	
5512057560	8,8	128	71	10	●	
5512057570	8,9	128	72	10	●	
5512057580	9	128	72	10	●	
5512057590	9,1	136	73	10	●	
5512057600	9,2	136	74	10	●	
5512057610	9,3	136	75	10	●	
5512057620	9,4	136	76	10	●	
5512057630	9,5	136	76	10	●	
5512057640	9,6	136	77	10	●	
5512057650	9,7	136	78	10	●	
5512057660	9,8	136	79	10	●	
5512057670	9,9	136	80	10	●	
5512057680	10	136	80	10	●	
5512057690	10,1	146	81	12	●	
5512057700	10,2	146	82	12	●	
5512057710	10,3	146	83	12	●	
5512057720	10,4	146	84	12	●	
5512057730	10,5	146	84	12	●	
5512057740	10,6	146	85	12	●	
5512057750	10,7	146	86	12	●	
5512057760	10,8	146	87	12	●	
5512057770	10,9	146	88	12	●	
5512057780	11	146	88	12	●	
5512057790	11,1	156	89	12	●	
5512057800	11,2	156	90	12	●	
5512057810	11,3	156	91	12	●	
5512057820	11,4	156	92	12	●	
5512057830	11,5	156	92	12	●	
5512057840	11,6	156	93	12	●	
5512057850	11,7	156	94	12	●	
5512057860	11,8	156	95	12	●	
5512057870	11,9	156	96	12	●	
5512057880	12	156	96	12	●	
5512057890	12,5	167	100	14	●	
5512057900	13	167	104	14	●	
5512057910	13,5	176	108	14	●	
5512057920	14	176	112	14	●	
5512057930	14,5	185	116	16	●	
5512057940	15	185	120	16	●	
5512057950	15,5	193	124	16	●	
5512057960	16	193	128	16	●	
5512057970	16,5	201	132	18	●	
5512057980	17	201	136	18	●	
5512057990	17,5	209	140	18	●	
5512058000	18	209	144	18	●	
5512058010	18,5	217	148	20	●	
5512058020	19	217	152	20	●	
5512058030	19,5	225	156	20	●	
5512058040	20	225	160	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎	○	○		◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎	○		○	○	◎	

● Delivery from stock
○ Available on short notice

TRS-HO-3D

WDI
- High performance
- Coolant through, 3 flutes, high feed drilling, for 3XD drilling

WDI
- High performance
- Innenkühlung , 3 Schneiden , Hochleistungsbohrer , 3xD

WDI
- Alta prestazione
- Con foro di lubrificazione, 3 eliche, alto avanzamento, 3 D

WDI
- Haute performance
- Arrosage interne, 3 lèvres, perçage haute vitesse, perçage 3D

WDI
- Yüksek performans
- İçten soğutmalı, 3 ağızlı, yüksek kesme hızlı delme, 3D boy

WDI
- High performance
- Indvendig køling, 3 skær, high feed boring, 3D

WDI
- High performance
- Kylkanalsborr med 3-skär, hög matning, 3xD

WDI
- Altas prestaciones
- Refrigeración interna, 3 labios, para gran avance, tipo 3D

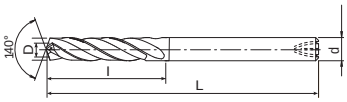
WDI
- Высокая производительность
- Трехзубые сверла с внутренними каналами и высокой подачей, 3D

WDI
- Wysoka wydajność
- Do wysokich posuwów wiercenia, trójostrzowe, chłodzenie wewnętrzne, 3D

GO TO LIVE STOCK CHECK

WDI









	EDP	D	L	l	d	Stock	Price		EDP	D	L	l	d	Stock	Price
New Sizes	48157050	5	80	25	6	●		New Sizes	48157955	9,55	106	48	10	●	
	8660510	5,1	82	26	6	●			8660960	9,6	106	48	10	●	
New Sizes	8660520	5,2	82	26	6	●			8660970	9,7	106	49	10	●	
New Sizes	8660530	5,3	82	27	6	●			8660980	9,8	106	49	10	●	
	8660540	5,4	82	27	6	●			8660990	9,9	106	50	10	●	
New Sizes	8660550	5,5	82	28	6	●			8661000	10	106	50	10	●	
New Sizes	48157555	5,55	82	28	6	●		New Sizes	48157101	10,1	113	51	12	●	
New Sizes	8660560	5,6	82	28	6	●		New Sizes	48157102	10,2	113	51	12	●	
New Sizes	8660570	5,7	82	29	6	●		New Sizes	48157103	10,3	113	52	12	●	
	8660580	5,8	82	29	6	●		New Sizes	48157104	10,4	113	52	12	●	
New Sizes	8660590	5,9	82	30	6	●		New Sizes	48157105	10,5	113	53	12	●	
	8660600	6	82	30	6	●		New Sizes	48157106	10,6	113	53	12	●	
New Sizes	48157061	6,1	88	31	8	●		New Sizes	48157107	10,7	113	54	12	●	
New Sizes	48157062	6,2	88	31	8	●			48157108	10,8	113	54	12	●	
New Sizes	48157063	6,3	88	32	8	●		New Sizes	48157109	10,9	113	55	12	●	
New Sizes	48157064	6,4	88	32	8	●		New Sizes	48157110	11	113	55	12	●	
New Sizes	48157065	6,5	88	33	8	●			8661110	11,1	120	56	12	●	
New Sizes	48157066	6,6	88	33	8	●			8661120	11,2	120	56	12	●	
New Sizes	48157067	6,7	88	34	8	●		New Sizes	8661130	11,3	120	57	12	●	
New Sizes	48157068	6,8	88	34	8	●		New Sizes	8661140	11,4	120	57	12	●	
New Sizes	48157069	6,9	88	35	8	●		New Sizes	8661150	11,5	120	58	12	●	
New Sizes	48157070	7	88	35	8	●		New Sizes	8661160	11,6	120	58	12	●	
	8660710	7,1	94	36	8	●		New Sizes	8661170	11,7	120	59	12	●	
New Sizes	8660720	7,2	94	36	8	●			8661180	11,8	120	59	12	●	
New Sizes	8660730	7,3	94	37	8	●			8661190	11,9	120	60	12	●	
New Sizes	8660740	7,4	94	37	8	●			8661200	12	120	60	12	●	
New Sizes	8660750	7,5	94	38	8	●		New Sizes	48157125	12,5	128	63	14	●	
New Sizes	48157755	7,55	94	38	8	●		New Sizes	48157130	13	128	65	14	●	
	8660760	7,6	94	38	8	●			8661350	13,5	134	68	14	●	
New Sizes	8660770	7,7	94	39	8	●			8661400	14	134	70	14	●	
New Sizes	8660780	7,8	94	39	8	●		New Sizes	48157145	14,5	140	73	16	●	
New Sizes	8660790	7,9	94	40	8	●		New Sizes	48157150	15	140	75	16	●	
	8660800	8	94	40	8	●			8661550	15,5	145	78	16	●	
New Sizes	48157081	8,1	101	41	10	●			8661600	16	145	80	16	●	
New Sizes	48157082	8,2	101	41	10	●		New Sizes	48157165	16,5	150	83	18	●	
New Sizes	48157083	8,3	101	42	10	●		New Sizes	48157170	17	150	85	18	●	
New Sizes	48157084	8,4	101	42	10	●			8661750	17,5	155	88	18	●	
New Sizes	48157085	8,5	101	43	10	●			8661800	18	155	90	18	●	
New Sizes	48157086	8,6	101	43	10	●		New Sizes	48157185	18,5	160	93	20	●	
New Sizes	48157087	8,7	101	44	10	●									
New Sizes	48157088	8,8	101	44	10	●									
New Sizes	48157089	8,9	101	45	10	●									
New Sizes	48157090	9	101	45	10	●									
	8660910	9,1	106	46	10	●									
	8660920	9,2	106	46	10	●									
	8660930	9,3	106	47	10	●									
	8660940	9,4	106	47	10	●									
	8660950	9,5	106	48	10	●									

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎	○	○		○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎					○	

● Delivery from stock
○ Available on short notice

TRS-HO-5D

WDI
- High performance
- Coolant through, 3 flutes, high feed drilling, for 5XD drilling

WDI
- High performance
- Innenkühlung , 3 Schneiden , Hochleistungsbohrer , 5xD

WDI
- Alta prestazione
- Con foro di lubrificazione, 3 eliche, alto avanzamento, 5 D

WDI
- Haute performance
- Arrosage interne, 3 lèvres, perçage haute vitesse, perçage 5D

WDI
- Yüksek performans
- İçten soğutmalı, 3 ağızlı, yüksek kesme hızlı delme, 5D boy

WDI
- High performance
- Indvendig køling, 3 skær, high feed boring, 5D

WDI
- High performance
- Kylkanalsborr med 3-skär, hög matning, 5xD

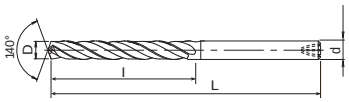
WDI
- Altas prestaciones
- Refrigeración interna, 3 labios, para gran avance, tipo 5D

WDI
- Высокая производительность
- Трехзубые сверла с внутренними каналами и высокой подачей, 5D

WDI
- Wysoka wydajność
- Do wysokich posuwów wiercenia, trójostrzowe, chłodzenie wewnętrzne, 5D

GO TO LIVE STOCK CHECK

CARBIDE | WDI | 30° | SHRINK FIT | 140° | h8 | R D≥4 | min⁻¹ C.109





* See page C.94 for Optimal Feed Rate !

	EDP	D	L	l	d	Stock	Price		EDP	D	L	l	d	Stock	Price
New Sizes	48158050	5	95	45	6	●		New Sizes	48158955	9,55	136	77	10	●	
	8662510	5,1	100	41	6	●		New Sizes	8662960	9,6	136	77	10	●	
	8662520	5,2	100	42	6	●		New Sizes	8662970	9,7	136	78	10	●	
New Sizes	8662530	5,3	100	43	6	●			8662980	9,8	136	79	10	●	
New Sizes	8662540	5,4	100	44	6	●		New Sizes	8662990	9,9	136	80	10	●	
	8662550	5,5	100	44	6	●			8663000	10	136	80	10	●	
New Sizes	48158555	5,55	100	45	6	●		New Sizes	48158101	10,1	146	81	12	●	
New Sizes	8662560	5,6	100	45	6	●		New Sizes	48158102	10,2	146	82	12	●	
New Sizes	8662570	5,7	100	46	6	●		New Sizes	48158103	10,3	146	83	12	●	
	8662580	5,8	100	47	6	●		New Sizes	48158104	10,4	146	84	12	●	
New Sizes	8662590	5,9	100	48	6	●		New Sizes	48158105	10,5	146	84	12	●	
	8662600	6	100	48	6	●		New Sizes	48158106	10,6	146	85	12	●	
New Sizes	48158061	6,1	109	49	8	●		New Sizes	48158107	10,7	146	86	12	●	
New Sizes	48158062	6,2	109	50	8	●		New Sizes	48158108	10,8	146	87	12	●	
New Sizes	48158063	6,3	109	51	8	●		New Sizes	48158109	10,9	146	88	12	●	
New Sizes	48158064	6,4	109	52	8	●		New Sizes	48158110	11	146	88	12	●	
New Sizes	48158065	6,5	109	52	8	●			8663110	11,1	156	89	12	●	
New Sizes	48158066	6,6	109	53	8	●		New Sizes	8663120	11,2	156	90	12	●	
New Sizes	48158067	6,7	109	54	8	●		New Sizes	8663130	11,3	156	91	12	●	
New Sizes	48158068	6,8	109	55	8	●		New Sizes	8663140	11,4	156	92	12	●	
New Sizes	48158069	6,9	109	56	8	●		New Sizes	8663150	11,5	156	92	12	●	
New Sizes	48158070	7	109	56	8	●		New Sizes	8663160	11,6	156	93	12	●	
	8662710	7,1	118	57	8	●		New Sizes	8663170	11,7	156	94	12	●	
New Sizes	8662720	7,2	118	58	8	●		New Sizes	8663180	11,8	156	95	12	●	
	8662730	7,3	118	59	8	●		New Sizes	8663190	11,9	156	96	12	●	
New Sizes	8662740	7,4	118	60	8	●			8663200	12	156	96	12	●	
	8662750	7,5	118	60	8	●		New Sizes	48158121	12,1	167	97	14	●	
New Sizes	48158755	7,55	118	61	8	●		New Sizes	48158122	12,2	167	98	14	●	
	8662760	7,6	118	61	8	●		New Sizes	48158123	12,3	167	99	14	●	
New Sizes	8662770	7,7	118	62	8	●		New Sizes	48158124	12,4	167	100	14	●	
New Sizes	8662780	7,8	118	63	8	●		New Sizes	48158125	12,5	167	100	14	●	
New Sizes	8662790	7,9	118	64	8	●		New Sizes	48158126	12,6	167	101	14	●	
	8662800	8	118	64	8	●		New Sizes	48158127	12,7	167	102	14	●	
New Sizes	48158081	8,1	128	65	10	●		New Sizes	48158128	12,8	167	103	14	●	
New Sizes	48158082	8,2	128	66	10	●		New Sizes	48158129	12,9	167	104	14	●	
New Sizes	48158083	8,3	128	67	10	●		New Sizes	48158130	13	167	104	14	●	
New Sizes	48158084	8,4	128	68	10	●			8663350	13,5	176	108	14	●	
New Sizes	48158085	8,5	128	68	10	●			8663400	14	176	112	14	●	
New Sizes	48158086	8,6	128	69	10	●		New Sizes	48158145	14,5	185	116	16	●	
New Sizes	48158087	8,7	128	70	10	●		New Sizes	48158150	15	185	120	16	●	
New Sizes	48158088	8,8	128	71	10	●			8663550	15,5	193	124	16	●	
New Sizes	48158089	8,9	128	72	10	●			8663600	16	193	128	16	●	
New Sizes	48158090	9	128	72	10	●		New Sizes	48158165	16,5	201	132	18	●	
New Sizes	8662910	9,1	136	73	10	●		New Sizes	48158170	17	201	136	18	●	
New Sizes	8662920	9,2	136	74	10	●			8663750	17,5	209	140	18	●	
New Sizes	8662930	9,3	136	75	10	●			8663800	18	209	144	18	●	
New Sizes	8662940	9,4	136	76	10	●		New Sizes	48158185	18,5	217	148	20	●	
	8662950	9,5	136	76	10	●									

Applications - Anwendungen - Applicazioni - Applications - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎	○	○		○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎					○	

● Delivery from stock
○ Available on short notice

TRS-HO-IOD

WDI
- High performance
- Coolant through, 3 flutes, high feed drilling, for 10XD drilling

WDI
- High performance
- Innenkühlung , 3 Schneiden , Hochleistungsbohrer , 10xD

WDI
- Alta prestazione
- Con foro di lubrificazione, 3 eliche, alto avanzamento, 10 D

WDI
- Haute performance
- Arrosage interne, 3 lèvres, perçage haute vitesse, perçage 10D

WDI
- Yüksek performans
- İçten soğutmalı, 3 ağızlı, yüksek kesme hızlı delme, 10D boy

WDI
- High performance
- Indvendig køling, 3 skær, high feed boring, 10D

WDI
- High performance
- Kylkanalsborr med 3-skär, hög matning, 10xD

WDI
- Altas prestaciones
- Refrigeración interna, 3 labios, para gran avance, tipo 10D

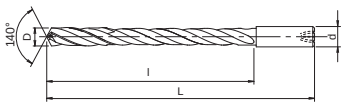
WDI
- Высокая производительность
- Трехзубые сверла с внутренними каналами и высокой подачей, 10D

WDI
- Wysoka wydajność
- Do wysokich posuwów wiercenia, trójostrzowe, chłodzenie wenętrzne, 10D

GO TO LIVE STOCK CHECK

WDI







EDP	D	L	l	d	Stock	Price
48159050	5	115	65	6	●	
8664055	5,5	128	78	6	●	
8664060	6	128	78	6	●	
48159065	6,5	140	87	8	●	
48159070	7	140	90	8	●	

EDP	D	L	l	d	Stock	Price
8664075	7,5	155	100	8	●	
8664080	8	155	105	8	●	
48159085	8,5	165	110	10	●	
48159090	9	165	115	10	●	
8664100	10	190	130	10	●	
8664120	12	215	155	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎	○	○		○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎					○	

● Delivery from stock
○ Available on short notice

DIA
- High performance
- Triple angle drill
- For CFRP material
- Without delamination Fiber breakout

DIA
- High performance
- Bohrer mit 3 Spitzenwinkeln
- Für Verbundwerkstoffe
- (Kohlefaser / CFRP) Entwickelt für Bohrbearbeitungen ohne "Delamination"

DIA
- Alta prestazione
- Punta triplo angolo
- Per materiali
- compositi CFRP Senza delaminazione

DIA
- Haute performance
- Foret 3 pentes
- Pour matériaux composites
- Sans délamination de la fibre

DIA
- Yüksek performans
- Üç açılı matkap
- CFPR malzeme için
- Deliminasyon olmadan fiber koparma

DIA
- High performance
- 3-facet bor
- For CFRP materiale
- Uden udflosning ved gennemboring

DIA
- High performance
- Triple angle drill
- För CFRP material
- Utan delaminering fiber beakout

DIA
- Altas prestaciones
- Broca de triple ángulo de punta
- Para fibras CFRP
- Sin delaminación de fibra a la salida

DIA
- Высокая производительность
- Сверло с тройным углом
- Для углепластика
- Прорыв без расслоения волокон

DIA
- Wysoka wydajność
- Trójkątne ostrze wiertła
- Do materiałów CFRP
- Bez rozwarstwienia, przełamuje włókna

GO TO LIVE STOCK CHECK

DIA



DIA

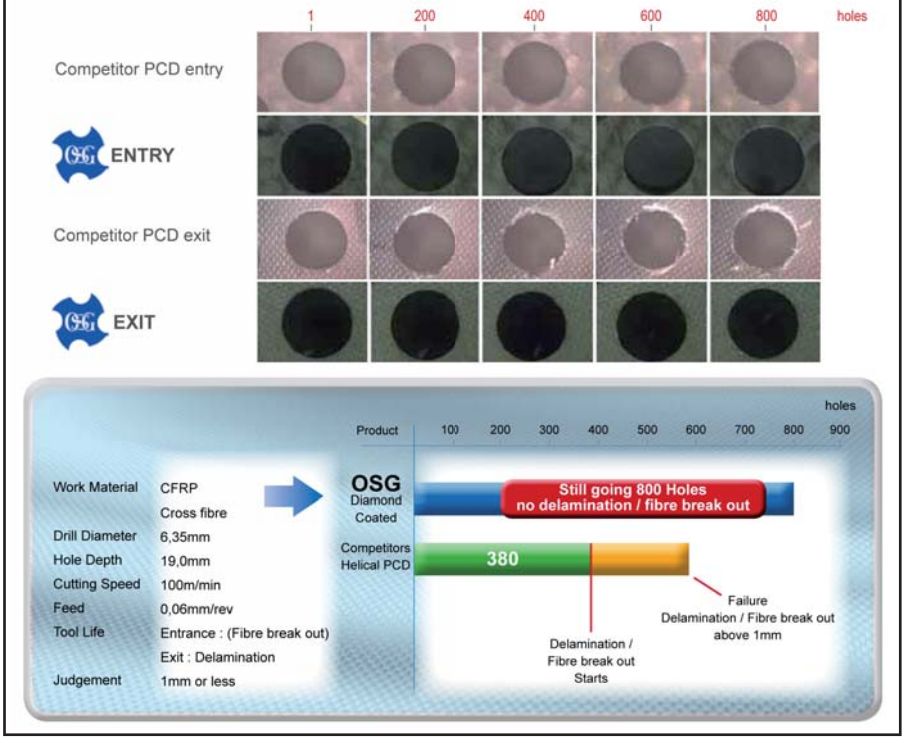


EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
48154001	4	80	30	4	○		48154004	6,35	88	38	6,35	○	
48154002	6	90	40	6	○		48154003	8	100	50	8	○	

CFRP Diamond coated carbide drill (PAT.P)

The drilling of composite materials is becoming more common and there are various manufacturers designing and producing drills for these applications.

However only OSG can offer exceptional drill performance and tool life.
Our drill design benefits from a special step angle, point geometry and patented smooth diamond coating, allowing us to produce what we believe to be the best drilling solution for CFRP.



Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	CFRP
								◎

● Delivery from stock
○ Available on short notice

WDO-PLT

WDI
- High performance
- Pilot drill for WDO-10D/ 15D/20D/30D, CAO-GDXL

WDI
- High performance
- Pilotbohrer für WDO-10D/ 15D/20D/30D, CAO-GDXL

WDI
- Alta prestazione
- Punta pilota per WDO-10D/ 15D/20D/30D, CAO-GDXL

WDI
- Haute performance
- Foret pilote pour WDO-10D/ 15D/20D/30D, CAO-GDXL

WDI
- Yüksek performans
- Pilot matkap için WDO-10D/ 15D/20D/30D, CAO-GDXL

WDI
- High performance
- Forbor for WDO-10D/ 15D/20D/30D, CAO-GDXL

WDI
- High performance
- Pilot borr för WDO-10D/ 15D/20D/30D, CAO-GDXL

WDI
- Altas prestaciones
- Broca piloto para WDO-10D/ 15D/20D/30D, CAO-GDXL

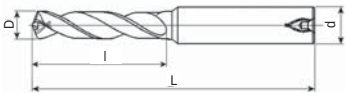
WDI
- Высокая производительность
- Пилотное сверло для WDO-10D/ 15D/20D/30D, CAO-GDXL

WDI
- Wysoka wydajność
- Wiertło pilotowe do WDO-10D/ 15D/20D/30D, CAO-GDXL

GO TO LIVE STOCK CHECK

WDI





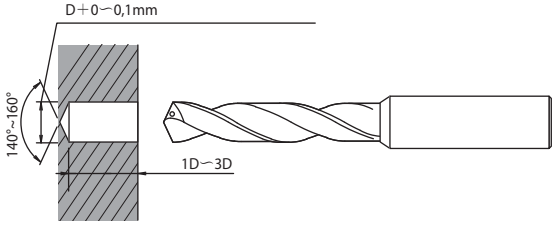


EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8568903	3,03	65	15	3	●		8568907	7,03	85	35	7	●	
8568923	3,53	70	18	4	●		8568908	8,03	90	40	8	●	
8568904	4,03	70	20	4	●		8568928	8,53	95	43	9	●	
8568924	4,53	75	23	5	●		8568909	9,03	95	45	9	●	
8568905	5,03	75	25	5	●		8568910	10,03	100	50	10	●	
8568925	5,53	80	28	6	●		8568911	11,03	115	55	11	●	
8568906	6,03	80	30	6	●		8568912	12,03	120	60	12	●	
8568926	6,53	85	33	7	●								

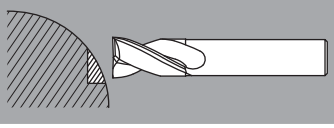
Recommended operation for WDO Series

① Make a pilot hole (e.g. WDO-PLT)

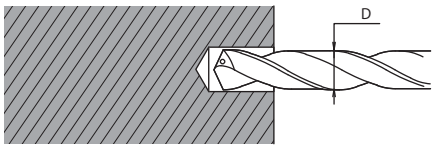
- For a pilot hole, select 0~0,1mm larger size drill than extra long drill.



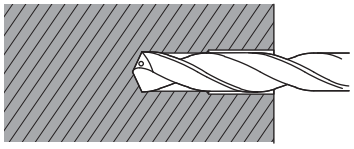
★ When working on a curved surface, use the FX-ZDS (end mill for counterboring) to counterbore a pilot hole.



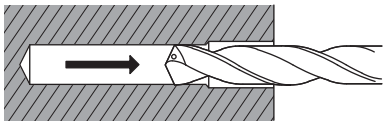
② Insert the extra long drill into a pilot hole with zero or low revolution.



③ Increase the revolution to the designated speed and start drilling.



④ After drilling, move the drill away from the bottom of the hole; then reduce its speed while pulling it out of the hole.



※ Make sure to use an internal coolant supply when drilling.

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	◎	◎			○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎						

WDO-IOD

WDI
- High performance
- For deep drilling in steel
- Extra long non step drilling 10 D

WDI
- High performance
- Zum Tiefbohren im Stahl
- Extra länge Ohne Step 10 D

WDI
- Alta prestazione
- Forature profonde
- Extra lunga foratura continua 10 D

WDI
- Haute performance
- Pour le forage profond dans l'acier
- Extra long forage en continu 10 D

WDI
- Yüksek performans
- Çelik için derin delme
- Ekstra uzun 10D kesintisiz delme

WDI
- High performance
- For dyb boring i stål
- Ekstra lang boring uden udspåning 10 D

WDI
- High performance
- Step fri borrning i stål
- Extra lång step fri borrning 10 D

WDI
- Altas prestaciones
- Para taladrado profundo en acero
- Extra-larga taladrado ininterrumpido 10 D

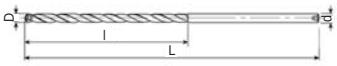
WDI
- Высокая производительность
- Для глубокого сверления в стали
- Непрерывное сверление глубиной 10 D

WDI
- Wysoka wydajność
- Do głębokiego wiercenia w stali
- Extra długie, wiercenie bez odwiórowywania - non step 10 D

GO TO LIVE STOCK CHECK

WDI

CARBIDE | WDI | 30° | SHRINK FIT | 140° | h8 | R | min⁻¹ C.110





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
48149020	2	75	26	3	●		48149071	7,1	155	100	8	●	
48149021	2,1	75	33	3	●		48149072	7,2	155	100	8	●	
48149022	2,2	75	33	3	●		48149073	7,3	155	100	8	●	
48149023	2,3	75	33	3	●		48149074	7,4	155	100	8	●	
48149024	2,4	75	33	3	●		48149075	7,5	155	100	8	●	
48149025	2,5	75	33	3	●		48149076	7,6	155	105	8	●	
48149026	2,6	90	40	3	●		48149077	7,7	155	105	8	●	
48149027	2,7	90	40	3	●		48149078	7,8	155	105	8	●	
48149028	2,8	90	40	3	●		48149079	7,9	155	105	8	●	
48149029	2,9	90	40	3	●		48149080	8	155	105	8	●	
48149030	3	90	40	3	●		48149081	8,1	165	110	10	●	
48149031	3,1	100	45	4	●		48149082	8,2	165	110	10	●	
48149032	3,2	100	45	4	●		48149083	8,3	165	110	10	●	
48149033	3,3	100	45	4	●		48149084	8,4	165	110	10	●	
48149034	3,4	100	50	4	●		48149085	8,5	165	110	10	●	
48149035	3,5	100	50	4	●		48149086	8,6	165	115	10	●	
48149036	3,6	100	50	4	●		48149087	8,7	165	115	10	●	
48149037	3,7	100	50	4	●		48149088	8,8	165	115	10	●	
48149038	3,8	100	50	4	●		48149089	8,9	165	115	10	●	
48149039	3,9	100	50	4	●		48149090	9	165	115	10	●	
48149040	4	100	50	4	●		48149091	9,1	190	125	10	●	
48149041	4,1	115	55	6	●		48149092	9,2	190	125	10	●	
48149042	4,2	115	55	6	●		48149093	9,3	190	125	10	●	
48149043	4,3	115	60	6	●		48149094	9,4	190	125	10	●	
48149044	4,4	115	60	6	●		48149095	9,5	190	125	10	●	
48149045	4,5	115	60	6	●		48149096	9,6	190	130	10	●	
48149046	4,6	115	60	6	●		48149097	9,7	190	130	10	●	
48149047	4,7	115	65	6	●		48149098	9,8	190	130	10	●	
48149048	4,8	115	65	6	●		48149099	9,9	190	130	10	●	
48149049	4,9	115	65	6	●		48149100	10	190	130	10	●	
48149050	5	115	65	6	●		48149101	10,1	205	140	12	●	
48149051	5,1	128	70	6	●		48149102	10,2	205	140	12	●	
48149052	5,2	128	70	6	●		48149103	10,3	205	140	12	●	
48149053	5,3	128	70	6	●		48149104	10,4	205	140	12	●	
48149054	5,4	128	78	6	●		48149105	10,5	205	140	12	●	
48149055	5,5	128	78	6	●		48149106	10,6	205	140	12	●	
48149056	5,6	128	78	6	●		48149107	10,7	205	140	12	●	
48149057	5,7	128	78	6	●		48149108	10,8	205	145	12	●	
48149058	5,8	128	78	6	●		48149109	10,9	205	145	12	●	
48149059	5,9	128	78	6	●		48149110	11	205	145	12	●	
48149060	6	128	78	6	●		48149111	11,1	215	155	12	●	
48149061	6,1	140	87	8	●		48149112	11,2	215	155	12	●	
48149062	6,2	140	87	8	●		48149113	11,3	215	155	12	●	
48149063	6,3	140	87	8	●		48149114	11,4	215	155	12	●	
48149064	6,4	140	87	8	●		48149115	11,5	215	155	12	●	
48149065	6,5	140	87	8	●		48149116	11,6	215	155	12	●	
48149066	6,6	140	87	8	●		48149117	11,7	215	155	12	●	
48149067	6,7	140	87	8	●		48149118	11,8	215	155	12	●	
48149068	6,8	140	90	8	●		48149119	11,9	215	155	12	●	
48149069	6,9	140	90	8	●		48149120	12	215	155	12	●	
48149070	7	140	90	8	●								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	○				○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎						

● Delivery from stock
○ Available on short notice

WDO-15D

WDI
- High performance
- For deep drilling in steel
- Extra long non step drilling 15 D

WDI
- High performance
- Zum Tiefbohren im Stahl
- Extra länge Ohne Step 15 D

WDI
- Alta prestazione
- Forature profonde
- Extra lunga foratura continua 15 D

WDI
- Haute performance
- Pour le forage profond dans l'acier
- Extra long forage en continu 15 D

WDI
- Yüksek performans
- Çelik için derin delme
- Ekstra uzun 15D kesintisiz delme

WDI
- High performance
- For dyb boring i stål
- Ekstra lang boring uden udspåning 15 D

WDI
- High performance
- Step fri borrning i stål
- Extra lång step fri borrning 15 D

WDI
- Altas prestaciones
- Para taladrado profundo en acero
- Extra-larga taladrado ininterrumpido 15 D

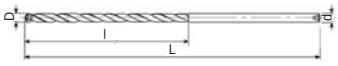
WDI
- Высокая производительность
- Для глубокого сверления в стали
- Непрерывное сверление глубиной 15 D

WDI
- Wysoka wydajność
- Do głębokiego wiercenia w stali
- Extra długie, wiercenie bez odwiórowywania - non step 15 D

GO TO LIVE STOCK CHECK

WDI







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
48150030	3	105	55	3	●		48150076	7,6	195	145	8	○	
48150031	3,1	125	60	4	○		48150077	7,7	195	145	8	○	
48150032	3,2	125	60	4	○		48150078	7,8	195	145	8	○	
48150033	3,3	125	60	4	●		48150079	7,9	195	145	8	○	
48150034	3,4	125	65	4	○		48150080	8	195	145	8	●	
48150035	3,5	125	65	4	●		48150081	8,1	210	155	10	●	
48150036	3,6	125	65	4	○		48150082	8,2	210	155	10	●	
48150037	3,7	125	65	4	○		48150083	8,3	210	155	10	○	
48150038	3,8	125	75	4	○		48150084	8,4	210	155	10	○	
48150039	3,9	125	75	4	●		48150085	8,5	210	155	10	●	
48150040	4	125	75	4	●		48150086	8,6	210	160	10	○	
48150041	4,1	140	75	6	○		48150087	8,7	210	160	10	●	
48150042	4,2	140	75	6	●		48150088	8,8	210	160	10	○	
48150043	4,3	140	85	6	○		48150089	8,9	210	160	10	○	
48150044	4,4	140	85	6	●		48150090	9	210	160	10	●	
48150045	4,5	140	85	6	●		48150091	9,1	240	170	10	○	
48150046	4,6	140	85	6	○		48150092	9,2	240	170	10	●	
48150047	4,7	140	85	6	○		48150093	9,3	240	170	10	○	
48150048	4,8	140	90	6	●		48150094	9,4	240	170	10	○	
48150049	4,9	140	90	6	○		48150095	9,5	240	170	10	○	
48150050	5	140	90	6	●		48150096	9,6	240	180	10	○	
48150051	5,1	160	95	6	○		48150097	9,7	240	180	10	○	
48150052	5,2	160	95	6	○		48150098	9,8	240	180	10	●	
48150053	5,3	160	95	6	○		48150099	9,9	240	180	10	○	
48150054	5,4	160	110	6	○		48150100	10	240	180	10	●	
48150055	5,5	160	110	6	●		48150101	10,1	260	190	12	○	
48150056	5,6	160	110	6	○		48150102	10,2	260	190	12	○	
48150057	5,7	160	110	6	●		48150103	10,3	260	190	12	○	
48150058	5,8	160	110	6	○		48150104	10,4	260	190	12	○	
48150059	5,9	160	110	6	○		48150105	10,5	260	190	12	○	
48150060	6	160	110	6	●		48150106	10,6	260	190	12	○	
48150061	6,1	175	120	8	●		48150107	10,7	260	200	12	○	
48150062	6,2	175	120	8	○		48150108	10,8	260	200	12	○	
48150063	6,3	175	120	8	●		48150109	10,9	260	200	12	○	
48150064	6,4	175	120	8	○		48150110	11	260	200	12	●	
48150065	6,5	175	120	8	●		48150111	11,1	280	210	12	○	
48150066	6,6	175	120	8	●		48150112	11,2	280	210	12	○	
48150067	6,7	175	120	8	●		48150113	11,3	280	210	12	○	
48150068	6,8	175	125	8	●		48150114	11,4	280	210	12	○	
48150069	6,9	175	125	8	●		48150115	11,5	280	210	12	○	
48150070	7	175	125	8	●		48150116	11,6	280	210	12	○	
48150071	7,1	195	135	8	○		48150117	11,7	280	210	12	○	
48150072	7,2	195	135	8	○		48150118	11,8	280	210	12	○	
48150073	7,3	195	135	8	○		48150119	11,9	280	215	12	○	
48150074	7,4	195	135	8	○		48150120	12	280	215	12	●	
48150075	7,5	195	135	8	●								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	○				○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎						

● Delivery from stock
○ Available on short notice

WDO-20D

WDI
- High performance
- For deep drilling in steel
- Extra long non step drilling 20 D

WDI
- High performance
- Zum Tiefbohren im Stahl
- Extra länge Ohne Step 20 D

WDI
- Alta prestazione
- Forature profonde
- Extra lunga foratura continua 20 D

WDI
- Haute performance
- Pour le forage profond dans l'acier
- Extra long forage en continu 20 D

WDI
- Yüksek performans
- Çelik için derin delme
- Ekstra uzun 20D kesintisiz delme

WDI
- High performance
- For dyb boring i stål
- Ekstra lang boring uden udspåning 20 D

WDI
- High performance
- Step fri borrning i stål
- Extra lång step fri borrning 20 D

WDI
- Altas prestaciones
- Para taladrado profundo en acero
- Extra-larga taladrado ininterrumpido 20 D

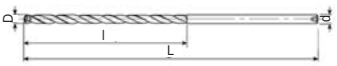
WDI
- Высокая производительность
- Для глубокого сверления в стали
- Непрерывное сверление глубиной 20 D

WDI
- Wysoka wydajność
- Do głębokiego wiercenia w stali
- Extra długie, wiercenie bez odwiórowywania - non step 20 D

GO TO LIVE STOCK CHECK

WDI









EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
48200030	3	120	70	3	●		48200076	7,6	230	180	8	●	
48200031	3,1	140	80	4	●		48200077	7,7	230	180	8	●	
48200032	3,2	140	80	4	●		48200078	7,8	230	180	8	●	
48200033	3,3	140	80	4	●		48200079	7,9	230	180	8	●	
48200034	3,4	140	85	4	●		48200080	8	230	180	8	●	
48200035	3,5	140	85	4	●		48200081	8,1	260	195	8	●	
48200036	3,6	140	85	4	●		48200082	8,2	260	195	10	●	
48200037	3,7	140	85	4	●		48200083	8,3	260	195	10	●	
48200038	3,8	140	90	4	●		48200084	8,4	260	195	10	●	
48200039	3,9	140	90	4	●		48200085	8,5	260	195	10	●	
48200040	4	140	90	4	●		48200086	8,6	260	210	10	●	
48200041	4,1	165	100	6	●		48200087	8,7	260	210	10	●	
48200042	4,2	165	100	6	●		48200088	8,8	260	210	10	●	
48200043	4,3	165	110	6	●		48200089	8,9	260	210	10	●	
48200044	4,4	165	110	6	●		48200090	9	260	210	10	●	
48200045	4,5	165	110	6	●		48200091	9,1	290	220	10	●	
48200046	4,6	165	110	6	●		48200092	9,2	290	220	10	●	
48200047	4,7	165	110	6	●		48200093	9,3	290	220	10	●	
48200048	4,8	165	115	6	●		48200094	9,4	290	220	10	●	
48200049	4,9	165	115	6	●		48200095	9,5	290	220	10	●	
48200050	5	165	115	6	●		48200096	9,6	290	230	10	●	
48200051	5,1	190	120	6	●		48200097	9,7	290	230	10	●	
48200052	5,2	190	120	6	●		48200098	9,8	290	230	10	●	
48200053	5,3	190	120	6	●		48200099	9,9	290	230	10	●	
48200054	5,4	190	140	6	●		48200100	10	290	230	10	●	
48200055	5,5	190	140	6	●		48200101	10,1	310	250	12	●	
48200056	5,6	190	140	6	●		48200102	10,2	310	250	12	●	
48200057	5,7	190	140	6	●		48200103	10,3	310	250	12	●	
48200058	5,8	190	140	6	●		48200104	10,4	310	250	12	●	
48200059	5,9	190	140	6	●		48200105	10,5	310	250	12	●	
48200060	6	190	140	6	●		48200106	10,6	310	250	12	●	
48200061	6,1	210	155	8	●		48200107	10,7	310	250	12	●	
48200062	6,2	210	155	8	●		48200108	10,8	310	250	12	●	
48200063	6,3	210	155	8	●		48200109	10,9	310	250	12	●	
48200064	6,4	210	155	8	●		48200110	11	310	250	12	●	
48200065	6,5	210	155	8	●		48200111	11,1	330	270	12	●	
48200066	6,6	210	155	8	●		48200112	11,2	330	270	12	●	
48200067	6,7	210	155	8	●		48200113	11,3	330	270	12	●	
48200068	6,8	210	160	8	●		48200114	11,4	330	270	12	●	
48200069	6,9	210	160	8	●		48200115	11,5	330	270	12	●	
48200070	7	210	160	8	●		48200116	11,6	330	270	12	●	
48200071	7,1	230	170	8	●		48200117	11,7	330	270	12	●	
48200072	7,2	230	170	8	●		48200118	11,8	330	270	12	●	
48200073	7,3	230	170	8	●		48200119	11,9	330	270	12	●	
48200074	7,4	230	170	8	●		48200120	12	330	270	12	●	
48200075	7,5	230	170	8	●								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	○				○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎						

● Delivery from stock
○ Available on short notice

WDO-30D

WDI
- High performance
- For deep drilling in steel
- Extra long non step drilling 30 D

WDI
- High performance
- Zum Tiefbohren im Stahl
- Extra länge Ohne Step 30 D

WDI
- Alta prestazione
- Forature profonde
- Extra lunga foratura continua 30 D

WDI
- Haute performance
- Pour le forage profond dans l'acier
- Extra long forage en continu 30 D

WDI
- Yüksek performans
- Çelik için derin delme
- Ekstra uzun 30D kesintisiz delme

WDI
- High performance
- For dyb boring i stål
- Ekstra lang boring uden udspåning 30 D

WDI
- High performance
- Step fri borrning i stål
- Extra lång step fri borrning 30 D

WDI
- Altas prestaciones
- Para taladrado profundo en acero
- Extra-larga taladrado ininterrumpido 30 D

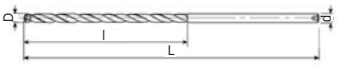
WDI
- Высокая производительность
- Для глубокого сверления в стали
- Непрерывное сверление глубиной 30 D

WDI
- Wysoka wydajność
- Do głębokiego wiercenia w stali
- Extra długie, wiercenie bez odwiórowywania - non step 30 D

GO TO LIVE STOCK CHECK

WDI







	EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
New Sizes	48300030	3	150	100	3	○		48300068	6,8	280	230	8	○	
	48300035	3,5	185	116	4	●		48300069	6,9	280	230	8	○	
	48300036	3,6	185	116	4	○		48300070	7	280	230	8	●	
	48300037	3,7	185	116	4	○		48300071	7,1	315	250	8	○	
	48300038	3,8	185	132	4	○		48300072	7,2	315	250	8	○	
	48300039	3,9	185	132	4	○		48300073	7,3	315	250	8	●	
	48300040	4	185	132	4	●		48300074	7,4	315	250	8	○	
	48300041	4,1	215	140	6	○		48300075	7,5	315	250	8	●	
	48300042	4,2	215	140	6	○		48300076	7,6	315	265	8	○	
	48300043	4,3	215	150	6	○		48300077	7,7	315	265	8	○	
	48300044	4,4	215	150	6	○		48300078	7,8	315	265	8	○	
	48300045	4,5	215	150	6	●		48300079	7,9	315	265	8	○	
	48300046	4,6	215	150	6	○		48300080	8	315	265	8	●	
	48300047	4,7	215	150	6	○		48300081	8,1	350	280	10	●	
	48300048	4,8	215	165	6	○		48300082	8,2	350	280	10	○	
	48300049	4,9	215	165	6	○		48300083	8,3	350	280	10	○	
	48300050	5	215	165	6	●		48300084	8,4	350	280	10	○	
	48300051	5,1	250	180	6	○		48300085	8,5	350	280	10	●	
	48300052	5,2	250	180	6	●		48300086	8,6	350	300	10	○	
	48300053	5,3	250	180	6	○		48300087	8,7	350	300	10	○	
	48300054	5,4	250	200	6	○		48300088	8,8	350	300	10	○	
	48300055	5,5	250	200	6	●		48300089	8,9	350	300	10	○	
	48300056	5,6	250	200	6	○		48300090	9	350	300	10	●	
	48300057	5,7	250	200	6	○		48300091	9,1	390	315	10	○	
	48300058	5,8	250	200	6	○		48300092	9,2	390	315	10	○	
	48300059	5,9	250	200	6	○		48300093	9,3	390	315	10	○	
	48300060	6	250	200	6	●		48300094	9,4	390	315	10	○	
	48300061	6,1	280	215	8	●		48300095	9,5	390	315	10	○	
	48300062	6,2	280	215	8	○		48300096	9,6	390	330	10	○	
	48300063	6,3	280	215	8	○		48300097	9,7	390	330	10	○	
	48300064	6,4	280	215	8	○		48300098	9,8	390	330	10	○	
	48300065	6,5	280	215	8	●		48300099	9,9	390	330	10	○	
	48300066	6,6	280	215	8	○		48300100	10	390	330	10	●	
	48300067	6,7	280	215	8	○								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	○				○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎						

● Delivery from stock
○ Available on short notice

CAO-GDXL

CrN

- High performance
- For deep drilling in Cu & Al alloys
- Extra long non step drilling 15 D, 20 D, 30 D

CrN

- High performance
- Zum Tiefbohren in Kupfer und Aluminium sowie Al-Legierungen
- Extra länge Ohne Step 15 D, 20 D, 30 D

CrN

- Alta prestazione
- Forature profonde per Cu & leghe di alluminio
- Extra lunga foratura continua 15 D, 20 D, 30 D

CrN

- Haute performance
- Pour le forage profond dans Cu & alliages Al
- Extra long forage en continu 15 D, 20 D, 30 D

CrN

- Yüksek performans
- Cu & Al alaşımlı çelik için derin delme
- Ekstra uzun 15 D, 20 D, 30 D, kesintisiz delme

CrN

- High performance
- Dyb boring i Cu & Al legering
- Ekstra lang boring uden udspåning 15 D, 20 D, 30 D

CrN

- High performance
- For djup borrning i Cu. och Al.
- Extra lång step fri borrning 15 D, 20 D, 30 D

CrN

- Altas prestaciones
- Para taladrado profundo en cobre y aluminio aleados
- Extra-larga taladrado ininterrumpido 15 D, 20 D, 30 D

CrN

- Высокая производительность
- Для глубокого сверления медных и алюминиевых сплавов
- Непрерывное сверление глубиной 15 D, 20 D, 30 D

CrN

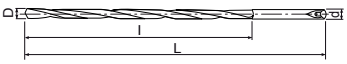
- Wysoka wydajność
- Do głębokiego wiercenia w stali, miedzi i stopach aluminium
- Extra długie, wiercenie bez odwiórowywania - non step 15 D, 20 D, 30 D

GO TO LIVE STOCK CHECK

CrN

CrN

CARBIDE | 30° | SHRINK FIT | 130° | h8 | X | min⁻¹ C.110





	EDP	D	L	l	d	Stock	Price
15 XD	8567130	3x15D	105	55	3	●	
	8567140	4x15D	125	75	4	●	
	8567150	5x15D	140	90	5	●	
	8567160	6x15D	160	110	6	●	
	8567165	6,5x15D	175	120	7	●	
20 XD	8567340	4x20D	140	90	4	●	
	8567345	4,5x20D	165	110	5	●	
	8567350	5x20D	165	115	5	●	
	8567355	5,5x20D	190	140	6	●	
	8567360	6x20D	190	140	6	●	
30 XD	8567450	5x30D	215	165	5	●	
	8567455	5,5x30D	250	200	6	●	
	8567460	6x30D	250	200	6	●	

	EDP	D	L	l	d	Stock	Price
15 XD	8567170	7x15D	175	125	7	●	
	8567180	8x15D	195	145	8	●	
	8567190	9x15D	210	160	9	●	
	8567200	10x15D	240	180	10	●	
20 XD	8567370	7x20D	210	160	7	●	
	8567380	8x20D	230	180	8	●	
	8567390	9x20D	260	210	9	●	
	8567400	10x20D	290	230	10	●	
30 XD	8567470	7x30D	280	230	7	●	
	8567480	8x30D	315	265	8	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			○	○	◎			

● Delivery from stock
○ Available on short notice

HYP-HP-3D

HY-PRO
- High performance
- General purpose 3D drill
- 3D drilling

HY-PRO
- High performance
- 3D Bohrer-Allgemeine Anwendungen
- 3D Bohren

HY-PRO
- Alta prestazione
- 3D con fori raccomandato per applicazioni generali
- 3D foratura

HY-PRO
- Haute performance
- Foret 3D application générale
- Forage 3D

HY-PRO
- Yüksek performans
- Genel kullanım, 3D matkap
- 3D matkap

HY-PRO
- High performance
- Universalt 3D bor
- 3D boring

HY-PRO
- High performance
- Allround 3D
- 3D borrning

HY-PRO
- Altas prestaciones
- Broca 3D empleo general
- Taladrado 3D

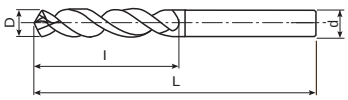
HY-PRO
- Высокая производительность
- Многоцелевое сверло 3D
- Сверление глубиной 3D

HY-PRO
- Wysoka wydajność
- Wiertło 3D ogólnego zastosowania
- Wiercenie 3D

GO TO LIVE STOCK CHECK

HYP

CARBIDE | TiAlN | 30° | SHRINK FIT | 140° | m7 | min⁻¹ C.110 | HY-PRO







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
30200100	1	35	7	3	●		30200556	5,56 (7/32)	66	28	6	●	
30200110	1,1	35	7	3	●		30200560	5,6	66	28	6	●	
30200120	1,2	35	8	3	●		30200570	5,7	66	28	6	●	
30200130	1,3	35	8	3	●		30200580	5,8	66	28	6	●	
30200140	1,4	35	9	3	●		30200590	5,9	66	28	6	●	
30200150	1,5	40	9	3	●		30200595	5,95 (15/64)	66	28	6	●	
30200160	1,6	40	10	3	●		30200600	6	66	28	6	●	
30200170	1,7	40	10	3	●		30200610	6,1	79	34	8	●	
30200180	1,8	40	11	3	●		30200620	6,2	79	34	8	●	
30200190	1,9	40	11	3	●		30200630	6,3	79	34	8	●	
30200200	2	45	13	3	●		30200635	6,35 (1/4)	79	34	8	●	
30200210	2,1	45	13	3	●		30200640	6,4	79	34	8	●	
30200220	2,2	45	13	3	●		30200650	6,5	79	34	8	●	
30200230	2,3	45	13	3	●		30200660	6,6	79	34	8	●	
30200240	2,4	45	15	3	●		30200670	6,7	79	34	8	●	
30200250	2,5	50	15	3	●		30200675	6,75 (17/64)	79	34	8	●	
30200260	2,6	50	15	3	●		30200680	6,8	79	34	8	●	
30200270	2,7	50	17	3	●		30200690	6,9	79	34	8	●	
30200280	2,8	50	17	3	●		30200700	7	79	34	8	●	
30200290	2,9	50	17	3	●		30200710	7,1	79	34	8	●	
30200300	3	62	20	6	●		30200714	7,14 (9/32)	79	41	8	●	
30200310	3,1	62	20	6	●		30200720	7,2	79	41	8	●	
30200317	3,17 (1/8)	62	20	6	●		30200730	7,3	79	41	8	●	
30200320	3,2	62	20	6	●		30200740	7,4	79	41	8	●	
30200330	3,3	62	20	6	●		30200750	7,5	79	41	8	●	
30200340	3,4	62	20	6	●		30200754	7,54 (19/64)	79	41	8	●	
30200350	3,5	62	20	6	●		30200760	7,6	79	41	8	●	
30200357	3,57 (9/64)	62	20	6	●		30200770	7,7	79	41	8	●	
30200360	3,6	62	20	6	●		30200780	7,8	79	41	8	●	
30200370	3,7	62	20	6	●		30200790	7,9	79	41	8	●	
30200380	3,8	66	24	6	●		30200794	7,94 (5/16)	79	41	8	●	
30200390	3,9	66	24	6	●		30200800	8	79	41	8	●	
30200397	3,97 (5/32)	66	24	6	●		30200810	8,1	89	47	10	●	
30200400	4	66	24	6	●		30200820	8,2	89	47	10	●	
30200410	4,1	66	24	6	●		30200830	8,3	89	47	10	●	
30200420	4,2	66	24	6	●		30200833	8,33 (21/64)	89	47	10	●	
30200430	4,3	66	24	6	●		30200840	8,4	89	47	10	●	
30200437	4,37 (11/64)	66	24	6	●		30200850	8,5	89	47	10	●	
30200440	4,4	66	24	6	●		30200860	8,6	89	47	10	●	
30200450	4,5	66	24	6	●		30200870	8,7	89	47	10	●	
30200460	4,6	66	24	6	●		30200873	8,73 (11/32)	89	47	10	●	
30200470	4,7	66	24	6	●		30200880	8,8	89	47	10	●	
30200476	4,76 (3/16)	66	24	6	●		30200890	8,9	89	47	10	●	
30200480	4,8	66	28	6	●		30200900	9	89	47	10	●	
30200490	4,9	66	28	6	●		30200910	9,1	89	47	10	●	
30200500	5	66	28	6	●		30200913	9,13 (23/64)	89	47	10	●	
30200510	5,1	66	28	6	●		30200920	9,2	89	47	10	●	
30200516	5,16 (13/64)	66	28	6	●		30200930	9,3	89	47	10	●	
30200520	5,2	66	28	6	●		30200940	9,4	89	47	10	●	
30200530	5,3	66	28	6	●		30200950	9,5	89	47	10	●	
30200540	5,4	66	28	6	●		30200952	9,52 (3/8)	89	47	10	●	
30200550	5,5	66	28	6	●		30200960	9,6	89	47	10	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	◎	○			○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎						

● Delivery from stock
○ Available on short notice

HYP-HP-3D

HY-PRO
- High performance
- General purpose 3D drill
- 3D drilling

HY-PRO
- High performance
- 3D Bohrer-Allgemeine Anwendungen
- 3D Bohren

HY-PRO
- Alta prestazione
- 3D con fori raccomandato per applicazioni generali
- 3D foratura

HY-PRO
- Haute performance
- Foret 3D application générale
- Forage 3D

HY-PRO
- Yüksek performans
- Genel kullanım, 3D matkap
- 3D matkap

HY-PRO
- High performance
- Universalt 3D bor
- 3D boring

HY-PRO
- High performance
- Allround 3D
- 3D borrning

HY-PRO
- Altas prestaciones
- Broca 3D empleo general
- Taladrado 3D

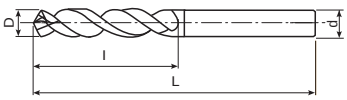
HY-PRO
- Высокая производительность
- Многоцелевое сверло 3D
- Сверление глубиной 3D

HY-PRO
- Wysoka wydajność
- Wiertło 3D ogólnego zastosowania
- Wiercenie 3D

GO TO LIVE STOCK CHECK

HYP

CARBIDE | TiAlN | 30° | SHRINK FIT | 140° | m7 | min⁻¹ C.110 | HY-PRO





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
30200970	9,7	89	47	10	●		30201170	11,7	102	55	12	●	
30200980	9,8	89	47	10	●		30201180	11,8	102	55	12	●	
30200990	9,9	89	47	10	●		30201190	11,9	102	55	12	●	
30200992	9,92 (25/64)	89	47	10	●		30201191	11,91 (15/32)	102	55	12	●	
30201000	10	89	47	10	●		30201200	12	102	55	12	●	
30201010	10,1	102	55	12	●		30201230	12,3 (31/64)	107	60	14	●	
30201020	10,2	102	55	12	●		30201250	12,5	107	60	14	●	
30201030	10,3	102	55	12	●		30201270	12,7 (1/2)	107	60	14	●	
30201032	10,32 (13/32)	102	55	12	●		30201300	13	107	60	14	●	
30201040	10,4	102	55	12	●		30201350	13,5	107	60	14	•	
30201050	10,5	102	55	12	●		30201400	14	107	60	14	•	
30201060	10,6	102	55	12	●		30201429	14,29 (9/16)	115	65	16	•	
30201070	10,7	102	55	12	●		30201450	14,5	115	65	16	•	
30201072	10,72 (27/64)	102	55	12	●		30201500	15	115	65	16	•	
30201080	10,8	102	55	12	●		30201550	15,5	115	65	16	•	
30201090	10,9	102	55	12	●		30201587	15,87 (5/8)	115	65	16	•	
30201100	11	102	55	12	●		30201600	16	115	65	16	•	
30201110	11,1	102	55	12	●		30201650	16,5	123	73	18	•	
30201111	11,11 (7/16)	102	55	12	●		30201700	17	123	73	18	•	
30201120	11,2	102	55	12	●		30201750	17,5	123	73	18	•	
30201130	11,3	102	55	12	●		30201800	18	123	73	18	•	
30201140	11,4	102	55	12	●		30201850	18,5	131	79	20	•	
30201150	11,5	102	55	12	●		30201900	19	131	79	20	•	
30201151	11,51 (29/64)	102	55	12	●		30201950	19,5	131	79	20	•	
30201160	11,6	102	55	12	●		30202000	20	131	79	20	•	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	◎	○			○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎						

● Delivery from stock
○ Available on short notice

HYP-HP-5D

HY-PRO
- High performance
- General purpose 5D drill
- 5D drilling

HY-PRO
- High performance
- 5D Bohrer-Allgemeine Anwendungen
- 5D Bohren

HY-PRO
- Alta prestazione
- 5D con fori raccomandato per applicazioni generali
- 5D foratura

HY-PRO
- Haute performance
- Foret 5D application générale
- Forage 5D

HY-PRO
- Yüksek performans
- Genel kullanım, 5D matkap
- 5D matkap

HY-PRO
- High performance
- Universalt 5D bor
- 5D boring

HY-PRO
- High performance
- Allround 5D
- 5D borrning

HY-PRO
- Altas prestaciones
- Broca 5D empleo general
- Taladrado 5D

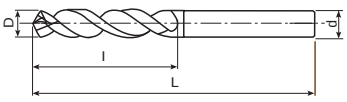
HY-PRO
- Высокая производительность
- Многоцелевое сверло 5D
- Сверление глубиной 5D

HY-PRO
- Wysoka wydajność
- Wiertło 5D ogólnego zastosowania
- Wiercenie 5D

GO TO LIVE STOCK CHECK

HYP

CARBIDE | TiAlN | 30° | SHRINK FIT | 140° | m7 | min⁻¹ C.111 | HY-PRO





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
31200100	1	38	9	3	●		31200560	5,6	82	44	6	●	
31200110	1,1	38	9	3	●		31200570	5,7	82	44	6	●	
31200120	1,2	38	11	3	●		31200580	5,8	82	44	6	●	
31200130	1,3	38	11	3	●		31200590	5,9	82	44	6	●	
31200140	1,4	38	12	3	●		31200595	5,95 (15/64)	82	44	6	●	
31200150	1,5	45	12	3	●		31200600	6	82	44	6	●	
31200160	1,6	45	14	3	●		31200610	6,1	91	53	8	●	
31200170	1,7	45	14	3	●		31200620	6,2	91	53	8	●	
31200180	1,8	45	16	3	●		31200630	6,3	91	53	8	●	
31200190	1,9	45	16	3	●		31200635	6,35 (1/4)	91	53	8	●	
31200200	2	50	18	3	●		31200640	6,4	91	53	8	●	
31200210	2,1	50	18	3	●		31200650	6,5	91	53	8	●	
31200220	2,2	52	20	3	●		31200660	6,6	91	53	8	●	
31200230	2,3	52	20	3	●		31200670	6,7	91	53	8	●	
31200240	2,4	52	22	3	●		31200675	6,75 (17/64)	91	53	8	●	
31200250	2,5	56	22	3	●		31200680	6,8	91	53	8	●	
31200260	2,6	56	22	3	●		31200690	6,9	91	53	8	●	
31200270	2,7	56	23	3	●		31200700	7	91	53	8	●	
31200280	2,8	56	23	3	●		31200710	7,1	91	53	8	●	
31200290	2,9	56	23	3	●		31200714	7,14 (9/32)	91	53	8	●	
31200300	3	66	28	6	●		31200720	7,2	91	53	8	●	
31200310	3,1	66	28	6	●		31200730	7,3	91	53	8	●	
31200317	3,17 (1/8)	66	28	6	●		31200740	7,4	91	53	8	●	
31200320	3,2	66	28	6	●		31200750	7,5	91	53	8	●	
31200330	3,3	66	28	6	●		31200754	7,54 (19/64)	91	53	8	●	
31200340	3,4	66	28	6	●		31200760	7,6	91	53	8	●	
31200350	3,5	66	28	6	●		31200770	7,7	91	53	8	●	
31200357	3,57 (9/64)	66	28	6	●		31200780	7,8	91	53	8	●	
31200360	3,6	66	28	6	●		31200790	7,9	91	53	8	●	
31200370	3,7	66	28	6	●		31200794	7,94 (5/16)	91	53	8	●	
31200380	3,8	74	36	6	●		31200800	8	91	53	8	●	
31200390	3,9	74	36	6	●		31200810	8,1	103	61	8	●	
31200397	3,97 (5/32)	74	36	6	●		31200820	8,2	103	61	10	●	
31200400	4	74	36	6	●		31200830	8,3	103	61	10	●	
31200410	4,1	74	36	6	●		31200833	8,33 (21/64)	103	61	10	●	
31200420	4,2	74	36	6	●		31200840	8,4	103	61	10	●	
31200430	4,3	74	36	6	●		31200850	8,5	103	61	10	●	
31200437	4,37 (11/64)	74	36	6	●		31200860	8,6	103	61	10	●	
31200440	4,4	74	36	6	●		31200870	8,7	103	61	10	●	
31200450	4,5	74	36	6	●		31200873	8,73 (11/32)	103	61	10	●	
31200460	4,6	74	36	6	●		31200880	8,8	103	61	10	●	
31200470	4,7	82	44	6	●		31200890	8,9	103	61	10	●	
31200476	4,76 (3/16)	82	44	6	●		31200900	9	103	61	10	●	
31200480	4,8	82	44	6	●		31200910	9,1	103	61	10	●	
31200490	4,9	82	44	6	●		31200913	9,13 (23/64)	103	61	10	●	
31200500	5	82	44	6	●		31200920	9,2	103	61	10	●	
31200510	5,1	82	44	6	●		31200930	9,3	103	61	10	●	
31200516	5,16 (13/64)	82	44	6	●		31200940	9,4	103	61	10	●	
31200520	5,2	82	44	6	●		31200950	9,5	103	61	10	●	
31200530	5,3	82	44	6	●		31200952	9,52 (3/8)	103	61	10	●	
31200540	5,4	82	44	6	●		31200960	9,6	103	61	10	●	
31200550	5,5	82	44	6	●		31200970	9,7	103	61	10	●	
31200556	5,56 (7/32)	82	44	6	●		31200980	9,8	103	61	10	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	◎	○			○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎						

● Delivery from stock
○ Available on short notice

HYP-HP-5D

HY-PRO
- High performance
- General purpose 5D drill
- 5D drilling

HY-PRO
- High performance
- 5D Bohrer-Allgemeine Anwendungen
- 5D Bohren

HY-PRO
- Alta prestazione
- 5D con fori raccomandato per applicazioni generali
- 5D foratura

HY-PRO
- Haute performance
- Foret 5D application générale
- Forage 5D

HY-PRO
- Yüksek performans
- Genel kullanım, 5D matkap
- 5D matkap

HY-PRO
- High performance
- Universalt 5D bor
- 5D boring

HY-PRO
- High performance
- Allround 5D
- 5D borrning

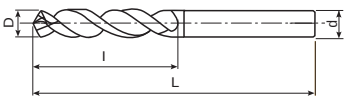
HY-PRO
- Altas prestaciones
- Broca 5D empleo general
- Taladrado 5D

HY-PRO
- Высокая производительность
- Многоцелевое сверло 5D
- Сверление глубиной 5D

HY-PRO
- Wysoka wydajność
- Wiertło 5D ogólnego zastosowania
- Wiercenie 5D

GO TO LIVE STOCK CHECK

CARBIDE | TiAlN | 30° | SHRINK FIT | 140° | m7 | min⁻¹ C.111 | HY-PRO





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
31200990	9,9	103	61	10	●		31201180	11,8	118	71	12	●	
31200992	9,92 (25/64)	103	61	10	●		31201190	11,9	118	71	12	●	
31201000	10	103	61	10	●		31201191	11,91 (15/32)	118	71	12	●	
31201010	10,1	118	71	12	●		31201200	12	118	71	12	●	
31201020	10,2	118	71	12	●		31201230	12,3 (31/64)	124	77	14	●	
31201030	10,3	118	71	12	●		31201250	12,5	124	77	14	●	
31201032	10,32 (13/32)	118	71	12	●		31201270	12,7 (1/2)	124	77	14	●	
31201040	10,4	118	71	12	●		31201300	13	124	77	14	●	
31201050	10,5	118	71	12	●		31201350	13,5	124	77	14	●	
31201060	10,6	118	71	12	●		31201400	14	124	77	14	●	
31201070	10,7	118	71	12	●		31201429	14,29 (9/16)	133	83	16	●	
31201072	10,72 (27/64)	118	71	12	●		31201450	14,5	133	83	16	●	
31201080	10,8	118	71	12	●		31201500	15	133	83	16	●	
31201090	10,9	118	71	12	●		31201550	15,5	133	83	16	●	
31201100	11	118	71	12	●		31201587	15,87 (5/8)	133	83	16	●	
31201110	11,1	118	71	12	●		31201600	16	133	93	18	●	
31201111	11,11 (7/16)	118	71	12	●		31201650	16,5	143	93	18	●	
31201120	11,2	118	71	12	●		31201700	17	143	93	18	●	
31201130	11,3	118	71	12	●		31201750	17,5	143	93	18	●	
31201140	11,4	118	71	12	●		31201800	18	143	93	18	●	
31201150	11,5	118	71	12	●		31201850	18,5	153	101	20	●	
31201151	11,51 (29/64)	118	71	12	●		31201900	19	153	101	20	●	
31201160	11,6	118	71	12	●		31201950	19,5	153	101	20	●	
31201170	11,7	118	71	12	●		31202000	20	153	101	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	◎	○			○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎						

● Delivery from stock
○ Available on short notice

HYP-HPO-3D

HY-PRO
- High performance
- General purpose 3D drill
- 3D drilling

HY-PRO
- High performance
- 3D Bohrer-Allgemeine Anwendungen
- 3D Bohren

HY-PRO
- Alta prestazione
- 3D con fori raccomandato per applicazioni generali
- 3D foratura

HY-PRO
- Haute performance
- Foret 3D application générale
- Forage 3D

HY-PRO
- Yüksek performans
- Genel kullanım, 3D matkap
- 3D matkap

HY-PRO
- High performance
- Universalt 3D bor
- 3D boring

HY-PRO
- High performance
- Allround 3D
- 3D borrning

HY-PRO
- Altas prestaciones
- Broca 3D empleo general
- Taladrado 3D

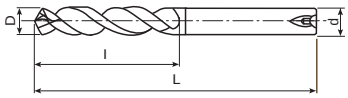
HY-PRO
- Высокая производительность
- Многоцелевое сверло 3D
- Сверление глубиной 3D

HY-PRO
- Wysoka wydajność
- Wiertło 3D ogólnego zastosowania
- Wiercenie 3D

GO TO LIVE STOCK CHECK

HYP







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
30210300	3	62	20	6	●		30210710	7,1	79	34	8	●	
30210310	3,1	62	20	6	●		30210714	7,14 (9/32)	79	41	8	●	
30210317	3,17 (1/8)	62	20	6	●		30210720	7,2	79	41	8	●	
30210320	3,2	62	20	6	●		30210730	7,3	79	41	8	●	
30210330	3,3	62	20	6	●		30210740	7,4	79	41	8	●	
30210340	3,4	62	20	6	●		30210750	7,5	79	41	8	●	
30210350	3,5	62	20	6	●		30210754	7,54 (19/64)	79	41	8	●	
30210357	3,57 (9/64)	62	20	6	●		30210760	7,6	79	41	8	●	
30210360	3,6	62	20	6	●		30210770	7,7	79	41	8	●	
30210370	3,7	62	20	6	●		30210780	7,8	79	41	8	●	
30210380	3,8	66	24	6	●		30210790	7,9	79	41	8	●	
30210390	3,9	66	24	6	●		30210794	7,94 (5/16)	79	41	8	●	
30210397	3,97 (5/32)	66	24	6	●		30210800	8	79	41	8	●	
30210400	4	66	24	6	●		30210810	8,1	89	47	10	●	
30210410	4,1	66	24	6	●		30210820	8,2	89	47	10	●	
30210420	4,2	66	24	6	●		30210830	8,3	89	47	10	●	
30210430	4,3	66	24	6	●		30210833	8,33 (21/64)	89	47	10	●	
30210437	4,37 (11/64)	66	24	6	●		30210840	8,4	89	47	10	●	
30210440	4,4	66	24	6	●		30210850	8,5	89	47	10	●	
30210450	4,5	66	24	6	●		30210860	8,6	89	47	10	●	
30210460	4,6	66	24	6	●		30210870	8,7	89	47	10	●	
30210470	4,7	66	24	6	●		30210873	8,73 (11/32)	89	47	10	●	
30210476	4,76 (3/16)	66	24	6	●		30210880	8,8	89	47	10	●	
30210480	4,8	66	28	6	●		30210890	8,9	89	47	10	●	
30210490	4,9	66	28	6	●		30210900	9	89	47	10	●	
30210500	5	66	28	6	●		30210910	9,1	89	47	10	●	
30210510	5,1	66	28	6	●		30210913	9,13 (23/64)	89	47	10	●	
30210516	5,16 (13/64)	66	28	6	●		30210920	9,2	89	47	10	●	
30210520	5,2	66	28	6	●		30210930	9,3	89	47	10	●	
30210530	5,3	66	28	6	●		30210940	9,4	89	47	10	●	
30210540	5,4	66	28	6	●		30210950	9,5	89	47	10	●	
30210550	5,5	66	28	6	●		30210952	9,52 (3/8)	89	47	10	●	
30210556	5,56 (7/32)	66	28	6	●		30210960	9,6	89	47	10	●	
30210560	5,6	66	28	6	●		30210970	9,7	89	47	10	●	
30210570	5,7	66	28	6	●		30210980	9,8	89	47	10	●	
30210580	5,8	66	28	6	●		30210990	9,9	89	47	10	●	
30210590	5,9	66	28	6	●		30210992	9,92 (25/64)	89	47	10	●	
30210595	5,95 (15/64)	66	28	6	●		30211000	10	89	47	10	●	
30210600	6	66	28	6	●		30211010	10,1	102	55	12	●	
30210610	6,1	79	34	8	●		30211020	10,2	102	55	12	●	
30210620	6,2	79	34	8	●		30211030	10,3	102	55	12	●	
30210630	6,3	79	34	8	●		30211032	10,32 (13/32)	102	55	12	●	
30210635	6,35 (1/4)	79	34	8	●		30211040	10,4	102	55	12	●	
30210640	6,4	79	34	8	●		30211050	10,5	102	55	12	●	
30210650	6,5	79	34	8	●		30211060	10,6	102	55	12	●	
30210660	6,6	79	34	8	●		30211070	10,7	102	55	12	●	
30210670	6,7	79	34	8	●		30211072	10,72 (27/64)	102	55	12	●	
30210675	6,75 (17/64)	79	34	8	●		30211080	10,8	102	55	12	●	
30210680	6,8	79	34	8	●		30211090	10,9	102	55	12	●	
30210690	6,9	79	34	8	●		30211100	11	102	55	12	●	
30210700	7	79	34	8	●		30211110	11,1	102	55	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	◎	○			○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎						

● Delivery from stock
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HYP-HPO-3D

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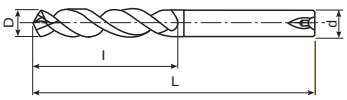
HY-PRO
- Wysoka wydajność
- Wiertło 3D ogólnego zastosowania
- Wiercenie 3D

GO TO LIVE STOCK CHECK

HYP

HYP







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
30211111	11,11 (7/16)	102	55	12	●		30211350	13,5	107	60	14	●	
30211120	11,2	102	55	12	●		30211400	14	107	60	14	●	
30211130	11,3	102	55	12	●		30211429	14,29 (9/16)	115	65	16	●	
30211140	11,4	102	55	12	●		30211450	14,5	115	65	16	●	
30211150	11,5	102	55	12	●		30211500	15	115	65	16	●	
30211151	11,51 (29/64)	102	55	12	●		30211550	15,5	115	65	16	●	
30211160	11,6	102	55	12	●		30211587	15,87 (5/8)	115	65	16	●	
30211170	11,7	102	55	12	●		30211600	16	115	65	16	●	
30211180	11,8	102	55	12	●		30211650	16,5	123	73	18	●	
30211190	11,9	102	55	12	●		30211700	17	123	73	18	●	
30211191	11,91 (15/32)	102	55	12	●		30211750	17,5	123	73	18	●	
30211200	12	102	55	12	●		30211800	18	123	73	18	●	
30211230	12,3 (31/64)	107	60	14	●		30211850	18,5	131	79	20	●	
30211250	12,5	107	60	14	●		30211900	19	131	79	20	●	
30211270	12,7 (1/2)	107	60	14	●		30211950	19,5	131	79	20	●	
30211300	13	107	60	14	●		30212000	20	131	79	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	◎	○			○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎						

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- Broca 5D empleo general
- Taladrado 5D

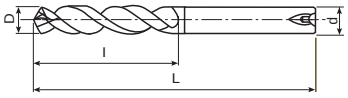
HY-PRO
- Высокая производительность
- Многоцелевое сверло 5D
- Сверление глубиной 5D

HY-PRO
- Wysoka wydajność
- Wiertło 5D ogólnego zastosowania
- Wiercenie 5D

GO TO LIVE STOCK CHECK

HYP







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
30220300	3	66	28	6	●		30220714	7,14 (9/32)	91	53	8	●	
30220310	3,1	66	28	6	●		30220720	7,2	91	53	8	●	
30220317	3,17 (1/8)	66	28	6	●		30220730	7,3	91	53	8	●	
30220320	3,2	66	28	6	●		30220740	7,4	91	53	8	●	
30220330	3,3	66	28	6	●		30220750	7,5	91	53	8	●	
30220340	3,4	66	28	6	●		30220754	7,54 (19/64)	91	53	8	●	
30220350	3,5	66	28	6	●		30220760	7,6	91	53	8	●	
30220357	3,57 (9/64)	66	28	6	●		30220770	7,7	91	53	8	●	
30220360	3,6	66	28	6	●		30220780	7,8	91	53	8	●	
30220370	3,7	66	28	6	●		30220790	7,9	91	53	8	●	
30220380	3,8	74	36	6	●		30220794	7,94 (5/16)	91	53	8	●	
30220390	3,9	74	36	6	●		30220800	8	91	53	8	●	
30220397	3,97 (5/32)	74	36	6	●		30220810	8,1	103	61	10	●	
30220400	4	74	36	6	●		30220820	8,2	103	61	10	●	
30220410	4,1	74	36	6	●		30220830	8,3	103	61	10	●	
30220420	4,2	74	36	6	●		30220833	8,33 (21/64)	103	61	10	●	
30220430	4,3	74	36	6	●		30220840	8,4	103	61	10	●	
30220437	4,37 (11/64)	74	36	6	●		30220850	8,5	103	61	10	●	
30220440	4,4	74	36	6	●		30220860	8,6	103	61	10	●	
30220450	4,5	74	36	6	●		30220870	8,7	103	61	10	●	
30220460	4,6	74	36	6	●		30220873	8,73 (11/32)	103	61	10	●	
30220470	4,7	82	44	6	●		30220880	8,8	103	61	10	●	
30220476	4,76 (3/16)	82	44	6	●		30220890	8,9	103	61	10	●	
30220480	4,8	82	44	6	●		30220900	9	103	61	10	●	
30220490	4,9	82	44	6	●		30220910	9,1	103	61	10	●	
30220500	5	82	44	6	●		30220913	9,13 (23/64)	103	61	10	●	
30220510	5,1	82	44	6	●		30220920	9,2	103	61	10	●	
30220516	5,16 (13/64)	82	44	6	●		30220930	9,3	103	61	10	●	
30220520	5,2	82	44	6	●		30220940	9,4	103	61	10	●	
30220530	5,3	82	44	6	●		30220950	9,5	103	61	10	●	
30220540	5,4	82	44	6	●		30220952	9,52 (3/8)	103	61	10	●	
30220550	5,5	82	44	6	●		30220960	9,6	103	61	10	●	
30220556	5,56 (7/32)	82	44	6	●		30220970	9,7	103	61	10	●	
30220560	5,6	82	44	6	●		30220980	9,8	103	61	10	●	
30220570	5,7	82	44	6	●		30220990	9,9	103	61	10	●	
30220580	5,8	82	44	6	●		30220992	9,92 (25/64)	103	61	10	●	
30220590	5,9	82	44	6	●		30221000	10	103	61	10	●	
30220595	5,95 (15/64)	82	44	6	●		30221010	10,1	118	71	12	●	
30220600	6	82	44	6	●		30221020	10,2	118	71	12	●	
30220610	6,1	91	53	8	●		30221030	10,3	118	71	12	●	
30220620	6,2	91	53	8	●		30221032	10,32 (13/32)	118	71	12	●	
30220630	6,3	91	53	8	●		30221040	10,4	118	71	12	●	
30220635	6,35 (1/4)	91	53	8	●		30221050	10,5	118	71	12	●	
30220640	6,4	91	53	8	●		30221060	10,6	118	71	12	●	
30220650	6,5	91	53	8	●		30221070	10,7	118	71	12	●	
30220660	6,6	91	53	8	●		30221072	10,72 (27/64)	118	71	12	●	
30220670	6,7	91	53	8	●		30221080	10,8	118	71	12	●	
30220675	6,75 (17/64)	91	53	8	●		30221090	10,9	118	71	12	●	
30220680	6,8	91	53	8	●		30221100	11	118	71	12	●	
30220690	6,9	91	53	8	●		30221110	11,1	118	71	12	●	
30220700	7	91	53	8	●		30221111	11,11 (7/16)	118	71	12	●	
30220710	7,1	91	53	8	●		30221120	11,2	118	71	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	◎	○			○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎						

● Delivery from stock
○ Available on short notice

HYP-HPO-5D

HY-PRO
- High performance
- General purpose 5D drill
- 5D drilling

HY-PRO
- High performance
- 5D Bohrer-Allgemeine Anwendungen
- 5D Bohren

HY-PRO
- Alta prestazione
- 5D con fori raccomandato per applicazioni generali
- 5D foratura

HY-PRO
- Haute performance
- Foret 5D application générale
- Forage 5D

HY-PRO
- Yüksek performans
- Genel kullanım, 5D matkap
- 5D matkap

HY-PRO
- High performance
- Universalt 5D bor
- 5D boring

HY-PRO
- High performance
- Allround 5D
- 5D borrning

HY-PRO
- Altas prestaciones
- Broca 5D empleo general
- Taladrado 5D

HY-PRO
- Высокая производительность
- Многоцелевое сверло 5D
- Сверление глубиной 5D

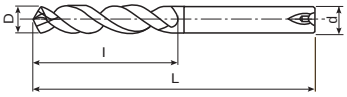
HY-PRO
- Wysoka wydajność
- Wiertło 5D ogólnego zastosowania
- Wiercenie 5D

GO TO LIVE STOCK CHECK

HYP

HYP

CARBIDE | TiAlN | 30° | SHRINK FIT | 140° | m7 | min⁻¹ C.111 | HY-PRO





EDP	D	L	l	d	Stock	Price
30221130	11,3	118	71	12	●	
30221140	11,4	118	71	12	●	
30221150	11,5	118	71	12	●	
30221151	11,51 (29/64)	118	71	12	●	
30221160	11,6	118	71	12	●	
30221170	11,7	118	71	12	●	
30221180	11,8	118	71	12	●	
30221190	11,9	118	71	12	●	
30221191	11,91 (15/32)	118	71	12	●	
30221200	12	118	71	12	●	
30221230	12,3 (31/64)	124	77	14	●	
30221250	12,5	124	77	14	●	
30221270	12,7 (1/2)	124	77	14	●	
30221300	13	124	77	14	●	
30221350	13,5	124	77	14	●	

EDP	D	L	l	d	Stock	Price
30221400	14	124	77	14	●	
30221429	14,29 (9/16)	133	83	16	●	
30221450	14,5	133	83	16	●	
30221500	15	133	83	16	●	
30221550	15,5	133	83	16	●	
30221587	15,87 (5/8)	133	83	16	●	
30221600	16	133	83	16	●	
30221650	16,5	143	93	18	●	
30221700	17	143	93	18	●	
30221750	17,5	143	93	18	●	
30221800	18	143	93	18	●	
30221850	18,5	153	101	20	●	
30221900	19	153	101	20	●	
30221950	19,5	153	101	20	●	
30222000	20	153	101	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	◎	○			○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎						

● Delivery from stock
○ Available on short notice

HYP-HPO-8D

HY-PRO
- High performance
- General purpose 8D drill
- 8D drilling

HY-PRO
- High performance
- 8D Bohrer-Allgemeine Anwendungen
- 8D Bohren

HY-PRO
- Alta prestazione
- 8D con fori raccomandato per applicazioni generali
- 8D foratura

HY-PRO
- Haute performance
- Foret 8D application générale
- Forage 8D

HY-PRO
- Yüksek performans
- Genel kullanım, 8D matkap
- 8D matkap

HY-PRO
- High performance
- Universalt 8D bor
- 8D boring

HY-PRO
- High performance
- Allround 8D
- 8D borrning

HY-PRO
- Altas prestaciones
- Broca 8D empleo general
- Taladrado 8D

HY-PRO
- Высокая производительность
- Многоцелевое сверло 8D
- Сверление глубиной 8D

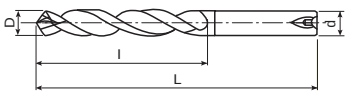
HY-PRO
- Wysoka wydajność
- Wiertło 8D ogólnego zastosowania
- Wiercenie 8D

GO TO LIVE STOCK CHECK

HYP

HYP

CARBIDE | TiAlN | 30° | SHRINK FIT | 140° | m7 | min⁻¹ C.111 | HY-PRO





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
32210300	3	70	30	4	●		32210720	7,2	116	76	8	●	
32210310	3,1	74	34	4	●		32210730	7,3	116	76	8	●	
32210317	3,17 (1/8)	74	34	4	●		32210740	7,4	116	76	8	●	
32210320	3,2	74	34	4	●		32210750	7,5	116	76	8	●	
32210330	3,3	74	34	4	●		32210754	7,54 (19/64)	116	76	8	●	
32210340	3,4	74	34	4	●		32210760	7,6	116	76	8	●	
32210350	3,5	80	40	4	●		32210770	7,7	116	76	8	●	
32210357	3,57 (9/64)	80	40	4	●		32210780	7,8	116	76	8	●	
32210360	3,6	80	40	4	●		32210790	7,9	116	76	8	●	
32210370	3,7	80	40	4	●		32210794	7,94 (5/16)	116	76	8	●	
32210380	3,8	80	40	4	●		32210800	8	116	76	8	●	
32210390	3,9	80	40	4	●		32210810	8,1	131	87	10	●	
32210397	3,97 (5/32)	80	40	4	●		32210820	8,2	131	87	10	●	
32210400	4	80	40	4	●		32210830	8,3	131	87	10	●	
32210410	4,1	90	43	6	●		32210833	8,33 (21/64)	131	87	10	●	
32210420	4,2	90	43	6	●		32210840	8,4	131	87	10	●	
32210430	4,3	90	43	6	●		32210850	8,5	131	87	10	●	
32210437	4,37 (11/64)	90	43	6	●		32210860	8,6	131	87	10	●	
32210440	4,4	90	50	6	●		32210870	8,7	131	87	10	●	
32210450	4,5	90	50	6	●		32210873	8,73 (11/32)	131	87	10	●	
32210460	4,6	90	50	6	●		32210880	8,8	131	87	10	●	
32210470	4,7	90	50	6	●		32210890	8,9	131	87	10	●	
32210476	4,76 (3/16)	90	50	6	●		32210900	9	131	87	10	●	
32210480	4,8	90	50	6	●		32210910	9,1	139	95	10	●	
32210490	4,9	90	50	6	●		32210913	9,13 (23/64)	139	95	10	●	
32210500	5	90	50	6	●		32210920	9,2	139	95	10	●	
32210510	5,1	97	57	6	●		32210930	9,3	139	95	10	●	
32210516	5,16 (13/64)	97	57	6	●		32210940	9,4	139	95	10	●	
32210520	5,2	97	57	6	●		32210950	9,5	139	95	10	●	
32210530	5,3	97	57	6	●		32210952	9,52 (3/8)	139	95	10	●	
32210540	5,4	97	57	6	●		32210960	9,6	139	95	10	●	
32210550	5,5	97	57	6	●		32210970	9,7	139	95	10	●	
32210556	5,56 (7/32)	97	57	6	●		32210980	9,8	139	95	10	●	
32210560	5,6	97	57	6	●		32210990	9,9	139	95	10	●	
32210570	5,7	97	57	6	●		32210992	9,92 (25/64)	139	95	10	●	
32210580	5,8	97	57	6	●		32211000	10	139	95	10	●	
32210590	5,9	97	57	6	●		32211010	10,1	155	106	12	●	
32210595	5,95 (15/64)	97	57	6	●		32211020	10,2	155	106	12	●	
32210600	6	97	57	6	●		32211030	10,3	155	106	12	●	
32210610	6,1	106	66	8	●		32211032	10,32 (13/32)	155	106	12	●	
32210620	6,2	106	66	8	●		32211040	10,4	155	106	12	●	
32210630	6,3	106	66	8	●		32211050	10,5	155	106	12	●	
32210635	6,35 (1/4)	106	66	8	●		32211060	10,6	155	106	12	●	
32210640	6,4	106	66	8	●		32211070	10,7	155	106	12	●	
32210650	6,5	106	66	8	●		32211072	10,72 (27/64)	155	106	12	●	
32210660	6,6	106	66	8	●		32211080	10,8	155	106	12	●	
32210670	6,7	106	66	8	●		32211090	10,9	155	106	12	●	
32210675	6,75 (17/64)	106	66	8	●		32211100	11	155	106	12	●	
32210680	6,8	106	66	8	●		32211110	11,1	163	114	12	●	
32210690	6,9	116	76	8	●		32211111	11,11 (7/16)	163	114	12	●	
32210700	7	116	76	8	●		32211120	11,2	163	114	12	●	
32210710	7,1	116	76	8	●		32211130	11,3	163	114	12	●	
32210714	7,14 (9/32)	116	76	8	●		32211140	11,4	163	114	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	◎	○			○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎						

HYP-HPO-8D

HY-PRO
- High performance
- General purpose 8D drill
- 8D drilling

HY-PRO
- High performance
- 8D Bohrer-Allgemeine Anwendungen
- 8D Bohren

HY-PRO
- Alta prestazione
- 8D con fori raccomandato per applicazioni generali
- 8D foratura

HY-PRO
- Haute performance
- Foret 8D application générale
- Forage 8D

HY-PRO
- Yüksek performans
- Genel kullanım, 8D matkap
- 8D matkap

HY-PRO
- High performance
- Universalt 8D bor
- 8D boring

HY-PRO
- High performance
- Allround 8D
- 8D borrning

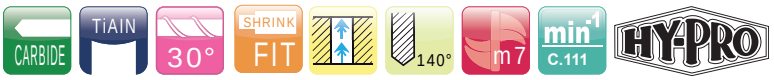
HY-PRO
- Altas prestaciones
- Broca 8D empleo general
- Taladrado 8D

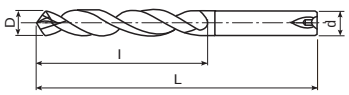
HY-PRO
- Высокая производительность
- Многоцелевое сверло 8D
- Сверление глубиной 8D

HY-PRO
- Wysoka wydajność
- Wiertło 8D ogólnego zastosowania
- Wiercenie 8D

GO TO LIVE STOCK CHECK

HYP







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
32211150	11,5	163	114	12	●	New sizes	32211429	14,29 (9/16)	204	152	16	●	
New sizes 32211151	11,51 (29/64)	163	114	12	●		32211450	14,5	204	152	16	●	
New sizes 32211160	11,6	163	114	12	●		32211500	15	204	152	16	●	
New sizes 32211170	11,7	163	114	12	●		32211550	15,5	204	152	16	●	
New sizes 32211180	11,8	163	114	12	●	New sizes	32211587	15,87 (5/8)	204	152	16	●	
New sizes 32211190	11,9	163	114	12	●		32211600	16	204	152	16	●	
New sizes 32211191	11,91 (15/32)	163	114	12	●	New sizes	32211650	16,5	223	171	18	●	
32211200	12	163	114	12	●	New sizes	32211700	17	223	171	18	●	
New sizes 32211230	12,3 (31/64)	182	133	14	●	New sizes	32211750	17,5	223	171	18	●	
32211250	12,5	182	133	14	●	New sizes	32211800	18	223	171	18	●	
32211270	12,7 (1/2)	182	133	14	●	New sizes	32211850	18,5	244	190	20	●	
32211300	13	182	133	14	●	New sizes	32211900	19	244	190	20	●	
32211350	13,5	182	133	14	●	New sizes	32211950	19,5	244	190	20	●	
32211400	14	182	133	14	●	New sizes	32212000	20	244	190	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	◎	○			○
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	◎	◎						

● Delivery from stock
○ Available on short notice

WH55-5D

CARBIDE
- High performance
- For hardened material up to 55 HRC
- 5D drilling

CARBIDE
- High performance
- Für gehärtete Materialien bis 55 HRC
- 5xD effektive Bearbeitungstiefe

CARBIDE
- Alta prestazione
- Per acciai temprati fino a 55 HRC
- 5 D foratura

CARBIDE
- Haute performance
- Pour matériaux supérieur à 55 HRC
- Forage 5 D

CARBIDE
- Yüksek performans
- 55HRC ye kadar sertleştirilmiş malzemeler için
- 5D matkap

CARBIDE
- High performance
- For hærdede materialer op til 55 HRC
- 5 D boring

CARBIDE
- High performance
- För härdat stål upp till 55HRC
- 5 D borrning

CARBIDE
- Altas prestaciones
- Para aceros templados hasta 55 HRC
- Taladrado 5 D

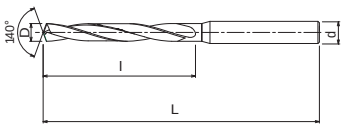
CARBIDE
- Высокая производительность
- Для закаленных материалов до 55 HRC
- Сверление глубиной 5 D

CARBIDE
- Wysoka wydajność
- Dla utwardzonych materiałów do 55 HRC
- Wiercenie 5D

GO TO LIVE STOCK CHECK

Carbide

CARBIDE | WXS | 12°~20° | SHRINK FIT | h8 | min⁻¹ C.111





EDP	D	L	l	d	Stock	Price
3312200	2	68	18	4	●	
3312250	2,5	73	23	4	●	
3312280	2,8	73	27	4	●	
3312300	3	78	29	6	●	
3312330	3,3	78	32	6	●	
3312350	3,5	78	32	6	●	
3312380	3,8	78	36	6	●	
3312400	4	78	36	6	●	
3312420	4,2	88	38	6	●	
3312450	4,5	88	41	6	●	
3312480	4,8	88	45	6	●	
3312500	5	88	45	6	●	
3312510	5,1	92	42	6	●	
3312550	5,5	92	44	6	●	
3312580	5,8	92	48	6	●	
3312600	6	92	48	6	●	
3312650	6,5	102	52	8	●	
3312680	6,8	102	56	8	●	

EDP	D	L	l	d	Stock	Price
3312700	7	102	56	8	●	
3312750	7,5	118	60	8	●	
3312780	7,8	118	64	8	●	
3312800	8	118	64	8	●	
3312850	8,5	128	68	10	●	
3312870	8,7	128	70	10	●	
3312880	8,8	128	72	10	●	
3312900	9	128	72	10	●	
3312950	9,5	136	76	10	●	
3312980	9,8	136	80	10	●	
3313000	10	136	80	10	●	
3313030	10,3	146	84	12	●	
3313050	10,5	146	84	12	●	
3313080	10,8	146	88	12	●	
3313100	11	146	88	12	●	
3313150	11,5	156	92	12	●	
3313180	11,8	156	96	12	●	
3313200	12	156	96	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
					◎	◎	○	
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc

● Delivery from stock
○ Available on short notice

WHO55-5D

CARBIDE
- High performance
- For hardened material up to 55 HRC
- 5D drilling

CARBIDE
- High performance
- Für gehärtete Materialien bis 55 HRC
- 5xD effektive Bearbeitungstiefe

CARBIDE
- Alta prestazione
- Per acciai temprati fino a 55 HRC
- 5 D foratura

CARBIDE
- Haute performance
- Pour matériaux supérieur à 55 HRC
- Forage 5 D

CARBIDE
- Yüksek performans
- 55HRC ye kadar sertleştirilmiş malzemeler için
- 5D matkap

CARBIDE
- High performance
- For hærdede materialer op til 55 HRC
- 5 D boring

CARBIDE
- High performance
- För härdat stål upp till 55HRC
- 5 D borrning

CARBIDE
- Altas prestaciones
- Para aceros templados hasta 55 HRC
- Taladrado 5 D

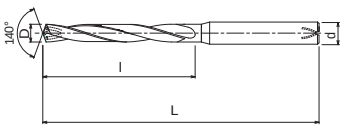
CARBIDE
- Высокая производительность
- Для закаленных материалов до 55 HRC
- Сверление глубиной 5 D

CARBIDE
- Wysoka wydajność
- Dla utwardzonych materiałów do 55 HRC
- Wiercenie 5D

GO TO LIVE STOCK CHECK

Carbide







EDP	D	L	l	d	Stock	Price
3316330	3,3	78	32	6	●	
3316340	3,4	78	32	6	●	
3316349	3,49	78	32	6	●	
3316350	3,5	78	32	6	●	
3316360	3,6	78	34	6	●	
3316370	3,7	78	34	6	●	
3316380	3,8	78	36	6	●	
3316390	3,9	78	36	6	●	
3316400	4	78	36	6	●	
3316410	4,1	88	38	6	●	
3316415	4,15	88	38	6	●	
3316420	4,2	88	38	6	●	
3316430	4,3	88	41	6	●	
3316440	4,4	88	41	6	●	
3316450	4,5	88	41	6	●	
3316460	4,6	88	43	6	●	
3316470	4,7	88	43	6	●	
3316480	4,8	88	45	6	●	
3316490	4,9	88	45	6	●	
3316500	5	88	45	6	●	
3316510	5,1	92	42	6	●	
3316520	5,2	92	42	6	●	
3316530	5,3	92	44	6	●	
3316540	5,4	92	44	6	●	
3316550	5,5	92	44	6	●	
3316556	5,56	92	46	6	●	
3316560	5,6	92	46	6	●	

EDP	D	L	l	d	Stock	Price
3316570	5,7	92	46	6	●	
3316580	5,8	92	48	6	●	
3316590	5,9	92	48	6	●	
3316600	6	92	48	6	●	
3316650	6,5	102	52	8	●	
3316680	6,8	102	56	8	●	
3316700	7	102	56	8	●	
3316750	7,5	118	60	8	●	
3316780	7,8	118	64	8	●	
3316800	8	118	64	8	●	
3316850	8,5	128	68	10	●	
3316858	8,58	128	70	10	●	
3316870	8,7	128	70	10	●	
3316880	8,8	128	72	10	●	
3316900	9	128	72	10	●	
3316950	9,5	136	76	10	●	
3316980	9,8	136	80	10	●	
3316997	9,97	136	80	10	●	
3317000	10	136	80	10	●	
3317030	10,3	146	84	12	●	
3317050	10,5	146	84	12	●	
3317080	10,8	146	88	12	●	
3317100	11	146	88	12	●	
3317150	11,5	156	92	12	●	
3317156	11,56	156	94	12	●	
3317180	11,8	156	96	12	●	
3317200	12	156	96	12	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
					◎	◎	○	
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
								◎

● Delivery from stock
○ Available on short notice

WH70-DRL

CARBIDE
- High performance
- For hardened material up to 70 HRC

CARBIDE
- High performance
- Für gehärtete Materialien bis 70 HRC

CARBIDE
- Alta prestazione
- Per acciai temprati fino a 70 HRC

CARBIDE
- Haute performance
- Pour matériaux spérieur à 70 HRC

CARBIDE
- Yüksek performans
- 70HRC ye kadar sertleştirilmiş malzemeler için

CARBIDE
- High performance
- For hærdede materialer op til 70 HRC

CARBIDE
- High performance
- För härdat stål upp till 70 HRC

CARBIDE
- Altas prestaciones
- Para aceros templados hasta 70 HRC

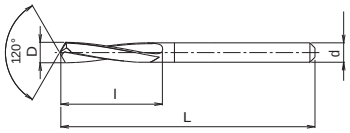
CARBIDE
- Высокая производительность
- Для закаленных материалов до 70 HRC

CARBIDE
- Wysoka wydajność
- Dla utwardzonych materiałów do 70 HRC

GO TO LIVE STOCK CHECK

Carbide

CARBIDE | WXS | 12° | SHRINK FIT | 120° | h8 | min¹ C.112





EDP	D	L	l	d	Stock	Price
3318200	2	42	12	3	●	
3318210	2,1	42	12	3	●	
3318220	2,2	43	13	3	●	
3318230	2,3	43	13	3	●	
3318240	2,4	44	14	3	●	
3318250	2,5	44	14	3	●	
3318260	2,6	44	14	3	●	
3318270	2,7	46	16	3	●	
3318280	2,8	46	16	3	●	
3318290	2,9	46	16	3	●	
3318300	3	46	16	3	●	
3318310	3,1	48	18	4	●	
3318320	3,2	48	18	4	●	
3318330	3,3	48	18	4	●	
3318340	3,4	50	20	4	●	
3318350	3,5	50	20	4	●	
3318360	3,6	50	20	4	●	
3318370	3,7	50	20	4	●	
3318380	3,8	52	22	4	●	
3318390	3,9	52	22	4	●	
3318400	4	52	22	4	●	
3318410	4,1	68	25	5	●	
3318420	4,2	68	25	5	●	
3318430	4,3	68	28	5	●	
3318440	4,4	68	28	5	●	
3318450	4,5	68	28	5	●	
3318460	4,6	68	28	5	●	
3318470	4,7	68	28	5	●	
3318480	4,8	68	32	5	●	
3318490	4,9	68	32	5	●	
3318500	5	68	32	5	●	
3318510	5,1	74	32	6	●	
3318520	5,2	74	32	6	●	
3318530	5,3	74	32	6	●	
3318540	5,4	74	35	6	●	
3318550	5,5	74	35	6	●	
3318560	5,6	74	35	6	●	
3318570	5,7	74	35	6	●	
3318580	5,8	74	35	6	●	
3318590	5,9	74	35	6	●	
3318600	6	74	35	6	●	
3318610	6,1	83	40	7	●	
3318620	6,2	83	40	7	●	
3318630	6,3	83	40	7	●	
3318640	6,4	83	40	7	●	
3318650	6,5	83	40	7	●	
3318660	6,6	83	40	7	●	
3318670	6,7	83	40	7	●	
3318680	6,8	83	45	7	●	
3318690	6,9	83	45	7	●	
3318700	7	83	45	7	●	

EDP	D	L	l	d	Stock	Price
3318710	7,1	94	45	8	●	
3318720	7,2	94	45	8	●	
3318730	7,3	94	45	8	●	
3318740	7,4	94	45	8	●	
3318750	7,5	94	45	8	●	
3318760	7,6	94	50	8	●	
3318770	7,7	94	50	8	●	
3318780	7,8	94	50	8	●	
3318790	7,9	94	50	8	●	
3318800	8	94	50	8	●	
3318810	8,1	101	50	9	●	
3318820	8,2	101	50	9	●	
3318830	8,3	101	50	9	●	
3318840	8,4	101	50	9	●	
3318850	8,5	101	50	9	●	
3318860	8,6	101	57	9	●	
3318870	8,7	101	57	9	●	
3318880	8,8	101	57	9	●	
3318890	8,9	101	57	9	●	
3318900	9	101	57	9	●	
3318910	9,1	106	57	10	●	
3318920	9,2	106	57	10	●	
3318930	9,3	106	57	10	●	
3318940	9,4	106	57	10	●	
3318950	9,5	106	57	10	●	
3318960	9,6	106	63	10	●	
3318970	9,7	106	63	10	●	
3318980	9,8	106	63	10	●	
3318990	9,9	106	63	10	●	
3319000	10	106	63	10	●	
3319010	10,1	113	63	11	●	
3319020	10,2	113	63	11	●	
3319030	10,3	113	63	11	●	
3319040	10,4	113	63	11	●	
3319050	10,5	113	63	11	●	
3319060	10,6	113	63	11	●	
3319070	10,7	113	71	11	●	
3319080	10,8	113	71	11	●	
3319090	10,9	113	71	11	●	
3319100	11	113	71	11	●	
3319110	11,1	120	71	12	●	
3319120	11,2	120	71	12	●	
3319130	11,3	120	71	12	●	
3319140	11,4	120	71	12	●	
3319150	11,5	120	71	12	●	
3319160	11,6	120	71	12	●	
3319170	11,7	120	71	12	●	
3319180	11,8	120	71	12	●	
3319190	11,9	120	76	12	●	
3319200	12	120	76	12	●	

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							◎	
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc

● Delivery from stock
○ Available on short notice

EX-H-DRL

CARBIDE
- High performance
- For removing broken taps

CARBIDE
- High performance
- Zum Entfernen von abgebrochenen Gewindebohren

CARBIDE
- Alta prestazione
- Per la rimozione di maschi rotti e bulloni danneggiati

CARBIDE
- Haute performance
- Pour extraction de tarauds cassés

CARBIDE
- Yüksek performans
- Kırılmış kılavuzları çıkarmak için

CARBIDE
- High performance
- Udboring af knust gevindtap

CARBIDE
- High performance
- För borttagning av brutna gängtappar

CARBIDE
- Altas prestaciones
- Para extraer machos rotos

CARBIDE
- Высокая производительность
- Для удаления сломанных метчиков

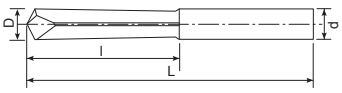
CARBIDE
- Wysoka wydajność
- Do usuwania złamanych gwintowników

GO TO LIVE STOCK CHECK

Carbide

Carbide

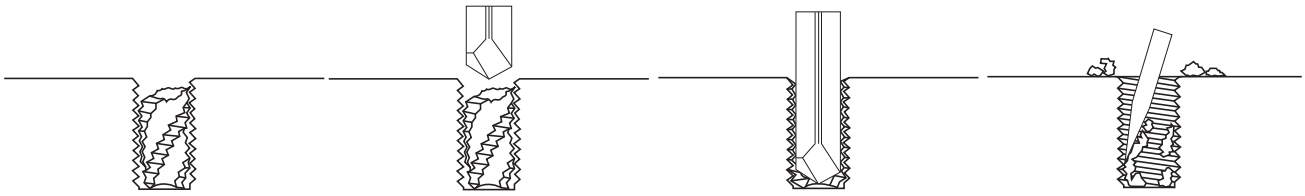
CARBIDE h7





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
87702	2	30	10	2	●		87708	8	80	40	8	●	
87703	3	40	15	3	●		87709	9	100	45	10	●	
87704	4	45	20	4	●		87710	10	100	50	10	●	
87705	5	50	25	5	●		87781	11	156	55	12	●	
87706	6	60	30	6	●		87782	12	162	60	12	●	
87707	7	80	35	8	●								

Work procedure for Removing Damaged Tap in hole



Position the drill at the center of the damaged tap, securing both the workpiece and the drill firmly. When the head of the damaged tap is protruding, grind the damaged surface flat to make the center of the damaged tap easier to drill.

Make an initial, centered approach by drilling lightly, then quickly withdrawing the drill. For this step, do not use lubrication.

Select an appropriate drill by consulting the table. Drill the hole at a fixed feed speed, stopping the operation occasionally to remove chip waste. In addition, use plenty of high quality cutting fluid.

Once the hole has been cleared, the peripheral remnants of the tap can be removed with ease. Once the hole is cleaned, tapping can he resumed.

Cutting Conditions and Procedures to Note.

1. **Use a drilling speed of 20-25 m/min.**
2. **Hand feed of 0.01mm - 0.05mm/rev. is the norm.**
3. **Use a rigid holder.**
4. **Select a high quality cutting oil and apply sufficient amounts.**
5. **This tool should not be used to drill soft steel, aluminium alloy equivalents, or other soft materials.**
6. **Resharpening should be done periodically.**
7. **For through hole processing of heat treated steel etc., using a cut off - positioned under the work material - to prevent breakage caused by sudden torque.**

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					○	○	◎	
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc

● Delivery from stock
○ Available on short notice

VPH-GDS

XPM
- High performance
- Ideal for alloy steel short

XPM
- High performance
- Besonders geeignet für legierten Stahl, kurze Bohrungen

XPM
- Alta prestazione
- Corta, ideale per acciai legati

XPM
- Haute performance
- Idéale pour des aciers alliés, court

XPM
- Yüksek performans
- Alaşımlı çelikler için ideal, kısa

XPM
- High performance
- Ideel for legeret stål, kort

XPM
- High performance
- Perfekt för legerat stål, kort

XPM
- Altas prestaciones
- Ideal para aceros aleados, corta

XPM
- Высокая производительность
- Идеально для легированных сталей, короткое

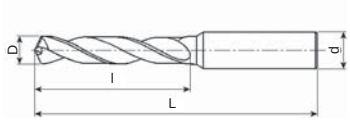
XPM
- Wysoka wydajność
- Idealne do stali stopowych stali, krótkie

GO TO LIVE STOCK CHECK

XPM

XPM









EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8599020	2	44	12	3	●		8599076	7,6	81	37	8	●	
8599021	2,1	44	12	3	●		8599077	7,7	81	37	8	●	
8599022	2,2	45	13	3	●		8599078	7,8	81	37	8	●	
8599023	2,3	45	13	3	●		8599079	7,9	81	37	8	●	
8599024	2,4	46	14	3	●		8599080	8	81	37	8	●	
8599025	2,5	46	14	3	●		8599081	8,1	87	37	10	●	
8599026	2,6	46	14	3	●		8599082	8,2	87	37	10	●	
8599027	2,7	48	16	3	●		8599083	8,3	87	37	10	●	
8599028	2,8	48	16	3	●		8599084	8,4	87	37	10	●	
8599029	2,9	48	16	3	●		8599085	8,5	87	37	10	●	
8599030	3	48	16	3	●		8599086	8,6	90	40	10	●	
8599031	3,1	50	18	3	●		8599087	8,7	90	40	10	●	
8599032	3,2	50	18	3	●		8599088	8,8	90	40	10	●	
8599033	3,3	50	18	4	●		8599089	8,9	90	40	10	●	
8599034	3,4	52	20	4	●		8599090	9	90	40	10	●	
8599035	3,5	52	20	4	●		8599091	9,1	90	40	10	●	
8599036	3,6	52	20	4	●		8599092	9,2	90	40	10	●	
8599037	3,7	52	20	4	●		8599093	9,3	90	40	10	●	
8599038	3,8	54	22	4	●		8599094	9,4	90	40	10	●	
8599039	3,9	54	22	4	●		8599095	9,5	90	40	10	●	
8599040	4	54	22	4	●		8599096	9,6	93	43	10	●	
8599041	4,1	66	22	6	●		8599097	9,7	93	43	10	●	
8599042	4,2	66	22	6	●		8599098	9,8	93	43	10	●	
8599043	4,3	68	24	6	●		8599099	9,9	93	43	10	●	
8599044	4,4	68	24	6	●		8599100	10	93	43	10	●	
8599045	4,5	68	24	6	●		8599101	10,1	100	43	12	●	
8599046	4,6	68	24	6	●		8599102	10,2	100	43	12	●	
8599047	4,7	68	24	6	●		8599103	10,3	100	43	12	●	
8599048	4,8	70	26	6	●		8599104	10,4	100	43	12	●	
8599049	4,9	70	26	6	●		8599105	10,5	100	43	12	●	
8599050	5	70	26	6	●		8599106	10,6	100	43	12	●	
8599051	5,1	70	26	6	●		8599107	10,7	104	47	12	●	
8599052	5,2	70	26	6	●		8599108	10,8	104	47	12	●	
8599053	5,3	70	26	6	●		8599109	10,9	104	47	12	●	
8599054	5,4	72	28	6	●		8599110	11	104	47	12	●	
8599055	5,5	72	28	6	●		8599111	11,1	104	47	12	●	
8599056	5,6	72	28	6	●		8599112	11,2	104	47	12	●	
8599057	5,7	72	28	6	●		8599113	11,3	104	47	12	●	
8599058	5,8	72	28	6	●		8599114	11,4	104	47	12	●	
8599059	5,9	72	28	6	●		8599115	11,5	104	47	12	●	
8599060	6	72	28	6	●		8599116	11,6	104	47	12	●	
8599061	6,1	75	31	8	●		8599117	11,7	104	47	12	●	
8599062	6,2	75	31	8	●		8599118	11,8	104	47	12	●	
8599063	6,3	75	31	8	●		8599119	11,9	108	51	12	●	
8599064	6,4	75	31	8	●		8599120	12	108	51	12	●	
8599065	6,5	75	31	8	●		8599121	12,1	108	51	12	●	
8599066	6,6	75	31	8	●		8599122	12,2	108	51	12	●	
8599067	6,7	75	31	8	●		8599123	12,3	108	51	12	●	
8599068	6,8	78	34	8	●		8599124	12,4	108	51	12	●	
8599069	6,9	78	34	8	●		8599125	12,5	108	51	12	●	
8599070	7	78	34	8	●		8599126	12,6	108	51	12	●	
8599071	7,1	78	34	8	●		8599127	12,7	108	51	12	●	
8599072	7,2	78	34	8	●		8599128	12,8	108	51	12	●	
8599073	7,3	78	34	8	●		8599129	12,9	108	51	12	●	
8599074	7,4	78	34	8	●		8599130	13	108	51	12	●	
8599075	7,5	78	34	8	●								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	○	○	○	◎	◎	◎		
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
◎	◎	◎					◎	◎

● Delivery from stock
○ Available on short notice

VP-GDR

XPM
- High performance
- Regular for high speed drilling

XPM
- High performance
- Geeignet für Hochleistungsbohren (HSC)

XPM
- Alta prestazione
- Regolare, per forature ad alta velocità

XPM
- Haute performance
- Normal, pour forage haute vitesse

XPM
- Yüksek performans
- Yüksek kesme hızlı delme için uygun

XPM
- High performance
- Mellemlang, til high speed boring

XPM
- High performance
- Normal, för high speed borrning

XPM
- Altas prestaciones
- Regular para taladrado a alta velocidad

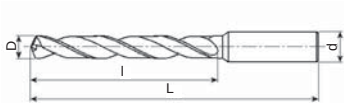
XPM
- Высокая производительность
- Сверло нормальной длины для скоростного сверления

XPM
- Wysoka wydajność
- Standard do wysokich prędkości wiercenia

GO TO LIVE STOCK CHECK

XPM







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8593020	2	56	24	3	●		8593072	7,2	113	69	8	●	
8593021	2,1	56	24	3	●		8593073	7,3	113	69	8	●	
8593022	2,2	59	27	3	●		8593074	7,4	113	69	8	●	
8593023	2,3	59	27	3	●		8593075	7,5	113	69	8	●	
8593024	2,4	62	30	3	●		8593076	7,6	119	75	8	●	
8593025	2,5	62	30	3	●		8593077	7,7	119	75	8	●	
8593026	2,6	62	30	3	●		8593078	7,8	119	75	8	●	
8593027	2,7	65	33	3	●		8593079	7,9	119	75	8	●	
8593028	2,8	65	33	3	●		8593080	8	119	75	8	●	
8593029	2,9	65	33	3	●		8593081	8,1	125	75	10	●	
8593030	3	65	33	3	●		8593082	8,2	125	75	10	●	
8593031	3,1	68	36	4	●		8593083	8,3	125	75	10	●	
8593032	3,2	68	36	4	●		8593084	8,4	125	75	10	●	
8593033	3,3	68	36	4	●		8593085	8,5	125	75	10	●	
8593034	3,4	71	39	4	●		8593086	8,6	131	81	10	●	
8593035	3,5	71	39	4	●		8593087	8,7	131	81	10	●	
8593036	3,6	71	39	4	●		8593088	8,8	131	81	10	●	
8593037	3,7	71	39	4	●		8593089	8,9	131	81	10	●	
8593038	3,8	75	43	4	●		8593090	9	131	81	10	●	
8593039	3,9	75	43	4	●		8593091	9,1	131	81	10	●	
8593040	4	75	43	4	●		8593092	9,2	131	81	10	●	
8593041	4,1	87	43	6	●		8593093	9,3	131	81	10	●	
8593042	4,2	87	43	6	●		8593094	9,4	131	81	10	●	
8593043	4,3	91	47	6	●		8593095	9,5	131	81	10	●	
8593044	4,4	91	47	6	●		8593096	9,6	137	87	10	●	
8593045	4,5	91	47	6	●		8593097	9,7	137	87	10	●	
8593046	4,6	91	47	6	●		8593098	9,8	137	87	10	●	
8593047	4,7	91	47	6	●		8593099	9,9	137	87	10	●	
8593048	4,8	96	52	6	●		8593100	10	137	87	10	●	
8593049	4,9	96	52	6	●		8593101	10,1	144	87	12	●	
8593050	5	96	52	6	●		8593102	10,2	144	87	12	●	
8593051	5,1	96	52	6	●		8593103	10,3	144	87	12	●	
8593052	5,2	96	52	6	●		8593104	10,4	144	87	12	●	
8593053	5,3	96	52	6	●		8593105	10,5	144	87	12	●	
8593054	5,4	101	57	6	●		8593106	10,6	144	87	12	●	
8593055	5,5	101	57	6	●		8593107	10,7	151	94	12	●	
8593056	5,6	101	57	6	●		8593108	10,8	151	94	12	●	
8593057	5,7	101	57	6	●		8593109	10,9	151	94	12	●	
8593058	5,8	101	57	6	●		8593110	11	151	94	12	●	
8593059	5,9	101	57	6	●		8593111	11,1	151	94	12	●	
8593060	6	101	57	6	●		8593112	11,2	151	94	12	●	
8593061	6,1	107	63	8	●		8593113	11,3	151	94	12	●	
8593062	6,2	107	63	8	●		8593114	11,4	151	94	12	●	
8593063	6,3	107	63	8	●		8593115	11,5	151	94	12	●	
8593064	6,4	107	63	8	●		8593116	11,6	151	94	12	●	
8593065	6,5	107	63	8	●		8593117	11,7	151	94	12	●	
8593066	6,6	107	63	8	●		8593118	11,8	151	94	12	●	
8593067	6,7	107	63	8	●		8593119	11,9	158	101	12	●	
8593068	6,8	113	69	8	●		8593120	12	158	101	12	●	
8593069	6,9	113	69	8	●		8593121	12,1	158	101	12	●	
8593070	7	113	69	8	●		8593122	12,2	158	101	12	●	
8593071	7,1	113	69	8	●		8593123	12,3	158	101	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎				
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
◎	◎	◎		○	◎	○	○	○

● Delivery from stock
○ Available on short notice

VP-GDR

XPM
- High performance
- Regular for high speed drilling

XPM
- High performance
- Geeignet für Hochleistungsbohren (HSC)

XPM
- Alta prestazione
- Regolare, per forature ad alta velocità

XPM
- Haute performance
- Normal, pour forage haute vitesse

XPM
- Yüksek performans
- Yüksek kesme hızlı delme için uygun

XPM
- High performance
- Mellemlang, til high speed boring

XPM
- High performance
- Normal, för high speed borrning

XPM
- Altas prestaciones
- Regular para taladrado a alta velocidad

XPM
- Высокая производительность
- Сверло нормальной длины для скоростного сверления

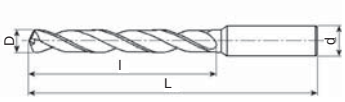
XPM
- Wysoka wydajność
- Standard do wysokich prędkości wiercenia

GO TO LIVE STOCK CHECK

XPM

XPM







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8593124	12,4	158	101	12	●		8593200	20	191	125	20	●	
8593125	12,5	158	101	12	●		8593205	20,5	204	128	25	●	
8593126	12,6	158	101	12	●		8593210	21	204	128	25	●	
8593127	12,7	158	101	12	●		8593215	21,5	208	132	25	●	
8593128	12,8	158	101	12	●		8593220	22	208	132	25	●	
8593129	12,9	158	101	12	●		8593225	22,5	212	136	25	●	
8593130	13	158	101	12	●		8593230	23	212	136	25	●	
8593135	13,5	166	106	16	●		8593235	23,5	212	136	25	●	
8593140	14	166	106	16	●		8593240	24	216	140	25	●	
8593145	14,5	169	109	16	●		8593245	24,5	216	140	25	●	
8593150	15	169	109	16	●		8593250	25	216	140	25	●	
8593155	15,5	172	112	16	●		8593255	25,5	225	145	32	●	
8593160	16	172	112	16	●		8593260	26	225	145	32	●	
8593165	16,5	181	115	20	●		8593265	26,5	225	145	32	●	
8593170	17	181	115	20	●		8593270	27	230	150	32	●	
8593175	17,5	184	118	20	●		8593280	28	230	150	32	●	
8593180	18	184	118	20	●		8593290	29	235	155	32	●	
8593185	18,5	188	122	20	●		8593300	30	235	155	32	●	
8593190	19	188	122	20	●		8593310	31	240	160	32	●	
8593195	19,5	191	125	20	●		8593320	32	245	165	32	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
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◎	◎	◎	◎	◎				
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
◎	◎	◎		○	◎	○	○	○

● Delivery from stock
○ Available on short notice

VP-HO-GDR

CPM
- High performance
- Regular for high speed drilling

CPM
- High performance
- Geeignet für Hochleistungsbohren (HSC)

CPM
- Alta prestazione
- Regolare, per forature ad alta velocità

CPM
- Haute performance
- Normal, pour forage haute vitesse

CPM
- Yüksek performans
- Yüksek kesme hızlı delme için uygun

CPM
- High performance
- Mellemlang, til high speed boring

CPM
- High performance
- Normal, för high speed borrning

CPM
- Altas prestaciones
- Regular para taladrado a alta velocidad

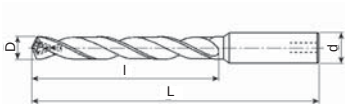
CPM
- Высокая производительность
- Сверло нормальной длины для скоростного сверления

CPM
- Wysoka wydajność
- Standard do wysokich prędkości wiercenia

GO TO LIVE STOCK CHECK

XPM







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8593560	6	101	57	6	●		8593675	17,5	184	118	20	●	
8593565	6,5	107	63	6	●		8593676	17,6	184	118	20	●	
8593568	6,8	113	69	7	●		8593680	18	184	118	20	●	
8593570	7	113	69	7	●		8593685	18,5	188	122	20	●	
8593575	7,5	113	69	8	●		8593690	19	188	122	20	●	
8593580	8	119	75	8	●		8593695	19,5	191	125	20	●	
8593585	8,5	125	75	9	●		8593696	19,6	191	125	20	●	
8593586	8,6	131	81	9	●		8593700	20	191	125	20	●	
8593590	9	131	81	9	●		8593705	20,5	204	128	25	●	
8593595	9,5	131	81	10	●		8593710	21	204	128	25	●	
8593600	10	137	87	10	●		8593711	21,1	204	128	25	●	
8593603	10,3	144	87	11	●		8593715	21,5	208	132	25	●	
8593605	10,5	144	87	11	●		8593720	22	208	132	25	●	
8593610	11	151	94	11	●		8593725	22,5	212	136	25	●	
8593615	11,5	151	94	12	●		8593730	23	212	136	25	●	
8593620	12	158	101	12	●		8593735	23,5	212	136	25	●	
8593625	12,5	161	101	16	●		8593740	24	216	140	25	●	
8593630	13	161	101	16	●		8593745	24,5	216	140	25	●	
8593635	13,5	166	106	16	●		8593750	25	216	140	25	●	
8593640	14	166	106	16	●		8593755	25,5	225	145	32	●	
8593641	14,1	169	109	16	●		8593760	26	225	145	32	●	
8593645	14,5	169	109	16	●		8593765	26,5	225	145	32	●	
8593650	15	169	109	16	●		8593770	27	230	150	32	●	
8593655	15,5	172	112	16	●		8593780	28	230	150	32	●	
8593656	15,6	172	112	16	●		8593790	29	235	155	32	●	
8593660	16	172	112	16	●		8593800	30	235	155	32	●	
8593665	16,5	181	115	20	●		8593810	31	240	160	32	●	
8593670	17	181	115	20	●		8593820	32	245	165	32	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎	○			◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
◎	◎	◎		○	◎	◎	◎	○

● Delivery from stock
○ Available on short notice

NEXUS-GDS

HSSE-V3
- High performance
- Short for high speed drilling

HSSE-V3
- High performance
- Kurz für Hochleistungsbohren (HSC)

HSSE-V3
- Alta prestazione
- Corta, per forature ad alta velocità

HSSE-V3
- Haute performance
- Court, pour forage haute vitesse

HSSE-V3
- Yüksek performans
- Yüksek kesme hızı için kısa boy

HSSE-V3
- High performance
- Kort, til high speed boring

HSSE-V3
- High performance
- Kort, för high speed borrning

HSSE-V3
- Altas prestaciones
- Corta para taladrado a alta velocidad

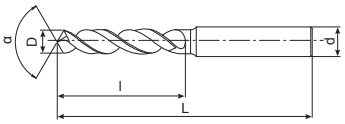
HSSE-V3
- Высокая производительность
- Короткое сверло для скоростного сверления

HSSE-V3
- Wysoka wydajność
- Krótkie do wysokich prędkości wiercenia

GO TO LIVE STOCK CHECK

HSSE V3

HSSE | WDI | 35°~40° | 140° D<2 | 130° 2≤D≤4 | 120° D>4 | h8 | F | min⁻¹ C.114





EDP	D	α	L	l	d	Stock	Price	EDP	D	α	L	l	d	Stock	Price
8650100	1	140	38	6	3	●		8650500	5	120	70	26	6	●	
8650110	1,1	140	39	7	3	●		8650510	5,1	120	70	26	6	●	
8650120	1,2	140	40	8	3	●		8650520	5,2	120	70	26	6	●	
8650130	1,3	140	40	8	3	●		8650530	5,3	120	70	26	6	●	
8650140	1,4	140	41	9	3	●		8650540	5,4	120	72	28	6	●	
8650150	1,5	140	41	9	3	●		8650548	5,48	120	72	28	6	●	
8650160	1,6	140	42	10	3	●		8650550	5,5	120	72	28	6	●	
8650170	1,7	140	42	10	3	●		8650560	5,6	120	72	28	6	●	
8650180	1,8	140	43	11	3	●		8650570	5,7	120	72	28	6	●	
8650181	1,81	140	43	11	3	●		8650580	5,8	120	72	28	6	●	
8650183	1,83	140	43	11	3	●		8650590	5,9	120	72	28	6	●	
8650190	1,9	140	43	11	3	●		8650600	6	120	72	28	6	●	
8650200	2	130	44	12	3	●		8650610	6,1	120	75	31	8	●	
8650210	2,1	130	44	12	3	●		8650620	6,2	120	75	31	8	●	
8650211	2,11	130	44	12	3	●		8650630	6,3	120	75	31	8	●	
8650213	2,13	130	45	13	3	●		8650640	6,4	120	75	31	8	●	
8650220	2,2	130	45	13	3	●		8650650	6,5	120	75	31	8	●	
8650228	2,28	130	45	13	3	●		8650660	6,6	120	75	31	8	●	
8650230	2,3	130	45	13	3	●		8650680	6,8	120	78	34	8	●	
8650238	2,38	130	46	14	3	●		8650690	6,9	120	78	34	8	●	
8650240	2,4	130	46	14	3	●		8650700	7	120	78	34	8	●	
8650250	2,5	130	46	14	3	●		8650734	7,34	120	78	34	8	●	
8650260	2,6	130	46	14	3	●		8650738	7,38	120	78	34	8	●	
8650270	2,7	130	48	16	3	●		8650740	7,4	120	78	34	8	●	
8650276	2,76	130	48	16	3	●		8650750	7,5	120	78	34	8	●	
8650278	2,78	130	48	16	3	●		8650780	7,8	120	81	37	8	●	
8650280	2,8	130	48	16	3	●		8650790	7,9	120	81	37	8	●	
8650290	2,9	130	48	16	3	●		8650800	8	120	81	37	8	●	
8650300	3	130	48	16	3	●		8650810	8,1	120	87	37	10	●	
8650310	3,1	130	50	18	4	●		8650820	8,2	120	87	37	10	●	
8650320	3,2	130	50	18	4	●		8650830	8,3	120	87	37	10	●	
8650325	3,25	130	50	18	4	●		8650840	8,4	120	87	37	10	●	
8650330	3,3	130	50	18	4	●		8650850	8,5	120	87	37	10	●	
8650340	3,4	130	52	20	4	●		8650860	8,6	120	90	40	10	●	
8650350	3,5	130	52	20	4	●		8650870	8,7	120	90	40	10	●	
8650360	3,6	130	52	20	4	●		8650880	8,8	120	90	40	10	●	
8650365	3,65	130	52	20	4	●		8650900	9	120	90	40	10	●	
8650367	3,67	130	52	20	4	●		8650918	9,18	120	90	40	10	●	
8650370	3,7	130	52	20	4	●		8650920	9,2	120	90	40	10	●	
8650380	3,8	130	54	22	4	●		8650924	9,24	120	90	40	10	●	
8650390	3,9	130	54	22	4	●		8650934	9,34	120	90	40	10	●	
8650400	4	130	54	22	4	●		8650936	9,36	120	90	40	10	●	
8650410	4,1	120	66	22	6	●		8650950	9,5	120	90	40	10	●	
8650420	4,2	120	66	22	6	●		8650980	9,8	120	93	43	10	●	
8650430	4,3	120	68	24	6	●		8651000	10	120	93	43	10	●	
8650440	4,4	120	68	24	6	●		8651020	10,2	120	100	43	12	●	
8650450	4,5	120	68	24	6	●		8651030	10,3	120	100	43	12	●	
8650459	4,59	120	68	24	6	●		8651040	10,4	120	100	43	12	●	
8650460	4,6	120	68	24	6	●		8651050	10,5	120	100	43	12	●	
8650463	4,63	120	68	24	6	●		8651100	11	120	104	47	12	●	
8650470	4,7	120	68	24	6	●		8651120	11,2	120	104	47	12	●	
8650480	4,8	120	70	26	6	●		8651150	11,5	120	104	47	12	●	
8650490	4,9	120	70	26	6	●		8651200	12	120	108	51	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	◎	◎		

NEXUS-GDR

HSSE-V3
- High performance
- Regular for high speed drilling

HSSE-V3
- High performance
- Geeignet für Hochleistungsbohren (HSC)

HSSE-V3
- Alta prestazione
- Regolare, per forature ad alta velocità

HSSE-V3
- Haute performance
- Normal, pour forage haute vitesse

HSSE-V3
- Yüksek performans
- Yüksek kesme hızlı delme için uygun

HSSE-V3
- High performance
- Mellemlang, til high speed boring

HSSE-V3
- High performance
- Normal, för high speed borrning

HSSE-V3
- Altas prestaciones
- Regular para taladrado a alta velocidad

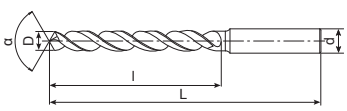
HSSE-V3
- Высокая производительность
- Сверло нормальной длины для скоростного сверления

HSSE-V3
- Wysoka wydajność
- Standard do wysokich prędkości wiercenia

GO TO LIVE STOCK CHECK

HSSE V3







EDP	D	α	L	l	d	Stock	Price	EDP	D	α	L	l	d	Stock	Price
8655200	2	130	56	24	3	●		8655550	5,5	120	101	57	6	●	
8655230	2,3	130	59	27	3	●		8655600	6	120	101	57	6	●	
8655250	2,5	130	62	30	3	●		8655680	6,8	120	113	69	8	●	
8655260	2,6	130	62	30	3	●		8655690	6,9	120	113	69	8	●	
8655280	2,8	130	65	33	3	●		8655700	7	120	113	69	8	●	
8655300	3	130	65	33	3	●		8655800	8	120	119	75	8	●	
8655330	3,3	130	68	36	4	●		8655850	8,5	120	125	75	10	●	
8655340	3,4	130	71	39	4	●		8655860	8,6	120	131	81	10	●	
8655350	3,5	130	71	39	4	●		8655880	8,8	120	131	81	10	●	
8655400	4	130	75	43	4	●		8655900	9	120	131	81	10	●	
8655420	4,2	120	87	43	6	●		8656000	10	120	137	87	10	●	
8655430	4,3	120	91	47	6	●		8656030	10,3	120	144	87	12	●	
8655450	4,5	120	91	47	6	●		8656040	10,4	120	144	87	12	●	
8655500	5	120	96	52	6	●		8656050	10,5	120	144	87	12	●	
8655510	5,1	120	96	52	6	●		8656100	11	120	151	94	12	●	
8655520	5,2	120	96	52	6	●		8656200	12	120	158	101	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	◎	◎		

● Delivery from stock
○ Available on short notice

EX-SUS-GDS

HSSE-V3
- High performance
- EX GOLD DRILL
- By 0,01 of D 0,5~6mm
- Special flute design to facilitate short chipping & accurate hole size
- For CNC high speed drilling

HSSE-V3
- High performance
- EX GOLD DRILL
- Abstufung 0,01 von D 0,5~6mm
- Spezielle Schneidengeometrie für kurze Bruchspäne
- Sehr gut geeignet fïr CNC High Speed Drilling

HSSE-V3
- Alta prestazione
- EX GOLD DRILL
- Progressione 0,01da D.0,5~6mm
- Il disegno speciale dell'elica della punta da origine a trucioli corti
- Per macchine CNC con avanzamento e velocità rapida

HSSE-V3
- Haute performance
- EX GOLD DRILL
- Par 0,01 de D 0.5~6mm
- Le design spécial de l'hélice du foret donne des copeaux courts
- Pour machine CNC avec avance et vitesse rapide

HSSE-V3
- Yüksek performans
- EX GOLD MATKAP
- Çap D 0.5~6mm aralığında 0,01 artan ölçüler ile
- Küçük talaş ve istenilen hassas delik ölçüsünü yakalamak için dizayn edilmiş özel kanal dizaynı
- CNC lerde yüksek kesme hızında delme için

HSSE-V3
- High performance
- EX GOLD DRILL
- Fra Ø 0,5~6 / 0,01mm spring
- Special geometri for opnåelse af korte spåner og nøjagtige hulstørrelser
- Til high speed boring

HSSE-V3
- High performance
- EX GOLD DRILL
- Från Ø 0,5-6mm,varje 0,01mm
- Unik spetsgeometri, korta spån, hög precision
- För CNC High Speed borrning

HSSE-V3
- Altas prestaciones
- EX GOLD DRILL
- Por 0,01 de D 0,5 a 6mm
- Ranura diseñada para virutaje desmenuzado y agujeros precisos
- Para taladrado CNC

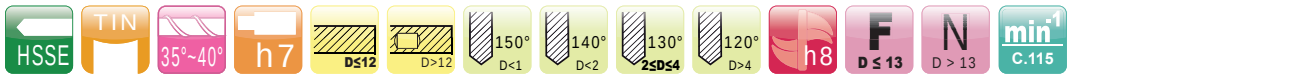
HSSE-V3
- Высокая производительность
- EX GOLD DRILL
- Через 0,01мм для D0.5-6мм
- Канавка спроектирована для обеспечения короткой стружки и точного размера отверстия
- Для скоростного сверления с ЧПУ

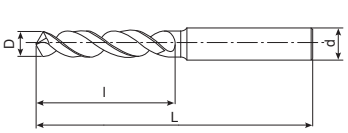
HSSE-V3
- Wysoka wydajność
- EX GOLD DRILL
- Stopniowanie co 0,01mm i 0,5mm od D 6mm
- Specjalna konstrukcja ostrza ułatwia łamanie wiórów i zapewnia dokładny rozmiar otworu
- Do maszyn CNC wiercenie z wysokimi prędkościami

GO TO LIVE STOCK CHECK

HSSE V3

HSSE V3







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
61505	0,5	38	3	3	●		8595102	1,02	38	6	3	●	
8595051	0,51	38	3	3	●		8595103	1,03	38	6	3	●	
8595052	0,52	38	3	3	●		8595104	1,04	38	6	3	●	
8595053	0,53	38	3	3	●		8595105	1,05	38	6	3	●	
8595054	0,54	38	3,5	3	●		8595106	1,06	38	6	3	●	
8595055	0,55	38	3,5	3	●		8595107	1,07	39	7	3	●	
8595056	0,56	38	3,5	3	●		8595108	1,08	39	7	3	●	
8595057	0,57	38	3,5	3	●		8595109	1,09	39	7	3	●	
8595058	0,58	38	3,5	3	●		61511	1,1	39	7	3	●	
8595059	0,59	38	3,5	3	●		8595111	1,11	39	7	3	●	
61506	0,6	38	3,5	3	●		8595112	1,12	39	7	3	●	
8595061	0,61	38	4	3	●		8595113	1,13	39	7	3	●	
8595062	0,62	38	4	3	●		8595114	1,14	39	7	3	●	
8595063	0,63	38	4	3	●		8595115	1,15	39	7	3	●	
8595064	0,64	38	4	3	●		8595116	1,16	39	7	3	●	
8595065	0,65	38	4	3	●		8595117	1,17	39	7	3	●	
8595066	0,66	38	4	3	●		8595118	1,18	39	7	3	●	
8595067	0,67	38	4	3	●		8595119	1,19	40	8	3	●	
8595068	0,68	38	4,5	3	●		61512	1,2	40	8	3	●	
8595069	0,69	38	4,5	3	●		8595121	1,21	40	8	3	●	
61507	0,7	38	4,5	3	●		8595122	1,22	40	8	3	●	
8595071	0,71	38	4,5	3	●		8595123	1,23	40	8	3	●	
8595072	0,72	38	4,5	3	●		8595124	1,24	40	8	3	●	
8595073	0,73	38	4,5	3	●		8595125	1,25	40	8	3	●	
8595074	0,74	38	4,5	3	●		8595126	1,26	40	8	3	●	
8595075	0,75	38	4,5	3	●		8595127	1,27	40	8	3	●	
8595076	0,76	38	5	3	●		8595128	1,28	40	8	3	●	
8595077	0,77	38	5	3	●		8595129	1,29	40	8	3	●	
8595078	0,78	38	5	3	●		61513	1,3	40	8	3	●	
8595079	0,79	38	5	3	●		8595131	1,31	40	8	3	●	
61508	0,8	38	5	3	●		8595132	1,32	40	8	3	●	
8595081	0,81	38	5	3	●		8595133	1,33	41	8	3	●	
8595082	0,82	38	5	3	●		8595134	1,34	41	8	3	●	
8595083	0,83	38	5	3	●		8595135	1,35	41	8	3	●	
8595084	0,84	38	5	3	●		8595136	1,36	41	8	3	●	
8595085	0,85	38	5	3	●		8595137	1,37	41	9	3	●	
8595086	0,86	38	5,5	3	●		8595138	1,38	41	9	3	●	
8595087	0,87	38	5,5	3	●		8595139	1,39	41	9	3	●	
8595088	0,88	38	5,5	3	●		61514	1,4	41	9	3	●	
8595089	0,89	38	5,5	3	●		8595141	1,41	41	9	3	●	
61509	0,9	38	5,5	3	●		8595142	1,42	41	9	3	●	
8595091	0,91	38	5,5	3	●		8595143	1,43	41	9	3	●	
8595092	0,92	38	5,5	3	●		8595144	1,44	41	9	3	●	
8595093	0,93	38	5,5	3	●		8595145	1,45	41	9	3	●	
8595094	0,94	38	5,5	3	●		8595146	1,46	41	9	3	●	
8595095	0,95	38	6	3	●		8595147	1,47	41	9	3	●	
8595096	0,96	38	6	3	●		8595148	1,48	41	9	3	●	
8595097	0,97	38	6	3	●		8595149	1,49	41	9	3	●	
8595098	0,98	38	6	3	●		61515	1,5	41	9	3	●	
8595099	0,99	38	6	3	●		8595151	1,51	42	10	3	●	
61510	1	38	6	3	●		8595152	1,52	42	10	3	●	
8595101	1,01	38	6	3	●		8595153	1,53	42	10	3	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	○	◎		

EX-SUS-GDS

HSSE-V3
- High performance
- EX GOLD DRILL
- By 0,01 of D 0,5~6mm
- Special flute design to facilitate short chipping & accurate hole size
- For CNC high speed drilling

HSSE-V3
- High performance
- EX GOLD DRILL
- Abstufung 0,01 von D 0,5~6mm
- Spezielle Schneidengeometrie für kurze Bruchspäne
- Sehr gut geeignet fïr CNC High Speed Drilling

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- Alta prestazione
- EX GOLD DRILL
- Progressione 0,01da D.0,5~6mm
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- Haute performance
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- Par 0,01 de D 0.5~6mm
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- Yüksek performans
- EX GOLD MATKAP
- Çap D 0.5~6mm aralığında 0,01 artan ölçüler ile
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- CNC lerde yüksek kesme hızında delme için

HSSE-V3
- High performance
- EX GOLD DRILL
- Fra Ø 0,5~6 / 0,01mm spring
- Special geometri for opnåelse af korte spåner og nøjagtige hulstørrelser
- Til high speed boring

HSSE-V3
- High performance
- EX GOLD DRILL
- Från Ø 0,5-6mm,varje 0,01mm
- Unik spetsgeometri, korta spån, hög precision
- För CNC High Speed borrning

HSSE-V3
- Altas prestaciones
- EX GOLD DRILL
- Por 0,01 de D 0,5 a 6mm
- Ranura diseñada para virutaje desmenuzado y agujeros precisos
- Para taladrado CNC

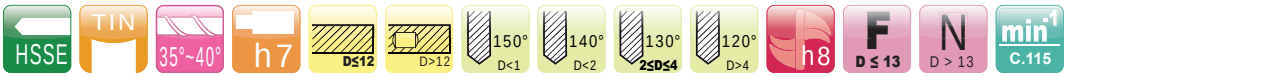
HSSE-V3
- Высокая производительность
- EX GOLD DRILL
- Через 0,01мм для D0.5-6мм
- Канавка спроектирована для обеспечения короткой стружки и точного размера отверстия
- Для скоростного сверления с ЧПУ

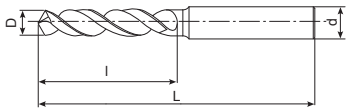
HSSE-V3
- Wysoka wydajność
- EX GOLD DRILL
- Stopniowanie co 0,01mm i 0,5mm od D 6mm
- Specjalna konstrukcja ostrza ułatwia łamanie wiórów i zapewnia dokładny rozmiar otworu
- Do maszyn CNC wiercenie z wysokimi prędkościami

GO TO LIVE STOCK CHECK

HSSE V3

HSSE V3







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8595154	1,54	42	10	3	●		8595206	2,06	44	12	3	●	
8595155	1,55	42	10	3	●		8595207	2,07	44	12	3	●	
8595156	1,56	42	10	3	●		8595208	2,08	44	12	3	●	
8595157	1,57	42	10	3	●		8595209	2,09	44	12	3	●	
8595158	1,58	42	10	3	●		61521	2,1	44	12	3	●	
8595159	1,59	42	10	3	●		8595211	2,11	44	12	3	●	
61516	1,6	42	10	3	●		8595212	2,12	44	12	3	●	
8595161	1,61	42	10	3	●		8595213	2,13	45	13	3	●	
8595162	1,62	42	10	3	●		8595214	2,14	45	13	3	●	
8595163	1,63	42	10	3	●		8595215	2,15	45	13	3	●	
8595164	1,64	42	10	3	●		8595216	2,16	45	13	3	●	
8595165	1,65	42	10	3	●		8595217	2,17	45	13	3	●	
8595166	1,66	42	10	3	●		8595218	2,18	45	13	3	●	
8595167	1,67	42	10	3	●		8595219	2,19	45	13	3	●	
8595168	1,68	42	10	3	●		61522	2,2	45	13	3	●	
8595169	1,69	42	10	3	●		8595221	2,21	45	13	3	●	
61517	1,7	42	10	3	●		8595222	2,22	45	13	3	●	
8595171	1,71	43	11	3	●		8595223	2,23	45	13	3	●	
8595172	1,72	43	11	3	●		8595224	2,24	45	13	3	●	
8595173	1,73	43	11	3	●		8595225	2,25	45	13	3	●	
8595174	1,74	43	11	3	●		8595226	2,26	45	13	3	●	
8595175	1,75	43	11	3	●		8595227	2,27	45	13	3	●	
8595176	1,76	43	11	3	●		8595228	2,28	45	13	3	●	
8595177	1,77	43	11	3	●		8595229	2,29	45	13	3	●	
8595178	1,78	43	11	3	●		61523	2,3	45	13	3	●	
8595179	1,79	43	11	3	●		8595231	2,31	45	13	3	●	
61518	1,8	43	11	3	●		8595232	2,32	45	13	3	●	
8595181	1,81	43	11	3	●		8595233	2,33	45	13	3	●	
8595182	1,82	43	11	3	●		8595234	2,34	45	13	3	●	
8595183	1,83	43	11	3	●		8595235	2,35	45	13	3	●	
8595184	1,84	43	11	3	●		8595236	2,36	45	13	3	●	
8595185	1,85	43	11	3	●		8595237	2,37	46	14	3	●	
8595186	1,86	43	11	3	●		8595238	2,38	46	14	3	●	
8595187	1,87	43	11	3	●		8595239	2,39	46	14	3	●	
8595188	1,88	43	11	3	●		61524	2,4	46	14	3	●	
8595189	1,89	43	11	3	●		8595241	2,41	46	14	3	●	
61519	1,9	43	11	3	●		8595242	2,42	46	14	3	●	
8595191	1,91	44	12	3	●		8595243	2,43	46	14	3	●	
8595192	1,92	44	12	3	●		8595244	2,44	46	14	3	●	
8595193	1,93	44	12	3	●		8595245	2,45	46	14	3	●	
8595194	1,94	44	12	3	●		8595246	2,46	46	14	3	●	
8595195	1,95	44	12	3	●		8595247	2,47	46	14	3	●	
8595196	1,96	44	12	3	●		8595248	2,48	46	14	3	●	
8595197	1,97	44	12	3	●		8595249	2,49	46	14	3	●	
8595198	1,98	44	12	3	●		61525	2,5	46	14	3	●	
8595199	1,99	44	12	3	●		8595251	2,51	46	14	3	●	
61520	2	44	12	3	●		8595252	2,52	46	14	3	●	
8595201	2,01	44	12	3	●		8595253	2,53	46	14	3	●	
8595202	2,02	44	12	3	●		8595254	2,54	46	14	3	●	
8595203	2,03	44	12	3	●		8595255	2,55	46	14	3	●	
8595204	2,04	44	12	3	●		8595256	2,56	46	14	3	●	
8595205	2,05	44	12	3	●		8595257	2,57	46	14	3	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	○	◎		

● Delivery from stock
○ Available on short notice

EX-SUS-GDS

HSSE-V3
- High performance
- EX GOLD DRILL
- By 0,01 of D 0,5~6mm
- Special flute design to facilitate short chipping & accurate hole size
- For CNC high speed drilling

HSSE-V3
- High performance
- EX GOLD DRILL
- Abstufung 0,01 von D 0,5~6mm
- Spezielle Schneidengeometrie für kurze Bruchspäne
- Sehr gut geeignet fïr CNC High Speed Drilling

HSSE-V3
- Alta prestazione
- EX GOLD DRILL
- Progressione 0,01da D.0,5~6mm
- Il disegno speciale dell'elica della punta da origine a trucioli corti
- Per macchine CNC con avanzamento e velocità rapida

HSSE-V3
- Haute performance
- EX GOLD DRILL
- Par 0,01 de D 0.5~6mm
- Le design spécial de l'hélice du foret donne des copeaux courts
- Pour machine CNC avec avance et vitesse rapide

HSSE-V3
- Yüksek performans
- EX GOLD MATKAP
- Çap D 0.5~6mm aralığında 0,01 artan ölçüler ile
- Küçük talaş ve istenilen hassas delik ölçüsünü yakalamak için dizayn edilmiş özel kanal dizaynı
- CNC lerde yüksek kesme hızında delme için

HSSE-V3
- High performance
- EX GOLD DRILL
- Fra Ø 0,5~6 / 0,01mm spring
- Special geometri for opnåelse af korte spåner og nøjagtige hulstørrelser
- Til high speed boring

HSSE-V3
- High performance
- EX GOLD DRILL
- Från Ø 0,5-6mm,varje 0,01mm
- Unik spetsgeometri, korta spån, hög precision
- För CNC High Speed borrning

HSSE-V3
- Altas prestaciones
- EX GOLD DRILL
- Por 0,01 de D 0,5 a 6mm
- Ranura diseñada para virutaje desmenuzado y agujeros precisos
- Para taladrado CNC

HSSE-V3
- Высокая производительность
- EX GOLD DRILL
- Через 0,01мм для D0.5-6мм
- Канавка спроектирована для обеспечения короткой стружки и точного размера отверстия
- Для скоростного сверления с ЧПУ

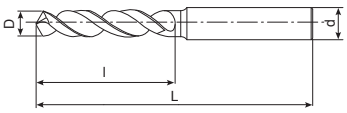
HSSE-V3
- Wysoka wydajność
- EX GOLD DRILL
- Stopniowanie co 0,01mm i 0,5mm od D 6mm
- Specjalna konstrukcja ostrza ułatwia łamanie wiórów i zapewnia dokładny rozmiar otworu
- Do maszyn CNC wiercenie z wysokimi prędkościami

GO TO LIVE STOCK CHECK

HSSE V3

HSSE V3

HSSE | TiN | 35°~40° | h7 | D≤12 | D>12 | 150° D<1 | 140° D<2 | 130° 2≤D≤4 | 120° D>4 | h8 | F D ≤ 13 | N D > 13 | min^{-1} C.115





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8595258	2,58	46	14	3	●		61531	3,1	50	18	4	●	
8595259	2,59	46	14	3	●		8595311	3,11	50	18	4	●	
61526	2,6	46	14	3	●		8595312	3,12	50	18	4	●	
8595261	2,61	46	14	3	●		8595313	3,13	50	18	4	●	
8595262	2,62	46	14	3	●		8595314	3,14	50	18	4	●	
8595263	2,63	46	14	3	●		8595315	3,15	50	18	4	●	
8595264	2,64	46	14	3	●		8595316	3,16	50	18	4	●	
8595265	2,65	46	14	3	●		8595317	3,17	50	18	4	●	
8595266	2,66	48	16	3	●		8595318	3,18	50	18	4	●	
8595267	2,67	48	16	3	●		8595319	3,19	50	18	4	●	
8595268	2,68	48	16	3	●		61532	3,2	50	18	4	●	
8595269	2,69	48	16	3	●		8595321	3,21	50	18	4	●	
61527	2,7	48	16	3	●		8595322	3,22	50	18	4	●	
8595271	2,71	48	16	3	●		8595323	3,23	50	18	4	●	
8595272	2,72	48	16	3	●		8595324	3,24	50	18	4	●	
8595273	2,73	48	16	3	●		8595325	3,25	50	18	4	●	
8595274	2,74	48	16	3	●		8595326	3,26	50	18	4	●	
8595275	2,75	48	16	3	●		8595327	3,27	50	18	4	●	
8595276	2,76	48	16	3	●		8595328	3,28	50	18	4	●	
8595277	2,77	48	16	3	●		8595329	3,29	50	18	4	●	
8595278	2,78	48	16	3	●		61533	3,3	50	18	4	●	
8595279	2,79	48	16	3	●		8595331	3,31	50	18	4	●	
61528	2,8	48	16	3	●		8595332	3,32	50	18	4	●	
8595281	2,81	48	16	3	●		8595333	3,33	50	18	4	●	
8595282	2,82	48	16	3	●		8595334	3,34	50	18	4	●	
8595283	2,83	48	16	3	●		8595335	3,35	50	18	4	●	
8595284	2,84	48	16	3	●		8595336	3,36	52	20	4	●	
8595285	2,85	48	16	3	●		8595337	3,37	52	20	4	●	
8595286	2,86	48	16	3	●		8595338	3,38	52	20	4	●	
8595287	2,87	48	16	3	●		8595339	3,39	52	20	4	●	
8595288	2,88	48	16	3	●		61534	3,4	52	20	4	●	
8595289	2,89	48	16	3	●		8595341	3,41	52	20	4	●	
61529	2,9	48	16	3	●		8595342	3,42	52	20	4	●	
8595291	2,91	48	16	3	●		8595343	3,43	52	20	4	●	
8595292	2,92	48	16	3	●		8595344	3,44	52	20	4	●	
8595293	2,93	48	16	3	●		8595345	3,45	52	20	4	●	
8595294	2,94	48	16	3	●		8595346	3,46	52	20	4	●	
8595295	2,95	48	16	3	●		8595347	3,47	52	20	4	●	
8595296	2,96	48	16	3	●		8595348	3,48	52	20	4	●	
8595297	2,97	48	16	3	●		8595349	3,49	52	20	4	●	
8595298	2,98	48	16	3	●		61535	3,5	52	20	4	●	
8595299	2,99	48	16	3	●		8595351	3,51	52	20	4	●	
61530	3	48	16	3	●		8595352	3,52	52	20	4	●	
8595301	3,01	50	18	4	●		8595353	3,53	52	20	4	●	
8595302	3,02	50	18	4	●		8595354	3,54	52	20	4	●	
8595303	3,03	50	18	4	●		8595355	3,55	52	20	4	●	
8595304	3,04	50	18	4	●		8595356	3,56	52	20	4	●	
8595305	3,05	50	18	4	●		8595357	3,57	52	20	4	●	
8595306	3,06	50	18	4	●		8595358	3,58	52	20	4	●	
8595307	3,07	50	18	4	●		8595359	3,59	52	20	4	●	
8595308	3,08	50	18	4	●		61536	3,6	52	20	4	●	
8595309	3,09	50	18	4	●		8595361	3,61	52	20	4	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
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◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	○	◎		

● Delivery from stock
○ Available on short notice

EX-SUS-GDS

HSSE-V3
- High performance
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- By 0,01 of D 0,5~6mm
- Special flute design to facilitate short chipping & accurate hole size
- For CNC high speed drilling

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- Abstufung 0,01 von D 0,5~6mm
- Spezielle Schneidengeometrie für kurze Bruchspäne
- Sehr gut geeignet für CNC High Speed Drilling

HSSE-V3
- Alta prestazione
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- Progressione 0,01da D.0,5~6mm
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- Par 0,01 de D 0.5~6mm
- Le design spécial de l'hélice du foret donne des copeaux courts
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HSSE-V3
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- EX GOLD MATKAP
- Çap D 0.5~6mm aralığında 0,01 artan ölçüler ile
- Küçük talaş ve istenilen hassas delik ölçüsünü yakalamak için dizayn edilmiş özel kanal dizaynı
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- Fra Ø 0,5~6 / 0,01mm spring
- Special geometri for opnåelse af korte spåner og nøjagtige hulstørrelser
- Til high speed boring

HSSE-V3
- High performance
- EX GOLD DRILL
- Från Ø 0,5-6mm,varje 0,01mm
- Unik spetsgeometri, korta spån, hög precision
- För CNC High Speed borrning

HSSE-V3
- Altas prestaciones
- EX GOLD DRILL
- Por 0,01 de D 0,5 a 6mm
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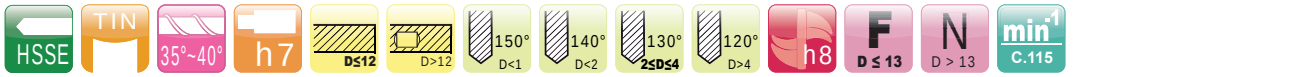
HSSE-V3
- Высокая производительность
- EX GOLD DRILL
- Через 0,01мм для D0.5-6мм
- Канавка спроектирована для обеспечения короткой стружки и точного размера отверстия
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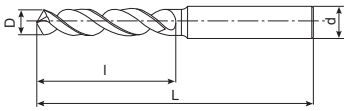
HSSE-V3
- Wysoka wydajność
- EX GOLD DRILL
- Stopniowanie co 0,01mm i 0,5mm od D 6mm
- Specjalna konstrukcja ostrza ułatwia łamanie wiórów i zapewnia dokładny rozmiar otworu
- Do maszyn CNC wiercenie z wysokimi prędkościami

GO TO LIVE STOCK CHECK

HSSE V3

HSSE V3







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8595362	3,62	52	20	4	●		8595414	4,14	66	22	6	●	
8595363	3,63	52	20	4	●		8595415	4,15	66	22	6	●	
8595364	3,64	52	20	4	●		8595416	4,16	66	22	6	●	
8595365	3,65	52	20	4	●		8595417	4,17	66	22	6	●	
8595366	3,66	52	20	4	●		8595418	4,18	66	22	6	●	
8595367	3,67	52	20	4	●		8595419	4,19	66	22	6	●	
8595368	3,68	52	20	4	●		61542	4,2	66	22	6	●	
8595369	3,69	52	20	4	●		8595421	4,21	66	22	6	●	
61537	3,7	52	20	4	●		8595422	4,22	66	22	6	●	
8595371	3,71	52	20	4	●		8595423	4,23	66	22	6	●	
8595372	3,72	52	20	4	●		8595424	4,24	66	22	6	●	
8595373	3,73	52	20	4	●		8595425	4,25	66	22	6	●	
8595374	3,74	52	20	4	●		8595426	4,26	68	24	6	●	
8595375	3,75	52	20	4	●		8595427	4,27	68	24	6	●	
8595376	3,76	54	22	4	●		8595428	4,28	68	24	6	●	
8595377	3,77	54	22	4	●		8595429	4,29	68	24	6	●	
8595378	3,78	54	22	4	●		61543	4,3	68	24	6	●	
8595379	3,79	54	22	4	●		8595431	4,31	68	24	6	●	
61538	3,8	54	22	4	●		8595432	4,32	68	24	6	●	
8595381	3,81	54	22	4	●		8595433	4,33	68	24	6	●	
8595382	3,82	54	22	4	●		8595434	4,34	68	24	6	●	
8595383	3,83	54	22	4	●		8595435	4,35	68	24	6	●	
8595384	3,84	54	22	4	●		8595436	4,36	68	24	6	●	
8595385	3,85	54	22	4	●		8595437	4,37	68	24	6	●	
8595386	3,86	54	22	4	●		8595438	4,38	68	24	6	●	
8595387	3,87	54	22	4	●		8595439	4,39	68	24	6	●	
8595388	3,88	54	22	4	●		61544	4,4	68	24	6	●	
8595389	3,89	54	22	4	●		8595441	4,41	68	24	6	●	
61539	3,9	54	22	4	●		8595442	4,42	68	24	6	●	
8595391	3,91	54	22	4	●		8595443	4,43	68	24	6	●	
8595392	3,92	54	22	4	●		8595444	4,44	68	24	6	●	
8595393	3,93	54	22	4	●		8595445	4,45	68	24	6	●	
8595394	3,94	54	22	4	●		8595446	4,46	68	24	6	●	
8595395	3,95	54	22	4	●		8595447	4,47	68	24	6	●	
8595396	3,96	54	22	4	●		8595448	4,48	68	24	6	●	
8595397	3,97	54	22	4	●		8595449	4,49	68	24	6	●	
8595398	3,98	54	22	4	●		61545	4,5	68	24	6	●	
8595399	3,99	54	22	4	●		8595451	4,51	68	24	6	●	
61540	4	54	22	4	●		8595452	4,52	68	24	6	●	
8595401	4,01	66	22	6	●		8595453	4,53	68	24	6	●	
8595402	4,02	66	22	6	●		8595454	4,54	68	24	6	●	
8595403	4,03	66	22	6	●		8595455	4,55	68	24	6	●	
8595404	4,04	66	22	6	●		8595456	4,56	68	24	6	●	
8595405	4,05	66	22	6	●		8595457	4,57	68	24	6	●	
8595406	4,06	66	22	6	●		8595458	4,58	68	24	6	●	
8595407	4,07	66	22	6	●		8595459	4,59	68	24	6	●	
8595408	4,08	66	22	6	●		61546	4,6	68	24	6	●	
8595409	4,09	66	22	6	●		8595461	4,61	68	24	6	●	
61541	4,1	66	22	6	●		8595462	4,62	68	24	6	●	
8595411	4,11	66	22	6	●		8595463	4,63	68	24	6	●	
8595412	4,12	66	22	6	●		8595464	4,64	68	24	6	●	
8595413	4,13	66	22	6	●		8595465	4,65	68	24	6	●	

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◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	○	◎		

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EX-SUS-GDS

HSSE-V3
- High performance
- EX GOLD DRILL
- By 0,01 of D 0,5~6mm
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HSSE-V3
- High performance
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- Från Ø 0,5-6mm,varje 0,01mm
- Unik spetsgeometri, korta spån, hög precision
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HSSE-V3
- Altas prestaciones
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- Por 0,01 de D 0,5 a 6mm
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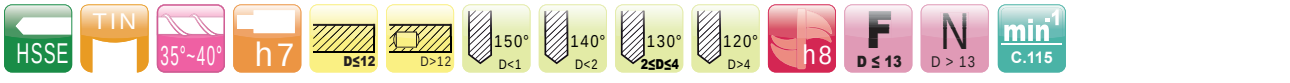
HSSE-V3
- Высокая производительность
- EX GOLD DRILL
- Через 0,01мм для D0.5-6мм
- Канавка спроектирована для обеспечения короткой стружки и точного размера отверстия
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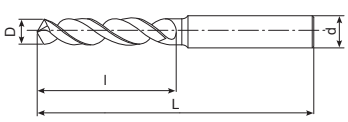
HSSE-V3
- Wysoka wydajność
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- Stopniowanie co 0,01mm i 0,5mm od D 6mm
- Specjalna konstrukcja ostrza ułatwia łamanie wiórów i zapewnia dokładny rozmiar otworu
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GO TO LIVE STOCK CHECK

HSSE V3

HSSE V3







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8595466	4,66	68	24	6	●		8595518	5,18	70	26	6	●	
8595467	4,67	68	24	6	●		8595519	5,19	70	26	6	●	
8595468	4,68	68	24	6	●		61552	5,2	70	26	6	●	
8595469	4,69	68	24	6	●		8595521	5,21	70	26	6	●	
61547	4,7	68	24	6	●		8595522	5,22	70	26	6	●	
8595471	4,71	68	24	6	●		8595523	5,23	70	26	6	●	
8595472	4,72	68	24	6	●		8595524	5,24	70	26	6	●	
8595473	4,73	68	24	6	●		8595525	5,25	70	26	6	●	
8595474	4,74	68	24	6	●		8595526	5,26	70	26	6	●	
8595475	4,75	68	24	6	●		8595527	5,27	70	26	6	●	
8595476	4,76	70	26	6	●		8595528	5,28	70	26	6	●	
8595477	4,77	70	26	6	●		8595529	5,29	70	26	6	●	
8595478	4,78	70	26	6	●		61553	5,3	70	26	6	●	
8595479	4,79	70	26	6	●		8595531	5,31	72	28	6	●	
61548	4,8	70	26	6	●		8595532	5,32	72	28	6	●	
8595481	4,81	70	26	6	●		8595533	5,33	72	28	6	●	
8595482	4,82	70	26	6	●		8595534	5,34	72	28	6	●	
8595483	4,83	70	26	6	●		8595535	5,35	72	28	6	●	
8595484	4,84	70	26	6	●		8595536	5,36	72	28	6	●	
8595485	4,85	70	26	6	●		8595537	5,37	72	28	6	●	
8595486	4,86	70	26	6	●		8595538	5,38	72	28	6	●	
8595487	4,87	70	26	6	●		8595539	5,39	72	28	6	●	
8595488	4,88	70	26	6	●		61554	5,4	72	28	6	●	
8595489	4,89	70	26	6	●		8595541	5,41	72	28	6	●	
61549	4,9	70	26	6	●		8595542	5,42	72	28	6	●	
8595491	4,91	70	26	6	●		8595543	5,43	72	28	6	●	
8595492	4,92	70	26	6	●		8595544	5,44	72	28	6	●	
8595493	4,93	70	26	6	●		8595545	5,45	72	28	6	●	
8595494	4,94	70	26	6	●		8595546	5,46	72	28	6	●	
8595495	4,95	70	26	6	●		8595547	5,47	72	28	6	●	
8595496	4,96	70	26	6	●		8595548	5,48	72	28	6	●	
8595497	4,97	70	26	6	●		8595549	5,49	72	28	6	●	
8595498	4,98	70	26	6	●		61555	5,5	72	28	6	●	
8595499	4,99	70	26	6	●		8595551	5,51	72	28	6	●	
61550	5	70	26	6	●		8595552	5,52	72	28	6	●	
8595501	5,01	70	26	6	●		8595553	5,53	72	28	6	●	
8595502	5,02	70	26	6	●		8595554	5,54	72	28	6	●	
8595503	5,03	70	26	6	●		8595555	5,55	72	28	6	●	
8595504	5,04	70	26	6	●		8595556	5,56	72	28	6	●	
8595505	5,05	70	26	6	●		8595557	5,57	72	28	6	●	
8595506	5,06	70	26	6	●		8595558	5,58	72	28	6	●	
8595507	5,07	70	26	6	●		8595559	5,59	72	28	6	●	
8595508	5,08	70	26	6	●		61556	5,6	72	28	6	●	
8595509	5,09	70	26	6	●		8595561	5,61	72	28	6	●	
61551	5,1	70	26	6	●		8595562	5,62	72	28	6	●	
8595511	5,11	70	26	6	●		8595563	5,63	72	28	6	●	
8595512	5,12	70	26	6	●		8595564	5,64	72	28	6	●	
8595513	5,13	70	26	6	●		8595565	5,65	72	28	6	●	
8595514	5,14	70	26	6	●		8595566	5,66	72	28	6	●	
8595515	5,15	70	26	6	●		8595567	5,67	72	28	6	●	
8595516	5,16	70	26	6	●		8595568	5,68	72	28	6	●	
8595517	5,17	70	26	6	●		8595569	5,69	72	28	6	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	○	◎		

EX-SUS-GDS

HSSE-V3
- High performance
- EX GOLD DRILL
- By 0,01 of D 0,5~6mm
- Special flute design to facilitate short chipping & accurate hole size
- For CNC high speed drilling

HSSE-V3
- High performance
- EX GOLD DRILL
- Abstufung 0,01 von D 0,5~6mm
- Spezielle Schneidengeometrie für kurze Bruchspäne
- Sehr gut geeignet fir CNC High Speed Drilling

HSSE-V3
- Alta prestazione
- EX GOLD DRILL
- Progressione 0,01da D.0,5~6mm
- Il disegno speciale dell'elica della punta da origine a trucioli corti
- Per macchine CNC con avanzamento e velocità rapida

HSSE-V3
- Haute performance
- EX GOLD DRILL
- Par 0,01 de D 0.5~6mm
- Le design spécial de l'hélice du foret donne des copeaux courts
- Pour machine CNC avec avance et vitesse rapide

HSSE-V3
- Yüksek performans
- EX GOLD MATKAP
- Çap D 0.5~6mm aralığında 0,01 artan ölçüler ile
- Küçük talaş ve istenilen hassas delik ölçüsünü yakalamak için dizayn edilmiş özel kanal dizaynı
- CNC lerde yüksek kesme hızında delme için

HSSE-V3
- High performance
- EX GOLD DRILL
- Fra Ø 0,5~6 / 0,01mm spring
- Special geometri for opnåelse af korte spåner og nøjagtige hulstørrelser
- Til high speed boring

HSSE-V3
- High performance
- EX GOLD DRILL
- Från Ø 0,5-6mm,varje 0,01mm
- Unik spetsgeometri, korta spån, hög precision
- För CNC High Speed borrning

HSSE-V3
- Altas prestaciones
- EX GOLD DRILL
- Por 0,01 de D 0,5 a 6mm
- Ranura diseñada para virutaje desmenuzado y agujeros precisos
- Para taladrado CNC

HSSE-V3
- Высокая производительность
- EX GOLD DRILL
- Через 0,01мм для D0.5-6мм
- Канавка спроектирована для обеспечения короткой стружки и точного размера отверстия
- Для скоростного сверления с ЧПУ

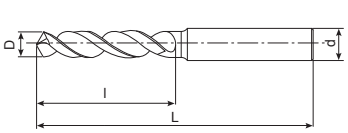
HSSE-V3
- Wysoka wydajność
- EX GOLD DRILL
- Stopniowanie co 0,01mm i 0,5mm od D 6mm
- Specjalna konstrukcja ostrza ułatwia łamanie wiórów i zapewnia dokładny rozmiar otworu
- Do maszyn CNC wiercenie z wysokimi prędkościami

GO TO LIVE STOCK CHECK

HSSE V3

HSSE V3







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
61557	5,7	72	28	6	●		61582	8,2	87	37	10	●	
8595571	5,71	72	28	6	●		61583	8,3	87	37	10	●	
8595572	5,72	72	28	6	●		61584	8,4	87	37	10	●	
8595573	5,73	72	28	6	●		61585	8,5	87	37	10	●	
8595574	5,74	72	28	6	●		61586	8,6	90	40	10	●	
8595575	5,75	72	28	6	●		61587	8,7	90	40	10	●	
8595576	5,76	72	28	6	●		61588	8,8	90	40	10	●	
8595577	5,77	72	28	6	●		61589	8,9	90	40	10	●	
8595578	5,78	72	28	6	●		61590	9	90	40	10	●	
8595579	5,79	72	28	6	●		61591	9,1	90	40	10	●	
61558	5,8	72	28	6	●		61592	9,2	90	40	10	●	
8595581	5,81	72	28	6	●		61593	9,3	90	40	10	●	
8595582	5,82	72	28	6	●		61594	9,4	90	40	10	●	
8595583	5,83	72	28	6	●		61595	9,5	90	40	10	●	
8595584	5,84	72	28	6	●		61596	9,6	93	43	10	●	
8595585	5,85	72	28	6	●		61597	9,7	93	43	10	●	
8595586	5,86	72	28	6	●		61598	9,8	93	43	10	●	
8595587	5,87	72	28	6	●		61599	9,9	93	43	10	●	
8595588	5,88	72	28	6	●		61600	10	93	43	10	●	
8595589	5,89	72	28	6	●		61601	10,1	100	43	12	●	
61559	5,9	72	28	6	●		61602	10,2	100	43	12	●	
8595591	5,91	72	28	6	●		61603	10,3	100	43	12	●	
8595592	5,92	72	28	6	●		61604	10,4	100	43	12	●	
8595593	5,93	72	28	6	●		61605	10,5	100	43	12	●	
8595594	5,94	72	28	6	●		61606	10,6	100	43	12	●	
8595595	5,95	72	28	6	●		61607	10,7	104	47	12	●	
8595596	5,96	72	28	6	●		61608	10,8	104	47	12	●	
8595597	5,97	72	28	6	●		61609	10,9	104	47	12	●	
8595598	5,98	72	28	6	●		61610	11	104	47	12	●	
8595599	5,99	72	28	6	●		61611	11,1	104	47	12	●	
61560	6	72	28	6	●		61612	11,2	104	47	12	●	
61561	6,1	75	31	8	●		61613	11,3	104	47	12	●	
61562	6,2	75	31	8	●		61614	11,4	104	47	12	●	
61563	6,3	75	31	8	●		61615	11,5	104	47	12	●	
61564	6,4	75	31	8	●		61616	11,6	104	47	12	●	
61565	6,5	75	31	8	●		61617	11,7	104	47	12	●	
61566	6,6	75	31	8	●		61618	11,8	104	47	12	●	
61567	6,7	75	31	8	●		61619	11,9	108	51	12	●	
61568	6,8	78	34	8	●		61620	12	108	51	12	●	
61569	6,9	78	34	8	●		43011210	12,1	108	51	16	●	
61570	7	78	34	8	●		43011220	12,2	108	51	16	●	
61571	7,1	78	34	8	●		43011230	12,3	108	51	16	●	
61572	7,2	78	34	8	●		43011240	12,4	108	51	16	●	
61573	7,3	78	34	8	●		43011250	12,5	108	51	16	●	
61574	7,4	78	34	8	●		43011260	12,6	108	51	16	●	
61575	7,5	78	34	8	●		43011270	12,7	108	51	16	●	
61576	7,6	81	37	8	●		43011280	12,8	108	51	16	●	
61577	7,7	81	37	8	●		43011290	12,9	108	51	16	●	
61578	7,8	81	37	8	●		43011300	13	108	51	16	●	
61579	7,9	81	37	8	●		43011350	13,5	114	54	16	●	
61580	8	81	37	8	●		43011400	14	114	54	16	●	
61581	8,1	87	37	10	●		43011450	14,5	116	56	16	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
								◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc

● Delivery from stock
○ Available on short notice

EX-SUS-GDS

HSSE-V3
- High performance
- EX GOLD DRILL
- By 0,01 of D 0,5~6mm
- Special flute design to facilitate short chipping & accurate hole size
- For CNC high speed drilling

HSSE-V3
- High performance
- EX GOLD DRILL
- Abstufung 0,01 von D 0,5~6mm
- Spezielle Schneidengeometrie für kurze Bruchspäne
- Sehr gut geeignet für CNC High Speed Drilling

HSSE-V3
- Alta prestazione
- EX GOLD DRILL
- Progressione 0,01da D.0,5~6mm
- Il disegno speciale dell'elica della punta da origine a trucioli corti
- Per macchine CNC con avanzamento e velocità rapida

HSSE-V3
- Haute performance
- EX GOLD DRILL
- Par 0,01 de D 0.5~6mm
- Le design spécial de l'hélice du foret donne des copeaux courts
- Pour machine CNC avec avance et vitesse rapide

HSSE-V3
- Yüksek performans
- EX GOLD MATKAP
- Çap D 0.5~6mm aralığında 0,01 artan ölçüler ile
- Küçük talaş ve istenilen hassas delik ölçüsünü yakalamak için dizayn edilmiş özel kanal dizaynı
- CNC lerde yüksek kesme hızında delme için

HSSE-V3
- High performance
- EX GOLD DRILL
- Fra Ø 0,5~6 / 0,01mm spring
- Special geometri for opnåelse af korte spåner og nøjagtige hulstørrelser
- Til high speed boring

HSSE-V3
- High performance
- EX GOLD DRILL
- Från Ø 0,5-6mm,varje 0,01mm
- Unik spetsgeometri, korta spån, hög precision
- För CNC High Speed borrning

HSSE-V3
- Altas prestaciones
- EX GOLD DRILL
- Por 0,01 de D 0,5 a 6mm
- Ranura diseñada para virutaje desmenuzado y agujeros precisos
- Para taladrado CNC

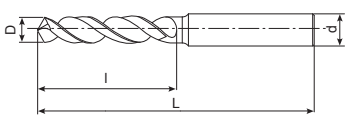
HSSE-V3
- Высокая производительность
- EX GOLD DRILL
- Через 0,01мм для D0.5-6мм
- Канавка спроектирована для обеспечения короткой стружки и точного размера отверстия
- Для скоростного сверления с ЧПУ

HSSE-V3
- Wysoka wydajność
- EX GOLD DRILL
- Stopniowanie co 0,01mm i 0,5mm od D 6mm
- Specjalna konstrukcja ostrza ułatwia łamanie wiórów i zapewnia dokładny rozmiar otworu
- Do maszyn CNC wiercenie z wysokimi prędkościami

GO TO LIVE STOCK CHECK

HSSE V3







EDP	D	L	l	d	Stock	Price
43011500	15	116	56	16	●	
43011550	15,5	118	58	16	●	
43011600	16	118	58	16	●	
43011650	16,5	126	60	20	●	
43011700	17	126	60	20	●	
43011750	17,5	128	62	20	●	

EDP	D	L	l	d	Stock	Price
43011800	18	128	62	20	●	
43011850	18,5	130	64	20	●	
43011900	19	130	64	20	●	
43011950	19,5	132	66	20	●	
43012000	20	132	66	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	○	◎		

● Delivery from stock
○ Available on short notice

EX-SUS-GDR

HSSE-V3
- High performance
- EX GOLD DRILL
- By 0,01 of D 2~6mm
- Special flute design to facilitate short chipping & accurate hole size
- For CNC high speed drilling

HSSE-V3
- High performance
- EX GOLD DRILL
- Abstufung 0,01 von D 2~6mm
- Spezielle Schneidengeometrie für kurze Bruchspäne
- Sehr gut geeignet fir CNC High Speed Drilling

HSSE-V3
- Alta prestazione
- EX GOLD DRILL
- Progressione 0,01da D2~6mm
- Il disegno speciale dell'elica della punta da origine a trucioli corti
- Per macchine CNC con avanzamento e velocità rapida

HSSE-V3
- Haute performance
- EX GOLD DRILL
- Par 0,01 de D 2~6mm
- Le design spécial de l'hélice du foret donne des copeaux courts
- Pour machine CNC avec avance et vitesse rapide

HSSE-V3
- Yüksek performans
- EX GOLD MATKAP
- Çap D 2~6mm aralığında 0,01 artan ölçüler ile
- Küçük talaş ve istenilen hassas delik ölçüsünü yakalamak için dizayn edilmiş özel kanal dizaynı
- CNC lerde yüksek kesme hızında delme için

HSSE-V3
- High performance
- EX GOLD DRILL
- Fra Ø 2~6 / 0,01mm spring
- Special geometri for opnåelse af korte spåner og nøjagtige hulstørrelser
- Til high speed boring

HSSE-V3
- High performance
- EX GOLD DRILL
- Från Ø 0,5-6mm,varje 2mm
- Unik spetsgeometri, korta spån, hög precision
- För CNC High Speed borrning

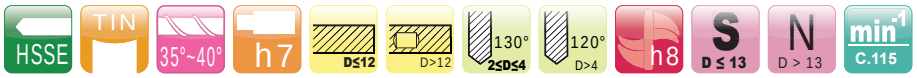
HSSE-V3
- Altas prestaciones
- EX GOLD DRILL
- Por 0,01 de D 2 a 6mm
- Ranura diseñada para virutaje desmenuzado y agujeros precisos
- Para taladrado CNC

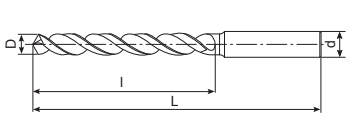
HSSE-V3
- Высокая производительность
- EX GOLD DRIL
- Через 0,01мм для D2-6мм
- Канавка спроектирована для обеспечения короткой стружки и точного размера отверстия
- Для скоростного сверления с ЧПУ

HSSE-V3
- Wysoka wydajność
- EX GOLD DRILL
- Stopniowanie co 0,01mm i 0,5mm od D 2~6mm
- Specjalna konstrukcja ostrza ułatwia łamanie wiórów i zapewnia dokładny rozmiar otworu
- Do maszyn CNC wiercenie z wysokimi prędkościami

GO TO LIVE STOCK CHECK

HSSE V3







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
62520	2	56	24	3	●		8597252	2,52	62	30	3	●	
8597201	2,01	56	24	3	●		8597253	2,53	62	30	3	●	
8597202	2,02	56	24	3	●		8597254	2,54	62	30	3	●	
8597203	2,03	56	24	3	●		8597255	2,55	62	30	3	●	
8597204	2,04	56	24	3	●		8597256	2,56	62	30	3	●	
8597205	2,05	56	24	3	●		8597257	2,57	62	30	3	●	
8597206	2,06	56	24	3	●		8597258	2,58	62	30	3	●	
8597207	2,07	56	24	3	●		8597259	2,59	62	30	3	●	
8597208	2,08	56	24	3	●		62526	2,6	62	30	3	●	
8597209	2,09	56	24	3	●		8597261	2,61	62	30	3	●	
62521	2,1	56	24	3	●		8597262	2,62	62	30	3	●	
8597211	2,11	56	24	3	●		8597263	2,63	62	30	3	●	
8597212	2,12	56	24	3	●		8597264	2,64	62	30	3	●	
8597213	2,13	59	27	3	●		8597265	2,65	62	30	3	●	
8597214	2,14	59	27	3	●		8597266	2,66	65	33	3	●	
8597215	2,15	59	27	3	●		8597267	2,67	65	33	3	●	
8597216	2,16	59	27	3	●		8597268	2,68	65	33	3	●	
8597217	2,17	59	27	3	●		8597269	2,69	65	33	3	●	
8597218	2,18	59	27	3	●		62527	2,7	65	33	3	●	
8597219	2,19	59	27	3	●		8597271	2,71	65	33	3	●	
62522	2,2	59	27	3	●		8597272	2,72	65	33	3	●	
8597221	2,21	59	27	3	●		8597273	2,73	65	33	3	●	
8597222	2,22	59	27	3	●		8597274	2,74	65	33	3	●	
8597223	2,23	59	27	3	●		8597275	2,75	65	33	3	●	
8597224	2,24	59	27	3	●		8597276	2,76	65	33	3	●	
8597225	2,25	59	27	3	●		8597277	2,77	65	33	3	●	
8597226	2,26	59	27	3	●		8597278	2,78	65	33	3	●	
8597227	2,27	59	27	3	●		8597279	2,79	65	33	3	●	
8597228	2,28	59	27	3	●		62528	2,8	65	33	3	●	
8597229	2,29	59	27	3	●		8597281	2,81	65	33	3	●	
62523	2,3	59	27	3	●		8597282	2,82	65	33	3	●	
8597231	2,31	59	27	3	●		8597283	2,83	65	33	3	●	
8597232	2,32	59	27	3	●		8597284	2,84	65	33	3	●	
8597233	2,33	59	27	3	●		8597285	2,85	65	33	3	●	
8597234	2,34	59	27	3	●		8597286	2,86	65	33	3	●	
8597235	2,35	59	27	3	●		8597287	2,87	65	33	3	●	
8597236	2,36	59	27	3	●		8597288	2,88	65	33	3	●	
8597237	2,37	62	30	3	●		8597289	2,89	65	33	3	●	
8597238	2,38	62	30	3	●		62529	2,9	65	33	3	●	
8597239	2,39	62	30	3	●		8597291	2,91	65	33	3	●	
62524	2,4	62	30	3	●		8597292	2,92	65	33	3	●	
8597241	2,41	62	30	3	●		8597293	2,93	65	33	3	●	
8597242	2,42	62	30	3	●		8597294	2,94	65	33	3	●	
8597243	2,43	62	30	3	●		8597295	2,95	65	33	3	●	
8597244	2,44	62	30	3	●		8597296	2,96	65	33	3	●	
8597245	2,45	62	30	3	●		8597297	2,97	65	33	3	●	
8597246	2,46	62	30	3	●		8597298	2,98	65	33	3	●	
8597247	2,47	62	30	3	●		8597299	2,99	65	33	3	●	
8597248	2,48	62	30	3	●		62530	3	65	33	3	●	
8597249	2,49	62	30	3	●		8597301	3,01	68	36	4	●	
62525	2,5	62	30	3	●		8597302	3,02	68	36	4	●	
8597251	2,51	62	30	3	●		8597303	3,03	68	36	4	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	○	◎		

● Delivery from stock
○ Available on short notice

EX-SUS-GDR

HSSE-V3
- High performance
- EX GOLD DRILL
- By 0,01 of D 2~6mm
- Special flute design to facilitate short chipping & accurate hole size
- For CNC high speed drilling

HSSE-V3
- High performance
- EX GOLD DRILL
- Abstufung 0,01 von D 2~6mm
- Spezielle Schneidengeometrie für kurze Bruchspäne
- Sehr gut geeignet fir CNC High Speed Drilling

HSSE-V3
- Alta prestazione
- EX GOLD DRILL
- Progressione 0,01da D2~6mm
- Il disegno speciale dell'elica della punta da origine a trucioli corti
- Per macchine CNC con avanzamento e velocità rapida

HSSE-V3
- Haute performance
- EX GOLD DRILL
- Par 0,01 de D 2~6mm
- Le design spécial de l'hélice du foret donne des copeaux courts
- Pour machine CNC avec avance et vitesse rapide

HSSE-V3
- Yüksek performans
- EX GOLD MATKAP
- Çap D 2~6mm aralığında 0,01 artan ölçüler ile
- Küçük talaş ve istenilen hassas delik ölçüsünü yakalamak için dizayn edilmiş özel kanal dizaynı
- CNC lerde yüksek kesme hızında delme için

HSSE-V3
- High performance
- EX GOLD DRILL
- Fra Ø 2~6 / 0,01mm spring
- Special geometri for opnåelse af korte spåner og nøjagtige hulstørrelser
- Til high speed boring

HSSE-V3
- High performance
- EX GOLD DRILL
- Från Ø 0,5-6mm,varje 2mm
- Unik spetsgeometri, korta spån, hög precision
- För CNC High Speed borrning

HSSE-V3
- Altas prestaciones
- EX GOLD DRILL
- Por 0,01 de D 2 a 6mm
- Ranura diseñada para virutaje desmenuzado y agujeros precisos
- Para taladrado CNC

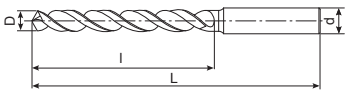
HSSE-V3
- Высокая производительность
- EX GOLD DRIL
- Через 0,01мм для D2-6мм
- Канавка спроектирована для обеспечения короткой стружки и точного размера отверстия
- Для скоростного сверления с ЧПУ

HSSE-V3
- Wysoka wydajność
- EX GOLD DRILL
- Stopniowanie co 0,01mm
- i 0,5mm od D 2~6mm Specjalna konstrukcja ostrza ułatwia łamanie wiórów i zapewnia dokładny rozmiar otworu
- Do maszyn CNC wiercenie z wysokimi prędkościami

GO TO LIVE STOCK CHECK

HSSE V3







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8597304	3,04	68	36	4	●		8597356	3,56	71	39	4	●	
8597305	3,05	68	36	4	●		8597357	3,57	71	39	4	●	
8597306	3,06	68	36	4	●		8597358	3,58	71	39	4	●	
8597307	3,07	68	36	4	●		8597359	3,59	71	39	4	●	
8597308	3,08	68	36	4	●		62536	3,6	71	39	4	●	
8597309	3,09	68	36	4	●		8597361	3,61	71	39	4	●	
62531	3,1	68	36	4	●		8597362	3,62	71	39	4	●	
8597311	3,11	68	36	4	●		8597363	3,63	71	39	4	●	
8597312	3,12	68	36	4	●		8597364	3,64	71	39	4	●	
8597313	3,13	68	36	4	●		8597365	3,65	71	39	4	●	
8597314	3,14	68	36	4	●		8597366	3,66	71	39	4	●	
8597315	3,15	68	36	4	●		8597367	3,67	71	39	4	●	
8597316	3,16	68	36	4	●		8597368	3,68	71	39	4	●	
8597317	3,17	68	36	4	●		8597369	3,69	71	39	4	●	
8597318	3,18	68	36	4	●		62537	3,7	71	39	4	●	
8597319	3,19	68	36	4	●		8597371	3,71	71	39	4	●	
62532	3,2	68	36	4	●		8597372	3,72	71	39	4	●	
8597321	3,21	68	36	4	●		8597373	3,73	71	39	4	●	
8597322	3,22	68	36	4	●		8597374	3,74	71	39	4	●	
8597323	3,23	68	36	4	●		8597375	3,75	71	39	4	●	
8597324	3,24	68	36	4	●		8597376	3,76	75	43	4	●	
8597325	3,25	68	36	4	●		8597377	3,77	75	43	4	●	
8597326	3,26	68	36	4	●		8597378	3,78	75	43	4	●	
8597327	3,27	68	36	4	●		8597379	3,79	75	43	4	●	
8597328	3,28	68	36	4	●		62538	3,8	75	43	4	●	
8597329	3,29	68	36	4	●		8597381	3,81	75	43	4	●	
62533	3,3	68	36	4	●		8597382	3,82	75	43	4	●	
8597331	3,31	68	36	4	●		8597383	3,83	75	43	4	●	
8597332	3,32	68	36	4	●		8597384	3,84	75	43	4	●	
8597333	3,33	68	36	4	●		8597385	3,85	75	43	4	●	
8597334	3,34	68	36	4	●		8597386	3,86	75	43	4	●	
8597335	3,35	68	36	4	●		8597387	3,87	75	43	4	●	
8597336	3,36	71	39	4	●		8597388	3,88	75	43	4	●	
8597337	3,37	71	39	4	●		8597389	3,89	75	43	4	●	
8597338	3,38	71	39	4	●		62539	3,9	75	43	4	●	
8597339	3,39	71	39	4	●		8597391	3,91	75	43	4	●	
62534	3,4	71	39	4	●		8597392	3,92	75	43	4	●	
8597341	3,41	71	39	4	●		8597393	3,93	75	43	4	●	
8597342	3,42	71	39	4	●		8597394	3,94	75	43	4	●	
8597343	3,43	71	39	4	●		8597395	3,95	75	43	4	●	
8597344	3,44	71	39	4	●		8597396	3,96	75	43	4	●	
8597345	3,45	71	39	4	●		8597397	3,97	75	43	4	●	
8597346	3,46	71	39	4	●		8597398	3,98	75	43	4	●	
8597347	3,47	71	39	4	●		8597399	3,99	75	43	4	●	
8597348	3,48	71	39	4	●		62540	4	75	43	4	●	
8597349	3,49	71	39	4	●		8597401	4,01	87	43	6	●	
62535	3,5	71	39	4	●		8597402	4,02	87	43	6	●	
8597351	3,51	71	39	4	●		8597403	4,03	87	43	6	●	
8597352	3,52	71	39	4	●		8597404	4,04	87	43	6	●	
8597353	3,53	71	39	4	●		8597405	4,05	87	43	6	●	
8597354	3,54	71	39	4	●		8597406	4,06	87	43	6	●	
8597355	3,55	71	39	4	●		8597407	4,07	87	43	6	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	○	◎		

● Delivery from stock
○ Available on short notice

EX-SUS-GDR

HSSE-V3
- High performance
- EX GOLD DRILL
- By 0,01 of D 2~6mm
- Special flute design to facilitate short chipping & accurate hole size
- For CNC high speed drilling

HSSE-V3
- High performance
- EX GOLD DRILL
- Abstufung 0,01 von D 2~6mm
- Spezielle Schneidengeometrie für kurze Bruchspäne
- Sehr gut geeignet fïr CNC High Speed Drilling

HSSE-V3
- Alta prestazione
- EX GOLD DRILL
- Progressione 0,01da D2~6mm
- Il disegno speciale dell'elica della punta da origine a trucioli corti
- Per macchine CNC con avanzamento e velocità rapida

HSSE-V3
- Haute performance
- EX GOLD DRILL
- Par 0,01 de D 2~6mm
- Le design spécial de l'hélice du foret donne des copeaux courts
- Pour machine CNC avec avance et vitesse rapide

HSSE-V3
- Yüksek performans
- EX GOLD MATKAP
- Çap D 2~6mm aralığında 0,01 artan ölçüler ile
- Küçük talaş ve istenilen hassas delik ölçüsünü yakalamak için dizayn edilmiş özel kanal dizaynı
- CNC lerde yüksek kesme hızında delme için

HSSE-V3
- High performance
- EX GOLD DRILL
- Fra Ø 2~6 / 0,01mm spring
- Special geometri for opnåelse af korte spåner og nøjagtige hulstørrelser
- Til high speed boring

HSSE-V3
- High performance
- EX GOLD DRILL
- Från Ø 0,5-6mm,varje 2mm
- Unik spetsgeometri, korta spån, hög precision
- För CNC High Speed borrning

HSSE-V3
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- EX GOLD DRILL
- Por 0,01 de D 2 a 6mm
- Ranura diseñada para virutaje desmenuzado y agujeros precisos
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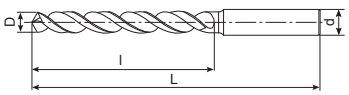
HSSE-V3
- Высокая производительность
- EX GOLD DRILL
- Через 0,01мм для D2-6мм
- Канавка спроектирована для обеспечения короткой стружки и точного размера отверстия
- Для скоростного сверления с ЧПУ

HSSE-V3
- Wysoka wydajność
- EX GOLD DRILL
- Stopniowanie co 0,01mm i 0,5mm od D 2~6mm
- Specjalna konstrukcja ostrza ułatwia łamanie wiórów i zapewnia dokładny rozmiar otworu
- Do maszyn CNC wiercenie z wysokimi prędkościami

GO TO LIVE STOCK CHECK

HSSE V3







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8597408	4,08	87	43	6	●		62546	4,6	91	47	6	●	
8597409	4,09	87	43	6	●		8597461	4,61	91	47	6	●	
62541	4,1	87	43	6	●		8597462	4,62	91	47	6	●	
8597411	4,11	87	43	6	●		8597463	4,63	91	47	6	●	
8597412	4,12	87	43	6	●		8597464	4,64	91	47	6	●	
8597413	4,13	87	43	6	●		8597465	4,65	91	47	6	●	
8597414	4,14	87	43	6	●		8597466	4,66	91	47	6	●	
8597415	4,15	87	43	6	●		8597467	4,67	91	47	6	●	
8597416	4,16	87	43	6	●		8597468	4,68	91	47	6	●	
8597417	4,17	87	43	6	●		8597469	4,69	91	47	6	●	
8597418	4,18	87	43	6	●		62547	4,7	91	47	6	●	
8597419	4,19	87	43	6	●		8597471	4,71	91	47	6	●	
62542	4,2	87	43	6	●		8597472	4,72	91	47	6	●	
8597421	4,21	87	43	6	●		8597473	4,73	91	47	6	●	
8597422	4,22	87	43	6	●		8597474	4,74	91	47	6	●	
8597423	4,23	87	43	6	●		8597475	4,75	91	47	6	●	
8597424	4,24	87	43	6	●		8597476	4,76	96	52	6	●	
8597425	4,25	87	43	6	●		8597477	4,77	96	52	6	●	
8597426	4,26	91	47	6	●		8597478	4,78	96	52	6	●	
8597427	4,27	91	47	6	●		8597479	4,79	96	52	6	●	
8597428	4,28	91	47	6	●		62548	4,8	96	52	6	●	
8597429	4,29	91	47	6	●		8597481	4,81	96	52	6	●	
62543	4,3	91	47	6	●		8597482	4,82	96	52	6	●	
8597431	4,31	91	47	6	●		8597483	4,83	96	52	6	●	
8597432	4,32	91	47	6	●		8597484	4,84	96	52	6	●	
8597433	4,33	91	47	6	●		8597485	4,85	96	52	6	●	
8597434	4,34	91	47	6	●		8597486	4,86	96	52	6	●	
8597435	4,35	91	47	6	●		8597487	4,87	96	52	6	●	
8597436	4,36	91	47	6	●		8597488	4,88	96	52	6	●	
8597437	4,37	91	47	6	●		8597489	4,89	96	52	6	●	
8597438	4,38	91	47	6	●		62549	4,9	96	52	6	●	
8597439	4,39	91	47	6	●		8597491	4,91	96	52	6	●	
62544	4,4	91	47	6	●		8597492	4,92	96	52	6	●	
8597441	4,41	91	47	6	●		8597493	4,93	96	52	6	●	
8597442	4,42	91	47	6	●		8597494	4,94	96	52	6	●	
8597443	4,43	91	47	6	●		8597495	4,95	96	52	6	●	
8597444	4,44	91	47	6	●		8597496	4,96	96	52	6	●	
8597445	4,45	91	47	6	●		8597497	4,97	96	52	6	●	
8597446	4,46	91	47	6	●		8597498	4,98	96	52	6	●	
8597447	4,47	91	47	6	●		8597499	4,99	96	52	6	●	
8597448	4,48	91	47	6	●		62550	5	96	52	6	●	
8597449	4,49	91	47	6	●		8597501	5,01	96	52	6	●	
62545	4,5	91	47	6	●		8597502	5,02	96	52	6	●	
8597451	4,51	91	47	6	●		8597503	5,03	96	52	6	●	
8597452	4,52	91	47	6	●		8597504	5,04	96	52	6	●	
8597453	4,53	91	47	6	●		8597505	5,05	96	52	6	●	
8597454	4,54	91	47	6	●		8597506	5,06	96	52	6	●	
8597455	4,55	91	47	6	●		8597507	5,07	96	52	6	●	
8597456	4,56	91	47	6	●		8597508	5,08	96	52	6	●	
8597457	4,57	91	47	6	●		8597509	5,09	96	52	6	●	
8597458	4,58	91	47	6	●		62551	5,1	96	52	6	●	
8597459	4,59	91	47	6	●		8597511	5,11	96	52	6	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	○	◎		

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EX-SUS-GDR

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HSSE-V3
- High performance
- EX GOLD DRILL
- Abstufung 0,01 von D 2~6mm
- Spezielle Schneidengeometrie für kurze Bruchspäne
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HSSE-V3
- Alta prestazione
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- Haute performance
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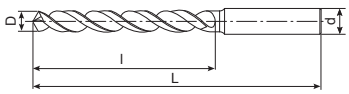
HSSE-V3
- Высокая производительность
- EX GOLD DRIL
- Через 0,01мм для D2-6мм
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- Do maszyn CNC wiercenie z wysokimi prędkościami

GO TO LIVE STOCK CHECK

HSSE V3







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8597512	5,12	96	52	6	●		8597564	5,64	101	57	6	●	
8597513	5,13	96	52	6	●		8597565	5,65	101	57	6	●	
8597514	5,14	96	52	6	●		8597566	5,66	101	57	6	●	
8597515	5,15	96	52	6	●		8597567	5,67	101	57	6	●	
8597516	5,16	96	52	6	●		8597568	5,68	101	57	6	●	
8597517	5,17	96	52	6	●		8597569	5,69	101	57	6	●	
8597518	5,18	96	52	6	●		62557	5,7	101	57	6	●	
8597519	5,19	96	52	6	●		8597571	5,71	101	57	6	●	
62552	5,2	96	52	6	●		8597572	5,72	101	57	6	●	
8597521	5,21	96	52	6	●		8597573	5,73	101	57	6	●	
8597522	5,22	96	52	6	●		8597574	5,74	101	57	6	●	
8597523	5,23	96	52	6	●		8597575	5,75	101	57	6	●	
8597524	5,24	96	52	6	●		8597576	5,76	101	57	6	●	
8597525	5,25	96	52	6	●		8597577	5,77	101	57	6	●	
8597526	5,26	96	52	6	●		8597578	5,78	101	57	6	●	
8597527	5,27	96	52	6	●		8597579	5,79	101	57	6	●	
8597528	5,28	96	52	6	●		62558	5,8	101	57	6	●	
8597529	5,29	96	52	6	●		8597581	5,81	101	57	6	●	
62553	5,3	96	52	6	●		8597582	5,82	101	57	6	●	
8597531	5,31	101	57	6	●		8597583	5,83	101	57	6	●	
8597532	5,32	101	57	6	●		8597584	5,84	101	57	6	●	
8597533	5,33	101	57	6	●		8597585	5,85	101	57	6	●	
8597534	5,34	101	57	6	●		8597586	5,86	101	57	6	●	
8597535	5,35	101	57	6	●		8597587	5,87	101	57	6	●	
8597536	5,36	101	57	6	●		8597588	5,88	101	57	6	●	
8597537	5,37	101	57	6	●		8597589	5,89	101	57	6	●	
8597538	5,38	101	57	6	●		62559	5,9	101	57	6	●	
8597539	5,39	101	57	6	●		8597591	5,91	101	57	6	●	
62554	5,4	101	57	6	●		8597592	5,92	101	57	6	●	
8597541	5,41	101	57	6	●		8597593	5,93	101	57	6	●	
8597542	5,42	101	57	6	●		8597594	5,94	101	57	6	●	
8597543	5,43	101	57	6	●		8597595	5,95	101	57	6	●	
8597544	5,44	101	57	6	●		8597596	5,96	101	57	6	●	
8597545	5,45	101	57	6	●		8597597	5,97	101	57	6	●	
8597546	5,46	101	57	6	●		8597598	5,98	101	57	6	●	
8597547	5,47	101	57	6	●		8597599	5,99	101	57	6	●	
8597548	5,48	101	57	6	●		62560	6	101	57	6	●	
8597549	5,49	101	57	6	●		62561	6,1	107	63	8	●	
62555	5,5	101	57	6	●		62562	6,2	107	63	8	●	
8597551	5,51	101	57	6	●		62563	6,3	107	63	8	●	
8597552	5,52	101	57	6	●		62564	6,4	107	63	8	●	
8597553	5,53	101	57	6	●		62565	6,5	107	63	8	●	
8597554	5,54	101	57	6	●		62566	6,6	107	63	8	●	
8597555	5,55	101	57	6	●		62567	6,7	107	63	8	●	
8597556	5,56	101	57	6	●		62568	6,8	113	69	8	●	
8597557	5,57	101	57	6	●		62569	6,9	113	69	8	●	
8597558	5,58	101	57	6	●		62570	7	113	69	8	●	
8597559	5,59	101	57	6	●		62571	7,1	113	69	8	●	
62556	5,6	101	57	6	●		62572	7,2	113	69	8	●	
8597561	5,61	101	57	6	●		62573	7,3	113	69	8	●	
8597562	5,62	101	57	6	●		62574	7,4	113	69	8	●	
8597563	5,63	101	57	6	●		62575	7,5	113	69	8	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	○	◎		

EX-SUS-GDR

HSSE-V3
- High performance
- EX GOLD DRILL
- By 0,01 of D 2~6mm
- Special flute design to facilitate short chipping & accurate hole size
- For CNC high speed drilling

HSSE-V3
- High performance
- EX GOLD DRILL
- Abstufung 0,01 von D 2~6mm
- Spezielle Schneidengeometrie für kurze Bruchspäne
- Sehr gut geeignet fir CNC High Speed Drilling

HSSE-V3
- Alta prestazione
- EX GOLD DRILL
- Progressione 0,01da D2~6mm
- Il disegno speciale dell'elica della punta da origine a trucioli corti
- Per macchine CNC con avanzamento e velocità rapida

HSSE-V3
- Haute performance
- EX GOLD DRILL
- Par 0,01 de D 2~6mm
- Le design spécial de l'hélice du foret donne des copeaux courts
- Pour machine CNC avec avance et vitesse rapide

HSSE-V3
- Yüksek performans
- EX GOLD MATKAP
- Çap D 2~6mm aralığında 0,01 artan ölçüler ile
- Küçük talaş ve istenilen hassas delik ölçüsünü yakalamak için dizayn edilmiş özel kanal dizaynı
- CNC lerde yüksek kesme hızında delme için

HSSE-V3
- High performance
- EX GOLD DRILL
- Fra Ø 2~6 / 0,01mm spring
- Special geometri for opnåelse af korte spåner og nøjagtige hulstørrelser
- Til high speed boring

HSSE-V3
- High performance
- EX GOLD DRILL
- Från Ø 0,5-6mm,varje 2mm
- Unik spetsgeometri, korta spån, hög precision
- För CNC High Speed borrning

HSSE-V3
- Altas prestaciones
- EX GOLD DRILL
- Por 0,01 de D 2 a 6mm
- Ranura diseñada para virutaje desmenuzado y agujeros precisos
- Para taladrado CNC

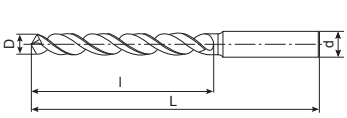
HSSE-V3
- Высокая производительность
- EX GOLD DRIL
- Через 0,01мм для D2-6мм
- Канавка спроектирована для обеспечения короткой стружки и точного размера отверстия
- Для скоростного сверления с ЧПУ

HSSE-V3
- Wysoka wydajność
- EX GOLD DRILL
- Stopniowanie co 0,01mm i 0,5mm od D 2~6mm
- Specjalna konstrukcja ostrza ułatwia łamanie wiórów i zapewnia dokładny rozmiar otworu
- Do maszyn CNC wiercenie z wysokimi prędkościami

GO TO LIVE STOCK CHECK

HSSE V3







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
62576	7,6	119	75	8	●		62611	11,1	151	94	12	●	
62577	7,7	119	75	8	●		62612	11,2	151	94	12	●	
62578	7,8	119	75	8	●		62613	11,3	151	94	12	●	
62579	7,9	119	75	8	●		62614	11,4	151	94	12	●	
62580	8	119	75	8	●		62615	11,5	151	94	12	●	
62581	8,1	125	75	10	●		62616	11,6	151	94	12	●	
62582	8,2	125	75	10	●		62617	11,7	151	94	12	●	
62583	8,3	125	75	10	●		62618	11,8	151	94	12	●	
62584	8,4	125	75	10	●		62619	11,9	158	101	12	●	
62585	8,5	125	75	10	●		62620	12	158	101	12	●	
62586	8,6	131	81	10	●		43021210	12,1	158	101	16	●	
62587	8,7	131	81	10	●		43021220	12,2	158	101	16	●	
62588	8,8	131	81	10	●		43021230	12,3	158	101	16	●	
62589	8,9	131	81	10	●		43021240	12,4	158	101	16	●	
62590	9	131	81	10	●		43021250	12,5	158	101	16	●	
62591	9,1	131	81	10	●		43021260	12,6	158	101	16	●	
62592	9,2	131	81	10	●		43021270	12,7	158	101	16	●	
62593	9,3	131	81	10	●		43021280	12,8	158	101	16	●	
62594	9,4	131	81	10	●		43021290	12,9	158	101	16	●	
62595	9,5	131	81	10	●		43021300	13	158	101	16	●	
62596	9,6	137	87	10	●		43021350	13,5	166	106	16	●	
62597	9,7	137	87	10	●		43021400	14	166	106	16	●	
62598	9,8	137	87	10	●		43021450	14,5	169	109	16	●	
62599	9,9	137	87	10	●		43021500	15	169	109	16	●	
62600	10	137	87	10	●		43021550	15,5	172	112	16	●	
62601	10,1	144	87	12	●		43021600	16	172	112	16	●	
62602	10,2	144	87	12	●		43021650	16,5	181	115	20	●	
62603	10,3	144	87	12	●		43021700	17	181	115	20	●	
62604	10,4	144	87	12	●		43021750	17,5	184	118	20	●	
62605	10,5	144	87	12	●		43021800	18	184	118	20	●	
62606	10,6	144	87	12	●		43021850	18,5	188	122	20	●	
62607	10,7	151	94	12	●		43021900	19	188	122	20	●	
62608	10,8	151	94	12	●		43021950	19,5	191	125	20	●	
62609	10,9	151	94	12	●		43022000	20	191	125	20	●	
62610	11	151	94	12	●								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	○							◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
			◎	◎	○	◎		

● Delivery from stock
○ Available on short notice

V-HDO-GDR

HSS-Co
- High performance
- Regular for high speed drilling

HSS-Co
- High performance
- Geeignet für Hochleistungsbohren (HSC)

HSS-Co
- Alta prestazione
- Regolare, per forature ad alta velocità

HSS-Co
- Haute performance
- Normal, pour forage haute vitesse

HSS-Co
- Yüksek performans
- Yüksek kesme hızlı delme için uygun

HSS-Co
- High performance
- Mellemlang, til high speed boring

HSS-Co
- High performance
- Normal, för high speed borrning

HSS-Co
- Altas prestaciones
- Regular para taladrado a alta velocidad

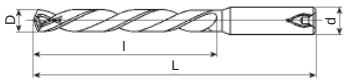
HSS-Co
- Высокая производительность
- Сверло нормальной длины для скоростного сверления

HSS-Co
- Wysoka wydajność
- Standard do wysokich prędkości wiercenia

GO TO LIVE STOCK CHECK

HSS Co









EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
43040600	6	101	57	6	●		43041080	10,8	151	94	11	●	
43040610	6,1	107	63	6	●		43041090	10,9	151	94	11	●	
43040620	6,2	107	63	6	●		43041100	11	151	94	11	●	
43040630	6,3	107	63	6	●		43041110	11,1	151	94	12	●	
43040640	6,4	107	63	6	●		43041120	11,2	151	94	12	●	
43040650	6,5	107	63	6	●		43041130	11,3	151	94	12	●	
43040660	6,6	107	63	7	●		43041140	11,4	151	94	12	●	
43040670	6,7	107	63	7	●		43041150	11,5	151	94	12	●	
43040680	6,8	113	69	7	●		43041160	11,6	151	94	12	●	
43040690	6,9	113	69	7	●		43041170	11,7	151	94	12	●	
43040700	7	113	69	7	●		43041180	11,8	151	94	12	●	
43040710	7,1	113	69	8	●		43041190	11,9	158	101	12	●	
43040720	7,2	113	69	8	●		43041200	12	158	101	12	●	
43040730	7,3	113	69	8	●		43041250	12,5	140	80	16	●	
43040740	7,4	113	69	8	●		43041300	13	145	85	16	●	
43040750	7,5	113	69	8	●		43041350	13,5	150	90	16	●	
43040760	7,6	119	75	8	●		43041400	14	150	90	16	●	
43040770	7,7	119	75	8	●		43041450	14,5	155	95	16	●	
43040780	7,8	119	75	8	●		43041500	15	161	95	20	●	
43040790	7,9	119	75	8	●		43041550	15,5	166	100	20	●	
43040800	8	119	75	8	●		43041600	16	166	100	20	●	
43040810	8,1	125	75	9	●		43041650	16,5	172	106	20	●	
43040820	8,2	125	75	9	●		43041700	17	172	106	20	●	
43040830	8,3	125	75	9	●		43041750	17,5	178	112	20	●	
43040840	8,4	125	75	9	●		43041800	18	178	112	20	●	
43040850	8,5	125	75	9	●		43041850	18,5	184	118	20	●	
43040860	8,6	131	81	9	●		43041900	19	194	118	25	●	
43040870	8,7	131	81	9	●		43041950	19,5	201	125	25	●	
43040880	8,8	131	81	9	●		43042000	20	201	125	25	●	
43040890	8,9	131	81	9	●		43042050	20,5	204	128	25	●	
43040900	9	131	81	9	●		43042100	21	204	128	25	●	
43040910	9,1	131	81	10	●		43042150	21,5	208	132	25	●	
43040920	9,2	131	81	10	●		43042200	22	208	132	25	●	
43040930	9,3	131	81	10	●		43042250	22,5	212	136	25	●	
43040940	9,4	131	81	10	●		43042300	23	212	136	25	●	
43040950	9,5	131	81	10	●		43042350	23,5	212	136	25	●	
43040960	9,6	137	87	10	●		43042400	24	220	140	32	●	
43040970	9,7	137	87	10	●		43042450	24,5	220	140	32	●	
43040980	9,8	137	87	10	●		43042500	25	220	140	32	●	
43040990	9,9	137	87	10	●		43042550	25,5	225	145	32	●	
43041000	10	137	87	10	●		43042600	26	225	145	32	●	
43041010	10,1	144	87	11	●		43042650	26,5	225	145	32	●	
43041020	10,2	144	87	11	●		43042700	27	230	150	32	●	
43041030	10,3	144	87	11	●		43042800	28	230	150	32	●	
43041040	10,4	144	87	11	●		43042900	29	235	155	32	●	
43041050	10,5	144	87	11	●		43043000	30	235	155	32	●	
43041060	10,6	144	87	11	●		43043100	31	240	160	32	●	
43041070	10,7	151	94	11	●		43043200	32	245	165	32	●	

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◎	◎	◎	◎	◎				◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	○	○	○	○	◎	○	○	○

HSS-Co
- High performance
- HSS extra long drill
- Non step drilling 10 D, 15 D, 20 D
- Without internal coolant

HSS-Co
- High performance
- HSS extra lange Bohrer
- Ohne Step 10 D, 15 D, 20 D
- Ohne innerer Kühlmittelzuführ

HSS-Co
- Alta prestazione
- HSS extra lunga
- Foratura continua 10 D, 15 D, 20 D
- senza fori di lubrificazione

HSS-Co
- Haute performance
- Foret HSSE revêtu extra long.
- Forage en continu 10 D, 15 D, 20 D
- Sans arrosage central

HSS-Co
- Yüksek performans
- HSS ekstra uzun matkap
- Ekstra uzun 10 D, 15 D, 20 D kesintisiz delme
- İçten soğutma yok

HSS-Co
- High performance
- HSS ekstra lang
- Uden udspåning i 10 D, 15 D, 20 D
- Uden kølekanaler

HSS-Co
- High performance
- HSS extra långa borr
- Step fri borrning 10D, 15D, 20D
- Utan Kylkanaler

HSS-Co
- Altas prestaciones
- Broca HSS extra larga.
- Taladrado ininterrumpido 10 D, 15 D, 20 D
- Sin agujeros de refrigeración

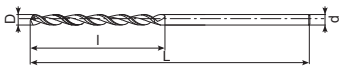
HSS-Co
- Высокая производительность
- Сверхдлинное сверло из быстрорежущей стали
- Непрерывное сверление глубиной 10 D, 15 D, 20 D
- Без внутреннего охлаждения

HSS-Co
- Wysoka wydajność
- Wiertło HSS extra długie
- wiercenie bez odwiórowywania - non step 10 D, 15 D, 20 D
- Bez wewnętrznego chłodzenia

GO TO LIVE STOCK CHECK

HSS Co

HSS-Co | WXL | 40° | h7 | | 120° | h8 | R D≥3 | X D<3 | min⁻¹ C.116





	EDP	D	L	l	d	Stock	Price
10 XD	8622816	1,6	75	26	1,6	●	
	8622818	1,8	75	26	1,8	●	
	8622820	2	75	26	2	●	
	8622821	2,1	75	33	2,1	●	
	8622822	2,2	75	33	2,2	●	
	8622823	2,3	75	33	2,3	●	
	8622824	2,4	75	33	2,4	●	
	8622825	2,5	75	33	2,5	●	
	8622826	2,6	90	40	2,6	●	
	8622827	2,7	90	40	2,7	●	
	8622828	2,8	90	40	2,8	●	
	8622829	2,9	90	40	2,9	●	
	8622830	3	90	40	3	●	
	8622831	3,1	100	45	3,1	●	
	8622832	3,2	100	45	3,2	●	
	8622833	3,3	100	45	3,3	●	
	8622834	3,4	100	50	3,4	●	
	8622835	3,5	100	50	3,5	●	
	8622836	3,6	100	50	3,6	●	
	8622837	3,7	100	50	3,7	●	
	8622838	3,8	100	50	3,8	●	
	8622839	3,9	100	50	3,9	●	
	8622840	4	100	50	4	●	
	8622841	4,1	115	55	4,1	●	
	8622842	4,2	115	55	4,2	●	
	8622843	4,3	115	60	4,3	●	
	8622844	4,4	115	60	4,4	●	
	8622845	4,5	115	60	4,5	●	
	8622846	4,6	115	60	4,6	●	
	8622847	4,7	115	60	4,7	●	
	8622848	4,8	115	65	4,8	●	
	8622849	4,9	115	65	4,9	●	
	8622850	5	115	65	5	●	
	8622851	5,1	128	70	5,1	●	
	8622852	5,2	128	70	5,2	●	
	8622853	5,3	128	70	5,3	●	
	8622854	5,4	128	78	5,4	●	
	8622855	5,5	128	78	5,5	●	
	8622856	5,6	128	78	5,6	●	
	8622857	5,7	128	78	5,7	●	
	8622858	5,8	128	78	5,8	●	
	8622859	5,9	128	78	5,9	●	
	8622860	6	128	78	6	●	
	8622861	6,1	140	78	6,1	●	
	8622862	6,2	140	87	6,2	●	
	8622863	6,3	140	87	6,3	●	
	8622864	6,4	140	87	6,4	●	
	8622865	6,5	140	87	6,5	●	
	8622866	6,6	140	87	6,6	●	
	8622867	6,7	140	87	6,7	●	
	8622868	6,8	140	90	6,8	●	
	8622869	6,9	140	90	6,9	●	

	EDP	D	L	l	d	Stock	Price
10 XD	8622870	7	140	90	7	●	
	8622871	7,1	155	100	7,1	●	
	8622872	7,2	155	100	7,2	●	
	8622873	7,3	155	100	7,3	●	
	8622874	7,4	155	100	7,4	●	
	8622875	7,5	155	100	7,5	●	
	8622876	7,6	155	105	7,6	●	
	8622877	7,7	155	105	7,7	●	
	8622878	7,8	155	105	7,8	●	
	8622879	7,9	155	105	7,9	●	
	8622880	8	155	105	8	●	
	8622881	8,1	165	110	8,1	●	
	8622882	8,2	165	110	8,2	●	
	8622883	8,3	165	110	8,3	●	
	8622884	8,4	165	110	8,4	●	
	8622885	8,5	165	110	8,5	●	
	8622886	8,6	165	115	8,6	●	
	8622887	8,7	165	115	8,7	●	
	8622888	8,8	165	115	8,8	●	
	8622889	8,9	165	115	8,9	●	
	8622890	9	165	115	9	●	
	8622891	9,1	190	125	9,1	●	
	8622892	9,2	190	125	9,2	●	
	8622893	9,3	190	125	9,3	●	
	8622894	9,4	190	125	9,4	●	
	8622895	9,5	190	125	9,5	●	
	8622896	9,6	190	130	9,6	●	
	8622897	9,7	190	130	9,7	●	
	8622898	9,8	190	130	9,8	●	
	8622899	9,9	190	130	9,9	●	
	8622900	10	190	130	10	●	
	8622901	10,1	205	140	10,1	●	
	8622902	10,2	205	140	10,2	●	
	8622903	10,3	205	140	10,3	●	
	8622904	10,4	205	140	10,4	●	
	8622905	10,5	205	140	10,5	●	
	8622906	10,6	205	145	10,6	●	
	8622907	10,7	205	145	10,7	●	
	8622908	10,8	205	145	10,8	●	
	8622909	10,9	205	145	10,9	●	
	8622910	11	205	145	11	●	
	8622911	11,1	215	155	11,1	●	
	8622912	11,2	215	155	11,2	●	
	8622913	11,3	215	155	11,3	●	
	8622914	11,4	215	155	11,4	●	
	8622915	11,5	215	155	11,5	●	
	8622916	11,6	215	155	11,6	●	
	8622917	11,7	215	155	11,7	●	
	8622918	11,8	215	155	11,8	●	
	8622919	11,9	215	155	11,9	●	
	8622920	12	215	155	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎					
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎			◎			

● Delivery from stock
○ Available on short notice

HSS-Co
- High performance
- HSS extra long drill
- Non step drilling 10 D, 15 D, 20 D
- Without internal coolant

HSS-Co
- High performance
- HSS extra lange Bohrer
- Ohne Step 10 D, 15 D, 20 D
- Ohne innerer Kühlmittelzuführ

HSS-Co
- Alta prestazione
- HSS extra lunga
- Foratura continua 10 D, 15 D, 20 D
- senza fori di lubrificazione

HSS-Co
- Haute performance
- Foret HSSE revêtu extra long.
- Forage en continu 10 D, 15 D, 20 D
- Sans arrosage central

HSS-Co
- Yüksek performans
- HSS ekstra uzun matkap
- Ekstra uzun 10 D, 15 D, 20 D kesintisiz delme
- İçten soğutma yok

HSS-Co
- High performance
- HSS ekstra lang
- Uden udspåning i 10 D, 15 D, 20 D
- Uden kølekanaler

HSS-Co
- High performance
- HSS extra långa borr
- Step fri borrning 10D, 15D, 20D
- Utan Kylkanaler

HSS-Co
- Altas prestaciones
- Broca HSS extra larga.
- Taladrado ininterrumpido 10 D, 15 D, 20 D
- Sin agujeros de refrigeración

HSS-Co
- Высокая производительность
- Сверхдлинное сверло из быстрорежущей стали
- Непрерывное сверление глубиной 10 D, 15 D, 20 D
- Без внутреннего охлаждения

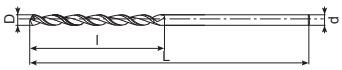
HSS-Co
- Wysoka wydajność
- Wiertło HSS extra długie
- wiercenie bez odwiórowywania - non step 10 D, 15 D, 20 D
- Bez wewnętrznego chłodzenia

GO TO LIVE STOCK CHECK

HSS Co

HSS Co







15 XD

EDP	D	L	l	d	Stock	Price
8623016	1,6	70	30	1,6	●	
8623018	1,8	75	34	1,8	●	
8623020	2	80	36	2	●	
8623021	2,1	80	38	2,1	●	
8623022	2,2	80	40	2,2	●	
8623023	2,3	85	42	2,3	●	
8623024	2,4	85	44	2,4	●	
8623025	2,5	85	46	2,5	●	
8623026	2,6	100	48	2,6	●	
8623027	2,7	100	50	2,7	●	
8623028	2,8	100	50	2,8	●	
8623029	2,9	105	54	2,9	●	
8623030	3	105	54	3	●	
8623031	3,1	110	56	3,1	●	
8623032	3,2	110	58	3,2	●	
8623033	3,3	110	60	3,3	●	
8623034	3,4	115	62	3,4	●	
8623035	3,5	115	64	3,5	●	
8623036	3,6	115	66	3,6	●	
8623037	3,7	120	68	3,7	●	
8623038	3,8	120	70	3,8	●	
8623039	3,9	120	70	3,9	●	
8623040	4	120	72	4	●	
8623041	4,1	135	74	4,1	●	
8623042	4,2	135	76	4,2	●	
8623043	4,3	140	78	4,3	●	
8623044	4,4	140	80	4,4	●	
8623045	4,5	140	82	4,5	●	
8623046	4,6	145	84	4,6	●	
8623047	4,7	145	86	4,7	●	
8623048	4,8	145	86	4,8	●	
8623049	4,9	150	88	4,9	●	
8623050	5	150	90	5	●	
8623051	5,1	150	92	5,1	●	

15 XD

EDP	D	L	l	d	Stock	Price
8623052	5,2	155	94	5,2	●	
8623053	5,3	155	96	5,3	●	
8623054	5,4	155	98	5,4	●	
8623055	5,5	155	100	5,5	●	
8623056	5,6	160	102	5,6	●	
8623057	5,7	165	104	5,7	●	
8623058	5,8	165	106	5,8	●	
8623060	6	170	108	6	●	
8623062	6,2	170	112	6,2	●	
8623063	6,3	175	114	6,3	●	
8623065	6,5	200	118	6,5	●	
8623066	6,6	200	120	6,6	●	
8623068	6,8	200	124	6,8	●	
8623069	6,9	200	126	6,9	●	
8623070	7	200	126	7	●	
8623071	7,1	200	128	7,1	●	
8623075	7,5	205	136	7,5	●	
8623080	8	215	144	8	●	
8623081	8,1	215	146	8,1	●	
8623082	8,2	220	148	8,2	●	
8623085	8,5	225	154	8,5	●	
8623086	8,6	225	156	8,6	●	
8623088	8,8	230	160	8,8	●	
8623090	9	230	162	9	●	
8623093	9,3	240	168	9,3	●	
8623095	9,5	240	172	9,5	●	
8623097	9,7	245	176	9,7	●	
8623098	9,8	245	178	9,8	●	
8623100	10	250	180	10	●	
8623105	10,5	270	190	10,5	●	
8623110	11	280	200	11	●	
8623115	11,5	290	208	11,5	●	
8623118	11,8	295	214	11,8	●	
8623120	12	300	216	12	●	

20 XD

EDP	D	L	l	d	Stock	Price
8623216	1,6	85	38	1,6	●	
8623218	1,8	85	42	1,8	●	
8623220	2	85	46	2	●	
8623221	2,1	90	50	2,1	●	
8623222	2,2	90	52	2,2	●	
8623223	2,3	95	54	2,3	●	
8623224	2,4	95	56	2,4	●	
8623225	2,5	100	58	2,5	●	
8623226	2,6	110	60	2,6	●	
8623227	2,7	115	64	2,7	●	
8623228	2,8	115	66	2,8	●	
8623229	2,9	120	68	2,9	●	
8623230	3	120	70	3	●	
8623231	3,1	125	72	3,1	●	
8623232	3,2	125	74	3,2	●	
8623233	3,3	125	76	3,3	●	
8623234	3,4	130	80	3,4	●	
8623235	3,5	130	82	3,5	●	
8623237	3,7	135	86	3,7	●	
8623238	3,8	140	88	3,8	●	
8623240	4	140	92	4	●	
8623241	4,1	155	96	4,1	●	
8623242	4,2	155	98	4,2	●	
8623243	4,3	160	100	4,3	●	

20 XD

EDP	D	L	l	d	Stock	Price
8623245	4,5	165	104	4,5	●	
8623246	4,6	165	106	4,6	●	
8623248	4,8	170	112	4,8	●	
8623250	5	175	116	5	●	
8623251	5,1	180	118	5,1	●	
8623252	5,2	180	120	5,2	●	
8623255	5,5	185	128	5,5	●	
8623257	5,7	190	132	5,7	●	
8623258	5,8	200	134	5,8	●	
8623260	6	200	138	6	●	
8623263	6,3	200	146	6,3	●	
8623265	6,5	225	150	6,5	●	
8623268	6,8	225	158	6,8	●	
8623269	6,9	230	160	6,9	●	
8623270	7	230	162	7	●	
8623275	7,5	245	174	7,5	●	
8623280	8	255	184	8	●	
8623281	8,1	255	188	8,1	●	
8623282	8,2	260	190	8,2	●	
8623285	8,5	265	196	8,5	●	
8623290	9	275	208	9	●	
8623300	10	300	230	10	●	
8623310	11	350	254	11	●	
8623320	12	350	276	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎					
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎			◎			

EX-GDXL

HSS-Co
- High performance
- HSS extra long drill for general applications

HSS-Co
- High performance
- Extra langer Bohrer, für allgemeine Anwendungen

HSS-Co
- Alta prestazione
- Extra lunga per applicazioni generali

HSS-Co
- Haute performance
- Extra long, pour applications universelles

HSS-Co
- Yüksek performans
- HSS genel uygulamar için extra uzun

HSS-Co
- High performance
- HSS ekstra lang, generelt brug

HSS-Co
- High performance
- Extra långa borr, allround

HSS-Co
- Altas prestaciones
- Broca extra-larga para aplicaciones generales

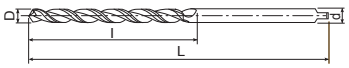
HSS-Co
- Высокая производительность
- Особо длинное, общего назначения

HSS-Co
- Wysoka wydajność
- Wiertło HSS extra długie do zastosowań ogólnych

GO TO LIVE STOCK CHECK

HSS Co







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8590520	2	100	40	2	○		8591542	4,2	150	80	4,2	○	
8591020	2	100	50	2	○		8592042	4,2	200	100	4,2	○	
8590521	2,1	100	40	2,1	○		8591043	4,3	100	60	4,3	○	
8591021	2,1	100	50	2,1	○		8591543	4,3	150	80	4,3	○	
8590522	2,2	100	40	2,2	○		8592043	4,3	200	100	4,3	○	
8591022	2,2	100	50	2,2	○		8591044	4,4	100	60	4,4	○	
8590523	2,3	100	40	2,3	○		8591544	4,4	150	80	4,4	○	
8591023	2,3	100	50	2,3	○		8592044	4,4	200	100	4,4	○	
8590524	2,4	100	40	2,4	○		8591045	4,5	100	60	4,5	○	
8591024	2,4	100	50	2,4	○		8591545	4,5	150	80	4,5	○	
8591025	2,5	100	50	2,5	○		8592045	4,5	200	100	4,5	○	
8591026	2,6	100	50	2,6	○		8591046	4,6	100	60	4,6	○	
8591027	2,7	100	50	2,7	○		8591546	4,6	150	80	4,6	○	
8591028	2,8	100	50	2,8	○		8592046	4,6	200	100	4,6	○	
8591029	2,9	100	50	2,9	○		8591547	4,7	150	80	4,7	○	
8591030	3	100	55	3	○		8592047	4,7	200	100	4,7	○	
8591530	3	150	75	3	○		8591548	4,8	150	80	4,8	○	
8592030	3	200	100	3	○		8592048	4,8	200	100	4,8	○	
8591031	3,1	100	55	3,1	○		8591549	4,9	150	80	4,9	○	
8591531	3,1	150	75	3,1	○		8592049	4,9	200	100	4,9	○	
8592031	3,1	200	100	3,1	○		8591550	5	150	85	5	○	
8591032	3,2	100	55	3,2	○		8592050	5	200	105	5	○	
8591532	3,2	150	75	3,2	○		8592550	5	250	130	5	○	
8592032	3,2	200	100	3,2	○		8604050	5	250	160	5	○	
8591033	3,3	100	55	3,3	○		8591551	5,1	150	85	5,1	○	
8591533	3,3	150	75	3,3	○		8592051	5,1	200	105	5,1	○	
8592033	3,3	200	100	3,3	○		8604051	5,1	250	160	5,1	○	
8591034	3,4	100	55	3,4	○		8591552	5,2	150	85	5,2	○	
8591534	3,4	150	75	3,4	○		8592052	5,2	200	105	5,2	○	
8592034	3,4	200	100	3,4	○		8604052	5,2	250	160	5,2	○	
8591035	3,5	100	55	3,5	○		8591553	5,3	150	85	5,3	○	
8591535	3,5	150	75	3,5	○		8592053	5,3	200	105	5,3	○	
8592035	3,5	200	100	3,5	○		8604053	5,3	250	160	5,3	○	
8591036	3,6	100	55	3,6	○		8591554	5,4	150	85	5,4	○	
8591536	3,6	150	75	3,6	○		8592054	5,4	200	105	5,4	○	
8592036	3,6	200	100	3,6	○		8604054	5,4	250	160	5,4	○	
8591037	3,7	100	55	3,7	○		8591555	5,5	150	85	5,5	○	
8591537	3,7	150	75	3,7	○		8592055	5,5	200	105	5,5	○	
8592037	3,7	200	100	3,7	○		8604055	5,5	250	160	5,5	○	
8591038	3,8	100	55	3,8	○		8591556	5,6	150	85	5,6	○	
8591538	3,8	150	75	3,8	○		8592056	5,6	200	105	5,6	○	
8592038	3,8	200	100	3,8	○		8604056	5,6	250	160	5,6	○	
8591039	3,9	100	55	3,9	○		8591557	5,7	150	85	5,7	○	
8591539	3,9	150	75	3,9	○		8592057	5,7	200	105	5,7	○	
8592039	3,9	200	100	3,9	○		8604057	5,7	250	160	5,7	○	
8591040	4	100	60	4	○		8591558	5,8	150	85	5,8	○	
8591540	4	150	80	4	○		8592058	5,8	200	105	5,8	○	
8592040	4	200	100	4	○		8604058	5,8	250	160	5,8	○	
8591041	4,1	100	60	4,1	○		8591559	5,9	150	85	5,9	○	
8591541	4,1	150	80	4,1	○		8592059	5,9	200	105	5,9	○	
8592041	4,1	200	100	4,1	○		8604059	5,9	250	160	5,9	○	
8591042	4,2	100	60	4,2	○		8591560	6	150	90	6	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	○				
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎			○			

● Delivery from stock
○ Available on short notice

EX-GDXL

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- HSS extra long drill for general applications

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- High performance
- Extra langer Bohrer, für allgemeine Anwendungen

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- Extra lunga per applicazioni generali

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HSS-Co
- Yüksek performans
- HSS genel uygulamar için extra uzun

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- High performance
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HSS-Co
- High performance
- Extra långa borr, allround

HSS-Co
- Altas prestaciones
- Broca extra-larga para aplicaciones generales

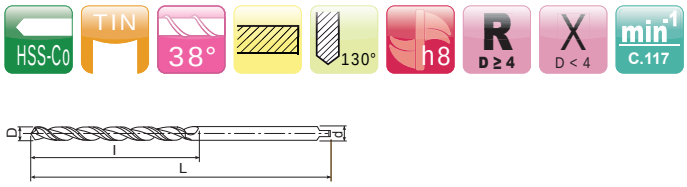
HSS-Co
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- Особо длинное, общего назначения

HSS-Co
- Wysoka wydajność
- Wiertło HSS extra długie do zastosowań ogólnych

GO TO LIVE STOCK CHECK

HSS Co

HSS Co





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8592060	6	200	110	6	○		8592073	7,3	200	110	7,3	○	
8604060	6	250	160	6	○		8604073	7,3	250	160	7,3	○	
8604260	6	300	200	6	○		8604273	7,3	300	200	7,3	○	
8591561	6,1	150	90	6,1	○		8591574	7,4	150	90	7,4	○	
8592061	6,1	200	110	6,1	○		8592074	7,4	200	110	7,4	○	
8604061	6,1	250	160	6,1	○		8604074	7,4	250	160	7,4	○	
8604261	6,1	300	200	6,1	○		8604274	7,4	300	200	7,4	○	
8591562	6,2	150	90	6,2	○		8591575	7,5	150	90	7,5	○	
8592062	6,2	200	110	6,2	○		8592075	7,5	200	110	7,5	○	
8604062	6,2	250	160	6,2	○		8604075	7,5	250	160	7,5	○	
8604262	6,2	300	200	6,2	○		8604275	7,5	300	200	7,5	○	
8591563	6,3	150	90	6,3	○		8592076	7,6	200	110	7,6	○	
8592063	6,3	200	110	6,3	○		8604076	7,6	250	160	7,6	○	
8604063	6,3	250	160	6,3	○		8604276	7,6	300	200	7,6	○	
8604263	6,3	300	200	6,3	○		8592077	7,7	200	110	7,7	○	
8591564	6,4	150	90	6,4	○		8604077	7,7	250	160	7,7	○	
8592064	6,4	200	110	6,4	○		8604277	7,7	300	200	7,7	○	
8604064	6,4	250	160	6,4	○		8592078	7,8	200	110	7,8	○	
8604264	6,4	300	200	6,4	○		8604078	7,8	250	160	7,8	○	
8591565	6,5	150	90	6,5	○		8604278	7,8	300	200	7,8	○	
8592065	6,5	200	110	6,5	○		8592079	7,9	200	110	7,9	○	
8604065	6,5	250	160	6,5	○		8604079	7,9	250	160	7,9	○	
8604265	6,5	300	200	6,5	○		8604279	7,9	300	200	7,9	○	
8591566	6,6	150	90	6,6	○		8592080	8	200	110	8	○	
8592066	6,6	200	110	6,6	○		8604080	8	250	160	8	○	
8604066	6,6	250	160	6,6	○		8604280	8	300	200	8	○	
8604266	6,6	300	200	6,6	○		8592081	8,1	200	115	8,1	○	
8591567	6,7	150	90	6,7	○		8604081	8,1	250	160	8,1	○	
8592067	6,7	200	110	6,7	○		8604281	8,1	300	200	8,1	○	
8604067	6,7	250	160	6,7	○		8592082	8,2	200	115	8,2	○	
8604267	6,7	300	200	6,7	○		8604082	8,2	250	160	8,2	○	
8591568	6,8	150	90	6,8	○		8604282	8,2	300	200	8,2	○	
8592068	6,8	200	110	6,8	○		8592083	8,3	200	115	8,3	○	
8604068	6,8	250	160	6,8	○		8604083	8,3	250	160	8,3	○	
8604268	6,8	300	200	6,8	○		8604283	8,3	300	200	8,3	○	
8591569	6,9	150	90	6,9	○		8592084	8,4	200	115	8,4	○	
8592069	6,9	200	110	6,9	○		8604084	8,4	250	160	8,4	○	
8604069	6,9	250	160	6,9	○		8604284	8,4	300	200	8,4	○	
8604269	6,9	300	200	6,9	○		8592085	8,5	200	115	8,5	○	
8591570	7	150	90	7	○		8604085	8,5	250	160	8,5	○	
8592070	7	200	110	7	○		8604285	8,5	300	200	8,5	○	
8604070	7	250	160	7	○		8592086	8,6	200	115	8,6	○	
8604270	7	300	200	7	○		8604086	8,6	250	160	8,6	○	
8591571	7,1	150	90	7,1	○		8604286	8,6	300	200	8,6	○	
8592071	7,1	200	110	7,1	○		8592087	8,7	200	115	8,7	○	
8604071	7,1	250	160	7,1	○		8604087	8,7	250	160	8,7	○	
8604271	7,1	300	200	7,1	○		8604287	8,7	300	200	8,7	○	
8591572	7,2	150	90	7,2	○		8592088	8,8	200	115	8,8	○	
8592072	7,2	200	110	7,2	○		8604088	8,8	250	160	8,8	○	
8604072	7,2	250	160	7,2	○		8604288	8,8	300	200	8,8	○	
8604272	7,2	300	200	7,2	○		8592089	8,9	200	115	8,9	○	
8591573	7,3	150	90	7,3	○		8604089	8,9	250	160	8,9	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	○				
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎			○			

● Delivery from stock
○ Available on short notice

EX-GDXL

HSS-Co
- High performance
- HSS extra long drill for general applications

HSS-Co
- High performance
- Extra langer Bohrer, für allgemeine Anwendungen

HSS-Co
- Alta prestazione
- Extra lunga per applicazioni generali

HSS-Co
- Haute performance
- Extra long, pour applications universelles

HSS-Co
- Yüksek performans
- HSS genel uygulamar için extra uzun

HSS-Co
- High performance
- HSS ekstra lang, generelt brug

HSS-Co
- High performance
- Extra långa borr, allround

HSS-Co
- Altas prestaciones
- Broca extra-larga para aplicaciones generales

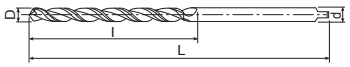
HSS-Co
- Высокая производительность
- Особо длинное, общего назначения

HSS-Co
- Wysoka wydajność
- Wiertło HSS extra długie do zastosowań ogólnych

GO TO LIVE STOCK CHECK

HSS Co

HSS-Co | TIN | 38° | 130° | h8 | R D≥4 | X D<4 | min⁻¹ C.117





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8604289	8,9	300	200	8,9	○		8592107	10,7	200	120	10,7	○	
8592090	9	200	115	9	○		8604107	10,7	250	160	10,7	○	
8604090	9	250	160	9	○		8604307	10,7	300	200	10,7	○	
8604290	9	300	200	9	○		8592108	10,8	200	120	10,8	○	
8592091	9,1	200	115	9,1	○		8604108	10,8	250	160	10,8	○	
8604091	9,1	250	160	9,1	○		8604308	10,8	300	200	10,8	○	
8604291	9,1	300	200	9,1	○		8592109	10,9	200	120	10,9	○	
8592092	9,2	200	115	9,2	○		8604109	10,9	250	160	10,9	○	
8604092	9,2	250	160	9,2	○		8604309	10,9	300	200	10,9	○	
8604292	9,2	300	200	9,2	○		8592110	11	200	120	11	○	
8592093	9,3	200	115	9,3	○		8604110	11	250	160	11	○	
8604093	9,3	250	160	9,3	○		8604310	11	300	200	11	○	
8604293	9,3	300	200	9,3	○		8592111	11,1	200	120	11,1	○	
8592094	9,4	200	115	9,4	○		8604111	11,1	250	160	11,1	○	
8604094	9,4	250	160	9,4	○		8604311	11,1	300	200	11,1	○	
8604294	9,4	300	200	9,4	○		8592112	11,2	200	120	11,2	○	
8592095	9,5	200	115	9,5	○		8604112	11,2	250	160	11,2	○	
8604095	9,5	250	160	9,5	○		8604312	11,2	300	200	11,2	○	
8604295	9,5	300	200	9,5	○		8592113	11,3	200	120	11,3	○	
8592096	9,6	200	115	9,6	○		8604113	11,3	250	160	11,3	○	
8604096	9,6	250	160	9,6	○		8604313	11,3	300	200	11,3	○	
8604296	9,6	300	200	9,6	○		8592114	11,4	200	120	11,4	○	
8592097	9,7	200	115	9,7	○		8604114	11,4	250	160	11,4	○	
8604097	9,7	250	160	9,7	○		8604314	11,4	300	200	11,4	○	
8604297	9,7	300	200	9,7	○		8592115	11,5	200	120	11,5	○	
8592098	9,8	200	115	9,8	○		8604115	11,5	250	160	11,5	○	
8604098	9,8	250	160	9,8	○		8604315	11,5	300	200	11,5	○	
8604298	9,8	300	200	9,8	○		8592116	11,6	200	120	11,6	○	
8592099	9,9	200	115	9,9	○		8604116	11,6	250	160	11,6	○	
8604099	9,9	250	160	9,9	○		8604316	11,6	300	200	11,6	○	
8604299	9,9	300	200	9,9	○		8592117	11,7	200	120	11,7	○	
8592100	10	200	120	10	○		8604117	11,7	250	160	11,7	○	
8604100	10	250	160	10	○		8604317	11,7	300	200	11,7	○	
8604300	10	300	200	10	○		8592118	11,8	200	120	11,8	○	
8592101	10,1	200	120	10,1	○		8604118	11,8	250	160	11,8	○	
8604101	10,1	250	160	10,1	○		8604318	11,8	300	200	11,8	○	
8604301	10,1	300	200	10,1	○		8592119	11,9	200	120	11,9	○	
8592102	10,2	200	120	10,2	○		8604119	11,9	250	160	11,9	○	
8604102	10,2	250	160	10,2	○		8604319	11,9	300	200	11,9	○	
8604302	10,2	300	200	10,2	○		8592120	12	200	120	12	○	
8592103	10,3	200	120	10,3	○		8604120	12	250	160	12	○	
8604103	10,3	250	160	10,3	○		8604320	12	300	200	12	○	
8604303	10,3	300	200	10,3	○		8592121	12,1	200	120	12,1	○	
8592104	10,4	200	120	10,4	○		8604121	12,1	250	160	12,1	○	
8604104	10,4	250	160	10,4	○		8604321	12,1	300	200	12,1	○	
8604304	10,4	300	200	10,4	○		8592122	12,2	200	120	12,2	○	
8592105	10,5	200	120	10,5	○		8604122	12,2	250	160	12,2	○	
8604105	10,5	250	160	10,5	○		8604322	12,2	300	200	12,2	○	
8604305	10,5	300	200	10,5	○		8592123	12,3	200	120	12,3	○	
8592106	10,6	200	120	10,6	○		8604123	12,3	250	160	12,3	○	
8604106	10,6	250	160	10,6	○		8604323	12,3	300	200	12,3	○	
8604306	10,6	300	200	10,6	○		8592124	12,4	200	120	12,4	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	○				
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎			○			

● Delivery from stock
○ Available on short notice

EX-GDXL

HSS-Co
- High performance
- HSS extra long drill for general applications

HSS-Co
- High performance
- Extra langer Bohrer, für allgemeine Anwendungen

HSS-Co
- Alta prestazione
- Extra lunga per applicazioni generali

HSS-Co
- Haute performance
- Extra long, pour applications universelles

HSS-Co
- Yüksek performans
- HSS genel uygulamar için extra uzun

HSS-Co
- High performance
- HSS ekstra lang, generelt brug

HSS-Co
- High performance
- Extra långa borr, allround

HSS-Co
- Altas prestaciones
- Broca extra-larga para aplicaciones generales

HSS-Co
- Высокая производительность
- Особо длинное, общего назначения

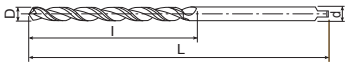
HSS-Co
- Wysoka wydajność
- Wiertło HSS extra długie do zastosowań ogólnych

GO TO LIVE STOCK CHECK

HSS Co

HSS Co







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8604124	12,4	250	160	12,4	○		8604327	12,7	300	200	12,7	○	
8604324	12,4	300	200	12,4	○		8592128	12,8	200	120	12,8	○	
8592125	12,5	200	120	12,5	○		8604128	12,8	250	160	12,8	○	
8604125	12,5	250	160	12,5	○		8604328	12,8	300	200	12,8	○	
8604325	12,5	300	200	12,5	○		8592129	12,9	200	120	12,9	○	
8592126	12,6	200	120	12,6	○		8604129	12,9	250	160	12,9	○	
8604126	12,6	250	160	12,6	○		8604329	12,9	300	200	12,9	○	
8604326	12,6	300	200	12,6	○		8592130	13	200	120	13	○	
8592127	12,7	200	120	12,7	○		8604130	13	250	160	13	○	
8604127	12,7	250	160	12,7	○		8604330	13	300	200	13	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
○	◎	◎	◎	○				
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
	◎	◎			○			

● Delivery from stock
○ Available on short notice

V-SDR

HSSE-V3
- High performance
- General purpose applications

HSSE-V3
- High performance
- Für allgemeine Bearbeitung

HSSE-V3
- Alta prestazione
- Per applicazioni generali

HSSE-V3
- Haute performance
- Pour applications générales

HSSE-V3
- Yüksek performans
- Genel kullanım uygulamaları

HSSE-V3
- High performance
- Til generelt brug

HSSE-V3
- High performance
- Allround bearbetning

HSSE-V3
- Altas prestaciones
- Para aplicaciones generales

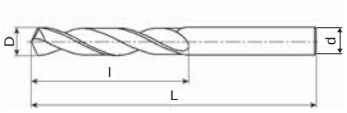
HSSE-V3
- Высокая производительность
- Общего назначения

HSSE-V3
- Wysoka wydajność
- Ogólnego zastosowania, uniwersalne

GO TO LIVE STOCK CHECK

HSSE V3







EDP	D	L	l	d	Stock	Price
8594020	2	49	24	2	●	
8594021	2,1	49	24	2,1	●	
8594022	2,2	53	27	2,2	●	
8594023	2,3	53	27	2,3	●	
8594024	2,4	57	30	2,4	●	
8594025	2,5	57	30	2,5	●	
8594026	2,6	57	30	2,6	●	
8594027	2,7	61	33	2,7	●	
8594028	2,8	61	33	2,8	●	
8594029	2,9	61	33	2,9	●	
8594030	3	61	33	3	●	
8594031	3,1	65	36	3,1	●	
8594032	3,2	65	36	3,2	●	
8594033	3,3	65	36	3,3	●	
8594034	3,4	70	39	3,4	●	
8594035	3,5	70	39	3,5	●	
8594036	3,6	70	39	3,6	●	
8594037	3,7	70	39	3,7	●	
8594038	3,8	75	43	3,8	●	
8594039	3,9	75	43	3,9	●	
8594040	4	75	43	4	●	
8594041	4,1	75	43	4,1	●	
8594042	4,2	75	43	4,2	●	
8594043	4,3	80	47	4,3	●	
8594044	4,4	80	47	4,4	●	
8594045	4,5	80	47	4,5	●	
8594046	4,6	80	47	4,6	●	
8594047	4,7	80	47	4,7	●	
8594048	4,8	86	52	4,8	●	
8594049	4,9	86	52	4,9	●	
8594050	5	86	52	5	●	
8594051	5,1	86	52	5,1	●	
8594052	5,2	86	52	5,2	●	
8594053	5,3	86	52	5,3	●	
8594054	5,4	93	57	5,4	●	
8594055	5,5	93	57	5,5	●	
8594056	5,6	93	57	5,6	●	
8594057	5,7	93	57	5,7	●	
8594058	5,8	93	57	5,8	●	
8594059	5,9	93	57	5,9	●	
8594060	6	93	57	6	●	
8594061	6,1	101	63	6,1	●	
8594062	6,2	101	63	6,2	●	
8594063	6,3	101	63	6,3	●	
8594064	6,4	101	63	6,4	●	
8594065	6,5	101	63	6,5	●	
8594066	6,6	101	63	6,6	●	
8594067	6,7	109	63	6,7	●	
8594068	6,8	109	69	6,8	●	
8594069	6,9	109	69	6,9	●	
8594070	7	109	69	7	●	
8594071	7,1	109	69	7,1	●	
8594072	7,2	109	69	7,2	●	
8594073	7,3	109	69	7,3	●	
8594074	7,4	109	69	7,4	●	
8594075	7,5	109	69	7,5	●	

EDP	D	L	l	d	Stock	Price
8594076	7,6	117	75	7,6	●	
8594077	7,7	117	75	7,7	●	
8594078	7,8	117	75	7,8	●	
8594079	7,9	117	75	7,9	●	
8594080	8	117	75	8	●	
8594081	8,1	117	75	8,1	●	
8594082	8,2	117	75	8,2	●	
8594083	8,3	117	75	8,3	●	
8594084	8,4	117	75	8,4	●	
8594085	8,5	117	75	8,5	●	
8594086	8,6	125	81	8,6	●	
8594087	8,7	125	81	8,7	●	
8594088	8,8	125	81	8,8	●	
8594089	8,9	125	81	8,9	●	
8594090	9	125	81	9	●	
8594091	9,1	125	81	9,1	●	
8594092	9,2	125	81	9,2	●	
8594093	9,3	125	81	9,3	●	
8594094	9,4	125	81	9,4	●	
8594095	9,5	125	81	9,5	●	
8594096	9,6	133	87	9,6	●	
8594097	9,7	133	87	9,7	●	
8594098	9,8	133	87	9,8	●	
8594099	9,9	133	87	9,9	●	
8594100	10	133	87	10	●	
8594101	10,1	133	87	10,1	●	
8594102	10,2	133	87	10,2	●	
8594103	10,3	133	87	10,3	●	
8594104	10,4	133	87	10,4	●	
8594105	10,5	133	87	10,5	●	
8594106	10,6	133	87	10,6	●	
8594107	10,7	142	94	10,7	●	
8594108	10,8	142	94	10,8	●	
8594109	10,9	142	94	10,9	●	
8594110	11	142	94	11	●	
8594111	11,1	142	94	11,1	●	
8594112	11,2	142	94	11,2	●	
8594113	11,3	142	94	11,3	●	
8594114	11,4	142	94	11,4	●	
8594115	11,5	142	94	11,5	●	
8594116	11,6	142	94	11,6	●	
8594117	11,7	142	94	11,7	●	
8594118	11,8	142	94	11,8	●	
8594119	11,9	151	101	11,9	●	
8594120	12	151	101	12	●	
8594121	12,1	151	101	12,1	●	
8594122	12,2	151	101	12,2	●	
8594123	12,3	151	101	12,3	●	
8594124	12,4	151	101	12,4	●	
8594125	12,5	151	101	12,5	●	
8594126	12,6	151	101	12,6	●	
8594127	12,7	151	101	12,7	●	
8594128	12,8	151	101	12,8	●	
8594129	12,9	151	101	12,9	●	
8594130	13	151	101	13	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	○	◎					
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
○	○	○		○	○			

● Delivery from stock
○ Available on short notice

ULTRA FX
- High performance
- For centering and chamfering

ULTRA FX
- High performance
- Zum Zentrieren und Fräsen

ULTRA FX
- Alta prestazione
- Per centratura e svasatura su centri di lavoro

ULTRA FX
- Haute performance
- A centrer et à chanfreiner

ULTRA FX
- Yüksek performans
- Merkezleme ve pah kırma takımı

ULTRA FX
- High performance
- Til centrering og rejfning

ULTRA FX
- High performance
- Til centrering och fasning

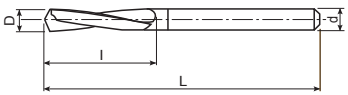
ULTRA FX
- Altas prestaciones
- Para puntear y chaflanar

ULTRA FX
- Высокая производительность
- Для центрования и снятия фасок

ULTRA FX
- Wysoka wydajność
- Do centrowania i fazowania

GO TO LIVE STOCK CHECK







EDP	D	L	l	d	Stock	Price
8561503	3	48	9	3	●	
8561504	4	54	12	4	●	
8561506	6	72	15	6	●	
8561508	8	81	20	8	●	
8561510	10	93	24	10	●	

EDP	D	L	l	d	Stock	Price
8561512	12	108	28	12	●	
8561516	16	118	41	16	●	
8561520	20	132	46	20	●	
8561525	25	151	53	25	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎	○			
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
◎	◎	◎	○		○	○	○	○

● Delivery from stock
○ Available on short notice

HYP-LDS

HY-PRO
- For centering and chamfering

HY-PRO
- Zum Zentrieren und Fräsen

HY-PRO
- Per centratura e svasatura su centri di lavoro

HY-PRO
- A centrer et à chanfreiner

HY-PRO
- Merkezleme ve pah kırma takımı

HY-PRO
- Til centrering og rejfning

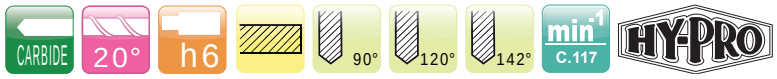
HY-PRO
- Til centrering och fasning

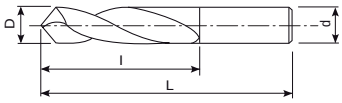
HY-PRO
- Para puntear y chaflanar

HY-PRO
- Для центрования и снятия фасок

HY-PRO
- Do centrowania i fazowania

GO TO LIVE STOCK CHECK







EDP	D	L	l	d	α	Stock	Price
20900300	3	35	8	3	90	●	
20900400	4	40	10	4	90	●	
20900600	6	50	16	6	90	●	
20900800	8	60	23	8	90	●	
20901000	10	70	24	10	90	●	
20901200	12	70	25	12	90	●	
20901600	16	80	30	16	90	●	
20902000	20	100	35	20	90	●	
21200300	3	35	8	3	120	●	
21200400	4	40	10	4	120	●	
21200600	6	50	16	6	120	●	
21200800	8	60	23	8	120	●	

EDP	D	L	l	d	α	Stock	Price
21201000	10	70	24	10	120	●	
21201200	12	70	25	12	120	●	
21201600	16	80	30	16	120	●	
21202000	20	100	35	20	120	●	
21420300	3	35	8	3	142	●	
21420400	4	40	10	4	142	●	
21420600	6	50	16	6	142	●	
21420800	8	60	23	8	142	●	
21421000	10	70	24	10	142	●	
21421200	12	70	25	12	142	●	
21421600	16	80	30	16	142	●	
21422000	20	100	35	20	142	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulama - Zastosowania								
C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	◎	○			
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
◎	◎	◎	○		○	○	○	○

● Delivery from stock
○ Available on short notice

(TIN)-NC-LDS

HSS
- For centering and chamfering

HSS
- Zum Zentrieren und Fräsen

HSS
- Per centratura e svasatura su centri di lavoro

HSS
- A centrer et à chanfreiner

HSS
- Merkezleme ve pah kırma takımı

HSS
- Til centrering og rejfning

HSS
- Til centrering och fasning

HSS
- Para puntear y chaflanar

HSS
- Для центрования и снятия фасок

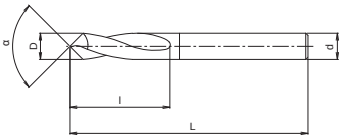
HSS
- Do centrowania i fazowania

GO TO LIVE STOCK CHECK

HSS

The TIN-NC-LDS with TIN coating increases tool live and allows higher speed.

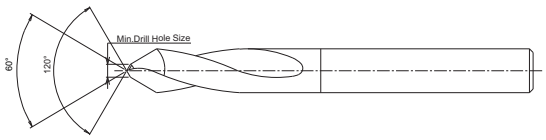






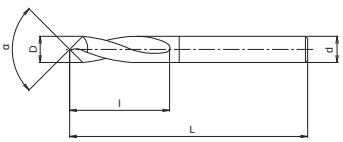
EDP	D	α	L	l	d	Drill hole size	Stock	Price
63703	3	60	48	11	3	1,5	●	
63603	3	90	48	11	3	1,1	●	
63653	3	120	48	11	3	-	●	
63704	4	60	54	15	4	1,7	●	
63604	4	90	54	15	4	1,3	●	
63654	4	120	54	15	4	-	●	
63706	6	60	72	20	6	1,9	●	
63606	6	90	72	20	6	1,5	●	
63656	6	120	72	20	6	-	●	
63708	8	60	81	26	8	1,9	●	
63608	8	90	81	26	8	1,6	●	
63658	8	120	81	26	8	-	●	

EDP	D	α	L	l	d	Drill hole size	Stock	Price
63710	10	60	93	30	10	2,1	●	
63610	10	90	93	30	10	2,1	●	
63660	10	120	93	30	10	-	●	
63712	12	60	108	36	12	2,1	●	
63612	12	90	108	36	12	2,1	●	
63662	12	120	108	36	12	-	●	
63616	16	90	118	41	16	3	●	
63618	20	90	132	53	20	3	●	
63620	25	90	151	60	25	3	●	



The (TIN)-NC-LDS with point angle 60° has a 120° point angle within the minimum drill hole diameter in order to prevent the chisel edges from crashing.





EDP	D	α	L	l	d	Drill hole size	Stock	Price
62903	3	90	48	11	3	1,1	●	
62923	3	120	48	11	3	-	●	
62943	3	130	48	11	3	-	●	
62904	4	90	54	15	4	1,3	●	
62924	4	120	54	15	4	-	●	
62944	4	130	54	15	4	-	●	
62906	6	90	72	20	6	1,5	●	
62926	6	120	72	20	6	-	●	
62946	6	130	72	20	6	-	●	
62908	8	90	81	26	8	1,6	●	
62928	8	120	81	26	8	-	●	
62948	8	130	81	26	8	-	●	
62910	10	90	93	30	10	2,1	●	
62930	10	120	93	30	10	-	●	

EDP	D	α	L	l	d	Drill hole size	Stock	Price
62950	10	130	93	30	10	-	●	
62912	12	90	108	36	12	2,1	●	
62932	12	120	108	36	12	-	●	
62952	12	130	108	36	12	-	●	
62916	16	90	118	41	16	3	●	
62936	16	120	118	41	16	-	●	
62956	16	130	118	41	16	-	●	
62918	20	90	132	53	20	3	●	
62938	20	120	132	53	20	-	●	
62958	20	130	132	53	20	-	●	
62920	25	90	151	60	25	3	●	
62940	25	120	151	60	25	-	●	
62960	25	130	151	60	25	-	●	

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C≤0.2%	0.25<C≤0.4%	C≥0.45%	SCM	~35 HRC	35~45 HRC	45~50 HRC	50~70 HRC	SUS
◎	◎	◎	◎	○				◎
SKD	GG	GGG	Cu	Al	AC	Ti	Tiall	Inc
◎	◎	◎	◎		◎	◎		

● Delivery from stock
○ Available on short notice

QUICK GUIDE FOR YOUR TRS FEED %

GO TO LIVE STOCK CHECK

Absolutely Necessary Knowledge

Material Type	Tool Supplier	Dia	Speed	Feed	Feed Rate		Efficiency	Hole Depth	Tool Life	Tool Life	Machine	Parts Name
		(mm)	(m/min)	(mm/min)	(mm/rev)	%xD	Improve	(mm)	(m)	Improve	Type	
Cast iron	Competitor A	14	91	749	0,36	2,5%	0%	58,42	75	0%	CAT50	Housing Cast Iron
	TRS-HO-5D	14	85	1.321	0,69	4,9%	176%		238	317%		

Material Type	Tool Supplier	Dia	Speed	Feed	Feed Rate		Efficiency	Hole Depth	Tool Life	Tool Life	Machine	Parts Name
		(mm)	(m/min)	(mm/min)	(mm/rev)	%xD	Improve	(mm)	(m)	Improve	Type	
Ductile Cast iron	Competitor A	8,8	70	1.000	0,40	4,5%	0%	20	48	0%	BT50	Rear Drum
	TRS-HO-5D	8,8	80,1	1.200	0,41	4,7%	120%		168	350%		

Material Type	Tool Supplier	Dia	Speed	Feed	Feed Rate		Efficiency	Hole Depth	Tool Life	Tool Life	Machine	Parts Name
		(mm)	(m/min)	(mm/min)	(mm/rev)	%xD	Improve	(mm)	(m)	Improve	Type	
Low Carbon Steel	Competitor A	13,1	129	686	0,23	1,7%	0%	50,8	66	0%	Lathe	-
	TRS-HO-5D	13,1	99	1.524	0,64	4,8%	222%		127	192%		

Material Type	Tool Supplier	Dia	Speed	Feed	Feed Rate		Efficiency	Hole Depth	Tool Life	Tool Life	Machine	Parts Name
		(mm)	(m/min)	(mm/min)	(mm/rev)	(%xD)	Improve	(mm)	(m)	Improve	Type	
Alloy Steel	Competitor A	10	101	732	0,23	2,3%	0%	38,1	51	0%	CAT50	-
	TRS-HO-5D	10	79	1.217	0,48	4,8%	166%		225	439%		

Our Experience recommends these Feed Rates

Grey Cast iron

	Vc	Fz/rev	Ave. Efficiency	Ave. Tool Life	Tool Life
	(m/min)	(%xD)	Improvement	(m)	Improvement
5mm to 8mm	100	4,8%	197%	158	167%
Over 8mm to 12mm	90	4,3%	195%	123	191%
Over 12mm to 16mm	90	4,4%	250%	131	162%
Over 16mm	90	4,1%	311%	161	240%
Average	92,5	4,4%	238%	143	190%

Ductile Cast iron

	Vc	Fz/rev	Ave. Efficiency	Ave. Tool Life	Tool Life
	(m/min)	(%xD)	Improvement	(m)	Improvement
5mm to 8mm	72	4,7%	257%	127	229%
Over 8mm to 12mm	86	4,6%	255%	159	126%
Over 12mm to 16mm	83	3,7%	169%	109	193%
Over 16mm	70	3,8%	279%	104	225%
Average	78	4,2%	240%	125	193%

Carbon Steel

	Vc	Fz/rev	Ave. Efficiency	Ave. Tool Life	Tool Life
	(m/min)	(%xD)	Improvement	(m)	Improvement
5mm to 8mm	93	4,4%	173%	103	225%
Over 8mm to 12mm	90	4,0%	241%	111	275%
Over 12mm	90	3,7%	141%	95	208%
Average	91	4,0%	185%	103	236%

Alloy Steel

	Vc	Fz/rev	Ave. Efficiency	Ave. Tool Life	Tool Life
	(m/min)	(%xD)	Improvement	(m)	Improvement
5mm to 8mm	79	4,3%	231%	83	172%
Over 8mm to 12mm	83	4,1%	252%	102	290%
Over 12mm	73	3,7%	218%	86	177%
Average	78	4,0%	234%	90	213%

HY-PRO-CARB

HY-PRO
- Multi-Purpose Centering and Chamfering Tool

HY-PRO
- Vielseitig einsetzbares Faswerkzeug und Zentrierwerkzeug

HY-PRO
- Utensile per scanalature, multiuso, per centri di foratura

HY-PRO
- Foret multi-fonction, pour pointage et chanfreinage

HY-PRO
- Çok amaçlı merkezleme ve pah kırmak için

HY-PRO
- Universalt platteværktøj til centrering og rejfning

HY-PRO
- Multifunktionsverktyg för centrering, fasning osv.

HY-PRO
- Herramienta multi-función para centrar y chaflanar

HY-PRO
- Универсальный инструмент для центрования и снятия фасок

HY-PRO
- Wielofunkcyjne narzędzie do fazowania i centrowania

GO TO LIVE STOCK CHECK

Multi-Purpose Centering and chamfering Tool.

min⁻¹ C.118

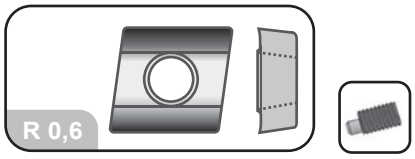
HY-PRO



EDP	Point Angle	D	L	l	d		Stock	Price
738015	90°	13,5	110	28	16	1	●	
738025	118°	16,15	110	28	16	1	●	
738055	90°	13,5	200	28	16	1	●	
738065	118°	16,15	200	28	16	1	●	

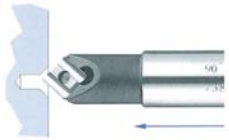
EDP	Type	Application		Stock	Price
73811000	NK1010	Aluminium, Cast Iron	10	●	
73812000	NK2020	Steel	10	●	
73801100	-	L-6 Replacement Screw	1	●	





EDP	Accesoires - Zubehör - Accesori - Accessoires Tilbehør - Tillbehør - Accesorios - Akkcecyapы	Stock	Price
73801600	K-3 Multi Driver for L-6, L-10 screws	●	

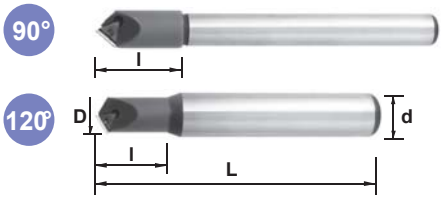


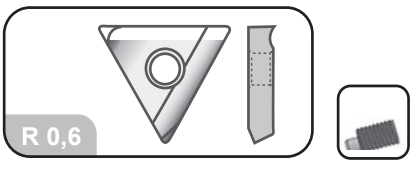




EDP	Point Angle	D	L	l	d		Stock	Price
738095	90°	22,5	130	30	20	1	●	
738096	120°	26,6	130	35	25	1	●	
738097	90°	22,5	200	30	20	1	●	
738098	120°	26,6	200	50	32	1	●	

EDP	Type	Application		Stock	Price
73819000	NK2020	For Steel	10	●	
73819100	NK1010	Cast & Aluminium	10	●	
73819011	NK6060	For Steel TiAlN	10	●	
73819111	NK8080	Cast & Aluminium TiAlN	10	●	
73801200	-	L-10 Replacement Screw	1	●	





EDP	Accesoires - Zubehör - Accesori - Accessoires Tilbehør - Tillbehør - Accesorios - Akkcecyapы		Sock	Price
73801600	K-3 Multi Driver for L-6, L-10 screws	1	●	

HY-PRO-CARB

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HY-PRO
- Vielseitig einsetzbares Faswerkzeug und Zentrierwerkzeug

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- Utensile per scanalature, multiuso, per centri di foratura

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- Foret multi-fonction, pour pointage et chanfreinage

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HY-PRO
- Wielofunkcyjne narzędzie do fazowania i centrowania

GO TO LIVE STOCK CHECK

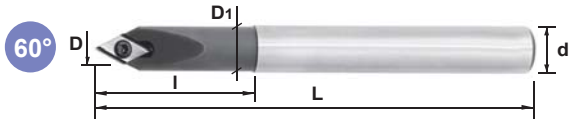
Multi-Purpose Centering and chamfering Tool.

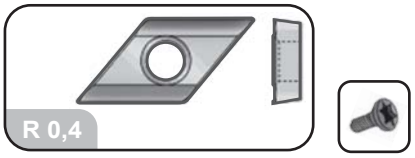
min¹ C.118 HY-PRO



EDP	Angle	D	D1	L	l	d		Stock	Price
738085	60°	12	15	150	55	16	1	●	

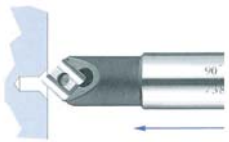
EDP	Type	Application		Stock	Price
73818005	NK1010-60	Aluminium, Cast Iron	10	●	
73801300	-	L-15 Replacement Screw	10	●	





EDP	Accesoires - Zubehör - Accesori - Accessoires Tilbehør - Tillbehör - Accesorios - Akkcecyapы		Stock	Price
73801700	N-6 Multi Driver for L-15 screw	1	●	



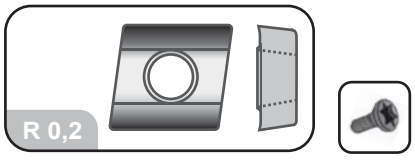




EDP	Point Angle	D	L	l	d		Stock	Price
738031	90°	9	105	33	10	1	●	
738036	90°	9	165	33	10	1	●	

EDP	Type	Application		Stock	Price
73813005	NK5050	Aluminium, Cast iron	10	●	
73801400	-	L-13 Replacement Screw	1	●	





EDP	Accesoires - Zubehör - Accesori - Accessoires Tilbehør - Tillbehør - Accesorios - Akkcecyapы		Stock	Price
73801500	N-5 Multi Driver for L-13 screw	1	●	

● Delivery from stock
○ Available on short notice

HY-PRO-CARB

HY-PRO
- 60° Multi-Purpose Chamfering tool

HY-PRO
- 60° Vielseitig einsetzbares Faswerkzeug

HY-PRO
- 60° Utensile per scanalature, multiuso

HY-PRO
- 60° Foret multi-fonction pour chanfreinage

HY-PRO
- 60° Çok amaçlı pah kırmak takımı

HY-PRO
- 60° Universalt platteværktøj til centering og rejfning

HY-PRO
- 60° för fasning

HY-PRO
- 60° Herramienta multi-función para chaflanar

HY-PRO
- 60° Универсальный инструмент для центрования и снятия фасок

HY-PRO
- 60° narzędzie wielofunkcyjne do fazowania

GO TO LIVE STOCK CHECK

Multi-Purpose Centering and chamfering Tool.

min⁻¹ C.118

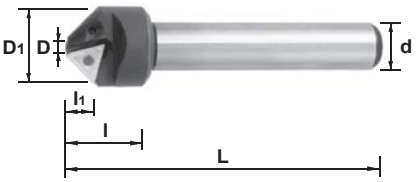
HY-PRO

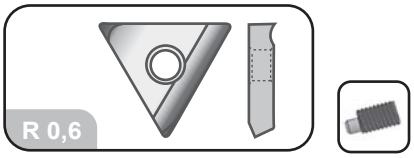


EDP	D	D1	L	l	l1	d		Stock	Price
738075	8	29,4	130	30	10,7	20	1	●	

EDP	Type	Application		Stock	Price
73817000	2001	General Purpose	10	●	
73801100	-	L-6 Replacement Screw	1	●	

90°





EDP	Accesoires - Zubehör - Accesori - Accessoires Tilbehør - Tillbehör - Accesorios - Akkcecyapы		Stock	Price
73801600	K-3 Multi Driver for L-6, L-10 screws	1	●	

PHOENIX
- High performance
- 2 flutes

PHOENIX
- High performance
- 2 Schneiden

PHOENIX
- Alta prestazione
- 2 denti

PHOENIX
- Haute performance
- 2 lèvres

PHOENIX
- Yüksek performans
- 2 Kanal

PHOENIX
- High performance
- 2 skær

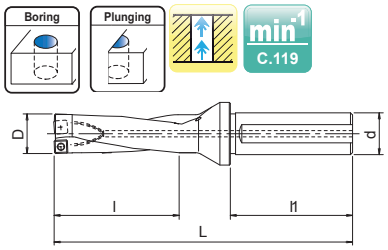
PHOENIX
- High performance
- 2 skär

PHOENIX
- Altas prestaciones
- 2 labios

PHOENIX
- Высокая производительность
- 2-зуба

PHOENIX
- Wysoka wydajność
- 2 ostrowe

GO TO LIVE STOCK CHECK

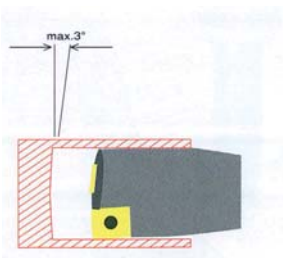


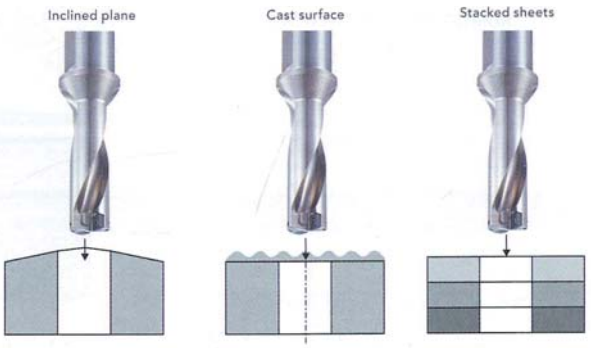


EDP	Designation	D	Applicable Inserts	L	l	l1	d	Stock	Price
7800100	PHP140FS20M04-3D	14	①	116	42	50	20	●	
7800101	PHP145FS20M04-3D	14,5	①	119	45	50	20	●	
7800102	PHP150FS20M04-3D	15	①	119	45	50	20	●	
7800103	PHP155FS20M04-3D	15,5	①	122	48	50	20	●	
7800104	PHP160FS20M04-3D	16	①	122	48	50	20	●	
7800105	PHP165FS20M05-3D	16,5	②	125	51	50	20	●	
7800106	PHP170FS20M05-3D	17	②	125	51	50	20	●	
7800107	PHP175FS25M05-3D	17,5	②	134	54	56	25	●	
7800108	PHP180FS25M05-3D	18	②	134	54	56	25	●	
7800109	PHP185FS25M06-3D	18,5	③	137	57	56	25	●	
7800110	PHP190FS25M06-3D	19	③	137	57	56	25	●	
7800111	PHP195FS25M06-3D	19,5	③	140	60	56	25	●	
7800112	PHP200FS25M06-3D	20	③	140	60	56	25	●	
7800113	PHP205FS25M06-3D	20,5	③	143	63	56	25	●	
7800114	PHP210FS25M07-3D	21	④	143	63	56	25	●	
7800115	PHP215FS25M07-3D	21,5	④	146	66	56	25	●	
7800116	PHP220FS25M07-3D	22	④	146	66	56	25	●	
7800117	PHP225FS25M07-3D	22,5	④	149	69	56	25	●	
7800118	PHP230FS25M07-3D	23	④	149	69	56	25	●	
7800119	PHP235FS32M07-3D	23,5	④	156	72	60	32	●	
7800120	PHP240FS32M07-3D	24	④	156	72	60	32	●	
7800121	PHP245FS32M08-3D	24,5	⑤	159	75	60	32	●	
7800122	PHP250FS32M08-3D	25	⑤	159	75	60	32	●	
7800123	PHP255FS32M08-3D	25,5	⑤	162	78	60	32	●	
7800124	PHP260FS32M08-3D	26	⑤	162	78	60	32	●	
7800125	PHP265FS32M08-3D	26,5	⑤	165	81	60	32	●	
7800126	PHP270FS32M08-3D	27	⑤	165	81	60	32	●	
7800127	PHP280FS32M08-3D	28	⑤	168	84	60	32	●	
7800128	PHP290FS32M10-3D	29	⑥	171	87	60	32	●	
7800130	PHP300FS32M10-3D	30	⑥	179	90	60	32	●	
7800131	PHP310FS32M10-3D	31	⑥	182	93	60	32	●	
7800132	PHP320FS32M10-3D	32	⑥	185	96	60	32	●	
7800133	PHP330FS40M10-3D	33	⑥	196	99	68	40	●	
7800134	PHP340FS40M10-3D	34	⑥	199	102	68	40	●	
7800135	PHP350FS40M12-3D	35	⑦	202	105	68	40	●	
7800136	PHP360FS40M12-3D	36	⑦	205	108	68	40	●	
7800137	PHP370FS40M12-3D	37	⑦	218	111	68	40	●	
7800138	PHP380FS40M12-3D	38	⑦	221	114	68	40	●	
7800139	PHP390FS40M12-3D	39	⑦	224	117	68	40	●	
7800140	PHP400FS40M12-3D	40	⑦	227	120	68	40	●	

Point angle shape

Point angle shape increases the machining range





● Delivery from stock
○ Available on short notice

PHP INSERT

PHOENIX
- Applicable insert for PHP drill

PHOENIX
- Wendeplatten, Bohrer PHP

PHOENIX
- Inserti applicabili per punta PHP

PHOENIX
- Choix de plaquettes pour le perçage

PHOENIX
- Php matkap için uygun uç

PHOENIX
- Anvendelige skær til PHP bor

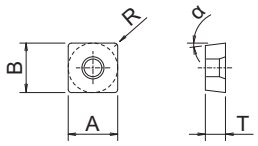
PHOENIX
- Utbytbara vändskär för korthålsborr

PHOENIX
- Plaquitas para broca PHP

PHOENIX
- Сменные пластинки для PHP сверла

PHOENIX
- Płytka, do wierteł PHP

GO TO LIVE STOCK CHECK





	Designation	No. of cutting edges	Application Diameter	Insert Size A X B	T	α	R	Grade of coated Materials XP9040	XP9025	Price
①	SCMT042204-DM	4	14,0 ~ 16,0	4,8 x 4,8	2,2	7°	0,4	7818001	7817001	
②	SCMT052404-DM	4	16,5 ~ 18,0	5,4 x 5,4	2,4	7°	0,4	7818002	7817002	
③	SCMT062806-DM	4	18,5 ~ 20,5	6,2 x 6,2	2,8	7°	0,6	7818003	7817003	
④	SCMT073206-DM	4	21,0 ~ 24,0	7,2 x 7,2	3,2	7°	0,6	7818004	7817004	
⑤	SCMT083608-DM	4	24,5 ~ 28,0	8,6 x 8,6	3,6	7°	0,8	7818005	7817005	
⑥	SCMT104208-DM	4	29,0 ~ 34,0	10 x 10	4,2	7°	0,8	7818006	7817006	
⑦	SCMT125008-DM	4	35,0 ~ 40,0	12,3 x 12,3	5	7°	0,8	7818007	7817007	

Order quantity - 10 pcs. in package

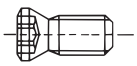
Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S
XP9040	DM	Coolant	◉	◉		◉	○
XC9025	DM	Coolant	○	○	◉	○	

◉ First choice
○ Second choice

DM: Center cutting Type Drill

Accessories - *Clamping Screw & Wrench*



Clamping Screw

EDP	Designation	Applicable Inserts	Stock	Price
7808100	FS18538 (Torx 6)	① SCMT042204-DM	●	
7808102	FS20540 (Torx 6)	② SCMT052404-DM	●	
7808104	FS22550 (Torx 7)	③ SCMT062806-DM	●	
7808108	FS25560 (Torx 8)	④ SCMT073206-DM	●	
7808110	FS30573 (Torx 8)	⑤ SCMT083608-DM	●	
7808111	FS35572 (Torx 15)	⑥ SCMT104208-DM	●	
7808113	FS45510 (Torx 20)	⑦ SCMT125008-DM	●	



Wrench

EDP	Designation	Applicable Inserts		Stock	Price
7808203	T6-D (Torx 6)	① SCMT042204-DM	② SCMT052404-DM	●	
7808204	T7-D (Torx 7)	③ SCMT062806-DM	-	●	
7808205	T8-D (Torx 8)	④ SCMT073206-DM	⑤ SCMT083608-DM	●	
7808208	T15-D (Torx 15)	⑥ SCMT104208-DM		●	
7808209	T20-D (Torx 20)	⑦ SCMT125008-DM		●	

PHOENIX
- High performance
- Drill
- 2 flutes

PHOENIX
- High performance
- Bohrer
- 2 Schneiden

PHOENIX
- Alta prestazione
- Foratura
- 2 denti

PHOENIX
- Haute performance
- Foret
- 2 lèvres

PHOENIX
- Yüksek performans
- Matkap
- 2 ağızlı

PHOENIX
- High performance
- Boring
- 2 skær

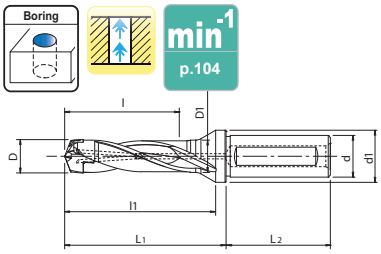
PHOENIX
- High performance
- Borr
- 2 skär

PHOENIX
- Altas prestaciones
- Taladrado
- 2 labios

PHOENIX
- Высокая производительность
- Сверло
- 2-зуба

PHOENIX
- Wysoka wydajność
- Wiertło
- 2-ostrzowe

GO TO LIVE STOCK CHECK





3D Type

EDP	Designation	Drilling Dia Min	Drilling Dia Max	Applicable Head	D	l	l1	L1	L2	d	d1	Applicable Driver	Stock	Price
7831015	PXDZ140-3D-113,5-16	14	14,49	①	13,5	43	63,4	69,9	48	16	20	D-1	●	
7831016	PXDZ145-3D-115,5-16	14,5	14,99	②	14	44,5	65,5	72	48	16	20	D-1	●	
7831017	PXDZ150-3D-119,5-20	15	15,99	③	14,5	46,5	67,1	73,6	50	20	25	D-1	●	
7831018	PXDZ160-3D-123,5-20	16	16,99	④	15,5	49,5	71,7	78,2	50	20	25	D-1	●	
7831019	PXDZ170-3D-128,5-20	17	17,99	⑤	16,5	52,5	76,8	83,3	50	20	25	D-1	●	
7831020	PXDZ180-3D-138,5-25	18	18,99	⑥	17,5	55,5	81,4	87,9	56	25	32	D-1	●	
7831021	PXDZ190-3D-142,5-25	19	19,99	⑦	18,5	58,5	85,4	91,9	56	25	32	D-2	●	
7831022	PXDZ200-3D-146,5-25	20	20,99	⑧	19,5	61,5	90,1	96,6	56	25	32	D-2	●	
7831023	PXDZ210-3D-154,5-32	21	21,99	⑨	20,5	64,5	94,7	101,2	60	32	42	D-2	●	
7831024	PXDZ220-3D-158,5-32	22	22,99	⑩	21,5	67,5	98,8	105,3	60	32	42	D-2	●	
7831025	PXDZ230-3D-162,5-32	23	23,99	⑪	22,5	70,5	103,4	109,9	60	32	42	D-3	●	
7831026	PXDZ240-3D-167,5-32	24	24,99	⑫	23,5	73,5	108,4	114,9	60	32	42	D-3	●	
7831027	PXDZ250-3D-170,5-32	25	25,99	⑬	24,5	76,5	112	118,5	60	32	42	D-3	●	

5D Type

EDP	Designation	Drilling Dia Min	Drilling Dia Max	Applicable Head	D	l	l1	L1	L2	d	d1	Applicable Driver	Stock	Price
7831065	PXDZ140-5D-141,5-16	14	14,49	①	13,5	71,25	91,4	97,9	48	16	20	D-1	●	
7831066	PXDZ145-5D-144,5-16	14,5	14,99	②	14	73,75	94,5	101	48	16	20	D-1	●	
7831067	PXDZ150-5D-149,5-20	15	15,99	③	14,5	77,5	97,1	103,6	50	20	25	D-1	●	
7831068	PXDZ160-5D-155,5-20	16	16,99	④	15,5	82,5	103,7	110,2	50	20	25	D-1	●	
7831069	PXDZ170-5D-162,5-20	17	17,99	⑤	16,5	87,5	110,8	117,3	50	20	25	D-1	●	
7831070	PXDZ180-5D-174,5-25	18	18,99	⑥	17,5	92,5	117,4	123,9	56	25	32	D-1	●	
7831071	PXDZ190-5D-180,5-25	19	19,99	⑦	18,5	97,5	123,4	129,9	56	25	32	D-2	●	
7831072	PXDZ200-5D-186,5-25	20	20,99	⑧	19,5	102,5	130,1	136,6	56	25	32	D-2	●	
7831073	PXDZ210-5D-196,5-32	21	21,99	⑨	20,5	107,5	136,7	143,2	60	32	42	D-2	●	
7831074	PXDZ220-5D-202,5-32	22	22,99	⑩	21,5	112,5	142,8	149,3	60	32	42	D-2	●	
7831075	PXDZ230-5D-208,5-32	23	23,99	⑪	22,5	117,5	149,4	155,9	60	32	42	D-3	●	
7831076	PXDZ240-5D-215,5-32	24	24,99	⑫	23,5	122,5	156,4	162,9	60	32	42	D-3	●	
7831077	PXDZ250-5D-220,5-32	25	25,99	⑬	24,5	127,5	162	168,5	60	32	42	D-3	●	

Accessories -*Driver*



Driver



	EDP	Designation	Sheet Thickness	Applicable Head	Stock	Price
D-1	7808282	PXDP1400-1899	1,5	①~⑥	●	
D-2	7808283	PXDP1900-2299	1,8	⑦~⑩	●	
D-3	7808284	PXDP2300-2699	2	⑪~⑬	●	

● Delivery from stock
○ Available on short notice

PXD APPLICABLE HEAD

PHOENIX
- Applicable head for steel

PHOENIX
- Kronenbohrer für Stahl

PHOENIX
- Testa applicabile per Acciaio

PHOENIX
- Têtes interchangeables pour aciers

PHOENIX
- Çelik için uygulanabilir kafa

PHOENIX
- Anvendelig i stål

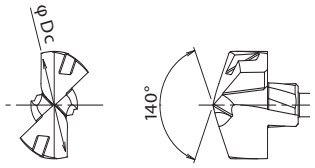
PHOENIX
- För stål

PHOENIX
- Aplicable cabeza para acero

PHOENIX
- Сменная режущая головка для стали

PHOENIX
- Grot wiertła PXD do stali

GO TO LIVE STOCK CHECK





(PC) For Steel

EDP		Designation	Dc	Grades	Stock	Price
7831140	①	PXDH1400-PC	14	XP3425	●	
		PXDH1410-PC	14,1	XP3425	✳	
		PXDH1420-PC	14,2	XP3425	✳	
		PXDH1430-PC	14,3	XP3425	✳	
		PXDH1440-PC	14,4	XP3425	✳	
7831145	②	PXDH1450-PC	14,5	XP3425	●	
		PXDH1460-PC	14,6	XP3425	✳	
		PXDH1470-PC	14,7	XP3425	✳	
		PXDH1480-PC	14,8	XP3425	✳	
		PXDH1490-PC	14,9	XP3425	✳	
7831351	②	PXDH1495-PC	14,95	XP3425	●	
7831150	③	PXDH1500-PC	15	XP3425	●	
		PXDH1510-PC	15,1	XP3425	✳	
		PXDH1520-PC	15,2	XP3425	✳	
7831352	③	PXDH1525-PC	15,25	XP3425	●	
		PXDH1530-PC	15,3	XP3425	✳	
		PXDH1540-PC	15,4	XP3425	✳	
7831155	③	PXDH1550-PC	15,5	XP3425	●	
		PXDH1560-PC	15,6	XP3425	✳	
		PXDH1570-PC	15,7	XP3425	✳	
		PXDH1580-PC	15,8	XP3425	✳	
		PXDH1590-PC	15,9	XP3425	✳	
7831160	④	PXDH1600-PC	16	XP3425	●	
		PXDH1610-PC	16,1	XP3425	✳	
		PXDH1620-PC	16,2	XP3425	✳	
		PXDH1630-PC	16,3	XP3425	✳	
		PXDH1640-PC	16,4	XP3425	✳	
7831165	④	PXDH1650-PC	16,5	XP3425	●	
		PXDH1660-PC	16,6	XP3425	✳	
7831167	④	PXDH1670-PC	16,7	XP3425	●	
		PXDH1680-PC	16,8	XP3425	✳	
		PXDH1690-PC	16,9	XP3425	✳	
7831170	⑤	PXDH1700-PC	17	XP3425	●	
		PXDH1710-PC	17,1	XP3425	✳	
		PXDH1720-PC	17,2	XP3425	✳	
7831353	⑤	PXDH1725-PC	17,25	XP3425	●	
		PXDH1730-PC	17,3	XP3425	✳	
		PXDH1740-PC	17,4	XP3425	✳	
7831175	⑤	PXDH1750-PC	17,5	XP3425	●	
		PXDH1760-PC	17,6	XP3425	✳	
		PXDH1770-PC	17,7	XP3425	✳	
		PXDH1780-PC	17,8	XP3425	✳	
		PXDH1790-PC	17,9	XP3425	✳	
7831180	⑥	PXDH1800-PC	18	XP3425	●	
		PXDH1810-PC	18,1	XP3425	✳	
		PXDH1820-PC	18,2	XP3425	✳	
		PXDH1830-PC	18,3	XP3425	✳	
		PXDH1840-PC	18,4	XP3425	✳	
7831185	⑥	PXDH1850-PC	18,5	XP3425	●	
		PXDH1860-PC	18,6	XP3425	✳	
7831187	⑥	PXDH1870-PC	18,7	XP3425	●	
		PXDH1880-PC	18,8	XP3425	✳	
		PXDH1890-PC	18,9	XP3425	✳	
7831190	⑦	PXDH1900-PC	19	XP3425	●	
		PXDH1910-PC	19,1	XP3425	✳	
		PXDH1920-PC	19,2	XP3425	✳	
7831354	⑦	PXDH1925-PC	19,25	XP3425	●	
		PXDH1930-PC	19,3	XP3425	✳	
		PXDH1940-PC	19,4	XP3425	✳	
7831195	⑦	PXDH1950-PC	19,5	XP3425	●	
		PXDH1960-PC	19,6	XP3425	✳	
		PXDH1970-PC	19,7	XP3425	✳	
		PXDH1980-PC	19,8	XP3425	✳	
		PXDH1990-PC	19,9	XP3425	✳	

EDP		Designation	Dc	Grades	Stock	Price
7831200	⑧	PXDH2000-PC	20	XP3425	●	
		PXDH2010-PC	20,1	XP3425	✳	
		PXDH2020-PC	20,2	XP3425	✳	
		PXDH2030-PC	20,3	XP3425	✳	
		PXDH2040-PC	20,4	XP3425	✳	
7831205	⑧	PXDH2050-PC	20,5	XP3425	●	
		PXDH2060-PC	20,6	XP3425	✳	
7831207	⑧	PXDH2070-PC	20,7	XP3425	●	
		PXDH2080-PC	20,8	XP3425	✳	
		PXDH2090-PC	20,9	XP3425	✳	
7831210	⑨	PXDH2100-PC	21	XP3425	●	
		PXDH2110-PC	21,1	XP3425	✳	
		PXDH2120-PC	21,2	XP3425	✳	
7831355	⑨	PXDH2125-PC	21,25	XP3425	●	
		PXDH2130-PC	21,3	XP3425	✳	
		PXDH2140-PC	21,4	XP3425	✳	
7831215	⑨	PXDH2150-PC	21,5	XP3425	●	
		PXDH2160-PC	21,6	XP3425	✳	
		PXDH2170-PC	21,7	XP3425	✳	
		PXDH2180-PC	21,8	XP3425	✳	
		PXDH2190-PC	21,9	XP3425	✳	
7831220	⑩	PXDH2200-PC	22	XP3425	●	
		PXDH2210-PC	22,1	XP3425	✳	
		PXDH2220-PC	22,2	XP3425	✳	
		PXDH2230-PC	22,3	XP3425	✳	
7831224	⑩	PXDH2240-PC	22,4	XP3425	●	
7831225	⑩	PXDH2250-PC	22,5	XP3425	●	
		PXDH2260-PC	22,6	XP3425	✳	
		PXDH2270-PC	22,7	XP3425	✳	
		PXDH2280-PC	22,8	XP3425	✳	
		PXDH2290-PC	22,9	XP3425	✳	
7831230	⑪	PXDH2300-PC	23	XP3425	●	
		PXDH2310-PC	23,1	XP3425	✳	
		PXDH2320-PC	23,2	XP3425	✳	
7831356	⑪	PXDH2325-PC	23,25	XP3425	●	
		PXDH2330-PC	23,3	XP3425	✳	
		PXDH2340-PC	23,4	XP3425	✳	
7831235	⑪	PXDH2350-PC	23,5	XP3425	●	
		PXDH2360-PC	23,6	XP3425	✳	
		PXDH2370-PC	23,7	XP3425	✳	
		PXDH2380-PC	23,8	XP3425	✳	
		PXDH2390-PC	23,9	XP3425	✳	
7831240	⑫	PXDH2400-PC	24	XP3425	●	
		PXDH2410-PC	24,1	XP3425	✳	
		PXDH2420-PC	24,2	XP3425	✳	
		PXDH2430-PC	24,3	XP3425	✳	
		PXDH2440-PC	24,4	XP3425	✳	
7831245	⑫	PXDH2450-PC	24,5	XP3425	●	
		PXDH2460-PC	24,6	XP3425	✳	
		PXDH2470-PC	24,7	XP3425	✳	
		PXDH2480-PC	24,8	XP3425	✳	
		PXDH2490-PC	24,9	XP3425	✳	
7831250	⑬	PXDH2500-PC	25	XP3425	●	
		PXDH2510-PC	25,1	XP3425	✳	
		PXDH2520-PC	25,2	XP3425	✳	
		PXDH2530-PC	25,3	XP3425	✳	
7831254	⑬	PXDH2540-PC	25,4	XP3425	●	

PXD APPLICABLE HEAD

PHOENIX
- Applicable head for iron

PHOENIX
- Kronenbohrer für Stahlguss

PHOENIX
- Testa applicabile per Ghisa

PHOENIX
- Têtes interchangeables pour fers

PHOENIX
- Demir için uygulanabilir kafa

PHOENIX
- Anvendelig i støbegods

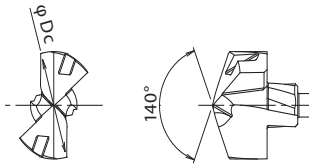
PHOENIX
- För gjutgods

PHOENIX
- Aplicable cabeza para fundición

PHOENIX
- Сменная режущая головка для чугуна

PHOENIX
- Grot wiertła PXD do żeliw

GO TO LIVE STOCK CHECK





(KC) For Cast Iron

EDP		Designation	Dc	Grades	Stock	Price
7831440	①	PXDH1400-KC	14	XP1425	●	
		PXDH1410-KC	14,1	XP1425	✳	
		PXDH1420-KC	14,2	XP1425	✳	
		PXDH1430-KC	14,3	XP1425	✳	
		PXDH1440-KC	14,4	XP1425	✳	
7831445	②	PXDH1450-KC	14,5	XP1425	●	
		PXDH1460-KC	14,6	XP1425	✳	
		PXDH1470-KC	14,7	XP1425	✳	
		PXDH1480-KC	14,8	XP1425	✳	
		PXDH1490-KC	14,9	XP1425	✳	
7831450	③	PXDH1500-KC	15	XP1425	●	
		PXDH1510-KC	15,1	XP1425	✳	
		PXDH1520-KC	15,2	XP1425	✳	
		PXDH1530-KC	15,3	XP1425	✳	
		PXDH1540-KC	15,4	XP1425	✳	
7831455	③	PXDH1550-KC	15,5	XP1425	●	
		PXDH1560-KC	15,6	XP1425	✳	
		PXDH1570-KC	15,7	XP1425	✳	
		PXDH1580-KC	15,8	XP1425	✳	
		PXDH1590-KC	15,9	XP1425	✳	
7831460	④	PXDH1600-KC	16	XP1425	●	
		PXDH1610-KC	16,1	XP1425	✳	
		PXDH1620-KC	16,2	XP1425	✳	
		PXDH1630-KC	16,3	XP1425	✳	
		PXDH1640-KC	16,4	XP1425	✳	
7831465	④	PXDH1650-KC	16,5	XP1425	●	
		PXDH1660-KC	16,6	XP1425	✳	
		PXDH1670-KC	16,7	XP1425	✳	
		PXDH1680-KC	16,8	XP1425	✳	
		PXDH1690-KC	16,9	XP1425	✳	
7831470	⑤	PXDH1700-KC	17	XP1425	●	
		PXDH1710-KC	17,1	XP1425	✳	
		PXDH1720-KC	17,2	XP1425	✳	
		PXDH1730-KC	17,3	XP1425	✳	
		PXDH1740-KC	17,4	XP1425	✳	
7831475	⑤	PXDH1750-KC	17,5	XP1425	●	
		PXDH1760-KC	17,6	XP1425	✳	
		PXDH1770-KC	17,7	XP1425	✳	
		PXDH1780-KC	17,8	XP1425	✳	
		PXDH1790-KC	17,9	XP1425	✳	
7831480	⑥	PXDH1800-KC	18	XP1425	●	
		PXDH1810-KC	18,1	XP1425	✳	
		PXDH1820-KC	18,2	XP1425	✳	
		PXDH1830-KC	18,3	XP1425	✳	
		PXDH1840-KC	18,4	XP1425	✳	
7831485	⑥	PXDH1850-KC	18,5	XP1425	●	
		PXDH1860-KC	18,6	XP1425	✳	
		PXDH1870-KC	18,7	XP1425	✳	
		PXDH1880-KC	18,8	XP1425	✳	
		PXDH1890-KC	18,9	XP1425	✳	
7831490	⑦	PXDH1900-KC	19	XP1425	●	
		PXDH1910-KC	19,1	XP1425	✳	
		PXDH1920-KC	19,2	XP1425	✳	
		PXDH1930-KC	19,3	XP1425	✳	
		PXDH1940-KC	19,4	XP1425	✳	
7831495	⑦	PXDH1950-KC	19,5	XP1425	●	
		PXDH1960-KC	19,6	XP1425	✳	
		PXDH1970-KC	19,7	XP1425	✳	
		PXDH1980-KC	19,8	XP1425	✳	
		PXDH1990-KC	19,9	XP1425	✳	

EDP		Designation	Dc	Grades	Stock	Price
7831500	⑧	PXDH2000-KC	20	XP1425	●	
		PXDH2010-KC	20,1	XP1425	✳	
		PXDH2020-KC	20,2	XP1425	✳	
		PXDH2030-KC	20,3	XP1425	✳	
		PXDH2040-KC	20,4	XP1425	✳	
7831505	⑧	PXDH2050-KC	20,5	XP1425	●	
		PXDH2060-KC	20,6	XP1425	✳	
		PXDH2070-KC	20,7	XP1425	✳	
		PXDH2080-KC	20,8	XP1425	✳	
		PXDH2090-KC	20,9	XP1425	✳	
7831510	⑨	PXDH2100-KC	21	XP1425	●	
		PXDH2110-KC	21,1	XP1425	✳	
		PXDH2120-KC	21,2	XP1425	✳	
		PXDH2130-KC	21,3	XP1425	✳	
		PXDH2140-KC	21,4	XP1425	✳	
7831515	⑨	PXDH2150-KC	21,5	XP1425	●	
		PXDH2160-KC	21,6	XP1425	✳	
		PXDH2170-KC	21,7	XP1425	✳	
		PXDH2180-KC	21,8	XP1425	✳	
		PXDH2190-KC	21,9	XP1425	✳	
7831520	⑩	PXDH2200-KC	22	XP1425	●	
		PXDH2210-KC	22,1	XP1425	✳	
		PXDH2220-KC	22,2	XP1425	✳	
		PXDH2230-KC	22,3	XP1425	✳	
		PXDH2240-KC	22,4	XP1425	✳	
7831525	⑩	PXDH2250-KC	22,5	XP1425	●	
		PXDH2260-KC	22,6	XP1425	✳	
		PXDH2270-KC	22,7	XP1425	✳	
		PXDH2280-KC	22,8	XP1425	✳	
		PXDH2290-KC	22,9	XP1425	✳	
7831530	⑪	PXDH2300-KC	23	XP1425	●	
		PXDH2310-KC	23,1	XP1425	✳	
		PXDH2320-KC	23,2	XP1425	✳	
		PXDH2330-KC	23,3	XP1425	✳	
		PXDH2340-KC	23,4	XP1425	✳	
7831535	⑪	PXDH2350-KC	23,5	XP1425	●	
		PXDH2360-KC	23,6	XP1425	✳	
		PXDH2370-KC	23,7	XP1425	✳	
		PXDH2380-KC	23,8	XP1425	✳	
		PXDH2390-KC	23,9	XP1425	✳	
7831540	⑫	PXDH2400-KC	24	XP1425	●	
		PXDH2410-KC	24,1	XP1425	✳	
		PXDH2420-KC	24,2	XP1425	✳	
		PXDH2430-KC	24,3	XP1425	✳	
		PXDH2440-KC	24,4	XP1425	✳	
7831545	⑫	PXDH2450-KC	24,5	XP1425	●	
		PXDH2460-KC	24,6	XP1425	✳	
		PXDH2470-KC	24,7	XP1425	✳	
		PXDH2480-KC	24,8	XP1425	✳	
		PXDH2490-KC	24,9	XP1425	✳	
7831550	⑬	PXDH2500-KC	25	XP1425	●	
		PXDH2510-KC	25,1	XP1425	✳	
		PXDH2520-KC	25,2	XP1425	✳	
		PXDH2530-KC	25,3	XP1425	✳	
		PXDH2540-KC	25,4	XP1425	✳	

● on stock
✳ Items scheduled to be standardized

PXD APPLICABLE HEAD

PHOENIX
- Applicable head for non ferrous metals

PHOENIX
- Kronenbohrer für nichteisen Metalle

PHOENIX
- Testa applicabile per Metalli non ferrosi

PHOENIX
- Têtes interchangeables pour métaux non ferreux

PHOENIX
- Metal dışı alaşımlar için uygulanabilir kafa

PHOENIX
- Anvendelig i ikke jernholdige materialer

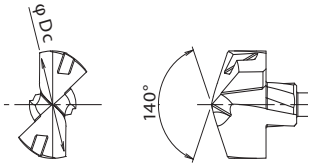
PHOENIX
- För icke järnhaltiga material

PHOENIX
- Aplicable cabeza para metales no ferricos

PHOENIX
- Сменная режущая головка для цветных металлов

PHOENIX
- Grot wiertła PXD do metali nieżelaznych

GO TO LIVE STOCK CHECK





(NC) For Non Ferrous metals

EDP		Designation	Dc	Grades	Stock	Price
7831740	①	PXDH1400-NC	14	CF225	●	
		PXDH1410-NC	14,1	CF225	✳	
		PXDH1420-NC	14,2	CF225	✳	
		PXDH1430-NC	14,3	CF225	✳	
		PXDH1440-NC	14,4	CF225	✳	
7831745	②	PXDH1450-NC	14,5	CF225	●	
		PXDH1460-NC	14,6	CF225	✳	
		PXDH1470-NC	14,7	CF225	✳	
		PXDH1480-NC	14,8	CF225	✳	
		PXDH1490-NC	14,9	CF225	✳	
7831750	③	PXDH1500-NC	15	CF225	●	
		PXDH1510-NC	15,1	CF225	✳	
		PXDH1520-NC	15,2	CF225	✳	
		PXDH1530-NC	15,3	CF225	✳	
		PXDH1540-NC	15,4	CF225	✳	
7831755	③	PXDH1550-NC	15,5	CF225	●	
		PXDH1560-NC	15,6	CF225	✳	
		PXDH1570-NC	15,7	CF225	✳	
		PXDH1580-NC	15,8	CF225	✳	
		PXDH1590-NC	15,9	CF225	✳	
7831760	④	PXDH1600-NC	16	CF225	●	
		PXDH1610-NC	16,1	CF225	✳	
		PXDH1620-NC	16,2	CF225	✳	
		PXDH1630-NC	16,3	CF225	✳	
		PXDH1640-NC	16,4	CF225	✳	
7831765	④	PXDH1650-NC	16,5	CF225	●	
		PXDH1660-NC	16,6	CF225	✳	
7831767	④	PXDH1670-NC	16,7	CF225	○	
		PXDH1680-NC	16,8	CF225	✳	
		PXDH1690-NC	16,9	CF225	✳	
7831770	⑤	PXDH1700-NC	17	CF225	●	
		PXDH1710-NC	17,1	CF225	✳	
		PXDH1720-NC	17,2	CF225	✳	
		PXDH1730-NC	17,3	CF225	✳	
		PXDH1740-NC	17,4	CF225	✳	
7831775	⑤	PXDH1750-NC	17,5	CF225	●	
		PXDH1760-NC	17,6	CF225	✳	
		PXDH1770-NC	17,7	CF225	✳	
		PXDH1780-NC	17,8	CF225	✳	
		PXDH1790-NC	17,9	CF225	✳	
7831780	⑥	PXDH1800-NC	18	CF225	●	
		PXDH1810-NC	18,1	CF225	✳	
		PXDH1820-NC	18,2	CF225	✳	
		PXDH1830-NC	18,3	CF225	✳	
		PXDH1840-NC	18,4	CF225	✳	
7831785	⑥	PXDH1850-NC	18,5	CF225	●	
		PXDH1860-NC	18,6	CF225	✳	
7831787	⑥	PXDH1870-NC	18,7	CF225	○	
		PXDH1880-NC	18,8	CF225	✳	
		PXDH1890-NC	18,9	CF225	✳	
7831790	⑦	PXDH1900-NC	19	CF225	●	
		PXDH1910-NC	19,1	CF225	✳	
		PXDH1920-NC	19,2	CF225	✳	
		PXDH1930-NC	19,3	CF225	✳	
		PXDH1940-NC	19,4	CF225	✳	
7831795	⑦	PXDH1950-NC	19,5	CF225	●	
		PXDH1960-NC	19,6	CF225	✳	
		PXDH1970-NC	19,7	CF225	✳	
		PXDH1980-NC	19,8	CF225	✳	
		PXDH1990-NC	19,9	CF225	✳	

EDP		Designation	Dc	Grades	Stock	Price
7831800	⑧	PXDH2000-NC	20	CF225	●	
		PXDH2010-NC	20,1	CF225	✳	
		PXDH2020-NC	20,2	CF225	✳	
		PXDH2030-NC	20,3	CF225	✳	
		PXDH2040-NC	20,4	CF225	✳	
7831805	⑧	PXDH2050-NC	20,5	CF225	●	
		PXDH2060-NC	20,6	CF225	✳	
7831807	⑧	PXDH2070-NC	20,7	CF225	○	
		PXDH2080-NC	20,8	CF225	✳	
		PXDH2090-NC	20,9	CF225	✳	
7831810	⑨	PXDH2100-NC	21	CF225	●	
		PXDH2110-NC	21,1	CF225	✳	
		PXDH2120-NC	21,2	CF225	✳	
		PXDH2130-NC	21,3	CF225	✳	
		PXDH2140-NC	21,4	CF225	✳	
7831815	⑨	PXDH2150-NC	21,5	CF225	●	
		PXDH2160-NC	21,6	CF225	✳	
		PXDH2170-NC	21,7	CF225	✳	
		PXDH2180-NC	21,8	CF225	✳	
		PXDH2190-NC	21,9	CF225	✳	
7831820	⑩	PXDH2200-NC	22	CF225	●	
		PXDH2210-NC	22,1	CF225	✳	
		PXDH2220-NC	22,2	CF225	✳	
		PXDH2230-NC	22,3	CF225	✳	
7831824	⑩	PXDH2240-NC	22,4	CF225	○	
7831825	⑩	PXDH2250-NC	22,5	CF225	●	
		PXDH2260-NC	22,6	CF225	✳	
		PXDH2270-NC	22,7	CF225	✳	
		PXDH2280-NC	22,8	CF225	✳	
		PXDH2290-NC	22,9	CF225	✳	
7831830	⑪	PXDH2300-NC	23	CF225	●	
		PXDH2310-NC	23,1	CF225	✳	
		PXDH2320-NC	23,2	CF225	✳	
		PXDH2330-NC	23,3	CF225	✳	
		PXDH2340-NC	23,4	CF225	✳	
7831835	⑪	PXDH2350-NC	23,5	CF225	●	
		PXDH2360-NC	23,6	CF225	✳	
		PXDH2370-NC	23,7	CF225	✳	
		PXDH2380-NC	23,8	CF225	✳	
		PXDH2390-NC	23,9	CF225	✳	
7831840	⑫	PXDH2400-NC	24	CF225	●	
		PXDH2410-NC	24,1	CF225	✳	
		PXDH2420-NC	24,2	CF225	✳	
		PXDH2430-NC	24,3	CF225	✳	
		PXDH2440-NC	24,4	CF225	✳	
7831845	⑫	PXDH2450-NC	24,5	CF225	●	
		PXDH2460-NC	24,6	CF225	✳	
		PXDH2470-NC	24,7	CF225	✳	
		PXDH2480-NC	24,8	CF225	✳	
		PXDH2490-NC	24,9	CF225	✳	
7831850	⑬	PXDH2500-NC	25	CF225	●	
		PXDH2510-NC	25,1	CF225	✳	
		PXDH2520-NC	25,2	CF225	✳	
		PXDH2530-NC	25,3	CF225	✳	
7831854	⑬	PXDH2540-NC	25,4	CF225	○	

BACK

PXD

	For Steel (PC)									For Cast Iron (KC)						Non Ferrous		
	MILD STEEL LOW CARBON STEEL SS400 - S10C ~ 150HB			CARBON STEEL S35C - S50C ~ 210HB (~710N/mm^2)			ALLOY STEEL SCM - SCr - SNCM 16 ~ 30HRC (710 ~ 950N/mm^2)			CAST IRON FC250 (~350N/mm^2)			DUCTILE CAST IRON FCD450 - FCD600			ALUMINIUM ALLOYS CASTING AC4A - ADC		
Drlling Speed	80 ~ 120 m/min			80 ~ 120 m/min			60 ~ 120 m/min			80 ~ 120 m/min			60 ~ 100 m/min			80 ~ 180 m/min		
MILL DIA. (mm)	SPEED (min^{-1})	FEED (mm/min)		SPEED (min^{-1})	FEED (mm/min)		SPEED (min^{-1})	FEED (mm/min)		SPEED (min^{-1})	FEED (mm/min)		SPEED (min^{-1})	FEED (mm/min)		SPEED (min^{-1})	FEED (mm/min)	
14	2.300	0,21	0,35	2.300	0,21	0,35	2.000	0,21	0,35	2.300	0,21	0,35	1.800	0,21	0,35	3.000	0,28	0,42
15	2.100	0,23	0,38	2.100	0,23	0,38	1.900	0,23	0,38	2.100	0,23	0,38	1.700	0,23	0,38	2.800	0,3	0,45
16	2.000	0,24	0,4	2.000	0,24	0,4	1.800	0,24	0,4	2.000	0,24	0,4	1.600	0,24	0,4	2.600	0,32	0,48
17	1.900	0,26	0,43	1.900	0,26	0,43	1.700	0,26	0,43	1.900	0,26	0,43	1.500	0,26	0,43	2.400	0,34	0,51
18	1.800	0,27	0,45	1.800	0,27	0,45	1.600	0,27	0,45	1.800	0,27	0,45	1.400	0,27	0,45	2.300	0,36	0,54
19	1.700	0,29	0,48	1.700	0,29	0,48	1.500	0,29	0,48	1.700	0,29	0,48	1.300	0,29	0,48	2.200	0,38	0,57
20	1.600	0,3	0,5	1.600	0,3	0,5	1.400	0,3	0,5	1.600	0,3	0,5	1.300	0,3	0,5	2.100	0,4	0,6
21	1.500	0,32	0,53	1.500	0,32	0,53	1.400	0,32	0,53	1.500	0,32	0,53	1.200	0,32	0,53	2.000	0,42	0,63
22	1.400	0,33	0,55	1.400	0,33	0,55	1.300	0,33	0,55	1.400	0,33	0,55	1.200	0,33	0,55	1.900	0,44	0,66
23	1.400	0,35	0,58	1.400	0,35	0,58	1.200	0,35	0,58	1.400	0,35	0,58	1.100	0,35	0,58	1.800	0,46	0,69
24	1.300	0,36	0,6	1.300	0,36	0,6	1.200	0,36	0,6	1.300	0,36	0,6	1.100	0,36	0,6	1.700	0,48	0,72
25	1.300	0,38	0,63	1.300	0,38	0,63	1.100	0,38	0,63	1.300	0,38	0,63	1.000	0,38	0,63	1.700	0,5	0,75

1. The indicated speeds and feeds are for water soluble oil.
2. Suitable cutting fluid is water soluble high density oil (less than 20 times dilution).
3. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
4. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.

1. La velocità e avanzamento indicati si riferiscono a lavorazioni con emulsione solubile in acqua
2. Opportuno fluido di taglio è emulsione solubile in acqua ad alta densità (inferiore a 20volte di diluizione)
3. Fissare il materiale di lavoro per ridurre la possibilità di deformazione, deviazione o vibrazione di superficie lavorata
4. Un foro di lubrificazione ostruito può portare alla rottura. Assicurarsi che sia applicato un filtro al sistema di refrigerazione.

1. Die angegebenen Schnittdaten sind für die Verwendung von Emulsion.
2. Die geeignete Emulsion sollte weniger als 20% Fettgehalt haben.
3. Um Vibrationen und Rattermarken an der Werkstückoberfläche zu vermeiden empfehlen wir eine sehr starre Werkstückspannung.
4. Ein verschmutzte innere Kühlmittelzufuhr kann zum Werkzeugbruch führen. Bitte Kühlmittelfilter verwenden.

1. Les vitesses indiquées sont avec l'utilisation d'huile soluble.
2. Un fluide de coupe à forte densité d'huile est recommandé
3. Bien monter et bien serrer la pièce à usiner reduit les riques de déformation matière ,améliore la qualité de l'usinage, réduit les vibrations et les casses d'outils
4. L'obstruction d'un trou d'huile peut entrainer la rupture de l'outil, assurez vous de la qualité de filtration de votre dispositif de lubrification

1. De indikerede skæredata er ved brug af vandbaseret emulsion
2. Passende kølemiddel er vandbaseret med høj densitet (fortyndet mindre end 20 gange)
3. Fastgør emnematerialet sikkert for at undgå deformation, vibrationer og lign.
4. Et tilstoppet kølehul kan forårsage brud. Sørg for at kølemidlet er filtreret

1. Den angivna varvtal och matningar är för vattenlbaserad emulsion
2. Lämplig skärvätska är vattenlösligt hög densitet olja (mindre än 20 gånger utspädning)
3. Fäst arbetsstycket ordentligt för att undvika deformation, vibrationer och liknande.
4. Ett igensatt kylkanal kan orsaka brott. Filtrera helst kylvätskan

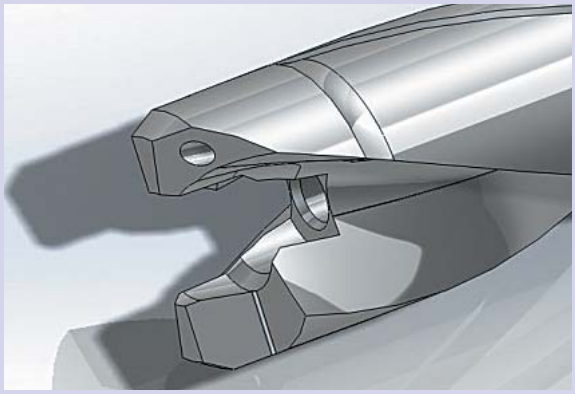
1. Las velocidades y avances recomendados son para taladrina
2. El refrigerante adecuado es taladrina concentrada al menos el 5%
3. Fijar la pieza de forma que no permita la deformación, flexión de la cara mecanizada o vibración
4. El agujero de refrigeración obstruido puede producir rotura. Asegúrese la aportación de refrigerante filtrado

1. Указанные скорость и подача для охлаждения эмульсией
2. Наиболее подходящая СОЖ — водная эмульсия высокой плотности (разбавление менее, чем 1/20)
3. Закрепите обрабатываемый материал, чтобы уменьшить возможность смещения, деформации или вибрации
4. Засорение отверстий для охлаждения может привести к поломке. Убедитесь, что фильтр СОЖ установлен и исправен

1. Belirtilen kesme hızı ve ilerleme kesme sıvısı kullanımına ögre verilmiştir
2. Uygun kesme sıvısı, suda çözünen yüksek yoğunluklu yağ (20 kat seyretmenden az olacak)
3. İşlemin bozulması, işlenen yüzeyin sapması veya titreşim ihtimallerini azaltmak için iş parçasını sabitleyin.
4. Tıkanan bir yağ deliği kırılmaya neden olabilir. Yağ besleyicide filtre bulunduğundan emin olun.

1. Prędkości i posuwy podane są do pracy w emulsji
2. Odpowiednia emulsja w stosunku 1/20
3. Właściwie zamocuj materiał aby zmniejszyć możliwość powstania deformacji , złej jakości powierzchni lub wibracji
4. Zatkany otwór chłodzący może doprowadzić do uszkodzenia. Proszę upewnić się, że filtr jest dołączony do podajnika emulsji

Mounting Procedure

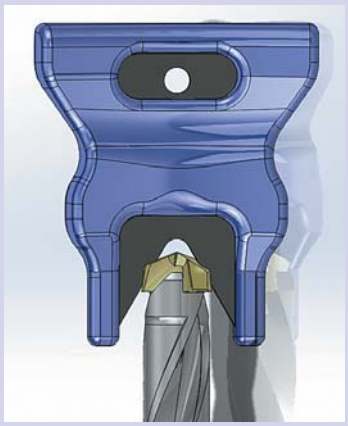


Step1
Clean attachment area with an air blower.

※ Any leftover cutting chips will cause problem for mounting head properly and can cause damages to the tool.



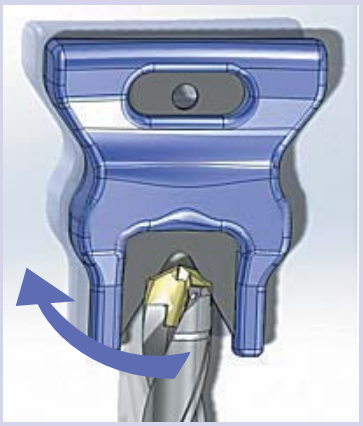
Step2
Manually attach the head.





Step3
Insert the flat metal portion of the designated driver into the groove on the head.

※Insert the designated driver firmly into the groove. Shallow driver insert will damage the groove



Step4
Turn the designated driver clockwise and mount the head onto the body.

※ Mount it firmly and make sure that there is no gap in the area between the head and the body.

PHOENIX
- High performance
- Drill
- 2 flutes

PHOENIX
- High performance
- Bohrer
- 2 Schneiden

PHOENIX
- Alta prestazione
- Foratura
- 2 denti

PHOENIX
- Haute performance
- Foret
- 2 lèvres

PHOENIX
- Yüksek performans
- Matkap
- 2 ağızlı

PHOENIX
- High performance
- Boring
- 2 skær

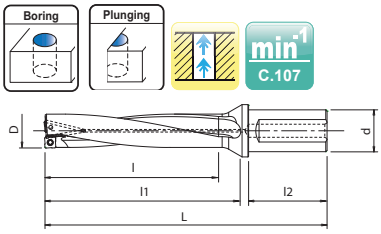
PHOENIX
- High performance
- Borr
- 2 skär

PHOENIX
- Altas prestaciones
- Taladrado
- 2 labios

PHOENIX
- Высокая производительность
- Сверло
- 2-зуба

PHOENIX
- Wysoka wydajność
- Wiertło
- 2-ostrzowe

GO TO LIVE STOCK CHECK





EDP	Designation	D	Applicable Inserts	L	l	l1	l2	d	Stock	Price
7802729	P5D2100FS25M07	21	①	184	105	120	56	25	●	
7802730	P5D2150FS25M07	21,5	①	187	108	123	56	25	●	
7802731	P5D2200FS25M07	22	①	189	110	125	56	25	●	
7802732	P5D2250FS25M07	22,5	①	192	113	128	56	25	●	
7802733	P5D2300FS25M07	23	①	194	115	130	56	25	●	
7802734	P5D2350FS32M07	23,5	①	201	118	133	60	32	●	
7802735	P5D2400FS32M07	24	①	203	120	135	60	32	●	
7802736	P5D2450FS32M07	24,5	①	206	123	138	60	32	●	
7802737	P5D2500FS32M08	25	②	208	125	140	60	32	●	
7802738	P5D2550FS32M08	25,5	②	211	128	143	60	32	●	
7802739	P5D2600FS32M08	26	②	213	130	145	60	32	●	
7802740	P5D2650FS32M08	26,5	②	216	133	148	60	32	●	
7802741	P5D2700FS32M08	27	②	218	135	150	60	32	●	
7802742	P5D2800FS32M08	28	②	223	140	155	60	32	●	
7802743	P5D2850FS32M08	28,5	②	226	143	158	60	32	●	
7802744	P5D2900FS32M09	29	③	228	145	160	60	32	●	
7802745	P5D3000FS32M09	30	③	233	150	165	60	32	●	
7802746	P5D3100FS32M09	31	③	238	155	170	60	32	●	
7802747	P5D3200FS32M09	32	③	243	160	175	60	32	●	
7802748	P5D3300FS40M09	33	③	258	165	180	70	40	●	
7802749	P5D3350FS40M09	33,5	③	261	168	183	70	40	●	

● Delivery from stock
○ Available on short notice

P5D INSERTS

PHOENIX
- High performance
- Drill
- 2 flutes

PHOENIX
- High performance
- Bohrer
- 2 Schneiden

PHOENIX
- Alta prestazione
- Foratura
- 2 denti

PHOENIX
- Haute performance
- Foret
- 2 lèvres

PHOENIX
- Yüksek performans
- Matkap
- 2 ağızlı

PHOENIX
- High performance
- Boring
- 2 skær

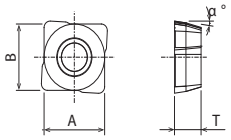
PHOENIX
- High performance
- Borr
- 2 skär

PHOENIX
- Altas prestaciones
- Taladrado
- 2 labios

PHOENIX
- Высокая производительность
- Сверло
- 2-зуба

PHOENIX
- Wysoka wydajność
- Wiertło
- 2-ostrzowe

GO TO LIVE STOCK CHECK





Designation	No. of cutting edges	Applicable Body	Insert Size				Coated Grades	Price
			A X B	T	α	R	XP9020	
①WCMT073106ER-DM	4	ø 21~24,5	7,42	3,1	8°	0,6	7823067	
②WCMT083508ER-DM	4	ø 25~28,5	8,71	3,5	8°	0,8	7823068	
③WCMT094008ER-DM	4	ø 29~33,5	10,04	4	8°	0,8	7823069	

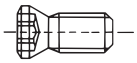
Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N
XP9020	DM	Coolant	◉	◉	○	○

DM Center Cutting Type Drill

◉ First choice
○ Second choice

Accessories - *Clamping Screw & Wrench*



Clamping Screw

EDP	Designation		Applicable Inserts			Stock	Price
7808136	FS25560P	①	XCMT0731...		-	●	
7808135	FS30570P	②	XCMT0835...	③	XCMT0940...	●	



Wrench

EDP	Designation		Applicable Inserts			Stock	Price
7808225	81P-D (Torx 8IP)	①	XCMT0731...		-	●	
7808226	91P-D (Torx 91P)	②	XCMT0835 ...	③	XCMT0940...	●	

CONDITIONS

P5D

	Work Material	Tensile strength/ Hardness	Drilling Speed Vc (m/min)	Feed Rate (mm/rev)		
				ø21~ø24,5	ø25~ø28,5	ø29~ø33,5
P	Mild Steel·Carbon Steel SS400 - S10C	~180HB	200 (150 ~ 250)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,2)	0,18 (0,13 ~ 0,2)
P	Carbon Steel·Alloy Steel S50C - SCM440	~280HB	150 (100 ~ 220)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,2)	0,18 (0,13 ~ 0,2)
P	Die Steel SKD11 - SKD61	~280HB	120 (80 ~ 180)	0,1 (0,06 ~ 0,13)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,18)
M	Stainless Steel (SUS304 - SUS420)	~250HB	100 (80 ~ 150)	0,08 (0,04 ~ 0,1)	0,1 (0,06 ~ 0,15)	0,12 (0,08 ~ 0,18)
K	Cast Iron FC250	~350N/mm²	150 (100 ~ 180)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,2)	0,18 (0,13 ~ 0,2)
K	Ductile Cast Iron FCD400	~800N/mm²	120 (80 ~ 150)	0,1 (0,06 ~ 0,13)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,18)
N	Aluminum Alloys	~13%Si	200 (100 ~ 800)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,25)	0,18 (0,13 ~ 0,3)

BACK

BACK BACK BACK BACK BACK BACK

WX-MS-GDS



	Carbon Steel Ck15 ■ Ck50 ~900 N/mm²		SCM SCM440 ~1060 N/mm²		Special Alloy SUJ2 SUS 440		Kovart FE-NI-CO		Cu C1020 ■ C2600		Al A5052 ■ 7075		AC AC4C ■ ADC	
Vc	20 ~ 80 m/min		20 ~ 56 m/min		20 ~ 36 m/min		20 ~ 45 m/min		20 ~ 45 m/min		32 ~ 80 m/min		32 ~ 63 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
0,2	25.000	0,002	25.000	0,002	25.000	0,002	25.000	0,002	25.000	0,002	25.000	0,004	25.000	0,002
0,3	20.000	0,003	20.000	0,003	20.000	0,003	20.000	0,003	20.000	0,003	20.000	0,007	20.000	0,003
0,5	15.000	0,007	14.000	0,007	13.000	0,007	13.000	0,007	13.000	0,007	15.000	0,015	15.000	0,007
1	12.000	0,02	11.000	0,02	10.000	0,02	6.400	0,01	6.400	0,01	12.000	0,03	12.000	0,01
1,5	10.000	0,02~0,04	8.400	0,02~0,04	6.800	0,03~0,05	4.800	0,012~0,03	4.800	0,012~0,03	10.000	0,03~0,08	10.000	0,12~0,030
2	8.000	0,03~0,05	6.500	0,03~0,05	5.000	0,04~0,06	4.000	0,016~0,04	4.000	0,016~0,04	8.000	0,04~0,01	8.000	0,016~0,04
3	5.500	0,07~0,07	4.500	0,04~0,07	3.400	0,06~0,09	3.000	0,024~0,06	3.000	0,024~0,06	6.500	0,06~0,15	6.500	0,024~0,06
4	4.000	0,06~0,10	3.200	0,06~0,10	2.500	0,08~0,12	2.500	0,03~0,08	2.500	0,03~0,08	5.000	0,08~0,20	5.000	0,03~0,08
5	3.200	0,07~0,12	2.600	0,07~0,12	2.000	0,10~0,15	2.000	0,04~0,10	2.000	0,04~0,10	4.200	0,10~0,25	4.000	0,04~0,10

MRS-GDL



	Martensitic Stainless Steel SUS420J2 SUS440C		Austenitic Stainless Steel SUS303 SUS304 SUS316 SUS316L		Ferritic Stainless Steel SUS430 SUS430F		Precipitation Hardening Stainless Steel SUS630	
Vc	20 ~ 50 m/min		15 ~ 40 m/min		20 ~ 50 m/min		15 ~ 40 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
0,5	12.700 ~ 31.800	0,005 ~ 0,015	9.500 ~ 25.400	0,005 ~ 0,015	12.700 ~ 31.800	0,005 ~ 0,015	9.500 ~ 25.400	0,005 ~ 0,015
1	6.300 ~ 15.900	0,010 ~ 0,030	4.700 ~ 12.700	0,010 ~ 0,030	6.300 ~ 15.900	0,010 ~ 0,030	4.700 ~ 12.700	0,010 ~ 0,030
1,5	4.200 ~ 10.600	0,015 ~ 0,045	3.100 ~ 8.400	0,015 ~ 0,045	4.200 ~ 10.600	0,015 ~ 0,045	3.100 ~ 8.400	0,015 ~ 0,045
2	3.180 ~ 7.900	0,020 ~ 0,060	2.300 ~ 6.300	0,020 ~ 0,060	3.180 ~ 7.900	0,020 ~ 0,060	2.300 ~ 6.300	0,020 ~ 0,060
2,5	2.500 ~ 6.300	0,025 ~ 0,075	1.900 ~ 5.000	0,025 ~ 0,075	2.500 ~ 6.300	0,025 ~ 0,075	1.900 ~ 5.000	0,025 ~ 0,075
3	2.100 ~ 5.300	0,030 ~ 0,090	1.500 ~ 4.200	0,030 ~ 0,090	2.100 ~ 5.300	0,030 ~ 0,090	1.500 ~ 4.200	0,030 ~ 0,090

WDO-3D/5D/WDO-PLT



	Carbon Steel S50C		Alloy Steel SCM440		Alloy Steel SCM440 - 30HRC		Cast Iron FC250		Ductile Cast IRON FCD700		Stainless Steel SUS304	
Vc	80 ~ 120 m/min		80 ~ 120 m/min		60 ~ 90 m/min		80 ~ 120 m/min		60 ~ 100 m/min		40 ~ 70 m/min	
Ø	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)
3	10.600	0,06~0,12	10.600	0,06~0,12	7.400	0,06~0,12	10.600	0,06~0,12	8.500	0,06~0,12	6.400	0,06~0,12
4	8.000	0,08~0,16	8.000	0,08~0,16	5.600	0,08~0,16	8.000	0,08~0,16	6.400	0,08~0,16	4.800	0,08~0,16
5	6.400	0,10~0,20	6.400	0,10~0,20	4.500	0,10~0,20	6.400	0,10~0,20	5.100	0,10~0,20	3.800	0,10~0,20
6	5.300	0,12~0,24	5.300	0,12~0,24	3.700	0,12~0,24	5.300	0,12~0,24	4.200	0,12~0,24	3.200	0,12~0,24
7	4.500	0,14~0,26	4.500	0,14~0,26	3.200	0,14~0,26	4.500	0,14~0,26	3.600	0,14~0,26	2.700	0,14~0,26
8	4.000	0,16~0,28	4.000	0,16~0,28	2.800	0,16~0,28	4.000	0,16~0,28	3.200	0,16~0,28	2.400	0,16~0,28
9	3.500	0,18~0,30	3.500	0,18~0,30	2.500	0,18~0,30	3.500	0,18~0,30	2.800	0,18~0,30	2.100	0,18~0,30
10	3.200	0,20~0,30	3.200	0,20~0,30	2.200	0,20~0,30	3.200	0,20~0,30	2.500	0,20~0,30	1.900	0,20~0,30
11	2.900	0,20~0,30	2.900	0,20~0,30	2.000	0,20~0,30	2.900	0,20~0,30	2.300	0,20~0,30	1.700	0,20~0,30
12	2.700	0,21~0,30	2.700	0,21~0,30	1.900	0,21~0,30	2.700	0,21~0,30	2.100	0,21~0,30	1.600	0,21~0,30
13	2.400	0,21~0,33	2.400	0,21~0,33	1.700	0,21~0,33	2.400	0,21~0,33	2.000	0,21~0,33	1.500	0,21~0,33
14	2.300	0,22~0,35	2.300	0,22~0,35	1.600	0,22~0,35	2.300	0,22~0,35	1.800	0,22~0,35	1.400	0,22~0,35
16	2.000	0,25~0,36	2.000	0,25~0,36	1.400	0,25~0,36	2.000	0,25~0,36	1.600	0,25~0,36	1.200	0,25~0,36
18	1.800	0,28~0,38	1.800	0,28~0,38	1.200	0,28~0,38	1.800	0,28~0,38	1.400	0,28~0,38	1.100	0,28~0,38
20	1.600	0,30~0,40	1.600	0,30~0,40	1.100	0,30~0,40	1.600	0,30~0,40	1.300	0,30~0,40	1.000	0,30~0,40

WDO-SUS-5D

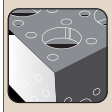


	Carbon Steel S50C		Alloy Steel SCM440		Alloy Steel SCM440 - 30HRC		Stainless Steel SUS304 SUS316		Super Duplex SUS630 17-4PH, 15-5PH		Ti Alloy	
Vc	80 ~ 120 m/min		80 ~ 120 m/min		60 ~ 90 m/min		60 ~ 100 m/min		30 ~ 60 m/min		20 ~ 50 m/min	
Ø	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)
3	10.600	0,06~0,12	10.600	0,06~0,12	7.400	0,06~0,12	8.500	0,06~0,12	4.800	0,06~0,09	3.700	0,05~0,09
4	8.000	0,08~0,16	8.000	0,08~0,16	5.600	0,08~0,16	6.400	0,08~0,16	3.600	0,08~0,12	2.800	0,06~0,12
5	6.400	0,10~0,20	6.400	0,10~0,20	4.500	0,10~0,20	5.100	0,10~0,20	2.900	0,10~0,15	2.200	0,08~0,15
6	5.300	0,12~0,24	5.300	0,12~0,24	3.700	0,12~0,24	4.200	0,12~0,24	2.400	0,12~0,18	1.900	0,09~0,18
7	4.500	0,14~0,26	4.500	0,14~0,26	3.200	0,14~0,26	3.600	0,14~0,26	2.000	0,14~0,21	1.600	0,11~0,21
8	4.000	0,16~0,28	4.000	0,16~0,28	2.800	0,16~0,28	3.200	0,16~0,28	1.800	0,16~0,24	1.400	0,12~0,24
9	3.500	0,18~0,30	3.500	0,18~0,30	2.500	0,18~0,30	2.800	0,18~0,30	1.600	0,18~0,27	1.200	0,14~0,27
10	3.200	0,20~0,30	3.200	0,20~0,30	2.200	0,20~0,30	2.500	0,20~0,30	1.400	0,20~0,30	1.100	0,15~0,30
11	2.900	0,20~0,30	2.900	0,20~0,30	2.000	0,20~0,30	2.300	0,20~0,30	1.300	0,20~0,30	1.000	0,15~0,30
12	2.700	0,21~0,30	2.700	0,21~0,30	1.900	0,21~0,30	2.100	0,21~0,30	1.200	0,21~0,30	900	0,16~0,30
13	2.400	0,21~0,33	2.400	0,21~0,33	1.700	0,21~0,33	2.000	0,21~0,33	1.100	0,21~0,33	900	0,18~0,33
14	2.300	0,22~0,35	2.300	0,22~0,35	1.600	0,22~0,35	1.800	0,22~0,35	1.000	0,22~0,35	800	0,19~0,35
16	2.000	0,25~0,36	2.000	0,25~0,36	1.400	0,25~0,36	1.600	0,25~0,36	900	0,25~0,36	700	0,22~0,36
18	1.800	0,28~0,38	1.800	0,28~0,38	1.200	0,28~0,38	1.400	0,28~0,38	800	0,28~0,38	600	0,24~0,38
20	1.600	0,30~0,40	1.600	0,30~0,40	1.100	0,30~0,40	1.300	0,30~0,40	700	0,30~0,40	600	0,27~0,40

CONDITIONS

WD-2D/WD-4D

Standard drilling - Standard Bohren - Foratura standard - Perçage standard - Standart matkap -
Standard boring - Standard borrning -Taladrado estándar - Стандартное сверление - Wiercenie standardowe



	C<0,35% (C<0,35%) St40 ■ SCM ~710 N/mm²		C≥0,35% (C≥0,35%) CK50 ~1060 N/mm²		Special Alloy SUJ2		SUS Serie SUS300 Serie SUS400		Hardened Steel SKD61 43 HRC		Hardened Steel 43 ~ 48 HRC		GG GG25 ~ 350 N/mm²		GGG GGG40 ~ 500 N/mm²	
Vc	63 ~ 100 m/min		63 ~ 100 m/min		50 ~ 71 m/min		25 ~ 40 m/min		40 ~ 63 m/min		32 ~ 45 m/min		63 ~ 100 m/min		50 ~ 80 m/min	
Ø	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)
2	11.000	0,06~0,08	11.000	0,06~0,08	9.000	0,06~0,08	4.700	0,06~0,08	7.600	0,06~0,08	6.000	0,06~0,08	12.000	0,06~0,08	10.000	0,06~0,08
3	8.000	0,09~0,12	8.000	0,09~0,12	6.000	0,09~0,12	3.200	0,09~0,12	5.000	0,09~0,12	4.000	0,09~0,12	8.000	0,09~0,12	6.900	0,09~0,12
4	6.300	0,10~0,15	6.300	0,10~0,15	4.750	0,10~0,15	2.400	0,10~0,15	3.800	0,10~0,15	3.000	0,10~0,15	6.300	0,10~0,15	5.200	0,10~0,15
5	5.000	0,12~0,18	5.000	0,12~0,18	3.800	0,12~0,18	1.900	0,12~0,18	3.000	0,12~0,18	2.450	0,12~0,18	5.000	0,12~0,18	4.100	0,12~0,18
6	4.200	0,14~0,20	4.200	0,14~0,20	3.200	0,14~0,20	1.600	0,14~0,20	2.550	0,14~0,20	2.050	0,14~0,20	4.200	0,14~0,20	3.450	0,14~0,20
8	3.200	0,16~0,24	3.200	0,16~0,24	2.400	0,16~0,24	1.200	0,16~0,24	1.900	0,16~0,24	1.550	0,16~0,24	3.200	0,16~0,24	2.600	0,16~0,24
10	2.550	0,18~0,27	2.550	0,18~0,27	1.900	0,18~0,27	950	0,18~0,27	1.550	0,18~0,27	1.250	0,18~0,27	2.600	0,18~0,27	2.100	0,18~0,27
12	2.100	0,20~0,30	2.100	0,20~0,30	1.600	0,20~0,30	800	0,20~0,30	1.300	0,20~0,30	1.050	0,20~0,30	2.200	0,20~0,30	1.750	0,20~0,30
14	1.800	0,22~0,35	1.800	0,22~0,35	1.350	0,22~0,35	700	0,22~0,35	1.100	0,22~0,35	880	0,22~0,35	1.800	0,22~0,35	1.500	0,22~0,35
16	1.600	0,25~0,36	1.600	0,25~0,36	1.200	0,25~0,36	600	0,25~0,36	950	0,25~0,36	770	0,25~0,36	1.600	0,25~0,36	1.300	0,25~0,36
18	1.400	0,28~0,38	1.400	0,28~0,38	1.050	0,28~0,38	530	0,28~0,38	850	0,28~0,38	680	0,28~0,38	1.400	0,28~0,38	1.200	0,28~0,38
20	1.300	0,30~0,40	1.300	0,30~0,40	960	0,30~0,40	480	0,30~0,40	760	0,30~0,40	610	0,30~0,40	1.300	0,30~0,40	1.050	0,30~0,40

TRS-HO-3D/5D/IOD



	Mild Steel - Low Carbon Steel SS400 ■ S10C ■ ~150HB ~500 N/mm²		Carbon Steel S35C ■ S50C ■ ~210HB ~710 N/mm²		Alloys Steel SCM ■ SCr ■ SNCM ■ 16~28HRC 710~900 N/mm²	
Vc	80 ~ 120 m/min		80 ~ 120 m/min		60 ~ 90 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
5	6.400	0,18 ~ 0,25	6.400	0,18 ~ 0,25	4.800	0,18 ~ 0,25
6	5.300	0,21 ~ 0,30	5.300	0,21 ~ 0,30	4.000	0,21 ~ 0,30
7	4.500	0,25 ~ 0,35	4.500	0,25 ~ 0,35	3.400	0,25 ~ 0,35
8	4.000	0,28 ~ 0,40	4.000	0,28 ~ 0,40	3.000	0,28 ~ 0,40
9	3.500	0,32 ~ 0,45	3.500	0,32 ~ 0,45	2.700	0,32 ~ 0,45
10	3.200	0,35 ~ 0,50	3.200	0,35 ~ 0,50	2.400	0,35 ~ 0,50
11	2.900	0,39 ~ 0,55	2.900	0,39 ~ 0,55	2.200	0,39 ~ 0,50
12	2.700	0,42 ~ 0,60	2.700	0,42 ~ 0,60	2.000	0,42 ~ 0,54
13	2.400	0,46 ~ 0,65	2.400	0,46 ~ 0,65	1.800	0,46 ~ 0,59
14	2.300	0,49 ~ 0,70	2.300	0,49 ~ 0,70	1.700	0,49 ~ 0,63
16	2.000	0,48 ~ 0,72	2.000	0,48 ~ 0,72	1.500	0,48 ~ 0,64
18	1.800	0,54 ~ 0,81	1.800	0,54 ~ 0,81	1.300	0,54 ~ 0,72

TRS-HO-3D/5D/IOD



	Alloys Steel SCM ■ SCr ■ SNCM ■ 28~35HRC 900~1100 N/mm²		Cast Iron FC250 ~350 N/mm²		Ductile Cast Iron FCD450 ■ FCD600 400~600 N/mm²	
Vc	60 ~ 90 m/min		80 ~ 120 m/min		60 ~ 100 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
5	4.800	0,18 ~ 0,25	6.400	0,18 ~ 0,30	5.100	0,18 ~ 0,25
6	4.000	0,21 ~ 0,30	5.300	0,21 ~ 0,36	4.200	0,21 ~ 0,30
7	3.400	0,25 ~ 0,35	4.500	0,25 ~ 0,42	3.600	0,25 ~ 0,35
8	3.000	0,28 ~ 0,40	4.000	0,28 ~ 0,48	3.200	0,28 ~ 0,40
9	2.700	0,32 ~ 0,45	3.500	0,32 ~ 0,54	2.800	0,32 ~ 0,45
10	2.400	0,35 ~ 0,50	3.200	0,35 ~ 0,60	2.500	0,35 ~ 0,50
11	2.200	0,39 ~ 0,50	2.900	0,39 ~ 0,66	2.300	0,39 ~ 0,55
12	2.000	0,42 ~ 0,54	2.700	0,42 ~ 0,72	2.100	0,42 ~ 0,60
13	1.800	0,46 ~ 0,59	2.400	0,46 ~ 0,78	2.000	0,46 ~ 0,65
14	1.700	0,49 ~ 0,63	2.300	0,49 ~ 0,84	1.800	0,49 ~ 0,70
16	1.500	0,48 ~ 0,64	2.000	0,56 ~ 0,80	1.600	0,48 ~ 0,72
18	1.300	0,54 ~ 0,72	1.800	0,63 ~ 0,90	1.400	0,54 ~ 0,81

D-STAD



Vc	50 ~ 100 m/min

Ø	RPM	F (mm/rev.)
4	4.000 ~ 8.000	0,03 ~ 0,05
6	2.600 ~ 5.300	0,04 ~ 0,075
6,35	2.500 ~ 5.000	0,04 ~ 0,075
8	2.000 ~ 4.000	0,05 ~ 0,08

WDO-IOD/I5D/20D/30D

	Mild Steel Low Carbon Steel SS400 ■ S10C ~ 150HB ~ 500 N/mm²		Carbon Steel S35C ■ S50C ~ 210HB ~ 710 N/mm²		Alloy Steel SCM ■ SCr ■ SNCM 16 ~ 28HRC 710 ~ 900 N/mm²		Cast Iron FC250 ~ 350 N/mm²		Ductile Cast Iron FCD450 FCD600 400 ~ 600 N/mm²		Stainless Steel SUS400 400 ~ 800 N/mm²	
Vc	60 ~ 125 m/min		60 ~ 125 m/min		60 ~ 125 m/min		60 ~ 125 m/min		50 ~ 80 m/min		40 ~ 80 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
3	7.500	0,06 ~ 0,12	7.500	0,06 ~ 0,12	7.500	0,06 ~ 0,12	7.500	0,06 ~ 0,12	7.500	0,06 ~ 0,12	5.300	0,06 ~ 0,12
4	6.400	0,08 ~ 0,16	6.400	0,08 ~ 0,16	6.400	0,08 ~ 0,16	6.400	0,08 ~ 0,16	5.600	0,08 ~ 0,16	5.000	0,08 ~ 0,16
5	5.800	0,10 ~ 0,20	5.800	0,10 ~ 0,20	5.800	0,10 ~ 0,20	5.800	0,10 ~ 0,20	4.500	0,10 ~ 0,20	4.500	0,10 ~ 0,20
6	4.800	0,12 ~ 0,24	4.800	0,12 ~ 0,24	4.800	0,12 ~ 0,24	4.800	0,12 ~ 0,24	3.800	0,12 ~ 0,24	3.800	0,12 ~ 0,24
8	3.600	0,16 ~ 0,28	3.600	0,16 ~ 0,28	3.600	0,16 ~ 0,28	3.600	0,16 ~ 0,28	2.800	0,16 ~ 0,28	2.800	0,16 ~ 0,28
10	2.900	0,20 ~ 0,35	2.900	0,20 ~ 0,35	2.900	0,20 ~ 0,35	2.900	0,20 ~ 0,35	2.300	0,20 ~ 0,35	2.300	0,20 ~ 0,35
12	2.400	0,24 ~ 0,42	2.400	0,24 ~ 0,42	2.400	0,24 ~ 0,42	2.400	0,24 ~ 0,42	1.900	0,24 ~ 0,42	1.900	0,24 ~ 0,42

CAO-GDXL

Standard drilling - Standard Bohren - Foratura standard - Perçage standard - Standart matkap - Standard boring - Standard borrning -Taladrado estándar - Стандартное сверление - Wiercenie standardowe

	AC ADC ■ AC		Al A20... ■ A70...		Al A50... ■ A60...		Cu C1020 ■ C1100		Cu CrCu	
Vc	80 ~ 200 m/min		60 ~ 120 m/min		80 ~ 200 m/min		80 ~ 200 m/min		60 ~ 120 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
3	12.800	0,09~0,15	10.700	0,09~0,15	12.800	0,06~0,12	12.800	0,06~0,12	10.700	0,05~0,09
4	9.600	0,12~0,20	8.000	0,12~0,20	9.600	0,08~0,16	9.600	0,08~0,16	8.000	0,06~0,10
5	7.700	0,15~0,25	6.400	0,15~0,25	7.700	0,10~0,20	7.700	0,10~0,20	6.400	0,06~0,10
6	6.400	0,18~0,30	5.400	0,18~0,30	6.400	0,12~0,20	6.400	0,12~0,20	5.400	0,06~0,10
8	4.800	0,20~0,40	4.000	0,20~0,40	4.800	0,12~0,25	4.800	0,12~0,25	4.000	0,08~0,15
10	3.900	0,25~0,50	3.200	0,25~0,50	3.900	0,15~0,25	3.900	0,15~0,25	3.200	0,08~0,15

HYP-HP-3D/HYP-HPO-3D

Standard drilling - Standard Bohren - Foratura standard - Perçage standard - Standart matkap - Standard boring - Standard borrning -Taladrado estándar - Стандартное сверление - Wiercenie standardowe

	Steel			Cu	A5052 / A7075	Al < 13% Si
	< 700 N/mm²	< 850 N/mm²	< 1000 N/mm²			< 130 HB
Vc	100 ~ 150 m/min	80 ~ 120 m/min	70 ~ 110 m/min	50 ~ 90 m/min	60 ~ 110 m/min	120 ~ 220 m/min
Ø	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)
3	0,09~0,12	0,09~0,12	0,09~0,12	0,02~0,03	0,09~0,20	0,09~0,28
4	0,10~0,15	0,10~0,15	0,10~0,15	0,02~0,04	0,10~0,24	0,10~0,38
5	0,12~0,18	0,12~0,18	0,12~0,18	0,03~0,05	0,12~0,28	0,12~0,40
6	0,14~0,20	0,14~0,20	0,14~0,20	0,03~0,06	0,14~0,34	0,14~0,48
8	0,16~0,24	0,16~0,24	0,16~0,24	0,04~0,08	0,16~0,38	0,16~0,53
10	0,18~0,27	0,18~0,27	0,18~0,27	0,05~0,10	0,18~0,45	0,18~0,63
12	0,20~0,30	0,20~0,30	0,20~0,30	0,06~0,12	0,20~0,53	0,20~0,75
14	0,22~0,35	0,22~0,35	0,22~0,35	0,08~0,16	0,22~0,57	0,22~0,81
16	0,25~0,36	0,25~0,36	0,25~0,36	0,10~0,18	0,25~0,61	0,25~0,85
18	0,28~0,38	0,28~0,38	0,28~0,38	0,12~0,20	0,28~0,63	0,28~0,90
20	0,30~0,40	0,30~0,40	0,30~0,40	0,20~0,28	0,28~0,68	0,30~0,98

HYP-HP-3D/HYP-HPO-3D

Standard drilling - Standard Bohren - Foratura standard - Perçage standard - Standart matkap - Standard boring - Standard borrning -Taladrado estándar - Стандартное сверление - Wiercenie standardowe

	GG (G)		SUS	High-Alloy Steel	Special Alloys	Hardened Steel
	< 180 HB	< 300 HB	< 820 HB	< 1200 N/mm²	< 30 HRC	< 60 HRC
Vc	150 ~ 200 m/min	100 ~ 150 m/min	40 ~ 50 m/min	50 ~60 m/min	15 ~ 25 m/min	15 ~ 25 m/min
Ø	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)
3	0,12~0,15	0,12~0,15	0,09~0,12	0,07~0,11	0,05~0,09	0,03~0,05
4	0,13~0,18	0,13~0,18	0,10~0,15	0,08~0,13	0,06~0,10	0,04~0,06
5	0,15~0,22	0,15~0,22	0,12~0,18	0,10~0,15	0,08~0,12	0,05~0,07
6	0,18~0,25	0,18~0,25	0,14~0,20	0,12~0,18	0,09~0,15	0,05~0,07
8	0,20~0,30	0,20~0,30	0,16~0,24	0,14~0,22	0,12~0,20	0,06~0,08
10	0,23~0,33	0,23~0,33	0,18~0,27	0,15~0,25	0,13~0,23	0,07~0,10
12	0,25~0,38	0,25~0,38	0,20~0,30	0,17~0,26	0,14~0,24	0,09~0,12
14	0,30~0,43	0,30~0,43	0,22~0,35	0,18~0,30	0,15~0,26	0,10~0,13
16	0,35~0,50	0,35~0,50	0,25~0,36	0,20~0,32	0,16~0,26	0,10~0,13
18	0,38~0,55	0,38~0,55	0,28~0,38	0,23~0,33	0,18~0,28	0,12~0,16
20	0,40~0,63	0,40~0,63	0,30~0,40	0,25~0,35	0,20~0,30	0,14~0,18

CONDITIONS

HYP-HP-5D/HYP-HPO-5D/HYP-HPO-8D

Standard drilling - Standard Bohren - Foratura standard - Perçage standard - Standart matkap -
Standard boring - Standard borrning -Taladrado estándar - Стандартное сверление - Wiercenie standardowe

	Steel			Cu	A5052 / A7075	Al < 13% Si
	< 700 N/mm²	< 850 N/mm²	< 1000 N/mm²			< 130 HB
Vc	100 ~ 150 m/min	80 ~ 120 m/min	70 ~ 110 m/min	50 ~ 90 m/min	60 ~ 110 m/min	120 ~ 220 m/min
Ø	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)
3	0,09~0,12	0,09~0,12	0,09~0,12	0,02~0,03	0,09~0,20	0,09~0,28
4	0,10~0,15	0,10~0,15	0,10~0,15	0,02~0,04	0,10~0,24	0,10~0,38
5	0,12~0,18	0,12~0,18	0,12~0,18	0,03~0,05	0,12~0,28	0,12~0,40
6	0,14~0,20	0,14~0,20	0,14~0,20	0,03~0,06	0,14~0,34	0,14~0,48
8	0,16~0,24	0,16~0,24	0,16~0,24	0,04~0,08	0,16~0,38	0,16~0,53
10	0,18~0,27	0,18~0,27	0,18~0,27	0,05~0,10	0,18~0,45	0,18~0,63
12	0,20~0,30	0,20~0,30	0,20~0,30	0,06~0,12	0,20~0,53	0,20~0,75
14	0,22~0,35	0,22~0,35	0,22~0,35	0,08~0,16	0,22~0,57	0,22~0,81
16	0,25~0,36	0,25~0,36	0,25~0,36	0,10~0,18	0,25~0,61	0,25~0,85
18	0,28~0,38	0,28~0,38	0,28~0,38	0,12~0,20	0,28~0,63	0,28~0,90
20	0,30~0,40	0,30~0,40	0,30~0,40	0,20~0,28	0,28~0,68	0,30~0,98

HYP-HP-5D/HYP-HPO-5D/HYP-HPO-8D

Standard drilling - Standard Bohren - Foratura standard - Perçage standard - Standart matkap -
Standard boring - Standard borrning -Taladrado estándar - Стандартное сверление - Wiercenie standardowe

	GG (G)		SUS	High-Alloy Steel	Special Alloys	Hardened Steel
	< 180 HB	< 300 HB	< 820 HB	< 1200 N/mm²	< 30 HRC	< 60 HRC
Vc	150 ~ 200 m/min	100 ~ 150 m/min	40 ~ 50 m/min	50 ~60 m/min	15 ~ 25 m/min	15 ~ 25 m/min
Ø	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)	F (mm/rev.)
3	0,12~0,15	0,12~0,15	0,09~0,12	0,07~0,11	0,05~0,09	0,03~0,05
4	0,13~0,18	0,13~0,18	0,10~0,15	0,08~0,13	0,06~0,10	0,04~0,06
5	0,15~0,22	0,15~0,22	0,12~0,18	0,10~0,15	0,08~0,12	0,05~0,07
6	0,18~0,25	0,18~0,25	0,14~0,20	0,12~0,18	0,09~0,15	0,05~0,07
8	0,20~0,30	0,20~0,30	0,16~0,24	0,14~0,22	0,12~0,20	0,06~0,08
10	0,23~0,33	0,23~0,33	0,18~0,27	0,15~0,25	0,13~0,23	0,07~0,10
12	0,25~0,38	0,25~0,38	0,20~0,30	0,17~0,26	0,14~0,24	0,09~0,12
14	0,30~0,43	0,30~0,43	0,22~0,35	0,18~0,30	0,15~0,26	0,10~0,13
16	0,35~0,50	0,35~0,50	0,25~0,36	0,20~0,32	0,16~0,26	0,10~0,13
18	0,38~0,55	0,38~0,55	0,28~0,38	0,23~0,33	0,18~0,28	0,12~0,16
20	0,40~0,63	0,40~0,63	0,30~0,40	0,25~0,35	0,20~0,30	0,14~0,18

WH55-5D

	SKD61 Special Alloy Steel ■ Hardened Steel Prehardened Steel 40 ~ 45 HRC		DAC55, DH31S, SKD61, SKD11, STAVAX			
			45 ~ 50 HRC		50 ~ 56 HRC	
Vc	35 ~ 35 m/min		80 ~ 120 m/min		60 ~ 90 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
2	6.400	0,02 ~ 0,04	4.000	0,02 ~ 0,04	4.000	0,02 ~ 0,04
3	4.200	0,03 ~ 0,06	2.700	0,03 ~ 0,06	2.700	0,03 ~ 0,06
4	3.200	0,04 ~ 0,08	2.000	0,04 ~ 0,08	2.000	0,04 ~ 0,08
5	2.500	0,05 ~ 0,10	1.600	0,05 ~ 0,10	1.600	0,05 ~ 0,10
6	2.100	0,06 ~ 0,12	1.300	0,06 ~ 0,12	1.300	0,06 ~ 0,12
7	1.800	0,07 ~ 0,14	1.100	0,07 ~ 0,14	1.100	0,07 ~ 0,14
8	1.600	0,08 ~ 0,16	1.000	0,08 ~ 0,16	1.000	0,08 ~ 0,16
9	1.400	0,09 ~ 0,18	900	0,09 ~ 0,18	900	0,09 ~ 0,18
10	1.300	0,10 ~ 0,20	800	0,10 ~ 0,20	800	0,10 ~ 0,20
11	1.150	0,11 ~ 0,22	720	0,11 ~ 0,22	720	0,11 ~ 0,22
12	1.100	0,12 ~ 0,24	700	0,12 ~ 0,24	700	0,12 ~ 0,24

WH055-5D

	SKD61 Special Alloy Steel ■ Hardened Steel ■ Prehardened Steel 40 ~ 45 HRC		DAC55, DH31S, SKD61, SKD11, STAVAX 45 ~ 50 HRC		DAC55, DH31S, SKD61, SKD11, STAVAX 50 ~ 56 HRC		Inconel 38 ~ 43 HRC	
Vc	35 ~ 35 m/min		20 ~ 30 m/min		20 ~ 30 m/min		10 ~ 30 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
3,3	3.900	0,033 ~ 0,066	2.400	0,033 ~ 0,066	2.400	0,033 ~ 0,066	1.900	0,033 ~ 0,066
4	3.200	0,04 ~ 0,08	2.000	0,04 ~ 0,08	2.000	0,04 ~ 0,08	1.600	0,04 ~ 0,08
5	2.500	0,05 ~ 0,10	1.600	0,05 ~ 0,10	1.600	0,05 ~ 0,10	1.300	0,05 ~ 0,10
6	2.100	0,06 ~ 0,12	1.300	0,06 ~ 0,12	1.300	0,06 ~ 0,12	1.100	0,06 ~ 0,12
7	1.800	0,07 ~ 0,14	1.100	0,07 ~ 0,14	1.100	0,07 ~ 0,14	900	0,07 ~ 0,14
8	1.600	0,08 ~ 0,16	1.000	0,08 ~ 0,16	1.000	0,08 ~ 0,16	800	0,08 ~ 0,16
9	1.400	0,09 ~ 0,18	900	0,09 ~ 0,18	900	0,09 ~ 0,18	700	0,09 ~ 0,18
10	1.300	0,10 ~ 0,20	800	0,10 ~ 0,20	800	0,10 ~ 0,20	600	0,10 ~ 0,20
11	1.150	0,11 ~ 0,22	720	0,11 ~ 0,22	720	0,11 ~ 0,22	600	0,11 ~ 0,22
12	1.100	0,12 ~ 0,24	700	0,12 ~ 0,24	700	0,12 ~ 0,24	500	0,12 ~ 0,24

WH70-DRL

	SKD11 ■ SKT ■ SUS440 55 ~ 60HRC		SKH ■ SKD11 ■ SKS 60 ~ 70HRC	
Vc	10 ~ 16 m/min		8 ~ 13 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
2	2.000	~ 0,04	1.900	~ 0,04
3	1.330	~ 0,04	1.250	~ 0,04
4	1.000	~ 0,04	950	~ 0,04
5	800	~ 0,04	750	~ 0,04
6	670	~ 0,04	630	~ 0,04
8	500	~ 0,04	480	~ 0,04
10	400	~ 0,04	380	~ 0,04
12	330	~ 0,04	320	~ 0,04
14,1	280	~ 0,04	270	~ 0,04
16,1	250	~ 0,04	240	~ 0,04
17,6	235	~ 0,04	190	~ 0,04
18,6	220	~ 0,04	180	~ 0,04

VPH-GDS

	~ 35HRC ■ 35~45 HRC ■ 45~50 HRC ■ 50~70 HRC						SKD				SCM	
	34~43 HRC 1060~1400 N/mm²		43~48 HRC 1400~1600 N/mm²		48~53 HRC 1600~1900 N/mm²		SKD11 ~1060 N/mm²		SKD61 ~900 N/mm²		100Cr6 710~900 N/mm²	
Vc	12 ~ 18 m/min		6 ~ 10 m/min		5 ~ 8 m/min		10 ~ 16 m/min		12 ~ 20 m/min		25 ~ 32 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
2	2.550	0,02~0,05	1.250	0,02~0,04	1.050	0,02~0,04	2.100	0,06~0,09	2.550	0,06~0,09	4.500	0,06~0,09
3	1.700	0,03~0,08	850	0,03~0,06	700	0,03~0,06	1.400	0,10~0,13	1.700	0,10~0,13	3.000	0,10~0,13
4	1.250	0,04~0,10	640	0,04~0,08	520	0,04~0,08	1.030	0,11~0,15	1.270	0,11~0,15	2.250	0,11~0,15
5	1.000	0,05~0,13	510	0,05~0,10	400	0,05~0,10	830	0,12~0,18	1.020	0,12~0,18	1.800	0,12~0,18
6	850	0,06~0,15	430	0,06~0,12	350	0,06~0,12	690	0,13~0,19	850	0,13~0,19	1.500	0,13~0,19
7	730	0,07~0,18	360	0,07~0,14	260	0,07~0,14	600	0,15~0,22	730	0,15~0,22	1.300	0,15~0,22
8	640	0,08~0,20	320	0,08~0,16	230	0,08~0,16	520	0,16~0,24	640	0,16~0,24	1.100	0,16~0,24
9	570	0,09~0,23	280	0,09~0,18	210	0,09~0,18	460	0,18~0,26	570	0,18~0,26	1.000	0,18~0,26
10	510	0,10~0,25	260	0,10~0,20	200	0,10~0,20	410	0,20~0,28	510	0,20~0,28	900	0,20~0,28
11	460	0,11~0,28	230	0,11~0,22	180	0,11~0,22	380	0,22~0,31	460	0,22~0,31	820	0,22~0,31
12	430	0,12~0,30	210	0,12~0,24	170	0,12~0,24	350	0,24~0,34	430	0,24~0,34	760	0,24~0,34
13	400	0,13~0,32	200	0,13~0,26	160	0,13~0,26	320	0,26~0,36	390	0,26~0,36	700	0,26~0,36

VPH-GDS

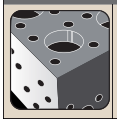
	Ti Alloy Ti-6Al-4V (32~38 HRC)		Inconel Inconel 718 (38~43 HRC)		Carbon Steel CK50 500 ~ 710 N/mm²		C≤0,2% 41CrMo4 ~500 N/mm²		GG GG25 ~350 N/mm²	
Vc	6 ~ 10 m/min		6 ~ 8 m/min		25 ~ 36 m/min		38 ~ 50 m/min		40 ~ 63 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
2	1.200	0,02~0,04	1.100	0,02~0,04	5.000	0,06~0,09	6.350	0,06~0,09	8.400	0,08~0,11
3	800	0,03~0,06	740	0,03~0,06	3.400	0,10~0,13	4.250	0,10~0,13	5.600	0,11~0,16
4	700	0,04~0,08	550	0,04~0,08	2.550	0,11~0,15	3.200	0,11~0,15	4.220	0,13~0,19
5	500	0,05~0,10	450	0,05~0,10	2.050	0,12~0,18	2.550	0,12~0,18	3.370	0,16~0,22
6	440	0,06~0,12	370	0,06~0,12	1.700	0,13~0,19	2.100	0,13~0,19	2.800	0,19~0,26
7	350	0,07~0,14	320	0,07~0,14	1.450	0,15~0,22	1.800	0,15~0,22	2.400	0,20~0,28
8	320	0,08~0,16	280	0,08~0,16	1.270	0,16~0,24	1.600	0,16~0,24	2.100	0,21~0,30
9	280	0,09~0,18	250	0,09~0,18	1.130	0,18~0,26	1.400	0,18~0,26	1.900	0,23~0,33
10	260	0,10~0,20	220	0,10~0,20	1.000	0,20~0,28	1.270	0,20~0,28	1.700	0,25~0,36
11	230	0,11~0,22	200	0,11~0,22	930	0,22~0,31	1.150	0,22~0,31	1.550	0,28~0,39
12	210	0,12~0,24	190	0,12~0,24	850	0,24~0,34	1.060	0,24~0,34	1.400	0,30~0,42
13	200	0,13~0,26	170	0,13~0,26	790	0,26~0,36	980	0,26~0,36	1.300	0,31~0,42

VP-GDR

	C≤0,2% CK15 ■ St40 ~500 N/mm²		C≥0,3% CK50 500~710 N/mm²		SCM 100Cr6 710~900 N/mm²		Special Alloy SKD61 ~28 HRC ~900 N/mm²		Special Alloy SKD11 28~34 HRC 900~1060 N/mm²		GG GG25 ~ 350 N/mm²		AC AC4C ■ ADC	
Vc	38 ~ 50 m/min		25 ~ 36 m/min		25 ~ 32 m/min		12 ~ 20 m/min		10 ~ 16 m/min		40 ~ 63 m/min		70 ~ 120 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
2	6.350	0,06~0,09	5.100	0,06~0,09	4.450	0,06~0,09	2.550	0,06~0,09	2.050	0,06~0,09	8.435	0,08~0,11	15.000	0,12~0,18
3	4.250	0,10~0,13	3.400	0,10~0,13	2.970	0,10~0,13	1.700	0,10~0,13	1.370	0,10~0,13	5.620	0,11~0,16	10.000	0,20~0,28
4	3.200	0,11~0,15	2.550	0,11~0,15	2.230	0,11~0,15	1.270	0,11~0,15	1.035	0,11~0,15	4.220	0,13~0,19	8.000	0,24~0,38
5	2.550	0,12~0,18	2.040	0,12~0,18	1.780	0,12~0,18	1.020	0,12~0,18	825	0,12~0,18	3.375	0,16~0,22	6.350	0,28~0,40
6	2.100	0,13~0,19	1.700	0,13~0,19	1.490	0,13~0,19	850	0,13~0,19	690	0,13~0,19	2.810	0,19~0,26	5.300	0,34~0,48
8	1.600	0,16~0,24	1.270	0,16~0,24	1.110	0,16~0,24	635	0,16~0,24	515	0,16~0,24	2.110	0,21~0,30	4.000	0,38~0,53
10	1.270	0,20~0,28	1.020	0,20~0,28	890	0,20~0,28	510	0,20~0,28	410	0,20~0,28	1.690	0,25~0,36	3.200	0,45~0,63
12	1.060	0,24~0,34	850	0,24~0,34	740	0,24~0,34	425	0,24~0,34	345	0,24~0,34	1.400	0,30~0,42	2.700	0,53~0,75
13	980	0,26~0,36	780	0,26~0,36	690	0,26~0,36	390	0,26~0,36	320	0,26~0,36	1.300	0,31~0,42	2.500	0,56~0,79
14	900	0,28~0,39	720	0,28~0,39	640	0,28~0,39	360	0,28~0,39	300	0,28~0,39	1.200	0,32~0,44	2.300	0,57~0,81
16	800	0,30~0,43	640	0,30~0,43	560	0,30~0,43	320	0,30~0,43	260	0,30~0,43	1.050	0,34~0,46	2.000	0,61~0,85
18	700	0,34~0,49	560	0,34~0,49	500	0,34~0,49	280	0,34~0,49	230	0,34~0,49	950	0,36~0,50	1.800	0,63~0,90
20	650	0,36~0,50	500	0,36~0,50	450	0,36~0,50	260	0,36~0,50	210	0,36~0,50	830	0,40~0,56	1.600	0,68~0,98
22	580	0,40~0,55	460	0,40~0,55	400	0,40~0,55	230	0,40~0,55	190	0,40~0,55	750	0,42~0,59	1.500	0,73~1,06
24	530	0,41~0,60	420	0,41~0,60	370	0,41~0,60	210	0,41~0,60	170	0,41~0,60	700	0,46~0,65	1.350	0,77~1,13
26	500	0,42~0,65	400	0,42~0,65	340	0,42~0,65	200	0,42~0,65	160	0,42~0,65	650	0,47~0,68	1.250	0,81~1,20
28	450	0,45~0,70	360	0,45~0,70	320	0,45~0,70	180	0,45~0,70	150	0,45~0,70	600	0,50~0,73	1.150	0,84~1,26
30	420	0,48~0,75	340	0,48~0,75	300	0,48~0,75	170	0,48~0,75	140	0,48~0,75	550	0,54~0,78	1.100	0,87~1,32
32	400	0,51~0,80	320	0,51~0,80	280	0,51~0,80	160	0,51~0,80	130	0,51~0,80	520	0,58~0,83	1.000	0,90~1,38

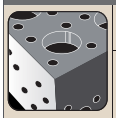
CONDITIONS

VP-HO-GDR



	C≤0,2% ~500 N/mm²		Carbon Steel CK50 500~710 N/mm²		SCM 100Cr6 710~900 N/mm²		SUS SUS300 SUS400		Special Alloy SKD61 ~28 HRC ~900 N/mm²		Special Alloy SKD11 28~34 HRC 900~1060 N/mm²		35~45 HRC 34~43 HRC 1060~ 1400 N/mm²		GG GG25 ~350 N/mm²		AC GG25 AC4C ■ ADC	
Vc	36 ~ 80 m/min		25 ~ 50 m/min		25 ~ 36 m/min		18 ~ 25 m/min		12 ~ 22 m/min		10 ~ 16 m/min		9 ~ 13 m/min		36 ~ 63 m/min		70 ~ 140 m/min	
Ø	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)	S (min⁻¹)	F (mm/rev)
6	3.000	0,13~0,19	1.900	0,13~0,19	1.500	0,13~0,19	1.100	0,13~0,19	850	0,13~0,19	660	0,13~0,19	630	0,08~0,15	2.500	0,19~0,26	5.300	0,34~0,48
8	2.300	0,17~0,24	1.400	0,17~0,24	1.100	0,17~0,24	830	0,17~0,24	640	0,17~0,24	450	0,17~0,24	470	0,13~0,20	1.900	0,21~0,30	4.000	0,38~0,53
10	1.800	0,20~0,28	1.100	0,20~0,28	950	0,20~0,28	660	0,20~0,28	500	0,20~0,28	400	0,20~0,28	380	0,16~0,24	1.500	0,25~0,36	3.200	0,45~0,63
12	1.500	0,24~0,34	950	0,24~0,34	800	0,24~0,34	550	0,24~0,34	420	0,24~0,34	330	0,24~0,34	320	0,19~0,28	1.250	0,30~0,34	2.700	0,53~0,75
13	1.400	0,26~0,36	900	0,26~0,36	750	0,26~0,36	510	0,26~0,36	400	0,26~0,36	300	0,26~0,36	290	0,20~0,30	1.200	0,31~0,42	2.500	0,56~0,79
14	1.350	0,28~0,39	820	0,28~0,39	700	0,28~0,39	470	0,28~0,39	360	0,28~0,39	280	0,28~0,39	270	0,20~0,32	1.100	0,32~0,44	2.300	0,57~0,81
16	1.200	0,30~0,43	720	0,30~0,43	600	0,30~0,43	420	0,30~0,43	320	0,30~0,43	250	0,30~0,43	240	0,22~0,32	1.000	0,34~0,46	2.000	0,61~0,85
18	1.100	0,34~0,49	650	0,34~0,49	550	0,34~0,49	370	0,34~0,49	280	0,34~0,49	220	0,34~0,49	210	0,24~0,40	900	0,36~0,50	1.800	0,63~0,90
20	950	0,36~0,50	580	0,36~0,50	480	0,36~0,50	330	0,36~0,50	260	0,36~0,50	200	0,36~0,50	190	0,27~0,45	800	0,40~0,56	1.600	0,68~0,98
22	850	0,40~0,55	520	0,40~0,55	450	0,40~0,55	300	0,40~0,55	230	0,40~0,55	180	0,40~0,55	170	0,28~0,48	700	0,42~0,59	1.500	0,73~1,06
24	800	0,41~0,60	480	0,41~0,60	400	0,41~0,60	280	0,41~0,60	210	0,41~0,60	170	0,41~0,60	160	0,29~0,52	650	0,46~0,65	1.350	0,77~1,13
26	750	0,42~0,65	450	0,42~0,65	370	0,42~0,65	250	0,42~0,65	200	0,42~0,65	150	0,42~0,65	150	0,30~0,56	600	0,47~0,68	1.250	0,81~1,20
28	700	0,45~0,70	410	0,45~0,70	350	0,45~0,70	240	0,45~0,70	180	0,45~0,70	140	0,45~0,70	140	0,31~0,59	550	0,50~0,73	1.150	0,84~1,26
30	650	0,48~0,75	400	0,48~0,75	320	0,48~0,75	220	0,48~0,75	170	0,48~0,75	130	0,48~0,75	130	0,32~0,63	500	0,54~0,78	1.100	0,87~1,32
32	600	0,51~0,80	360	0,51~0,80	300	0,51~0,80	200	0,51~0,80	160	0,51~0,80	120	0,51~0,80	120	0,32~0,67	480	0,58~0,83	1.000	0,90~1,38

NEXUS-GDS/NEXUS-GDR



	SUS									
	AUSTENITIC SUS304 - 200		AUSTENITIC SUS304 - 200		MARTENSITIC SUS420 - 440		FERRITIC SUS430 - 405		PRECIPITATION SUS630 - 631	
Vc	12 ~ 15 m/min		15 ~ 25 m/min		15 ~ 25 m/min		15 ~ 30 m/min		10 ~ 20 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
1	4.460	0,01~0,018	6.370	0,02~0,04	6.370	0,01~0,02	7.000	0,01~0.03	4.770	0,01~0,03
2	2.230	0,02~0,036	3.180	0,05~0,07	3.180	0,02~0,04	3.500	0,03~0,05	2.390	0,03~0,05
3	1.490	0,03~0,054	2.120	0,06~0,09	2.120	0,03~0,06	2.330	0,04~0,06	1.590	0,04~0,06
4	1.030	0,04~0,08	1.590	0,08~0,12	1.590	0,04~0,08	1.750	0,06~0,08	1.190	0,06~0,08
5	830	0,05~0,10	1.270	0,10~0,15	1.270	0,05~0,10	1.400	0,08~0,10	950	0,08~0,10
6	690	0,06~0,12	1.060	0,12~0,18	1.060	0,06~0,12	1.170	0,09~0,12	800	0,09~0,12
8	480	0,08~0,16	800	0,16~0,24	800	0,08~0,16	880	0,12~0,16	600	0,12~0,16
10	380	0,10~ 0,20	640	0,20~0,28	640	0,10~0,20	700	0,15~0,20	480	0,15~0,20
12	320	0,12~0,24	530	0,24~0,34	530	0,12~0,24	580	0,18~0,24	400	0,18~0,24

NEXUS-GDS/NEXUS-GDR



	Al A5052 - 7075		AC AC4C - ADC		Cu C1020 - 2600		C≤0,2% S15C - SS400 ~500 N/mm²	
Vc	32 ~ 63 m/min		63 ~ 100 m/min		40 ~ 60 m/min		40 ~ 60 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
1	15.000	0,02~0,06	25.000	0,02~0,06	15.920	0,01~0,03	15.920	0,02~0,05
2	8.000	0,04~0,12	10.000	0,04~0,12	7.960	0,04~0,06	7.960	0,06~0,09
3	5.300	0,06~0,18	6.700	0,06~0,18	5.310	0,06~0,09	5.310	0,10~0,13
4	4.000	0,08~0,24	6.400	0,08~0,24	3.980	0,08~0,11	3.980	0,11~0,15
5	3.200	0,10~0,30	5.000	0,10~0,30	3.180	0,10~0,13	3.180	0,12~0,18
6	2.700	0,12~0,36	4.200	0,12~0,36	2.650	0,12~0,15	2.650	0,13~0,19
8	2.000	0,16~0,45	3.200	0,16~0,45	1.990	0,16~0,20	1.990	0,17~0,24
10	1.600	0,20~ 0,55	2.500	0,20~0,55	1.590	0,20~0,25	1.590	0,20~0,28
12	1.350	0,24~0,66	2.100	0,24~0,66	1.330	0,24~0,30	1.330	0,24~0,34

Drilling depth	≤4D	≤5D	≤6D
Coefficient for reducing speed	x0,9	x0,8	x0,8

D= drill dia

EX-SUS-GDS/EX-SUS-GDR

	SUS								Al		AC		Cu		C≤0,2%	
	Austenitic SUS304 SUS200		Martensitic SUS420 SUS440		Ferritic SUS430 SUS405		Precipitation SUS630 SUS631		A5052 - 7075		AC4C - ADC		C1020 - 2600		CK15 - St40 ~500 N/mm²	
Vc	13 ~ 18 m/min		15 ~ 20 m/min		15 ~ 20 m/min		8 ~ 12 m/min		32 ~ 63 m/min		63 ~ 100 m/min		25 ~ 50 m/min		32 ~ 40 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
1	4.800	0,02~0,04	5.550	0,02~0,04	5.550	0,01~0,03	3.200	0,01~0,03	15.000	0,02~0,06	25.000	0,02~0,06	12.000	0,01~0,03	10.000	0,02~0,05
2	2.400	0,05~0,07	2.850	0,05~0,07	2.850	0,03~0,05	1.600	0,03~0,05	8.000	0,04~0,12	10.000	0,04~0,12	5.100	0,04~0,06	5.700	0,06~0,09
3	1.600	0,06~0,09	1.900	0,06~0,09	1.900	0,04~0,06	1.100	0,04~0,06	5.300	0,06~0,18	6.700	0,06~0,18	3.400	0,06~0,09	3.850	0,10~0,13
4	1.200	0,08~0,12	1.450	0,08~0,12	1.450	0,06~0,08	800	0,06~0,08	4.000	0,08~0,24	6.400	0,08~0,24	2.550	0,08~0,11	2.900	0,11~0,15
5	950	0,10~0,15	1.150	0,12~0,15	1.150	0,08~0,10	650	0,08~0,10	3.200	0,10~0,30	5.000	0,10~0,30	2.050	0,10~0,13	2.260	0,12~0,18
6	800	0,12~0,18	950	0,15~0,18	950	0,09~0,12	550	0,09~0,12	2.700	0,12~0,36	4.200	0,12~0,36	1.700	0,12~0,15	1.900	0,13~0,19
8	600	0,16~0,24	720	0,20~0,24	720	0,12~0,16	400	0,12~0,16	2.000	0,16~0,45	3.200	0,16~0,45	1.250	0,16~0,20	1.400	0,17~0,24
10	480	0,20~0,28	570	0,25~0,30	570	0,15~0,20	320	0,15~0,20	1.600	0,20~0,55	2.500	0,20~0,55	1.000	0,20~0,25	1.120	0,20~0,28
12	400	0,24~0,34	480	0,30~0,36	480	0,18~0,24	280	0,18~0,24	1.350	0,24~0,66	2.100	0,24~0,66	850	0,24~0,30	950	0,24~0,34
13	370	0,26~0,36	440	0,32~0,40	440	0,20~0,26	250	0,20~0,26	1.250	0,25~0,72	2.000	0,25~0,72	780	0,26~0,32	880	0,26~0,36
14	340	0,28~0,39	410	0,35~0,45	410	0,21~0,30	225	0,21~0,30	1.140	0,27~0,74	1.850	0,27~0,74	730	0,26~0,34	820	0,27~0,39
15	320	0,29~0,40	380	0,36~0,48	380	0,22~0,31	210	0,22~0,31	1.060	0,29~0,80	1.700	0,29~0,80	680	0,26~0,36	760	0,28~0,42
16	300	0,30~0,43	355	0,37~0,50	355	0,23~0,32	200	0,23~0,32	1.000	0,30~0,83	1.600	0,30~0,83	640	0,27~0,37	720	0,29~0,43
17	280	0,31~0,45	335	0,38~0,52	335	0,24~0,34	185	0,24~0,34	940	0,31~0,88	1.500	0,31~0,88	600	0,28~0,39	675	0,30~0,46
18	265	0,32~0,47	320	0,39~0,54	320	0,25~0,36	175	0,25~0,36	885	0,32~0,94	1.450	0,32~0,94	570	0,29~0,41	640	0,32~0,49
19	250	0,33~0,48	300	0,40~0,55	300	0,25~0,38	170	0,25~0,38	840	0,34~0,97	1.350	0,34~0,97	540	0,30~0,43	600	0,33~0,51
20	240	0,34~0,50	285	0,04~0,56	285	0,26~0,40	160	0,26~0,40	800	0,36~1,00	1.300	0,36~1,00	510	0,30~0,44	570	0,34~0,52

V-HDO-GDR

	C≤0,2% St37 ~500 N/mm²		C≤0,3% CK50 500~710 N/mm²		SCM 100Cr6 750~1200 N/mm²		SUS Série SUS300 Série SUS400		SKD SKD61 ~ 35 HRC		SKD X40CrMoV51 35 ~ 40 HRC		GG GG25 - GGG40		AC AlMG3 - AlMG51	
Vc	32 ~ 63 m/min		22 ~ 36 m/min		20 ~ 32 m/min		16 ~ 24 m/min		10 ~ 18 m/min		8 ~ 12 m/min		32 ~ 50 m/min		63 ~ 125 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
6	2.100	0,13~0,19	1.550	0,13~0,19	1.400	0,13~0,19	1.050	0,13~0,19	740	0,13~0,19	530	0,06~0,12	2.200	0,19~0,26	5.000	0,34~0,48
8	1.600	0,17~0,24	1.150	0,17~0,24	1.050	0,17~0,24	800	0,17~0,24	550	0,17~0,24	400	0,08~0,16	1.650	0,21~0,30	3.750	0,38~0,53
10	1.250	0,20~0,28	920	0,20~0,28	830	0,20~0,28	640	0,20~0,28	445	0,20~0,28	320	0,10~0,20	1.300	0,25~0,36	3.000	0,45~0,63
12	1.050	0,24~0,34	770	0,24~0,34	700	0,24~0,34	530	0,24~0,34	370	0,24~0,34	265	0,12~0,24	1.100	0,30~0,42	2.500	0,53~0,75
14	900	0,28~0,39	660	0,28~0,39	600	0,28~0,39	450	0,28~0,39	320	0,28~0,39	230	0,16~0,29	950	0,32~0,44	2.150	0,57~0,81
16	800	0,30~0,43	580	0,30~0,43	520	0,30~0,43	400	0,30~0,43	280	0,30~0,43	200	0,16~0,29	820	0,34~0,46	1.900	0,61~0,85
18	700	0,34~0,49	510	0,34~0,49	460	0,34~0,49	350	0,34~0,49	250	0,34~0,49	180	0,18~0,32	730	0,36~0,50	1.700	0,63~0,90
20	650	0,36~0,50	460	0,36~0,50	415	0,36~0,50	320	0,36~0,50	220	0,36~0,50	160	0,18~0,34	650	0,40~0,56	1.500	0,68~0,98
22	580	0,40~0,55	420	0,40~0,55	380	0,40~0,55	290	0,40~0,55	200	0,40~0,55	145	0,20~0,37	600	0,42~0,59	1.400	0,73~1,06
24	530	0,41~0,60	380	0,41~0,60	350	0,41~0,60	270	0,41~0,60	185	0,41~0,60	130	0,20~0,38	550	0,46~0,65	1.250	0,77~1,13
26	490	0,42~0,65	360	0,42~0,65	320	0,42~0,65	250	0,42~0,65	170	0,42~0,65	120	0,21~0,42	500	0,47~0,68	1.150	0,81~1,20
28	450	0,45~0,70	330	0,45~0,70	300	0,45~0,70	230	0,45~0,70	160	0,45~0,70	115	0,21~0,45	470	0,50~0,73	1.100	0,84~1,26
30	420	0,48~0,75	310	0,48~0,75	280	0,48~0,75	210	0,48~0,75	150	0,48~0,75	105	0,24~0,46	450	0,54~0,78	1.000	0,87~1,32
32	400	0,51~0,80	300	0,51~0,80	260	0,51~0,80	200	0,51~0,80	140	0,51~0,80	100	0,22~0,48	410	0,58~0,83	950	0,90~1,38

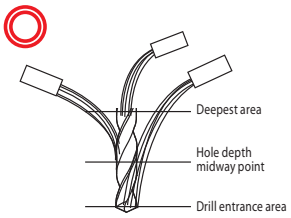
CONDITIONS

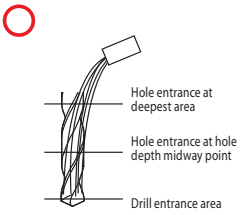
BACK

TDXL

	C≤0,2% S50C ■ S35C 500 ~ 710 N/mm²		SCM SCr ■ SNCM 710 ~ 900 N/mm²		SKD DIE STEELS SKD ■ SK ■ DH31 ■ DAC 710 ~ 900 N/mm²		GGG FCD400 ■ FCD500 ~ 500 N/mm²		GG FC200 ■ FC300 ~ 300 N/mm²	
Vc	20 ~ 24 m/min		18 ~ 22 m/min		12 ~ 16 m/min		16 ~ 20 m/min		18 ~ 24 m/min	
Ø	**S (min⁻¹)**	**F (mm/rev.)**	**S (min⁻¹)**	**F (mm/rev.)**	**S (min⁻¹)**	**F (mm/rev.)**	**S (min⁻¹)**	**F (mm/rev.)**	**S (min⁻¹)**	**F (mm/rev.)**
1,6	4.000	0,016~0,03	4.000	0,016~0,03	2.700	0,016~0,03	3.600	0,01~0,03	4.150	0,03~0,05
2	3.200	0,02~0,05	3.200	0,02~0,04	2.200	0,02~0,04	2.850	0,01~0,04	3.350	0,04~0,06
3	2.200	0,03~0,08	2.200	0,03~0,08	1.500	0,03~0,07	1.900	0,02~0,08	2.250	0,06~0,10
4	1.600	0,04~0,10	1.600	0,04~0,10	1.150	0,04~0,09	1.460	0,02~0,10	1.650	0,08~0,13
5	1.300	0,05~0,13	1.300	0,05~0,13	900	0,05~0,12	1.150	0,03~0,13	1.350	0,10~0,16
6	1.100	0,06~0,15	1.100	0,06~0,15	750	0,06~0,14	955	0,04~0,15	1.100	0,12~0,19
8	800	0,08~0,20	800	0,08~0,20	550	0,08~0,18	715	0,05~0,20	835	0,16~0,26
10	650	0,10~0,25	650	0,10~0,25	450	0,10~0,23	575	0,06~0,25	670	0,20~0,32
12	550	0,13~0,30	550	0,12~0,30	380	0,12~0,28	475	0,07~0,30	555	0,24~0,38

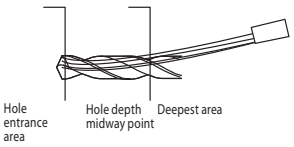
Vertical Machine



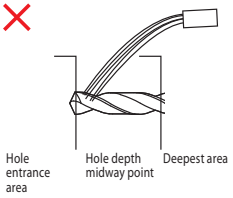


Allow the coolant to move along the drill if the discharge flow rate is low or the number of nozzles is too few

Horizontal Machine



If there are too few coolant nozzles is small, increase the amount of coolant and its discharge pressure and allow the coolant to move along the drill so that it is applied constantly to the entrance.

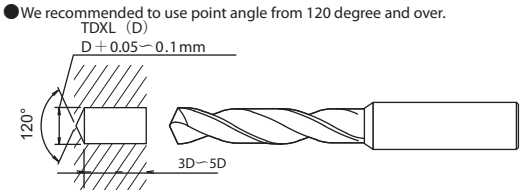


If there are too few coolant nozzles is small, the coolant that is applied to the hole entrance will stray from the hole along the way

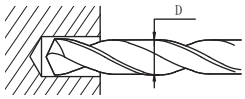
① Make a pilot hole.

Recommended drill : EX-SUS-GDS

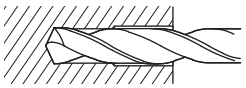
- For a pilot hole, select 0.05mm to 0.1mm larger size drill than TDXL. For deep hole, we recommend to drill deeper pilot hole.
- For a vertical machining center. When drilling many holes in a small area with vertical machining center. We recommend only centering by 130 degree point angle LDS to avoid chips building up in pilot holes, which can cause drill chipping or breakage. When drilling the pilot hole it is recommended to make the hole 3xD in depth, at a feed rate equal to (Drill φx 0.01) per revolution. Straightness will be less accurate than a comparable operation in a horizontal machining center.
- We recommended to use point angle from 120 degree and over.



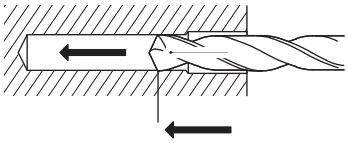
② Insert the TDXL into a pilot hole with low revolution. (~500 min⁻¹)



③ Start supplying the coolant.

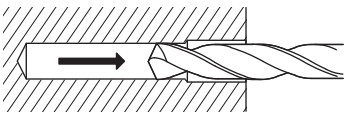


④ Increase the revolution to the designated speed and start drilling. At the start of drilling, set the feed rate to 1% of the drill dia. and increase the feed rate when the depth reaches between 3xD and 5xD.



Increase feed rate to between 1 and 2% Set it to 1%D between 3xD and 5xD

⑤ After drilling, move the drill away from the bottom of the hole; then reduce its speed while pulling it out of the hole..



EX-GDXL

	Carbon Steel				SCM		Special Alloy Steel				GG		Al AC	
	CK15 ■ St40 ~500 N/mm²		CK45 500 ~ 710 N/mm²		SCM 710 ~ 900 N/mm²		SKD61 ~ 900 N/mm² ~ 28 HRC		SKD11 ~ 1060 N/mm² 28 ~ 34 HRC		FC250 ~ 350 N/mm²		AC4C ■ ADC	
Vc	16 ~ 24 m/min		20 ~ 25 m/min		12 ~ 16 m/min		10 ~ 20 m/min		6 ~ 10 m/min		20 ~ 30 m/min		20 ~ 35 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
2	3.200	0,03~0,07	3.600	0,03~0,07	2.200	0,03~0,07	2.400	0,03~0,07	1.270	0,02~0,05	4.000	0,02~0,05	4.400	0,03~0,07
3	2.100	0,05~0,10	2.400	0,05~0,10	1.500	0,05~0,10	1.700	0,05~0,10	850	0,04~0,07	2.700	0,04~0,07	3.000	0,05~0,10
4	1.600	0,06~0,12	1.800	0,06~0,12	1.100	0,06~0,12	1.250	0,06~0,12	640	0,05~0,09	2.000	0,05~0,09	2.200	0,06~0,12
5	1.250	0,08~0,13	1.450	0,08~0,13	900	0,08~0,13	1.000	0,08~0,13	510	0,07~0,10	1.600	0,07~0,10	1.800	0,08~0,13
6	1.050	0,10~0,14	1.200	0,10~0,14	750	0,10~0,14	850	0,10~0,14	420	0,09~0,12	1.350	0,09~0,12	1.500	0,10~0,14
7	900	0,12~0,16	1.000	0,12~0,16	640	0,12~0,16	730	0,12~0,16	360	0,10~0,14	1.150	0,10~0,14	1.300	0,12~0,16
8	800	0,14~0,18	900	0,14~0,18	560	0,14~0,18	640	0,14~0,18	320	0,12~0,16	1.000	0,12~0,16	1.100	0,14~0,18
9	700	0,16~0,20	800	0,16~0,20	500	0,16~0,20	570	0,16~0,20	280	0,13~0,18	900	0,13~0,18	1.000	0,16~0,02
10	640	0,18~0,22	720	0,18~0,22	450	0,18~0,22	510	0,18~0,22	260	0,14~0,20	800	0,14~0,2	900	0,18~0,22
11	580	0,20~0,24	650	0,20~0,24	400	0,20~0,24	460	0,20~0,24	230	0,15~0,22	750	0,15~0,22	800	0,20~0,24
12	530	0,22~0,26	600	0,22~0,26	370	0,22~0,26	430	0,22~0,26	210	0,17~0,24	660	0,17~0,24	750	0,22~0,26
13	490	0,24~0,28	550	0,24~0,28	340	0,24~0,28	390	0,24~0,28	200	0,20~0,26	610	0,20~0,26	700	0,24~0,28

V-SDR

	C≤0,2%		Carbon Steel		SCM		Special Steel		Special Steel		GG		AC	
	CK15 ■ St40 ~500 N/mm²		CK45 ■ CK50 500 ~ 710 N/mm²		SCM ■ SNC ■ SNCM 710 ~ 900 N/mm²		SKD61 35 HRC		SKD11		GG25 ~ 350 N/mm²		AC4C ■ ADC	
Vc	22 ~ 40 m/min		16 ~ 30 m/min		12 ~ 25 m/min		8 ~ 16 m/min		6 ~ 12 m/min		22 ~ 40 m/min		50 ~ 100 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
2	5.700	0,02~0,08	4.000	0,02~0,08	3.500	0,02~0,08	1.900	0,02~0,08	1.600	0,02~0,08	5.700	0,07~0,10	10.000	0,07~0,10
3	3.850	0,03~0,10	2.800	0,03~0,10	2.400	0,03~0,10	1.320	0,03~0,10	1.060	0,03~0,10	3.850	0,11~0,14	10.000	0,11~0,14
4	2.900	0,04~0,13	2.100	0,04~0,13	1.800	0,04~0,13	950	0,04~0,13	800	0,04~0,13	2.900	0,12~0,17	7.500	0,12~0,17
5	2.260	0,05~0,15	1.600	0,05~0,15	1.400	0,05~0,15	750	0,05~0,15	630	0,05~0,15	2.260	0,14~0,20	6.300	0,14~0,20
6	1.900	0,06~0,17	1.320	0,06~0,17	1.180	0,06~0,17	630	0,06~0,17	530	0,06~0,17	1.900	0,17~0,24	5.000	0,17~0,24
8	1.400	0,08~0,21	1.000	0,08~0,21	900	0,08~0,21	480	0,08~0,21	400	0,08~0,21	1.400	0,19~0,28	4.000	0,19~0,28
10	1.120	0,10~0,22	800	0,10~0,22	710	0,10~0,22	380	0,10~0,22	320	0,10~0,22	1.120	0,22~0,33	3.150	0,22~0,33
12	950	0,12~0,27	670	0,12~0,27	600	0,12~0,27	320	0,12~0,27	270	0,12~0,27	950	0,26~0,38	2.650	0,26~0,38
13	880	0,13~0,29	620	0,13~0,29	550	0,13~0,29	300	0,13~0,29	250	0,13~0,29	880	0,27~0,39	2.450	0,27~0,39

FX-LDS/HYP-LDS

	C≤0,2%		Carbon Steel		SCM		Special Steel		Special Steel		GG		AC	
	St40 ~ 500 N/mm²		CK45 500 ~ 710 N/mm²		SCM440 710 ~ 900 N/mm²		SKD61 28 HRC		SKD11 34 HRC		GG25 ~ 350 N/mm²		AC4D	
Vc	63 ~ 80 m/min		40 ~ 63 m/min		32 ~ 50 m/min		20 ~ 28 m/min		16 ~ 22 m/min		63 ~ 100 m/min		80 ~ 160 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
3	7.500	0,04~0,08	5.500	0,04~0,08	4.500	0,04~0,08	2.500	0,04~0,08	2.000	0,04~0,08	8.000	0,05~0,09	12.000	0,10~0,22
4	5.700	0,05~0,10	4.100	0,05~0,10	3.300	0,05~0,10	1.900	0,05~0,10	1.500	0,05~0,10	6.500	0,07~0,12	9.500	0,12~0,25
6	3.800	0,06~0,12	2.700	0,06~0,12	2.300	0,06~0,12	1.250	0,06~0,12	1.000	0,06~0,12	4.300	0,12~0,18	6.400	0,14~0,28
8	2.800	0,08~0,15	2.000	0,08~0,15	1.700	0,08~0,15	950	0,08~0,15	750	0,08~0,15	3.200	0,13~0,20	4.800	0,18~0,32
10	2.300	0,10~0,18	1.700	0,10~0,18	1.400	0,10~0,18	750	0,10~0,18	600	0,10~0,18	2.600	0,17~0,25	3.800	0,22~0,36
12	1.900	0,12~0,21	1.400	0,12~0,21	1.200	0,12~0,21	650	0,12~0,21	500	0,12~0,21	2.200	0,21~0,30	3.200	0,25~0,40
16	1.400	0,16~0,28	1.000	0,16~0,28	900	0,16~0,28	500	0,16~0,28	380	0,16~0,28	1.600	0,24~0,32	2.400	0,32~0,48
20	1.150	0,20~0,34	820	0,20~0,34	700	0,20~0,34	400	0,20~0,34	300	0,20~0,34	1.300	0,26~0,40	1.900	0,40~0,60
25	900	0,25~0,45	650	0,25~0,45	560	0,25~0,45	300	0,25~0,45	250	0,25~0,45	1.000	0,30~0,50	1.500	0,50~0,75

TIN-NC-LDS/NC-LDS



	C≤0,2% St40		Carbon Steel CK45		SCM SCM440		Special Steel SKD61 35 HRC		Special Steel SKD11 34 HRC		GG GG25 ~ 350 N/mm²		SUS SUS304		AC AC4D	
Vc	32 ~ 40 m/min		22 ~ 30 m/min		20 ~ 25 m/min		10 ~ 13 m/min		8 ~ 12 m/min		25 ~ 32 m/min		8 ~ 12 m/min		51 ~ 100 m/min	
Ø	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)	S (min⁻¹)	F (mm/rev.)
3	3.850	0,04~0,08	2.800	0,04~0,08	2.400	0,04~0,08	1.220	0,04~0,08	1.060	0,04~0,08	3.100	0,04~0,09	1.060	0,04~0,08	8.000	0,10~0,22
4	2.900	0,05~0,10	2.100	0,05~0,10	1.800	0,05~0,10	910	0,05~0,10	800	0,05~0,10	2.400	0,05~0,12	800	0,05~0,10	6.000	0,12~0,25
6	1.900	0,06~0,12	1.320	0,06~0,12	1.180	0,06~0,12	610	0,06~0,12	530	0,06~0,12	1.600	0,06~0,18	530	0,06~0,12	4.000	0,14~0,28
8	1.400	0,08~0,15	1.000	0,08~0,15	900	0,08~0,15	450	0,08~0,15	400	0,08~0,15	1.200	0,08~0,20	400	0,08~0,15	3.000	0,18~0,32
10	1.120	0,10~0,18	800	0,10~0,18	710	0,10~0,18	360	0,10~0,18	320	0,10~0,18	950	0,10~0,25	320	0,10~0,18	2.400	0,22~0,36
12	950	0,12~0,21	670	0,12~0,21	600	0,12~0,21	300	0,12~0,21	270	0,12~0,21	800	0,12~0,30	270	0,12~0,21	2.000	0,25~0,40
16	720	0,16~0,28	520	0,16~0,28	450	0,16~0,28	220	0,16~0,28	200	0,16~0,28	600	0,16~0,32	200	0,16~0,28	1.500	0,32~0,48
20	560	0,20~0,34	400	0,20~0,34	360	0,20~0,34	180	0,20~0,34	160	0,20~0,34	480	0,20~0,40	160	0,20~0,34	1.200	0,40~0,60
25	450	0,25~0,45	320	0,25~0,45	290	0,25~0,45	150	0,25~0,45	130	0,25~0,45	380	0,25~0,50	130	0,25~0,45	960	0,50~0,75

HY-PRO-CARB



	C≤0,2%	SUS	Die Steels	GG	Al
Grade	NK2020	NK2020	NK2020	NK1010	NK1010
(rev./min)	3.000	2.000	3.000	3.200	4.000
F (mm/min)	80	50	50	200	150

HY-PRO-CARB



	C≤0,2%	SUS	Die Steels	GG	Al
Grade	NK2020	NK2020	NK2020	NK1010	NK1010
(rev./min)	3.000	2.500	3.000	3.000	4.000
F (mm/min)	200	150	150	200	300

Drill - Wendeplattenbohrer - Punta - Forets plaquettes -
Bor - Korthålsborr - Broca - Сверление

PHP

	Work Material	Tensile Strength-Hardness	Drilling Speed Vc (m/min)	Feed Rate (mm/rev)			
				ø14~ø20.5	ø21~ø28	ø29~ø34	ø35~ø40
P	Mild Steel·Carbon Steel CK 15 St. 52-3	~180HB	200 (150 ~ 250)	0,09 (0,06 ~ 0,13)	0,13 (0,10 ~ 0,18)	0,18 (0,13 ~ 0,21)	0,25 (0,20 ~ 0,27)
	Carbon Steel·Alloy Steel Cf 53 42CrMo4	~280HB	160 (100 ~ 220)	0,09 (0,06 ~ 0,13)	0,13 (0,10 ~ 0,18)	0,18 (0,13 ~ 0,21)	0,25 (0,20 ~ 0,27)
	Die Steel X40CrMoV5 1	~280HB	140 (80 ~ 180)	0,08 (0,05 ~ 0,12)	0,12 (0,06 ~ 0,15)	0,14 (0,09 ~ 0,18)	0,15 (0,10 ~ 0,20)
M	Stainless Steel (SUS304 - SUS420)	~250HB	150 (100 ~ 180)	0,08 (0,05 ~ 0,12)	0,10 (0,06 ~ 0,12)	0,15 (0,10 ~ 0,17)	0,18 (0,15 ~ 0,20)
K	Cast Iron GG 25	~350N/mm²	150 (100 ~ 180)	0,09 (0,06 ~ 0,13)	0,13 (0,10 ~ 0,18)	0,18 (0,13 ~ 0,21)	0,25 (0,20 ~ 0,27)
	Ductile Cast Iron GGG 40	~800N/mm²	130 (80 ~ 150)	0,09 (0,06 ~ 0,13)	0,12 (0,08 ~ 0,16)	0,16 (0,1 ~ 0,20)	0,20 (0,15 ~ 0,25)
N	Aluminum Alloys	~13%Si	220 (100 ~ 800)	0,09 (0,06 ~ 0,20)	0,13 (0,10 ~ 0,25)	0,18 (0,13 ~ 0,30)	0,25 (0,20 ~ 0,35)
S	Heat Resistant Alloys(Wet) (Inconel 718)	–	30 (15 ~ 50)	0,04 (0,02 ~ 0,06)	0,06 (0,03 ~ 0,10)	0,08 (0,04 ~ 0,12)	0,10 (0,06 ~ 0,14)
	Titanium Alloy(Wet) (Ti-6Al-4V)	–	60 (30 ~ 100)	0,06 (0,04 ~ 0,08)	0,08 (0,06 ~ 0,12)	0,10 (0,08 ~ 0,15)	0,12 (0,10 ~ 0,15)

■ Recommended grade per Materials

◎ First recommended grade
○ Second recommended grade

Inserts Grades	Chip Breaker	Use of Coolant	P	M	K	N	S
XP9040	DM	Yes	◎	◎		◎	○
XC9025	DM	Yes	○	○	◎	○	

DM:Center Cutting Type Drill

1. The indicated speeds and feeds are for water soluble oil.
2. Suitable cutting fluid is water soluble high density oil (less than 20 times dilution).
3. Using non-water soluble oil is not recommended.
4. These conditions are for drilling depth less than 3 times the drill diameter.
5. Inserts should be attached to the holder tightly in a very neat condition.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.

1. La velocità e avanzamento indicati si riferiscono a lavorazioni con emulsione solubile in acqua
2. Opportuno fluido di taglio è emulsione solubile in acqua ad alta densità (inferiore a 20volte di diluizione)
3. Utilizzo di olio non solubile in acqua non è raccomandato
4. Queste condizioni sono per profondità di foratura inferiore a 3 volte il diametro
5. Gli Inserti dovrebbero essere applicati al corpo ermeticamente in una condizione molto pulita
6. Fissare il materiale di lavoro per ridurre la possibilità di deformazione, deviazione o vibrazione di superficie lavorata
7. Un foro di lubrificazione ostruito può portare alla rottura. Assicurarsi che sia applicato un filtro al sistema di refrigerazione.

1. Die angegebenen Schnittdaten sind für die Verwendung von Emulsion.
2. Die geeignete Emulsion sollte weniger als 20% Fettgehalt haben.
3. Die Benützung von Schneidöl wird nicht empfohlen.
4. Die angegebenen Schnittdaten sind für Bearbeitungen kleiner 3xD
5. Die Wendeschneidplatten sollten präzise im Halter fixiert werden.
6. Um Vibrationen und Rattermarken an der Werkstückoberfläche zu vermeiden empfehlen wir eine sehr starre Werkstückspannung.
7. Ein verschmutzte innere Kühlmittelzufuhr kann zum Werkzeugbruch führen. Bitte Kühlmittelfilter verwenden.

1. Les vitesses indiquées sont avec l'utilisation d'huile soluble.
2. Un fluide de coupe à forte densité d'huile est recommandé
3. L'usinage à sec n'est pas recommandé
4. Ces conditions sont pour le perçage inférieur ou égal à 3xD
5. Les plaquettes doivent etre montées sur un support propre et en bonne état
6. Bien monter et bien serrer la pièce à usiner reduit les riques de déformation matière ,améliore la qualité de l'usinage, réduit les vibrations et les casses d'outils
7. L'obstruction d'un trou d'huile peut entrainer la rupture de l'outil, assurez vous de la qualité de filtration de votre dispositif de lubrification

1. De indikerede skæredata er ved brug af vandbaseret emulsion
2. Passende kølemiddel er vandbaseret med høj densitet (fortyndet mindre end 20 gange)
3. Ikke vandbaseret kølemiddel anbefales ikke
4. Disse skæredata er for boredybde mindre end 3 gange diameter
5. Fastspænd kun vendeskær i god kondition
6. Fastgør emnematerialet sikkert for at undgå deformation, vibrationer og lign.
7. Et tilstoppet kølehul kan forårsage brud. Sørg for at kølemidlet er filtreret

1. Den angivna varvtal och matningar är för vattenlbaserad emulsion
2. Lämplig skärvätska är vattenlösligt hög densitet olja (mindre än 20 gånger utspädning)
3. Ej vattenbaserad klmedel rekommenderas
4. Denna skärdata är för borrdjup mindre än 3xD
5. Använd endast vändskär som är i god kondition
6. Fäst arbetsstycket ordentligt för att undvika deformation, vibrationer och liknande.
7. Ett igensatt kylkanal kan orsaka brott. Filtrera helst kylvätskan

1. Las velocidades y avances recomendados son para taladrina
2. El refrigerante adecuado es taladrina concentrada al menos el 5%
3. No se recomienda utilizar aceite de corte
4. Condiciones de corte para taladrar menos de 3 veces el diámetro de corte
5. Las plaquitas deben estar fuertemente fijadas en alojamiento limpio
6. Fijar la pieza de forma que no permita la deformación, flexión de la cara mecanizada o vibración
7. El agujero de refrigeración obstruido puede producir rotura. Asegúrese la aportación de refrigerante filtrado

1. Указанные скорость и подача для охлаждения эмульсией
2. Наиболее подходящая СОЖ — водная эмульсия высокой плотности (разбавление менее, чем 1/20)
3. Использование не водной эмульсии не рекомендуется
4. Указанные скорость и подача для сверления глубиной меньше чем 3 диаметра
5. Сменные пластинки должны быть прикреплены к оправке плотно и очень аккуратно
6. Закрепите обрабатываемый материал, чтобы уменьшить возможность смещения, деформации или вибрации
7. Засорение отверстий для охлаждения может привести к поломке. Убедитесь, что фильтр СОЖ установлен и исправен

1. Belirtilen kesme hızı ve ilerleme kesme sıvısı kullanımına ögre verilmiştir
2. Uygun kesme sıvısı, suda çözünen yüksek yoğunluklu yağ (20 kat seyretmenden az olacak)
3. Suda çözülmeyen yağ kullanılması tavsiye edilmez
4. Belirtilen kesme değerler delme derinliğinin matkap çapının 3 katından küçük olduğunda geçerlidir
5. Ucu her bağlamada takıma sıkıcı tutturulması gerekir
6. İşlemin bozulması, işlenen yüzeyin sapması veya titreşim ihtimallerini azaltmak için iş parçasını sabitleyin.
7. Tıkanan bir yağ deliği kırılmaya neden olabilir. Yağ besleyicide filtre bulunduğundan emin olun.

1. Prędkości i posuwy podane są do pracy w emulsji
2. Odpowiednia emulsja w stosunku 1/20
3. Nie jest zalecane korzystanie z nierozpuszczalnego w wodzie oleju
4. Warunki te są podane dla wiercenia mniej niż 3 razy w średnicy wiertła.
5. Proszę przykręcać płytki ściśle, stosując niezużyte uchwyty
6. Właściwie zamocuj materiał aby zmniejszyć możliwość powstania deformacji , złej jakości powierzchni lub wibracji
7. Zatkany otwór chłodzący może doprowadzić do uszkodzenia. Proszę upewnić się, że filtr jest dołączony do podajnika emulsji

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- Altas prestaciones
- Escariador de ranuras rectas en metal duro

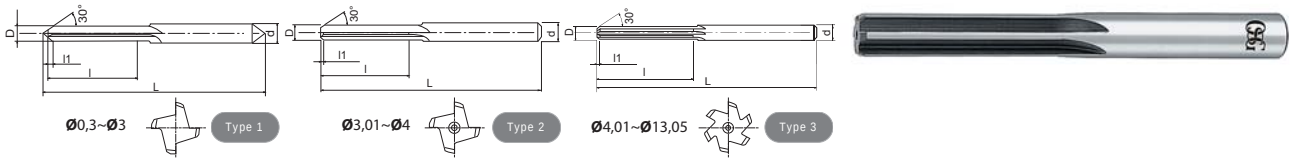
CARBIDE REAMER
- Высокая производительность
- Твердосплавная прямозубая развертка

CARBIDE REAMER
- Wysoka wydajność
- Rozwiertaki proste z węglika

GO TO LIVE STOCK CHECK

Carbide Reamer

CARBIDE | 0~+0.005 | h6 | min⁻¹ C.132-133



EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price	EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price
8900030	0,3	50	4	0,1	2	4	1	○		8900093	0,93	50	12	0,2	2	4	1	○	
8900031	0,31	50	4	0,1	2	4	1	○		8900094	0,94	50	12	0,2	2	4	1	○	
8900032	0,32	50	4	0,1	2	4	1	○		8900095	0,95	50	12	0,2	2	4	1	○	
8900033	0,33	50	4	0,1	2	4	1	○		8900096	0,96	50	14	0,2	2	4	1	○	
8900034	0,34	50	4	0,1	2	4	1	○		8900097	0,97	50	14	0,2	2	4	1	○	
8900035	0,35	50	4	0,1	2	4	1	○		8900098	0,98	50	14	0,2	2	4	1	○	
8900036	0,36	50	4	0,1	2	4	1	○		8900099	0,99	50	14	0,2	2	4	1	○	
8900037	0,37	50	4	0,1	2	4	1	○		8900100	1	50	14	0,2	2	4	1	○	
8900038	0,38	50	4	0,1	2	4	1	○		8900101	1,01	50	14	0,2	2	4	1	○	
8900039	0,39	50	4	0,1	2	4	1	○		8900102	1,02	50	14	0,2	2	4	1	○	
8900040	0,4	50	4	0,1	2	4	1	○		8900103	1,03	50	14	0,2	2	4	1	○	
8900041	0,41	50	4	0,1	2	4	1	○		8900104	1,04	50	14	0,2	2	4	1	○	
8900042	0,42	50	4	0,1	2	4	1	○		8900105	1,05	50	14	0,2	2	4	1	○	
8900043	0,43	50	4	0,1	2	4	1	○		8900106	1,06	50	14	0,2	2	4	1	○	
8900044	0,44	50	4	0,1	2	4	1	○		8900107	1,07	50	14	0,2	2	4	1	○	
8900045	0,45	50	4	0,1	2	4	1	○		8900108	1,08	50	14	0,2	2	4	1	○	
8900046	0,46	50	4	0,1	2	4	1	○		8900109	1,09	50	14	0,2	2	4	1	○	
8900047	0,47	50	4	0,1	2	4	1	○		8900110	1,1	50	14	0,2	2	4	1	○	
8900048	0,48	50	5	0,1	2	4	1	○		8900111	1,11	50	14	0,2	2	4	1	○	
8900049	0,49	50	5	0,1	2	4	1	○		8900112	1,12	50	14	0,2	2	4	1	○	
8900050	0,5	50	5	0,1	2	4	1	○		8900113	1,13	50	14	0,2	2	4	1	○	
8900051	0,51	50	5	0,1	2	4	1	○		8900114	1,14	50	14	0,2	2	4	1	○	
8900052	0,52	50	5	0,1	2	4	1	○		8900115	1,15	50	14	0,2	2	4	1	○	
8900053	0,53	50	5	0,1	2	4	1	○		8900116	1,16	50	14	0,2	2	4	1	○	
8900054	0,54	50	6	0,1	2	4	1	○		8900117	1,17	50	14	0,2	2	4	1	○	
8900055	0,55	50	6	0,1	2	4	1	○		8900118	1,18	50	14	0,2	2	4	1	○	
8900056	0,56	50	6	0,1	2	4	1	○		8900119	1,19	50	16	0,2	2	4	1	○	
8900057	0,57	50	6	0,1	2	4	1	○		8900120	1,2	50	16	0,2	2	4	1	○	
8900058	0,58	50	6	0,1	2	4	1	○		8900121	1,21	50	16	0,2	2	4	1	○	
8900059	0,59	50	6	0,1	2	4	1	○		8900122	1,22	50	16	0,2	2	4	1	○	
8900060	0,6	50	6	0,1	2	4	1	○		8900123	1,23	50	16	0,2	2	4	1	○	
8900061	0,61	50	8	0,1	2	4	1	○		8900124	1,24	50	16	0,2	2	4	1	○	
8900062	0,62	50	8	0,1	2	4	1	○		8900125	1,25	50	16	0,2	2	4	1	○	
8900063	0,63	50	8	0,1	2	4	1	○		8900126	1,26	50	16	0,3	2	4	1	○	
8900064	0,64	50	8	0,1	2	4	1	○		8900127	1,27	50	16	0,3	2	4	1	○	
8900065	0,65	50	8	0,1	2	4	1	○		8900128	1,28	50	16	0,3	2	4	1	○	
8900066	0,66	50	8	0,1	2	4	1	○		8900129	1,29	50	16	0,3	2	4	1	○	
8900067	0,67	50	8	0,1	2	4	1	○		8900130	1,3	50	16	0,3	2	4	1	○	
8900068	0,68	50	10	0,1	2	4	1	○		8900131	1,31	50	16	0,3	2	4	1	○	
8900069	0,69	50	10	0,1	2	4	1	○		8900132	1,32	50	16	0,3	2	4	1	○	
8900070	0,7	50	10	0,1	2	4	1	○		8900133	1,33	50	16	0,3	2	4	1	○	
8900071	0,71	50	10	0,1	2	4	1	○		8900134	1,34	50	16	0,3	2	4	1	○	
8900072	0,72	50	10	0,1	2	4	1	○		8900135	1,35	50	16	0,3	2	4	1	○	
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8900074	0,74	50	10	0,1	2	4	1	○		8900137	1,37	50	16	0,3	2	4	1	○	
8900075	0,75	50	10	0,1	2	4	1	○		8900138	1,38	50	16	0,3	2	4	1	○	
8900076	0,76	50	12	0,1	2	4	1	○		8900139	1,39	50	16	0,3	2	4	1	○	
8900077	0,77	50	12	0,1	2	4	1	○		8900140	1,4	50	16	0,3	2	4	1	○	
8900078	0,78	50	12	0,1	2	4	1	○		8900141	1,41	50	16	0,3	2	4	1	○	
8900079	0,79	50	12	0,1	2	4	1	○		8900142	1,42	50	16	0,3	2	4	1	○	
8900080	0,8	50	12	0,1	2	4	1	○		8900143	1,43	50	16	0,3	2	4	1	○	
8900081	0,81	50	12	0,2	2	4	1	○		8900144	1,44	50	16	0,3	2	4	1	○	
8900082	0,82	50	12	0,2	2	4	1	○		8900145	1,45	50	16	0,3	2	4	1	○	
8900083	0,83	50	12	0,2	2	4	1	○		8900146	1,46	50	16	0,3	2	4	1	○	
8900084	0,84	50	12	0,2	2	4	1	○		8900147	1,47	50	16	0,3	2	4	1	○	
8900085	0,85	50	12	0,2	2	4	1	○		8900148	1,48	50	16	0,3	2	4	1	○	
8900086	0,86	50	12	0,2	2	4	1	○		8900149	1,49	50	16	0,3	2	4	1	○	
8900087	0,87	50	12	0,2	2	4	1	○		8900150	1,5	50	16	0,3	2	4	1	○	
8900088	0,88	50	12	0,2	2	4	1	○		8900151	1,51	50	18	0,3	2	4	1	○	
8900089	0,89	50	12	0,2	2	4	1	○		8900152	1,52	50	18	0,3	2	4	1	○	
8900090	0,9	50	12	0,2	2	4	1	○		8900153	1,53	50	18	0,3	2	4	1	○	
8900091	0,91	50	12	0,2	2	4	1	○		8900154	1,54	50	18	0,3	2	4	1	○	
8900092	0,92	50	12	0,2	2	4	1	○		8900155	1,55	50	18	0,3	2	4	1	○	

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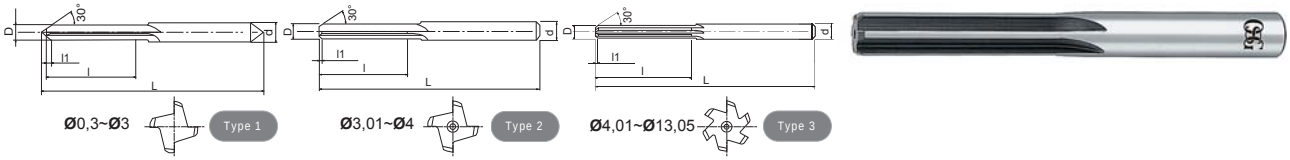
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EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price	EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price
8900156	1,56	50	18	0,3	2	4	1	○		8900219	2,19	50	20	0,5	2,5	4	1	○	
8900157	1,57	50	18	0,3	2	4	1	○		8900220	2,2	50	20	0,5	2,5	4	1	○	
8900158	1,58	50	18	0,3	2	4	1	○		8900221	2,21	50	20	0,5	2,5	4	1	○	
8900159	1,59	50	18	0,3	2	4	1	○		8900222	2,22	50	20	0,5	2,5	4	1	○	
8900160	1,6	50	18	0,3	2	4	1	○		8900223	2,23	50	20	0,5	2,5	4	1	○	
8900161	1,61	50	18	0,4	2	4	1	○		8900224	2,24	50	20	0,5	2,5	4	1	○	
8900162	1,62	50	18	0,4	2	4	1	○		8900225	2,25	50	20	0,5	2,5	4	1	○	
8900163	1,63	50	18	0,4	2	4	1	○		8900226	2,26	50	20	0,5	2,5	4	1	○	
8900164	1,64	50	18	0,4	2	4	1	○		8900227	2,27	50	20	0,5	2,5	4	1	○	
8900165	1,65	50	18	0,4	2	4	1	○		8900228	2,28	50	20	0,5	2,5	4	1	○	
8900166	1,66	50	18	0,4	2	4	1	○		8900229	2,29	50	20	0,5	2,5	4	1	○	
8900167	1,67	50	18	0,4	2	4	1	○		8900230	2,3	50	20	0,5	2,5	4	1	○	
8900168	1,68	50	18	0,4	2	4	1	○		8900231	2,31	50	20	0,5	2,5	4	1	○	
8900169	1,69	50	18	0,4	2	4	1	○		8900232	2,32	50	20	0,5	2,5	4	1	○	
8900170	1,7	50	18	0,4	2	4	1	○		8900233	2,33	50	20	0,5	2,5	4	1	○	
8900171	1,71	50	18	0,4	2	4	1	○		8900234	2,34	50	20	0,5	2,5	4	1	○	
8900172	1,72	50	18	0,4	2	4	1	○		8900235	2,35	50	20	0,5	2,5	4	1	○	
8900173	1,73	50	18	0,4	2	4	1	○		8900236	2,36	50	20	0,5	2,5	4	1	○	
8900174	1,74	50	18	0,4	2	4	1	○		8900237	2,37	50	22	0,5	2,5	4	1	○	
8900175	1,75	50	18	0,4	2	4	1	○		8900238	2,38	50	22	0,5	2,5	4	1	○	
8900176	1,76	50	18	0,4	2	4	1	○		8900239	2,39	50	22	0,5	2,5	4	1	○	
8900177	1,77	50	18	0,4	2	4	1	○		8900240	2,4	50	22	0,5	2,5	4	1	○	
8900178	1,78	50	18	0,4	2	4	1	○		8900241	2,41	50	22	0,5	2,5	4	1	○	
8900179	1,79	50	18	0,4	2	4	1	○		8900242	2,42	50	22	0,5	2,5	4	1	○	
8900180	1,8	50	18	0,4	2	4	1	○		8900243	2,43	50	22	0,5	2,5	4	1	○	
8900181	1,81	50	18	0,4	2	4	1	○		8900244	2,44	50	22	0,5	2,5	4	1	○	
8900182	1,82	50	18	0,4	2	4	1	○		8900245	2,45	50	22	0,5	2,5	4	1	○	
8900183	1,83	50	18	0,4	2	4	1	○		8900246	2,46	50	22	0,5	2,5	4	1	○	
8900184	1,84	50	18	0,4	2	4	1	○		8900247	2,47	50	22	0,5	2,5	4	1	○	
8900185	1,85	50	18	0,4	2	4	1	○		8900248	2,48	50	22	0,5	2,5	4	1	○	
8900186	1,86	50	18	0,4	2	4	1	○		8900249	2,49	50	22	0,5	2,5	4	1	○	
8900187	1,87	50	18	0,4	2	4	1	○		8900250	2,5	50	22	0,5	2,5	4	1	○	
8900188	1,88	50	18	0,4	2	4	1	○		8900251	2,51	60	22	0,6	3	4	1	○	
8900189	1,89	50	18	0,4	2	4	1	○		8900252	2,52	60	22	0,6	3	4	1	○	
8900190	1,9	50	18	0,4	2	4	1	○		8900253	2,53	60	22	0,6	3	4	1	○	
8900191	1,91	50	20	0,4	2	4	1	○		8900254	2,54	60	22	0,6	3	4	1	○	
8900192	1,92	50	20	0,4	2	4	1	○		8900255	2,55	60	22	0,6	3	4	1	○	
8900193	1,93	50	20	0,4	2	4	1	○		8900256	2,56	60	22	0,6	3	4	1	○	
8900194	1,94	50	20	0,4	2	4	1	○		8900257	2,57	60	22	0,6	3	4	1	○	
8900195	1,95	50	20	0,4	2	4	1	○		8900258	2,58	60	22	0,6	3	4	1	○	
8900196	1,96	50	20	0,4	2	4	1	○		8900259	2,59	60	22	0,6	3	4	1	○	
8900197	1,97	50	20	0,4	2	4	1	○		8900260	2,6	60	22	0,6	3	4	1	○	
8900198	1,98	50	20	0,4	2	4	1	○		8900261	2,61	60	22	0,6	3	4	1	○	
8900199	1,99	50	20	0,4	2	4	1	○		8900262	2,62	60	22	0,6	3	4	1	○	
8900200	2	50	20	0,4	2	4	1	○		8900263	2,63	60	22	0,6	3	4	1	○	
8900201	2,01	50	20	0,5	2,5	4	1	○		8900264	2,64	60	22	0,6	3	4	1	○	
8900202	2,02	50	20	0,5	2,5	4	1	○		8900265	2,65	60	22	0,6	3	4	1	○	
8900203	2,03	50	20	0,5	2,5	4	1	○		8900266	2,66	60	22	0,6	3	4	1	○	
8900204	2,04	50	20	0,5	2,5	4	1	○		8900267	2,67	60	22	0,6	3	4	1	○	
8900205	2,05	50	20	0,5	2,5	4	1	○		8900268	2,68	60	22	0,6	3	4	1	○	
8900206	2,06	50	20	0,5	2,5	4	1	○		8900269	2,69	60	22	0,6	3	4	1	○	
8900207	2,07	50	20	0,5	2,5	4	1	○		8900270	2,7	60	22	0,6	3	4	1	○	
8900208	2,08	50	20	0,5	2,5	4	1	○		8900271	2,71	60	22	0,6	3	4	1	○	
8900209	2,09	50	20	0,5	2,5	4	1	○		8900272	2,72	60	22	0,6	3	4	1	○	
8900210	2,1	50	20	0,5	2,5	4	1	○		8900273	2,73	60	22	0,6	3	4	1	○	
8900211	2,11	50	20	0,5	2,5	4	1	○		8900274	2,74	60	22	0,6	3	4	1	○	
8900212	2,12	50	20	0,5	2,5	4	1	○		8900275	2,75	60	22	0,6	3	4	1	○	
8900213	2,13	50	20	0,5	2,5	4	1	○		8900276	2,76	60	22	0,6	3	4	1	○	
8900214	2,14	50	20	0,5	2,5	4	1	○		8900277	2,77	60	22	0,6	3	4	1	○	
8900215	2,15	50	20	0,5	2,5	4	1	○		8900278	2,78	60	22	0,6	3	4	1	○	
8900216	2,16	50	20	0,5	2,5	4	1	○		8900279	2,79	60	22	0,6	3	4	1	○	
8900217	2,17	50	20	0,5	2,5	4	1	○		8900280	2,8	60	22	0,6	3	4	1	○	
8900218	2,18	50	20	0,5	2,5	4	1	○		8900281	2,81	60	25	0,6	3	4	1	○	

● Delivery from stock
○ Available on short notice

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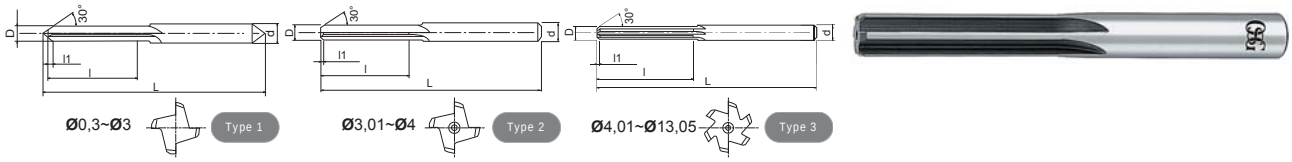
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CARBIDE | 0~+0.005 | h6 | min⁻¹ C.132-133



EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price	EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price
8900282	2,82	60	25	0,6	3	4	1	○		8900345	3,45	60	28	0,8	3,5	4	2	○	
8900283	2,83	60	25	0,6	3	4	1	○		8900346	3,46	60	28	0,8	3,5	4	2	○	
8900284	2,84	60	25	0,6	3	4	1	○		8900347	3,47	60	28	0,8	3,5	4	2	○	
8900285	2,85	60	25	0,6	3	4	1	○		8900348	3,48	60	28	0,8	3,5	4	2	○	
8900286	2,86	60	25	0,6	3	4	1	○		8900349	3,49	60	28	0,8	3,5	4	2	○	
8900287	2,87	60	25	0,6	3	4	1	○		8900350	3,5	60	28	0,8	3,5	4	2	○	
8900288	2,88	60	25	0,6	3	4	1	○		8900351	3,51	70	28	0,8	4	4	2	○	
8900289	2,89	60	25	0,6	3	4	1	○		8900352	3,52	70	28	0,8	4	4	2	○	
8900290	2,9	60	25	0,6	3	4	1	○		8900353	3,53	70	28	0,8	4	4	2	○	
8900291	2,91	60	25	0,6	3	4	1	○		8900354	3,54	70	28	0,8	4	4	2	○	
8900292	2,92	60	25	0,6	3	4	1	○		8900355	3,55	70	28	0,8	4	4	2	○	
8900293	2,93	60	25	0,6	3	4	1	○		8900356	3,56	70	28	0,8	4	4	2	○	
8900294	2,94	60	25	0,6	3	4	1	○		8900357	3,57	70	28	0,8	4	4	2	○	
8900295	2,95	60	25	0,6	3	4	1	○		8900358	3,58	70	28	0,8	4	4	2	○	
8900296	2,96	60	25	0,6	3	4	1	○		8900359	3,59	70	28	0,8	4	4	2	○	
8900297	2,97	60	25	0,6	3	4	1	○		8900360	3,6	70	28	0,8	4	4	2	○	
8900298	2,98	60	25	0,6	3	4	1	○		8900361	3,61	70	28	0,8	4	4	2	○	
8900299	2,99	60	25	0,6	3	4	1	○		8900362	3,62	70	28	0,8	4	4	2	○	
8900300	3	60	25	0,6	3	4	1	○		8900363	3,63	70	28	0,8	4	4	2	○	
8900301	3,01	60	28	0,6	3,5	4	2	○		8900364	3,64	70	28	0,8	4	4	2	○	
8900302	3,02	60	28	0,6	3,5	4	2	○		8900365	3,65	70	28	0,8	4	4	2	○	
8900303	3,03	60	28	0,6	3,5	4	2	○		8900366	3,66	70	28	0,8	4	4	2	○	
8900304	3,04	60	28	0,6	3,5	4	2	○		8900367	3,67	70	28	0,8	4	4	2	○	
8900305	3,05	60	28	0,6	3,5	4	2	○		8900368	3,68	70	28	0,8	4	4	2	○	
8900306	3,06	60	28	0,6	3,5	4	2	○		8900369	3,69	70	28	0,8	4	4	2	○	
8900307	3,07	60	28	0,6	3,5	4	2	○		8900370	3,7	70	28	0,8	4	4	2	○	
8900308	3,08	60	28	0,6	3,5	4	2	○		8900371	3,71	70	28	0,8	4	4	2	○	
8900309	3,09	60	28	0,6	3,5	4	2	○		8900372	3,72	70	28	0,8	4	4	2	○	
8900310	3,1	60	28	0,6	3,5	4	2	○		8900373	3,73	70	28	0,8	4	4	2	○	
8900311	3,11	60	28	0,6	3,5	4	2	○		8900374	3,74	70	28	0,8	4	4	2	○	
8900312	3,12	60	28	0,6	3,5	4	2	○		8900375	3,75	70	28	0,8	4	4	2	○	
8900313	3,13	60	28	0,6	3,5	4	2	○		8900376	3,76	70	28	0,8	4	4	2	○	
8900314	3,14	60	28	0,6	3,5	4	2	○		8900377	3,77	70	28	0,8	4	4	2	○	
8900315	3,15	60	28	0,6	3,5	4	2	○		8900378	3,78	70	28	0,8	4	4	2	○	
8900316	3,16	60	28	0,8	3,5	4	2	○		8900379	3,79	70	28	0,8	4	4	2	○	
8900317	3,17	60	28	0,8	3,5	4	2	○		8900380	3,8	70	28	0,8	4	4	2	○	
8900318	3,18	60	28	0,8	3,5	4	2	○		8900381	3,81	70	28	0,8	4	4	2	○	
8900319	3,19	60	28	0,8	3,5	4	2	○		8900382	3,82	70	28	0,8	4	4	2	○	
8900320	3,2	60	28	0,8	3,5	4	2	○		8900383	3,83	70	28	0,8	4	4	2	○	
8900321	3,21	60	28	0,8	3,5	4	2	○		8900384	3,84	70	28	0,8	4	4	2	○	
8900322	3,22	60	28	0,8	3,5	4	2	○		8900385	3,85	70	28	0,8	4	4	2	○	
8900323	3,23	60	28	0,8	3,5	4	2	○		8900386	3,86	70	28	0,8	4	4	2	○	
8900324	3,24	60	28	0,8	3,5	4	2	○		8900387	3,87	70	28	0,8	4	4	2	○	
8900325	3,25	60	28	0,8	3,5	4	2	○		8900388	3,88	70	28	0,8	4	4	2	○	
8900326	3,26	60	28	0,8	3,5	4	2	○		8900389	3,89	70	28	0,8	4	4	2	○	
8900327	3,27	60	28	0,8	3,5	4	2	○		8900390	3,9	70	28	0,8	4	4	2	○	
8900328	3,28	60	28	0,8	3,5	4	2	○		8900391	3,91	70	28	0,8	4	4	2	○	
8900329	3,29	60	28	0,8	3,5	4	2	○		8900392	3,92	70	28	0,8	4	4	2	○	
8900330	3,3	60	28	0,8	3,5	4	2	○		8900393	3,93	70	28	0,8	4	4	2	○	
8900331	3,31	60	28	0,8	3,5	4	2	○		8900394	3,94	70	28	0,8	4	4	2	○	
8900332	3,32	60	28	0,8	3,5	4	2	○		8900395	3,95	70	28	0,8	4	4	2	○	
8900333	3,33	60	28	0,8	3,5	4	2	○		8900396	3,96	70	28	0,8	4	4	2	○	
8900334	3,34	60	28	0,8	3,5	4	2	○		8900397	3,97	70	28	0,8	4	4	2	○	
8900335	3,35	60	28	0,8	3,5	4	2	○		8900398	3,98	70	28	0,8	4	4	2	○	
8900336	3,36	60	28	0,8	3,5	4	2	○		8900399	3,99	70	28	0,8	4	4	2	○	
8900337	3,37	60	28	0,8	3,5	4	2	○		8900400	4	70	28	0,8	4	4	2	○	
8900338	3,38	60	28	0,8	3,5	4	2	○		8900401	4,01	70	28	0,8	4,5	6	3	○	
8900339	3,39	60	28	0,8	3,5	4	2	○		8900402	4,02	70	28	0,8	4,5	6	3	○	
8900340	3,4	60	28	0,8	3,5	4	2	○		8900403	4,03	70	28	0,8	4,5	6	3	○	
8900341	3,41	60	28	0,8	3,5	4	2	○		8900404	4,04	70	28	0,8	4,5	6	3	○	
8900342	3,42	60	28	0,8	3,5	4	2	○		8900405	4,05	70	28	0,8	4,5	6	3	○	
8900343	3,43	60	28	0,8	3,5	4	2	○		8900406	4,06	70	28	0,8	4,5	6	3	○	
8900344	3,44	60	28	0,8	3,5	4	2	○		8900407	4,07	70	28	0,8	4,5	6	3	○	

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- Alta prestazione
- Alesatore cilindrico in metallo duro

CARBIDE REAMER
- Haute performance
- Alésoir carbure taille droite

KARBÜR RAYBA
- Yüksek performans
- Karbür düz rayba

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- High performance
- Hårdmetal rival med lige skær

CARBIDE REAMER
- High performance
- HM brotsch med raka skär

CARBIDE REAMER
- Altas prestaciones
- Escariador de ranuras rectas en metal duro

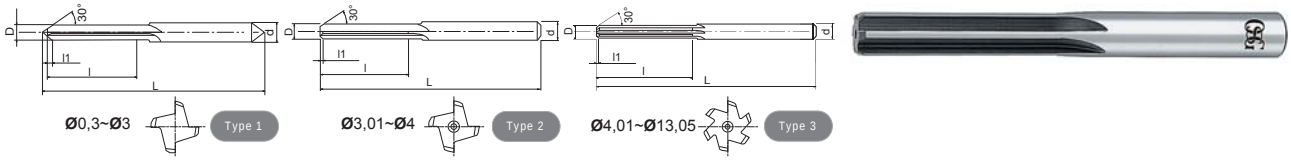
CARBIDE REAMER
- Высокая производительность
- Твердосплавная прямозубая развертка

CARBIDE REAMER
- Wysoka wydajność
- Rozwiertaki proste z węglika

GO TO LIVE STOCK CHECK

Carbide Reamer

CARBIDE | 0~+0.005 | h6 | min⁻¹ C.132-133



EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price	EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price
8900408	4,08	70	28	0,8	4,5	6	3	○		8900471	4,71	80	28	0,8	5	6	3	○	
8900409	4,09	70	28	0,8	4,5	6	3	○		8900472	4,72	80	28	0,8	5	6	3	○	
8900410	4,1	70	28	0,8	4,5	6	3	○		8900473	4,73	80	28	0,8	5	6	3	○	
8900411	4,11	70	28	0,8	4,5	6	3	○		8900474	4,74	80	28	0,8	5	6	3	○	
8900412	4,12	70	28	0,8	4,5	6	3	○		8900475	4,75	80	28	0,8	5	6	3	○	
8900413	4,13	70	28	0,8	4,5	6	3	○		8900476	4,76	80	32	0,8	5	6	3	○	
8900414	4,14	70	28	0,8	4,5	6	3	○		8900477	4,77	80	32	0,8	5	6	3	○	
8900415	4,15	70	28	0,8	4,5	6	3	○		8900478	4,78	80	32	0,8	5	6	3	○	
8900416	4,16	70	28	0,8	4,5	6	3	○		8900479	4,79	80	32	0,8	5	6	3	○	
8900417	4,17	70	28	0,8	4,5	6	3	○		8900480	4,8	80	32	0,8	5	6	3	○	
8900418	4,18	70	28	0,8	4,5	6	3	○		8900481	4,81	80	32	0,8	5	6	3	○	
8900419	4,19	70	28	0,8	4,5	6	3	○		8900482	4,82	80	32	0,8	5	6	3	○	
8900420	4,2	70	28	0,8	4,5	6	3	○		8900483	4,83	80	32	0,8	5	6	3	○	
8900421	4,21	70	28	0,8	4,5	6	3	○		8900484	4,84	80	32	0,8	5	6	3	○	
8900422	4,22	70	28	0,8	4,5	6	3	○		8900485	4,85	80	32	0,8	5	6	3	○	
8900423	4,23	70	28	0,8	4,5	6	3	○		8900486	4,86	80	32	0,8	5	6	3	○	
8900424	4,24	70	28	0,8	4,5	6	3	○		8900487	4,87	80	32	0,8	5	6	3	○	
8900425	4,25	70	28	0,8	4,5	6	3	○		8900488	4,88	80	32	0,8	5	6	3	○	
8900426	4,26	70	28	0,8	4,5	6	3	○		8900489	4,89	80	32	0,8	5	6	3	○	
8900427	4,27	70	28	0,8	4,5	6	3	○		8900490	4,9	80	32	0,8	5	6	3	○	
8900428	4,28	70	28	0,8	4,5	6	3	○		8900491	4,91	80	32	0,8	5	6	3	○	
8900429	4,29	70	28	0,8	4,5	6	3	○		8900492	4,92	80	32	0,8	5	6	3	○	
8900430	4,3	70	28	0,8	4,5	6	3	○		8900493	4,93	80	32	0,8	5	6	3	○	
8900431	4,31	70	28	0,8	4,5	6	3	○		8900494	4,94	80	32	0,8	5	6	3	○	
8900432	4,32	70	28	0,8	4,5	6	3	○		8900495	4,95	80	32	0,8	5	6	3	○	
8900433	4,33	70	28	0,8	4,5	6	3	○		8900496	4,96	80	32	0,8	5	6	3	○	
8900434	4,34	70	28	0,8	4,5	6	3	○		8900497	4,97	80	32	0,8	5	6	3	○	
8900435	4,35	70	28	0,8	4,5	6	3	○		8900498	4,98	80	32	0,8	5	6	3	○	
8900436	4,36	70	28	0,8	4,5	6	3	○		8900499	4,99	80	32	0,8	5	6	3	○	
8900437	4,37	70	28	0,8	4,5	6	3	○		8900500	5	80	32	0,8	5	6	3	○	
8900438	4,38	70	28	0,8	4,5	6	3	○		8900501	5,01	80	32	0,8	5,5	6	3	○	
8900439	4,39	70	28	0,8	4,5	6	3	○		8900502	5,02	80	32	0,8	5,5	6	3	○	
8900440	4,4	70	28	0,8	4,5	6	3	○		8900503	5,03	80	32	0,8	5,5	6	3	○	
8900441	4,41	70	28	0,8	4,5	6	3	○		8900504	5,04	80	32	0,8	5,5	6	3	○	
8900442	4,42	70	28	0,8	4,5	6	3	○		8900505	5,05	80	32	0,8	5,5	6	3	○	
8900443	4,43	70	28	0,8	4,5	6	3	○		8900506	5,06	80	32	0,8	5,5	6	3	○	
8900444	4,44	70	28	0,8	4,5	6	3	○		8900507	5,07	80	32	0,8	5,5	6	3	○	
8900445	4,45	70	28	0,8	4,5	6	3	○		8900508	5,08	80	32	0,8	5,5	6	3	○	
8900446	4,46	70	28	0,8	4,5	6	3	○		8900509	5,09	80	32	0,8	5,5	6	3	○	
8900447	4,47	70	28	0,8	4,5	6	3	○		8900510	5,1	80	32	0,8	5,5	6	3	○	
8900448	4,48	70	28	0,8	4,5	6	3	○		8900511	5,11	80	32	0,8	5,5	6	3	○	
8900449	4,49	70	28	0,8	4,5	6	3	○		8900512	5,12	80	32	0,8	5,5	6	3	○	
8900450	4,5	70	28	0,8	4,5	6	3	○		8900513	5,13	80	32	0,8	5,5	6	3	○	
8900451	4,51	80	28	0,8	5	6	3	○		8900514	5,14	80	32	0,8	5,5	6	3	○	
8900452	4,52	80	28	0,8	5	6	3	○		8900515	5,15	80	32	0,8	5,5	6	3	○	
8900453	4,53	80	28	0,8	5	6	3	○		8900516	5,16	80	32	0,8	5,5	6	3	○	
8900454	4,54	80	28	0,8	5	6	3	○		8900517	5,17	80	32	0,8	5,5	6	3	○	
8900455	4,55	80	28	0,8	5	6	3	○		8900518	5,18	80	32	0,8	5,5	6	3	○	
8900456	4,56	80	28	0,8	5	6	3	○		8900519	5,19	80	32	0,8	5,5	6	3	○	
8900457	4,57	80	28	0,8	5	6	3	○		8900520	5,2	80	32	0,8	5,5	6	3	○	
8900458	4,58	80	28	0,8	5	6	3	○		8900521	5,21	80	32	0,8	5,5	6	3	○	
8900459	4,59	80	28	0,8	5	6	3	○		8900522	5,22	80	32	0,8	5,5	6	3	○	
8900460	4,6	80	28	0,8	5	6	3	○		8900523	5,23	80	32	0,8	5,5	6	3	○	
8900461	4,61	80	28	0,8	5	6	3	○		8900524	5,24	80	32	0,8	5,5	6	3	○	
8900462	4,62	80	28	0,8	5	6	3	○		8900525	5,25	80	32	0,8	5,5	6	3	○	
8900463	4,63	80	28	0,8	5	6	3	○		8900526	5,26	80	32	0,8	5,5	6	3	○	
8900464	4,64	80	28	0,8	5	6	3	○		8900527	5,27	80	32	0,8	5,5	6	3	○	
8900465	4,65	80	28	0,8	5	6	3	○		8900528	5,28	80	32	0,8	5,5	6	3	○	
8900466	4,66	80	28	0,8	5	6	3	○		8900529	5,29	80	32	0,8	5,5	6	3	○	
8900467	4,67	80	28	0,8	5	6	3	○		8900530	5,3	80	32	0,8	5,5	6	3	○	
8900468	4,68	80	28	0,8	5	6	3	○		8900531	5,31	80	32	0,8	5,5	6	3	○	
8900469	4,69	80	28	0,8	5	6	3	○		8900532	5,32	80	32	0,8	5,5	6	3	○	
8900470	4,7	80	28	0,8	5	6	3	○		8900533	5,33	80	32	0,8	5,5	6	3	○	

● Delivery from stock
○ Available on short notice

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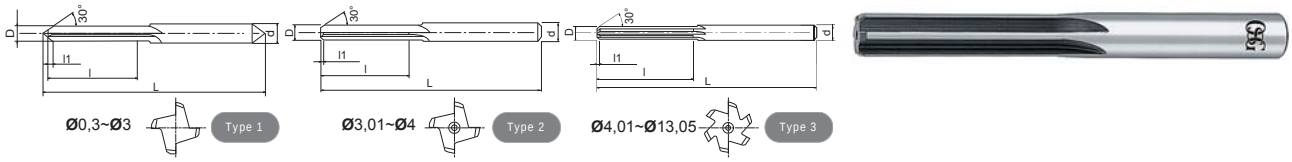
CARBIDE REAMER
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- Твердосплавная прямозубая развертка

CARBIDE REAMER
- Wysoka wydajność
- Rozwiertaki proste z węglika

GO TO LIVE STOCK CHECK

Carbide Reamer

CARBIDE | 0~+0.005 | h6 | min⁻¹ C.132-133



EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price	EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price
8900534	5,34	80	32	0,8	5,5	6	3	○		8900597	5,97	80	32	0,8	6	6	3	○	
8900535	5,35	80	32	0,8	5,5	6	3	○		8900598	5,98	80	32	0,8	6	6	3	○	
8900536	5,36	80	32	0,8	5,5	6	3	○		8900599	5,99	80	32	0,8	6	6	3	○	
8900537	5,37	80	32	0,8	5,5	6	3	○		8900600	6	80	32	0,8	6	6	3	○	
8900538	5,38	80	32	0,8	5,5	6	3	○		8900601	6,01	80	35	0,8	7	6	3	○	
8900539	5,39	80	32	0,8	5,5	6	3	○		8900602	6,02	80	35	0,8	7	6	3	○	
8900540	5,4	80	32	0,8	5,5	6	3	○		8900603	6,03	80	35	0,8	7	6	3	○	
8900541	5,41	80	32	0,8	5,5	6	3	○		8900604	6,04	80	35	0,8	7	6	3	○	
8900542	5,42	80	32	0,8	5,5	6	3	○		8900605	6,05	80	35	0,8	7	6	3	○	
8900543	5,43	80	32	0,8	5,5	6	3	○		8900606	6,06	80	35	0,8	7	6	3	○	
8900544	5,44	80	32	0,8	5,5	6	3	○		8900607	6,07	80	35	0,8	7	6	3	○	
8900545	5,45	80	32	0,8	5,5	6	3	○		8900608	6,08	80	35	0,8	7	6	3	○	
8900546	5,46	80	32	0,8	5,5	6	3	○		8900609	6,09	80	35	0,8	7	6	3	○	
8900547	5,47	80	32	0,8	5,5	6	3	○		8900610	6,1	80	35	0,8	7	6	3	○	
8900548	5,48	80	32	0,8	5,5	6	3	○		8900611	6,11	80	35	0,8	7	6	3	○	
8900549	5,49	80	32	0,8	5,5	6	3	○		8900612	6,12	80	35	0,8	7	6	3	○	
8900550	5,5	80	32	0,8	5,5	6	3	○		8900613	6,13	80	35	0,8	7	6	3	○	
8900551	5,51	80	32	0,8	5,5	6	3	○		8900614	6,14	80	35	0,8	7	6	3	○	
8900552	5,52	80	32	0,8	5,5	6	3	○		8900615	6,15	80	35	0,8	7	6	3	○	
8900553	5,53	80	32	0,8	5,5	6	3	○		8900616	6,16	80	35	0,8	7	6	3	○	
8900554	5,54	80	32	0,8	5,5	6	3	○		8900617	6,17	80	35	0,8	7	6	3	○	
8900555	5,55	80	32	0,8	5,5	6	3	○		8900618	6,18	80	35	0,8	7	6	3	○	
8900556	5,56	80	32	0,8	6	6	3	○		8900619	6,19	80	35	0,8	7	6	3	○	
8900557	5,57	80	32	0,8	6	6	3	○		8900620	6,2	80	35	0,8	7	6	3	○	
8900558	5,58	80	32	0,8	6	6	3	○		8900621	6,21	80	35	0,8	7	6	3	○	
8900559	5,59	80	32	0,8	6	6	3	○		8900622	6,22	80	35	0,8	7	6	3	○	
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8900564	5,64	80	32	0,8	6	6	3	○		8900627	6,27	80	35	0,8	7	6	3	○	
8900565	5,65	80	32	0,8	6	6	3	○		8900628	6,28	80	35	0,8	7	6	3	○	
8900566	5,66	80	32	0,8	6	6	3	○		8900629	6,29	80	35	0,8	7	6	3	○	
8900567	5,67	80	32	0,8	6	6	3	○		8900630	6,3	80	35	0,8	7	6	3	○	
8900568	5,68	80	32	0,8	6	6	3	○		8900631	6,31	80	35	0,8	7	6	3	○	
8900569	5,69	80	32	0,8	6	6	3	○		8900632	6,32	80	35	0,8	7	6	3	○	
8900570	5,7	80	32	0,8	6	6	3	○		8900633	6,33	80	35	0,8	7	6	3	○	
8900571	5,71	80	32	0,8	6	6	3	○		8900634	6,34	80	35	0,8	7	6	3	○	
8900572	5,72	80	32	0,8	6	6	3	○		8900635	6,35	80	35	0,8	7	6	3	○	
8900573	5,73	80	32	0,8	6	6	3	○		8900636	6,36	80	35	0,8	7	6	3	○	
8900574	5,74	80	32	0,8	6	6	3	○		8900637	6,37	80	35	0,8	7	6	3	○	
8900575	5,75	80	32	0,8	6	6	3	○		8900638	6,38	80	35	0,8	7	6	3	○	
8900576	5,76	80	32	0,8	6	6	3	○		8900639	6,39	80	35	0,8	7	6	3	○	
8900577	5,77	80	32	0,8	6	6	3	○		8900640	6,4	80	35	0,8	7	6	3	○	
8900578	5,78	80	32	0,8	6	6	3	○		8900641	6,41	80	35	0,8	7	6	3	○	
8900579	5,79	80	32	0,8	6	6	3	○		8900642	6,42	80	35	0,8	7	6	3	○	
8900580	5,8	80	32	0,8	6	6	3	○		8900643	6,43	80	35	0,8	7	6	3	○	
8900581	5,81	80	32	0,8	6	6	3	○		8900644	6,44	80	35	0,8	7	6	3	○	
8900582	5,82	80	32	0,8	6	6	3	○		8900645	6,45	80	35	0,8	7	6	3	○	
8900583	5,83	80	32	0,8	6	6	3	○		8900646	6,46	80	35	0,8	7	6	3	○	
8900584	5,84	80	32	0,8	6	6	3	○		8900647	6,47	80	35	0,8	7	6	3	○	
8900585	5,85	80	32	0,8	6	6	3	○		8900648	6,48	80	35	0,8	7	6	3	○	
8900586	5,86	80	32	0,8	6	6	3	○		8900649	6,49	80	35	0,8	7	6	3	○	
8900587	5,87	80	32	0,8	6	6	3	○		8900650	6,5	80	35	0,8	7	6	3	○	
8900588	5,88	80	32	0,8	6	6	3	○		8900651	6,51	80	35	0,8	7	6	3	○	
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8900590	5,9	80	32	0,8	6	6	3	○		8900653	6,53	80	35	0,8	7	6	3	○	
8900591	5,91	80	32	0,8	6	6	3	○		8900654	6,54	80	35	0,8	7	6	3	○	
8900592	5,92	80	32	0,8	6	6	3	○		8900655	6,55	80	35	0,8	7	6	3	○	
8900593	5,93	80	32	0,8	6	6	3	○		8900656	6,56	80	35	0,8	7	6	3	○	
8900594	5,94	80	32	0,8	6	6	3	○		8900657	6,57	80	35	0,8	7	6	3	○	
8900595	5,95	80	32	0,8	6	6	3	○		8900658	6,58	80	35	0,8	7	6	3	○	
8900596	5,96	80	32	0,8	6	6	3	○		8900659	6,59	80	35	0,8	7	6	3	○	

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- Alesatore cilindrico in metallo duro

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CARBIDE REAMER
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- HM brotsch med raka skär

CARBIDE REAMER
- Altas prestaciones
- Escariador de ranuras rectas en metal duro

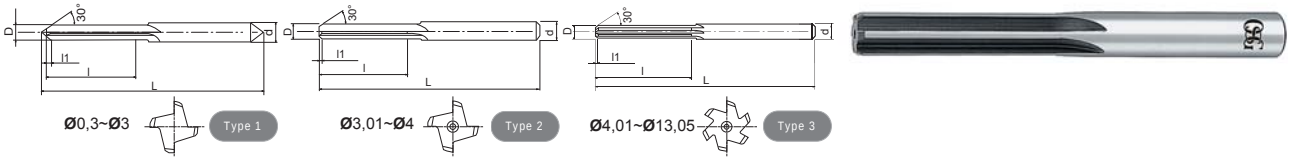
CARBIDE REAMER
- Высокая производительность
- Твердосплавная прямозубая развертка

CARBIDE REAMER
- Wysoka wydajność
- Rozwiertaki proste z węglika

GO TO LIVE STOCK CHECK

Carbide Reamer

CARBIDE | 0~+0.005 | h6 | min⁻¹ C.132-133



EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price	EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price
8900660	6,6	80	35	0,8	7	6	3	○		8900723	7,23	90	35	0,8	8	6	3	○	
8900661	6,61	80	35	0,8	7	6	3	○		8900724	7,24	90	35	0,8	8	6	3	○	
8900662	6,62	80	35	0,8	7	6	3	○		8900725	7,25	90	35	0,8	8	6	3	○	
8900663	6,63	80	35	0,8	7	6	3	○		8900726	7,26	90	35	0,8	8	6	3	○	
8900664	6,64	80	35	0,8	7	6	3	○		8900727	7,27	90	35	0,8	8	6	3	○	
8900665	6,65	80	35	0,8	7	6	3	○		8900728	7,28	90	35	0,8	8	6	3	○	
8900666	6,66	80	35	0,8	7	6	3	○		8900729	7,29	90	35	0,8	8	6	3	○	
8900667	6,67	80	35	0,8	7	6	3	○		8900730	7,3	90	35	0,8	8	6	3	○	
8900668	6,68	80	35	0,8	7	6	3	○		8900731	7,31	90	35	0,8	8	6	3	○	
8900669	6,69	80	35	0,8	7	6	3	○		8900732	7,32	90	35	0,8	8	6	3	○	
8900670	6,7	80	35	0,8	7	6	3	○		8900733	7,33	90	35	0,8	8	6	3	○	
8900671	6,71	80	35	0,8	7	6	3	○		8900734	7,34	90	35	0,8	8	6	3	○	
8900672	6,72	80	35	0,8	7	6	3	○		8900735	7,35	90	35	0,8	8	6	3	○	
8900673	6,73	80	35	0,8	7	6	3	○		8900736	7,36	90	35	0,8	8	6	3	○	
8900674	6,74	80	35	0,8	7	6	3	○		8900737	7,37	90	35	0,8	8	6	3	○	
8900675	6,75	80	35	0,8	7	6	3	○		8900738	7,38	90	35	0,8	8	6	3	○	
8900676	6,76	80	35	0,8	7	6	3	○		8900739	7,39	90	35	0,8	8	6	3	○	
8900677	6,77	80	35	0,8	7	6	3	○		8900740	7,4	90	35	0,8	8	6	3	○	
8900678	6,78	80	35	0,8	7	6	3	○		8900741	7,41	90	35	0,8	8	6	3	○	
8900679	6,79	80	35	0,8	7	6	3	○		8900742	7,42	90	35	0,8	8	6	3	○	
8900680	6,8	80	35	0,8	7	6	3	○		8900743	7,43	90	35	0,8	8	6	3	○	
8900681	6,81	80	35	0,8	7	6	3	○		8900744	7,44	90	35	0,8	8	6	3	○	
8900682	6,82	80	35	0,8	7	6	3	○		8900745	7,45	90	35	0,8	8	6	3	○	
8900683	6,83	80	35	0,8	7	6	3	○		8900746	7,46	90	35	0,8	8	6	3	○	
8900684	6,84	80	35	0,8	7	6	3	○		8900747	7,47	90	35	0,8	8	6	3	○	
8900685	6,85	80	35	0,8	7	6	3	○		8900748	7,48	90	35	0,8	8	6	3	○	
8900686	6,86	80	35	0,8	7	6	3	○		8900749	7,49	90	35	0,8	8	6	3	○	
8900687	6,87	80	35	0,8	7	6	3	○		8900750	7,5	90	35	0,8	8	6	3	○	
8900688	6,88	80	35	0,8	7	6	3	○		8900751	7,51	90	40	0,8	8	6	3	○	
8900689	6,89	80	35	0,8	7	6	3	○		8900752	7,52	90	40	0,8	8	6	3	○	
8900690	6,9	80	35	0,8	7	6	3	○		8900753	7,53	90	40	0,8	8	6	3	○	
8900691	6,91	80	35	0,8	7	6	3	○		8900754	7,54	90	40	0,8	8	6	3	○	
8900692	6,92	80	35	0,8	7	6	3	○		8900755	7,55	90	40	0,8	8	6	3	○	
8900693	6,93	80	35	0,8	7	6	3	○		8900756	7,56	90	40	0,8	8	6	3	○	
8900694	6,94	80	35	0,8	7	6	3	○		8900757	7,57	90	40	0,8	8	6	3	○	
8900695	6,95	80	35	0,8	7	6	3	○		8900758	7,58	90	40	0,8	8	6	3	○	
8900696	6,96	80	35	0,8	7	6	3	○		8900759	7,59	90	40	0,8	8	6	3	○	
8900697	6,97	80	35	0,8	7	6	3	○		8900760	7,6	90	40	0,8	8	6	3	○	
8900698	6,98	80	35	0,8	7	6	3	○		8900761	7,61	90	40	0,8	8	6	3	○	
8900699	6,99	80	35	0,8	7	6	3	○		8900762	7,62	90	40	0,8	8	6	3	○	
8900700	7	80	35	0,8	7	6	3	○		8900763	7,63	90	40	0,8	8	6	3	○	
8900701	7,01	90	35	0,8	8	6	3	○		8900764	7,64	90	40	0,8	8	6	3	○	
8900702	7,02	90	35	0,8	8	6	3	○		8900765	7,65	90	40	0,8	8	6	3	○	
8900703	7,03	90	35	0,8	8	6	3	○		8900766	7,66	90	40	0,8	8	6	3	○	
8900704	7,04	90	35	0,8	8	6	3	○		8900767	7,67	90	40	0,8	8	6	3	○	
8900705	7,05	90	35	0,8	8	6	3	○		8900768	7,68	90	40	0,8	8	6	3	○	
8900706	7,06	90	35	0,8	8	6	3	○		8900769	7,69	90	40	0,8	8	6	3	○	
8900707	7,07	90	35	0,8	8	6	3	○		8900770	7,7	90	40	0,8	8	6	3	○	
8900708	7,08	90	35	0,8	8	6	3	○		8900771	7,71	90	40	0,8	8	6	3	○	
8900709	7,09	90	35	0,8	8	6	3	○		8900772	7,72	90	40	0,8	8	6	3	○	
8900710	7,1	90	35	0,8	8	6	3	○		8900773	7,73	90	40	0,8	8	6	3	○	
8900711	7,11	90	35	0,8	8	6	3	○		8900774	7,74	90	40	0,8	8	6	3	○	
8900712	7,12	90	35	0,8	8	6	3	○		8900775	7,75	90	40	0,8	8	6	3	○	
8900713	7,13	90	35	0,8	8	6	3	○		8900776	7,76	90	40	0,8	8	6	3	○	
8900714	7,14	90	35	0,8	8	6	3	○		8900777	7,77	90	40	0,8	8	6	3	○	
8900715	7,15	90	35	0,8	8	6	3	○		8900778	7,78	90	40	0,8	8	6	3	○	
8900716	7,16	90	35	0,8	8	6	3	○		8900779	7,79	90	40	0,8	8	6	3	○	
8900717	7,17	90	35	0,8	8	6	3	○		8900780	7,8	90	40	0,8	8	6	3	○	
8900718	7,18	90	35	0,8	8	6	3	○		8900781	7,81	90	40	0,8	8	6	3	○	
8900719	7,19	90	35	0,8	8	6	3	○		8900782	7,82	90	40	0,8	8	6	3	○	
8900720	7,2	90	35	0,8	8	6	3	○		8900783	7,83	90	40	0,8	8	6	3	○	
8900721	7,21	90	35	0,8	8	6	3	○		8900784	7,84	90	40	0,8	8	6	3	○	
8900722	7,22	90	35	0,8	8	6	3	○		8900785	7,85	90	40	0,8	8	6	3	○	

● Delivery from stock
○ Available on short notice

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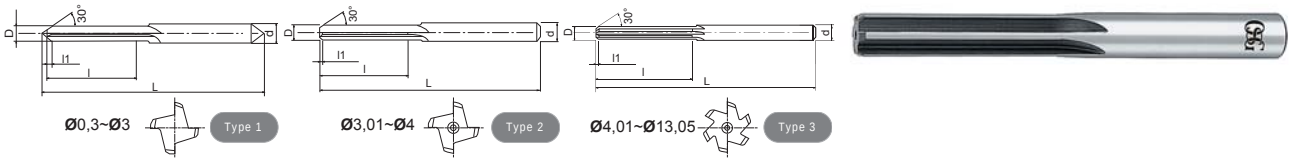
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- Wysoka wydajność
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GO TO LIVE STOCK CHECK

Carbide Reamer

CARBIDE | 0~+0.005 | h6 | min⁻¹ C.132-133



EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price	EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price
8900786	7,86	90	40	0,8	8	6	3	○		8900849	8,49	90	40	1	9	6	3	○	
8900787	7,87	90	40	0,8	8	6	3	○		8900850	8,5	90	40	1	9	6	3	○	
8900788	7,88	90	40	0,8	8	6	3	○		8900851	8,51	90	40	1	9	6	3	○	
8900789	7,89	90	40	0,8	8	6	3	○		8900852	8,52	90	40	1	9	6	3	○	
8900790	7,9	90	40	0,8	8	6	3	○		8900853	8,53	90	40	1	9	6	3	○	
8900791	7,91	90	40	0,8	8	6	3	○		8900854	8,54	90	40	1	9	6	3	○	
8900792	7,92	90	40	0,8	8	6	3	○		8900855	8,55	90	40	1	9	6	3	○	
8900793	7,93	90	40	0,8	8	6	3	○		8900856	8,56	90	40	1	9	6	3	○	
8900794	7,94	90	40	0,8	8	6	3	○		8900857	8,57	90	40	1	9	6	3	○	
8900795	7,95	90	40	0,8	8	6	3	○		8900858	8,58	90	40	1	9	6	3	○	
8900796	7,96	90	40	0,8	8	6	3	○		8900859	8,59	90	40	1	9	6	3	○	
8900797	7,97	90	40	0,8	8	6	3	○		8900860	8,6	90	40	1	9	6	3	○	
8900798	7,98	90	40	0,8	8	6	3	○		8900861	8,61	90	40	1	9	6	3	○	
8900799	7,99	90	40	0,8	8	6	3	○		8900862	8,62	90	40	1	9	6	3	○	
8900800	8	90	40	0,8	8	6	3	○		8900863	8,63	90	40	1	9	6	3	○	
8900801	8,01	90	40	1	9	6	3	○		8900864	8,64	90	40	1	9	6	3	○	
8900802	8,02	90	40	1	9	6	3	○		8900865	8,65	90	40	1	9	6	3	○	
8900803	8,03	90	40	1	9	6	3	○		8900866	8,66	90	40	1	9	6	3	○	
8900804	8,04	90	40	1	9	6	3	○		8900867	8,67	90	40	1	9	6	3	○	
8900805	8,05	90	40	1	9	6	3	○		8900868	8,68	90	40	1	9	6	3	○	
8900806	8,06	90	40	1	9	6	3	○		8900869	8,69	90	40	1	9	6	3	○	
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8900808	8,08	90	40	1	9	6	3	○		8900871	8,71	90	40	1	9	6	3	○	
8900809	8,09	90	40	1	9	6	3	○		8900872	8,72	90	40	1	9	6	3	○	
8900810	8,1	90	40	1	9	6	3	○		8900873	8,73	90	40	1	9	6	3	○	
8900811	8,11	90	40	1	9	6	3	○		8900874	8,74	90	40	1	9	6	3	○	
8900812	8,12	90	40	1	9	6	3	○		8900875	8,75	90	40	1	9	6	3	○	
8900813	8,13	90	40	1	9	6	3	○		8900876	8,76	90	40	1	9	6	3	○	
8900814	8,14	90	40	1	9	6	3	○		8900877	8,77	90	40	1	9	6	3	○	
8900815	8,15	90	40	1	9	6	3	○		8900878	8,78	90	40	1	9	6	3	○	
8900816	8,16	90	40	1	9	6	3	○		8900879	8,79	90	40	1	9	6	3	○	
8900817	8,17	90	40	1	9	6	3	○		8900880	8,8	90	40	1	9	6	3	○	
8900818	8,18	90	40	1	9	6	3	○		8900881	8,81	90	40	1	9	6	3	○	
8900819	8,19	90	40	1	9	6	3	○		8900882	8,82	90	40	1	9	6	3	○	
8900820	8,2	90	40	1	9	6	3	○		8900883	8,83	90	40	1	9	6	3	○	
8900821	8,21	90	40	1	9	6	3	○		8900884	8,84	90	40	1	9	6	3	○	
8900822	8,22	90	40	1	9	6	3	○		8900885	8,85	90	40	1	9	6	3	○	
8900823	8,23	90	40	1	9	6	3	○		8900886	8,86	90	40	1	9	6	3	○	
8900824	8,24	90	40	1	9	6	3	○		8900887	8,87	90	40	1	9	6	3	○	
8900825	8,25	90	40	1	9	6	3	○		8900888	8,88	90	40	1	9	6	3	○	
8900826	8,26	90	40	1	9	6	3	○		8900889	8,89	90	40	1	9	6	3	○	
8900827	8,27	90	40	1	9	6	3	○		8900890	8,9	90	40	1	9	6	3	○	
8900828	8,28	90	40	1	9	6	3	○		8900891	8,91	90	40	1	9	6	3	○	
8900829	8,29	90	40	1	9	6	3	○		8900892	8,92	90	40	1	9	6	3	○	
8900830	8,3	90	40	1	9	6	3	○		8900893	8,93	90	40	1	9	6	3	○	
8900831	8,31	90	40	1	9	6	3	○		8900894	8,94	90	40	1	9	6	3	○	
8900832	8,32	90	40	1	9	6	3	○		8900895	8,95	90	40	1	9	6	3	○	
8900833	8,33	90	40	1	9	6	3	○		8900896	8,96	90	40	1	9	6	3	○	
8900834	8,34	90	40	1	9	6	3	○		8900897	8,97	90	40	1	9	6	3	○	
8900835	8,35	90	40	1	9	6	3	○		8900898	8,98	90	40	1	9	6	3	○	
8900836	8,36	90	40	1	9	6	3	○		8900899	8,99	90	40	1	9	6	3	○	
8900837	8,37	90	40	1	9	6	3	○		8900900	9	90	40	1	9	6	3	○	
8900838	8,38	90	40	1	9	6	3	○		8900901	9,01	100	40	1	10	6	3	○	
8900839	8,39	90	40	1	9	6	3	○		8900902	9,02	100	40	1	10	6	3	○	
8900840	8,4	90	40	1	9	6	3	○		8900903	9,03	100	40	1	10	6	3	○	
8900841	8,41	90	40	1	9	6	3	○		8900904	9,04	100	40	1	10	6	3	○	
8900842	8,42	90	40	1	9	6	3	○		8900905	9,05	100	40	1	10	6	3	○	
8900843	8,43	90	40	1	9	6	3	○		8900906	9,06	100	40	1	10	6	3	○	
8900844	8,44	90	40	1	9	6	3	○		8900907	9,07	100	40	1	10	6	3	○	
8900845	8,45	90	40	1	9	6	3	○		8900908	9,08	100	40	1	10	6	3	○	
8900846	8,46	90	40	1	9	6	3	○		8900909	9,09	100	40	1	10	6	3	○	
8900847	8,47	90	40	1	9	6	3	○		8900910	9,1	100	40	1	10	6	3	○	
8900848	8,48	90	40	1	9	6	3	○		8900911	9,11	100	40	1	10	6	3	○	

CARBIDE REAMER
- High performance
- Carbide straight reamer

CARBIDE REAMER
- High performance
- Geradgenutete Vollhartmetallreibahle

CARBIDE REAMER
- Alta prestazione
- Alesatore cilindrico in metallo duro

CARBIDE REAMER
- Haute performance
- Alésoir carbure taille droite

KARBÜR RAYBA
- Yüksek performans
- Karbür düz rayba

CARBIDE REAMER
- High performance
- Hårdmetal rival med lige skær

CARBIDE REAMER
- High performance
- HM brotsch med raka skär

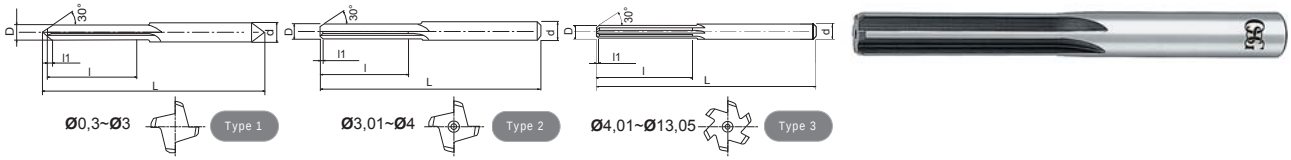
CARBIDE REAMER
- Altas prestaciones
- Escariador de ranuras rectas en metal duro

CARBIDE REAMER
- Высокая производительность
- Твердосплавная прямозубая развертка

CARBIDE REAMER
- Wysoka wydajność
- Rozwiertaki proste z węglika

GO TO LIVE STOCK CHECK

CARBIDE | 0~+0.005 | h6 | min⁻¹ C.132-133



EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price	EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price
8900912	9,12	100	40	1	10	6	3	○		8900975	9,75	100	45	1	10	6	3	○	
8900913	9,13	100	40	1	10	6	3	○		8900976	9,76	100	45	1	10	6	3	○	
8900914	9,14	100	40	1	10	6	3	○		8900977	9,77	100	45	1	10	6	3	○	
8900915	9,15	100	40	1	10	6	3	○		8900978	9,78	100	45	1	10	6	3	○	
8900916	9,16	100	40	1	10	6	3	○		8900979	9,79	100	45	1	10	6	3	○	
8900917	9,17	100	40	1	10	6	3	○		8900980	9,8	100	45	1	10	6	3	○	
8900918	9,18	100	40	1	10	6	3	○		8900981	9,81	100	45	1	10	6	3	○	
8900919	9,19	100	40	1	10	6	3	○		8900982	9,82	100	45	1	10	6	3	○	
8900920	9,2	100	40	1	10	6	3	○		8900983	9,83	100	45	1	10	6	3	○	
8900921	9,21	100	40	1	10	6	3	○		8900984	9,84	100	45	1	10	6	3	○	
8900922	9,22	100	40	1	10	6	3	○		8900985	9,85	100	45	1	10	6	3	○	
8900923	9,23	100	40	1	10	6	3	○		8900986	9,86	100	45	1	10	6	3	○	
8900924	9,24	100	40	1	10	6	3	○		8900987	9,87	100	45	1	10	6	3	○	
8900925	9,25	100	40	1	10	6	3	○		8900988	9,88	100	45	1	10	6	3	○	
8900926	9,26	100	40	1	10	6	3	○		8900989	9,89	100	45	1	10	6	3	○	
8900927	9,27	100	40	1	10	6	3	○		8900990	9,9	100	45	1	10	6	3	○	
8900928	9,28	100	40	1	10	6	3	○		8900991	9,91	100	45	1	10	6	3	○	
8900929	9,29	100	40	1	10	6	3	○		8900992	9,92	100	45	1	10	6	3	○	
8900930	9,3	100	40	1	10	6	3	○		8900993	9,93	100	45	1	10	6	3	○	
8900931	9,31	100	40	1	10	6	3	○		8900994	9,94	100	45	1	10	6	3	○	
8900932	9,32	100	40	1	10	6	3	○		8900995	9,95	100	45	1	10	6	3	○	
8900933	9,33	100	40	1	10	6	3	○		8900996	9,96	100	45	1	10	6	3	○	
8900934	9,34	100	40	1	10	6	3	○		8900997	9,97	100	45	1	10	6	3	○	
8900935	9,35	100	40	1	10	6	3	○		8900998	9,98	100	45	1	10	6	3	○	
8900936	9,36	100	40	1	10	6	3	○		8900999	9,99	100	45	1	10	6	3	○	
8900937	9,37	100	40	1	10	6	3	○		8901000	10	100	45	1	10	6	3	○	
8900938	9,38	100	40	1	10	6	3	○		8901001	10,01	100	45	1	11	6	3	○	
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8900940	9,4	100	40	1	10	6	3	○		8901003	10,03	100	45	1	11	6	3	○	
8900941	9,41	100	40	1	10	6	3	○		8901004	10,04	100	45	1	11	6	3	○	
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8900943	9,43	100	40	1	10	6	3	○		8901006	10,06	100	45	1	11	6	3	○	
8900944	9,44	100	40	1	10	6	3	○		8901007	10,07	100	45	1	11	6	3	○	
8900945	9,45	100	40	1	10	6	3	○		8901008	10,08	100	45	1	11	6	3	○	
8900946	9,46	100	40	1	10	6	3	○		8901009	10,09	100	45	1	11	6	3	○	
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8900948	9,48	100	40	1	10	6	3	○		8901011	10,11	100	45	1	11	6	3	○	
8900949	9,49	100	40	1	10	6	3	○		8901012	10,12	100	45	1	11	6	3	○	
8900950	9,5	100	40	1	10	6	3	○		8901013	10,13	100	45	1	11	6	3	○	
8900951	9,51	100	45	1	10	6	3	○		8901014	10,14	100	45	1	11	6	3	○	
8900952	9,52	100	45	1	10	6	3	○		8901015	10,15	100	45	1	11	6	3	○	
8900953	9,53	100	45	1	10	6	3	○		8901016	10,16	100	45	1	11	6	3	○	
8900954	9,54	100	45	1	10	6	3	○		8901017	10,17	100	45	1	11	6	3	○	
8900955	9,55	100	45	1	10	6	3	○		8901018	10,18	100	45	1	11	6	3	○	
8900956	9,56	100	45	1	10	6	3	○		8901019	10,19	100	45	1	11	6	3	○	
8900957	9,57	100	45	1	10	6	3	○		8901020	10,2	100	45	1	11	6	3	○	
8900958	9,58	100	45	1	10	6	3	○		8901021	10,21	100	45	1	11	6	3	○	
8900959	9,59	100	45	1	10	6	3	○		8901022	10,22	100	45	1	11	6	3	○	
8900960	9,6	100	45	1	10	6	3	○		8901023	10,23	100	45	1	11	6	3	○	
8900961	9,61	100	45	1	10	6	3	○		8901024	10,24	100	45	1	11	6	3	○	
8900962	9,62	100	45	1	10	6	3	○		8901025	10,25	100	45	1	11	6	3	○	
8900963	9,63	100	45	1	10	6	3	○		8901026	10,26	100	45	1	11	6	3	○	
8900964	9,64	100	45	1	10	6	3	○		8901027	10,27	100	45	1	11	6	3	○	
8900965	9,65	100	45	1	10	6	3	○		8901028	10,28	100	45	1	11	6	3	○	
8900966	9,66	100	45	1	10	6	3	○		8901029	10,29	100	45	1	11	6	3	○	
8900967	9,67	100	45	1	10	6	3	○		8901030	10,3	100	45	1	11	6	3	○	
8900968	9,68	100	45	1	10	6	3	○		8901031	10,31	100	45	1	11	6	3	○	
8900969	9,69	100	45	1	10	6	3	○		8901032	10,32	100	45	1	11	6	3	○	
8900970	9,7	100	45	1	10	6	3	○		8901033	10,33	100	45	1	11	6	3	○	
8900971	9,71	100	45	1	10	6	3	○		8901034	10,34	100	45	1	11	6	3	○	
8900972	9,72	100	45	1	10	6	3	○		8901035	10,35	100	45	1	11	6	3	○	
8900973	9,73	100	45	1	10	6	3	○		8901036	10,36	100	45	1	11	6	3	○	
8900974	9,74	100	45	1	10	6	3	○		8901037	10,37	100	45	1	11	6	3	○	

● Delivery from stock
○ Available on short notice

CARBIDE REAMER
- High performance
- Carbide straight reamer

CARBIDE REAMER
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- Geradgenutete Vollhartmetallreibahle

CARBIDE REAMER
- Alta prestazione
- Alesatore cilindrico in metallo duro

CARBIDE REAMER
- Haute performance
- Alésoir carbure taille droite

KARBÜR RAYBA
- Yüksek performans
- Karbür düz rayba

CARBIDE REAMER
- High performance
- Hårdmetal rival med lige skær

CARBIDE REAMER
- High performance
- HM brotsch med raka skär

CARBIDE REAMER
- Altas prestaciones
- Escariador de ranuras rectas en metal duro

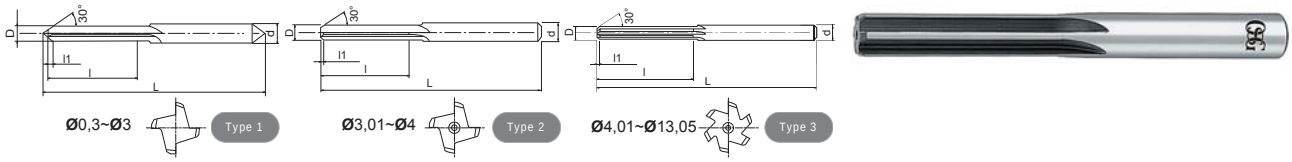
CARBIDE REAMER
- Высокая производительность
- Твердосплавная прямозубая развертка

CARBIDE REAMER
- Wysoka wydajność
- Rozwiertaki proste z węglika

GO TO LIVE STOCK CHECK

Carbide Reamer

CARBIDE | 0~+0.005 | h6 | min⁻¹ C.132-133



EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price	EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price
8901038	10,38	100	45	1	11	6	3	○		8901101	11,01	110	45	1	11	6	3	○	
8901039	10,39	100	45	1	11	6	3	○		8901102	11,02	110	45	1	11	6	3	○	
8901040	10,4	100	45	1	11	6	3	○		8901103	11,03	110	45	1	11	6	3	○	
8901041	10,41	100	45	1	11	6	3	○		8901104	11,04	110	45	1	11	6	3	○	
8901042	10,42	100	45	1	11	6	3	○		8901105	11,05	110	45	1	11	6	3	○	
8901043	10,43	100	45	1	11	6	3	○		8901106	11,06	110	45	1	11	6	3	○	
8901044	10,44	100	45	1	11	6	3	○		8901107	11,07	110	45	1	11	6	3	○	
8901045	10,45	100	45	1	11	6	3	○		8901108	11,08	110	45	1	11	6	3	○	
8901046	10,46	100	45	1	11	6	3	○		8901109	11,09	110	45	1	11	6	3	○	
8901047	10,47	100	45	1	11	6	3	○		8901110	11,1	110	45	1	11	6	3	○	
8901048	10,48	100	45	1	11	6	3	○		8901111	11,11	110	45	1	11	6	3	○	
8901049	10,49	100	45	1	11	6	3	○		8901112	11,12	110	45	1	11	6	3	○	
8901050	10,5	100	45	1	11	6	3	○		8901113	11,13	110	45	1	11	6	3	○	
8901051	10,51	100	45	1	11	6	3	○		8901114	11,14	110	45	1	11	6	3	○	
8901052	10,52	100	45	1	11	6	3	○		8901115	11,15	110	45	1	11	6	3	○	
8901053	10,53	100	45	1	11	6	3	○		8901116	11,16	110	45	1	11	6	3	○	
8901054	10,54	100	45	1	11	6	3	○		8901117	11,17	110	45	1	11	6	3	○	
8901055	10,55	100	45	1	11	6	3	○		8901118	11,18	110	45	1	11	6	3	○	
8901056	10,56	100	45	1	11	6	3	○		8901119	11,19	110	45	1	11	6	3	○	
8901057	10,57	100	45	1	11	6	3	○		8901120	11,2	110	45	1	11	6	3	○	
8901058	10,58	100	45	1	11	6	3	○		8901121	11,21	110	45	1	11	6	3	○	
8901059	10,59	100	45	1	11	6	3	○		8901122	11,22	110	45	1	11	6	3	○	
8901060	10,6	100	45	1	11	6	3	○		8901123	11,23	110	45	1	11	6	3	○	
8901061	10,61	100	45	1	11	6	3	○		8901124	11,24	110	45	1	11	6	3	○	
8901062	10,62	100	45	1	11	6	3	○		8901125	11,25	110	45	1	11	6	3	○	
8901063	10,63	100	45	1	11	6	3	○		8901126	11,26	110	45	1	11	6	3	○	
8901064	10,64	100	45	1	11	6	3	○		8901127	11,27	110	45	1	11	6	3	○	
8901065	10,65	100	45	1	11	6	3	○		8901128	11,28	110	45	1	11	6	3	○	
8901066	10,66	100	45	1	11	6	3	○		8901129	11,29	110	45	1	11	6	3	○	
8901067	10,67	100	45	1	11	6	3	○		8901130	11,3	110	45	1	11	6	3	○	
8901068	10,68	100	45	1	11	6	3	○		8901131	11,31	110	45	1	11	6	3	○	
8901069	10,69	100	45	1	11	6	3	○		8901132	11,32	110	45	1	11	6	3	○	
8901070	10,7	100	45	1	11	6	3	○		8901133	11,33	110	45	1	11	6	3	○	
8901071	10,71	100	45	1	11	6	3	○		8901134	11,34	110	45	1	11	6	3	○	
8901072	10,72	100	45	1	11	6	3	○		8901135	11,35	110	45	1	11	6	3	○	
8901073	10,73	100	45	1	11	6	3	○		8901136	11,36	110	45	1	11	6	3	○	
8901074	10,74	100	45	1	11	6	3	○		8901137	11,37	110	45	1	11	6	3	○	
8901075	10,75	100	45	1	11	6	3	○		8901138	11,38	110	45	1	11	6	3	○	
8901076	10,76	100	45	1	11	6	3	○		8901139	11,39	110	45	1	11	6	3	○	
8901077	10,77	100	45	1	11	6	3	○		8901140	11,4	110	45	1	11	6	3	○	
8901078	10,78	100	45	1	11	6	3	○		8901141	11,41	110	45	1	11	6	3	○	
8901079	10,79	100	45	1	11	6	3	○		8901142	11,42	110	45	1	11	6	3	○	
8901080	10,8	100	45	1	11	6	3	○		8901143	11,43	110	45	1	11	6	3	○	
8901081	10,81	100	45	1	11	6	3	○		8901144	11,44	110	45	1	11	6	3	○	
8901082	10,82	100	45	1	11	6	3	○		8901145	11,45	110	45	1	11	6	3	○	
8901083	10,83	100	45	1	11	6	3	○		8901146	11,46	110	45	1	11	6	3	○	
8901084	10,84	100	45	1	11	6	3	○		8901147	11,47	110	45	1	11	6	3	○	
8901085	10,85	100	45	1	11	6	3	○		8901148	11,48	110	45	1	11	6	3	○	
8901086	10,86	100	45	1	11	6	3	○		8901149	11,49	110	45	1	11	6	3	○	
8901087	10,87	100	45	1	11	6	3	○		8901150	11,5	110	45	1	11	6	3	○	
8901088	10,88	100	45	1	11	6	3	○		8901151	11,51	110	45	1	11	6	3	○	
8901089	10,89	100	45	1	11	6	3	○		8901152	11,52	110	45	1	11	6	3	○	
8901090	10,9	100	45	1	11	6	3	○		8901153	11,53	110	45	1	11	6	3	○	
8901091	10,91	100	45	1	11	6	3	○		8901154	11,54	110	45	1	11	6	3	○	
8901092	10,92	100	45	1	11	6	3	○		8901155	11,55	110	45	1	11	6	3	○	
8901093	10,93	100	45	1	11	6	3	○		8901156	11,56	110	45	1	11	6	3	○	
8901094	10,94	100	45	1	11	6	3	○		8901157	11,57	110	45	1	11	6	3	○	
8901095	10,95	100	45	1	11	6	3	○		8901158	11,58	110	45	1	11	6	3	○	
8901096	10,96	100	45	1	11	6	3	○		8901159	11,59	110	45	1	11	6	3	○	
8901097	10,97	100	45	1	11	6	3	○		8901160	11,6	110	45	1	11	6	3	○	
8901098	10,98	100	45	1	11	6	3	○		8901161	11,61	110	45	1	11	6	3	○	
8901099	10,99	100	45	1	11	6	3	○		8901162	11,62	110	45	1	11	6	3	○	
8901100	11	100	45	1	11	6	3	○		8901163	11,63	110	45	1	11	6	3	○	

CARBIDE REAMER
- High performance
- Carbide straight reamer

CARBIDE REAMER
- High performance
- Geradgenutete Vollhartmetallreibahle

CARBIDE REAMER
- Alta prestazione
- Alesatore cilindrico in metallo duro

CARBIDE REAMER
- Haute performance
- Alésoir carbure taille droite

KARBÜR RAYBA
- Yüksek performans
- Karbür düz rayba

CARBIDE REAMER
- High performance
- Hårdmetal rival med lige skær

CARBIDE REAMER
- High performance
- HM brotsch med raka skär

CARBIDE REAMER
- Altas prestaciones
- Escariador de ranuras rectas en metal duro

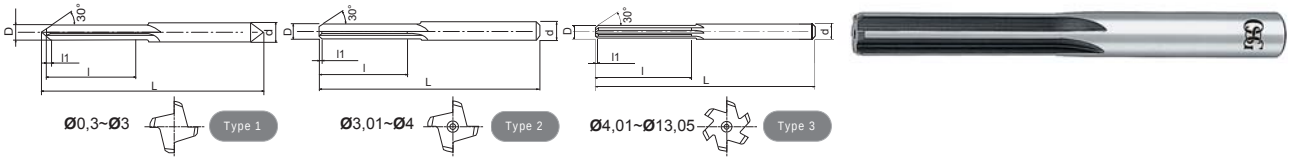
CARBIDE REAMER
- Высокая производительность
- Твердосплавная прямозубая развертка

CARBIDE REAMER
- Wysoka wydajność
- Rozwiertaki proste z węglika

GO TO LIVE STOCK CHECK

Carbide Reamer

CARBIDE | 0~+0.005 | h6 | min⁻¹ C.132-133



EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price	EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price
8901164	11,64	110	45	1	12	6	3	○		8901227	12,27	110	50	1	13	6	3	○	
8901165	11,65	110	45	1	12	6	3	○		8901228	12,28	110	50	1	13	6	3	○	
8901166	11,66	110	45	1	12	6	3	○		8901229	12,29	110	50	1	13	6	3	○	
8901167	11,67	110	45	1	12	6	3	○		8901230	12,3	110	50	1	13	6	3	○	
8901168	11,68	110	45	1	12	6	3	○		8901231	12,31	110	50	1	13	6	3	○	
8901169	11,69	110	45	1	12	6	3	○		8901232	12,32	110	50	1	13	6	3	○	
8901170	11,7	110	45	1	12	6	3	○		8901233	12,33	110	50	1	13	6	3	○	
8901171	11,71	110	45	1	12	6	3	○		8901234	12,34	110	50	1	13	6	3	○	
8901172	11,72	110	45	1	12	6	3	○		8901235	12,35	110	50	1	13	6	3	○	
8901173	11,73	110	45	1	12	6	3	○		8901236	12,36	110	50	1	13	6	3	○	
8901174	11,74	110	45	1	12	6	3	○		8901237	12,37	110	50	1	13	6	3	○	
8901175	11,75	110	45	1	12	6	3	○		8901238	12,38	110	50	1	13	6	3	○	
8901176	11,76	110	45	1	12	6	3	○		8901239	12,39	110	50	1	13	6	3	○	
8901177	11,77	110	45	1	12	6	3	○		8901240	12,4	110	50	1	13	6	3	○	
8901178	11,78	110	45	1	12	6	3	○		8901241	12,41	110	50	1	13	6	3	○	
8901179	11,79	110	45	1	12	6	3	○		8901242	12,42	110	50	1	13	6	3	○	
8901180	11,8	110	45	1	12	6	3	○		8901243	12,43	110	50	1	13	6	3	○	
8901181	11,81	110	50	1	12	6	3	○		8901244	12,44	110	50	1	13	6	3	○	
8901182	11,82	110	50	1	12	6	3	○		8901245	12,45	110	50	1	13	6	3	○	
8901183	11,83	110	50	1	12	6	3	○		8901246	12,46	110	50	1	13	6	3	○	
8901184	11,84	110	50	1	12	6	3	○		8901247	12,47	110	50	1	13	6	3	○	
8901185	11,85	110	50	1	12	6	3	○		8901248	12,48	110	50	1	13	6	3	○	
8901186	11,86	110	50	1	12	6	3	○		8901249	12,49	110	50	1	13	6	3	○	
8901187	11,87	110	50	1	12	6	3	○		8901250	12,5	110	50	1	13	6	3	○	
8901188	11,88	110	50	1	12	6	3	○		8901251	12,51	110	50	1	13	6	3	○	
8901189	11,89	110	50	1	12	6	3	○		8901252	12,52	110	50	1	13	6	3	○	
8901190	11,9	110	50	1	12	6	3	○		8901253	12,53	110	50	1	13	6	3	○	
8901191	11,91	110	50	1	12	6	3	○		8901254	12,54	110	50	1	13	6	3	○	
8901192	11,92	110	50	1	12	6	3	○		8901255	12,55	110	50	1	13	6	3	○	
8901193	11,93	110	50	1	12	6	3	○		8901256	12,56	110	50	1	13	6	3	○	
8901194	11,94	110	50	1	12	6	3	○		8901257	12,57	110	50	1	13	6	3	○	
8901195	11,95	110	50	1	12	6	3	○		8901258	12,58	110	50	1	13	6	3	○	
8901196	11,96	110	50	1	12	6	3	○		8901259	12,59	110	50	1	13	6	3	○	
8901197	11,97	110	50	1	12	6	3	○		8901260	12,6	110	50	1	13	6	3	○	
8901198	11,98	110	50	1	12	6	3	○		8901261	12,61	110	50	1	13	6	3	○	
8901199	11,99	110	50	1	12	6	3	○		8901262	12,62	110	50	1	13	6	3	○	
8901200	12	110	50	1	12	6	3	○		8901263	12,63	110	50	1	13	6	3	○	
8901201	12,01	110	50	1	13	6	3	○		8901264	12,64	110	50	1	13	6	3	○	
8901202	12,02	110	50	1	13	6	3	○		8901265	12,65	110	50	1	13	6	3	○	
8901203	12,03	110	50	1	13	6	3	○		8901266	12,66	110	50	1	13	6	3	○	
8901204	12,04	110	50	1	13	6	3	○		8901267	12,67	110	50	1	13	6	3	○	
8901205	12,05	110	50	1	13	6	3	○		8901268	12,68	110	50	1	13	6	3	○	
8901206	12,06	110	50	1	13	6	3	○		8901269	12,69	110	50	1	13	6	3	○	
8901207	12,07	110	50	1	13	6	3	○		8901270	12,7	110	50	1	13	6	3	○	
8901208	12,08	110	50	1	13	6	3	○		8901271	12,71	110	50	1	13	6	3	○	
8901209	12,09	110	50	1	13	6	3	○		8901272	12,72	110	50	1	13	6	3	○	
8901210	12,1	110	50	1	13	6	3	○		8901273	12,73	110	50	1	13	6	3	○	
8901211	12,11	110	50	1	13	6	3	○		8901274	12,74	110	50	1	13	6	3	○	
8901212	12,12	110	50	1	13	6	3	○		8901275	12,75	110	50	1	13	6	3	○	
8901213	12,13	110	50	1	13	6	3	○		8901276	12,76	110	50	1	13	6	3	○	
8901214	12,14	110	50	1	13	6	3	○		8901277	12,77	110	50	1	13	6	3	○	
8901215	12,15	110	50	1	13	6	3	○		8901278	12,78	110	50	1	13	6	3	○	
8901216	12,16	110	50	1	13	6	3	○		8901279	12,79	110	50	1	13	6	3	○	
8901217	12,17	110	50	1	13	6	3	○		8901280	12,8	110	50	1	13	6	3	○	
8901218	12,18	110	50	1	13	6	3	○		8901281	12,81	110	50	1	13	6	3	○	
8901219	12,19	110	50	1	13	6	3	○		8901282	12,82	110	50	1	13	6	3	○	
8901220	12,2	110	50	1	13	6	3	○		8901283	12,83	110	50	1	13	6	3	○	
8901221	12,21	110	50	1	13	6	3	○		8901284	12,84	110	50	1	13	6	3	○	
8901222	12,22	110	50	1	13	6	3	○		8901285	12,85	110	50	1	13	6	3	○	
8901223	12,23	110	50	1	13	6	3	○		8901286	12,86	110	50	1	13	6	3	○	
8901224	12,24	110	50	1	13	6	3	○		8901287	12,87	110	50	1	13	6	3	○	
8901225	12,25	110	50	1	13	6	3	○		8901288	12,88	110	50	1	13	6	3	○	
8901226	12,26	110	50	1	13	6	3	○		8901289	12,89	110	50	1	13	6	3	○	

● Delivery from stock
○ Available on short notice

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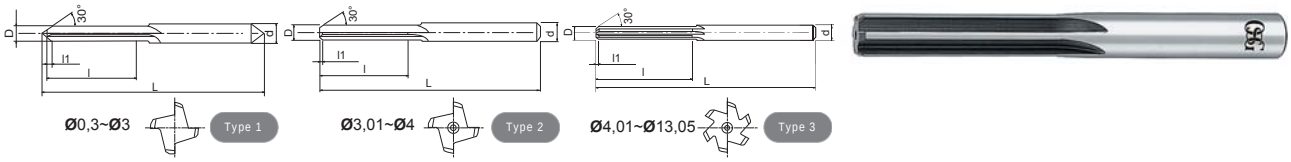
CARBIDE REAMER
- Высокая производительность
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CARBIDE REAMER
- Wysoka wydajność
- Rozwiertaki proste z węglika

GO TO LIVE STOCK CHECK

Carbide Reamer

CARBIDE | 0~+0.005 | h6 | min⁻¹ C.132-133



EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price	EDP	D	L	l	l1	d	ZΔ	Type	Stock	Price
8901290	12,9	110	50	1	13	6	3	○		8901298	12,98	110	50	1	13	6	3	○	
8901291	12,91	110	50	1	13	6	3	○		8901299	12,99	110	50	1	13	6	3	○	
8901292	12,92	110	50	1	13	6	3	○		8901300	13	110	50	1	13	6	3	○	
8901293	12,93	110	50	1	13	6	3	○		8901301	13,01	110	50	1	14	6	3	○	
8901294	12,94	110	50	1	13	6	3	○		8901302	13,02	110	50	1	14	6	3	○	
8901295	12,95	110	50	1	13	6	3	○		8901303	13,03	110	50	1	14	6	3	○	
8901296	12,96	110	50	1	13	6	3	○		8901304	13,04	110	50	1	14	6	3	○	
8901297	12,97	110	50	1	13	6	3	○		8901305	13,05	110	50	1	14	6	3	○	

CRM

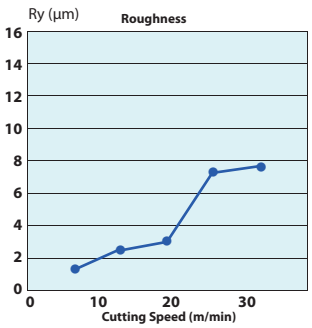
	Low Carbon Steel Mild Steel S15C ■ SS400 AIS11015		Carbon Steel S45C ■ S50C AIS11045 ■ 1050		Alloy Steel SCM ■ SNC ■ SNCM		Alluminium Alloy Castings A7075 ■ ADC DIN ALZnMgCul.5D		Hardened Steel SKT ■ SKD ~40 HRC		Hardened Steel SKT ■ SKD ~50 HRC		Cast Iron FC250		Copper C1100 DIN ECu57	
Vc	12 ~ 20 m/min		10 ~ 16 m/min		8 ~ 12 m/min		15 ~ 30 m/min		6 ~ 12 m/min		4 ~ 10 m/min		8 ~ 16 m/min		10 ~ 25 m/min	
Ø	**F (mm/rev.)**	**Removal Amount (mm)**	**F (mm/rev.)**	**Removal Amount (mm)**	**F (mm/rev.)**	**Removal Amount (mm)**	**F (mm/rev.)**	**Removal Amount (mm)**	**F (mm/rev.)**	**Removal Amount (mm)**	**F (mm/rev.)**	**Removal Amount (mm)**	**F (mm/rev.)**	**Removal Amount (mm)**	**F (mm/rev.)**	**Removal Amount (mm)**
0,3	0,002~ 0,005	0,03~ 0,08	0,002~ 0,005	0,03~ 0,08	0,002~ 0,005	0,03~ 0,08	0,002~ 0,005	0,03~ 0,08	0,001~ 0,004	0,03~ 0,08	-	-	0,002~ 0,005	0,03~ 0,08	0,002~ 0,005	0,03~ 0,08
0,5	0,004~ 0,01	0,05~ 0,10	0,004~ 0,01	0,05~ 0,10	0,004~ 0,01	0,05~ 0,10	0,004~ 0,01	0,05~ 0,10	0,003~ 0,009	0,05~ 0,10	-	-	0,004~ 0,01	0,05~ 0,10	0,004~ 0,01	0,05~ 0,10
1	0,008~ 0,015	0,05~ 0,10	0,008~ 0,015	0,05~ 0,10	0,008~ 0,015	0,05~ 0,10	0,008~ 0,015	0,05~ 0,10	0,007~ 0,014	0,05~ 0,10	-	-	0,008~ 0,015	0,05~ 0,10	0,008~ 0,015	0,05~ 0,10
2	0,018~ 0,03	0,05~ 0,15	0,018~ 0,03	0,05~ 0,15	0,018~ 0,03	0,05~ 0,15	0,018~ 0,03	0,05~ 0,15	0,015~ 0,027	0,05~ 0,15	-	-	0,018~ 0,03	0,05~ 0,15	0,018~ 0,03	0,05~ 0,15
3	0,028~ 0,045	0,10~ 0,20	0,028~ 0,045	0,10~ 0,20	0,028~ 0,045	0,10~ 0,20	0,028~ 0,045	0,10~ 0,20	0,023~ 0,04	0,10~ 0,20	0,012~ 0,03	0,03~ 0,08	0,028~ 0,045	0,10~ 0,20	0,028~ 0,045	0,10~ 0,20
4	0,04~ 0,06	0,10~ 0,20	0,04~ 0,06	0,10~ 0,20	0,04~ 0,06	0,10~ 0,20	0,04~ 0,06	0,10~ 0,20	0,032~ 0,052	0,10~ 0,20	0,015~ 0,035	0,03~ 0,08	0,04~ 0,06	0,10~ 0,20	0,04~ 0,06	0,10~ 0,20
5	0,05~ 0,09	0,10~ 0,20	0,05~ 0,09	0,10~ 0,20	0,05~ 0,09	0,10~ 0,20	0,06~ 0,09	0,10~ 0,20	0,04~ 0,08	0,10~ 0,20	0,02~ 0,05	0,03~ 0,08	0,05~ 0,09	0,10~ 0,20	0,05~ 0,09	0,10~ 0,20
6	0,06~ 0,12	0,10~ 0,20	0,06~ 0,12	0,10~ 0,20	0,06~ 0,12	0,10~ 0,20	0,07~ 0,13	0,10~ 0,20	0,05~ 0,10	0,10~ 0,20	0,025~ 0,055	0,03~ 0,08	0,06~ 0,12	0,10~ 0,20	0,06~ 0,12	0,10~ 0,20
8	0,08~ 0,15	0,10~ 0,20	0,08~ 0,15	0,10~ 0,20	0,08~ 0,15	0,10~ 0,20	0,08~ 0,18	0,10~ 0,20	0,06~ 0,13	0,10~ 0,20	0,03~ 0,075	0,03~ 0,08	0,08~ 0,15	0,10~ 0,20	0,08~ 0,15	0,10~ 0,20
10	0,10~ 0,20	0,10~ 0,20	0,10~ 0,20	0,10~ 0,20	0,10~ 0,20	0,10~ 0,20	0,10~ 0,23	0,10~ 0,30	0,08~ 0,18	0,10~ 0,20	0,04~ 0,08	0,03~ 0,08	0,10~ 0,20	0,10~ 0,20	0,10~ 0,20	0,10~ 0,20
12	0,12~ 0,22	0,10~ 0,20	0,12~ 0,22	0,10~ 0,20	0,12~ 0,22	0,10~ 0,20	0,12~ 0,28	0,10~ 0,30	0,10~ 0,20	0,10~ 0,20	0,04~ 0,09	0,03~ 0,08	0,12~ 0,23	0,10~ 0,20	0,12~ 0,23	0,10~ 0,20
13	0,13~ 0,23	0,10~ 0,20	0,13~ 0,23	0,10~ 0,20	0,13~ 0,23	0,10~ 0,20	0,13~ 0,30	0,10~ 0,30	0,10~ 0,21	0,10~ 0,20	0,04~ 0,10	0,03~ 0,08	0,13~ 0,25	0,10~ 0,20	0,13~ 0,25	0,10~ 0,20

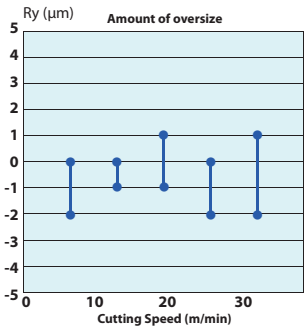
CRM

The surface roughness and amount of oversize at different cutting speeds - Die Oberflächenrauheit und das Aufmaß zu verschieden Schnittgeschwindigkeiten - Rugosità e dimensione a differente velocità di taglio - L'état de surface et quantité variable en fonction de la vitesse de coupe - Overfladeruhed og overstørrelse ved forskellige skærehastigheder - Ytjämnhet och hålstorleksläge i olika skärhastigheter -Rugosidad superficial y mayoración a diferentes velocidades de corte - Шероховатость поверхности и величина припуска при различных скоростях резания - Farklı kesme hızlarında yüzey pürüzlülüğü ve büyük ölçü miktarı - Chropowatość powierzchni i ilość naddatku przy różnych prędkościach skrawania

Cutting Conditions

Work Material	**S50C (JIS S50C,AISI 1050)**
Reamer Size	**10 mm**
Feed	**0,2 mm/rev**
Drill Hole Size	**9,8 mm**
Cutting Fluid	**Water-Soluble Fluid**



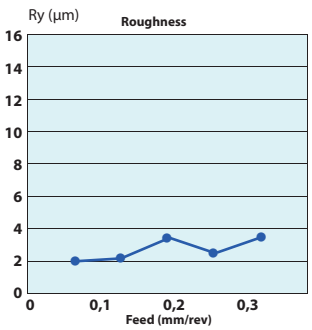


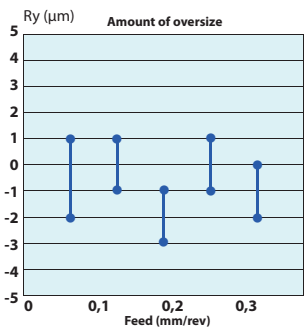
CRM

The surface roughness and amount of oversize at different feed rates per revolution - Die Oberflächenrauheit und das Aufmaß zu verschieden Vorschüben / Umdrehung - Rugosità e dimensione a differente avanzamento - L'état de surface et quantité variable en fonction de l'avance par tour - Overfladeruhed og overstørrelse ved forskellig tilspænding pr. omdr. - Ytjämnhet och hålstorleksläge i olika matningar - Rugosidad superficial y mayoración a diferentes avances - Шероховатость поверхности и величина припуска при различных подачах на оборот - Farklı devir başı ilerlemelerde yüzey pürüzlülüğü ve büyük ölçü miktarı - Chropowatość powierzchni i ilość naddatku przy różnych posuwach na obrót

Cutting Conditions

Work Material	**S50C (JIS S50C,AISI 1050)**
Reamer Size	**10 mm**
Cutting Speed	**15 m/min**
Drill Hole Size	**9,8 mm**
Cutting Fluid	**Water-Soluble Fluid**



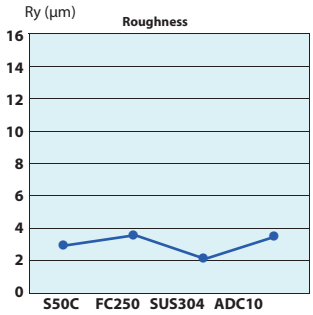


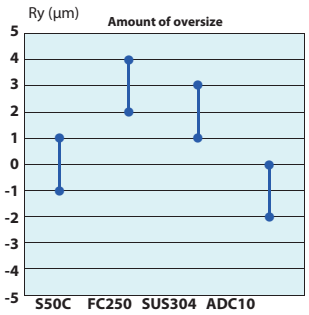
CRM

The surface roughness and amount of oversize for different work material - Die Oberflächenrauheit und das Aufmaß zu verschieden Werkstoffen - Rugosità e dimensione su differenti materiali di lavorazione - L'état de surface et quantité variable en fonction de la matière travaillée - Overfladeruhed og overstørrelse ved forskellige emnematerialer - Ytjämnhet och hålstorleksläge i olika material - Rugosidad superficial y mayoración e diferentes materiales - Шероховатость поверхности и величина припуска для различных материалов - Farklı iş malzemesinde yüzey pürüzlülüğü ve büyük ölçü miktarı - Chropowatość powierzchni i ilość naddatku dla różnych materiałów obrabianych

Cutting Conditions

Reamer Size	**10 mm**
Cutting Speed	**15 m/min**
Feed	**0,2 mm/rev**
Drill Hole Size	**9,8 mm**
Cutting Fluid	**Water-Soluble Fluid**





CRM

Example of Circularity

Cutting Conditions

Work Material	**S50C (JIS S50C,AISI 1050)**
Reamer Size	**10 mm**
Cutting Speed	**15 m/min**
Feed	**0,2 mm**
Drill Hole Size	**9,8 mm**



Magnification : X 2.000

Circularity : 3,64 µm

The amount of over size was determined from the actual reamer size

END MILLS CARBIDE

WXL WXS WX FX CARBIDE



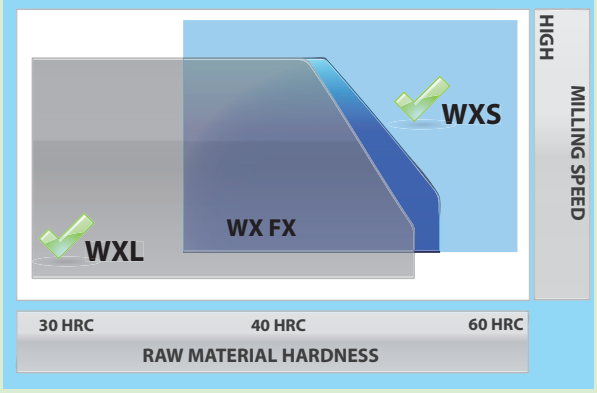
TOOL COMMUNICATION
OSG

TOKO-TON SPIRIT
Total Commitment

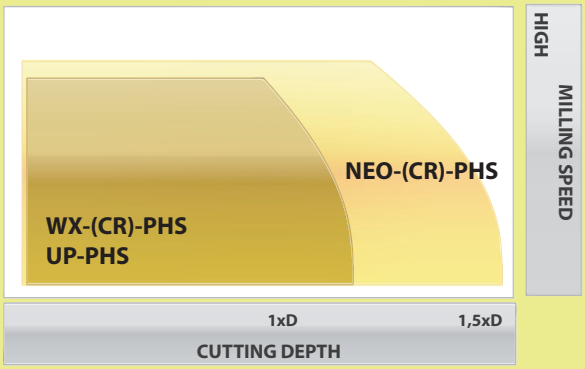
www.osgeurope.com

END MILLS PRODUCT MAP

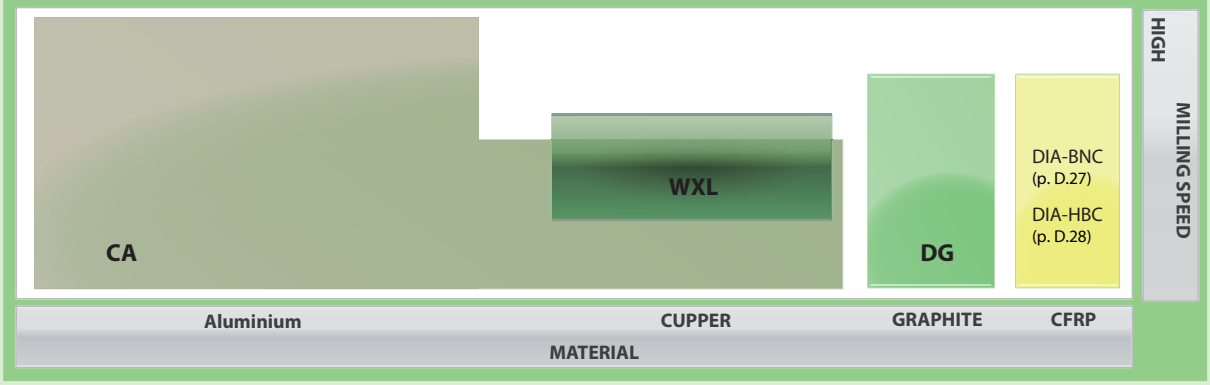
GENERAL
End Mills type selection
hardness/milling speed



SUS & EXOTIC MATERIAL
End Mills type selection
cutting depth/milling speed



Al, Cu, Graphite
End Mills type selection
material/milling speed



	Side milling	Slotting			Pocket milling		Copy milling	
	Square (CR)	Square	Square Long	Corner Radius	Corner Radius	Corner Radius Long	Ball Nose	Ball Nose Long
Above 50 HRC	WXS(CR)-EMS (D.61-D.62)				WX-(HS)-CRE (D.87-88) WXS-(HS)-CRE (D.59~60) FXS-PKE (D.131) HYP-HS-CRE (D.110)	WXS-CPR (D.69~74)	WXS-(HS)-EBD (D.63-64)	WXS-LN-EBD (D.65~68)
GENERAL up to 50 HRC	WXL-EMS (D.38)	WXL-1,5D-DE (D.34) WXL-2D-DE (D.35) WXL-3D-DE (D.36) WX-G-ETSS (D.77) HYP-HI-(W)EMS (D.109) HYP-HP-WRESF (D.106)	WXL-LN-EDS (D.40~42)	NEO-CR-PHS (D.30) WX-CR-PHS (D.89) HYP-CR-HI-WEMS (D.107) HYP-CR-HD-WEMS (D.108)			WXL-EBD (D.44) HYP-SB-EBD (D.111)	WXL-LN-EBD (D.45~50) WXL-PC-EBD (D.51~54)
SUS Exotic Material	NEO-(CR)-EMS (D.31-32)	NEO-PHS (D.29) WX-PHS (D.80) UP-PHS (D.58)						
Al, Cu, Alloy	WXL-EMS (D.38)	CA-ETS (D.137) CA-RG-EDS (D.135) HYP-F1 (D.105)			CA-PKE (D.139) CA-MFE (D.140)			
Graphite						DG-CPR (D.57)	DG-EBD (D.55)	DG-LN-EBD (D.56)
CFRP	DIA-BNC (D.27) DIA-HBC (D.28)							

EDS/-DE : 2 flutes
ETS(S) : 3 flutes
EMS : Multi-flutes

PHS : 4 flutes for Multi purpose
EBD : 2 flutes Ball Nose

CPR : Pencil Neck Corner Radius
CRE : Corner Radius High Feed

PKE/-MFE : Corner Radius for Pockets
RESF : Roughing

OSG's 1st choice
recommended

CARBIDE

TYPE	DESCRIPTIONS	
WXL	New coating WXL end mill series for milling copper up to materials 50 HRC	Neue WXL - Beschichtung für Bearbeitungen von Kupfer bis zu Werkstoffen mit 50 HRC
	Frese Serie WXL con nuovo rivestimento per la fresatura del rame fino a 50 HRC	Nouvelle série de fraises avec revêtement WXL pour l'usinage du cuivre jusque des matières de 50 HRC
	Ny WXL belægning, endefræsere til kobber og materialer op til 50 HRC	Ny beläggning WXL, pinnfräs serie för koppar och material upp till 50HRC
	Nuevas fresas recubiertas WXL para fresar desde cobre hasta 50 HrC	Концевые фрезы с новым покрытием WXL для фрезерования меди и сталей до 50 HRC
	Yeni kaplama WXL parmak freze serisi 50 HRC sertliğe kadar bakır malzemeleri frezelemek için	Nowa powłoka WXL seria frezów do obróbki od miedzi do materiałów 50 HRC
UP-PHS	Vibration - resistant, multipurpose end mills	Allgemeine Anwendungen, Anti-Vibration
	Fresa multifunzione, resistente alle vibrazioni	Fraise multi-fonction, anti-vibratoire
	Vibration-resistant, universal anvendelig	Vibrationsdämpande, allround
	Multiuso resistente a la vibración	Вибростойкая, многофункциональная концевая фреза
	Titreşime dayanıklı, çok amaçlı parmak freze	Odporny na wibracje frez multifunkcyjny
WXS	End mills with long neck for milling work material up to 60 HRC	HRC - Werkzeuge mitt Überlaufhals für Werkstoffe bis 60 HRC
	Frese con collo lungo per fresatura di materiali fino a 60 HRC	Fraises à dégagement long pour usinage matière jusqu'à 60 HRC
	Fræsere, long neck, ved fræsning op til 60 HRC	Pinnfräsar med lång frigång till fräsning av material upp till 60 HRC
	Fresa para cuello largo, para fresado hasta 60 HRC	Концевые фрезы с длинным хвостовиком для фрезерования материалов до 60 HRC
	60 HRC'ye kadar sertliğinde ki malzemeleri frezelemek için uzun boyunlu parmak freze	HRC Frezy z długą szyjką do frezowania materiałów do 60 HRC
WX	- New series of end mills, the best ratio performance - price - New micrograin with improved TiAlN	- Neueste Serie, bestes Preis-Leistungs-Verhältnis - Neues Mischkorn, Hartmetall mit 189,776 verbesserter TiAlN Mehrlagenbeschichtung
	- Nuova serie di frese, il miglior rapporto tra qualità e prezzo - Nuova micrograna con un migliorato rivestimento TiAlN	- Nouvelle série de fraises, le meilleur rapport performance - prix - Nouveau micrograin avec TiAlN amélioré
	- Ny serie af endefræsere, det bedste forhold mellem pris og performance - Ny micrograin med forbedret TiAlN belægning	- Ny serie av pinnfräsar, det bästa förhålandet mellan pris och prestanda - Ny HM micro grain med föbättrad TiAlN
	- Fresas con el mejor ratio prestaciones-precio - Con nuevo metal duro micrograno y TiAlN mejorado	- Новая серия концевых фрез, лучшее сочетание цены и производительности - новый микрозернистый карбид с улучшенным TiAlN
	- Yeni seri parmak frezeler, en iyi performans-fiyat oranı - Yeni mikrotanecikli geliştirilmiş TiAlN ile	- Nowa seria frezów, najlepszy stosunek jakość - cena - Nowy mikroziarnisty węglik z ulepszonym pokryciem TiAlN
FX	- High performance end mills selected for High Speed milling - Milling work material up to 55 HRC	- HSC Werkzeuge für allgemeine Anwendungen - Für Werkstoff bis 55 HRC
	- Frese ad alto rendimento selezionate per la fresatura ad alta velocità - Fresatura di materiali fino a 55 HRC	- Fraises de haute performance selectionnées pour de très hautes vitesses de coupe - Usinage matière jusqu'à 55 HRC
	- Specielt udvalgt materiale for høje skarehastigheder - Fræsning af materiale op til 55 HRC	- High performance pinnfräsar, bra till HSM - För material upp till 55HRC
	- Mat. de altas prestaciones seleccionado para emplear a altas veloc. de corte - Fresado de materiales hasta 55 HrC	- Высокопроизводительные концевые фрезы для высокоскоростного фрезерования - Для фрезерования материалов до 55 HRC
	- Yüksek kesme hızları için seçilmiş yüksek teknoliji parmak frezeler - 55 HRC'ye kadar sertlikteki malzemeler için	- Frezy o dużej wydajności wybrane do obróbki HSC - Frezowanie w materiale do 55 HRC
FXS	- High performance end mills selected for High Speed milling - Milling work material up to 60 HRC	- Absolute Premium HSC Werkzeuge mit einer sehr grossen Ausführungsvielfalt - Für Werkstoffe bis 60 HRC
	- Frese ad alto rendimento selezionate per la fresatura ad alta velocità - Fresatura di materiali fino a 60 HRC	- Fraises de haute performance selectionnées pour de très hautes vitesses de coupe - Usinage matière jusqu'à 60 HRC
	- Specielt udvalgt materiale for høje skarehastigheder - Fræsning af materiale op til 60 HRC	- High performance pinnfräsar, bra till HSM - För material upp till 60HRC
	- Mat. de altas prestaciones seleccionado para emplear a altas veloc. de corte - Fresado de materiales hasta 60 HrC	- Высокопроизводительные концевые фрезы для высокоскоростного фрезерования - Для фрезерования материалов до 60 HRC
	- Yüksek kesme hızları için seçilmiş yüksek teknoliji parmak frezeler - 60 HRC'ye kadar sertlikteki malzemeler için	- Frezy o dużej wydajności wybrane do obróbki HSC - Frezowanie w materiale do 60 HRC
CA	- For aluminium milling - Gives a excellent surface finish	- Für Aluminium - Für gute Oberflächen und optimalen Spänentransport
	- Per la fresatura dell'alluminio - Offre un'ottima finitura della superficie	- Pour l'usinage de l'aluminium - Donnent un excellent état de surface
	- Til fræsning af aluminium og kobber - Giver formidabel overfladefinish	- High performance pinnfräsar, bra till HSM - För bästa ytfinish
	- Para fresado de aluminio - Obtienen excelente acabado superficial	- для фрезерования алюминия - Обеспечивает превосходную чистоту поверхности
	- Alüminyum frezelemek için - Mükemmel yüzey kalitesi verir	- Do frezowania aluminium - Daje doskonałe wykończenie powierzchni
CRN	End mills specially developed by OSG for milling work material as aluminium and copper	Spezielle Werzeuge für die Bearbeitung von Werkstoffen wie Aluminium und Kupfer
	Frese sviluppate in modo particolare dalla OSG per la fresatura di come alluminio e rame	Fraises développées par OSG pour l'usinage des matières tel que l'aluminium, et le cuivre
	Endefræsere specielt udviklet af OSG til fræsning i materialer såsom aluminium og kobber	Pinnfräsar utrecklade av OSG till frasning av Aluminium och kappar
	Fresas especialmente desarrolladas por OSG para aluminio y cobre	Концевые фрезы, специально разработанные OSG для фрезерования алюминия и меди
	OSG tarafından özellikle alüminyum ve bakın frezelemek için geliştirilmiş parmak frezeler	Frezy specjalnie opracowane przez OSG do frezowania materiału takiego jak aluminium i miedź
GF	End mills for graphite milling	HSC-Werzeuge für Graphit Bearbeitung
	Frese per la fresatura della grafite	Fraises pour l'usinage du graphite
	Fræsere for fræsning i grafit	Pinnfräsar för grafit
	Fresa para grafito	Концевые фрезы для графита
	Grafit frezelemek için parmak frezeler	Frezy do obróbki grafitu
GX	- End mills with micrograin substrate, coated - Specially developed for Hypro Shrink Fit System	- Hartmetallfräser mit Feinkorn Substrat, beschichtet - Speziell entwickelt zum Schrumpfen mit Hypro Schrink Fit Systemen
	- Frese con un substrato di micrograna, rivestite - Sviluppate in modo particolare per il sistema di Calettamento	- Fraises avec un substrat micrograin revêtu - Outilsdéveloppés spécialement pour le frettage
	- Endefræsere i micrograin grundmateriale og belagt - Specielt udviklet til Hypro krympe System	- Pinnfräsar i HM, micrograin, belagda - Speciellt utvecklade för Hypro Shrink Fit System
	- Fresas recubiertas con sustrato micrograno - Especialmente desarrolladas para fijación térmica	- Концевые фрезы из микрозернистого карбида с покрытие - Специально разработано для Hypro термозажимной системы
	- Kaplamalı, mikrotanecikli parmak freze - Hypro Shrink Fit Sistemler için özellikle geliştirilmiş	- Frezy z mikroziarnistego węglika, powlekane - Specjalnie opracowane dla Hypro Shrink Fit System

WORK MATERIAL

~ 40 HRC	Hardened steel Pre-hardened steel	Legierter Stahl Gehärteter Stahl	Acciaio temprato Acciaio pre-temprato	Aciers trempés Aciers pré-trempés	Hærdet stål	Härdat stål	Aceros endurecidos	3 акаленные стали	Sertleştirilmiş çelikler Ön-sertleştirilmiş çelikler	Stale hartowane
~ 45 HRC	Hardened steel Pre-hardened steel	Legierter Stahl Gehärteter Stahl	Acciaio temprato Acciaio pre-temprato	Aciers trempés Aciers pré-trempés	Hærdet stål	Härdat stål	Aceros endurecidos	3 акаленные стали	Sertleştirilmiş çelikler Ön-sertleştirilmiş çelikler	Stale hartowane
~ 55 HRC	Hardened steel Pre-hardened steel	Legierter Stahl Gehärteter Stahl	Acciaio temprato Acciaio pre-temprato	Aciers trempés Aciers pré-trempés	Hærdet stål	Härdat stål	Aceros endurecidos	3 акаленные стали	Sertleştirilmiş çelikler Ön-sertleştirilmiş çelikler	Stale hartowane
~ 60 HRC	Hardened steel Pre-hardened steel	Legierter Stahl Gehärteter Stahl	Acciaio temprato Acciaio pre-temprato	Aciers trempés Aciers pré-trempés	Hærdet stål	Härdat stål	Aceros endurecidos	3 акаленные стали	Sertleştirilmiş çelikler Ön-sertleştirilmiş çelikler	Stale hartowane
~ 65 HRC	Hardened steel Pre-hardened steel	Legierter Stahl Gehärteter Stahl	Acciaio temprato Acciaio pre-temprato	Aciers trempés Aciers pré-trempés	Hærdet stål	Härdat stål	Aceros endurecidos	3 акаленные стали	Sertleştirilmiş çelikler Ön-sertleştirilmiş çelikler	Stale hartowane
SUS	Stainless steel ~ 35 HRC	VA Stahl ~ 35 HRC	Acciaio inossidabili ~ 35 HRC	Inoxydable ~ 35 HRC	Rustfrit stål	Rostfritt stål	Aceros inoxidables	Нержавеющие стали ~35HRC	Paslanmaz çelikler ~ 35 HRC	Stale nierdzewne ~ 35 HRC
GG	Cast iron ~ 350 HB	Grauguss ~ 350 HB	Ghisa grigia ~ 350 HB	Fonte ~ 350 HB	Støbejern	Gjutgods ~ 350 HB	Aceros fundidos ~ 350 HB	Чугун ~ 350 HB	Döküm ~ 350 HB	Żeliwa ~ 350 HB
Cu	Copper alloys	Kupferlegierungen	Rame	Alliages de cuivre	Kobber legeringer	Koppar legeringer	Aleaciones de cobre	Медные сплавы	Bakır alaşımları	Stopy miedzi
Ac	Aluminium alloys	Aluminium - legierungen	Leghe di Alluminio	Alliages d'aluminium	Aluminium leg.	Aluminium legeringar	Aluminio aleado	Литейные алюминиевые сплавы	Alüminyum alaşımları	Stopy aluminium
Gr	Graphite	Graphit	Rame e grafite	Graphite	Grafit	Grafit	Grafito	Графит	Grafit	Grafit
Ti	Titanium alloys	Titaniumlegierungen	Leghe di Titanio	Alliages de Titane	Titanium	Titanlegeringar	Titanio aleado	Титановые сплавы	Titanyum alaşımları	Stopy tytanu
HRS	Heat resisting steel	Hitzebeständige legierungen	Acciai resistenti al calore	Alliages à haute résistance temp.	Varmefast stål	Värmebehandlat stål	Aceros tratados	Жаростойкие стали	Isıya dayanıklı çelikler	Stale żaroodporne
Plast.	Plastics	Kunststoff	Plastiche	Plastiques	Plastik	Plast	Plasticos	Пластики	Plastikler	Tworzywa sztuczne
○	Good	Gut	Buono	Bon	God	Bra	Utilizable	Хороший	İyi	Dobry
◎	Excellent	Sehr gut	Ottimo	Excellent	Meget god	Mycket bra	Excelente	Превосходный	Mükemmel	Bardzo dobry

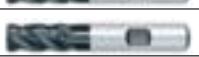
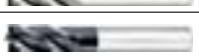
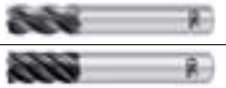
CARBIDE

CARBIDE

◎ Excellent - Sehr gut - Ottimo - Excellent - Meget god - Mycket bra - Excelente - Превосходный - Mükemmel - Bardzo dobry ○ Good - Gut - Buono - Bon - God - Bra - Utilizable - Хороший - İyi - Dobry

Type	Appearance		coating	material	Hardened Steel					SUS	GG	Cu	Al	Graphite	Ti	HRS	Plast.	CFRP	range
					~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	~35 HRC	~350 HB								
CA-ETS		D.137		CARBIDE								◎	◎				○		3 ~ 20
CA-MFE		D.140		CARBIDE								◎	◎				○		10 ~ 22
CAP-EBD		D.138		CARBIDE								◎	◎				◎		R0,5~R10
CA-PKE		D.139		CARBIDE								◎	◎				○		3 ~ 20
CA-RG-EDL		D.136		CARBIDE								◎	◎				○		3 ~ 12
CA-RG-EDS		D.135		CARBIDE								◎	◎				○		1 ~ 20
CBN-SXB		D.134		CBN	○	◎	◎	◎	◎										R0,5~R1,5
CRN-EBD	Limited Supply	D.143	CrN	CARBIDE								◎	○				○		R3~R6
CRN-EMS	Limited Supply	D.142	CrN	CARBIDE								◎	○				○		3 ~ 12
CRN-LN-EBD	Limited Supply	D.144	CrN	CARBIDE								◎	○				◎		R0,5~R2,5
CRN-LN-EDS	Limited Supply	D.141	CrN	CARBIDE								◎	○				◎		0,5 ~ 12
DG-CPR		D.57	DG	CARBIDE										◎					0,5 ~ 12
DG-EBD		D.55	DG	CARBIDE										◎					R2~R6
DG-LN-EBD		D.56	DG	CARBIDE															R0,2~R2
DIA-BNC		D.27	DIA	CARBIDE														◎	6 ~ 12
DIA-HBC		D.28	DIA	CARBIDE														◎	6 ~ 12
FX-CR-EDS-6	Limited Supply	D.119	FX	CARBIDE	◎	◎	◎	○		○	◎	○	○		○	○			0,6 ~ 2,5
FX-CR-MG-EDS		D.120	FX	CARBIDE	◎	◎	○	○		○	◎	○	○		○	○			3 ~ 12
FX-CR-MG-EMS		D.121	FX	CARBIDE	◎	◎	◎	○		○	◎	○	○		○	○			4 ~ 12
FX-EBD-6	Limited Supply	D.116	FX	CARBIDE	◎	◎	◎	○		◎	◎	○	○		○	○			R0,1~R3
FX-EDS-6	Limited Supply	D.95	FX	CARBIDE	◎	◎	◎	○		○	◎	○	○		○	○			0,2 ~ 2,5
FX-HS-EBDS	Limited Supply	D.113	FX	CARBIDE	◎	◎	◎	◎	○	◎	◎	○	○		○	○			R1,5~R6
FX-LN-EBD-6	Limited Supply	D.117	FX	CARBIDE	◎	◎	◎	○		◎	◎	○	○		○	○			R0,25~R3
FX-LN-EDS-6	Limited Supply	D.96	FX	CARBIDE	◎	◎	◎	○		○	◎	○	○		○	○			0,5 ~ 2,5
FX-LN-EMS-6	Limited Supply	D.101	FX	CARBIDE	◎	◎	◎	○		○	◎	○	○		○	○			1 ~ 6
FX-MG-EBD	Limited Supply	D.114	FX	CARBIDE	◎	◎	◎	○		◎	◎	○	○		○	○			R0,5~R15
FX-MG-EBD-3	Limited Supply	D.112	FX	CARBIDE	◎	◎	◎	○		◎	◎	○	○		○	○			R0,2~R1,5
FX-MG-EDL	Limited Supply	D.92	FX	CARBIDE	◎	◎	○			○	◎	○	○		○	○			1 ~ 12
FX-MG-EDS	Limited Supply	D.90-91	FX	CARBIDE	◎	◎	○	○		○	◎	○	○		○	○			0,2 ~ 12
FX-MG-EHL		D.103	FX	CARBIDE	◎	◎	○			◎	◎	○	○		◎	◎			6 ~ 12
FX-MG-EHS		D.102	FX	CARBIDE	◎	◎	○	○		◎	◎	○	○		◎	◎			3 ~ 20
FX-MG-EML	Limited Supply	D.98	FX	CARBIDE	◎	◎	○			○	◎	○	○		○	○			3 ~ 12
FX-MG-EMS	Limited Supply	D.97	FX	CARBIDE	◎	◎	○	○		○	◎	○	○		○	○			2 ~ 12
FX-MG-EXDL	Limited Supply	D.93	FX	CARBIDE	◎	◎	◎	○		○	◎	○	○		○				3 ~ 12
FX-MG-EXML	Limited Supply	D.99	FX	CARBIDE	◎	◎				○	◎	○	○		○				3 ~ 12
FX-PC-MG-EBD	Limited Supply	D.118	FX	CARBIDE	◎	◎	◎	○		◎	◎	○	○		○	○			R0,5~R6
FXS-CR-EMS	Limited Supply	D.133	FX	CARBIDE	◎	◎	◎	◎	○	○	◎				○	○			6 ~ 16
FXS-EBM		D.129	FX	CARBIDE	◎	◎	◎	◎	◎										R3~R10

◎ Excellent - Sehr gut - Ottimo - Excellent - Meget god - Mycket bra - Excelente - Превосходный - Mükemmel - Bardzo dobry ○ Good - Gut - Buono - Bon - God - Bra - Utilizable - Хороший - İyi - Dobry

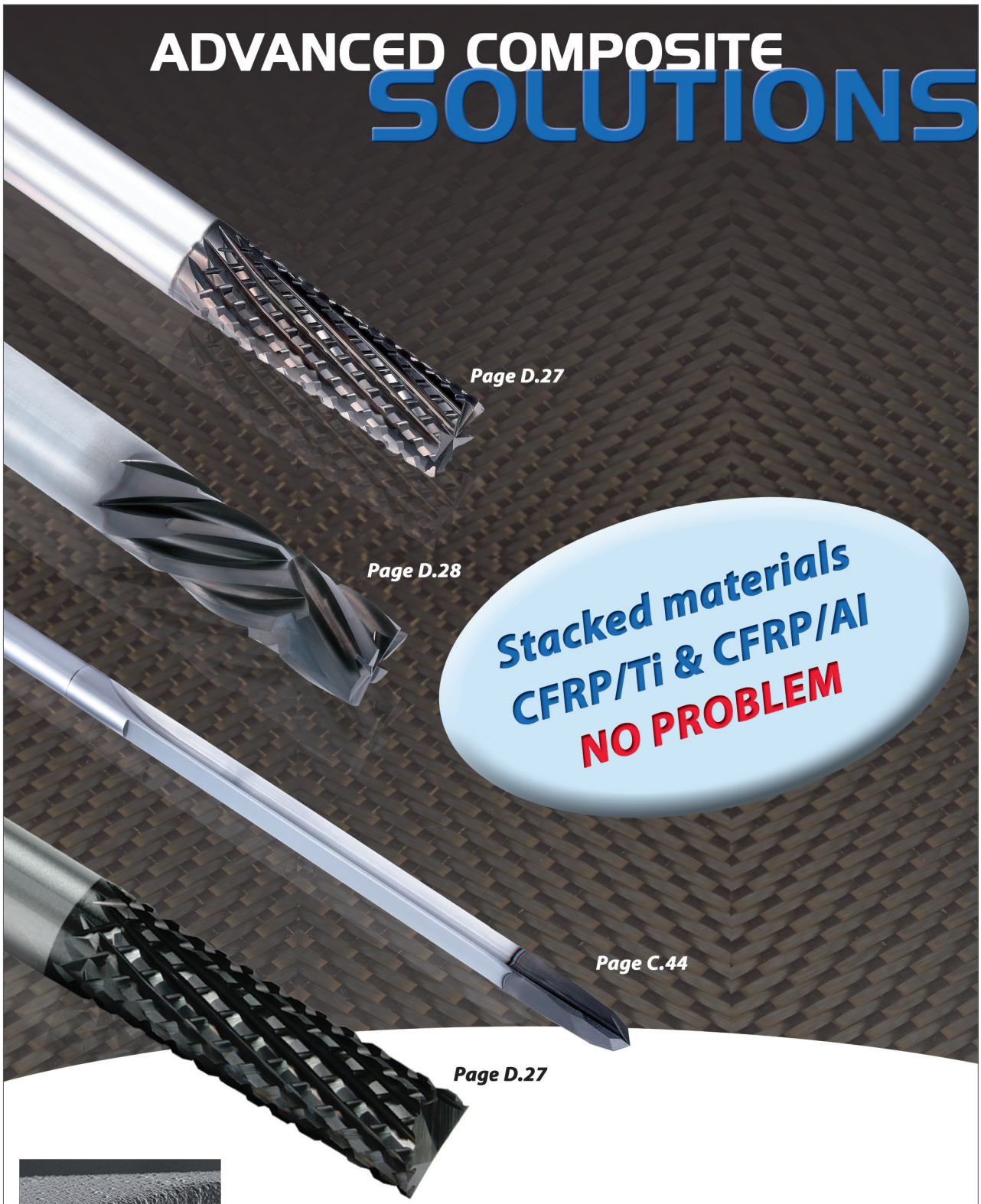
Type	Appearance		coating	material	Hardened Steel					SUS	GG	Cu	Al	Graphite	Ti	HRS	Plast.	CFRP	range
					~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	~35 HRC	~350 HB								
FXS-EBT		D.127	FX	CARBIDE	◎	◎	◎	◎	○										R3~R10
FXS-EML	 Limited Supply	D.124	FX	CARBIDE	◎	◎	◎	◎		○	◎					○			6 ~ 25
FXS-EMS	 Limited Supply	D.122	FX	CARBIDE	◎	◎	◎	◎	○	○	◎				○	○			1 ~ 30
FXS-EQD		D.126	FX	CARBIDE	◎	◎	◎	○		◎	◎				○	○			R0,5~R5
FXS-HPE		D.125	FX	CARBIDE	◎	◎	◎	○		○	◎				○	○			10 ~ 22
FXS-HS-EBM		D.128	FX	CARBIDE	◎	◎	◎	◎	◎										R3 ~ R10
FXS-HS-PKE		D.130	FX	CARBIDE	◎	◎	◎	○		◎	◎				◎	◎			6 ~ 20
FXS-LS-EMS	 Limited Supply	D.123	FX	CARBIDE	◎	◎	◎	◎	○	○	◎				○	○			3 ~ 30
FXS-MFE		D.132	FX	CARBIDE	◎	◎	◎	○		○	◎				○	○			10 ~ 22
FXS-PKE		D.131	FX	CARBIDE	◎	◎	◎	○		◎	◎				◎	◎			3 ~ 12
FX-SS-EBD		D.115	FX	CARBIDE	◎	◎	◎	○		◎	◎	○	○		○	○			R3~R6
FX-SS-EDS		D.94	FX	CARBIDE	◎	◎	○	○		○	◎	○	○		○	○			6 ~ 12
FX-SS-EMS		D.100	FX	CARBIDE	◎	◎	○	○		○	◎	○	○		○	○			6 ~ 12
HYP-CR-HI-WEMS		D.107	TiAlN	CARBIDE	◎	◎	○			◎	◎				◎	◎			4 ~ 20
HYP-CR-HD-WEMS		D.108	TiAlN	CARBIDE	◎	◎	○			◎	◎				◎	◎			6 ~ 20
HYP-CR-EMS		D.151	TiAlN	CARBIDE	○	○				○	○		○						5 ~ 20
HYP-EBD		D.153		CARBIDE	○	○				○	○		○						R0,5 ~ R12,5
HYP-EBD-TiAlN		D.152	TiAlN	CARBIDE	○	○				○	○		○						R0,5 ~ R12,5
HYP-EDS		D.146		CARBIDE	○	○				○	○		○						1 ~ 25
HYP-EDS-TiAlN		D.145	TiAlN	CARBIDE	○	○				○	○		○						1 ~ 25
HYP-EMS		D.150		CARBIDE	○	○				○	○		○						1 ~ 25
HYP-EMS-TiAlN		D.149	TiAlN	CARBIDE	○	○				○	○		○						1 ~ 25
HYP-ETS		D.148		CARBIDE	○	○				○	○		○						1 ~ 25
HYP-ETS-TiAlN		D.147	TiAlN	CARBIDE	○	○				○	○		○						1 ~ 25
HYP-F1	 NEW	D.105		CARBIDE									○				○		3 ~ 12
HYP-HI-EMS		D.109	TiAlN	CARBIDE	◎	◎	○			◎	◎				◎	◎			4 ~ 20
HYP-HI-WEMS		D.109	TiAlN	CARBIDE	◎	◎	○			◎	◎				◎	◎			4 ~ 20
HYP-HP-WRESF		D.106	TiAlN	CARBIDE	◎	◎				○	○								6 ~ 25
HYP-HS-CRE		D.110	TiAlN	CARBIDE	◎	◎	◎	◎	○		◎								6 ~ 12
HYP-SB-EBD		D.111	TiAlN	CARBIDE	◎	◎	◎			○	◎	○	○						R1,5~R6
HYP-ZDS	 NEW	D.104	TiAlN	CARBIDE	◎	○				◎	◎		○						4 ~ 10
MG-EDL		D.155		CARBIDE	○	○					○	○	○						3 ~ 12
MG-EDS		D.154		CARBIDE	○	○					○	○	○						1 ~ 20
MG-EML		D.157		CARBIDE	○	○					○	○	○						3 ~ 12
MG-EMS		D.156		CARBIDE	○	○					○	○	○						2 ~ 16
NEO-CR-EMS		D.32	FX	CARBIDE	◎	◎	◎	○		◎	◎				◎	◎			6 ~ 25
NEO-CR-PHS		D.30	FX	CARBIDE	◎	◎	○			◎	◎	○	○		◎	◎			3 ~ 25
NEO-EMS		D.31	FX	CARBIDE	◎	◎	◎	○		◎	◎				◎	◎			6 ~ 25
NEO-PHS		D.29	FX	CARBIDE	◎	◎	○			◎	◎				◎	◎			3 ~ 25

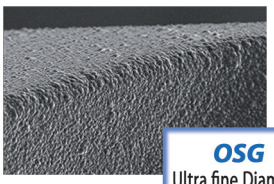
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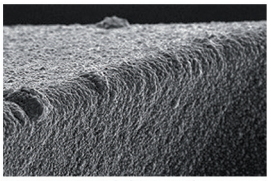
Type	Appearance		coating	material	Hardened Steel ~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG ~350 HB	Cu	Al	Graphite	Ti	HRS	Plast.	CFRP	range
PHX-LN-DBT	NEW	D.33	WXS	CARBIDE	◎	◎	◎	○		○	○	○	○		○	○			R0,5 ~ R3
UP-PHS		D.58	FX	CARBIDE	◎	◎	○			◎	◎	○	○		◎	○			3 ~ 12
WX-CRE		D.88	WX	CARBIDE	◎	◎	◎	◎	○		◎								2 ~ 13
WX-CR-PHS		D.89	WX	CARBIDE	◎	◎	○	○		◎	◎	○	○		◎	◎			3 ~ 20
WX-EBD	Limited Supply	D.84	WX	CARBIDE	◎	◎	◎	○		◎	◎	○	○		○	○			R0,2 ~ R6
WX-EDS	Limited Supply	D.76	WX	CARBIDE	◎	◎	○	○		○	◎	○	○		○	○			0,2 ~ 12
WX-EMS	Limited Supply	D.79	WX	CARBIDE	◎	◎	○	○		○	◎	○	○		○	○			2 ~ 12
WX-G-EDSS		D.75	WX	CARBIDE	◎	◎	○	○		○	◎	○	○		○	○			1 ~ 12
WX-G-EMSS		D.78	WX	CARBIDE	◎	◎	○	○		○	◎	○	○		○	○			3 ~ 12
WX-G-ETSS		D.77	WX	CARBIDE	◎	◎	○			◎				○					3 ~ 16
WX-HS-CRE		D.87	WX	CARBIDE	◎	◎	◎	◎	○		◎								6 ~ 12
WXL-1,5D-DE		D.34	WXL	CARBIDE	◎	◎	◎			◎	◎	◎	○		○	○			0,1 ~ 6
WXL-2D-DE		D.35	WXL	CARBIDE	◎	◎	◎			◎	◎	◎	○		○	○			0,1 ~ 20
WXL-3D-DE		D.36	WXL	CARBIDE	◎	◎	◎			◎	◎	◎	○		○	○			0,1 ~ 20
WXL-4D-DE		D.37	WXL	CARBIDE	◎	◎	◎			◎	◎	◎	○		○	○			0,2 ~ 12
WXL-CR-EDS-6	NEW	D.43	WXL	CARBIDE	◎	◎	◎	○		○	◎	○	○		○	○			0,6 ~ 2,5
WXL-EBD		D.44	WXL	CARBIDE	◎	◎	◎			◎	◎	◎	○		○	○			R0,05 ~ R10
WXL-EMS		D.38	WXL	CARBIDE	◎	◎	◎			◎	◎	◎	○		○	○			1 ~ 30
WXL-LN-EBD		D.45~50	WXL	CARBIDE	◎	◎	◎			◎	◎	◎	○		○	○			R0,05 ~ R3
WXL-LN-EDS		D.40~42	WXL	CARBIDE	◎	◎	○	○		○	◎	◎	○		○	○			0,2 ~ 5
WX-LN-EBD	Limited Supply	D.85-86	WX	CARBIDE	◎	◎	○	○		◎	◎	○	○		○	○			R0,1 ~ R3
WX-LN-EDS	Limited Supply	D.81~83	WX	CARBIDE	◎	◎	○	○		○	◎	○	○		○	○			0,2 ~ 5
WXL-LN-EMS-6	NEW	D.39	WXL	CARBIDE	◎	◎	◎	○		○	◎	○	○		○				1 ~ 6
WXL-PC-EBD		D.51~54	WXL	CARBIDE	◎	◎	◎			◎	◎	◎	○		○	○			R0,1 ~ R3
WX-PHS		D.80	WX	CARBIDE	◎	◎	○	○		◎	◎	○	○		◎	◎			3 ~ 20
WXS-CPR		D.69~74	WXS	CARBIDE	◎	◎	◎	◎		◎									0,2 ~ 4
WXS-CRE		D.60	WXS	CARBIDE	◎	◎	◎	◎	◎		◎								2 ~ 12
WXS-CR-EMS	NEW	D.61	WXS	CARBIDE	◎	◎	◎	◎	○	○	◎				○	○			6 ~ 12
WXS-EBD		D.64	WXS	CARBIDE	◎	◎	◎	◎	○	◎	◎				○	○			R0,5 ~ R6
WXS-EMS		D.62	WXS	CARBIDE	◎	◎	◎	◎	○	○	◎				○	○			1 ~ 12
WXS-HS-CRE		D.59	WXS	CARBIDE	◎	◎	◎	◎	◎		◎								6 ~ 12
WXS-HS-EBD		D.63	WXS	CARBIDE	◎	◎	◎	◎	○	◎	◎				○	○			R0,5 ~ R6
WXS-LN-EBD		D.65~68	WXS	CARBIDE	○	○	◎	◎	○	○	○	○	○		○	○			R0,05 ~ R3

ADVANCED COMPOSITE SOLUTIONS





OSG's range of tooling for composites incorporates many new design firsts to help eliminate the problems associated with machining these challenging materials, including our patented smooth diamond coating.



Conventional diamond coating

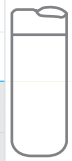
OSG tools are already used in the production of commercial and military aircraft and we are confident that the challenges asked of tooling manufactures for this market can be met by our range of composite tooling

ICONS										
Material - Material - Materiale - Matière outil - Material - Material - Materiale - Обрабатываемый материал - Malzemesi - Material										
CARBIDE	Carbide	Vollhartmetall	Carburo	Carbure	Hårdmetal	Hårdmetall	Metal duro	Карбид	Karbür	Węglik
Coating - Beschichtung - Rivestimento - Revêtement - Belægning - Beläggning - Recubrimiento - Покрытие - Kaplama -Powłoka										
WXL	WXL coating	WXL Beschichtung	WXL rivestimento	WXL revêtement	WXL belægning	WXL beläggning	WXL recubrimiento	WXL Покрытие	WXL Kaplama	WXL Powłoka
WXS	WXS super coating	WXS Superbeschichtung	WXS super rivestimento	WXS super revêtement	WXS super belægning	WXS super beläggning	WXS super recubrimiento	WXS Супер покрытие	WXS Süper kaplama	WXS Super powłoka
WX	Multi layered composite TiAlN	Mehrlagen-beschichtung TiAlN	Rivestimento multistrato composito TiAlN	Revêtement multicouches composite TiAlN	Flérlags komposit belægning TiALN	Multi layered CompositeTiAlN	Recubrimiento TiAlN multicapa	многослойное покрытие TiAlN	Çok katmanlı TiAlN kaplama	Powłoka wielowarstwowa TiAlN
FX	Multi layered composite TiAlN	Mehrlagen-beschichtung TiAlN	Rivestimento multistrato composito TiAlN	Revêtement multicouches composite TiAlN	Flérlags komposit belægning TiALN	Multi layered CompositeTiAlN	Recubrimiento TiAlN multicapa	многослойное покрытие TiAlN	Çok katmanlı TiAlN kaplama	Powłoka wielowarstwowa TiAlN
TiAlN	Multi layered coating TiAlN	Mehrlagen-beschichtung TiAlN	Rivestimento multistrato composito TiAlN	Revêtement multicouches composite TiAlN	Flérlags komposit belægning TiALN	Multilayer TiAlN beläggning	Recubrimiento TiAlN multicapa	многослойное покрытие TiAlN	Çok katmanlı TiAlN kaplama	Powłoka wielowarstwowa TiAlN
TiN	Coating Tin	Beschichtung TiN	Rivestimento TiN	Revêtement TiN	TiN: Belægning	TiN: Beläggning TiN	Recubrimiento TiN	Покрытие TiN	Tin kaplama	Powłoka TiN
GX	Multi layered composite TiAlN for Hypro Shrink Fit	Mehrlagen TiAlN Beschichtung für Schrumpfwerkzeuge	GX (multistrato TiAlN) speciale per calettamento	Revêtement GX (multicouches TiAlN) spécial frettage	Flérlags komposit belægning TiALN for Hypro-Shrink Fit	Multi layered CompositeTiAlN för Hypro-Shrink Fit	Recubrimiento TiAlN multicapa para fijación termica.	Супер покрытие	Hypro shrink fit için çok katmanlı komposit TiAlN	Wielowarstwowy kompozyt TiAlN do mocowania skurczowego
CrN	Chromium nitride	Chromnitrit	Nitruro di cromo	Nitrure de chrome	Crom nitrid	Krom nitrid	Recubrimiento Nitruro de Cromo	Хром нитрид	Krom nitrur	Azotek chromu
DIA	Diamond	Diamand Beschichtung	Rivestimento diamante	Revêtement diamanté	Diamant	Diamant	Diamante	Алмазное покрытие	Elmas	Powłoka Diamentowa
DG	Coating DG	Beschichtung DG	Rivestimento DG	Revêtement DG	DG Belægning	Beläggning DG	Recubrimiento DG	Алмазное покрытие DG	DG kaplama	DG powłoka
Helix Angle - Helix-Drall Winkel - Angolo d'elica - Angle d'hélice - Helix vinkel - Spiral vinkel - Angulo de helice - Угол спирали - Helis açısı - Kąt spirali										
30°	Helix Angle	Helix-Drall Winkel	Angolo d'elica	Angle d'hélice	Helix vinkel	Spiral vinkel	Angulo de helice	Угол спирали	Helis açısı	Kąt spirali
Shank - Shaft - Gambo - Queue - Skaft - Skaft - Mango - Хвостовик - Şaft - Chwyt										
	Long Pencil Neck	Langer konischer Schaft	Riduzione conica lunga	Dégagement conique long	Long pencil neck	Lång konisk reducering	Mango larga reforzado con cuello conico	Длинная коническая шейка	Uzun kalem boyunlu	Długa szyjka ołówkowa
	Pencil Neck	Konischer Schaft	Riduzione conica	Dégagement conique	Pencil neck	Konish reducering	Mango reforzado con cuello conico	Коническая шейка	Kalem boyunlu	Szyjka ołówkowa
	Short Neck	Kurzer Schaft	Gambo corto	Queue courte	Short neck	Kort reducering	Cuello corto	Короткий хвостовик	Kısa boyunlu	Krótka ołówkowa
	Long Neck	Überlaufhals	Collo lungo	Dégagement long	Long neck	Lång reducering	Cuello largo	Длинный хвостовик	Uzun boyunlu	Długa szyjka
	Extra Long Neck	Extra langer Überlaufhals	Collo extra lungo	Queue extra longue	Ekstra long neck	Extra lång reducering	Cuello extra-largo	Особо длинный хвостовик	Ekstra uzun boyunlu	Extra długa szyjka
	Slim shank	Schaftdurchmesser kleiner als Schneide	Diametro del gambo inferiore al dia. del taglio	Dia. Queue inf. dia coupe	Tyndt skaft	Helreducerat skaft	Cuello delgado	Утоненный хвостовик	İnce şaft	Średnica chwytu mniejsza od ostrza
SHRINK FIT	Developed for Shrink Fit System	Speziell entwickelt zum Schrumpfen	Sviluppate specialmente per il calettamento	Développé pour le fretage	Udviklet til krympe System	Utvecklat för Shrink Fit System	Desarrollada para fijación térmica	Специально разработано для Hydro термозажимной системы	Shrink Fit Sistemler için özellikle geliştirilmiş	Specjalnie opracowane dla Shrink Fit System
Milling operation - Fräsmethode - Fresatura - Usinage - Fræsning bearbejdning - Fräsning bearbetning - Fresado operaciones - фрезерования обработки - Frezeleme operasyonu - Metody frezowania										
HIGH SPEED	High speed milling	HSC	Alta velocità	Usinage haute vitesse	High speed fræsning	High Speed Milling	Fresado a alta velocidad	Высокоскоростное фрезерование	Yüksek Hizda frezeleme	Obróbki HSC
ULTRA HIGH SPEED	Ultra High speed milling	Ultra HSC	Super alta velocità	Usinage ultra haute vitesse	Ultra High speed fræsning	Ultra High speed fräsning	Ultra alta velocidad de fresado	Сверх высокоскоростное фрезерование	Ultra yüksek hizda frezeleme	Ultra HSC
R	Roughing	Schruppen	Sgrossatura	Ebauche	Skrubfræsning	Skrubbfräsning	Desbaste	Черновая обработка	Kaba	Zgrubna
RF	Roughing and finishing	Schruppen und Schlichten	Sgrossatura e finitura	Ebauche et finition	Skrub- og sletfræsning	Skrubb- och finfräsning	Desbaste y acabado	Черновая и финишная обработка	Kaba ve finiş	Zgrubna i wykańczająca
PR	Pocket roughing	Taschenfräsen	Sgrossatura in cavità	Ebauche poches	Lomme skrubfræsning	Skrubbfräsning i kavitet	Desbaste de cajeras	Фрезерование карманов	Kaba cep boşaltma	Zgrubna kieszeni
SC	Slotting and contouring	Nuten - und Konturfräsen	Sgrossatura e contornatura	Rainurage et contournage	Spor- og konturfræsning	Spår- och konturfräsning	Ranurado y contorneado	Пазовое и контурное фрезерования	Slot kesim ve konturlama	Rowków i konturów
SF	Miror finishing	Super Schlichten	Super finitura	Finition miroir	Spejlblank finish	Fin yta	Acabado espejo	Зеркальная чистота поверхности	Super finiş	Super wykańczająca
	Deep wall milling	Taschenfräsen	Per fresature di pareti profonde	Fraisage cavité profonde	Dyb sidefræsning	Djup valsfräsning	Fresado de paredes profundas	Обработка глубоких стенок	Derin duvar frezeleme	Głębokie frezowanie ścianek
	Deep sloting	Rippenfräsen	Per scanalature profonde	Rainurage profond	Dyb sporfræsning	Djup spårfräsning	Ranurado profundo	Фрезерование глубоких пазов	Derin slot kesim	Głębokie szczeliny, rowki

ICONS										
Center - Zentrum - Centro - Centre Borende - Borrande - Central - Режущий центр - Merkezden kesme - Centralne ostrze										
CC	Center cutting	Zentrumschneidend	Taglio al centro	Coupe au centre	Borende	Borrande	Corte central	Режущий центр	Merkezden kesme	Centralne ostrze
Corner edge - Schneidkantenausfügrung - Angolo di taglio - Arrête de coupe - Hjørneudførelse - Hörnutförande - Filo de vertice - Острая кромка - - krawędź naroża										
	Sharp corner edge	Micro Abzugfase	Angolo di taglio con micro-smusso	Angle vif	Skarpt hjørne	Hörnutförande	Filo de vertice	Острая кромка	Keskin köşe kenar	Ostra krawędź narożnika
	220° cutting edge	220° Kukel	Tagliente a 220°	Sphérique sur 220°	220° skærevinkel	220° skärvinkel	Filo de corte	Режущая часть 220°	220° kesme kenarı	220 ° ostrze
Internal cooling - Innere Kühlmittelzuführung - Con fori di lubrificazione centrali - Arrosage central - Indvendig køling - Invändig Kylning Internal Refrigeración interna - Внутреннее охлаждение - Içten soğutma - Chłodzenie wewętrzne										
	Internal cooling	Innere Kühlmittel-zuführung	Con fori di lubrificazione centrali	Arrosage central	Indvendig køling	Invändig Kylning	Refrigeración interna	Внутреннее охлаждение	İçten soğutma	Chłodzenie wewętrzne
Series - Series - Series - Séries - Serie - Utförande - Serie - Серия - Seri - Seria										
	Stub lenght	Kurzer Hals	Serie troncato	Série courte	Stub længde	Kort utförande	Serie corta	Короткая длина	Saplama uzunluğu	Seria krótka
	Long series	Langer Hals	Serie lunga	Série longue	Lang serie	Långt utförande	Serie larga	Длинная серия	Kısa seri	Seria długa
	Extra long series	Extra Langer Hals	Serie extra lunga	Série extra longue	Ekstra lang serie	Extra lång utförande	Serie extra-larga	Особо длинная серия	Ekstra kısa seri	Extra długa seria
	Extra short cutlength	Schneidenlänge extra Kurz	Lunghezza di taglio extra corta	Long. coupe extra courte	Ekstra kort skærelængde	Extra kort skärlängd	Longitud de corte extra corto	Особо короткая режущая часть	Ekstra kısa kesme uzunluğu	Extra krótka część robocza
	Short cutlength	Schneidenlänge Kurz	Lunghezza di taglio corta	Long. coupe courte	Kort skærelængde	Kort skärlängd	Longitud de corte corto	Короткая режущая часть	kısa kesme uzunluğu	Krótka część robocza
	Long cutlength	Schneidenlänge lang	Lunghezza di taglio lunga	Long. coupe longue	Lang skærlængde	Lång skärlängd	Longitud de corte larga	Длинная режущая часть	uzun kesme kenarı	Długa część robocza
	Extra long cutlength	Schneidenlänge extra lang	Lunghezza di taglio extra lunga	Long. coupe extra longue	Ekstra lang skærlængde	Extra lång skärlängd	Longitud de corte extra-larga	Особо длинная режущая часть	Ekstra uzun kesme kenarı	Extra długa część robocza
1,5 D	Cutlength 1,5 D	Schneidenlänge 1,5 D	Lunghezza di taglio 1,5 D	Longueur de coupe 1,5 D	Skærlængde 1,5 D	Skärlängd 1,5 D	Longitud de corte 1,5 D	Режущая часть 1,5 D	kesme kenarı 1,5 D	część robocza 1,5 D
0,8 D	Cutlength 0,8 D	Schneidenlänge 0,8 D	Lunghezza di taglio 0,8 D	Longueur de coupe 0,8 D	Skærlængde 0,8 D	Skärlängd 0,8 D	Longitud de corte 0,8 D	Режущая часть 0,8 D	kesme kenarı 0,8 D	część robocza 0,8 D
1,5 D	Cutdepth 1,5 D	Schnittiefe 1,5 D	Profondità di taglio 1,5 D	Profondeur de coupe 1,5 D	Skæredybde 1,5 D	Skärdjup 1,5 D	profundidad de pasada 1,5 D	Глубина резания 1,5 D	kesme kenarı 1,5 D	część robocza 1,5 D
Radius Tolerance - adius Toleranz - Tolleranza del raggio - Tolérance de rayon- Radius Tolerance Radie tolerans - Tolerancia del radio - Точность радиуса - Radyus toleransı - Tolerancja promienia										
± 0.01	Radius tolerance	Radiusgenauigheit	Tolleranza del raggio delle frese	Tolérance du rayon	Radius tolerance	Radie tolerans	Tolerancia del radio	Точность радиуса	Radyus toleransı	Tolerancja promienia
Tolerance - Toleranz - Tolleranza - Tolérance - Tolerance - Tolerans - Tolerancia - Точность - Toleransı - Tolerancja										
	Milling diameter tolerance	Durchmessertoleranz	Tolleranza del diametro di fresatura	Tolérance dia. de fraisage	Tolerance	Tolerans	Tolerancia	Точность	Freze çap toleransı	Tolerancja średnicy
Cutting Conditions - Schnittwerte - Velocità di taglio - Conditions de coupe - Skæredata - Skärdata - Condiciones de corte - Условия резания - Kesme koşulları - Parametry obróbki										
	Cutting Conditions	Schnittwerte	Velocità di taglio	Conditions de coupe	Skæredata	Skärdata	Condiciones de corte	Условия резания	Kesme koşulları	Parametry obróbki
Taper Angle - Kegeltoleranz - Tolleranza della conicità - Tolérance conicité - Konusvinkel - Konisk vinkel - Conicidad (ambos lados) - Угол уклона - Kenara konik - Kąt stożka										
min	Taper Angle per side	Kegeltoleranz	Tolleranza della conicità	Tolérance de conicité	Konusvinkel	Vinkel per sida	Conicidad (ambos lados)	Угол уклона	Her kenara konik açı	Kąt stożka na stronę

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NAME		SPECIFICATION	
CFRP END MILLS			
 DIA-BNC	CARBIDE	Multiflutes for CFRP material	Vielzahnfräser für CFRP Material
	DIA	Mutitaglio per materiali compositi CFRP	Multidents pour les matériaux composites
 DIA-HBC	CARBIDE	4,6 flutes for CFRP material	4, 6 Nuten Fräser für CFRP Material
	DIA	4, 6 eliche per materiali compositi CFRP	4 et 6 dents pour les matériaux composites
SUPER RADIUS END MILLS			
 WX-(HS)-CRE	CARBIDE	3, 4 flutes, stub length, long shank High feed cutter	3, 4 Nuten, kurze Schneide, langer Schaft Hochvorschubsfräser
	WX	3, 4 eliche, tagliente corto, gambo lungo Fresa Alto Avanzamento	3, 4 lèvres, série courte, queue longue Haute vitesse de coupe
 WXS-(HS)-CRE	CARBIDE	5 flutes, stub length, long shank High feed cutter	5 Nuten, kurze Schneide, langer Schaft Hochvorschubsfräser
	WXS	5 eliche, tagliente corto, gambo lungo Fresa Alto Avanzamento	5 lèvres, série courte, queue longue Haute vitesse de coupe
 HYP-HS-CRE	CARBIDE	4 flutes, stub length, long shank High feed cutter	4 Nuten, kurze Schneide, langer Schaft Hochvorschubsfräser
	TiAlN	4 eliche, tagliente corto, gambo lungo Fresa Alto Avanzamento	4 lèvres, série courte, queue longue Haute vitesse de coupe
CORNER RADIUS END MILLS			
 WXS-CR-EMS NEW	CARBIDE	6 flutes, long shank	6 Schneiden, langer Schaft
	WXS	6 denti, gambo lungo	6 lèvres, queue longue
 WXS-CPR	CARBIDE	2 flutes, radius end mill, long neck, pencil neck	2 Schneiden mit Eckenradius, langer Hals
	WXS	2 denti, frese toriche, collo lungo,	2 lèvres, fraises à rayons, dégagement long
 DG-CPR	CARBIDE	2 flutes, long neck for Graphite	2 Schneiden, langer Hals für Graphit
	DG	2 denti, serie lunga per grafite	2 lèvres, dégagement long pour graphite
 NEO-CR-PHS	CARBIDE	4 flutes, variable lead type	4 Schneiden, ungleiche Teilung
	FX	4 denti, elice passo variabile	4 lèvres, hélice variable
 WX-CR-PHS	CARBIDE	4 flutes, big cutdepth	4 Schneiden, maximale Schnittiefe
	WX	4 denti, serie corta	4 lèvres, grande profondeur de coupe
 WXL-CR-EDS-6 NEW	CARBIDE	2 flutes, stub length, shank diameter 6	2 Schneiden, Kurz, Schaft 6 mm
	WXL	2 denti, serie corta, gambo diametro 6	2 lèvres, série courte, queue dia. 6
 FX-CR-EDS-6 Limited Supply	CARBIDE	2 flutes, stub length, shank diameter 6	2 Schneiden, Kurz, Schaft 6 mm
	FX	2 denti, serie corta, gambo diametro 6	2 lèvres, série courte, queue dia. 6
 FX-CR-MG-EDS	CARBIDE	2 flutes, long shank, short cutlenght	2 Schneiden, langer Schaft, Schneiden-länge : Kurz
	FX	2 denti, serie lunga, gambo corto	2 lèvres, queue longue, longueur de coupe courte
 NEO-CR-EMS	CARBIDE	6 flutes, variable lead type	6 Schneiden, ungleiche Teilung
	FX	6 denti, elica passo variabile	6 lèvres, hélice variable
 FX-CR-MG-EMS	CARBIDE	4 flutes, extra short cutlenght	4 Schneiden, Schneidenlänge : extra kurz
	FX	4 denti, serie extra corta	4 lèvres, longueur de coupe extra courte
 HYP-CR-HI-WEMS	CARBIDE	4 flutes, variable lead type	4 Schneiden, ungleiche Teilung
	TiAlN	4 denti, elica passo variabile	4 lèvres, hélice variable
 HYP-CR-HD-WEMS	CARBIDE	4 flutes, variable type for heavy duty	4 Schneiden, ungleiche Teilung
	TiAlN	4 denti, elica passo variabile torica per lavorazioni gravose	4 lèvres, type variable, pour usinage lourd
 HYP-CR-EMS	CARBIDE	4 flutes, regular, center cutting, corner radius	4 Schneiden, Normal, Zentrumschnei-dend, Radiusfräser
	TiAlN	4 denti, elica passo variabile torica per lavorazioni gravose	4 lèvres, série normale, coupe au centre, rayon

SPECIFICATION				RANGE	PAGE
CFRP END MILLS					
Flérskær for CFRP materiale	Flerskärsfräs för CFRP material	CFPR malzemesi için çok ağızlı		6 ~ 12	D.27
Multi-diente para fibras CFRP	Многозубая для углепластика	Wieloostrzowy do materiału CFRP			
4, 6 skær for CFRP materiale	4 och 6 skärs fräsar för CFRP material	CFPR malzemesi için 4,6 ağızlı		6 ~ 12	D.28
4, 6 dientes para fibras CFRP	3-4 зуба для углепластика	4,6 ostrzy dla materiału CFRP			
SUPER RADIUS END MILLS					
3, 4 skær, stub længde, langt skaft High Feed fræser	3 och 4 skärs fräsar, kort skärlängnd, långt skaft Högmatningsfräs	3,4 ağızlı uzun şaftlı Yüksek ilerlemeli freze		2 ~ 13	D.87 - D.88
3, 4 dientes corta para fibras CFRP Fresa de gran avance	3-4 зуба, короткая режущая часть и длинный хвостовик, Фреза с высокой подачей	3, 4 ostrza, krótkie ostrze, długi chwyt, szybkie posuwy robocze			
5 skær, stub længde, langt skaft High Feed fræser	5 skärs fräsar, kort skärlängnd, långt skaft Högmatningsfräs	5 ağızlı uzun şaftlı Yüksek ilerlemeli freze		2 ~ 12	D.59 - D.60
5 dientes corta para fibras CFRP Fresa de gran avance	5 зуба, короткая режущая часть и длинный хвостовик, Фреза с высокой подачей	5 ostrzy, krótkie ostrze, długi chwyt, szybkie posuwy robocze			
4 skær, stub længde, langt skaft High Feed fræser	4 skärs fräsar, kort skärlängnd, långt skaft Högmatningsfräs	4 ağızlı uzun şaftlı Yüksek ilerlemeli freze		6 ~ 12	D.110
4 dientes corta para fibras CFRP Fresa de gran avance	4 зуба, короткая режущая часть и длинный хвостовик, Фреза с высокой подачей	4 ostrza, krótkie ostrze, długi chwyt, szybkie posuwy robocze			
CORNER RADIUS END MILLS					
6 skær, langt skaft	6 skär, långt skaft	6 agızlı, uzun şaft		6 ~ 12	D.61
6 labios, mango larga	6 режущих кромок, длинный хвостовик	6 ostrzowe, długi chwyt			
2 skær, radiusfræser, Long pencil neck	2 skär, radiefräser, Lång konisk reducering	2 ağızlı, radyus parmak freze, uzun boyun, kalem boyun		6 ~ 12	D.69 ~ D.74
2 labios, radio y acabado, Mango reforzado con cuello conico	2 режущих кромки, радиус на кромке длинная коническая шейка	2 ostrzowy z promieniem, długa ołówkowa szyjka			
2,4 skær, Long neck for grafit	2, 4 skär, Lång reducering för grafit	2 ağızlı, Grafit için uzun boyunlu		0,5 ~ 12	D.57
2,4 labios, cuello largo para grafito	2,4 режущих кромки, длинная шейка, для графита	2 ostrzowy, długa szyjka, do grafitu			
4 skær, variabel helix type	4 skär, variabla-helix med differentierade skär	4 kanallı, değişken helisel açılı tip		3 ~ 25	D.30
4 labios, Helice variable	4 режущих кромки с переменным углом наклона витков	4 ostrzowy z nierównomiernym rozkład rozkładem zębów			
4 skær, stor skæredybde	4 skär, stort skäredjup	4 ağızlı, büyük kesme derinliği		3 ~ 20	D.89
4 labios, gran profundidad	4 режущих кромки, большая глубина резания	4 ostrzowy długa część robocza			
2 skær, stub længde, skaft diameter 6	2 skär, kort skärlängd, skaft diameter 6	2 kanallı, küt helisle uzunluk kazanımı, gövde çapı 6		0,6 ~ 2,5	D.43
2 labios, mango reforzado con cuello conico, diametro de mango 6	2 режущих кромки, короткая длина, хвостовик Ø6 мм	2 ostrzowy, krótki, chwyt 6mm			
2 skær, stub længde, skaft diameter 6	2 skär, kort skärlängd, skaft diameter 6	2 kanallı, küt helisle uzunluk kazanımı, gövde çapı 6		0,6 ~ 2,5	D.119
2 labios, mango reforzado con cuello conico, diametro de mango 6	2 режущих кромки, короткая длина, хвостовик Ø6 мм	2 ostrzowy, krótki, chwyt 6mm			
2 skær, langt skaft, kort skæredybde	2 skär, långt skaft, kort skärlängd	2 ağızlı, uzun şaft, kısa kesme uzunluğu		3 ~ 12	D.120
2 labios, mango larga, longitud de corte	2 режущих кромки, короткая длина, короткая режущая часть	2 ostrzowy, długi chwyt, długa część robocza			
6 skær, variabel helix type	6 skär, variabla-helix med differentierade skär	6 kanallı, değişken helisel açılı tip		6 ~ 25	D.32
6 labios, Helice variable	6 режущих кромок с переменным углом наклона витков	6 ostrzowy z nierównomiernym rozkład rozkładem zębów			
4 skær, ekstra kort skæredybde	4 skär, extra kort skärlängd	4 ağızlı, ekstra kısa kesme kenarı		4 ~ 12	D.121
4 labios, extra-corta, longitud de corte	4 режущих кромки, особо короткая режущая часть	4 ostrzowy bardzo krótka część robocza			
4 skær, variabel helix type	4 skär, variabla-helix med differentierade skär	4 kanallı, değişken helisel açılı tip		4 ~ 20	D.107
4 labios, Helice variable	4 режущих кромки с переменным углом наклона витков	4 ostrzowy z nierównomiernym rozkład rozkładem zębów			
4 skar, variabel type skrub	4 skär, variabla-helix med differentierade skär	4 ağızlı, ağır işler için uygun		6 ~ 20	D.108
4 labios, Helice variable con radio en vertice Para cajeado	4 режущих кромки с переменным углом наклона витков	4 ostrzowy, zmienna spirala do ciężkich obróbek			
4 skar, borende, hjørneradius	4 skär, Borrande, Hörnradie	4 ağızlı, düzenli, merkezden kesme, köşe radyuslu		5 ~ 20	D.151
4 labios, Helice variable con radio en vertice Para cajeado	4 режущих кромки, режущий центр, Концевые фрезы с радиусом	4 ostrzowy, regularny, centralne ostrze, promień naroża			

CARBIDE

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NAME	SPECIFICATION	
CORNER RADIUS END MILLS		
 FXS-HS-PKE	4 flutes radius, for pocket applications	4 Schneiden, zentrumschneidend, extra langer Schaft Eckenradius
	4 denti torica, gambo lungo, per fresature di pareti profonde	4 lèvres à rayon, fraisage de cavités profonde
 FXS-PKE	4 flutes radius, for pocket applications	4 Schneiden, zentrumschneidend, extra langer Schaft Eckenradius
	4 denti torica, gambo lungo, per fresature di pareti profonde	4 lèvres à rayon, fraisage de cavités profonde
 FXS-MFE	4 flutes radius at both ends, deep wall applications	4 Schneiden, Eckenradius vome und hinten, extralang
	4 denti, gambo extra lungo con raggio anteriore e posteriore	4 lèvres à rayon avant et arrière pour paroi profonde
 FXS-CR-EMS Limited Supply	6 or 8 flutes, long shank	6 oder 8 Schneiden, langer Schaft
	6, 8 denti, gambo lungo	6 ou 8 lèvres, queue longue
 CA-PKE	3 flutes, for pocket applications for Al & Cu	3 Schneiden, Eckenradius
	3 denti, per applicazioni di tasche per Al & Cu	2 lèvres pour usinage de poche
 CA-MFE	3 flutes radius at both ends, deep wall applications for Al & Cu	3 Schneiden, Eckenradius vome und hinten,
	3 deti a raggio, anteriore e posteriore, gambo extra lungo, per pareti profonde, per Al & Cu	3 lèvres à rayon avant et arrière, pour parois profonde, pour Al et Cu
BALL NOSE END MILLS		
 PHX-LN-DBT NEW	3 flutes, long neck, for hardened material	3 Schneiden, langer Hals - Überlaufhals
	3 denti, gambo lungo per materiali trattati	3 lèvres, degagement long pour matériel traité
 WXL-LN-EBD	2 flutes, long neck for mat. ~ 50 HRC	2 Schneiden, langer Hals für mat. ~ 50 HRC
	2 denti gambo lungo per mat. ~ 50 HRC	2 lèvres, dégagement long pour mat. ~ 50 HRC
 WXL-PC-EBD	2 flutes, pencil neck for mat. ~ 50 HRC	2 Nuten, konische Halsausführung für Materialien ~ 50 HRC
	2 eliche, per nervature per materiali ~ 50 HRC	2 dents tronc conique pour matière jusqu'à 50HRC
 WXS-LN-EBD	2 flutes, long neck, for hardened material	2 Schneiden, langer Hals - Überlaufhals
	2 denti, gambo lungo per materiali trattati	2 lèvres, degagement long pour matériel traité
 WX-LN-EBD Limited Supply	2 flutes, long neck	2 Schneiden, langer Hals - Überlaufhals
	2 denti, gambo lungo	2 lèvres, dégagement long
 FX-LN-EBD-6 Limited Supply	2 flutes, long neck, shank dia 6	2 Schneiden, langer Hals, Schaft dia 6
	2 denti, serie lunga, gambo dia 6	2 lèvres, dégagement long, queue dia 6
 DG-LN-EBD	2 flutes, long neck for graphite	2 Schneiden, langer Hals für Graphit
	2 denti, gambo lungo per grafite	2 lèvres, dégagement long pour graphite
 WXL-EBD	2 flutes, ball nose end mill for mat. ~ 50 HRC	2 Schneiden, Kopierfräser für mat. ~ 50 HRC
	2 denti, frese sferiche per mat. ~ 50 HRC	2 lèvres, fraise hémisphérique pour mat. ~ 50 HRC
 WXS-EBD	2 flutes, ball nose end mill for mat. > 50 HRC	2 Schneiden, Kopierfräser für mat. > 50 HRC
	2 denti, frese sferiche per mat. > 50 HRC	2 lèvres, fraise hémisphérique pour mat. > 50 HRC
 WXS-HS-EBD	2 flutes, ball nose end mill for mat. > 50 HRC	2 Schneiden, Kopierfräser für mat. > 50 HRC
	2 denti, frese sferiche per mat. > 50 HRC	2 lèvres, fraise hémisphérique pour mat. > 50 HRC

SPECIFICATION				RANGE	PAGE
CORNER RADIUS END MILLS					
4 skær radius, til lomme fræsning	4 skär radie, för djup valsfräsning	4 ağızlı köşelerde radyus, cep boşaltma uygulamaları için		6 ~ 20	D.130
4 labios radio, para aplicaciones de cajeado	4 режущих кромки, с радиусом на кромке, для фрезерования карманов	4 ostrzowy z promieniem naroża do obróbki kieszeni			
4 skær radius, til lomme fræsning	4 skär radie, för djup valsfräsning	4 ağızlı köşelerde radyus, cep boşaltma uygulamaları için		3 ~ 12	D.131
4 labios radio, para aplicaciones de cajeado	4 режущих кромки, с радиусом на кромке, для фрезерования карманов	4 ostrzowy z promieniem naroża do obróbki kieszeni			
4 skær med radius i begge ender, dyb sidebearbejdning	4 skär med radie i båda sidor av skären, djup valsbearbetning	4 ağızlı, bütün köşelerde radyus, Al & Cu derin duvar uygulamaları için		10 ~ 22	D.132
4 labios, paredes profundas	4 кромки с радиусом на обеих концах режущей части, для глубоких стенок	4 ostrzowy z promieniem po oby stro-nach do głębokich aplikacje ściennych			
6 , 8 skær, langt skaft	6 eller 8 skär, långt skaft	6,8 ağızlı, uzun şaft		6 ~ 16	D.133
6, 8 labios, mango larga	6 или 8 режущих кромок, длинный хвостовик	6,8 ostrzowe, długi chwyt			
3 skær, til lomme fræsning i Al & Cu	3 skär, djup valsbearbetning för Al & Cu	3 ağızlı, cep boşaltma uygulamaları için, Al & Cu		3 ~ 20	D.139
3 labios, para aplicaciones cajeado para Al & Cu	3 режущих кромки, для алюминия и меди	3 ostrzowe, obróbka kieszeni do Al i Cu			
3 skær med radius i begge ender, dyb sidebearbejdning for Al & Cu	3 skär med radie i båda sidor av skären, djup valsbearbetning för Al & Cu	3 ağızlı, bütün köşelerde radyus, derin duvar uygulamaları için		10 ~ 22	D.140
3 labios, paredes profundas	3 кромки с радиусом на обеих концах режущей части, для глубоких стенок, для алюминия и меди	3 ostrzowy z promieniem po oby stro-nach dla głębokich aplikacje ściennych do Al i Cu			
BALL NOSE END MILLS					
3 skær, long neck til hærdede materialer	3 skär, konisk reducerad för härdat material	3 ağızlı, uzun boyunlu, sertleştirilmiş çelikler için		R0,5 ~ R3	D.33
3 labios, cuello largo, para aceros endurecidos	3 кромки, длинная шейка, для закаленных сталей	ostrzowy, długa szyjka do materiału utwardzanego			
2 skær, long neck til mat. ~ 50 HRC	2 skär, lång reducering till mat. ~ 50 HRC	2 ağızlı, uzun boyunlu ~ 50 HRC malzemeleri için		R0,05 ~ R3	D.45 ~ D.50
2 labios, cuello largo para mat. ~ 50 HRC	2 кромки, длинный хвостовик, для материалов до 50HRC	2 ostrzowy, długa szyjka do mat. ~ 50 HRC			
2 skær, pencil neck til mat. ~ 50 HRC	2 skär, konisk reducerad till mat. ~ 50 HRC	2 ağızlı, kalem boyunlu ~ 50 HRC malzemeleri için		R0,1 ~ R3	D.51 ~ D.54
2 labios cuello cónico para material hasta 50 HRC	2-зубая фреза с конической шейкой для материалов ~50 HRC	2 ostrzowy, długa szyjka ołówkowa do mat. ~ 50 HRC			
2 skær, long neck til hærdede materialer	2 skär, konisk reducerad för härdat material	2 ağızlı, uzun boyunlu, sertleştirilmiş çelikler için		R0,05 ~ R3	D.65 ~ D.68
2 labios, cuello largo, para aceros endurecidos	2 кромки, длинная шейка, для закаленных сталей	2 ostrzowy, długa szyjka do materiału utwardzanego			
2 skær, long neck	2 skär, lång reducering	2 ağızlı, uzun boyunlu		R0,1 ~ R3	D.85 - D.86
2 labios, cuello largo	2 режущих кромки, длинная шейка	2 ostrzowy, długa szyjka			
2 skær, long neck, skaft Ø 6	2 skär, lång reducering, skaft D. 6	2 ağızlı, uzun boyunlu, şaft çapı 6		R0,25 ~ R3	D.117
2 labios, cuello largo, mango D.6	2 кромки, длинная шейка, хвостовик Ø6 мм	2 ostrzowy, długa szyjka chwyt 6 mm			
2 skær, long neck til grafit	2 skär, lång reducering för grafit	2 ağızlı, kalem boyunlu Grafit için		R0,2 ~ R2	D.56
2 labios, cuello largo para grafito	2 кромки, длинная шейка, для графита	2 ostrzowy, długa szyjka do grafitu			
2 skær, radiusfræser til mat. ~ 50 HRC	2 skär, radiefräs till mat. ~ 50 HRC	2 ağızlı, kalem küre parmak freze ~ 50 HRC malzemeleri için		R0,05~R10	D.44
2 labios, punta esférica, para mat. ~ 50 HRC	2 кромки, сферические, для материалов ~ 50 HRC	2 ostrzowy frez kulisty do mat. ~ 50 HRC			
2 skær, radiusfræser til mat. > 50 HRC	2 skær, radiusfræser til mat. > 50 HRC	2 ağızlı, kalem küre parmak freze > 50 HRC malzemeleri için		R0,5 ~ R6	D.64
2 labios, punta esférica, para mat. > 50 HRC	2 кромки, сферические, для материалов > 50 HRC	2 ostrzowy frez kulisty do mat. >50 HRC			
2 skær, radiusfræser til mat. > 50 HRC	2 skær, radiusfræser til mat. > 50 HRC	2 ağızlı, kalem küre parmak freze > 50 HRC malzemeleri için		R0,5 ~ R6	D.63
2 labios, punta esférica, para mat. > 50 HRC	2 кромки, сферические, для материалов > 50 HRC	2 ostrzowy frez kulisty do mat. >50 HRC			

CARBIDE

INDEX

NAME		SPECIFICATION	
BALL NOSE END MILLS			
 **WX-EBD** Limited Supply	CARBIDE	2 flutes, ball nose	2 Schneiden, Kopierfräser
	WX	2 denti, frese sferiche	2 lèvres, fraise hémisphérique
 **FX-HS-EBDS** Limited Supply	CARBIDE	2 flutes, stub length	2 Schneiden, langer Schaft
	FX	2 denti, serie corta	2 lèvres, série courte
 **FX-MG-EBD-3** Limited Supply	CARBIDE	2 flutes, ball nose, shank D.3	2 Schneiden, Kopierfräser, Schaft-durchmesser D 3
	FX	2 denti, frese sferiche, gambo D.3	2 lèvres, fraise hémisphérique D 3
 **FX-MG-EBD** Limited Supply	CARBIDE	2 flutes, ball nose	2 Schneiden, langer Schaf
	FX	2 denti, frese sferiche	2 Schneiden, Kopierfräser
 **FX-SS-EBD**	CARBIDE	2 flutes, extra long shank, slim shank	2 Schneiden, langer langer Schaft, Schaft-tdurchmesser kleiner als Schneide
	FX	2 denti, gambo extra lungo, gambo sottile	2 lèvres, queue extra longue, mince
 **FX-EBD-6** Limited Supply	CARBIDE	2 flutes, stub lenght, schank D. 6	2 Schneiden, Schneidenlänge : Kurz Schafttdurchmesser D 6
	FX	2 denti, serie corta, gambo D.6	2 lèvres, serie courte, dia. 6
 **FX-PC-MG-EBD** Limited Supply	CARBIDE	2 flutes, pencil neck, long shank	2 Schneiden, konischer Schaft, langer Schaft
	FX	2 denti, riduzione conica, gambo lungo	2 lèvres, dégagement conique, queue longue
 **FXS-EQD**	CARBIDE	2 flutes, 220° cutting edge	2 Schneiden, 220° Kugel
	FX	2 denti, 220°	2 lèvres, shpérique 220 °
 **FXS-EBT**	CARBIDE	3 flutes	3 Schneiden
	FX	3 denti	3 lèvres
 **FXS-HS-EBM**	CARBIDE	4 flutes, stub length, high efficiency	4 Schneiden, Kurz
	FX	4 denti, serie corta, per lavorazioni ad alta efficienza	4 denti, serie courte, haute efficacitée
 **FXS-EBM**	CARBIDE	4 flutes, high efficiency	4 Schneiden, langer Schaft
	FX	4 denti, gambo lungo	4 lèvres, haute efficacitée
 **CBN-SXB**	CBN	2 flutes, ball nose end mill for mat. ~ 68 HRC	2 Schneiden, Kopierfräser für mat. ~ 68 HRC
	CrN	2 denti, frese sferiche per mat. ~ 68 HRC	2 lèvres, fraise hémisphérique pour mat. ~ 68 HRC
 **CAP-EBD**	CARBIDE	2 flutes, super finishing for Al & Cu	2 Schneiden, Langer Schaft, Super-finish-ing für Al & Cu
		2 denti, gambo lungo, per rame, alluminio e plastica	2 lèvres, queue longue, pour super finition pour Al et Cu
 **CRN-EBD** Limited Supply	CARBIDE	2 flutes, super finishing for Cu & Al	2 Schneiden, Langer Schaft, Super-finish-ing für Al & Cu
	CrN	2 denti, gambo lungo, per rame, alluminio e plastica	2 lèvres, queue longue, pour super finition pour Al et Cu
 **CRN-LN-EBD** Limited Supply	CARBIDE	2 flutes, long neck, super finishing for Cu & Al	2 Schneiden, Überlaufhals, Super-finishing für Al & Cu
	CrN	2 denti, gambo scaricato lungo, per rame, alluminio e plastica	2 lèvres, dégagement long, super finition pour Al et Cu
 **DG-EBD**	CARBIDE	2 flutes for graphit	2 Schneiden für Graphit
	DG	2 denti per grafite	2 lèvres pour graphite

SPECIFICATION				RANGE	PAGE
BALL NOSE END MILLS					
2 skær, stub længde	2 skär, kort skärlängd	2 ağızlı, küre		R0,2 ~ R6	D.84
2 labios, Serie corta	2 кромки, сферические, короткая длинна	2 ostrzowy frez kulisty			
2 skær, stub længde	2 skär, kort skärlängd	2 ağızlı, saplama uzunluğu		R1,5 ~ R6	D.113
2 labios, Serie corta	2 кромки, сферические, короткая длинна	2 ostrzowy, krótki			
2 skær, radiusfræser, skaft Ø 3	2 skär, radiefräs, skaft D. 3	2 ağzılı, küre, şaft çapı D.3		R0,2 ~ R1,5	D.112
2 labios, punta esférica, mango D. 3	2 кромки, сферические, хвостовик Ø3 мм	2 ostrzowy frez kulisty chwyt 3 mm			
2 skær, radiusfræser	2 skär, fullradie	2 ağzılı, küre		R0,5 ~ R15	D.114
2 labios, punta esférica	2 режущих кромки, сферические	2 ostrzowy frez kulisty			
2 skær, ekstra langt og tyndt skaft	2 skär, exstra långt skaft, helreducerat skaft	2 ağızlı, ekstra uzun şaft, ince şaft		R3 ~ R6	D.115
2 labios, mango extra larga, cuello delgado	2 режущих кромки, утоненный шейка, длинный хвостовик	2 ostrzowy, extra długi chwyt, średnica chwytu mniejsza od ostrza			
2 skær, stub længde, skaft Ø 6	2 skär, kort skärlängd , skaft D:6	2 kanallı, küt helisle uzunluk kazanımı, gövde çapı 6 mm		R0,1 ~ R3	D.116
2 labios, serie corta, mango dia. 6	2 режущих кромки, короткая длина, хвостовик Ø6 мм	2 ostrzowy, krótki, chwyt 6mm			
2 skær, pencil neck, langt skaft	2 skär, konisk reducerad, långt skaft	2 ağızlı, kalem boyunlu, uzun şaft		R0,5 ~ R6	D.118
2 labios, mango reforzado con cuello conico, mango lungo	2 режущих кромки, коническая шейка, длинный хвостовик	2 ostrzowy, długa szyjka ołówkowa, długi chwyt			
2 skær, 220° skær	2 skär, 220° skær yta	2 ağızlı, 220° kesme kenarı		R0,5 ~ R5	D.126
2 labios, filo de corte 220°	2 режущих кромки, сферическая режущая часть 220	2 ostrzowy 220° frez kulisty			
3 skær	3 skär	3 ağızlı		R3 ~ R10	D.127
3 labios	3 режущих кромки	3 ostrzowy			
4 skær, stub længde, høj effektivitet	4 skär, kort skärlängd, högeffektiv	4 kanallı, küt helisle uzunluk kazanımı kanal işleme gibi yüksek yüklü işlemlerde		R3 ~ R10	D.128
4 labios, serie corto, altas prestaciones	4 режущих кромки, сферическая, короткая длина	4 ostrzy, krótkie ostrze , dla wysokosprawnej produkcji			
4 skær, høj effektivitet	4 skär, högeffektiv	4 ağızlı, kanal işleme gibi yüksek yüklü işlemlerde		R3 ~ R10	D.129
4 labios, alto contenido	4 режущих кромки, сферическая	4 ostrzy, dla wysokosprawnej produkcji			
2 skær, radius fræser for mat. ~ 68 HRC	2 skär, radie fräs för mat. ~ 68 HRC	2 ağızlı, kalem küre parmak freze ~ 68 HRC malzemeleri için		R0,5 ~ R1,5	D.134
2 labios, radio fresas para mat. ~ 68 HRC	2 кромки, сферическая, для материалов до ~ 68 HRC	2 ostrzowy frez kulisty do mat. ~ 68 HRC			
2 skær, til Al & Cu, super finish	2 skär, för Al & Cu, super finish	2 ağızlı, Al & Cu için süper finiş		R0,5 ~ R10	D.138
2 labios, para Al & Cu, super acabado	2 кромки, супер финишная обработка для меди и алюминия	2 ostrzowy super finishing do Al. i Cu			
2 skær, til Al & Cu, super finish	2 skär, för Al & Cu, super finish	2 ağızlı, Al & Cu için süper finiş		R3 ~ R6	D.143
2 labios, para Al & Cu, super acabado	2 кромки, супер финишная обработка для меди и алюминия	2 ostrzowy super finishing do Al. i Cu			
2 skær, long neck, super finish, til Al & Cu	2 skär, lång koniskt reducerad, super finish, för Al & Cu	2 ağızlı, uzun boyun, Al & Cu için süper finiş		R0,5 ~ R2,5	D.144
2 labios, para Al & Cu, super acabado	2 кромки, длинный хвостовик, супер финишная обработка для меди и алюминия	2 ostrzowy, długa szyjka super finishing do Al. i Cu			
2 skær for grafit	2 skär för grafit	2 ağızlı, grafit		R2 ~ R6	D.55
2 labios para grafito	2 режущих кромки, сферическая, для графита	2 ostrzowy, grafit			

CARBIDE

INDEX

NAME		SPECIFICATION	
BALL NOSE END MILLS			
 HYP-SB-EBD	CARBIDE TiAlN	2 flutes, ball nose end mill for material ~50 HRC 2 denti, frese sferiche per mat. ~ 50 HRC	2 Schneiden, Kopierfräser für mat. ~ 50 HRC 2 lèvres, fraise hémisphérique pour mat. ~ 50 HRC
 HYP-EBD-TiAlN	CARBIDE TiAlN	2 flutes, ball nose, short series 2 denti, frese sferiche, serie corta	2 Schneiden, Kopierfräser, Kurzer Hals 2 lèvres, boule, série courte
 HYP-EBD	CARBIDE	2 flutes, ball nose, short series 2 denti, frese sferiche, serie corta	2 Schneiden, Kopierfräser, Kurzer Hals 2 lèvres, boule, série courte
SLOTTING END MILLS			
 WXL-LN-EDS	CARBIDE WXL	2 flutes, long neck 2 denti, per scalanature profonde	2 Schneiden, langer Hals 2 lèvres, dégagement long
 WX-LN-EDS Limited Supply	CARBIDE WX	2 flutes, long neck 2 denti, per scalanature profonde	2 Schneiden, langer Hals 2 lèvres, dégagement long
 FX-LN-EDS-6 Limited Supply	CARBIDE FX	2 flutes, long neck, shank D. 6 2 denti, per scalanature profonde, gambo, D 6	2 Schneiden, Schneidenlänge : lang, Schaftdurchmesser D 6 2 lèvres, dégagement long, queue D 6
 CRN-LN-EDS Limited Supply	CARBIDE CrN	2 flutes, long neck for Cu & Al 2 denti, per scalanature profonde per Cu & Al	2 Schneiden, Überlaufhals für Cu & Al 2 lèvres, dégagement long pour Cu & Al
SLOTTING END MILLS			
 WXL-1,5D-DE	CARBIDE WXL	2 flutes, general use for 1,5 D 2 denti, applicazioni generali per 1,5 D	2 Schneiden, vielseitige Anwendungen für 1,5 D 2 lèvres, application générale pour 1,5 D
 WXL-2D-DE	CARBIDE WXL	2 flutes, general use for 2 D 2 denti, applicazioni generali per 2 D	2 Schneiden, vielseitige Anwendungen für 2 D 2 lèvres, application générale pour 2 D
 WXL-3D-DE	CARBIDE WXL	2 flutes, general use for 3 D 2 denti, applicazioni generali per 3 D	2 Schneiden, vielseitige Anwendungen für 3 D 2 lèvres, application générale pour 3 D
 WXL-4D-DE	CARBIDE WXL	2 flutes, general use for 4 D 2 denti, applicazioni generali per 4 D	2 Schneiden, vielseitige Anwendungen für 4 D 2 lèvres, application générale pour 4 D
 WX-G-EDSS	CARBIDE WX	2 flutes, cutlength extra short 2 denti, serie extra corta	2 Schneiden, Schneidenlänge : extra kurz 2 lèvres, longueur de coupe extra courte
 WX-EDS Limited Supply	CARBIDE WX	2 flutes, stub length 2 denti, serie corta	2 Schneiden, Schneidenlänge : kurz 2 lèvres, série courte

SPECIFICATION				RANGE	PAGE
BALL NOSE END MILLS					
2 skær, radius fræser for mat. ~ 50 HRC	2 skär, radie fräs för mat. ~ 50 HRC	2 ağızlı, kalem küre parmak freze ~ 50 HRC malzemeleri için		R1,5 ~ R6	D.111
2 labios, radio fresas para mat. ~ 50 HRC	2 кромки, сферическая, для материалов до ~ 50 HRC	2 ostrzowy frez kulisty do mat. ~ 50 HRC			
2 skær, radiusfræser, kort serie	2 skär, fullradie, kort utförande	2 ağızlı, küre, Kisa seri		R0,5 ~ R12,5	D.152
2 labios, esferica, serie corta	2 режущих кромки, сферическая фреза, короткая серия	2 ostrzowy frez kulisty, seria krótka			
2 skær, radiusfræser, kort serie	2 skär, fullradie, kort utförande	2 ağızlı, küre, Kisa seri		R0,5 ~ R12,5	D.153
2 labios, esferica, serie corta	2 режущих кромки, сферическая фреза, короткая серия	2 ostrzowy frez kulisty, seria krótka			
SLOTTING END MILLS					
2 skær, long neck	2 skär, lång reducering	2 ağızlı, uzun boyunlu		0,2 ~ 5	D.40 ~ D.42
2 labios, cuello largo	2 режущих кромки, длинная шейка	2 ostrzowy, długa szyjka			
2 skær, long neck	2 skär, lång reducering	2 ağızlı, uzun boyunlu		0,2 ~ 5	D.81 ~ D.83
2 labios, cuello largo	2 режущих кромки, длинная шейка	2 ostrzowy, długa szyjka			
2 skær, long neck, skaft D. 6	2 skär, lång reducering, skaft:6	2 ağızlı, uzun boyunlu, şaft çapı 6 mm		0,5 ~ 2,5	D.96
2 labios, cuello largo D. 6	2 режущих кромки, длинная шейка, хвостовик Ø6 мм	2 ostrzowy, długa szyjka chwyt 6 mm			
2 skær, long neck, skaft til Cu & Al	2 skär, lång reducering för Al & Cu	2 ağızlı, uzun boyunlu, Al & Cu		0,5 ~ 12	D.141
2 labios, cuello largo para Cu & Al	2 режущих кромки, длинная шейка, для алюминия и меди	2 ostrzowy, długa szyjka do Al. i Cu			
SLOTTING END MILLS					
2 skær, 1,5 D, til generelt brug	2 skär, diverse applikationer för 1,5 D	2 ağızlı, genel uygulamalar için 1,5D		0,1 ~ 6	D.34
2 labios, aplicación general para 1,5 D	2 режущих кромки, общего назначения, глубиной до 1,5 D	2 ostrzowy do zastosowań ogólnych 1,5D			
2 skær, 2 D, til generelt brug	2 skär, diverse applikationer för 2 D	2 ağızlı, genel uygulamalar için 2D		0,1 ~ 20	D.35
2 labios, aplicación general para2 D	2 режущих кромки, общего назначения, глубиной до 2D	2 ostrzowy do zastosowań ogólnych 2D			
2 skær, 3 D, til generelt brug	2 skär, diverse applikationer för 3 D	2 ağızlı, genel uygulamalar için 3D		0,1 ~ 20	D.36
2 labios, aplicación general para 3 D	2 режущих кромки, общего назначения, глубиной до 3D	2 ostrzowy do zastosowań ogólnych 3D			
2 skær, 4 D, til generelt brug	2 skär, diverse applikationer för 4 D	2 ağızlı, genel uygulamalar için 4D		0,2 ~ 12	D.37
2 labios, aplicación general para 4 D	2 режущих кромки, общего назначения, глубиной до 4D	2 ostrzowy do zastosowań ogólnych 4D			
2 skær, ekstra kort skærlængde	2 skær, exstra kort skärlängd	2 ağzılı, ekstra kısa kesme kenarı		1 ~ 12	D.75
2 labios, longitud de corte extra corto	2 режущих кромки, особо короткая режущая часть	2 ostrzowy bardzo krótka część robocza			
2 skær, stub længde	2 skär, kort	2 kanallı, küt helisle uzunluk kazanımı		0,2 ~ 12	D.76
2 labios, serie corta	2 режущих кромки, короткая длина	2 ostrzy, krótkie ostrze			

INDEX

NAME		SPECIFICATION	
SLOTTING END MILLS			
 FX-MG-EDS Limited Supply	CARBIDE / FX	2 flutes, stub length 2 denti, serie corta	2 Schneiden, Schneidenlänge : kurz 2 lèvres, série courte
 FX-MG-EDL Limited Supply	CARBIDE / FX	2 flutes, long cutlength 2 denti, serie lunga	2 Schneiden, Schneidenlänge : extra lang 2 lèvres, longueur de coupe extra longue
 FX-MG-EXDL Limited Supply	CARBIDE / FX	2 flutes, cutlength extra long 2 denti, serie extra lunga	2 Schneiden, Schneidenlänge : extra lang 2 lèvres, longueur de coupe extra longue
 FX-SS-EDS	CARBIDE / FX	2 flutes, slim shank 2 denti, dia del gambo inferiore al dia del taglio	2 Schneiden, Schaftdurchmesser kleiner als Schneide 2 lèvres, dia queue inférieure au dia de coupe
 FX-EDS-6 Limited Supply	CARBIDE / FX	2 flutes, stub length, shank D. 6 2 denti, serie lunga gambo D. 6	2 Schneiden, Schneidenlänge : Kurz, Schaftdurchmesser D 6 2 lèvres, série longue, queue D.6
 CA-RG-EDS	CARBIDE	2 flutes, stub length, for Al and Cu 2 denti, serie lunga per Al & Cu	2 Schneiden, Schaftdurchmesser kleiner als Schneide, für Aluminium und Kupferlegierungen 2 lèvres, série courte pour Al & Cu
 HYP-FI NEW	CARBIDE	1 flute, Straight shank 1 dento, Gambo cilindrico	1 Schneide, Zylindrischer Schaft 1 lèvre, Queue cylindrique
 CA-RG-EDL	CARBIDE	2 flutes, stub length, for Al and Cu 2 denti, serie lunga per Al & Cu	2 Schneiden, Schaftdurchmesser kleiner als Schneide, für Aluminium und Kupferlegierungen 2 lèvres, série courte pour Al & Cu
 HYP-EDS-TiAlN	CARBIDE / TiAlN	2 flutes, centre cutting, short series 2 denti, taglio al centro, serie corta	2 Schneiden, Zentrumschneidend, Kurzer Hals 2 lèvres, coupe au centre, série courte
 HYP-EDS	CARBIDE	2 flutes, centre cutting, short series 2 denti, taglio al centro, serie corta	2 Schneiden, Zentrumschneidend, Kurzer Hals 2 lèvres, coupe au centre, série courte
 MG-EDS	CARBIDE	2 flutes, centre cutting, short series 2 denti, taglio al centro, serie corta	2 Schneiden, Zentrumschneidend, Kurzer Hals 2 lèvres, coupe au centre, série courte
 MG-EDL	CARBIDE	2 flutes, centre cutting, long series 2 denti, taglio al centro, serie lunga	2 Schneiden, Zentrumschneidend, Langer Hals 2 lèvres, coupe au centre, série longue
MULTIFLUTES END MILLS			
 WXL-LN-EMS-6 NEW	CARBIDE / WXL	4 flutes, long neck, schank D. 6 4 denti, gambo extra lungo, per scanalature	4 Schneiden, langer Schaft, Schaftdurchmesser D. 6 4 lèvres, queue extra-longue, pour rainurage
 WXL-EMS	CARBIDE / WXL	4 flutes, for general use 4 denti, per applicazioni generali	4 Scheiden Schaftfräser für allgemeine Anwendungen 4 lèvres pour application générale
 NEO-EMS	CARBIDE / FX	6 flutes, variable lead type 6 denti, passo variabile	6 Scheiden, ungleiche Teilung 6 lèvres, hélice variable
 NEO-PHS	CARBIDE / FX	4 flutes, variable lead type 4 denti, passo variabile	4 Scheiden, ungleiche Teilung 4 lèvres, hélice variable
 UP-PHS	CARBIDE / FX	4 flutes, vibration resistant, multipurpose use 4 denti, resistente alle vibrazioni, multifunzione	4 Schneiden, anti-vibration, für Allgemeine Anwendungen 4 lèvres, résistante aux vibrations, multi-fonction
 WXS-EMS	CARBIDE / WXS	4,6 flutes for allied steel < 65 HRC 4 o 6 denti, per acciai temperato < 65 HRC	4,6 Schneiden, für legierten Stahl < 65 HRC 4 ou 6 lèvres pour aciers durs < 65 HRC

SPECIFICATION			RANGE	PAGE
SLOTTING END MILLS				
2 skær, stub længde	2 skär, kort	2 kanallı, küt helisle uzunluk kazanımı	0,2 ~ 12	D.90 - D.91
2 labios, serie corta	2 режущих кромки, короткая длина	2 ostrzowy, krótkie ostrze		
2 skær, lang skærlængde	2 skär, lång skärelängd	2 agızlı, uzun kesme uzunluğu	1 ~ 12	D.92
2 labios, longitud de corte larga	2 skär, lång skärelängd	2 ostrzowy, długa część robocza		
2 skær, ekstra lang skærlængde	2 skär, exstra lång skärelängd	2 agızlı, ekstra uzun kesme uzunluğu	3 ~ 12	D.93
2 labios, longitud de corte extra-larga	2 режущих кромки, особо длинная режущая часть	2 ostrzowy, extra długa część robocza		
2 skær, tyndt skaft	2 skär, helreducerat skaft	2 agızlı, İnce şaft	6 ~ 12	D.94
2 labios, cuello delgado	2 режущих кромки, утоненный хвостовик	2 ostrzowy, Średnica chwytu mniejsza od ostrza		
2 skær, stub længde, skaft Ø 6	2 skär, kort längd, skaft D:6	2 kanallı, küt helisle uzunluk kazanımı, gövde çapı 6 mm	0,2 ~ 2,5	D.95
2 labios, serie corta, mango Ø 6	2 режущих кромки, короткая длина, хвостовик Ø6 мм	2 ostrzowy, krótki, chwyt 6mm		
2 skær, stub længde til Al & Cu	2 skär, kort längd, till AL. og Cu. leg.	2 kanallı, küt helisle uzunluk kazanımı, Al & Cu	1 ~ 20	D.135
2 labios, serie corta para Al & Cu	2 режущих кромки, короткая, для алюминия и меди	2 ostrzowy, krótki do Al. i Cu		
1 skær, Cylindrisk skaft	1 skär, Cylindriskt skaft	1 kanal, Düz Şaft	3 ~ 12	D.105
1 labio, Mango sencillo	1 режущих кромки, Прямой хвостовик	1 ostrzow, Chwyt walcowy		
2 skær, stub længde til Al & Cu	2 skär, kort längd, till AL. og Cu. leg.	2 kanallı, küt helisle uzunluk kazanımı, Al & Cu	3 ~ 12	D.136
2 labios, serie corta para Al & Cu	2 режущих кромки, короткая, для алюминия и меди	2 ostrzowy, krótki do Al. i Cu		
2 skær, borende, kort serie	2 skär, borrande, kort utförande	2 kanallı, merkezden kesme, kisa seri	1 ~ 25	D.145
2 labios, corte central, serie corta	2 режущих кромки, режущий центр, короткая серия	2 ostrzowy, centralne ostrze, krótka seria		
2 skær, borende, kort serie	2 skär, borrande, kort utförande	2 kanallı, merkezden kesme, kisa seri	1 ~ 25	D.146
2 labios, corte central, serie corta	2 режущих кромки, режущий центр, короткая серия	2 ostrzowy, centralne ostrze, krótka seria		
2 skær, borende, kort serie	2 skär, borrande, kort utförande	2 kanallı, merkezden kesme, kisa seri	1 ~ 20	D.154
2 labios, corte central, serie corta	2 режущих кромки, режущий центр, короткая серия	2 ostrzowy, centralne ostrze, krótka seria		
2 skær, borende, lang serie	2 skär, borrande, långt utförande	2 kanallı, merkezden kesme, uzun seri	3 ~ 12	D.155
2 labios, corte central, serie larga	2 режущих кромки, режущий центр, длинная серия	2 ostrzowy, centralne ostrze, długa seria		
MULTIFLUTES END MILLS				
4 skær, long neck, skaft D 6	4 skär, lång reducering, skaft D6	4 kanallı, uzun boyunlu, gövde çapı 6	1 ~ 6	D.39
4 labios, cuello largo, mango D 6	4 режущих кромки, длинная шейка, хвостовик Ø6 мм	4 ostrzowy, długa szyjka, chwyt D.6		
4 skær, generelt brug	4 skär, allround	4 kanallı, değişken helisel açılı tip	1 ~ 30	D.38
4 labios, para aplicaciones generales	4 режущих кромки, общего назначения	4 ostrzowy do zastosowań ogólnych		
6 skær, variabel helix	6 skär, variabla-helix med differentierade skär	6 kanallı, değişken helisel açılı tip	6 ~ 25	D.31
6 labios, Helice variable	6 режущих кромок с переменным углом наклона витков	6 ostrzowy z nierównomiernym rozkładem zębów		
4 skær, variabel helix	4 skär, variabla-helix med differentierade skär	4 kanallı, değişken helisel açılı tip	3 ~ 25	D.29
4 labios, Helice variable	4 режущих кромок с переменным углом наклона витков	4 ostrzowy z nierównomiernym rozkład rozkładem zębów		
4 skær, vibration-resistant	4 skär, vibrationsdämpande	4 ağızlı, titreşime dayanıklı, çok amaçlı kullanım	3 ~ 12	D.58
4 labios, resistente a la vibración	4 режущих кромки, вибростойкая	4 ostrzowy odporny na wibracje frez multifunkcyjny		
4, 6 skær til stål < 65 HRC	4, 6 skär till stål upp till 65 HRC	4,6 ağızlı < 65 HRC çelikler için	1 ~ 12	D.62
4, 6 labios para aceros < 65 HRC	4 или 6 режущих кромок, для сталей до 65 HRC	4,6 ostrzowy frez do stali < 65 HRC		

CARBIDE

NAME	SPECIFICATION
MULTIFLUTES END MILLS	
 **WX-G-ETSS**	CARBIDE / WX 3 flutes, for stainless steel, titanium and steel 3 denti, per la fresatura di acciai inossidabili, Titanio, acciai
 **WX-G-EMSS**	CARBIDE / WX 4 flutes, cutlength extra short 4 denti, serie extra corta
 **WX-PHS**	CARBIDE / WX 4 flutes, for stainless steel, titanium and steel 4 denti, per la fresatura di acciai inossidabili, Titanio, acciai
 **WX-EMS** Limited Supply	CARBIDE / WX 4 flutes, stub length 4 denti, serie corta
 **FX-MG-EMS** Limited Supply	CARBIDE / FX 4 flutes, stub length 4 denti, serie corta
 **FX-MG-EML** Limited Supply	CARBIDE / FX 4 flutes, long length 4 denti, serie corta
 **FX-MG-EXML** Limited Supply	CARBIDE / FX 4 flutes, extra long length 4 denti, serie extra corta
 **FX-SS-EMS**	CARBIDE / FX 4 flutes, long shank, slim shank 4 denti, gambo lunga, dia del gambo inferiore al dia del taglio
 **HYP-HI-EMS**	CARBIDE / TiAlN 4 flutes, variable lead type 4 denti, passo variabile
 **HYP-HI-WEMS**	CARBIDE / TiAlN 4 flutes, variable lead type, weldon shank 4 denti, passo variabile, weldon
 **FX-MG-EHL**	CARBIDE / FX 3 flutes, long length, high helix 3 denti, serie lunga, elica forte torsione
 **FX-MG-EHS**	CARBIDE / FX 3 of 4 flutes, stub length, high helix 3, 4 denti, serie corta, elica forte torsione
 **FXS-EMS** Limited Supply	CARBIDE / FX 4,6 or 8 flutes, stub length 4,6 o 8 flutes, serie corta
 **FXS-LS-EMS** Limited Supply	CARBIDE / FX 4,6 or 8 flutes, stub length, long shank 4,6 o 8 flutes, serie corta, gambo lungo
 **FXS-EML** Limited Supply	CARBIDE / FX 6 or 8 flutes, long length 6, 8 denti, serie lunga
 **FXS-HPE**	CARBIDE / FX 4 flutes, extra long shank, for slotting 4 denti, extra lunga, per scanalature profonde
 **FX-LN-EMS-6** Limited Supply	CARBIDE / FX 4 flutes, long neck, schank D. 6 4 denti, gambo extra lungo, per scanalature

NAME	SPECIFICATION
	3 Schneiden, für VA Stahl - Titan - und Stahl 3 lèvres, pour inox, titane et aciers
	4 Schneiden, Schneidenlänge : extra kurz 4 lèvres, longueur de coupe extra courte
	4 Schneiden, für VA Stahl - Titan - und Stahl 4 lèvres, pour inox, titane et aciers
	4 Schneiden, Schaftdurchmesser kleiner als Schneide 4 lèvres, série courte
	4 Schneiden, Schaftdurchmesser kleiner als Schneide 4 lèvres, série courte
	4 Schneiden, langer Schaft 4 lèvres, série courte
	4 Schneiden, extra langer Schaft 4 lèvres, série extra courte
	4 Schneiden, langer Schaft 4 lèvres, queue longue, dia queue inférieure au dia de coupe
	4 Schneiden, ungleiche Teilung 4 lèvres, hélice variable
	4 Schneiden, ungleiche Teilung, weldon 4 lèvres, hélice variable, weldon
	3 Schneiden, lange Schaft, High spirale 3 lèvres, série clongue, hélice haute
	3 oder 4 Schneiden, Schaftdurchmesser kleiner als Schneide High spirale 3 ou 4 lèvres, serie courte, hélice haute
	4,6 oder 8 Schneiden, Schaftdurchmesser kleiner als Schneide 4,6 ou 8 lèvres, serie courte
	4,6 oder 8 Schneiden, langer Schaft 4,6 ou 8 lèvres, serie courte, queue courte
	6 oder 8 Schneiden, lange Schaft 6 ou 8 lèvres, série longue
	4 Schneiden, extra langer Schaft 4 lèvres, extra longue queue
	4 Schneiden, langer Schaft, Schaft-durchmesser D. 6 4 lèvres, queue extra-longue, pour rainurage

SPECIFICATION				RANGE	PAGE
MULTIFLUTES END MILLS					
3 skær, til stål, rustfrit stål og Titanium	3 skär, till rostfritt stål, Titanium och stål	3 ağızlı, paslanmaz çelik, Titanyum ve çelik için		3 ~ 16	D.77
3 labios, para aceros inoxidables, Titanium, aceros	3 режущих кромки, для всех нержавеющих сталей, титана, легированных сталей	3 ostrzowy, do stali nierdzewnych, tytanu i stali			
4skær, ekstra kort skærlængde	4 skär, exstra kort skärelängd	4 ağızlı, ekstra kısa kesme kenarı		3 ~ 12	D.78
4 labios, longitud de corte extra corto	4 режущих кромки, особо короткая режущая часть	4 ostrzowy bardzo krótka część robocza			
4 skær til stål, rustfrit stål og Titanium	4 skär, till rostfritt stål, Titanium och stål	4 ağızlı, paslanmaz çelik, Titanyum ve çelik için		3 ~ 20	D.80
4 labios, para aceros inoxidables, Titanium, aceros	3 режущих кромки, для всех нержавеющих сталей, титана, легированных сталей	4 ostrzowy, do stali nierdzewnych, tytanu i stali			
4 skær, stub længde	4 skär, kort längd	4 kanallı, küt helisle uzunluk kazanımı		2 ~ 12	D.79
4 labios, serie corta	4 режущих кромки, короткая длина	4 ostrzowy, krótki			
4 skær, stub længde	4 skär, kort längd	4 kanallı, küt helisle uzunluk kazanımı		2 ~ 12	D.97
4 labios, serie corta	4 режущих кромки, короткая длина	4 ostrzowy, krótki			
4 skær, lang serie	4 skär, lång skärlängd	4 kanallı, uzun kesme uzunluğu		3 ~ 12	D.98
4 labios, serie larga	4 режущих кромки, длинная	4 ostrzowy, długa część robocza			
4 skær, extra lang serie	4 skär, exstra lång skärlängd	4 kanallı, ekstra uzun kesme uzunluğu		3 ~ 12	D.99
4 labios, serie extra larga	4 режущих кромки, особо длинная	4 ostrzowy, extra długa część robocza			
4 skær, langt skaft, tyndt skaft	4 skär, långt skaft, helreducerat skaft	4 kanallı, uzun şaft, ince şaft		6 ~ 12	D.100
4 labios, mango larga, cuello delgado	4 режущих кромки, утоненный хвостовик	4 ostrzowy, długi chwyt, średnica chwytu mniejsza od ostrza			
4 skær, variabel helix	4 skär, variabla-helix med differentierade skär	4 kanallı, değişken helisel açılı tip		4 ~ 20	D.109
4 labios, Helice variable	4 режущих кромки, переменный шаг спиралей	4 ostrzowy z nierównomiernym rozkładem zębów			
4 skær, variabel helix, Weldon skaft	4 skär, variabla-helix med differentierade skär, Weldon	4 kanallı, değişken helisel açılı tip, weldon şaftlı		4 ~ 20	D.109
4 labios, Helice variable, Weldon	4 режущих кромки, переменный шаг спиралей, для Weldon	4 ostrzowy z nierównomiernym rozkład rozkładem zębów, Weldon			
3 skær, lang serie, skærkt snoet	3 skär, lång skärlängd	4 kanallı, uzun helisle uzunluk kazanımı, yüksek helis açısı		6 ~ 12	D.103
3 labios, serie larga	3 режущих кромки, длинная серия, крутая спираль	4 ostrzowy, długa część robocza, duża spirala			
3, 4 skær, stub længde	3 eller 4 skär, kort längd	4 kanallı, küt helisle uzunluk kazanımı, yüksek helis açısı		3 ~ 20	D.102
3, 4 labios, serie corta	3 или 4 режущих кромки, короткая длина, крутая спираль	4 ostrzowy, krótka część robocza, duża spirala			
4, 6, 8 skær, stub længde	4, 6 eller 8 skär, kort längd	4,6,8 kanallı, küt helisle uzunluk kazanımı		1 ~ 30	D.122
4, 6, 8 labios, serie corta	4,6 или 8 режущих кромок, короткая длина	4,6,8 ostrzowy, krótka część robocza			
4, 6, 8 skær, stub længde, langt skaft	4, 6 eller 8 skär, lång skärlängd, långt skaft	4,6,8 kanallı, küt helisle uzunluk kazanımı, uzun şaft		3 ~ 30	D.123
4, 6, 8 labios, serie corta, mango larga	4,6 или 8 режущих кромок, короткая длина режущей, длинный хвостовик	4,6,8 ostrzowy, krótka część robocza, długi chwyt			
6, 8 skær, lang serie	6 eller 8 skär, lång skärlängd	6,8 kanallı, uzun kesme uzunluğu		6 ~ 25	D.124
6,8 labios, serie larga	6 или 8 режущих кромок, длинная	6,8 ostrzowy, krótka część robocza			
4 skær, extra lang serie, til sporfræsning	4 skär, exstra långt helreducerat skaft, till spårfräsning	4 kanallı, ekstra uzun şaft, slot kesim için parmak freze		10 ~ 22	D.125
4 labios, serie extra larga, para ranurado	4 режущих кромки, особо длинный хвостовик, фрезерование пазов	4 ostrzowy, extra długi chwyt, frez do rowków			
4 skær, long neck, skaft D 6	4 skär, lång reducering, skaft D6	4 kanallı, uzun boyunlu, gövde çapı 6		1 ~ 6	D.101
4 labios, cuello largo, mango D 6	4 режущих кромки, длинная шейка, хвостовик Ø6 мм	4 ostrzowy, długa szyjka, chwyt D.6			

INDEX

NAME		SPECIFICATION	
MULTIFLUTES END MILLS			
 CA-ETS	CARBIDE	3 flutes, stub length for Al & Cu 3 denti, serie corta per Al & Cu	3 Schneiden, Schneidenlänge : kurz für Al & Cu 3 lèvres série courte pour Al & Cu
 CRN-EMS Limited Supply	CARBIDE CrN	4 flutes, stub length, finishing Al, Cu and plastic 4 denti, serie corta, per finiture su allumi-nio, rame e plastica	4 Schneiden, Schaftdurchmesser kleiner als Schneide, für Alu - Kupfer Legierungen, plastik 4 lèvres, série courte, finition Al, Cu et plastiques
 HYP-ETS-TIAIN	CARBIDE TiAlN	3 flutes, centre cutting, short series 3 denti, taglio al centro, serie corta	3 Schneiden, Zentrumschneidend, Kurzer Hals 3 lèvres, coupe au centre, série courte
 HYP-ETS	CARBIDE	3 flutes, centre cutting, short series 3 denti, taglio al centro, serie corta	3 Schneiden, Zentrumschneidend, Kurzer Hals 3 lèvres, coupe au centre, série courte
 HYP-EMS-TiAlN	CARBIDE TiAlN	4 flutes, centre cutting, short series 4 denti, taglio al centro, serie corta	4 Schneiden, Zentrumschneidend, Kurzer Hals 4 lèvres, coupe au centre, série courte
 HYP-EMS	CARBIDE	4 flutes, centre cutting, short series 4 denti, taglio al centro, serie corta	4 Schneiden, Zentrumschneidend, Kurzer Hals 4 lèvres, coupe au centre, série courte
 MG-EMS	CARBIDE	4 flutes, centre cutting, short series 4 denti, taglio al centro, serie corta	4 Schneiden, Zentrumschneidend, Kurzer Hals 4 lèvres, coupe au centre, série courte
 MG-EML	CARBIDE	4 flutes, centre cutting, long series 4 denti, taglio al centro, serie lunga	4 Schneiden, Zentrumschneidend, Langer Hals 4 lèvres, coupe au centre, série longue
ROUGHING END MILLS			
 HYP-HP-WRESF	CARBIDE TiAlN	4 flutes, for roughing, weldon shank 4 denti, frese a sgrossare, weldon	4 Schneiden, Schruppfräser, weldon 4 lèvres, fraise pour l'ébauche, weldon
COUNTERBORING END MILLS			
 HYP-ZDS NEW	CARBIDE TiAlN	2 flutes, counterboring 2 denti, lamatura	2 Schneiden , Anspiegelfläche 2 lèvres, chanfreinage

SPECIFICATION				RANGE	PAGE
MULTIFLUTES END MILLS					
3 skær, stub længde, til Al & Cu legeringer	3 skär, kort längd, för Al & Cu legering	3 kanallı, küt helisle uzunluk kazanımı, Al & Cu		3 ~ 20	D.137
3 labios, para Al & Cu aleado	3 режущих кромки, короткая, для алюминия и меди	4 ostrzowy, krótka część robocza, do Al & Cu			
4 skær, Stub længde sletfræsning Al, Cu, plastik	4 skär, kkort längd, finbearbetning. Al., Cu og plast	4 kanallı, küt helisle uzunluk kazanımı, Alüminyum, bakır ve plastik hassas işleme		3 ~ 12	D.142
4 labios, Serie corta, acabado Al, Cu, plàsticos	4 кромки, короткая, чистовая обработка алюминия, меди и пластиков	4 ostrzowy, typ krótki obr. wykańczająca Al, Cu oraz tworzyw			
3 skær, borende, kort serie	3 skär, borrande, kort utförande	3 kanallı, merkezden kesme, kisa seri		1 ~ 25	D.147
3 labios, corte central, serie corta	3 режущих кромки, режущий центр, короткая серия	3 ostrzowy, centralne ostrze, krótka seria			
3 skær, borende, kort serie	3 skär, borrande, kort utförande	3 kanallı, merkezden kesme, kisa seri		1 ~ 25	D.148
3 labios, corte central, serie corta	3 режущих кромки, режущий центр, короткая серия	3 ostrzowy, centralne ostrze, krótka seria			
4 skær, borende, kort serie	4 skär, borrande, kort utförande	4 kanallı, merkezden kesme, kisa seri		1 ~ 25	D.149
4 labios, corte central, serie corta	4 режущих кромки, режущий центр, короткая серия	4 ostrzowy, centralne ostrze, krótka seria			
4 skær, borende, kort serie	4 skär, borrande, kort utförande	4 kanallı, merkezden kesme, kisa seri		1 ~ 25	D.150
4 labios, corte central, serie corta	4 режущих кромки, режущий центр, короткая серия	4 ostrzowy, centralne ostrze, krótka seria			
4 skær, borende, kort serie	4 skär, borrande, kort utförande	4 kanallı, merkezden kesme, kisa seri		2 ~ 16	D.156
4 labios, corte central, serie corta	4 режущих кромки, режущий центр, короткая серия	4 ostrzowy, centralne ostrze, krótka seria			
4 skær, borende, lang serie	4 skär, borrande, långt utförande	4 kanallı, merkezden kesme, uzun seri		3 ~ 12	D.157
4 labios, corte central, serie larga	4 режущих кромки, режущий центр, длинная серия	4 ostrzowy, centralne ostrze, długa seria			
ROUGHING END MILLS					
4 skær, til skrubfræsning, weldon skaft	4 skär, till skrubbfräsning, Weldon	4 ağızlı, kaba, weldon şaftlı		6 ~ 25	D.106
4 labios para desbaste, weldon	4 режущих кромки, для черновой обработки, Weldon	4 ostrzowy, obr. zgróbna, chwyt Weldon			
COUNTERBORING END MILLS					
2 skær, undersænkning	2 skär, försänkning	2 ağızlı, kontur Baralama		4 ~ 10	D.104
2 taladrado, plano	2 режущих кромки, для фрезерования, зенкования,обточки	2 ostrzowy, pogłębianie			

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END MILLS SELECTION CHART

Type	Appearance		coating	Z	Hardened Steel ~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG ~350 HB	Cu	Al	Graphite	Ti	HRS	Plast.	CFRP	range
For CFRP - Für CFRP - Per CFRP - Pour CFRP - CFPR malzemesi için - For CFRP - För CFRP - Para CFRP - Для CFRP - Do materiału CRFP																			
DIA-BNC		D.27	DIA	8/12														◎	6 ~ 12
DIA-HBC		D.28	DIA	4/6														◎	6 ~ 12
For general use - Allgemeine Anwendungen - Per una vasta gamma di applicazioni - Multi fonction - Genel uygulamalar için All-round anvendelse - För diverse applikationer - Para aplicaciones generales - Общего назначения - Do zastosowań ogólnych																			
WXL-1,5D-DE		D.34	WXL	2	◎	◎	◎			◎	◎	◎	○		○	○			0,1 ~ 6
WXL-2D-DE		D.35	WXL	2	◎	◎	◎			◎	◎	◎	○		○	○			0,1 ~ 20
WXL-3D-DE		D.36	WXL	2	◎	◎	◎			◎	◎	◎	○		○	○			0,1 ~ 20
WXL-4D-DE		D.37	WXL	2	◎	◎	◎			◎	◎	◎	○		○	○			0,2 ~ 12
WXL-EMS		D.38	WXL	4	◎	◎	◎			◎	◎	◎	○		○	○			1 ~ 30
WX-EDS	Limited Supply	D.76	WX	2	◎	◎	○	○		○	◎	○	○		○	○			0,2 ~ 12
WX-EMS	Limited Supply	D.79	WX	4	◎	◎	○	○		○	◎	○	○		○	○			2 ~ 12
FX-MG-EDS	Limited Supply	D.90-91	FX	2	◎	◎	○	○		○	◎	○	○		○	○			0,2 ~ 12
FX-MG-EDL	Limited Supply	D.92	FX	2	◎	◎	○			○	◎	○	○		○	○			1 ~ 12
FX-MG-EXDL	Limited Supply	D.93	FX	2	◎	◎	◎	○		○	◎	○	○		○				3 ~ 12
FX-SS-EDS		D.94	FX	2	◎	◎	○	○		○	◎	○	○		○	○			6 ~ 12
FX-EDS-6	Limited Supply	D.95	FX	2	◎	◎	◎	○		○	◎	○	○		○	○			0,2 ~ 2,5
FX-MG-EMS	Limited Supply	D.97	FX	4	◎	◎	○	○		○	◎	○	○		○	○			2 ~ 12
FX-MG-EML	Limited Supply	D.98	FX	4	◎	◎	○			○	◎	○	○		○	○			3 ~ 12
FX-MG-EXML	Limited Supply	D.99	FX	4	◎	◎				○	◎	○	○		○				3 ~ 12
FX-SS-EMS		D.100	FX	4	◎	◎	○	○		○	◎	○	○		○	○			6 ~ 12
HYP-HI-EMS		D.109	TiAlN	4	◎	◎	○			◎	◎				◎	◎			4 ~ 20
HYP-HI-WEMS		D.109	TiAlN	4	◎	◎	○			◎	◎				◎	◎			4 ~ 20
For mass production - Massenproduktion - Per grande produzione - Pour grande production - Büyük imalatlar For stor produktion - Hög produktivitet - gran producción - Для массового производства - Do masowej produkcji																			
NEO-PHS		D.29	FX	4	◎	◎	○			◎	◎				◎	◎			3 ~ 25
UP-PHS		D.58	FX	4	◎	◎	○			◎	◎	○	○		◎	○			3 ~ 12
WX-G-EDSS		D.75	WX	2	◎	◎	○	○		○	◎	○	○		○	○			1 ~ 12
WX-G-ETSS		D.77	WX	3	◎	◎	○			◎					◎				3 ~ 16
WX-G-EMSS		D.78	WX	4	◎	◎	○	○		○	◎	○	○		○	○			3 ~ 12
WX-PHS		D.80	WX	4	◎	◎	○	○		◎	◎	○	○		◎	◎			3 ~ 20
For hardened steel - Für Gehärteter Stahl - Per Aciai temprati - Pour acier trempé - Sertleştirilmiş çelikler For hærdet stål - För härdat stål - Para aceros endurecidos - Для закаленной стали- Stale hartowane																			
WXS-EMS		D.62	WXS	4 / 6	◎	◎	◎	◎	○	○	◎				○	○			1 ~ 12
FXS-EMS	Limited Supply	D.122	FX	4/6/8	◎	◎	◎	◎	○	○	◎				○	○			1 ~ 30
FXS-LS-EMS	Limited Supply	D.123	FX	4/6/8	◎	◎	◎	◎	○	○	◎				○	○			3 ~ 30
FXS-EML	Limited Supply	D.124	FX	6 / 8	◎	◎	◎	◎		○	◎				○	○			6 ~ 25
FXS-HPE		D.125	FX	4	◎	◎	◎	○		○	◎				○	○			10 ~ 22
For exotic material (heat resistant) - Für Hitzebeständige Legierungen - Per acciaio resistente alle alte temperature - Pour alliage à haute résistance thermique - Isıya dayanıklı çelikler Eksotiske materiale - Exotiska material - Para exoticos materiales - Для экзотических материалов (жаростойких) - Do materiałów egzotycznych																			
NEO-EMS		D.31	FX	6	◎	◎	◎	○		◎	◎				◎	◎			6 ~ 25
FX-MG-EHS		D.102	FX	3 / 4	◎	◎	○	○		◎	◎	○	○		◎	◎			3~ 20
FX-MG-EHL		D.103	FX	3	◎	◎	○			◎	◎				◎	◎			6 ~ 12
For roughing - Schruppen - Sgrossatura - Ebauche - Kaba For skrubfræsning - För grovfräsning - Para desbaste - Для черновой обработки - Zgrubna																			
HYP-HP-WRESF		D.106	TiAlN	4/6	◎	◎				○	○								6 ~ 25
Counterboring - Anspiegelfläche - Lamatura - Chanfreinage - Kontur Baralama Undersænkning - Försänkning - Taladrado plano - для фрезерования,зенкования,обточки - Pogłębianie																			
HYP-ZDS	NEW	D.104	TiAlN	2	◎	○				◎	◎		○						4 ~ 10

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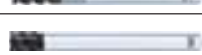
END MILLS SELECTION CHART

Type	Appearance		coating	Z	Hardened Steel ~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG ~350 HB	Cu	Al	Graphite	Ti	HRS	Plast.	CFRP	range
For deep slotting - Rippenfräsen - Per fresatura di pareti profonde - Rainurage profond - Derin slot kesim Dyb sporfræsning - Djup spårfräsning - Ranurado profundo - Для глубоких пазов - Głębokie szczeliny, rowki																			
WXL-LN-EDS		D.40~42	WXL	2	◎	◎	○	○		○	◎	◎	○		○	○			0,2 ~ 5
WX-LN-EDS	Limited Supply	D.81~83	WX	2	◎	◎	◎	○		○	◎	○	○		○	○			0,2 ~ 5
FX-LN-EDS-6	Limited Supply	D.96	FX	2	◎	◎	◎	○		○	◎	○	○		○	○			0,5 ~ 2,5
FX-LN-EMS-6	Limited Supply	D.101	FX	4	◎	◎	◎	○		○	◎	○	○		○	○			1 ~ 6
WXL-LN-EMS-6	NEW	D.39	WXL	4	◎	◎	◎	○		○	◎	○	○		○	○			1 ~ 6
Ball nose ~ 50 HRC - Kopierfräser ~ 50 HRC -Frese sferiche ~ 50 HRC - Fraise hémisphérique ~ 50 HRC - ~ 50 HRC Küre Radiusfræser ~ 50 HRC - Fullradie ~ 50 HRC - Esferica ~ 50 HRC - Сферическая фреза ~ 50 HRC - Frez kulisty ~ 50 HRC																			
WXL-EBD		D.44	WXL	2	◎	◎	◎			◎	◎	◎	○		○	○			R0,05 ~ R10
WXL-LN-EBD		D.45~50	WXL	2	◎	◎	◎			◎	◎	◎	○		○	○			R0,05 ~ R3
WXL-PC-EBD		D.51~54	WXL	2	◎	◎	◎			◎	◎	◎	○		○	○			R0,1 ~ R3
WX-EBD	Limited Supply	D.84	WX	2	◎	◎	◎	○		◎	◎	○	○		○	○			R0,2 ~ R6
WX-LN-EBD	Limited Supply	D.85-86	WX	2	◎	◎	○	○		◎	◎	○	○		○	○			R0,1 ~ R3
FX-MG-EBD-3	Limited Supply	D.112	FX	2	◎	◎	◎	○		◎	◎	○	○		○	○			R0,2~ R1,5
FX-HS-EBDS	Limited Supply	D.113	FX	2	◎	◎	◎	◎	○	◎	◎	○	○		○	○			R1,5 ~ R6
FX-MG-EBD	Limited Supply	D.114	FX	2	◎	◎	◎	○		◎	◎	○	○		○	○			R0,5 ~ R15
FX-SS-EBD		D.115	FX	2	◎	◎	◎	○		◎	◎	○	○		○	○			R3 ~ R6
FX-EBD-6	Limited Supply	D.116	FX	2	◎	◎	◎	○		◎	◎	○	○		○	○			R0,1 ~ R3
FX-LN-EBD-6	Limited Supply	D.117	FX	2	◎	◎	◎	○		◎	◎	○	○		○	○			R0,25 ~ R3
FX-PC-MG-EBD	Limited Supply	D.118	FX	2	◎	◎	◎	○		◎	◎	○	○		○	○			R0,5 ~ R6
HYP-SB-EBD		D.111	TiAlN	2	◎	◎	◎			○	◎	○	○						R1,5 ~ R6
Ball nose hardened steel > 50 HRC - Kopierfräser > 50 HRC - Frese sferiche > 50 HRC - Fraise hémisphérique > 50 HRC -> 50 HRC Sertleştirilmiş, Küre - Radiusfræser hærdet stål > 50 HRC - Fullradie hårdat stål > 50 HRC - Esferica aceros endurecidos > 50 HRC - Сферические концевые фрезы для закаленных сплавов - Frez Stale hartowane > 50 HRC																			
WXS-HS-EBD		D.63	WXS	2	◎	◎	◎	◎	○	◎	◎				○	○			R0,5 ~ R6
WXS-EBD		D.64	WXS	2	◎	◎	◎	◎	○	◎	◎				○	○			R0,5 ~ R6
PHX-LN-DBT	NEW	D.33	WXS	3	◎	◎	◎	○		○	○	○	○		○	○			R0,5 ~ R3
WXS-LN-EBD		D.65~68	WXS	2	○	○	◎	◎	○	○	○	○	○		○	○			R0,05 ~ R3
FXS-EQD		D.126	FX	2	◎	◎	◎	○		◎	◎				○	○			R0,5 ~ R5
FXS-EBT		D.127	FX	3	◎	◎	◎	◎	○										R3 ~ R10
FXS-HS-EBM		D.128	FX	4	◎	◎	◎	◎	◎										R3 ~ R10
FXS-EBM		D.129	FX	4	◎	◎	◎	◎	◎										R3 ~ R10
Ball nose mirror finish ~ 68 HRC - Kopierfräser für Superfinishing ~ 68 HRC - Frese sferiche er super finitura ~ 68 HRC - Fraise hémisphérique finition miroir ~ 68 HRC - ~ 68 HRC küre Super finiş Radiusfræser spejlblank finish ~ 68 HRC - Radiefräsar för fin finish ~ 68 HRC - Punta esférica acabado espejo ~ 68 HRC - Сферические концевые фрезы для зеркальной чистоты поверхности ~ 68 HRC - Frez kulisty super wykańczająca ~ 68 HRC																			
CBN-SXB		D.134	CrN	2	○	◎	◎	◎	◎										R0,5 ~ R1,5
Corner radius - Mehrschneider mit Eckenradius - Frese toriche - Fraise à rayon - Köşe radyuslu Hjørneradius - Hörnradie - Vertice radio - Концевые фрезы с радиусом - Promień naroża																			
WXS-CPR		D.69~74	WXS	2/4	◎	◎	◎	◎		◎									0,2 ~ 4
WX-HS-CRE		D.87	WX	4	◎	◎	◎	◎	○		◎								6 ~ 12
WX-CRE		D.88	WX	3/4	◎	◎	◎	◎	○		◎								2 ~ 13
WXS-HS-CRE		D.59	WXS	5	◎	◎	◎	◎	◎		◎								6 ~ 12
WXS-CRE		D.60	WXS	4/5	◎	◎	◎	◎	◎		◎								2 ~ 12
WXS-CR-EMS	NEW	D.61	WXS	6	◎	◎	◎	◎	○	○	◎				○	○			6 ~ 12
HYP-HS-CRE		D.110	TiAlN	4	◎	◎	◎	◎	○		◎								6 ~ 12
NEO-CR-PHS		D.30	FX	4	◎	◎	○			◎	◎				◎	◎			3 ~ 25

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END MILLS SELECTION CHART

Type	Appearance		coating	Z	Hardened Steel					SUS	GG	Cu	Al	Graphite	Ti	HRS	Plast.	CFRP	range
					~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	~35 HRC	~350 HB								
WX-CR-PHS		D.89	FX	4	◎	◎	○	○		◎	◎	○	○		◎	◎			3 ~ 20
WXL-CR-EDS-6	 NEW	D.43	WXL	2	◎	◎	◎	○		○	◎	○	○		○	○			0,6 ~ 2,5
FX-CR-EDS-6	 Limited Supply	D.119	FX	2	◎	◎	◎	○		○	◎	○	○		○	○			0,6 ~ 2,5
FX-CR-MG-EDS		D.120	FX	2	◎	◎	○	○		○	◎	○	○		○	○			3 ~ 12
NEO-CR-EMS		D.32	FX	4	◎	◎	◎	○		◎	◎				◎	◎			6 ~ 25
FX-CR-MG-EMS		D.121	FX	4	◎	◎	◎	○		○	◎	○	○		○	○			4 ~ 12
HYP-CR-HI-WEMS		D.107	TiAlN	4	◎	◎	○			◎	◎				◎	◎			4 ~ 20
HYP-CR-HD-WEMS		D.108	TiAlN	4	◎	◎	○			◎	◎				◎	◎			6 ~ 20
HYP-CR-EMS		D.151	TiAlN	4	○	○				○	○		○						5 ~ 20
FXS-HS-PKE		D.130	FX	4	◎	◎	◎	○		◎	◎				◎	◎			6 ~ 20
FXS-PKE		D.131	FX	4	◎	◎	◎	○		◎	◎				◎	◎			3 ~ 12
FXS-MFE		D.132	FX	4	◎	◎	◎	○		○	◎				○	○			10 ~ 22
FXS-CR-EMS	 Limited Supply	D.133	FX	6	◎	◎	◎	◎	○	○	◎				○	○			6 ~ 16
For aluminium - Für Aluminium - Per alluminio - Pour aluminium - Alüminyum Til aluminium - Till aluminium - Para aluminio - Для алюминия - Aluminium																			
CA-RG-EDS		D.135		2								◎	◎				○		1 ~ 20
CA-RG-EDL		D.136		2								◎	◎				○		3 ~ 12
CA-ETS		D.137		3								◎	◎						3 ~ 20
CAP-EBD		D.138		2								◎	◎						R0,5 ~ R10
CA-PKE		D.139		3								◎	◎						3 ~ 20
CA-MFE		D.140		3								◎	◎						10 ~ 22
HYP-F1	 NEW	D.105		1									○				○		3 ~ 12
For copper - Für Kupferlegierungen - Per rame - Pour cuivre - Bakır For Kobber - För Koppar - Para cobre - Для меди - Miedź																			
CRN-LN-EDS	 Limited Supply	D.141	CrN	2								◎	○						0,5 ~ 12
CRN-EMS	 Limited Supply	D.142	CrN	4								◎	○						3 ~ 12
CRN-EBD	 Limited Supply	D.143	CrN	2								◎	○						R3 ~ R6
CRN-LN-EBD	 Limited Supply	D.144	CrN	2								◎	○						R0,5 ~ R2,5
For graphite - Für Graphit - Per grafite- Pour Graphite - Grafit for grafit - för grafit - Para grafito - для графита - Grafit																			
DG-EBD		D.55	DG	2										◎					R2 ~ R6
DG-LN-EBD		D.56	DG	2										◎					R0,2 ~ R2
DG-CPR		D.57	DG	2/4										◎					0,5 ~ 12

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DIA-BNC

DIA
- High performance
- For CFRP material
- Multiflutes
- Trimming & Plunging operation
- For thin material

DIA
- High performance
- Für CFRP Werkstoffe
- Vielzahnfräser
- Umsäum und Tauchbearbeitungen
- Für Dünnwandige Werkstücke

DIA
- Alta prestazione
- Per materiali compositi CFRP
- Multitaglio
- Rifilatura operazioni in spinta
- Per materiali sottili

DIA
- Haute performance
- Pour matériaux composites
- Multidents
- Opération de contournage, rainurage et plongée
- Pour les matières de faible épaisseur

DIA
- Yüksek performans
- CFPR malzemesi için
- Çok ağızlı
- Çapak Alma ve Daldırma işlemi
- İnce malzemeler için

DIA
- High performance
- For CFRP materiale
- Flerskærs
- Til sidetrimning og udfræsning
- For tynde materialer

DIA
- High performance
- För CFRP material
- Flerskärig
- Trimning och plunging operationer
- För tunt material

DIA
- Altas prestaciones
- Para fibras CFRP
- Multi-diente
- Operaciones de corte y penetrado
- Para plancha delgada

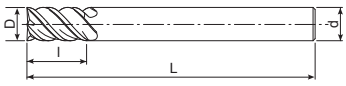
DIA
- Высокая производительность
- Для углепластика
- Многозубая
- Обрезка и плунжерное фрезерование
- Для тонких материалов

DIA
- Wysoka wydajność
- Do materiału CRFP
- Wieloostrzowy
- Obróbka konturowa i czołowa (Trimming & Plunging)
- Dla cienkich materiałów

GO TO LIVE STOCK CHECK

DIA

CARBIDE DIA





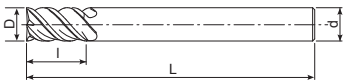
DIA

CARBIDE

FOR TRIMMING OPERATION

EDP	D	L	l	d	ZΔ	Stock	Price
48108001	6	68	18	6	8	○	
48108002	8	74	24	8	10	○	
48108003	10	80	30	10	12	○	
48108004	12	86	36	12	14	○	
20601116	1/8	1 1/2	3/4	1/8	8	○	
20601316	1/4	2 1/2	1	1/4	12	○	
20601516	3/8	2 1/2	1 1/4	3/8	12	○	
20601716	1/2	3	1 1/2	1/2	12	○	

CARBIDE DIA



FOR TRIMMING & PLUNGING OPERATION

EDP	D	L	l	d	ZΔ	Stock	Price
48108011	6	68	18	6	8	○	
48108012	8	74	24	8	10	○	
48108013	10	80	30	10	12	○	
48108014	12	86	36	12	14	○	
20600116	1/8	1 1/2	3/4	1/8	8	○	
20600316	1/4	2 1/2	1	1/4	12	○	
20600516	3/8	2 1/2	1 1/4	3/8	12	○	
20600716	1/2	3	1 1/2	1/2	12	○	

Recommanded Cutting Conditions

	Side Milling		Slotting	
Speed m/min.	120	240	90	180
Depth of Cut	Aa: Up to 1,5D / Ar: Up to 1D		Aa: 1D	
Dia.	Feed mm/min.	Feed mm/min.	Feed mm/min.	Feed mm/min.
1/8	500	1.000	250	500
3/16	630	1.300	300	600
1/4 6mm	770	1.600	380	750
5/16 8mm	900	1.800	450	900
3/8 10mm	1.000	2.000	510	1.000
1/2 12mm	1.300	2.600	630	1.300

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	CFRP
						◎

● Delivery from stock
○ Available on short notice

DIA-HBC

DIA
- High performance
- For CFRP material
- 4,6 flutes
- For thick material

DIA
- High performance
- Für CFRP Werkstoffe
- 4,6 Nuten
- Für stabile Werkstücke (Dickwandig)

DIA
- Alta prestazione
- Per materiali compositi CFRP
- 4,6 denti
- Per spessori elevati

DIA
- Haute performance
- Pour matériaux composites
- 4,6 dents
- Pour les matères épaisses

DIA
- Yüksek performans
- CFPR malzemesi için
- 4,6 ağızlı
- Kalın malzemeler için

DIA
- High performance
- For CFRP materiale
- 4, 6 skær
- For tykke materialer

DIA
- High performance
- För CFRP material
- 4 och 6 skäriga
- För tjockt material

DIA
- Altas prestaciones
- Para fibras CFRP
- 4,6 dietes
- Para plancha gruesa

DIA
- Высокая производительность
- Для углепластика
- 4-6 зубов
- Для толстых материалов

DIA
- Wysoka wydajność
- Do materiału CRFP
- 4,6 ostrzowy
- W przypadku grubego materiału

GO TO LIVE STOCK CHECK

DIA

CARBIDE DIA





DIA

CARBIDE

CARBIDE

FOR MILLING OPERATION

EDP	D	L	l	l1	d	ZΔ	Stock	Price
48109001	6	65	15	7,5	6	4	○	
48109002	8	70	20	10	8	4	○	
48109003	10	75	25	12,5	10	4	○	
48109004	12	100	30	15	12	4	○	
20650116	1/8	1 1/2	1/2	0,135	1/8	4	○	
20650316	1/4	2 1/2	3/4	0,225	1/4	6	○	
20650516	3/8	2 /12	1	0,338	3/8	6	○	
20650716	1/2	3	1 1/8	0,45	1/2	6	○	

Recommanded Cutting Conditions

	Side Milling		Slotting	
Speed m/min.	**120**	**240**	**90**	**180**
Depth of Cut	**Aa: Up to 1,5D / Ar: Up to 1D**		**Aa: 1D**	
Dia.	**Feed mm/min.**	**Feed mm/min.**	**Feed mm/min.**	**Feed mm/min.**
1/8	500	1.000	250	500
1/4 6mm	770	1.600	380	750
8 mm	900	1.800	450	900
3/8 10mm	1.000	2.000	510	1.000
1/2 12mm	1.300	2.600	630	1.300

Note: This table's parameters are based on common material thickness of approximately 0.250" under excellent workholding conditions and less than 20% x D depth of cut (side milling). Please adjust your parameters properly for your application or call OSG for assistance. Conventional milling is recommended for better surface finishes. Higher feed rates are possible but quality of part and surface should be considered.

Feed Reduction by Thickness of Part: Recommended feed adjustments based on thickness of part.
(Above table is based on approximately 1xD thickness.)

≤0,5D	x 150%
0,5D-1D	x 120%
1D-2D	x 80%
3D-4D	x 50%

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	CFRP
						◎

● Delivery from stock
○ Available on short notice

NEO-PHS

NEO
- High performance
- Introducing highly evolved "variable-lead" shape.
- Suppresses chattering, allowing for outstanding milling performances.

NEO
- High performance
- Einführung neuer und Hoch entwickelter Schneidengeometrie mit "ungleicher Teilung"
- Reduziert Vibrationen und sorgt für hervorragende Fräs Ergebnisse

NEO
- Alta prestazione
- Introduzione innovativo sviluppo della geometria a "Passo Variabile"
- Elimina vibrazioni permettendo eccellenti prestazioni di fresatura

NEO
- Haute performance
- Hélice à géométrie variable
- Empêche les vibrations et permet des performances extraordinaire

NEO
- Yüksek performans
- Son derece gelişmiş "değişken helisel açılı" yapının kullanımı
- Tırlamayı önler, olağanüstü frezeleme performası elde edilir

NEO
- High performance
- Variabel helix
- Modvirker vibrationer og giver en enestående fræse performance

NEO
- High performance
- Variabel helix
- Motverkar vibrationer hög avverkning

NEO
- Altas prestaciones
- Introduce la helice veriable
- Suprime la vibración permitiendo excelentes prestaciones

NEO
- Высокая производительность
- Представляем фрезу с переменным углом наклона витков
- Подавление вибраций обеспечивает выдающуюся производительность

NEO
- Wysoka wydajność
- Przedstawiamy frezy ze zmienną spiralą
- Redukuje wibracje, co pozwala na osiągnięcie wyjątkowo dobrych wyników frezowania

GO TO LIVE STOCK CHECK

NEO

CARBIDE

FX

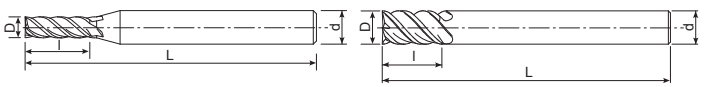
36°~39°

SHRINK FIT

D ≥ 12 0~-0.03

D ≤ 12 0~-0.02

min⁻¹ D.158



Type 1

Type 2



EDP	D	L	l	d	Type	Stock	Price
8529230	3	50	6	6	1	●	
8529240	4	50	8	6	1	●	
8529250	5	50	10	6	1	●	
8529260	6	50	12	6	2	●	
8529280	8	60	16	8	2	●	
8529300	10	70	20	10	2	●	
8529320	12	75	24	12	2	●	
8529360	16	100	32	16	2	●	
8529400	20	105	40	20	2	●	
8529450	25	120	50	25	2	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			◎	◎		

● Delivery from stock
○ Available on short notice

NEO-CR-PHS

NEO

- High performance
- Introducing highly evolved "variable-lead" shape.
- Suppresses chattering, allowing for outstanding milling performances.

NEO

- High performance
- Einführung neuer und Hoch entwickelter Schneidengeometrie mit "ungleicher Teilung"
- Reduziert Vibrationen und sorgt für hervorragende Fräs Ergebnisse

NEO

- Alta prestazione
- Introduzione innovativo sviluppo della geometria a "Passo Variabile"
- Elimina vibrazioni permettendo eccellenti prestazioni di fresatura

NEO

- Haute performance
- Hélice à géométrie variable
- Empêche les vibrations et permet des performances extraordinaire

NEO

- Yüksek performans
- Son derece gelişmiş "değişken helisel açılı" yapının kullanımı
- Tırlamayı önler, olağanüstü frezeleme performası elde edilir

NEO

- High performance
- Variabel helix
- Modvirker vibrationer og giver en enestående fræse performance

NEO

- High performance
- Variabel helix
- Motverkar vibrationer hög avverkning

NEO

- Altas prestaciones
- Introduce la helice veriable
- Suprime la vibración permitiendo excelentes prestaciones

NEO

- Высокая производительность
- Представляем фрезу с переменным углом наклона витков
- Подавление вибраций обеспечивает выдающуюся производительность

NEO

- Wysoka wydajność
- Przedstawiamy frezy ze zmienną spiralą
- Redukuje wibracje, co pozwala na osiągnięcie wyjątkowo dobrych wyników frezowania

GO TO LIVE STOCK CHECK

NEO

CARBIDE

FX

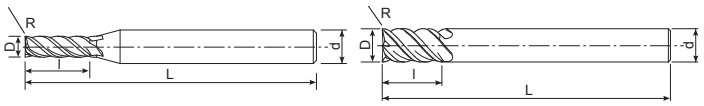
36°~39°

SHRINK FIT

D ≥ 12 0~-0.03

D ≤ 12 0~-0.02

min⁻¹ D.158



Type 1

Type 2



EDP	D	R	L	l	d	Type	Stock	Price
8529531	3	0,2	50	6	6	1	●	
8529533	3	0,5	50	6	6	1	●	
8529541	4	0,2	50	8	6	1	●	
8529543	4	0,5	50	8	6	1	●	
8529545	4	1	50	8	6	1	●	
8529551	5	0,2	50	10	6	1	●	
8529553	5	0,5	50	10	6	1	●	
8529555	5	1	50	10	6	1	●	
8529562	6	0,3	50	12	6	2	●	
8529563	6	0,5	50	12	6	2	●	
8529565	6	1	50	12	6	2	●	
8529582	8	0,3	60	16	8	2	●	
8529583	8	0,5	60	16	8	2	●	
8529585	8	1	60	16	8	2	●	
8529587	8	1,5	60	16	8	2	●	
8529589	8	2	60	16	8	2	●	
8529602	10	0,3	70	20	10	2	●	
8529603	10	0,5	70	20	10	2	●	
8529605	10	1	70	20	10	2	●	
8529607	10	1,5	70	20	10	2	●	
8529609	10	2	70	20	10	2	●	
8529613	10	3	70	20	10	2	●	
8529633	12	0,5	75	24	12	2	●	
8529635	12	1	75	24	12	2	●	
8529637	12	1,5	75	24	12	2	●	
8529639	12	2	75	24	12	2	●	
8529643	12	3	75	24	12	2	●	
8529662	16	1	100	32	16	2	●	
8529663	16	1,5	100	32	16	2	●	
8529664	16	2	100	32	16	2	●	
8529665	16	3	100	32	16	2	●	
8529682	20	1	105	40	20	2	●	
8529684	20	2	105	40	20	2	●	
8529685	20	3	105	40	20	2	●	
8529686	20	4	105	40	20	2	●	
8529687	20	5	105	40	20	2	●	
8529702	25	1	120	50	25	2	○	
8529704	25	2	120	50	25	2	○	
8529705	25	3	120	50	25	2	○	
8529706	25	4	120	50	25	2	○	
8529707	25	5	120	50	25	2	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		◎	◎		

● Delivery from stock
○ Available on short notice

NEO-EMS

NEO

- High performance
- Introducing highly evolved "variable-lead" shape.
- Suppresses chattering, allowing for outstanding milling performances.

NEO

- High performance
- Einführung neuer und Hoch entwickelter Schneidengeometrie mit "ungleicher Teilung"
- Reduziert Vibrationen und sorgt für hervorragende Fräs Ergebnisse

NEO

- Alta prestazione
- Introduzione innovativo sviluppo della geometria a "Passo Variabile"
- Elimina vibrazioni permettendo eccellenti prestazioni di fresatura

NEO

- Haute performance
- Hélice à géométrie variable
- Empêche les vibrations et permet des performances extraordinaire

NEO

- Yüksek performans
- Son derece gelişmiş "değişken helisel açılı" yapının kullanımı
- Tırlamayı önler, olağanüstü frezeleme performası elde edilir

NEO

- High performance
- Variabel helix
- Modvirker vibrationer og giver en enestående fræse performance

NEO

- High performance
- Variabel helix
- Motverkar vibrationer hög avverkning

NEO

- Altas prestaciones
- Introduce la helice veriable
- Suprime la vibración permitiendo excelentes prestaciones

NEO

- Высокая производительность
- Представляем фрезу с переменным углом наклона витков
- Подавление вибраций обеспечивает выдающуюся производительность

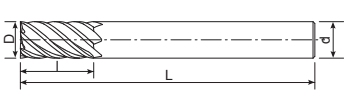
NEO

- Wysoka wydajność
- Przedstawiamy frezy ze zmienną spiralą
- Redukuje wibracje, co pozwala na osiągnięcie wyjątkowo dobrych wyników frezowania

GO TO LIVE STOCK CHECK

NEO

CARBIDE | FX | 37°~39° | SHRINK FIT | D ≥ 12 0~-0.03 | D ≤ 12 0~-0.02 | min⁻¹ D.159





EDP	D	L	l	d	Stock	Price
8519360	6	50	12	6	○	
8519380	8	60	16	8	●	
8519400	10	70	20	10	●	
8519420	12	75	24	12	●	
8519460	16	100	32	16	●	
8519500	20	105	40	20	●	
8519550	25	120	50	25	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			◎	◎		

● Delivery from stock
○ Available on short notice

NEO-CR-EMS

NEO

- High performance
- Introducing highly evolved "variable-lead" shape.
- Suppresses chattering, allowing for outstanding milling performances.

NEO

- High performance
- Einführung neuer und Hoch entwickelter Schneidengeometrie mit "ungleicher Teilung"
- Reduziert Vibrationen und sorgt für hervorragende Fräs Ergebnisse

NEO

- Alta prestazione
- Introduzione innovativo sviluppo della geometria a "Passo Variabile"
- Elimina vibrazioni permettendo eccellenti prestazioni di fresatura

NEO

- Haute performance
- Hélice à géométrie variable
- Empêche les vibrations et permet des performances extraordinaire

NEO

- Yüksek performans
- Son derece gelişmiş "değişken helisel açılı" yapının kullanımı
- Tırlamayı önler, olağanüstü frezeleme performası elde edilir

NEO

- High performance
- Variabel helix
- Modvirker vibrationer og giver en enestående fræse performance

NEO

- High performance
- Variabel helix
- Motverkar vibrationer hög avverkning

NEO

- Altas prestaciones
- Introduce la helice veriable
- Suprime la vibración permitiendo excelentes prestaciones

NEO

- Высокая производительность
- Представляем фрезу с переменным углом наклона витков
- Подавление вибраций обеспечивает выдающуюся производительность

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- Wysoka wydajność
- Przedstawiamy frezy ze zmienną spiralą
- Redukuje wibracje, co pozwala na osiągnięcie wyjątkowo dobrych wyników frezowania

GO TO LIVE STOCK CHECK

NEO

CARBIDE

FX

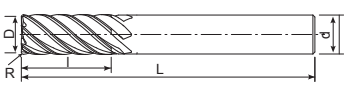
36°~39°

SHRINK FIT

D ≥ 12 0~-0.03

D ≤ 12 0~-0.02

min⁻¹ D.159





EDP	D	R	L	l	d	Stock	Price
8519662	6	0,3	50	12	6	●	
8519663	6	0,5	50	12	6	●	
8519665	6	1	50	12	6	●	
8519682	8	0,3	60	16	8	●	
8519683	8	0,5	60	16	8	●	
8519685	8	1	60	16	8	●	
8519687	8	1,5	60	16	8	●	
8519689	8	2	60	16	8	●	
8519702	10	0,3	70	20	10	●	
8519703	10	0,5	70	20	10	●	
8519705	10	1	70	20	10	●	
8519707	10	1,5	70	20	10	●	
8519709	10	2	70	20	10	●	
8519713	10	3	70	20	10	●	
8519733	12	0,5	75	24	12	●	
8519735	12	1	75	24	12	●	
8519737	12	1,5	75	24	12	●	
8519739	12	2	75	24	12	●	
8519743	12	3	75	24	12	●	
8519762	16	1	100	32	16	●	
8519763	16	1,5	100	32	16	●	
8519764	16	2	100	32	16	●	
8519765	16	3	100	32	16	●	
8519782	20	1	105	40	20	○	
8519784	20	2	105	40	20	○	
8519785	20	3	105	40	20	○	
8519786	20	4	105	40	20	○	
8519787	20	5	105	40	20	○	
8519802	25	1	120	50	25	○	
8519804	25	2	120	50	25	○	
8519805	25	3	120	50	25	○	
8519806	25	4	120	50	25	○	
8519807	25	5	120	50	25	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			◎	◎		

● Delivery from stock
○ Available on short notice

PHX-LN-DBT

WXS
- High performance
- 3 flutes
- Long neck

WXS
- High performance
- 3 Schneiden
- Überlaufhals

WXS
- Alta prestazione
- 3 denti
- Collo lungo scaricato

WXS
- Haute performance
- 3 lèvres
- Dégagement long

WXS
- Yüksek performans
- 3 ağızlı
- Uzun boyun

WXS
- High performance
- 3 skær
- Long neck

WXS
- High performance
- 3 skär
- Lång reducering

WXS
- Altas prestaciones
- 3 labios
- Cuello largo

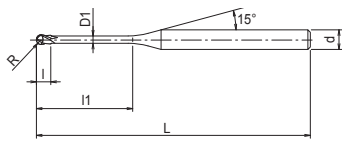
WXS
- Высокая производительность
- 3 режущих кромки
- Длинная шейка

WXS
- Wysoka wydajność
- 3 ostrzowy
- Długa szyjka

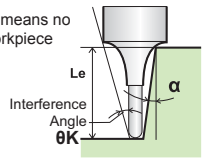
GO TO LIVE STOCK CHECK

WXS

CARBIDE | WXS | 45° | SHRINK FIT | ± 0.007 1<R≤6 | min⁻¹ D.160-161



No numerical value means no interference with workpiece





EDP	R	l1	L	l	d	D1	θk	Le (α)						Stock	Price
								0,5°	1°	1,5°	2°	2,5°	3°		
3195004	0,5	4	50	0,75	4	0,95	8,51	4,26	4,5	4,74	4,96	5,18	5,39	●	
3195006	0,5	6	50	0,75	4	0,95	7,13	6,39	6,72	7,03	7,32	7,95	7,88	●	
3195008	0,5	8	50	0,75	4	0,95	6,12	8,5	8,92	9,28	9,62	9,98	10,36	●	
3195010	0,5	10	50	0,75	4	0,95	5,35	10,61	11,09	11,51	11,92	12,37	12,85	●	
3195012	0,5	12	50	0,75	4	0,95	4,76	12,71	13,25	13,71	14,12	14,49	14,83	●	
3195014	0,5	14	50	0,75	4	0,95	4,3	14,81	15,4	15,9	16,34	16,73	17,82	●	
3195016	0,5	16	50	0,75	4	0,95	3,9	16,9	17,54	18,07	18,54	19,53	20,31	●	
3195106	0,75	6	50	1,12	4	1,95	6,43	6,37	6,7	7	7,28	7,54	7,82	●	
3195108	0,75	8	50	1,12	4	1,95	5,46	8,49	8,89	9,25	9,58	9,93	10,3	●	
3195110	0,75	10	50	1,12	4	1,95	4,75	10,6	11,07	11,48	11,88	12,32	12,79	●	
3195112	0,75	12	50	1,12	4	1,95	4,19	12,7	13,23	13,69	14,09	14,46	14,8	●	
3195116	0,75	16	50	1,12	4	1,95	3,4	16,89	17,52	18,05	18,51	18,93	19,31	●	
3195206	1	6	50	1,5	4	1,95	5,62	6,35	6,65	6,94	7,21	7,46	7,73	●	
3195208	1	8	50	1,5	4	1,95	4,71	8,46	8,85	9,2	9,52	9,85	10,21	●	
3195210	1	10	50	1,5	4	1,95	4,04	10,57	11,03	11,43	11,82	12,24	12,7	●	
3195212	1	12	50	1,5	4	1,95	3,55	12,67	13,19	13,64	14,12	14,63	15,19	●	
3195214	1	14	50	1,5	4	1,95	3,16	14,77	15,34	15,86	16,42	17,02	17,67	●	
3195216	1	16	50	1,5	4	1,95	2,84	16,86	17,48	18,08	18,72	19,41	-	●	
3195218	1	18	60	1,5	4	1,95	2,59	18,94	19,62	20,29	21,02	21,8	-	●	
3195220	1	20	60	1,5	4	1,95	2,37	21,03	21,76	22,51	23,18	-	-	●	
3195222	1	22	60	1,5	4	1,95	2,19	23,13	23,89	14,5	25,03	-	-	●	
3195312	1,5	12	60	2,25	4	2,85	2,04	12,61	13,1	13,57	14,08	-	-	●	
3195316	1,5	16	60	2,25	4	2,85	1,59	16,77	17,38	17,01	-	-	-	●	
3195320	1,5	20	60	2,25	4	2,85	1,3	20,92	21,65	-	-	-	-	●	
3195325	1,5	25	60	2,25	4	2,85	1,06	26,1	-	-	-	-	-	●	
3195416	2	16	60	3	4	3,85	-	-	-	-	-	-	-	●	
3195420	2	20	60	3	4	3,85	-	-	-	-	-	-	-	●	
3195425	2	25	60	3	4	3,85	-	-	-	-	-	-	-	●	
3195520	3	20	70	4,5	6	5,85	-	-	-	-	-	-	-	●	
3195530	3	30	70	4,5	6	5,85	-	-	-	-	-	-	-	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WXL-1,5D-DE

WXL
- High performance
- New WXL coating with high hardness and better lubrification.
- Recommended with lubrification or dry milling.

WXL
- High performance
- Neue WXL Beschichtung mit einer hohen Härte und geringem Reibungskoeffizient
- Empfohlen bei schlechter Schmierung sowie zur Trockenbearbeitung geeignet

WXL
- Alta prestazione
- Nuovo rivestimento WXL con elevata durezza e migliore lubrificazione
- Consigliato con emulsione o a secco Permette lavorazioni su ampio campo di applicazioni

WXL
- Haute performance
- Nouveau revêtement plus dur et plus glissant
- Recommandé pour usinage avec ou sans lubrification, nombreuses applications de fraisage

WXL
- Yüksek performans
- Yeni WXL kaplama yüksek sertlik ve daha iyi yağlama ile birlikte
- Kuru veya sulu kesim önerilir

WXL
- High performance
- Ny WXL belægning med høj hårdhed og forbedrerede smøreegenskaber
- Anbefales med køling eller tør bearbejdning

WXL
- High performance
- Ny WXL beläggning med extra hårdhet och mindre friktions koefficient
- Rekommenderad med eller utan smörjmedel Kan användas i många olika material

WXL
- Altas prestaciones
- Nuevo recubrimiento WXL de elevada dureza y lubricidad mejorada
- Recomendado con lubricación o en seco

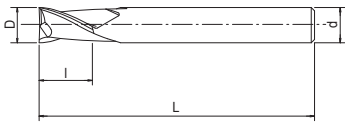
WXL
- Высокая производительность
- Новое WXL покрытие с высокой твердостью и низким коэффициентом трения.
- Рекомендована для работы с СОЖ и «сухого» фрезерования Позволяет обрабатывать широкий диапазон материалов

WXL
- Wysoka wydajność
- Nowa powłoka WXL o wysokiej twardości i niskim współczynnikiem tarcia
- Polecane do pracy z chłodzeniem i na sucho

GO TO LIVE STOCK CHECK

WXL

CARBIDE | WXL | 30° | SHRINK FIT | 0~-0.02 | min⁻¹ D.162





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
3181801	0,1	45	0,15	4	○		3181831	3,1	45	4,7	6	○	
3181802	0,2	45	0,3	4	○		3181832	3,2	45	4,8	6	○	
3181803	0,3	45	0,45	4	○		3181833	3,3	45	5	6	○	
3181804	0,4	45	0,6	4	○		3181834	3,4	45	5,1	6	○	
3181805	0,5	45	0,75	4	●		3181835	3,5	45	5,3	6	○	
3181806	0,6	45	0,9	4	○		3181836	3,6	45	5,4	6	○	
3181807	0,7	45	1,1	4	○		3181837	3,7	45	5,6	6	○	
3181808	0,8	45	1,2	4	○		3181838	3,8	45	5,7	6	○	
3181809	0,9	45	1,4	4	○		3181839	3,9	45	5,9	6	○	
3181810	1	45	1,5	4	●		3181840	4	45	6	6	●	
3181811	1,1	45	1,7	4	○		3181841	4,1	50	6,2	6	○	
3181812	1,2	45	1,8	4	○		3181842	4,2	50	6,3	6	○	
3181813	1,3	45	2	4	○		3181843	4,3	50	6,5	6	○	
3181814	1,4	45	2,1	4	○		3181844	4,4	50	6,6	6	○	
3181815	1,5	45	2,3	4	●		3181845	4,5	50	6,8	6	○	
3181816	1,6	45	2,4	4	○		3181846	4,6	50	6,9	6	○	
3181817	1,7	45	2,6	4	○		3181847	4,7	50	7,1	6	○	
3181818	1,8	45	2,7	4	○		3181848	4,8	50	7,2	6	○	
3181819	1,9	45	2,9	4	○		3181849	4,9	50	7,4	6	○	
3181820	2	45	3	4	●		3181850	5	50	7,5	6	●	
3181821	2,1	45	3,2	4	○		3181851	5,1	50	7,7	6	○	
3181822	2,2	45	3,3	4	○		3181852	5,2	50	7,8	6	○	
3181823	2,3	45	3,5	4	○		3181853	5,3	50	8	6	○	
3181824	2,4	45	3,6	4	○		3181854	5,4	50	8,1	6	○	
3181825	2,5	45	3,8	4	●		3181855	5,5	50	8,3	6	○	
3181826	2,6	45	3,9	4	○		3181856	5,6	50	8,4	6	○	
3181827	2,7	45	4,1	4	○		3181857	5,7	50	8,6	6	○	
3181828	2,8	45	4,2	4	○		3181858	5,8	50	8,7	6	○	
3181829	2,9	45	4,4	4	○		3181859	5,9	50	8,9	6	○	
3181830	3	45	4,5	6	●		3181860	6	50	9	6	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

● Delivery from stock
○ Available on short notice

WXL-2D-DE

WXL
- High performance
- New WXL coating with high hardness and better lubrification.
- Recommended with lubrification or dry milling.

WXL
- High performance
- Neue WXL Beschichtung mit einer hohen Härte und geringem Reibungskoeffizient
- Empfohlen bei schlechter Schmierung sowie zur Trockenbearbeitung geeignet

WXL
- Alta prestazione
- Nuovo rivestimento WXL con elevata durezza e migliore lubrificazione
- Consigliato con emulsione o a secco Permette lavorazioni su ampio campo di applicazioni

WXL
- Haute performance
- Nouveau revêtement plus dur et plus glissant
- Recommandé pour usinage avec ou sans lubrification, nombreuses applications de fraisage

WXL
- Yüksek performans
- Yeni WXL kaplama yüksek sertlik ve daha iyi yağlama ile birlikte
- Kuru veya sulu kesim önerilir

WXL
- High performance
- Ny WXL belægning med høj hårdhed og forbedrerede smøreegenskaber
- Anbefales med køling eller tør bearbejdning

WXL
- High performance
- Ny WXL beläggning med extra hårdhet och mindre friktions koefficient
- Rekommenderad med eller utan smörjmedel Kan användas i många olika material

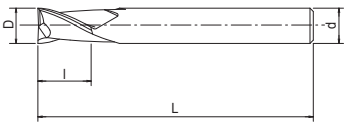
WXL
- Altas prestaciones
- Nuevo recubrimiento WXL de elevada dureza y lubricidad mejorada
- Recomendado con lubricación o en seco

WXL
- Высокая производительность
- Новое WXL покрытие с высокой твердостью и низким коэффициентом трения.
- Рекомендована для работы с СОЖ и «сухого» фрезерования Позволяет обрабатывать широкий диапазон материалов

WXL
- Wysoka wydajność
- Nowa powłoka WXL o wysokiej twardości i niskim współczynnikiem tarcia
- Polecane do pracy z chłodzeniem i na sucho

GO TO LIVE STOCK CHECK







EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
3182001	0,1	45	0,2	4	●		3182038	3,8	45	7,6	6	○	
3182002	0,2	45	0,4	4	●		3182039	3,9	45	7,8	6	○	
3182003	0,3	45	0,6	4	●		3182040	4	45	8	6	●	
3182004	0,4	45	0,8	4	●		3182041	4,1	50	8,2	6	○	
3182005	0,5	45	1	4	●		3182042	4,2	50	8,4	6	○	
3182006	0,6	45	1,2	4	●		3182043	4,3	50	8,6	6	○	
3182007	0,7	45	1,4	4	●		3182044	4,4	50	8,8	6	○	
3182008	0,8	45	1,6	4	●		3182045	4,5	50	9	6	●	
3182009	0,9	45	1,8	4	●		3182046	4,6	50	9,2	6	○	
3182010	1	45	2	4	●		3182047	4,7	50	9,4	6	○	
3182011	1,1	45	2,2	4	●		3182048	4,8	50	9,6	6	○	
3182012	1,2	45	2,4	4	●		3182049	4,9	50	9,8	6	○	
3182013	1,3	45	2,6	4	●		3182050	5	50	10	6	●	
3182014	1,4	45	2,8	4	●		3182051	5,1	50	10,2	6	○	
3182015	1,5	45	3	4	●		3182052	5,2	50	10,4	6	○	
3182016	1,6	45	3,2	4	●		3182053	5,3	50	10,6	6	○	
3182017	1,7	45	3,4	4	●		3182054	5,4	50	10,8	6	○	
3182018	1,8	45	3,6	4	●		3182055	5,5	50	11	6	●	
3182019	1,9	45	3,8	4	●		3182056	5,6	50	11,2	6	○	
3182020	2	45	4	4	●		3182057	5,7	50	11,4	6	○	
3182021	2,1	45	4,2	4	○		3182058	5,8	50	11,6	6	○	
3182022	2,2	45	4,4	4	○		3182059	5,9	50	11,8	6	○	
3182023	2,3	45	4,6	4	○		3182060	6	50	12	6	●	
3182024	2,4	45	4,8	4	○		3182065	6,5	60	13	8	○	
3182025	2,5	45	5	4	●		3182070	7	60	14	8	●	
3182026	2,6	45	5,2	4	○		3182075	7,5	60	15	8	○	
3182027	2,7	45	5,4	4	○		3182080	8	60	16	8	●	
3182028	2,8	45	5,6	4	○		3182085	8,5	70	17	10	○	
3182029	2,9	45	5,8	4	○		3182090	9	70	18	10	●	
3182030	3	45	6	6	●		3182095	9,5	70	19	10	○	
3182031	3,1	45	6,2	6	○		3182100	10	70	20	10	●	
3182032	3,2	45	6,4	6	○		3182110	11	75	22	12	●	
3182033	3,3	45	6,6	6	○		3182120	12	75	24	12	●	
3182034	3,4	45	6,8	6	○		3182160	16	90	32	16	○	
3182035	3,5	45	7	6	●		3182180	18	90	36	16	○	
3182036	3,6	45	7,2	6	○		3182200	20	100	40	20	○	
3182037	3,7	45	7,4	6	○								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

● Delivery from stock
○ Available on short notice

WXL-3D-DE

WXL
- High performance
- New WXL coating with high hardness and better lubrification.
- Recommended with lubrification or dry milling.

WXL
- High performance
- Neue WXL Beschichtung mit einer hohen Härte und geringem Reibungskoeffizient
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WXL
- Altas prestaciones
- Nuevo recubrimiento WXL de elevada dureza y lubricidad mejorada
- Recomendado con lubricación o en seco

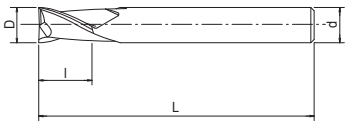
WXL
- Высокая производительность
- Новое WXL покрытие с высокой твердостью и низким коэффициентом трения.
- Рекомендована для работы с СОЖ и «сухого» фрезерования Позволяет обрабатывать широкий диапазон материалов

WXL
- Wysoka wydajność
- Nowa powłoka WXL o wysokiej twardości i niskim współczynnikiem tarcia
- Polecane do pracy z chłodzeniem i na sucho

GO TO LIVE STOCK CHECK

WXL

CARBIDE | WXL | 35° | SHRINK FIT | D > 12 0~-0.03 | D ≤ 12 0~-0.02 | min⁻¹ D.164





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
3182401	0,1	45	0,3	4	○		3182438	3,8	45	11,4	6	○	
3182402	0,2	45	0,6	4	○		3182439	3,9	45	11,7	6	○	
3182403	0,3	45	0,9	4	○		3182440	4	50	12	6	●	
3182404	0,4	45	1,2	4	○		3182441	4,1	50	12,3	6	○	
3182405	0,5	45	1,5	4	●		3182442	4,2	50	12,6	6	○	
3182406	0,6	45	1,8	4	○		3182443	4,3	50	12,9	6	○	
3182407	0,7	45	2,1	4	●		3182444	4,4	50	13,2	6	○	
3182408	0,8	45	2,4	4	○		3182445	4,5	50	13,5	6	●	
3182409	0,9	45	2,7	4	○		3182446	4,6	55	13,8	6	○	
3182410	1	45	3	4	●		3182447	4,7	55	14,1	6	○	
3182411	1,1	45	3,3	4	○		3182448	4,8	55	14,4	6	○	
3182412	1,2	45	3,6	4	●		3182449	4,9	55	14,7	6	○	
3182413	1,3	45	3,9	4	○		3182450	5	55	15	6	●	
3182414	1,4	45	4,2	4	○		3182451	5,1	55	15,3	6	○	
3182415	1,5	45	4,5	4	●		3182452	5,2	55	15,6	6	○	
3182416	1,6	45	4,8	4	○		3182453	5,3	55	15,9	6	○	
3182417	1,7	45	5,1	4	○		3182454	5,4	55	16,2	6	○	
3182418	1,8	45	5,4	4	○		3182455	5,5	60	16,5	6	●	
3182419	1,9	45	5,7	4	○		3182456	5,6	60	16,8	6	○	
3182420	2	45	6	4	●		3182457	5,7	60	17,1	6	○	
3182421	2,1	45	6,3	4	○		3182458	5,8	60	17,4	6	○	
3182422	2,2	45	6,6	4	○		3182459	5,9	60	17,7	6	○	
3182423	2,3	45	6,9	4	○		3182460	6	60	18	6	●	
3182424	2,4	45	7,2	4	○		3182465	6,5	65	19,5	8	○	
3182425	2,5	45	7,5	4	●		3182470	7	65	21	8	●	
3182426	2,6	45	7,8	4	○		3182475	7,5	70	22,5	8	○	
3182427	2,7	45	8,1	4	○		3182480	8	70	24	8	●	
3182428	2,8	45	8,4	4	○		3182485	8,5	70	25,5	10	○	
3182429	2,9	45	8,7	4	○		3182490	9	75	27	10	●	
3182430	3	45	9	6	●		3182495	9,5	75	28,5	10	○	
3182431	3,1	45	9,3	6	○		3182500	10	80	30	10	●	
3182432	3,2	45	9,6	6	○		3182510	11	80	33	12	○	
3182433	3,3	45	9,9	6	○		3182520	12	90	36	12	●	
3182434	3,4	45	10,2	6	○		3182560	16	110	48	16	○	
3182435	3,5	45	10,5	6	●		3182580	18	130	54	16	○	
3182436	3,6	45	10,8	6	○		3182600	20	130	60	20	○	
3182437	3,7	45	11,1	6	○								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

● Delivery from stock
○ Available on short notice

WXL-4D-DE

WXL
- High performance
- New WXL coating with high hardness and better lubrification.
- Recommended with lubrification or dry milling.

WXL
- High performance
- Neue WXL Beschichtung mit einer hohen Härte und geringem Reibungskoeffizient
- Empfohlen bei schlechter Schmierung sowie zur Trockenbearbeitung geeignet

WXL
- Alta prestazione
- Nuovo rivestimento WXL con elevata durezza e migliore lubrificazione
- Consigliato con emulsione o a secco Permette lavorazioni su ampio campo di applicazioni

WXL
- Haute performance
- Nouveau revêtement plus dur et plus glissant
- Recommandé pour usinage avec ou sans lubrification, nombreuses applications de fraisage

WXL
- Yüksek performans
- Yeni WXL kaplama yüksek sertlik ve daha iyi yağlama ile birlikte
- Kuru veya sulu kesim önerilir

WXL
- High performance
- Ny WXL belægning med høj hårdhed og forbedrerede smøreegenskaber
- Anbefales med køling eller tør bearbejdning

WXL
- High performance
- Ny WXL beläggning med extra hårdhet och mindre friktions koefficient
- Rekommenderad med eller utan smörjmedel Kan användas i många olika material

WXL
- Altas prestaciones
- Nuevo recubrimiento WXL de elevada dureza y lubricidad mejorada
- Recomendado con lubricación o en seco

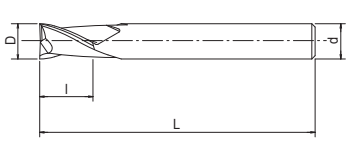
WXL
- Высокая производительность
- Новое WXL покрытие с высокой твердостью и низким коэффициентом трения.
- Рекомендована для работы с СОЖ и «сухого» фрезерования Позволяет обрабатывать широкий диапазон материалов

WXL
- Wysoka wydajność
- Nowa powłoka WXL o wysokiej twardości i niskim współczynnikiem tarcia
- Polecane do pracy z chłodzeniem i na sucho

GO TO LIVE STOCK CHECK

WXL

CARBIDE | WXL | 40° | SHRINK FIT | D > 12 0~-0.03 | D ≤ 12 0~-0.02 | min⁻¹ D.165





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
3182602	0,2	45	0,8	4	○		3182633	3,3	50	13,2	6	○	
3182603	0,3	45	1,2	4	○		3182634	3,4	50	13,6	6	○	
3182604	0,4	45	1,6	4	○		3182635	3,5	50	14	6	○	
3182605	0,5	45	2	4	●		3182636	3,6	50	14,4	6	○	
3182606	0,6	45	2,4	4	○		3182637	3,7	50	14,8	6	○	
3182607	0,7	45	2,8	4	○		3182638	3,8	50	15,2	6	○	
3182608	0,8	45	3,2	4	○		3182639	3,9	50	15,6	6	○	
3182609	0,9	45	3,6	4	○		3182640	4	55	16	6	●	
3182610	1	45	4	4	●		3182641	4,1	55	16,4	6	○	
3182611	1,1	45	4,4	4	○		3182642	4,2	55	16,8	6	○	
3182612	1,2	45	4,8	4	○		3182643	4,3	55	17,2	6	○	
3182613	1,3	45	5,2	4	○		3182644	4,4	55	17,6	6	○	
3182614	1,4	45	5,6	4	○		3182645	4,5	55	18	6	○	
3182615	1,5	45	6	4	○		3182646	4,6	55	18,4	6	○	
3182616	1,6	45	6,4	4	○		3182647	4,7	55	18,8	6	○	
3182617	1,7	45	6,8	4	○		3182648	4,8	55	19,2	6	○	
3182618	1,8	45	7,2	4	○		3182649	4,9	55	19,6	6	○	
3182619	1,9	45	7,6	4	○		3182650	5	60	20	6	●	
3182620	2	45	8	4	●		3182651	5,1	60	20,4	6	○	
3182621	2,1	45	8,4	4	○		3182652	5,2	60	20,8	6	○	
3182622	2,2	45	8,8	4	○		3182653	5,3	60	21,2	6	○	
3182623	2,3	45	9,2	4	○		3182654	5,4	60	21,6	6	○	
3182624	2,4	45	9,6	4	○		3182655	5,5	65	22	6	○	
3182625	2,5	45	10	4	○		3182656	5,6	65	22,4	6	○	
3182626	2,6	50	10,4	4	○		3182657	5,7	65	22,8	6	○	
3182627	2,7	50	10,8	4	○		3182658	5,8	65	23,2	6	○	
3182628	2,8	50	11,2	4	○		3182659	5,9	65	23,6	6	○	
3182629	2,9	50	11,6	4	○		3182660	6	65	24	6	●	
3182630	3	50	12	6	●		3182680	8	80	32	8	●	
3182631	3,1	50	12,4	6	○		3182700	10	90	40	10	●	
3182632	3,2	50	12,8	6	○		3182720	12	100	48	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

● Delivery from stock
○ Available on short notice

WXL-EMS

WXL
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- Recomendado con lubricación o en seco

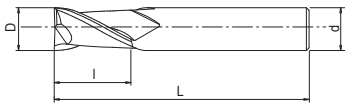
WXL
- Высокая производительность
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WXL
- Wysoka wydajność
- Nowa powłoka WXL o wysokiej twardości i niskim współczynnikiem tarcia
- Polecane do pracy z chłodzeniem i na sucho

GO TO LIVE STOCK CHECK

WXL

CARBIDE | WXL | 30° | 2 ≤ 12 | D > 12 0~-0.03 | D ≤ 12 0~-0.02 | min⁻¹ D.166





EDP	D	L	l	d	Stock	Price
3130510	1	40	2,5	4	●	
3130515	1,5	40	4	4	●	
3130520	2	40	6	4	●	
3130525	2,5	40	8	4	●	
3130530	3	45	8	6	●	
3130535	3,5	45	10	6	●	
3130540	4	45	11	6	●	
3130545	4,5	45	11	6	●	
3130550	5	50	13	6	●	
3130560	6	50	13	6	●	
3130570	7	60	16	8	●	
3130580	8	60	19	8	●	
3130590	9	70	19	10	●	
3130600	10	70	22	10	●	
3130620	12	75	26	12	●	
3130640	14	85	26	12	●	
3130650	15	90	26	16	○	
3130660	16	100	32	16	●	
3130680	18	100	32	16	○	
3130700	20	105	38	20	●	
3130750	25	120	45	25	○	
3130800	30	125	45	32	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○			○	○	

● Delivery from stock
○ Available on short notice

WXL-LN-EMS-6

WXL
- High performance
- 4 flutes
- Long neck
- Shank dia. 6

WXL
- High performance
- 4 Schneiden
- Langer Hals
- Schaftdurchmesser dia. 6

WXL
- Alta prestazione
- 4 denti
- Serie lunga
- Diametro del gambo dia. 6

WXL
- Haute performance
- 4 lèvres
- Série longue
- Diamètre queue dia. 6

WXL
- Yüksek performans
- 4 ağızlı
- Uzun boyun
- Gövde çapı 6 mm

WXL
- High performance
- 4 skær
- Langt skaft
- Skaft dia. 6

WXL
- High performance
- 4 skär
- Lång reducering
- Skaft dia. 6

WXL
- Altas prestaciones
- 4 labio
- Serie larga
- Cuello dia. 6

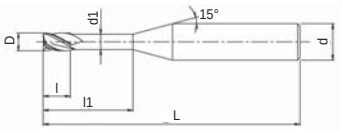
WXL
- Высокая производительность
- 4 режущих кромки
- короткая длина
- Хвостовик Ø6 мм

WXL
- Wysoka wydajność
- 4 ostrzowy
- Długa szyjka
- Chwyt 6mm

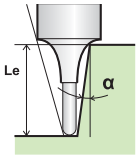
GO TO LIVE STOCK CHECK

WXL

CARBIDE | WXL | 30° | SHRINK FIT | HIGH SPEED | CC | Ø2 ≤ D | 0~-0.0015 | min⁻¹ D.167



No numerical value means no interference with workpiece





EDP	D	l1	L	l	d1	d	Le						Stock	Price
							0,5°	1°	1,5°	2°	2,5°	3°		
48142010	1	5	60	1,5	0,95	6	5,16	5,34	5,54	5,74	5,97	6,21	●	
48142015	1,5	7,5	60	2,3	1,45	6	7,75	8,02	8,31	8,62	8,96	9,32	●	
48142020	2	10	60	3	1,95	6	10,34	10,7	11,08	11,5	11,95	12,43	●	
48142025	2,5	12,5	60	3,7	2,40	6	12,92	13,37	13,85	14,37	14,93	15,54	●	
48142030	3	15	70	4,5	2,85	6	15,5	16,05	16,62	17,25	17,92	18,65	●	
48142035	3,5	17,5	70	5,3	3,35	6	18,09	18,72	19,4	20,12	20,91	21,76	●	
48142040	4	20	70	6	3,85	6	20,67	21,39	22,17	23	-	-	○	
48142050	5	25	80	7,5	4,85	6	25,84	26,74	-	-	-	-	○	
48142060	6	30	90	9	5,85	6	-	-	-	-	-	-	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○			

WXL-LN-EDS

WXL
- High performance
- 2 flutes
- Long neck

WXL
- High performance
- 2 Schneiden
- Überlaufhals

WXL
- Alta prestazione
- 2 denti
- Collo lungo scaricato

WXL
- Haute performance
- 2 lèvres
- Dégagement long

WXL
- Yüksek performans
- 2 ağızlı
- Uzun boyun

WXL
- High performance
- 2 skær
- Long neck

WXL
- High performance
- 2 skär
- Lång reducering

WXL
- Altas prestaciones
- 2 labios
- Cuello largo

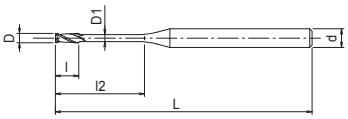
WXL
- Высокая производительность
- 2 режущих кромки
- Длинная шейка

WXL
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka

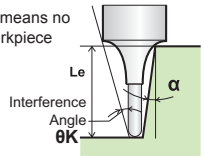
GO TO LIVE STOCK CHECK

WXL

CARBIDE | WXL | 30° | 0~-0.0015 | min⁻¹ D.168-169



No numerical value means no interference with workpiece





EDP	D	l2	L	l	d	D1	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3131201	0,2	0,5	45	0,3	4	0,18	14,02	0,52	0,55	0,57	0,6	0,62	0,64	●	
3131202	0,2	1	45	0,3	4	0,18	13,19	1,05	1,09	1,13	1,17	1,22	1,27	●	
3131203	0,2	1,5	45	0,3	4	0,18	12,45	1,57	1,62	1,68	1,75	1,81	1,89	●	
3131204	0,2	2	45	0,3	4	0,18	11,78	2,09	2,16	2,24	2,32	2,41	2,51	○	
3131205	0,2	2,5	45	0,3	4	0,18	11,18	2,6	2,69	2,79	2,90	3,01	3,13	○	
3131206	0,2	3	45	0,3	4	0,18	10,64	3,12	3,23	3,35	3,47	3,61	3,75	○	
3131207	0,2	3,5	45	0,3	4	0,18	10,15	3,64	3,76	3,9	4,05	4,20	4,37	○	
3131208	0,2	4	45	0,3	4	0,18	9,71	4,15	4,3	4,45	4,62	4,8	5	○	
3131302	0,3	1	45	0,45	4	0,28	13,16	1,03	1,08	1,12	1,16	1,21	1,25	●	
3131303	0,3	1,5	45	0,45	4	0,28	12,4	1,56	1,61	1,67	1,74	1,8	1,88	○	
3131304	0,3	2	45	0,45	4	0,28	11,73	2,08	2,15	2,23	2,31	2,4	2,5	●	
3131305	0,3	2,5	45	0,45	4	0,28	11,12	2,59	2,68	2,78	2,88	3	3,12	○	
3131306	0,3	3	45	0,45	4	0,28	10,57	3,11	3,22	3,33	3,46	3,59	3,74	●	
3131308	0,3	4	45	0,45	4	0,28	9,62	4,14	4,29	4,44	4,61	4,79	4,98	○	
3131310	0,3	5	45	0,45	4	0,28	8,83	5,18	5,36	5,55	5,76	5,98	6,23	○	
3131312	0,3	6	45	0,45	4	0,28	8,15	6,21	6,43	6,66	6,91	7,18	7,47	○	
3131318	0,3	9	45	0,45	4	0,28	6,63	9,31	9,64	9,98	10,36	10,76	11,2	○	
3131403	0,4	1,5	45	0,6	4	0,37	12,4	1,52	1,57	1,63	1,69	1,75	1,82	○	
3131404	0,4	2	45	0,6	4	0,37	11,71	2,03	2,1	2,18	2,26	2,35	2,45	●	
3131406	0,4	3	45	0,6	4	0,37	10,53	3,07	3,17	3,29	3,41	3,55	3,69	●	
3131408	0,4	4	45	0,6	4	0,37	9,56	4,1	4,24	4,4	4,56	4,74	4,93	●	
3131410	0,4	5	45	0,6	4	0,37	8,76	5,13	5,31	5,51	5,71	5,93	6,18	○	
3131412	0,4	6	45	0,6	4	0,37	8,08	6,17	6,38	6,61	6,86	7,13	7,42	○	
3131414	0,4	7	45	0,6	4	0,37	7,49	7,2	7,45	7,72	8,01	8,32	8,66	○	
3131416	0,4	8	45	0,6	4	0,37	6,99	8,24	8,52	8,83	9,16	9,52	9,9	○	
3131418	0,4	9	45	0,6	4	0,37	6,55	9,27	9,59	9,94	10,31	10,71	11,15	○	
3131420	0,4	10	45	0,6	4	0,37	6,16	10,3	10,66	11,05	11,46	11,91	12,39	○	
3131424	0,4	12	45	0,6	4	0,37	5,5	12,37	12,8	13,26	13,76	14,3	14,88	○	
3131501	0,5	1,5	45	0,7	4	0,45	12,29	1,56	1,61	1,67	1,73	1,8	1,87	○	
3131502	0,5	2	45	0,7	4	0,45	11,59	2,07	2,14	2,22	2,31	2,4	2,49	●	
3131503	0,5	3	45	0,7	4	0,45	10,4	3,11	3,21	3,33	3,46	3,59	3,74	●	
3131504	0,5	4	45	0,7	4	0,45	9,43	4,14	4,28	4,44	4,61	4,78	4,98	●	
3131505	0,5	5	45	0,7	4	0,45	8,63	5,17	5,35	5,55	5,75	5,98	6,22	○	
3131506	0,5	6	45	0,7	4	0,45	7,95	6,21	6,42	6,66	6,9	7,17	7,47	●	
3131507	0,5	7	45	0,7	4	0,45	7,37	7,24	7,49	7,76	8,05	8,37	8,71	○	
3131508	0,5	8	45	0,7	4	0,45	6,86	8,27	8,56	8,87	9,2	9,56	9,95	●	
3131509	0,5	9	45	0,7	4	0,45	6,43	9,31	9,63	9,98	10,35	10,76	11,19	○	
3131510	0,5	10	45	0,7	4	0,45	6,04	10,34	10,7	11,09	11,5	11,95	12,44	○	
3131512	0,5	12	45	0,7	4	0,45	5,39	12,41	12,84	13,31	13,8	14,34	14,92	○	
3131515	0,5	15	50	0,7	4	0,45	4,65	15,51	16,05	16,63	17,25	17,93	18,65	○	
3131602	0,6	2	45	0,9	4	0,55	11,51	2,07	2,14	2,22	2,31	2,4	2,49	●	
3131603	0,6	3	45	0,9	4	0,55	10,31	3,11	3,21	3,33	3,46	3,59	3,74	○	
3131604	0,6	4	45	0,9	4	0,55	9,33	4,14	4,28	4,44	4,61	4,78	4,98	●	
3131605	0,6	5	45	0,9	4	0,55	8,52	5,17	5,35	5,55	5,75	5,98	6,22	○	
3131606	0,6	6	45	0,9	4	0,55	7,84	6,21	6,42	6,66	6,9	7,17	7,47	●	
3131607	0,6	7	45	0,9	4	0,55	7,26	7,24	7,49	7,76	8,05	8,37	8,71	○	
3131608	0,6	8	45	0,9	4	0,55	6,76	8,27	8,56	8,87	9,2	9,56	9,95	●	
3131610	0,6	10	45	0,9	4	0,55	5,94	10,34	10,7	11,09	11,5	11,95	12,44	●	
3131612	0,6	12	45	0,9	4	0,55	5,29	12,41	12,84	13,31	13,8	14,34	14,92	○	
3131615	0,6	15	50	0,9	4	0,55	4,55	15,51	16,05	16,63	17,25	17,93	18,65	○	
3131618	0,6	18	50	0,9	4	0,55	3,99	18,61	19,26	19,96	20,7	21,51	22,38	○	
3131702	0,7	2	45	1	4	0,65	11,43	2,07	2,14	2,22	2,31	2,4	2,49	●	
3131704	0,7	4	45	1	4	0,65	9,22	4,14	4,28	4,44	4,61	4,78	4,98	●	
3131706	0,7	6	45	1	4	0,65	7,73	6,21	6,42	6,66	6,9	7,17	7,47	●	
3131708	0,7	8	45	1	4	0,65	6,65	8,27	8,56	8,87	9,2	9,56	9,95	●	
3131710	0,7	10	45	1	4	0,65	5,83	10,34	10,7	11,09	11,5	11,95	12,44	●	
3131804	0,8	4	45	1,2	4	0,75	9,11	4,14	4,28	4,44	4,61	4,78	4,98	●	
3131806	0,8	6	45	1,2	4	0,75	7,61	6,21	6,42	6,66	6,9	7,17	7,47	●	
3131808	0,8	8	45	1,2	4	0,75	6,53	8,27	8,56	8,87	9,2	9,56	9,95	●	
3131810	0,8	10	45	1,2	4	0,75	5,72	10,34	10,7	11,09	11,5	11,95	12,44	●	
3131812	0,8	12	45	1,2	4	0,75	5,09	12,41	12,84	13,31	13,8	14,34	14,92	●	
3131814	0,8	14	50	1,2	4	0,75	4,58	14,48	14,98	15,52	16,1	16,73	17,41	○	
3131816	0,8	16	50	1,2	4	0,75	4,16	16,54	17,12	17,74	18,4	19,12	19,9	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

WXL-LN-EDS

WXL
- High performance
- 2 flutes
- Long neck

WXL
- High performance
- 2 Schneiden
- Überlaufhals

WXL
- Alta prestazione
- 2 denti
- Collo lungo scaricato

WXL
- Haute performance
- 2 lèvres
- Dégagement long

WXL
- Yüksek performans
- 2 ağızlı
- Uzun boyun

WXL
- High performance
- 2 skær
- Long neck

WXL
- High performance
- 2 skär
- Lång reducering

WXL
- Altas prestaciones
- 2 labios
- Cuello largo

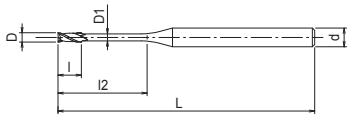
WXL
- Высокая производительность
- 2 режущих кромки
- Длинная шейка

WXL
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka

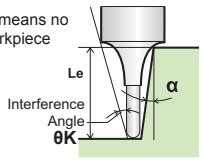
GO TO LIVE STOCK CHECK

WXL

CARBIDE | WXL | 30° | 0~-0.0015 | min⁻¹ D.168-169



No numerical value means no interference with workpiece





EDP	D	l2	L	l	d	D1	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3131820	0,8	20	55	1,2	4	0,75	3,52	20,68	21,4	22,17	23	23,9	24,87	○	
3131824	0,8	24	60	1,2	4	0,75	3,06	24,81	25,68	26,6	27,6	28,68	29,84	○	
3131904	0,9	4	45	1,35	4	0,85	9	4,14	4,28	4,44	4,61	4,78	4,98	○	
3131906	0,9	6	45	1,35	4	0,85	7,49	6,21	6,42	6,66	6,9	7,17	7,47	●	
3131908	0,9	8	45	1,35	4	0,85	6,41	8,27	8,56	8,87	9,2	9,56	9,95	●	
3131910	0,9	10	45	1,35	4	0,85	5,61	10,34	10,7	11,09	11,5	11,95	12,44	●	
3131915	0,9	15	50	1,35	4	0,85	4,26	15,51	16,05	16,63	17,25	17,93	18,65	●	
3132003	1	3	45	1,5	4	0,95	9,89	3,11	3,21	3,33	3,46	3,59	3,74	○	
3132004	1	4	45	1,5	4	0,95	8,88	4,14	4,28	4,44	4,61	4,78	4,98	○	
3132005	1	5	45	1,5	4	0,95	8,05	5,17	5,35	5,55	5,75	5,98	6,22	●	
3132006	1	6	45	1,5	4	0,95	7,37	6,21	6,42	6,66	6,9	7,17	7,47	●	
3132007	1	7	45	1,5	4	0,95	6,79	7,24	7,49	7,76	8,05	8,37	8,71	○	
3132008	1	8	45	1,5	4	0,95	6,29	8,27	8,56	8,87	9,2	9,56	9,95	●	
3132009	1	9	45	1,5	4	0,95	5,86	9,31	9,63	9,98	10,35	10,76	11,19	○	
3132010	1	10	45	1,5	4	0,95	5,49	10,34	10,7	11,09	11,5	11,95	12,44	●	
3132012	1	12	45	1,5	4	0,95	4,87	12,41	12,84	13,31	13,8	14,34	14,92	●	
3132014	1	14	50	1,5	4	0,95	4,38	14,48	14,98	15,52	16,1	16,73	17,41	●	
3132016	1	16	50	1,5	4	0,95	3,97	16,54	17,12	17,74	18,4	19,12	19,9	●	
3132018	1	18	55	1,5	4	0,95	3,64	18,61	19,26	19,96	20,7	21,51	22,38	○	
3132020	1	20	55	1,5	4	0,95	3,35	20,68	21,4	22,17	23	23,9	24,87	○	
3132022	1	22	60	1,5	4	0,95	3,11	22,75	23,54	24,39	25,3	26,29	27,36	○	
3132025	1	25	60	1,5	4	0,95	2,81	25,85	26,75	27,71	28,75	29,87	-	○	
3132030	1	30	70	1,5	4	0,95	2,41	31,02	32,1	33,25	34,5	-	-	○	
3132204	1,2	4	45	1,8	4	1,15	8,54	4,22	4,38	4,54	4,71	4,9	5,09	○	
3132206	1,2	6	45	1,8	4	1,15	7,05	6,3	6,52	6,76	7,01	7,29	7,58	●	
3132208	1,2	8	45	1,8	4	1,15	6	8,37	8,66	8,98	9,31	9,67	10,07	●	
3132210	1,2	10	45	1,8	4	1,15	5,22	10,44	10,8	11,19	11,61	12,06	12,55	●	
3132212	1,2	12	45	1,8	4	1,15	4,62	12,51	12,94	13,41	13,91	14,45	15,04	●	
3132214	1,2	14	50	1,8	4	1,15	4,14	14,57	15,08	15,63	16,21	16,84	17,53	○	
3132216	1,2	16	50	1,8	4	1,15	3,76	16,64	17,22	17,84	18,51	19,23	20,01	○	
3132220	1,2	20	55	1,8	4	1,15	3,16	20,77	21,5	22,28	23,11	24,01	24,99	○	
3132406	1,4	6	45	2,1	4	1,35	6,77	6,3	6,52	6,76	7,01	7,29	7,58	●	
3132408	1,4	8	45	2,1	4	1,35	5,73	8,37	8,66	8,98	9,31	9,67	10,07	●	
3132410	1,4	10	45	2,1	4	1,35	4,97	10,44	10,8	11,19	11,61	12,06	12,55	●	
3132412	1,4	12	45	2,1	4	1,35	4,39	12,51	12,94	13,41	13,91	14,45	15,04	●	
3132414	1,4	14	50	2,1	4	1,35	3,92	14,57	15,08	15,63	16,21	16,84	17,53	○	
3132416	1,4	16	50	2,1	4	1,35	3,55	16,64	17,22	17,84	18,51	19,23	20,01	●	
3132422	1,4	22	60	2,1	4	1,35	2,76	22,84	23,64	24,49	25,41	26,4	-	○	
3132504	1,5	4	45	2,3	4	1,45	8,12	4,22	4,38	4,54	4,71	4,9	5,09	○	
3132506	1,5	6	45	2,3	4	1,45	6,62	6,3	6,52	6,76	7,01	7,29	7,58	●	
3132508	1,5	8	45	2,3	4	1,45	5,59	8,37	8,66	8,98	9,31	9,67	10,07	●	
3132510	1,5	10	45	2,3	4	1,45	4,84	10,44	10,8	11,19	11,61	12,06	12,55	●	
3132512	1,5	12	45	2,3	4	1,45	4,26	12,51	12,94	13,41	13,91	14,45	15,04	●	
3132514	1,5	14	50	2,3	4	1,45	3,81	14,57	15,08	15,63	16,21	16,84	17,53	●	
3132516	1,5	16	50	2,3	4	1,45	3,45	16,64	17,22	17,84	18,51	19,23	20,01	●	
3132518	1,5	18	55	2,3	4	1,45	3,14	18,71	19,36	20,06	20,81	21,62	22,5	●	
3132520	1,5	20	55	2,3	4	1,45	2,89	20,77	21,5	22,28	23,11	24,01	-	●	
3132525	1,5	25	60	2,3	4	1,45	2,4	25,94	26,85	27,82	28,86	-	-	○	
3132530	1,5	30	70	2,3	4	1,45	2,06	31,11	32,2	33,36	34,61	-	-	○	
3132538	1,5	38	80	2,3	4	1,45	1,67	39,38	40,75	42,22	-	-	-	○	
3132540	1,5	40	80	2,3	4	1,45	1,6	41,45	42,89	44,44	-	-	-	○	
3132545	1,5	45	80	2,3	4	1,45	1,44	46,62	48,24	-	-	-	-	○	
3132606	1,6	6	45	2,4	4	1,55	6,47	6,3	6,52	6,76	7,01	7,29	7,58	●	
3132608	1,6	8	45	2,4	4	1,55	5,45	8,37	8,66	8,98	9,31	9,67	10,07	●	
3132610	1,6	10	45	2,4	4	1,55	4,71	10,44	10,8	11,19	11,61	12,06	12,55	●	
3132612	1,6	12	45	2,4	4	1,55	4,14	12,51	12,94	13,41	13,91	14,45	15,04	●	
3132614	1,6	14	50	2,4	4	1,55	3,7	14,57	15,08	15,63	16,21	16,84	17,53	○	
3132616	1,6	16	50	2,4	4	1,55	3,34	16,64	17,22	17,84	18,51	19,23	20,01	○	
3132618	1,6	18	55	2,4	4	1,55	3,04	18,71	19,36	20,06	20,81	21,62	22,5	○	
3132620	1,6	20	55	2,4	4	1,55	2,8	20,77	21,5	22,28	23,11	24,01	-	○	
3132806	1,8	6	45	2,7	4	1,75	5,96	6,42	6,77	7,1	7,39	7,68	7,99	●	
3132808	1,8	8	45	2,7	4	1,75	5,01	8,53	8,96	9,34	9,69	10,07	10,48	●	
3132810	1,8	10	45	2,7	4	1,75	4,33	10,64	11,13	11,56	11,99	12,46	12,97	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

● Delivery from stock
○ Available on short notice

WXL-LN-EDS

WXL
- High performance
- 2 flutes
- Long neck

WXL
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- Haute performance
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- 2 labios
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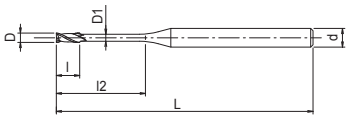
WXL
- Высокая производительность
- 2 режущих кромки
- Длинная шейка

WXL
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka

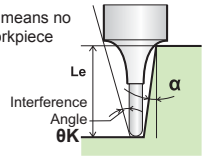
GO TO LIVE STOCK CHECK

WXL

CARBIDE | WXL | 30° | 0~-0.0015 | min⁻¹ D.168-169



No numerical value means no interference with workpiece





EDP	D	l2	L	l	d	D1	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3132812	1,8	12	45	2,7	4	1,75	3,81	12,74	13,29	13,78	14,29	14,85	15,45	●	
3132814	1,8	14	50	2,7	4	1,75	3,4	14,83	15,44	15,99	16,59	17,24	17,94	●	
3132816	1,8	16	50	2,7	4	1,75	3,07	16,92	17,58	18,21	18,89	19,63	20,43	●	
3132818	1,8	18	55	2,7	4	1,75	2,79	19,01	19,71	20,43	21,19	22,02	-	●	
3132820	1,8	20	55	2,7	4	1,75	2,57	21,09	21,85	22,64	23,49	24,41	-	●	
3132825	1,8	25	60	2,7	4	1,75	2,13	26,28	27,2	28,18	29,24	-	-	○	
3133006	2	6	45	3	4	1,95	5,62	6,42	6,77	7,1	7,39	7,68	7,99	●	
3133008	2	8	45	3	4	1,95	4,7	8,53	8,96	9,34	9,69	10,07	10,48	●	
3133010	2	10	45	3	4	1,95	4,04	10,64	11,13	11,56	11,99	12,46	12,97	●	
3133012	2	12	45	3	4	1,95	3,54	12,74	13,29	13,78	14,29	14,85	15,45	●	
3133014	2	14	50	3	4	1,95	3,15	14,83	15,44	15,99	16,59	17,24	17,94	●	
3133016	2	16	50	3	4	1,95	2,84	16,92	17,58	18,21	18,89	19,63	-	●	
3133018	2	18	55	3	4	1,95	2,58	19,01	19,71	20,43	21,19	22,02	-	●	
3133020	2	20	55	3	4	1,95	2,37	21,09	21,85	22,64	23,49	-	-	●	
3133025	2	25	60	3	4	1,95	1,96	26,28	27,2	28,18	-	-	-	●	
3133030	2	30	70	3	4	1,95	1,68	31,45	32,55	33,73	-	-	-	●	
3133035	2	35	80	3	4	1,95	1,46	36,62	37,9	-	-	-	-	○	
3133040	2	40	90	3	4	1,95	1,3	41,79	43,25	-	-	-	-	○	
3133050	2	50	100	3	4	1,95	1,06	52,13	53,94	-	-	-	-	○	
3133060	2	60	110	3	4	1,95	0,89	62,46	-	-	-	-	-	○	
3133508	2,5	8	45	3,7	4	2,4	3,86	8,47	8,87	9,22	9,57	9,94	10,35	●	
3133510	2,5	10	45	3,7	4	2,4	3,27	10,57	11,03	11,44	11,87	12,33	12,83	●	
3133512	2,5	12	45	3,7	4	2,4	2,84	12,66	13,18	13,66	14,17	14,72	-	●	
3133514	2,5	14	50	3,7	4	2,4	2,51	14,75	15,32	15,88	16,47	17,11	-	●	
3133516	2,5	16	55	3,7	4	2,4	2,25	16,83	17,46	18,09	18,77	-	-	●	
3133518	2,5	18	55	3,7	4	2,4	2,03	18,91	19,6	20,31	21,07	-	-	●	
3133520	2,5	20	60	3,7	4	2,4	1,86	20,99	21,74	22,52	-	-	-	●	
3133525	2,5	25	70	3,7	4	2,4	1,53	26,17	27,09	28,07	-	-	-	●	
3133530	2,5	30	80	3,7	4	2,4	1,3	31,34	32,44	-	-	-	-	●	
3133540	2,5	40	90	3,7	4	2,4	1	41,68	-	-	-	-	-	○	
3133550	2,5	50	100	3,7	4	2,4	0,81	52,02	-	-	-	-	-	○	
3134008	3	8	45	4,5	6	2,85	6,19	8,42	8,79	9,13	9,47	9,84	10,24	●	
3134010	3	10	45	4,5	6	2,85	5,41	10,51	10,95	11,35	11,77	12,23	12,73	●	
3134012	3	12	45	4,5	6	2,85	4,81	12,6	13,09	13,56	14,07	14,62	15,21	●	
3134014	3	14	50	4,5	6	2,85	4,32	14,68	15,23	15,78	16,37	17,01	17,7	●	
3134016	3	16	55	4,5	6	2,85	3,93	16,76	17,37	18	18,67	19,4	20,18	●	
3134018	3	18	55	4,5	6	2,85	3,6	18,84	19,51	20,21	20,97	21,79	22,67	●	
3134020	3	20	60	4,5	6	2,85	3,32	20,91	21,65	22,43	23,27	24,18	25,16	●	
3134025	3	25	65	4,5	6	2,85	2,79	26,09	27	27,97	29,02	30,15	-	●	
3134030	3	30	80	4,5	6	2,85	2,4	31,25	32,34	33,51	34,77	-	-	●	
3134035	3	35	90	4,5	6	2,85	2,1	36,42	37,69	39,05	40,52	-	-	●	
3134040	3	40	90	4,5	6	2,85	1,87	41,59	43,04	44,6	-	-	-	●	
3134050	3	50	100	4,5	6	2,85	1,54	51,93	53,74	55,68	-	-	-	○	
3135012	4	12	50	6	6	3,85	3,58	12,6	13,09	13,56	14,07	14,62	15,21	●	
3135016	4	16	60	6	6	3,85	2,87	16,76	17,37	18	18,67	19,4	-	●	
3135020	4	20	60	6	6	3,85	2,39	20,91	21,65	22,43	23,27	-	-	●	
3135025	4	25	70	6	6	3,85	1,98	26,09	27	27,97	-	-	-	●	
3135030	4	30	80	6	6	3,85	1,69	31,25	32,34	33,51	-	-	-	●	
3135035	4	35	90	6	6	3,85	1,47	36,42	37,69	-	-	-	-	●	
3135040	4	40	90	6	6	3,85	1,3	41,59	43,04	-	-	-	-	●	
3135045	4	45	100	6	6	3,85	1,17	46,76	48,39	-	-	-	-	●	
3135050	4	50	100	6	6	3,85	1,06	51,93	53,74	-	-	-	-	●	
3135060	4	60	110	6	6	3,85	0,9	62,26	-	-	-	-	-	○	
3136016	5	16	60	7,5	6	4,85	1,58	16,76	17,37	18	-	-	-	●	
3136020	5	20	70	7,5	6	4,85	1,3	20,91	21,65	-	-	-	-	○	
3136025	5	25	70	7,5	6	4,85	1,06	26,09	27	-	-	-	-	●	
3136030	5	30	90	7,5	6	4,85	0,89	31,25	-	-	-	-	-	○	
3136035	5	35	90	7,5	6	4,85	0,77	36,42	-	-	-	-	-	●	
3136040	5	40	100	7,5	6	4,85	0,68	41,59	-	-	-	-	-	○	
3136050	5	50	110	7,5	6	4,85	0,55	51,93	-	-	-	-	-	●	
3136060	5	60	120	7,5	6	4,85	0,46	-	-	-	-	-	-	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

● Delivery from stock
○ Available on short notice

WXL-CR-EDS-6

WXL
- High performance
- 2 flutes
- Shank dia. 6

WXL
- High performance
- 2 Schneiden
- Schaftdurchmesser dia. 6

WXL
- Alta prestazione
- 2 denti
- Diametro del gambo dia. 6

WXL
- Haute performance
- 2 lèvres
- Diamètre queue dia. 6

WXL
- Yüksek performans
- 2 ağızlı
- Gövde çapı 6 mm

WXL
- High performance
- 2 skær
- Skaft dia. 6

WXL
- High performance
- 2 skär
- Skaft dia. 6

WXL
- Altas prestaciones
- 2 labio
- Cuello dia. 6

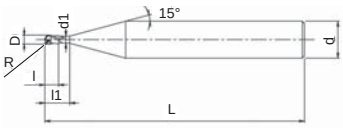
WXL
- Высокая производительность
- 2 режущих кромки
- Хвостовик Ø6 мм

WXL
- Wysoka wydajność
- 2 ostrzowy
- Chwyt 6mm

GO TO LIVE STOCK CHECK

WXL

CARBIDE | WXL | 30° | SHRINK FIT | HIGH SPEED | CC | 0~-0.0015 | min⁻¹ D.171





EDP	D	l1	R	L	l	d1	d	Le 0,5°	Le 1°	Le 1,5°	Le 2°	Le 2,5°	Le 3°	Stock	Price
48144060	0,6	1,8	0,1	50	0,9	0,55	6	1,86	1,92	1,99	2,07	2,15	2,23	●	
48144080	0,8	2,4	0,1	50	1,2	0,75	6	2,48	2,56	2,66	2,76	2,86	2,98	●	
48144100	1	2,5	0,1	50	1,5	0,95	6	2,58	2,67	2,77	2,85	2,98	3,1	●	
48144120	1,2	3	0,1	50	1,8	1,15	6	3,1	3,2	3,32	3,45	3,58	3,72	●	
48144150	1,5	3,8	0,1	50	2,3	1,45	6	3,92	4,06	4,21	4,36	4,54	4,72	●	
48144180	1,8	4,5	0,1	50	2,7	1,75	6	4,62	4,81	4,98	5,17	5,37	5,59	●	
48144200	2	5	0,1	50	3	1,95	6	5,16	5,34	5,54	5,74	5,97	6,21	●	
48144250	2,5	5	0,1	50	3,7	2,4	6	5,16	5,34	5,54	5,74	5,97	6,21	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WXL-EBD

WXL
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- Recommended with lubrification or dry milling.

WXL
- High performance
- Neue WXL Beschichtung mit einer hohen Härte und geringem Reibungskoeffizient
- Empfohlen bei schlechter Schmierung sowie zur Trockenbearbeitung geeignet

WXL
- Alta prestazione
- Nuovo rivestimento WXL con elevata durezza e migliore lubrificazione
- Consigliato con emulsione o a secco Permette lavorazioni su ampio campo di applicazioni

WXL
- Haute performance
- Nouveau revêtement plus dur et plus glissant
- Recommandé pour usinage avec ou sans lubrification Nombreuses applications de fraisage

WXL
- Yüksek performans
- Yeni WXL kaplama yüksek
- sertlik ve daha iyi yağlama ile birlikte
- Kuru veya sulu kesim önerilir

WXL
- High performance
- Ny WXL belægning med høj hårdhed og forbedrerede smøreegenskaber
- Anbefales med køling eller tør bearbejdning

WXL
- High performance
- Ny WXL beläggning med extra hårdhet och mindre friktions koefficient
- Rekommenderad med eller utan smörjmedel Kan användas i många olika material

WXL
- Altas prestaciones
- Nuevo recubrimiento WXL de elevada dureza y lubricidad mejorada
- Recomendado con lubricación o en seco

WXL
- Высокая производительность
- Новое WXL покрытие с высокой твердостью и низким коэффициентом трения.
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WXL
- Wysoka wydajność
- Nowa powłoka WXL o wysokiej twardości i niskim współczynnikiem tarcia
- Polecane do pracy z chłodzeniem i na sucho

GO TO LIVE STOCK CHECK

WXL

CARBIDE

WXL

30°

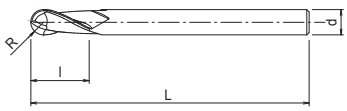
SHRINK FIT

± 0.005 3 > R

0.003 - ± 0.007 3≤R≤6

± 0.01 6 < R

min -1 D.170-171





EDP	D	R	L	l	d	Stock	Price
3105010	0,1	0,05	40	0,2	4	●	
3105020	0,2	0,1	40	0,4	4	●	
3105030	0,3	0,15	40	0,6	4	●	
3106030	0,3	0,15	50	0,6	6	●	
3105040	0,4	0,2	40	0,8	4	●	
3106040	0,4	0,2	50	0,8	6	●	
3105050	0,5	0,25	40	1,1	4	●	
3106050	0,5	0,25	50	1,1	6	●	
3105060	0,6	0,3	40	1,1	4	●	
3106060	0,6	0,3	50	1,1	6	●	
3105080	0,8	0,4	40	2	4	●	
3106080	0,8	0,4	50	2	6	●	
3105100	1	0,5	50	1,5	4	●	
3105101	1	0,5	50	2,5	4	●	
3106100	1	0,5	60	2,5	6	●	
3105120	1,2	0,6	50	3	4	●	
3105140	1,4	0,7	50	3,5	4	●	
3105150	1,5	0,75	50	2	4	●	
3105151	1,5	0,75	50	4	4	●	
3106150	1,5	0,75	50	4	6	●	
3105160	1,6	0,8	50	4	4	●	
3105200	2	1	50	3	4	●	
3105201	2	1	50	6	4	●	
3106200	2	1	50	5	6	●	
3105250	2,5	1,25	50	3	4	●	
3105251	2,5	1,25	50	6	4	●	
3106250	2,5	1,25	60	6	6	●	
3105300	3	1,5	60	4,5	4	●	
3106300	3	1,5	60	4,5	6	●	
3106301	3	1,5	60	8	6	●	
3106350	3,5	1,75	70	8	6	●	
3106400	4	2	70	6	6	●	
3105400	4	2	60	8	4	●	
3106401	4	2	70	8	6	●	
3106500	5	2,5	80	8	6	●	
3106501	5	2,5	80	10	6	●	
3106502	5	2,5	80	12	6	●	
3106600	6	3	90	10	6	●	
3106601	6	3	90	12	6	●	
3106610	7	3,5	90	14	6	●	
3106620	8	4	100	12	8	●	
3106621	8	4	100	14	8	●	
3106630	9	4,5	100	18	8	●	
3106640	10	5	100	15	10	●	
3106641	10	5	100	18	10	●	
3106650	11	5,5	100	22	10	●	
3106660	12	6	110	18	12	●	
3106661	12	6	110	22	12	●	
3106670	14	7	110	26	12	○	
3106680	16	8	140	30	16	●	
3106690	18	9	140	34	16	○	
3106700	20	10	160	38	20	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
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◎	◎	◎			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

● Delivery from stock
○ Available on short notice

WXL-LN-EBD

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- Nuovo rivestimento WXL con elevata durezza e migliore lubrificazione
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- Ny WXL beläggning med extra hårdhet och mindre friktions koefficient
- Rekommenderad med eller utan smörjmedel Kan användas i många olika material

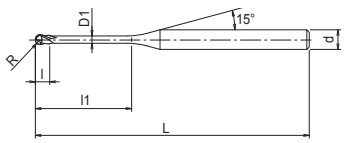
WXL
- Altas prestaciones
- Nuevo recubrimiento WXL de elevada dureza y lubricidad mejorada
- Recomendado con lubricación o en seco

WXL
- Высокая производительность
- Новое WXL покрытие с высокой твердостью и низким коэффициентом трения.
- Рекомендована для работы с СОЖ и «сухого» фрезерования Позволяет обрабатывать широкий диапазон материалов

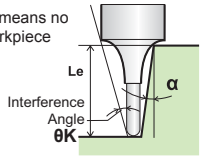
WXL
- Wysoka wydajność
- Nowa powłoka WXL o wysokiej twardości i niskim współczynnikiem tarcia
- Polecane do pracy z chłodzeniem i na sucho

GO TO LIVE STOCK CHECK

CARBIDE | WXL | 30° | SHRINK FIT | R ± 0.005 | min⁻¹ D.172-176



No numerical value means no interference with workpiece





EDP	D	R	l1	L	l	d	D1	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3110103	0,1	0,05	0,3	45	0,08	4	0,085	14,46	0,34	0,35	0,36	0,37	0,38	0,4	●	
3110105	0,1	0,05	0,5	45	0,08	4	0,085	14,1	0,54	0,56	0,58	0,6	0,62	0,64	●	
3110203	0,2	0,1	0,3	45	0,16	4	0,18	14,59	0,3	0,31	0,32	0,33	0,34	0,35	●	
3110205	0,2	0,1	0,5	45	0,16	4	0,18	14,44	0,53	0,55	0,57	0,59	0,61	0,63	●	
3120205	0,2	0,1	0,5	50	0,16	6	0,18	14,16	0,53	0,55	0,57	0,59	0,61	0,63	●	
3110207	0,2	0,1	0,75	45	0,16	4	0,18	13,72	0,79	0,82	0,85	0,88	0,91	0,94	●	
3110210	0,2	0,1	1	45	0,16	4	0,18	13,31	1,05	1,09	1,13	1,17	1,21	1,26	●	
3120210	0,2	0,1	1	50	0,16	6	0,18	13,85	1,05	1,09	1,13	1,17	1,21	1,26	●	
3110212	0,2	0,1	1,25	45	0,16	4	0,18	12,92	1,31	1,36	1,41	1,46	1,51	1,57	●	
3110215	0,2	0,1	1,5	45	0,16	4	0,18	12,56	1,57	1,63	1,68	1,74	1,81	1,88	●	
3120215	0,2	0,1	1,5	50	0,16	6	0,18	13,3	1,57	1,63	1,68	1,74	1,81	1,88	●	
3110217	0,2	0,1	1,75	45	0,16	4	0,18	12,21	1,83	1,9	1,96	2,03	2,11	2,19	●	
3110220	0,2	0,1	2	45	0,16	4	0,18	11,88	2,09	2,16	2,24	2,32	2,4	2,5	●	
3120220	0,2	0,1	2	50	0,16	6	0,18	12,8	2,09	2,16	2,24	2,32	2,4	2,5	●	
3110225	0,2	0,1	2,5	45	0,16	4	0,18	11,28	2,61	2,7	2,79	2,89	3	3,12	●	
3110230	0,2	0,1	3	45	0,16	4	0,18	10,73	3,13	3,23	3,35	3,47	3,6	3,74	●	
3110305	0,3	0,15	0,5	45	0,24	4	0,28	14,22	0,52	0,54	0,56	0,58	0,6	0,62	●	
3110306	0,3	0,15	0,6	45	0,24	4	0,28	14,03	0,63	0,65	0,68	0,7	0,72	0,75	●	
3110307	0,3	0,15	0,75	45	0,24	4	0,28	13,77	0,79	0,82	0,85	0,87	0,9	0,93	●	
3110310	0,3	0,15	1	45	0,24	4	0,28	13,34	1,05	1,09	1,12	1,16	1,2	1,24	●	
3120310	0,3	0,15	1	50	0,24	6	0,28	13,88	1,05	1,09	1,12	1,16	1,2	1,24	●	
3110312	0,3	0,15	1,25	45	0,24	4	0,28	12,94	1,31	1,36	1,4	1,45	1,5	1,55	●	
3110315	0,3	0,15	1,5	45	0,24	4	0,28	12,57	1,57	1,63	1,68	1,74	1,8	1,87	●	
3120315	0,3	0,15	1,5	50	0,24	6	0,28	13,33	1,57	1,63	1,68	1,74	1,8	1,87	●	
3110317	0,3	0,15	1,75	45	0,24	4	0,28	12,21	1,83	1,89	1,96	2,02	2,1	2,18	●	
3110320	0,3	0,15	2	45	0,24	4	0,28	11,87	2,09	2,16	2,23	2,31	2,4	2,49	●	
3120320	0,3	0,15	2	50	0,24	6	0,28	12,81	2,09	2,16	2,23	2,31	2,4	2,49	●	
3110322	0,3	0,15	2,25	45	0,24	4	0,28	11,56	2,35	2,43	2,51	2,6	2,69	2,8	●	
3110325	0,3	0,15	2,5	45	0,24	4	0,28	11,25	2,61	2,69	2,79	2,89	2,99	3,11	●	
3120325	0,3	0,15	2,5	50	0,24	6	0,28	12,34	2,61	2,69	2,79	2,89	2,99	3,11	●	
3110327	0,3	0,15	2,75	45	0,24	4	0,28	10,97	2,87	2,96	3,06	3,17	3,29	3,42	●	
3110330	0,3	0,15	3	45	0,24	4	0,28	10,69	3,13	3,23	3,34	3,46	3,59	3,73	●	
3120330	0,3	0,15	3	50	0,24	6	0,28	11,89	3,13	3,23	3,34	3,46	3,59	3,73	●	
3110335	0,3	0,15	3,5	45	0,24	4	0,28	10,19	3,64	3,76	3,9	4,04	4,19	4,35	●	
3110340	0,3	0,15	4	45	0,24	4	0,28	9,72	4,16	4,3	4,45	4,61	4,78	4,97	●	
3110345	0,3	0,15	4,5	45	0,24	4	0,28	9,30	4,68	4,83	5	5,19	5,38	5,59	●	
3110350	0,3	0,15	5	45	0,24	4	0,28	8,91	5,19	5,37	5,56	5,76	5,98	6,22	●	
3110405	0,4	0,2	0,5	45	0,3	4	0,37	14,30	0,52	0,53	0,55	0,56	0,58	0,6	●	
3110407	0,4	0,2	0,75	45	0,3	4	0,37	13,83	0,78	0,8	0,83	0,85	0,88	0,91	●	
3110410	0,4	0,2	1	45	0,3	4	0,37	13,39	1,04	1,07	1,11	1,14	1,18	1,22	●	
3120410	0,4	0,2	1	50	0,3	6	0,37	13,93	1,04	1,07	1,11	1,14	1,18	1,22	●	
3110415	0,4	0,2	1,5	45	0,3	4	0,37	12,59	1,56	1,61	1,66	1,72	1,77	1,84	●	
3120415	0,4	0,2	1,5	50	0,3	6	0,37	13,36	1,56	1,61	1,66	1,72	1,77	1,84	●	
3110420	0,4	0,2	2	45	0,3	4	0,37	11,88	2,08	2,14	2,21	2,29	2,37	2,46	●	
3120420	0,4	0,2	2	50	0,3	6	0,37	12,83	2,08	2,14	2,21	2,29	2,37	2,46	●	
3110425	0,4	0,2	2,5	45	0,3	4	0,37	11,24	2,6	2,68	2,77	2,87	2,97	3,08	●	
3120425	0,4	0,2	2,5	50	0,3	6	0,37	12,35	2,6	2,68	2,77	2,87	2,97	3,08	●	
3110430	0,4	0,2	3	45	0,3	4	0,37	10,67	3,11	3,21	3,32	3,44	3,57	3,7	●	
3120430	0,4	0,2	3	50	0,3	6	0,37	11,90	3,11	3,21	3,32	3,44	3,57	3,7	●	
3110435	0,4	0,2	3,5	45	0,3	4	0,37	10,15	3,63	3,75	3,88	4,02	4,16	4,33	●	
3110440	0,4	0,2	4	45	0,3	4	0,37	9,68	4,15	4,28	4,43	4,59	4,76	4,95	●	
3120440	0,4	0,2	4	50	0,3	6	0,37	11,09	4,15	4,28	4,43	4,59	4,76	4,95	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

● Delivery from stock
○ Available on short notice

WXL-LN-EBD

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- New WXL coating with high hardness and better lubrification.
- Recommended with lubrification or dry milling.

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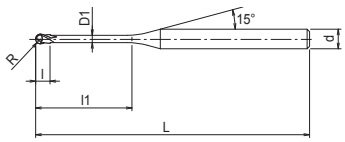
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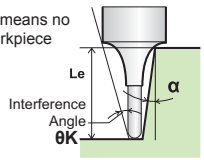
WXL
- Wysoka wydajność
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- Polecane do pracy z chłodzeniem i na sucho

GO TO LIVE STOCK CHECK

CARBIDE | WXL | 30° | SHRINK FIT | ± 0.005 | min D.172–176



No numerical value means no interference with workpiece





EDP	D	R	l1	L	l	d	D1	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3110445	0,4	0,2	4,5	45	0,3	4	0,37	9,25	4,66	4,82	4,99	5,17	5,36	5,57	●	
3110450	0,4	0,2	5	45	0,3	4	0,37	8,86	5,18	5,35	5,54	5,74	5,96	6,19	●	
3120450	0,4	0,2	5	50	0,3	6	0,37	10,38	5,18	5,35	5,54	5,74	5,96	6,19	●	
3110455	0,4	0,2	5,5	45	0,3	4	0,37	8,5	5,7	5,89	6,09	6,32	6,55	6,81	●	
3110460	0,4	0,2	6	45	0,3	4	0,37	8,16	6,21	6,42	6,65	6,89	7,15	7,43	●	
3120460	0,4	0,2	6	50	0,3	6	0,37	9,76	6,21	6,42	6,65	6,89	7,15	7,43	●	
3110510	0,5	0,25	1	45	0,4	4	0,45	13,45	1,03	1,06	1,09	1,12	1,15	1,19	●	
3110515	0,5	0,25	1,5	45	0,4	4	0,45	12,62	1,55	1,59	1,64	1,69	1,75	1,81	●	
3120515	0,5	0,25	1,5	50	0,4	6	0,45	13,4	1,55	1,59	1,64	1,69	1,75	1,81	●	
3110520	0,5	0,25	2	45	0,4	4	0,45	11,89	2,06	2,13	2,2	2,27	2,35	2,43	●	
3120520	0,5	0,25	2	50	0,4	6	0,45	12,86	2,06	2,13	2,2	2,27	2,35	2,43	●	
3110525	0,5	0,25	2,5	45	0,4	4	0,45	11,23	2,58	2,66	2,75	2,84	2,94	3,05	●	
3120525	0,5	0,25	2,5	50	0,4	6	0,45	12,36	2,58	2,66	2,75	2,84	2,94	3,05	●	
3110530	0,5	0,25	3	45	0,4	4	0,45	10,65	3,1	3,2	3,3	3,42	3,54	3,68	●	
3120530	0,5	0,25	3	50	0,4	6	0,45	11,9	3,1	3,2	3,3	3,42	3,54	3,68	●	
3110535	0,5	0,25	3,5	45	0,4	4	0,45	10,12	3,61	3,73	3,86	3,99	4,14	4,3	●	
3110540	0,5	0,25	4	45	0,4	4	0,45	9,64	4,13	4,27	4,41	4,57	4,74	4,92	●	
3120540	0,5	0,25	4	50	0,4	6	0,45	11,08	4,13	4,27	4,41	4,57	4,74	4,92	●	
3110545	0,5	0,25	4,5	45	0,4	4	0,45	9,2	4,65	4,8	4,97	5,14	5,33	5,54	●	
3110550	0,5	0,25	5	45	0,4	4	0,45	8,8	5,17	5,34	5,52	5,72	5,93	6,16	●	
3120550	0,5	0,25	5	50	0,4	6	0,45	10,36	5,17	5,34	5,52	5,72	5,93	6,16	●	
3110555	0,5	0,25	5,5	45	0,4	4	0,45	8,43	5,68	5,87	6,07	6,29	6,53	6,78	●	
3110560	0,5	0,25	6	45	0,4	4	0,45	8,1	6,2	6,41	6,63	6,87	7,13	7,41	●	
3120560	0,5	0,25	6	50	0,4	6	0,45	9,73	6,2	6,41	6,63	6,87	7,13	7,41	●	
3110570	0,5	0,25	7	45	0,4	4	0,45	7,49	7,23	7,48	7,74	8,02	8,32	8,65	●	
3110580	0,5	0,25	8	45	0,4	4	0,45	6,98	8,27	8,55	8,85	9,17	9,52	9,89	●	
3120580	0,5	0,25	8	50	0,4	6	0,45	8,67	8,27	8,55	8,85	9,17	9,52	9,89	●	
3110590	0,5	0,25	9	45	0,4	4	0,45	6,52	9,3	9,62	9,95	10,32	10,71	11,14	●	
3110600	0,5	0,25	10	45	0,4	4	0,45	6,13	10,33	10,68	11,06	11,47	11,9	12,38	●	
3110610	0,6	0,3	11	45	0,5	4	0,55	13,49	1,03	1,05	1,08	1,11	1,14	1,18	●	
3110615	0,6	0,3	1,5	45	0,5	4	0,55	12,64	1,55	1,59	1,64	1,69	1,74	1,8	●	
3120615	0,6	0,3	1,5	50	0,5	6	0,55	13,42	1,55	1,59	1,64	1,69	1,74	1,8	●	
3110620	0,6	0,3	2	45	0,5	4	0,55	11,88	2,06	2,12	2,19	2,26	2,34	2,42	●	
3120620	0,6	0,3	2	50	0,5	6	0,55	12,87	2,06	2,12	2,19	2,26	2,34	2,42	●	
3110625	0,6	0,3	2,5	45	0,5	4	0,55	11,21	2,58	2,66	2,74	2,84	2,94	3,04	●	
3120625	0,6	0,3	2,5	50	0,5	6	0,55	12,37	2,58	2,66	2,74	2,84	2,94	3,04	●	
3110630	0,6	0,3	3	45	0,5	4	0,55	10,61	3,1	3,19	3,3	3,41	3,53	3,66	●	
3120630	0,6	0,3	3	50	0,5	6	0,55	11,9	3,1	3,19	3,3	3,41	3,53	3,66	●	
3110635	0,6	0,3	3,5	45	0,5	4	0,55	10,07	3,61	3,73	3,85	3,99	4,13	4,29	●	
3110640	0,6	0,3	4	45	0,5	4	0,55	9,58	4,13	4,26	4,41	4,56	4,73	4,91	●	
3120640	0,6	0,3	4	50	0,5	6	0,55	11,06	4,13	4,26	4,41	4,56	4,73	4,91	●	
3110645	0,6	0,3	4,5	45	0,5	4	0,55	9,13	4,65	4,8	4,96	5,14	5,32	5,53	●	
3110650	0,6	0,3	5	45	0,5	4	0,55	8,73	5,16	5,33	5,51	5,71	5,92	6,15	●	
3120650	0,6	0,3	5	50	0,5	6	0,55	10,33	5,16	5,33	5,51	5,71	5,92	6,15	●	
3110655	0,6	0,3	5,5	45	0,5	4	0,55	8,36	5,68	5,87	6,07	6,29	6,52	6,77	●	
3110660	0,6	0,3	6	45	0,5	4	0,55	8,02	6,2	6,4	6,62	6,86	7,12	7,39	●	
3120660	0,6	0,3	6	50	0,5	6	0,55	9,69	6,2	6,4	6,62	6,86	7,12	7,39	●	
3110665	0,6	0,3	6,5	45	0,5	4	0,55	7,7	6,71	6,94	7,18	7,44	7,71	8,02	●	
3110670	0,6	0,3	7	45	0,5	4	0,55	7,41	7,23	7,47	7,73	8,01	8,31	8,64	●	
3110675	0,6	0,3	7,5	45	0,5	4	0,55	7,14	7,75	8,01	8,29	8,59	8,91	9,26	●	
3110680	0,6	0,3	8	45	0,5	4	0,55	6,89	8,26	8,54	8,84	9,16	9,51	9,88	●	
3120680	0,6	0,3	8	50	0,5	6	0,55	8,62	8,26	8,54	8,84	9,16	9,51	9,88	●	

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~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			◎	◎
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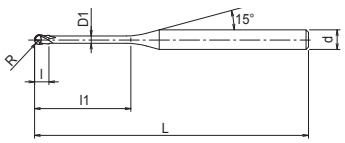
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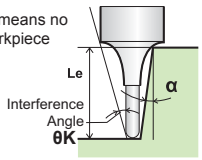
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3110685	0,6	0,3	8,5	45	0,5	4	0,55	6,66	8,78	9,08	9,39	9,74	10,1	10,5	●	
3110690	0,6	0,3	9	45	0,5	4	0,55	6,44	9,3	9,61	9,95	10,31	10,7	11,12	●	
3110695	0,6	0,3	9,5	45	0,5	4	0,55	6,23	9,81	10,15	10,5	10,89	11,3	11,75	●	
3110700	0,6	0,3	10	45	0,5	4	0,55	6,04	10,33	10,68	11,06	11,46	11,9	12,37	●	
3120700	0,6	0,3	10	50	0,5	6	0,55	7,76	10,33	10,68	11,06	11,46	11,9	12,37	●	
3110711	0,6	0,3	11	45	0,5	4	0,55	5,69	11,37	11,75	12,16	12,61	13,09	13,61	●	
3110712	0,6	0,3	12	45	0,5	4	0,55	5,38	12,4	12,82	13,27	13,76	14,28	14,85	●	
3110820	0,8	0,4	2	45	0,6	4	0,75	11,86	2,06	2,12	2,18	2,25	2,32	2,4	●	
3120820	0,8	0,4	2	50	0,6	6	0,75	12,9	2,06	2,12	2,18	2,25	2,32	2,4	●	
3110830	0,8	0,4	3	45	0,5	4	0,75	10,52	3,09	3,19	3,29	3,4	3,51	3,64	●	
3120830	0,8	0,4	3	50	0,6	6	0,75	11,89	3,09	3,19	3,29	3,4	3,51	3,64	●	
3110840	0,8	0,4	4	45	0,6	4	0,75	9,45	4,13	4,26	4,4	4,55	4,71	4,88	●	
3120840	0,8	0,4	4	50	0,6	6	0,75	11,02	4,13	4,26	4,4	4,55	4,71	4,88	●	
3110850	0,8	0,4	5	45	0,6	4	0,75	8,58	5,16	5,33	5,5	5,7	5,9	6,13	●	
3120850	0,8	0,4	5	50	0,6	6	0,75	10,27	5,16	5,33	5,5	5,7	5,9	6,13	●	
3110860	0,8	0,4	6	45	0,6	4	0,75	7,85	6,19	6,4	6,61	6,85	7,1	7,37	●	
3120860	0,8	0,4	6	50	0,6	6	0,75	9,62	6,19	6,4	6,61	6,85	7,1	7,37	●	
3110870	0,8	0,4	7	45	0,6	4	0,75	7,24	7,23	7,47	7,72	8	8,29	8,61	●	
3110880	0,8	0,4	8	45	0,6	4	0,75	6,71	8,26	8,54	8,83	9,15	9,49	9,86	●	
3120880	0,8	0,4	8	50	0,6	6	0,75	8,53	8,26	8,54	8,83	9,15	9,49	9,86	●	
3110890	0,8	0,4	9	45	0,6	4	0,75	6,25	9,29	9,6	9,94	10,3	10,68	11,1	●	
3110900	0,8	0,4	10	45	0,6	4	0,75	5,86	10,33	10,67	11,05	11,45	11,88	12,34	●	
3120900	0,8	0,4	10	50	0,6	6	0,75	7,66	10,33	10,67	11,05	11,45	11,88	12,34	●	
3110912	0,8	0,4	12	45	0,6	4	0,75	5,2	12,4	12,81	13,26	13,75	14,27	14,83	●	
3111025	1	0,5	2,5	45	0,8	4	0,95	11,09	2,57	2,64	2,72	2,81	2,9	3	●	
3111030	1	0,5	3	45	0,8	4	0,95	10,43	3,09	3,18	3,28	3,38	3,49	3,62	●	
3121030	1	0,5	3	50	0,8	6	0,95	11,88	3,09	3,18	3,28	3,38	3,49	3,62	●	
3111040	1	0,5	4	45	0,8	4	0,95	9,32	4,12	4,25	4,39	4,53	4,69	4,86	●	
3121040	1	0,5	4	50	0,8	6	0,95	10,98	4,12	4,25	4,39	4,53	4,69	4,86	●	
3111050	1	0,5	5	45	0,8	4	0,95	8,41	5,16	5,32	5,49	5,68	5,88	6,1	●	
3121050	1	0,5	5	50	0,8	6	0,95	10,21	5,16	5,32	5,49	5,68	5,88	6,1	●	
3111060	1	0,5	6	45	0,8	4	0,95	7,67	6,19	6,39	6,6	6,83	7,08	7,35	●	
3121060	1	0,5	6	50	0,8	6	0,95	9,54	6,19	6,39	6,6	6,83	7,08	7,35	●	
3111070	1	0,5	7	45	0,8	4	0,95	7,05	7,22	7,46	7,71	7,98	8,27	8,59	●	
3121070	1	0,5	7	50	0,8	6	0,95	8,95	7,22	7,46	7,71	7,98	8,27	8,59	●	
3111080	1	0,5	8	45	0,8	4	0,95	6,52	8,26	8,53	8,82	9,13	9,47	9,83	●	
3121080	1	0,5	8	50	0,8	6	0,95	8,43	8,26	8,53	8,82	9,13	9,47	9,83	●	
3111090	1	0,5	9	45	0,8	4	0,95	6,06	9,29	9,6	9,93	10,28	10,66	11,08	●	
3111100	1	0,5	10	45	0,8	4	0,95	5,66	10,33	10,67	11,04	11,43	11,86	12,32	●	
3121100	1	0,5	10	50	0,8	6	0,95	7,55	10,33	10,67	11,04	11,43	11,86	12,32	●	
3111112	1	0,5	12	45	0,8	4	0,95	5,01	12,39	12,81	13,25	13,73	14,25	14,81	●	
3121112	1	0,5	12	50	0,8	6	0,95	6,83	12,39	12,81	13,25	13,73	14,25	14,81	●	
3111114	1	0,5	14	50	0,8	4	0,95	4,49	14,46	14,95	15,47	16,03	16,64	17,29	●	
3121114	1	0,5	14	60	0,8	6	0,95	6,24	14,46	14,95	15,47	16,03	16,64	17,29	●	
3111116	1	0,5	16	50	0,8	4	0,95	4,06	16,53	17,09	17,69	18,33	19,03	19,78	●	
3121116	1	0,5	16	60	0,8	6	0,95	5,74	16,53	17,09	17,69	18,33	19,03	19,78	●	
3111118	1	0,5	18	55	0,8	4	0,95	3,71	18,59	19,23	19,9	20,63	21,41	22,26	●	
3111120	1	0,5	20	55	0,8	4	0,95	4,95	20,66	21,36	22,12	22,93	23,8	24,75	●	
3121120	1	0,5	20	60	0,8	6	0,95	3,42	20,66	21,36	22,12	22,93	23,8	24,75	●	
3121122	1	0,5	22	60	0,8	6	0,95	4,63	22,73	23,5	24,33	25,23	26,19	27,24	●	
3111240	1,2	0,6	4	45	1	4	1,15	9,07	4,19	4,34	4,48	4,62	4,78	4,95	●	
3111260	1,2	0,6	6	45	1	4	1,15	7,41	6,27	6,48	6,69	6,92	7,17	7,44	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

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- Ny WXL beläggning med extra hårdhet och mindre friktions koefficient
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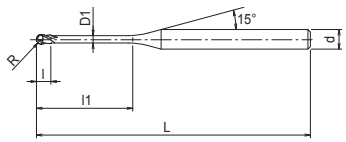
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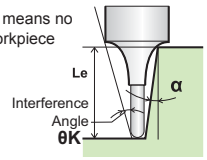
WXL
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- Nowa powłoka WXL o wysokiej twardości i niskim współczynnikiem tarcia
- Polecane do pracy z chłodzeniem i na sucho

GO TO LIVE STOCK CHECK

CARBIDE | WXL | 30° | SHRINK FIT | R ± 0.005 | min⁻¹ D.172–176



No numerical value means no interference with workpiece





EDP	D	R	l1	L	l	d	D1	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3121260	1,2	0,6	6	50	1	6	1,15	9,4	6,27	6,48	6,69	6,92	7,17	7,44	●	
3111280	1,2	0,6	8	45	1	4	1,15	6,26	8,35	8,62	8,91	9,22	9,56	9,93	●	
3121280	1,2	0,6	8	50	1	6	1,15	8,28	8,35	8,62	8,91	9,22	9,56	9,93	●	
3111300	1,2	0,6	10	45	1	4	1,15	5,42	10,42	10,76	11,13	11,52	11,95	12,41	●	
3121300	1,2	0,6	10	50	1	6	1,15	7,39	10,42	10,76	11,13	11,52	11,95	12,41	●	
3111312	1,2	0,6	12	45	1	4	1,15	4,78	12,49	12,9	13,34	13,82	14,34	14,9	●	
3121312	1,2	0,6	12	50	1	6	1,15	6,68	12,49	12,9	13,34	13,82	14,34	14,9	●	
3111314	1,2	0,6	14	50	1	4	1,15	4,27	14,55	15,04	15,56	16,12	16,73	17,38	●	
3111316	1,2	0,6	16	50	1	4	1,15	3,86	16,62	17,18	17,78	18,42	19,12	19,87	●	
3121316	1,2	0,6	16	60	1	6	1,15	5,6	16,62	17,18	17,78	18,42	19,12	19,87	●	
3111318	1,2	0,6	18	55	1	4	1,15	3,52	18,69	19,32	19,99	20,72	21,51	22,36	●	
3111320	1,2	0,6	20	60	1	4	1,15	3,24	20,75	21,46	22,21	23,02	23,9	24,84	●	
3111324	1,2	0,6	24	60	1	4	1,15	2,79	24,89	25,74	26,64	27,62	28,68	-	●	
3111480	1,4	0,7	8	45	1,1	4	1,35	6,04	8,35	8,61	8,9	9,21	9,54	9,9	●	
3111512	1,4	0,7	12	45	1,1	4	1,35	4,57	12,48	12,89	13,33	13,81	14,32	14,87	●	
3111516	1,4	0,7	16	50	1,1	4	1,35	3,67	16,62	17,17	17,77	18,41	19,1	19,85	●	
3111530	1,5	0,75	3	45	1,2	4	1,45	10,01	3,13	3,25	3,35	3,45	3,56	3,67	●	
3111540	1,5	0,75	4	45	1,2	4	1,45	8,8	4,18	4,33	4,46	4,6	4,75	4,92	●	
3111560	1,5	0,75	6	45	1,2	4	1,45	7,08	6,27	6,47	6,68	6,9	7,14	7,4	●	
3121560	1,5	0,75	6	50	1,2	6	1,45	9,26	6,27	6,47	6,68	6,9	7,14	7,4	●	
3111580	1,5	0,75	8	45	1,2	4	1,45	5,92	8,34	8,61	8,90	9,2	9,53	9,89	●	
3121580	1,5	0,75	8	50	1,2	6	1,45	8,11	8,34	8,61	8,90	9,2	9,53	9,89	●	
3111600	1,5	0,75	10	45	1,2	4	1,45	5,09	10,41	10,75	11,11	11,5	11,92	12,38	●	
3121600	1,5	0,75	10	50	1,2	6	1,45	7,21	10,41	10,75	11,11	11,5	11,92	12,38	●	
3111612	1,5	0,75	12	45	1,2	4	1,45	4,46	12,48	12,89	13,33	13,8	14,31	14,86	●	
3121612	1,5	0,75	12	50	1,2	6	1,45	6,49	12,48	12,89	13,33	13,8	14,31	14,86	●	
3111614	1,5	0,75	14	50	1,2	4	1,45	3,96	14,55	15,03	15,55	16,1	16,7	17,35	●	
3111616	1,5	0,75	16	55	1,2	4	1,45	3,57	16,62	17,17	17,76	18,4	19,09	19,83	●	
3121616	1,5	0,75	16	60	1,2	6	1,45	5,4	16,62	17,17	17,76	18,4	19,09	19,83	●	
3111618	1,5	0,75	18	55	1,2	4	1,45	3,25	18,68	19,31	19,98	20,7	21,48	22,32	●	
3111620	1,5	0,75	20	55	1,2	4	1,45	2,98	20,75	21,45	22,19	23	23,87	-	●	
3121620	1,5	0,75	20	60	1,2	6	1,45	4,63	20,75	21,45	22,19	23	23,87	24,81	●	
3111622	1,5	0,75	22	55	1,2	4	1,45	2,75	22,82	23,59	24,41	25,3	26,26	-	●	
3111630	1,5	0,75	30	65	1,2	4	1,45	2,1	31,09	32,14	33,28	34,5	-	-	●	
3111640	1,6	0,8	4	45	1,3	4	1,55	8,7	4,18	4,33	4,46	4,59	4,74	4,91	●	
3111680	1,6	0,8	8	45	1,3	4	1,55	5,8	8,34	8,61	8,89	9,19	9,52	9,88	●	
3111712	1,6	0,8	12	45	1,3	4	1,55	4,34	12,48	12,89	13,32	13,79	14,3	14,85	●	
3111716	1,6	0,8	16	50	1,3	4	1,55	3,47	16,61	17,16	17,76	18,39	19,08	19,82	●	
3111720	1,6	0,8	20	55	1,3	4	1,55	2,89	20,75	21,44	22,19	22,99	23,86	-	●	
3111880	1,8	0,9	8	45	1,4	4	1,75	5,38	8,48	8,88	9,23	9,56	9,90	10,27	●	
3111912	1,8	0,9	12	45	1,4	4	1,75	4,02	12,69	13,22	13,68	14,16	14,68	15,24	●	
3111916	1,8	0,9	16	50	1,4	4	1,75	3,2	16,88	17,51	18,11	18,76	19,46	20,21	●	
3111920	1,8	0,9	20	55	1,4	4	1,75	2,66	21,05	21,79	22,55	23,36	24,24	-	●	
3112030	2	1	3	45	1,6	4	1,95	9,1	3,16	3,31	3,47	3,64	3,8	3,96	●	
3112040	2	1	4	45	1,6	4	1,95	7,87	4,23	4,44	4,66	4,86	5,06	5,26	●	
3122040	2	1	4	50	1,6	6	1,95	10,32	4,23	4,44	4,66	4,86	5,06	5,26	●	
3112060	2	1	6	45	1,6	4	1,95	6,19	6,36	6,67	6,96	7,23	7,49	7,76	●	
3122060	2	1	6	50	1,6	6	1,95	8,77	6,36	6,67	6,96	7,23	7,49	7,76	●	
3112080	2	1	8	45	1,6	4	1,95	5,1	8,48	8,87	9,22	9,55	9,88	10,24	●	
3122080	2	1	8	50	1,6	6	1,95	7,61	8,48	8,87	9,22	9,55	9,88	10,24	●	
3112100	2	1	10	45	1,6	4	1,95	4,33	10,59	11,05	11,45	11,85	12,27	12,73	●	
3122100	2	1	10	50	1,6	6	1,95	6,73	10,59	11,05	11,45	11,85	12,27	12,73	●	

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~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
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Cu	Al	Graphite	Ti	HRS	Plast.	
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● Delivery from stock
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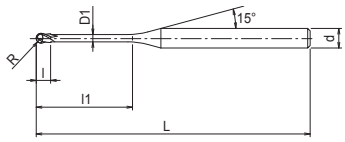
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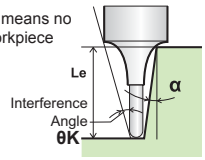
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3112112	2	1	12	45	1,6	4	1,95	3,77	12,69	13,21	13,67	14,15	14,66	15,22	●	
3122112	2	1	12	50	1,6	6	1,95	6,03	12,69	13,21	13,67	14,15	14,66	15,22	●	
3112114	2	1	14	50	1,6	4	1,95	3,33	14,78	15,36	15,89	16,45	17,05	17,7	●	
3112116	2	1	16	50	1,6	4	1,95	2,98	16,88	17,51	18,1	18,75	19,44	-	●	
3122116	2	1	16	60	1,6	6	1,95	4,98	16,88	17,51	18,1	18,75	19,44	20,19	●	
3112118	2	1	18	55	1,6	4	1,95	2,7	18,96	19,65	20,32	21,04	21,83	-	●	
3112120	2	1	20	55	1,6	4	1,95	2,47	21,05	21,78	22,54	23,34	-	-	●	
3122120	2	1	20	65	1,6	6	1,95	4,25	21,05	21,78	22,54	23,34	24,22	25,16	●	
3112122	2	1	22	60	1,6	4	1,95	2,27	23,13	23,92	24,75	25,64	-	-	●	
3112125	2	1	25	65	1,6	4	1,95	2,03	26,24	27,13	28,08	29,09	-	-	●	
3122125	2	1	25	70	1,6	6	1,95	3,58	26,24	27,13	28,08	29,09	30,19	31,38	●	
3112130	2	1	30	70	1,6	4	1,95	1,73	31,42	32,48	33,62	-	-	-	●	
3122130	2	1	30	75	1,6	6	1,95	3,1	31,42	32,48	33,62	34,84	36,16	37,59	●	
3112135	2	1	35	75	1,6	4	1,95	1,5	36,59	37,83	39,16	-	-	-	●	
3122135	2	1	35	80	1,6	6	1,95	2,73	36,59	37,83	39,16	40,59	42,14	-	●	
3112140	2	1	40	80	1,6	4	1,95	1,33	41,76	43,18	-	-	-	-	●	
3112560	2,5	1,25	6	45	2	4	2,35	5,46	6,26	6,51	6,75	6,99	7,21	7,46	●	
3112600	2,5	1,25	10	50	2	4	2,35	3,63	10,46	10,85	11,21	11,59	11,99	12,43	●	
3112615	2,5	1,25	15	55	2	4	2,35	2,55	15,67	16,21	16,75	17,34	17,96	-	●	
3112620	2,5	1,25	20	60	2	4	2,35	1,97	20,87	21,56	22,30	-	-	-	●	
3112625	2,5	1,25	25	65	2	4	2,35	1,6	26,04	26,91	27,84	-	-	-	●	
3112630	2,5	1,25	30	70	2	4	2,35	1,35	31,21	32,26	-	-	-	-	●	
3112635	2,5	1,25	35	70	2	4	2,35	1,17	36,38	37,61	-	-	-	-	●	
3123059	3	1,5	6	45	2,4	3	2,85	-	-	-	-	-	-	-	●	
3113060	3	1,5	6	45	2,4	4	2,85	4,29	6,25	6,49	6,72	6,95	7,17	7,4	●	
3123060	3	1,5	6	50	2,4	6	2,85	8,17	6,25	6,49	6,72	6,95	7,17	7,4	●	
3123080	3	1,5	8	50	2,4	6	2,85	6,88	8,35	8,67	8,97	9,25	9,55	9,88	●	
3123100	3	1,5	10	50	2,4	6	2,85	5,94	10,44	10,83	11,19	11,55	11,94	12,37	●	
3123112	3	1,5	12	55	2,4	6	2,85	5,22	12,53	12,98	13,4	13,85	14,33	14,86	●	
3123114	3	1,5	14	55	2,4	6	2,85	4,66	14,62	15,13	15,62	16,15	16,72	17,34	●	
3123115	3	1,5	15	55	2,4	6	2,85	4,42	15,66	16,2	16,73	17,3	17,92	18,59	●	
3123116	3	1,5	16	55	2,4	6	2,85	4,21	16,7	17,26	17,84	18,45	19,11	19,83	●	
3123120	3	1,5	20	60	2,4	6	2,85	3,52	20,86	21,54	22,27	23,05	23,89	24,8	●	
3123125	3	1,5	25	65	2,4	6	2,85	2,92	26,04	26,89	27,81	28,8	29,86	-	●	
3123130	3	1,5	30	70	2,4	6	2,85	2,5	31,2	32,24	33,35	34,55	-	-	●	
3123135	3	1,5	35	80	2,4	6	2,85	2,18	36,37	37,59	38,89	40,3	-	-	●	
3123140	3	1,5	40	85	2,4	6	2,85	1,94	41,54	42,94	44,43	-	-	-	●	
3123600	3,5	1,75	10	60	2,8	6	3,35	5,4	10,43	10,81	11,16	11,51	11,9	12,31	●	
3123615	3,5	1,75	15	60	2,8	6	3,35	3,93	15,65	16,18	16,7	17,26	17,87	18,53	●	
3123620	3,5	1,75	20	65	2,8	6	3,35	3,08	20,85	21,53	22,24	23,01	23,84	24,74	●	
3123625	3,5	1,75	25	65	2,8	6	3,35	2,54	26,03	26,87	27,78	28,76	29,82	-	●	
3123630	3,5	1,75	30	70	2,8	6	3,35	2,16	31,2	32,22	33,32	34,51	-	-	●	
3123635	3,5	1,75	35	80	2,8	6	3,35	1,88	36,36	37,57	38,87	-	-	-	●	
3123640	3,5	1,75	40	90	2,8	6	3,35	1,66	41,53	42,92	44,41	-	-	-	●	
3123645	3,5	1,75	45	90	2,8	6	3,35	1,49	46,7	48,27	-	-	-	-	●	
3114080	4	2	8	55	3,2	4	3,85	-	-	-	-	-	-	-	●	
3124080	4	2	8	60	3,2	6	3,85	5,67	8,33	8,63	8,91	9,18	9,46	9,77	●	
3124100	4	2	10	60	3,2	6	3,85	4,74	10,42	10,79	11,13	11,48	11,85	12,25	●	
3124112	4	2	12	60	3,2	6	3,85	4,07	12,51	12,95	13,35	13,78	14,24	14,74	●	
3124114	4	2	14	60	3,2	6	3,85	3,57	14,60	15,09	15,57	16,08	16,63	17,22	●	
3124115	4	2	15	60	3,2	6	3,85	3,36	15,64	16,16	16,67	17,23	17,82	18,47	●	
3124116	4	2	16	60	3,2	6	3,85	3,18	16,68	17,23	17,78	18,38	19,02	19,71	●	

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~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			◎	◎
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◎	○		○	○		

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WXL-LN-EBD

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- High performance
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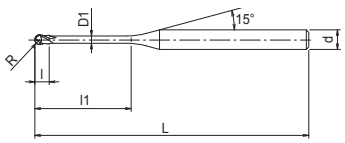
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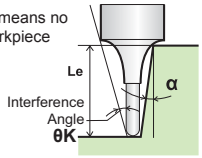
WXL
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- Polecane do pracy z chłodzeniem i na sucho

GO TO LIVE STOCK CHECK

CARBIDE | WXL | 30° | SHRINK FIT | R ± 0.005 | min⁻¹ D.172-176



No numerical value means no interference with workpiece





EDP	D	R	l1	L	l	d	D1	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3124120	4	2	20	65	3,2	6	3,85	2,6	20,84	21,51	22,22	22,98	23,8	-	●	
3124125	4	2	25	70	3,2	6	3,85	2,12	26,02	26,86	27,76	28,72	-	-	●	
3124130	4	2	30	80	3,2	6	3,85	1,79	31,19	32,21	33,3	-	-	-	●	
3124135	4	2	35	80	3,2	6	3,85	1,55	36,36	37,55	38,84	-	-	-	●	
3124140	4	2	40	90	3,2	6	3,85	1,36	41,52	42,9	-	-	-	-	●	
3124145	4	2	45	90	3,2	6	3,85	1,22	46,69	48,25	-	-	-	-	●	
3124150	4	2	50	100	3,2	6	3,85	1,1	51,86	53,6	-	-	-	-	●	
3125100	5	2,5	10	65	5	6	4,85	2,96	10,4	10,75	11,08	11,4	11,75	-	●	
3125115	5	2,5	15	70	5	6	4,85	1,96	15,62	16,13	16,62	-	-	-	●	
3125120	5	2,5	20	70	5	6	4,85	1,46	20,82	21,47	-	-	-	-	●	
3125125	5	2,5	25	70	5	6	4,85	1,16	26	26,82	-	-	-	-	●	
3125130	5	2,5	30	80	5	6	4,85	0,97	31,17	-	-	-	-	-	●	
3125135	5	2,5	35	80	5	6	4,85	0,83	36,34	-	-	-	-	-	●	
3125140	5	2,5	40	90	5	6	4,85	0,72	41,51	-	-	-	-	-	●	
3125145	5	2,5	45	100	5	6	4,85	0,64	46,68	-	-	-	-	-	●	
3125150	5	2,5	50	100	5	6	4,85	0,58	51,84	-	-	-	-	-	●	
3126100	6	3	10	60	6	6	5,85	-	-	-	-	-	-	-	●	
3126120	6	3	20	70	6	6	5,85	-	-	-	-	-	-	-	●	
3126125	6	3	25	70	6	6	5,85	-	-	-	-	-	-	-	●	
3126130	6	3	30	80	6	6	5,85	-	-	-	-	-	-	-	●	
3126135	6	3	35	80	6	6	5,85	-	-	-	-	-	-	-	●	
3126140	6	3	40	90	6	6	5,85	-	-	-	-	-	-	-	●	
3126145	6	3	45	100	6	6	5,85	-	-	-	-	-	-	-	●	
3126150	6	3	50	120	6	6	5,85	-	-	-	-	-	-	-	●	

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- Recomendado con lubricación o en seco
- Mango reforzado con cuello conico

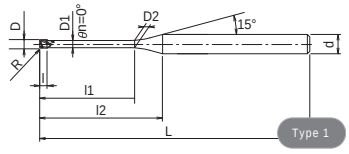
WXL
- Высокая производительность
- Новое WXL покрытие с высокой твердостью и низким коэффициентом трения.
- Рекомендована для работы с СОЖ и «сухого» фрезерования
- Коническая шейка

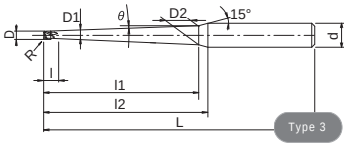
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- Polecane do pracy z chłodzeniem i na sucho
- Szyjka ołówkowa

GO TO LIVE STOCK CHECK

WXL

CARBIDE | WXL | 30° | SHRINK FIT | R ± 0.005 | min⁻¹ D.177-182







EDP	D	R	θ	l1	L	l	D1	D2	l2	d	Type	Stock	Price
3170011	0,2	0,1	0,5°	1	45	0,16	0,18	0,19	8,1	4	1	○	
3170012	0,2	0,1	0,5°	1,5	45	0,16	0,18	0,20	8,6	4	1	○	
3170013	0,2	0,1	0,5°	2	45	0,16	0,18	0,21	9	4	1	○	
3170014	0,2	0,1	0,5°	2,5	45	0,16	0,18	0,22	9,5	4	1	○	
3170015	0,2	0,1	0,5°	3	45	0,16	0,18	0,23	10	4	1	○	
3170021	0,2	0,1	1°	2	45	0,16	0,18	0,23	9	4	1	○	
3170022	0,2	0,1	1°	2,5	45	0,16	0,18	0,25	9,5	4	1	○	
3170023	0,2	0,1	1°	3	45	0,16	0,18	0,27	9,9	4	1	○	
3170031	0,3	0,15	0,5°	2	45	0,24	0,28	0,31	8,9	4	1	○	
3170032	0,3	0,15	0,5°	3	45	0,24	0,28	0,32	9,8	4	1	○	
3170041	0,3	0,15	1°	3	45	0,24	0,28	0,36	9,8	4	1	○	
3170042	0,3	0,15	1°	4	45	0,24	0,28	0,40	10,7	4	1	○	
3170051	0,4	0,2	0,5°	2	45	0,3	0,38	0,41	8,7	4	1	○	
3170052	0,4	0,2	0,5°	3	45	0,3	0,38	0,42	9,6	4	1	○	
3170053	0,4	0,2	0,5°	4	45	0,3	0,38	0,44	10,6	4	1	○	
3170054	0,4	0,2	0,5°	5	45	0,3	0,38	0,46	11,6	4	1	○	
3170055	0,4	0,2	0,5°	6	45	0,3	0,38	0,48	12,5	4	1	○	
3170061	0,4	0,2	1°	4	45	0,3	0,38	0,50	10,5	4	1	○	
3170062	0,4	0,2	1°	5	45	0,3	0,38	0,54	11,4	4	1	○	
3170063	0,4	0,2	1°	6	45	0,3	0,38	0,57	12,4	4	1	○	
3170071	0,5	0,25	0,5°	4	45	0,4	0,48	0,54	10,4	4	1	○	
3170072	0,5	0,25	0,5°	6	45	0,4	0,48	0,57	12,4	4	1	○	
3170073	0,5	0,25	0,5°	8	45	0,4	0,48	0,61	14,3	4	1	○	
3170074	0,5	0,25	0,5°	10	45	0,4	0,48	0,64	16,2	4	1	○	
3170081	0,5	0,25	1°	4	45	0,4	0,48	0,60	10,3	4	1	○	
3170082	0,5	0,25	1°	6	45	0,4	0,48	0,67	12,2	4	1	○	
3170083	0,5	0,25	1°	8	45	0,4	0,48	0,74	14,1	4	1	○	
3170084	0,5	0,25	1°	10	45	0,4	0,48	0,81	15,9	4	1	○	
3170085	0,5	0,25	1°	12	50	0,4	0,48	0,88	17,8	4	1	○	
3170091	0,6	0,3	0,5°	2	45	0,5	0,58	0,60	8,3	4	1	○	
3170092	0,6	0,3	0,5°	4	45	0,5	0,58	0,64	10,2	4	1	○	
3170093	0,6	0,3	0,5°	6	45	0,5	0,58	0,67	12,2	4	1	○	
3170094	0,6	0,3	0,5°	8	45	0,5	0,58	0,71	14,1	4	1	○	
3170095	0,6	0,3	0,5°	10	45	0,5	0,58	0,74	16	4	1	○	
3170096	0,6	0,3	0,5°	12	45	0,5	0,58	0,78	18	4	1	○	
3170097	0,6	0,3	0,5°	16	50	0,5	0,58	0,85	21,9	4	1	○	
3170101	0,6	0,3	1°	4	45	0,5	0,58	0,70	10,1	4	1	○	
3170102	0,6	0,3	1°	6	45	0,5	0,58	0,77	12	4	1	○	
3170103	0,6	0,3	1°	8	45	0,5	0,58	0,83	13,9	4	1	○	
3170104	0,6	0,3	1°	10	45	0,5	0,58	0,90	15,7	4	1	○	
3170105	0,6	0,3	1°	12	45	0,5	0,58	0,97	17,6	4	1	○	
3170106	0,6	0,3	1°	16	50	0,5	0,58	1,11	21,4	4	1	○	
3170111	0,8	0,4	0,5°	4	45	0,6	0,78	0,84	9,9	4	1	○	
3170112	0,8	0,4	0,5°	6	45	0,6	0,78	0,87	11,8	4	1	○	
3170113	0,8	0,4	0,5°	8	45	0,6	0,78	0,91	13,7	4	1	○	
3170114	0,8	0,4	0,5°	12	45	0,6	0,78	0,98	17,6	4	1	○	
3170121	0,8	0,4	1°	8	45	0,6	0,78	1,03	13,5	4	1	○	
3170122	0,8	0,4	1°	12	45	0,6	0,78	1,17	17,2	4	1	○	
3170123	0,8	0,4	1°	16	50	0,6	0,78	1,31	21	4	1	○	
3170131	1	0,5	0,5°	6	45	0,63	1,42	0,98	11,5	4	3	○	
3170132	1	0,5	0,5°	8	45	0,63	1,42	1,02	13,4	4	3	○	
3170133	1	0,5	0,5°	10	45	0,63	1,42	1,05	15,4	4	3	●	

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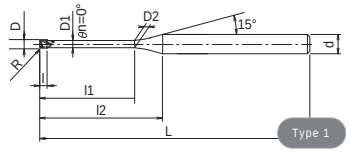
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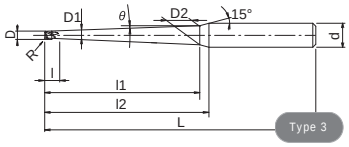
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GO TO LIVE STOCK CHECK

CARBIDE | WXL | 30° | SHRINK FIT | ± 0.005 | min⁻¹ D.177-182







EDP	D	R	θ	l1	L	l	D1	D2	l2	d	Type	Stock	Price
3170134	1	0,5	0,5°	12	45	0,63	0,95	1,09	17,3	4	3	●	
3170135	1	0,5	0,5°	16	50	0,63	0,95	1,16	21,2	4	3	●	
3170136	1	0,5	0,5°	18	55	0,63	0,95	1,19	23,1	4	3	○	
3170137	1	0,5	0,5°	20	55	0,63	0,95	1,23	25,1	4	3	●	
3170138	1	0,5	0,5°	25	60	0,63	0,95	1,31	29,9	4	3	●	
3170139	1	0,5	0,5°	30	65	0,63	0,95	1,4	34,7	4	3	●	
3170140	1	0,5	0,5°	35	70	0,63	0,95	1,49	39,6	4	3	○	
3170141	1	0,5	1°	10	45	0,63	0,95	1,20	15,1	4	3	●	
3170142	1	0,5	1°	16	50	0,63	0,95	1,41	20,7	4	3	●	
3170143	1	0,5	1°	20	55	0,63	0,95	1,55	24,4	4	3	●	
3170144	1	0,5	1°	25	60	0,63	0,95	1,73	29,1	4	3	●	
3170145	1	0,5	1°	30	65	0,63	0,95	1,9	33,8	4	3	●	
3170146	1	0,5	1°	35	70	0,63	0,95	2,07	38,5	4	3	○	
3170147	1	0,5	1°	40	80	0,63	0,95	2,25	43,1	4	3	○	
3170148	1	0,5	1°	50	90	0,63	0,95	2,60	52,5	4	3	○	
3170149	1	0,5	1°	60	100	0,63	0,95	2,95	61,8	4	3	○	
3170150	1	0,5	1°	70	110	0,63	0,95	3,3	71,2	4	3	○	
3170151	1	0,5	1,5°	8	45	0,63	0,95	1,25	13	4	3	○	
3170152	1	0,5	1,5°	10	45	0,63	0,95	1,35	14,8	4	3	○	
3170153	1	0,5	1,5°	12	45	0,63	0,95	1,46	16,6	4	3	○	
3170154	1	0,5	1,5°	16	50	0,63	0,95	1,67	20,2	4	3	○	
3170155	1	0,5	1,5°	20	55	0,63	0,95	1,88	23,8	4	3	○	
3170156	1	0,5	1,5°	25	60	0,63	0,95	2,14	28,4	4	3	○	
3170157	1	0,5	1,5°	30	65	0,63	0,95	2,4	32,9	4	3	○	
3170158	1	0,5	1,5°	35	70	0,63	0,95	2,66	37,4	4	3	○	
3170161	1	0,5	2°	45	80	0,63	1,95	4	-	4	4	○	
3170171	1,2	0,6	0,5°	12	45	0,76	1,15	1,28	16,9	4	3	○	
3170172	1,2	0,6	0,5°	25	60	0,76	1,15	1,51	29,5	4	3	○	
3170181	1,2	0,6	1°	12	45	0,76	1,15	1,47	16,6	4	3	○	
3170182	1,2	0,6	1°	25	60	0,76	1,15	1,92	28,8	4	3	○	
3170191	1,2	0,6	1,5°	12	45	0,76	1,15	1,65	16,3	4	3	○	
3170192	1,2	0,6	1,5°	25	60	0,76	1,15	2,33	28	4	3	○	
3170211	1,5	0,75	0,5°	8	45	0,95	1,42	1,48	12,6	4	3	○	
3170212	1,5	0,75	0,5°	10	45	0,95	1,42	1,51	14,5	4	3	○	
3170213	1,5	0,75	0,5°	12	45	0,95	1,42	1,55	16,4	4	3	●	
3170214	1,5	0,75	0,5°	16	55	0,95	1,42	1,62	20,3	4	3	●	
3170215	1,5	0,75	0,5°	20	55	0,95	1,42	1,69	24,2	4	3	●	
3170216	1,5	0,75	0,5°	25	60	0,95	1,42	1,78	29	4	3	●	
3170217	1,5	0,75	0,5°	30	65	0,95	1,42	1,86	33,9	4	3	○	
3170218	1,5	0,75	0,5°	35	70	0,95	1,42	1,95	38,7	4	3	○	
3170221	1,5	0,75	1°	10	45	0,95	1,42	1,66	14,2	4	3	○	
3170222	1,5	0,75	1°	12	45	0,95	1,42	1,73	16,1	4	3	●	
3170223	1,5	0,75	1°	16	55	0,95	1,42	1,87	19,9	4	3	●	
3170224	1,5	0,75	1°	20	55	0,95	1,42	2,01	23,6	4	3	●	
3170225	1,5	0,75	1°	25	60	0,95	1,42	2,18	28,3	4	3	●	
3170226	1,5	0,75	1°	30	65	0,95	1,42	2,36	32,9	4	3	○	
3170227	1,5	0,75	1°	35	70	0,95	1,42	2,53	37,6	4	3	○	
3170230	1,5	0,75	1,5°	10	45	0,95	1,42	1,8	14	4	3	○	
3170231	1,5	0,75	1,5°	12	45	0,95	1,42	1,91	15,8	4	3	○	
3170232	1,5	0,75	1,5°	16	55	0,95	1,42	2,12	19,4	4	3	○	
3170233	1,5	0,75	1,5°	20	55	0,95	1,42	2,33	23	4	3	○	
3170234	1,5	0,75	1,5°	25	60	0,95	1,42	2,59	27,5	4	3	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

● Delivery from stock
○ Available on short notice

WXL-PC-EBD

WXL
- High performance
- New WXL coating with high hardness and better lubrification.
- Recommended with lubrification or dry milling.
- Pencil neck

WXL
- High performance
- Neue WXL Beschichtung mit einer hohen Härte und geringem Reibungskoeffizient
- Empfohlen bei schlechter Schmierung sowie zur Trockenbearbeitung geeignet
- Konischer Schaft

WXL
- Alta prestazione
- Nuovo rivestimento WXL con elevata durezza e migliore lubrificazione
- Consigliato con emulsione o a secco Permette lavorazioni su ampio campo di applicazioni
- Riduzione conica

WXL
- Haute performance
- Nouveau revêtement plus dur et plus glissant
- Recommandé pour usinage avec ou sans lubrification Nombreuses applications de fraisage
- Dégagement conique

WXL
- Yüksek performans
- Yeni WXL kaplama yüksek sertlik ve daha iyi yağlama ile birlikte
- Kuru veya sulu kesim önerilir
- Kalem boyunlu

WXL
- High performance
- Ny WXL belægning med høj hårdhed og forbedrerede smøreegenskaber
- Anbefales med køling eller tør bearbejdning
- Pencil neck

WXL
- High performance
- Ny WXL beläggning med extra hårdhet och mindre friktions koefficient
- Rekommenderad med eller utan smörjmedel Kan användas i många olika material
- Konisk reducerad

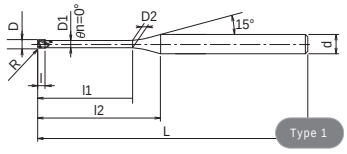
WXL
- Altas prestaciones
- Nuevo recubrimiento WXL de elevada dureza y lubricidad mejorada
- Recomendado con lubricación o en seco
- Mango reforzado con cuello conico

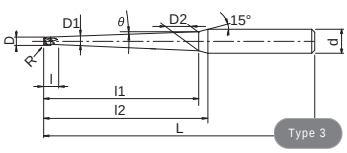
WXL
- Высокая производительность
- Новое WXL покрытие с высокой твердостью и низким коэффициентом трения.
- Рекомендована для работы с СОЖ и «сухого» фрезерования
- Коническая шейка

WXL
- Wysoka wydajność
- Nowa powłoka WXL o wysokiej twardości i niskim współczynnikiem tarcia
- Polecane do pracy z chłodzeniem i na sucho
- Szyjka ołówkowa

GO TO LIVE STOCK CHECK

CARBIDE | WXL | 30° | SHRINK FIT | R ± 0.005 | min⁻¹ D.177-182







EDP	D	R	θ	l1	L	l	D1	D2	l2	d	Type	Stock	Price
3170235	1,5	0,75	1,5°	30	65	0,95	1,42	2,85	32	4	3	○	
3170236	1,5	0,75	1,5°	35	70	0,95	1,42	3,11	36,5	4	3	○	
3170241	1,5	0,75	2°	38,6	70	0,95	1,42	4	-	4	4	○	
3170271	2	1	0,5°	8	45	1,26	1,93	1,98	11,6	4	3	○	
3170272	2	1	0,5°	10	45	1,26	1,93	2,02	13,6	4	3	○	
3170273	2	1	0,5°	12	45	1,26	1,93	2,05	15,5	4	3	○	
3170274	2	1	0,5°	16	50	1,26	1,93	2,12	19,4	4	3	●	
3170275	2	1	0,5°	20	55	1,26	1,93	2,19	23,2	4	3	●	
3170276	2	1	0,5°	25	65	1,26	1,93	2,28	28,1	4	3	●	
3170277	2	1	0,5°	30	70	1,26	1,93	2,37	32,9	4	3	●	
3170278	2	1	0,5°	35	75	1,26	1,93	2,46	37,8	4	3	●	
3170279	2	1	0,5°	40	80	1,26	1,93	2,54	42,6	4	3	○	
3170281	2	1	1°	16	50	1,26	1,93	2,37	18,9	4	3	●	
3170282	2	1	1°	20	55	1,26	1,93	2,51	22,7	4	3	●	
3170283	2	1	1°	25	65	1,26	1,93	2,68	27,3	4	3	●	
3170284	2	1	1°	30	70	1,26	1,93	2,86	32	4	3	●	
3170285	2	1	1°	35	75	1,26	1,93	3,03	36,7	4	3	●	
3170286	2	1	1°	40	80	1,26	1,93	3,21	41,4	4	3	○	
3170287	2	1	1°	50	90	1,26	1,93	3,56	54,4	6	3	○	
3170288	2	1	1°	60	100	1,26	1,93	3,9	63,8	6	3	○	
3170289	2	1	1°	70	110	1,26	1,93	4,25	73,1	6	3	○	
3170291	2	1	1,5°	16	50	1,26	1,93	2,61	18,5	4	3	○	
3170292	2	1	1,5°	20	55	1,26	1,93	2,82	22,1	4	3	○	
3170293	2	1	1,5°	25	65	1,26	1,93	3,08	26,6	4	3	○	
3170294	2	1	1,5°	30	70	1,26	1,93	3,35	31,1	4	3	○	
3170295	2	1	1,5°	35	75	1,26	1,93	3,61	36	4	3	○	
3170296	2	1	1,5°	41,4	80	1,26	1,93	4	-	4	4	○	
3170301	2	1	2°	31,5	70	1,26	1,93	4	-	4	4	○	
3170321	3	1,5	0,5°	8	50	2,4	2,95	2,99	14,1	6	1	○	
3170322	3	1,5	0,5°	10	50	2,4	2,95	3,03	16	6	1	○	
3170323	3	1,5	0,5°	12	55	2,4	2,95	3,06	17,9	6	1	○	
3170324	3	1,5	0,5°	16	55	2,4	2,95	3,13	21,8	6	1	○	
3170325	3	1,5	0,5°	20	60	2,4	2,95	3,2	25,7	6	1	●	
3170326	3	1,5	0,5°	25	65	2,4	2,95	3,29	30,5	6	1	●	
3170327	3	1,5	0,5°	30	70	2,4	2,95	3,38	35,4	6	1	●	
3170328	3	1,5	0,5°	35	80	2,4	2,95	3,47	40,2	6	1	●	
3170329	3	1,5	0,5°	40	85	2,4	2,95	3,55	45	6	1	○	
3170330	3	1,5	0,5°	50	90	2,4	2,95	3,73	54,7	6	1	○	
3170331	3	1,5	1°	20	60	2,4	2,95	3,51	25,1	6	1	●	
3170332	3	1,5	1°	25	65	2,4	2,95	3,68	29,8	6	1	●	
3170333	3	1,5	1°	30	70	2,4	2,95	3,86	34,5	6	1	●	
3170334	3	1,5	1°	35	80	2,4	2,95	4,03	39,1	6	1	●	
3170335	3	1,5	1°	40	85	2,4	2,95	4,21	43,8	6	1	○	
3170336	3	1,5	1°	50	90	2,4	2,95	4,55	53,2	6	1	○	
3170337	3	1,5	1°	60	100	2,4	2,95	4,9	62,5	6	1	○	
3170338	3	1,5	1°	70	110	2,4	2,95	5,25	71,9	6	1	○	
3170341	3	1,5	1,5°	20	60	2,4	2,95	3,81	24,6	6	1	○	
3170342	3	1,5	1,5°	25	65	2,4	2,95	4,07	29,1	6	1	○	
3170343	3	1,5	1,5°	30	70	2,4	2,95	4,33	33,6	6	1	○	
3170344	3	1,5	1,5°	35	80	2,4	2,95	4,60	38,1	6	1	○	
3170345	3	1,5	1,5°	40	85	2,4	2,95	4,86	42,6	6	1	○	
3170346	3	1,5	1,5°	50	90	2,4	2,95	5,38	51,6	6	1	○	

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◎	○		○	○		

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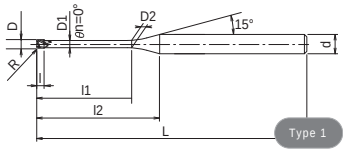
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- Nuevo recubrimiento WXL de elevada dureza y lubricidad mejorada
- Recomendado con lubricación o en seco
- Mango reforzado con cuello conico

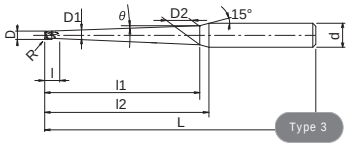
WXL
- Высокая производительность
- Новое WXL покрытие с высокой твердостью и низким коэффициентом трения.
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GO TO LIVE STOCK CHECK

CARBIDE | WXL | 30° | SHRINK FIT | R ± 0.005 | min⁻¹ D.177–182







EDP	D	R	θ	l1	L	l	D1	D2	l2	d	Type	Stock	Price
3170347	3	1,5	1,5°	62,5	100	2,4	2,95	6	-	6	2	○	
3170351	3	1,5	2°	47,5	100	2,4	2,95	6	-	6	2	○	
3170371	4	2	1°	20	65	3,2	3,93	4,5	23,4	6	1	○	
3170372	4	2	1°	30	80	3,2	3,93	4,84	32,7	6	1	●	
3170373	4	2	1°	40	90	3,2	3,93	5,19	42,1	6	1	○	
3170374	4	2	1°	50	100	3,2	3,93	5,54	55,1	8	1	○	
3170375	4	2	1°	60	110	3,2	3,93	5,89	64,5	8	1	○	
3170381	4	2	1,5°	44,2	80	3,2	3,93	6	44,7	6	2	○	
3170391	4	2	2°	34	80	3,2	3,93	6	34,5	6	2	○	
3170401	5	2,5	1°	30	100	5	4,95	5,8	34,7	8	1	○	
3170402	5	2,5	1°	40	100	5	4,95	6,15	44	8	1	○	
3170403	5	2,5	1°	60	130	5	4,95	6,85	62,7	8	1	○	
3170411	5	2,5	1,5°	26,9	100	5	4,95	6	-	6	2	○	
3170412	5	2,5	1,5°	65,1	130	5	4,95	8	-	8	2	○	
3170421	5	2,5	2°	50,1	130	5	4,95	8	-	8	2	○	
3170431	6	3	1°	30	100	6	5,95	6,77	32,9	8	1	○	
3170432	6	3	1°	40	100	6	5,95	7,12	42,2	8	1	○	
3170433	6	3	1°	50	100	6	5,95	7,47	51,6	8	1	○	
3170434	6	3	1°	60	110	6	5,95	7,81	64,6	10	1	○	
3170435	6	3	1°	70	120	6	5,95	8,16	74	10	1	○	
3170436	6	3	1°	80	130	6	5,95	8,51	87,1	12	1	○	
3170441	6	3	1,5°	49	100	6	5,95	8	-	8	2	○	
3170451	6	3	2°	36	100	6	5,95	8	-	8	2	○	

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~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○		○	○		

● Delivery from stock
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DG-EBD

DG
- High performance
- Diamand coated end mills for graphite milling

DG
- High performance
- GD Diamant beschichteter Kugelfräser für Graphitbearbeitung

DG
- Alta prestazione
- DG Rivestimento al diamante per Grafite

DG
- Haute performance
- Revêtement diamant pour usinage graphite

DG
- Yüksek performans
- Grafit frezelemek için elmas kaplı parmak frezeler

DG
- High performance
- Diamant belagte fræsere til fræsning i grafit

DG
- High performance
- Diamant belagda fräsar för grafit

DG
- Altas prestaciones
- Recubrimiento de Diamante para fresado de grafito

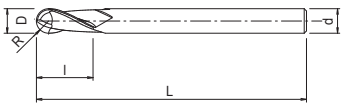
DG
- Высокая производительность
- Фрезы с алмазным покрытием для графита

DG
- Wysoka wydajność
- Diamentowa powłoka do frezowania grafitu

GO TO LIVE STOCK CHECK

DG

CARBIDE | DG | 30° | SHRINK FIT | R ± 0.01 | min⁻¹ D.183





EDP	D	R	L	l	d	Stock	Price
8553541	4	2	80	8	4	●	
8553561	6	3	80	12	6	●	
8553581	8	4	100	16	8	●	
8553601	10	5	100	20	10	●	
8553621	12	6	130	36	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
		◎				

DG-LN-EBD

DG
- High performance
- Diamand coated end mills for graphite milling

DG
- High performance
- GD Diamant beschichteter Kugelfräser für Graphitbearbeitung

DG
- Alta prestazione
- DG Rivestimento al diamante per Grafite

DG
- Haute performance
- Revêtement diamant pour usinage graphite

DG
- Yüksek performans
- Grafit frezelemek için elmas kaplı parmak frezeler

DG
- High performance
- Diamant belagte fræsere til fræsning i grafit

DG
- High performance
- Diamant belagda fräsar för grafit

DG
- Altas prestaciones
- Recubrimiento de Diamante para fresado de grafito

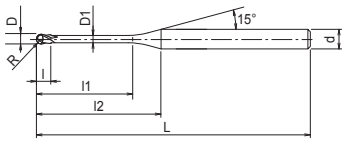
DG
- Высокая производительность
- Фрезы с алмазным покрытием для графита

DG
- Wysoka wydajność
- Diamentowa powłoka do frezowania grafitu

GO TO LIVE STOCK CHECK

DG

CARBIDE | DG | 30° | SHRINK FIT | ± 0.01 0,5 ≤ R | ± 0.008 0,5 > R | min⁻¹ D.184





EDP	D	R	l1	l	D1	l2	d	L	Stock	Price
8553701	0,4	0,2	4	0,6	0,36	11,17	4	50	●	
8553702	0,4	0,2	8	0,6	0,36	15,17	4	50	●	
8553711	0,6	0,3	6	0,9	0,56	12,8	4	50	●	
8553712	0,6	0,3	10	0,9	0,56	16,8	4	50	●	
48104001	0,8	0,4	15	1,2	0,76	21,4	4	60	●	
8553721	1	0,5	4	1,5	0,96	10,05	4	50	●	
8553722	1	0,5	6	1,5	0,96	12,05	4	50	●	
8553723	1	0,5	10	1,5	0,96	16,05	4	50	●	
8553724	1	0,5	16	1,5	0,96	22,05	4	60	●	
8553725	1	0,5	20	1,5	0,96	26,05	4	60	●	
8553726	1	0,5	30	1,5	0,96	36,05	4	80	●	
8553731	1,5	0,75	6	2,3	1,44	11,07	4	50	●	
8553732	1,5	0,75	10	2,3	1,44	15,07	4	50	●	
8553733	1,5	0,75	16	2,3	1,44	21,07	4	60	●	
8553742	2	1	10	3	1,9	14,35	4	50	●	
8553743	2	1	16	3	1,9	20,35	4	60	●	
8553744	2	1	20	3	1,9	24,35	4	60	●	
8553745	2	1	30	3	1,9	34,35	4	80	●	
8553761	3	1,5	20	4,5	2,9	22,48	4	60	●	
8553762	3	1,5	40	4,5	2,9	42,48	4	80	●	
8553781	4	2	20	6	3,9	–	4	60	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
		◎				

● Delivery from stock
○ Available on short notice

DG-CPR

DG
- High performance
- Diamand coated end mills for graphite milling

DG
- High performance
- GD Diamant beschichteter Kugelfräser für Graphitbearbeitung

DG
- Alta prestazione
- DG Rivestimento al diamante per Grafite

DG
- Haute performance
- Revêtement diamant pour usinage graphite

DG
- Yüksek performans
- Grafit frezelemek için elmas kaplı parmak frezeler

DG
- High performance
- Diamant belagte fræsere til fræsning i grafit

DG
- High performance
- Diamant belagda fräsar för grafit

DG
- Altas prestaciones
- Recubrimiento de Diamante para fresado de grafito

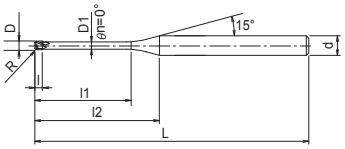
DG
- Высокая производительность
- Фрезы с алмазным покрытием для графита

DG
- Wysoka wydajność
- Diamentowa powłoka do frezowania grafitu

GO TO LIVE STOCK CHECK

DG

CARBIDE | DG | 30° | SHRINK FIT | R ± 0.01 | D ≤ 1 0~-0.02 | D ≥ 1 0~-0.027 | min⁻¹ D.185





EDP	D	R	θn	l1	l	D1	l2	ZΔ	d	L	Stock	Price
8554511	0,5	0,1	0°	4	0,9	0,46	10,98	2	4	50	●	
8554512	0,5	0,1	0°	6	0,9	0,46	12,98	2	4	50	●	
48103001	1	0,1	0°	10	1,5	0,96	16,05	2	4	50	●	
8554542	2	0,2	0°	10	3	1,9	14,35	2	4	60	●	
8554544	2	0,2	0°	20	3	1,9	24,35	2	4	70	●	
48103002	4	0,3	0°	40	6	3,9	–	4	6	100	●	
48103004	4	0,5	0°	25	6	3,9	–	4	6	70	●	
48103003	4	0,5	0°	40	6	3,9	–	4	6	100	●	
48103005	4	1	0°	40	6	3,9	–	4	6	100	●	
48103006	6	0,3	0°	30	6	5,7	–	4	6	100	●	
8554621	6	0,5	0°	30	6	5,7	–	4	6	100	●	
8554622	6	1	0°	30	6	5,7	–	4	6	100	●	
48103007	8	0,3	0°	100	8	7,6	–	4	8	150	●	
8554661	8	0,5	0°	30	8	7,6	–	4	8	100	●	
48103008	8	0,5	0°	100	8	7,6	–	4	8	150	●	
48103009	8	1	0°	100	8	7,6	–	4	8	150	●	
8554701	10	0,5	0°	40	10	9,5	–	4	10	125	●	
8554702	10	1	0°	40	10	9,5	–	4	10	125	●	
8554722	12	1	0°	48	12	11,4	–	4	12	150	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
		◎				

● Delivery from stock
○ Available on short notice

FX
- High performance
- Multipurpose
- Vibration-resistant

FX
- High performance
- Allgemeine Anwendungen
- Anti-vibration

FX
- Alta prestazione
- Multifunzione
- Resistente alle vibrazioni

FX
- Haute performance
- Multi-fonction
- Résistante aux vibrations

FX
- Yüksek performans
- Çok amaçlı kullanım
- Titreşime dayanıklı

FX
- High performance
- Universal anvendelig
- Vibration-resistant

FX
- High performance
- Allround
- Vibrationsdämpande

FX
- Altas prestaciones
- Fresa multiuso
- Resistente a la vibración

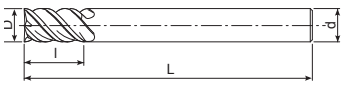
FX
- Высокая производительность
- Универсальная
- Вибростойкая

FX
- Wysoka wydajność
- Multifunkcyjne
- Odporne na wibracje

GO TO LIVE STOCK CHECK

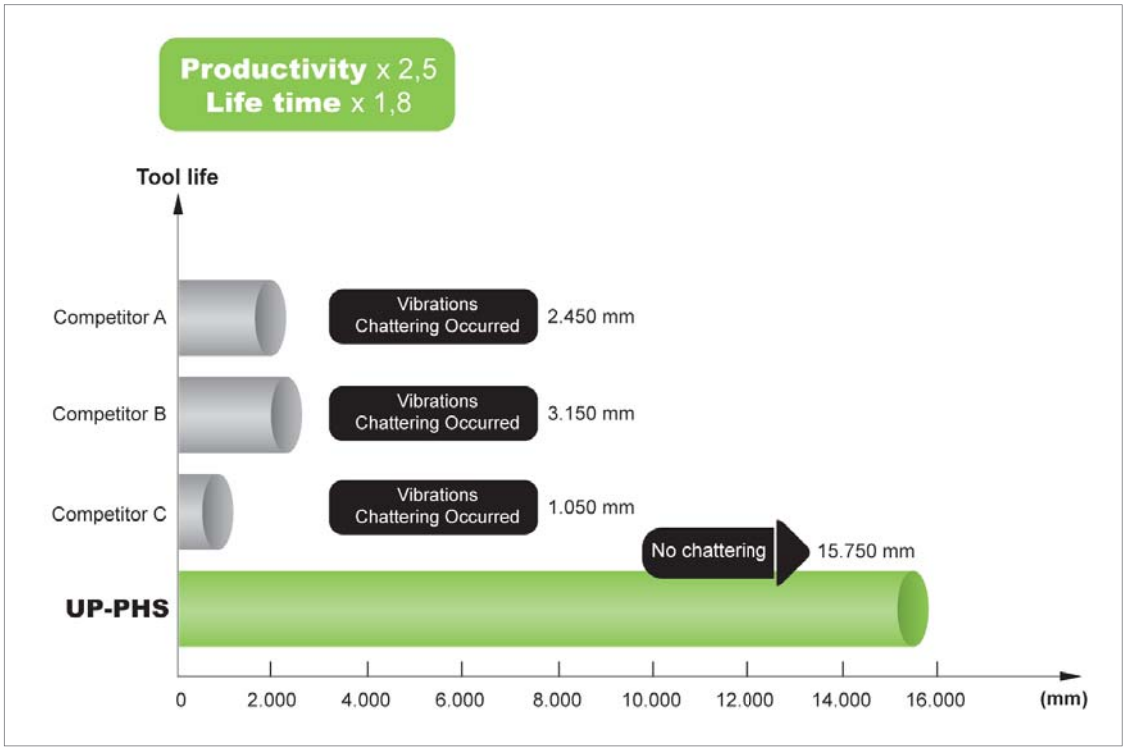
FX

CARBIDE | FX | 38° | SHRINK FIT | HIGH SPEED | RF | SC | CC | 0~-0.02 | min⁻¹ D.186





EDP	D	L	l	d	Stock	Price
8529030	3	60	8	6	●	
8529040	4	60	11	6	●	
8529050	5	60	13	6	●	
8529060	6	60	13	6	●	
8529080	8	80	19	8	●	
8529100	10	80	22	10	●	
8529120	12	100	26	12	●	



Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		◎	○		

● Delivery from stock
○ Available on short notice

WXS-HS-CRE

WXS
- High performance
- Super radius end mills
- For materials up to and over 65 HRC

WXS
- High performance
- Mehrschneider mit Eckenradius
- Für Materialien bis und über 65 HRC

WXS
- Alta prestazione
- Frese toriche
- Per materiali fino e oltre 65 HRC

WXS
- Haute performance
- Fraises toriques
- Pour matériaux jusqu'à et supérieur à 65 HRC

WXS
- Yüksek performans
- Super Radyus Parmak Freze
- 65 HRC ye kadar veya üstü malzemeler için

WXS
- High performance
- Super Radius Endefræsere
- Til materialer op til og over 65 HRC

WXS
- High performance
- Pinnfräsar med extra stora hörnradier
- För material upp till och över 65 HRC

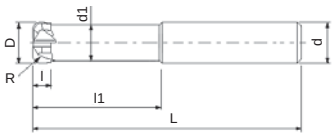
WXS
- Altas prestaciones
- Fresa con super-radio
- Para materiales hasta 65 HrC

WXS
- Высокая производительность
- Концевые фрезы Супер радиус
- Для материалов > 65HRC

WXS
- Wysoka wydajność
- Frez Super Radius
- Do materiałów do i ponad 65 HRC

GO TO LIVE STOCK CHECK

WXS | SHRINK FIT | HIGH SPEED | CC | 0~-0.03 | min⁻¹ D.187





EDP	D	R	L	l1	l	d1	d	ZΔ	Stock	Price
48107467	6	1,5	50	24	2,5	5,4	6	5	●	
48107489	8	2	60	32	3,5	7,2	8	5	●	
48107509	10	2	70	40	4	9	10	5	●	
48107533	12	3	80	48	5	11	12	5	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	◎		◎
Cu	Al	Graphite	Ti	HRS	Plast.	

● Delivery from stock
○ Available on short notice

WXS-CRE

WXS
- High performance
- Super radius end mills
- For materials up to and over 65 HRC

WXS
- High performance
- Mehrschneider mit Eckenradius
- Für Materialien bis und über 65 HRC

WXS
- Alta prestazione
- Frese toriche
- Per materiali fino e oltre 65 HRC

WXS
- Haute performance
- Fraises toriques
- Pour matériaux jusqu'à et supérieur à 65 HRC

WXS
- Yüksek performans
- Super Radyus Parmak Freze
- 65 HRC ye kadar veya üstü malzemeler için

WXS
- High performance
- Super Radius Endefræsere
- Til materialer op til og over 65 HRC

WXS
- High performance
- Pinnfräsar med extra stora hörnradier
- För material upp till och över 65 HRC

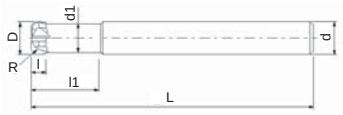
WXS
- Altas prestaciones
- Fresa con super-radio
- Para materiales hasta 65 HrC

WXS
- Высокая производительность
- Концевые фрезы Супер радиус
- Для материалов > 65HRC

WXS
- Wysoka wydajność
- Frez Super Radius
- Do materiałów do i ponad 65 HRC

GO TO LIVE STOCK CHECK

CARBIDE | WXS | SHRINK FIT | HIGH SPEED | CC | 0~-0.03 | min⁻¹ D.187



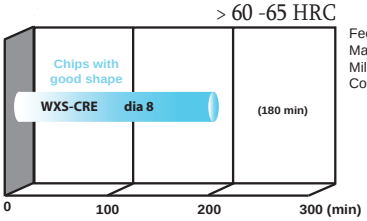


EDP	D	R	L	l1	l	d1	d	ZΔ	Stock	Price
48106421	2	0,5	50	8	0,8	2	6	4	●	
48106433	3	0,75	55	12	1,2	2,7	6	5	●	
48106445	4	1	55	12	1,6	3,6	6	5	●	
48106467	6	1,5	90	12	2,5	5,4	6	5	●	
48106489	8	2	100	16	3,5	7,2	8	5	●	
48106509	10	2	100	20	4	9	10	5	●	
48106533	12	3	110	24	5	11	12	5	●	

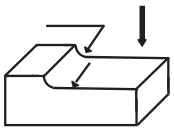
ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı - liczba ostrzy

Processing Examples

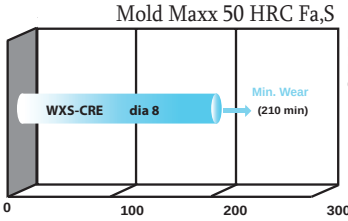
> 60 -65 HRC



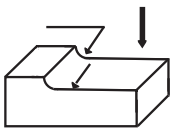
Feed: 63m/min (3 500 mm/min)
Machine : Vertical machining center
Milling depth : ap = 3 mm - ae = 0,1 mm
Coolant : Air



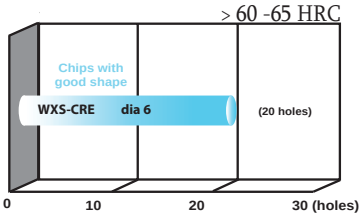
Mold Maxx 50 HRC Fa,S



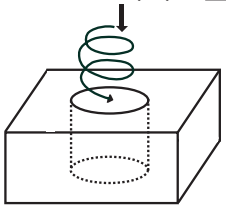
Feed: 130m/min (10 000 mm/min)
Machine : Vertical machining center
Milling depth : ap = 3 - 4 mm - ae = 0,1 mm
Coolant : Air



> 60 -65 HRC



Machine : Vertical machining center
Holedepth : 20 mm
Coolant : Air



Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	◎		◎
Cu	Al	Graphite	Ti	HRS	Plast.	

● Delivery from stock
○ Available on short notice

WXS-CR-EMS

WXS
- High performance
- 6 flutes
- For hardened steel

WXS
- High performance
- 6 Schneiden
- Für gehärteten Stahl

WXS
- Alta prestazione
- 6 denti
- Per Acciai temprati

WXS
- Haute performance
- 6 lèvres
- Pour des aciers trempés

WXS
- Yüksek performans
- 6 ağızlı
- Sertleştirilmiş çelikler

WXS
- High performance
- 6 skær
- Til hærdet stål

WXS
- High performance
- 6 skär
- Flerskärsfräs

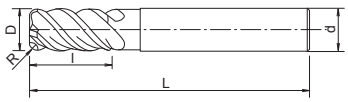
WXS
- Altas prestaciones
- 6 labios
- De acero templado

WXS
- Высокая производительность
- 6 Многозубые
- Для закаленных сталей

WXS
- Wysoka wydajność
- 6 ostrzowy
- Stale hartowane

GO TO LIVE STOCK CHECK

CARBIDE | WXS | 45° | SHRINK FIT | HIGH SPEED | CC | D > 12 0~-0.03 | D ≤ 12 0~-0.02 | min⁻¹ D.188





EDP	D	R	L	l	d	ZΔ	Stock	Price
48141061	6	0,5	90	15	6	6	●	
48141081	8	0,5	100	20	8	6	●	
48141101	10	0,5	100	25	10	6	○	
48141102	10	1	100	25	10	6	○	
48141121	12	0,5	110	30	12	6	○	
48141122	12	1	110	30	12	6	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○	○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			○	○		

● Delivery from stock
○ Available on short notice

WXS-EMS

WXS
- High performance
- 4,6 flutes
- High speed machining for general steel to hardened steel

WXS
- High performance
- 4,6 Schneiden
- HSC Schlichtfräsen für Stahl und gehärtetem Stahl

WXS
- Alta prestazione
- 4,6 denti
- Fresatura alta velocità per acciai e acciai temprati

WXS
- Haute performance
- 4,6 lèvres
- Usinage haute vitesse, pour aciers et aciers trempés

WXS
- Yüksek performans
- 4,6 ağızlı
- Genel çelikler den sertleştirilmiş çeliklere kadar yüksek hızda frezeleme

WXS
- High performance
- 4,6 Skar
- High speed fræsning i stål og hærdet stål

WXS
- High performance
- 4,6 Skär
- High Speed Milling för stål och härdat stål

WXS
- Altas prestaciones
- 4,6 labio
- Fresado a alta velocidad HSM para aceros y aceros endurecidos

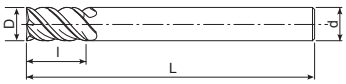
WXS
- Высокая производительность
- 4,6 режущих кромки
- Высокоскоростное фрезерование сталей и закаленных сталей

WXS
- Wysoka wydajność
- 4,6 ostrzowy
- Obróbka HSC ogólna obróbka stali oraz stali hartowanej

GO TO LIVE STOCK CHECK

WXS

CARBIDE | WXS | 45° | SHRINK FIT | 0~-0.02 | min⁻¹ D.189





EDP	D	L	l	d	ZΔ	Stock	Price
3041010	1	60	2,5	6	4	●	
3041015	1,5	60	4	6	4	●	
3041020	2	60	6	6	4	●	
3041025	2,5	60	8	6	4	●	
3041030	3	60	8	6	4	●	
3041035	3,5	60	10	6	4	●	
3041040	4	60	11	6	4	●	
3041045	4,5	60	11	6	4	●	
3041050	5	60	13	6	4	●	
3041055	5,5	60	13	6	4	●	
3041060	6	60	13	6	6	●	
3041080	8	70	19	8	6	●	
3041100	10	80	22	10	6	●	
3041120	12	90	26	12	6	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○	○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			○	○		

● Delivery from stock
○ Available on short notice

WXS-HS-EBD

WXS
- High performance
- 2 flutes ball nose
- Materials > 50 HRC
- Short length

WXS
- High performance
- 2 Schneiden Kopierfräser
- Für Materialien bis und über 50 HRC
- Schneidenlänge : Kurz

WXS
- Alta prestazione
- 2 denti
- Per materiali fino e oltre 50 HRC
- serie corta

WXS
- Haute performance
- 2 lèvres
- Pour matériaux supérieur à 50 HRC
- Série courte

WXS
- Yüksek performans
- 2 ağızlı küre freze
- 50 HRC ye kadar veya üstü malzemeler için
- Kısa kesme uzunluğu

WXS
- High performance
- 2 skær, Radius fræser
- Til materialer op til og over 50 HRC
- Kort

WXS
- High performance
- 2 skär
- För material upp till och över 50 HRC
- Korta

WXS
- Altas prestaciones
- Fresa con super-radio
- Para materiales por encima de 50 HrC
- Mango corto

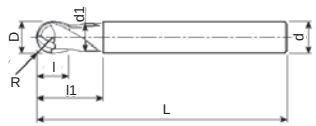
WXS
- Высокая производительность
- Сферические концевые фрезы
- Для материалов > 50HRC
- Короткий хвостовик

WXS
- Wysoka wydajność
- 2 ostrzowy frez kulowy
- Do materiałów do i ponad 50 HRC
- Krótka część robocza

GO TO LIVE STOCK CHECK

WXS

CARBIDE | WXS | 30° | SHRINK FIT | ± 0.005 1 ≥ R | ± 0.007 1<R≤6 | min⁻¹ D.190 191





EDP	D	R	l1	L	l	d1	d	Stock	Price
3041710	1	0,5	2	40	1	0,95	4	●	
3041720	2	1	4	40	2	1,95	6	●	
3041730	3	1,5	6	50	3	2,85	6	●	
3041740	4	2	8	50	4	3,85	6	●	
3041750	5	2,5	10	50	5	4,85	6	●	
3041760	6	3	-	50	9	-	6	●	
3041780	8	4	-	60	12	-	8	●	
3041800	10	5	-	70	15	-	10	●	
3041820	12	6	-	80	18	-	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○	◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			○	○		

● Delivery from stock
○ Available on short notice

WXS-EBD

WXS
- High performance
- 2 flutes ball nose
- Materials > 50 HRC

WXS
- High performance
- 2 Schneiden Kopierfräser
- Für Materialien bis und über 50 HRC

WXS
- Alta prestazione
- 2 denti
- Per materiali fino e oltre 50 HRC

WXS
- Haute performance
- 2 lèvres
- Pour matériaux supérieur à 50 HRC

WXS
- Yüksek performans
- 2 ağızlı küre freze
- 50 HRC ye kadar veya üstü malzemeler için

WXS
- High performance
- 2 skær, Radius fræser
- Til materialer op til og over 50 HRC

WXS
- High performance
- 2 skär
- För material upp till och över 50 HRC

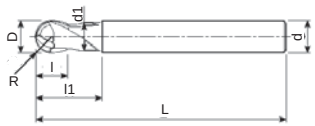
WXS
- Altas prestaciones
- Fresa con super-radio
- Para materiales por encima de 50 HrC

WXS
- Высокая производительность
- Сферические концевые фрезы
- Для материалов > 50HRC

WXS
- Wysoka wydajność
- 2 ostrzowy frez kulowy
- Do materiałów do i ponad 50 HRC

GO TO LIVE STOCK CHECK

WXS | CARBIDE | 30° | SHRINK FIT | ± 0.005 1 ≥ R | ± 0.007 1<R≤6 | ± 0.01 6 < R | min⁻¹ D.190 191





EDP	D	R	l1	L	l	d1	d	Stock	Price
3041410	1	0,5	2	50	1	0,95	4	●	
3041415	1,5	0,75	3	50	1,5	1,45	4	●	
3041420	2	1	4	50	2	1,95	6	●	
3041430	3	1,5	6	60	3	2,85	6	●	
3041440	4	2	8	70	4	3,85	6	●	
3041441	4	2	8	60	4	3,85	4	●	
3041450	5	2,5	10	80	5	4,85	6	●	
3041460	6	3	-	90	9	-	6	●	
3041480	8	4	-	100	12	-	8	●	
3041500	10	5	-	100	15	-	10	●	
3041520	12	6	-	110	18	-	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○	◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			○	○		

● Delivery from stock
○ Available on short notice

WXS-LN-EBD

WXS
- High performance
- 2 flutes
- Long neck
- for hardened material

WXS
- High performance
- 2 Schneiden
- Überlaufhals
- Legierte Werkstoffe

WXS
- Alta prestazione
- 2 denti
- Collo lungo scaricato
- Per materiali temprati

WXS
- Haute performance
- 2 lèvres
- Dégagement long
- Pour matériel trempé

WXS
- Yüksek performans
- 2 ağızlı
- Uzun boyun
- Sertleştirilmiş çelikler için

WXS
- High performance
- 2 skär
- Lång reducering
- Härdat material

WXS
- High performance
- 2 skär
- Lång reducering
- Härdat material

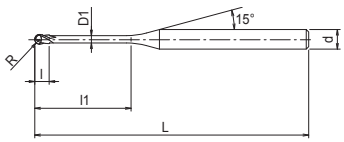
WXS
- Altas prestaciones
- 2 labio
- Cuello largo
- Aceros endurecidos

WXS
- Высокая производительность
- 2 режущих кромки
- Длинная шейка
- Для закаленных сталей

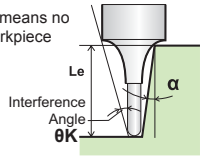
WXS
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka
- Do materiału utwardzanego

GO TO LIVE STOCK CHECK

WXS CARBIDE 30° SHRINK FIT ± 0.005 min⁻¹ D.193–198



No numerical value means no interference with workpiece





EDP	D	R	l1	L	l	d	d1	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3050100	0,1	0,05	0,3	45	0,08	4	0,09	14,51	0,31	0,32	0,33	0,34	0,35	0,36	●	
3050101	0,1	0,05	0,5	45	0,08	4	0,09	14,31	0,42	0,44	0,45	0,47	0,48	0,5	●	
3050201	0,2	0,1	0,5	45	0,16	4	0,18	14,16	0,53	0,55	0,57	0,59	0,61	0,63	●	
3049921	0,2	0,1	0,75	45	0,16	4	0,18	13,72	0,79	0,82	0,85	0,88	0,91	0,94	●	
3050202	0,2	0,1	1	45	0,16	4	0,18	13,31	1,05	1,09	1,13	1,17	1,21	1,26	●	
3049922	0,2	0,1	1,25	45	0,16	4	0,18	12,92	1,31	1,36	1,41	1,46	1,51	1,57	●	
3050203	0,2	0,1	1,5	45	0,16	4	0,18	12,56	1,57	1,63	1,68	1,74	1,81	1,88	●	
3049923	0,2	0,1	1,75	45	0,16	4	0,18	12,21	1,83	1,9	1,96	2,03	2,11	2,19	●	
3050204	0,2	0,1	2	46	0,16	4	0,18	11,88	2,09	2,16	2,24	2,32	2,4	2,5	●	
3050205	0,2	0,1	2,5	45	0,16	4	0,18	11,28	2,61	2,7	2,79	2,89	3	3,12	●	
3050206	0,2	0,1	3	45	0,16	4	0,18	10,73	3,13	3,23	3,35	3,47	3,6	3,74	●	
3050301	0,3	0,15	0,6	45	0,16	4	0,16	14,03	0,63	0,65	0,68	0,7	0,72	0,75	●	
3050302	0,3	0,15	1	45	0,24	4	0,28	13,34	1,05	1,09	1,12	1,16	1,2	1,24	●	
3049932	0,3	0,15	1,25	45	0,24	4	0,28	12,94	1,31	1,36	1,4	1,45	1,5	1,55	●	
3050303	0,3	0,15	1,5	45	0,24	4	0,28	12,57	1,57	1,63	1,68	1,74	1,8	1,87	●	
3049933	0,3	0,15	1,75	45	0,24	4	0,28	12,21	1,83	1,89	1,96	2,02	2,1	2,18	●	
3050304	0,3	0,15	2	45	0,24	4	0,28	11,87	2,09	2,16	2,23	2,31	2,4	2,49	●	
3049934	0,3	0,15	2,25	45	0,24	4	0,28	11,56	2,35	2,43	2,51	2,6	2,69	2,8	●	
3050305	0,3	0,15	2,5	45	0,24	4	0,28	11,25	2,61	2,69	2,79	2,89	2,99	3,11	●	
3050306	0,3	0,15	3	45	0,24	4	0,28	10,69	3,13	3,23	3,34	3,46	3,59	3,73	●	
3050307	0,3	0,15	3,5	45	0,24	4	0,28	10,19	3,64	3,76	3,9	4,04	4,19	4,35	●	
3050308	0,3	0,15	4	45	0,24	4	0,28	9,72	4,16	4,3	4,45	4,61	4,78	4,97	●	
3050309	0,3	0,15	4,5	45	0,24	4	0,28	9,3	4,68	4,83	5	5,19	5,38	5,59	●	
3050310	0,3	0,15	5	45	0,24	4	0,28	8,91	5,19	5,37	5,56	5,76	5,98	6,22	●	
3050401	0,4	0,2	0,8	45	0,3	4	0,37	13,74	0,83	0,86	0,88	0,91	0,94	0,97	●	
3050402	0,4	0,2	1	45	0,3	4	0,37	13,39	1,04	1,07	1,11	1,14	1,18	1,22	●	
3050403	0,4	0,2	1,5	45	0,3	4	0,37	12,59	1,56	1,61	1,66	1,72	1,77	1,84	●	
3050404	0,4	0,2	2	45	0,3	4	0,37	11,88	2,08	2,14	2,21	2,29	2,37	2,46	●	
3050405	0,4	0,2	2,5	45	0,3	4	0,37	11,24	2,6	2,68	2,77	2,87	2,97	3,08	●	
3050406	0,4	0,2	3	45	0,3	4	0,37	10,67	3,11	3,21	3,32	3,44	3,57	3,7	●	
3050407	0,4	0,2	3,5	45	0,3	4	0,37	10,15	3,63	3,75	3,88	4,02	4,16	4,33	●	
3050408	0,4	0,2	4	45	0,3	4	0,37	9,68	4,15	4,28	4,43	4,59	4,76	4,95	●	
3050409	0,4	0,2	4,5	45	0,3	4	0,37	9,25	4,66	4,82	4,99	5,17	5,36	5,57	●	
3050410	0,4	0,2	5	45	0,3	4	0,37	8,86	5,18	5,35	5,54	5,74	5,96	6,19	●	
3050411	0,4	0,2	5,5	45	0,3	4	0,37	8,5	5,7	5,89	6,09	6,32	6,55	6,81	●	
3050412	0,4	0,2	6	45	0,3	4	0,37	8,16	6,21	6,42	6,65	6,89	7,15	7,43	●	
3050500	0,5	0,25	1	45	0,4	4	0,45	13,45	1,03	1,06	1,09	1,12	1,15	1,19	●	
3050501	0,5	0,25	1,5	45	0,4	4	0,45	12,62	1,55	1,59	1,64	1,69	1,75	1,81	●	
3050502	0,5	0,25	2	45	0,4	4	0,45	11,89	2,06	2,13	2,2	2,27	2,35	2,43	●	
3049952	0,5	0,25	2,5	45	0,4	4	0,45	11,23	2,58	2,66	2,75	2,84	2,94	3,05	●	
3050503	0,5	0,25	3	45	0,4	4	0,45	10,65	3,1	3,2	3,3	3,42	3,54	3,68	●	
3049953	0,5	0,25	3,5	45	0,4	4	0,45	10,12	3,61	3,73	3,86	3,99	4,14	4,3	●	
3050504	0,5	0,25	4	45	0,4	4	0,45	9,64	4,13	4,27	4,41	4,57	4,74	4,92	●	
3049954	0,5	0,25	4,5	45	0,4	4	0,45	9,2	4,65	4,8	4,97	5,14	5,33	5,54	●	
3050505	0,5	0,25	5	45	0,4	4	0,45	8,8	5,17	5,34	5,52	5,72	5,93	6,16	●	
3049955	0,5	0,25	5,5	45	0,4	4	0,45	8,43	5,68	5,87	6,07	6,29	6,53	6,78	●	
3050506	0,5	0,25	6	45	0,4	4	0,45	8,1	6,2	6,41	6,63	6,87	7,13	7,41	●	
3050507	0,5	0,25	7	45	0,4	4	0,45	7,49	7,23	7,48	7,74	8,02	8,32	8,65	●	
3050508	0,5	0,25	8	45	0,4	4	0,45	6,98	8,27	8,55	8,85	9,17	9,52	9,89	●	
3050509	0,5	0,25	9	45	0,4	4	0,45	6,52	9,3	9,62	9,95	10,32	10,71	11,14	●	
3050510	0,5	0,25	10	45	0,4	4	0,45	6,13	10,33	10,68	11,06	11,47	11,9	12,38	●	
3050601	0,6	0,3	1,2	45	0,5	4	0,55	13,14	1,24	1,27	1,3	1,34	1,38	1,43	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○	◎	◎	○	○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WXS-LN-EBD

WXS
- High performance
- 2 flutes
- Long neck
- for hardened material

WXS
- High performance
- 2 Schneiden
- Überlaufhals
- Legierte Werkstoffe

WXS
- Alta prestazione
- 2 denti
- Collo lungo scaricato
- Per materiali temprati

WXS
- Haute performance
- 2 lèvres
- Dégagement long
- Pour matériel trempé

WXS
- Yüksek performans
- 2 ağızlı
- Uzun boyun
- Sertleştirilmiş çelikler için

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- High performance
- 2 skär
- Lång reducering
- Härdat material

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- 2 skär
- Lång reducering
- Härdat material

WXS
- Altas prestaciones
- 2 labio
- Cuello largo
- Aceros endurecidos

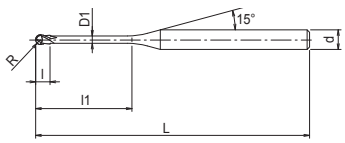
WXS
- Высокая производительность
- 2 режущих кромки
- Длинная шейка
- Для закаленных сталей

WXS
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka
- Do materiału utwardzanego

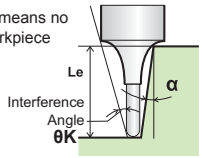
GO TO LIVE STOCK CHECK

WXS

CARBIDE | WXS | 30° | SHRINK FIT | R ± 0.005 | min⁻¹ D.193–198



No numerical value means no interference with workpiece





EDP	D	R	l1	L	l	d	d1	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3050602	0,6	0,3	2	45	0,5	4	0,55	11,88	2,06	2,12	2,19	2,26	2,34	2,42	●	
3049962	0,6	0,3	2,5	45	0,5	4	0,55	11,21	2,58	2,66	2,74	2,84	2,94	3,04	●	
3050603	0,6	0,3	3	45	0,5	4	0,55	10,61	3,1	3,19	3,3	3,41	3,53	3,66	●	
3049963	0,6	0,3	3,5	45	0,5	4	0,55	10,07	3,61	3,73	3,85	3,99	4,13	4,29	●	
3050604	0,6	0,3	4	45	0,5	4	0,55	9,58	4,13	4,26	4,41	4,56	4,73	4,91	●	
3049964	0,6	0,3	4,5	45	0,5	4	0,55	9,13	4,65	4,8	4,96	5,14	5,32	5,53	●	
3050605	0,6	0,3	5	45	0,5	4	0,55	8,73	5,16	5,33	5,51	5,71	5,92	6,15	●	
3049965	0,6	0,3	5,5	45	0,5	4	0,55	8,36	5,68	5,87	6,07	6,29	6,52	6,77	●	
3050606	0,6	0,3	6	45	0,5	4	0,55	8,02	6,2	6,4	6,62	6,86	7,12	7,39	●	
3049966	0,6	0,3	6,5	45	0,5	4	0,55	7,7	6,71	6,94	7,18	7,44	7,71	8,02	●	
3050607	0,6	0,3	7	45	0,5	4	0,55	7,41	7,23	7,47	7,73	8,01	8,31	8,64	●	
3049967	0,6	0,3	7,5	45	0,5	4	0,55	7,14	7,75	8,01	8,29	8,59	8,91	9,26	●	
3050608	0,6	0,3	8	45	0,5	4	0,55	6,89	8,26	8,54	8,84	9,16	9,51	9,88	●	
3049968	0,6	0,3	8,5	45	0,5	4	0,55	6,66	8,78	9,08	9,39	9,74	10,1	10,5	●	
3050609	0,6	0,3	9	45	0,5	4	0,55	6,44	9,3	9,61	9,95	10,31	10,7	11,12	●	
3049969	0,6	0,3	9,5	45	0,5	4	0,55	6,23	9,81	10,15	10,5	10,89	11,3	11,75	●	
3050610	0,6	0,3	10	45	0,5	4	0,55	6,04	10,33	10,68	11,06	11,46	11,9	12,37	●	
3050611	0,6	0,3	11	50	0,5	4	0,55	5,69	11,37	11,75	12,16	12,61	13,09	13,61	●	
3050612	0,6	0,3	12	50	0,5	4	0,55	5,38	12,4	12,82	13,27	13,76	14,28	14,85	●	
3050802	0,8	0,4	2	45	0,6	4	0,75	11,86	2,06	2,12	2,18	2,25	2,32	2,4	●	
3050803	0,8	0,4	3	45	0,6	4	0,75	10,52	3,09	3,19	3,29	3,4	3,51	3,64	●	
3050804	0,8	0,4	4	45	0,6	4	0,75	9,45	4,13	4,26	4,4	4,55	4,71	4,88	●	
3050805	0,8	0,4	5	45	0,6	4	0,75	8,58	5,16	5,33	5,5	5,7	5,9	6,13	●	
3050806	0,8	0,4	6	45	0,6	4	0,75	7,85	6,19	6,4	6,61	6,85	7,1	7,37	●	
3050807	0,8	0,4	7	45	0,6	4	0,75	7,24	7,23	7,47	7,72	8	8,29	8,61	●	
3050808	0,8	0,4	8	45	0,6	4	0,75	6,71	8,26	8,54	8,83	9,15	9,49	9,86	●	
3050810	0,8	0,4	10	45	0,6	4	0,75	5,86	10,33	10,67	11,05	11,45	11,88	12,34	●	
3050812	0,8	0,4	12	50	0,6	4	0,75	5,2	12,4	12,81	13,26	13,75	14,27	14,83	●	
3051002	1	0,5	2	45	0,8	4	0,95	11,84	2,06	2,11	2,17	2,23	2,3	2,37	●	
3051003	1	0,5	3	45	0,8	4	0,95	10,43	3,09	3,18	3,28	3,38	3,49	3,62	●	
3051004	1	0,5	4	45	0,8	4	0,95	9,32	4,12	4,25	4,39	4,53	4,69	4,86	●	
3051005	1	0,5	5	45	0,8	4	0,95	8,41	5,16	5,32	5,49	5,68	5,88	6,1	●	
3051006	1	0,5	6	45	0,8	4	0,95	7,67	6,19	6,39	6,6	6,83	7,08	7,35	●	
3051007	1	0,5	7	45	0,8	4	0,95	7,05	7,22	7,46	7,71	7,98	8,27	8,59	●	
3051008	1	0,5	8	45	0,8	4	0,95	6,52	8,26	8,53	8,82	9,13	9,47	9,83	●	
3051009	1	0,5	9	45	0,8	4	0,95	6,06	9,29	9,6	9,93	10,28	10,66	11,08	●	
3051010	1	0,5	10	45	0,8	4	0,95	5,66	10,33	10,67	11,04	11,43	11,86	12,32	●	
3051012	1	0,5	12	45	0,8	4	0,95	5,01	12,39	12,81	13,25	13,73	14,25	14,81	●	
3051014	1	0,5	14	50	0,8	4	0,95	4,49	14,46	14,95	15,47	16,03	16,64	17,29	●	
3051016	1	0,5	16	50	0,8	4	0,95	4,06	16,53	17,09	17,69	18,33	19,03	19,78	●	
3051018	1	0,5	18	55	0,8	4	0,95	3,71	18,59	19,23	19,9	20,63	21,41	22,26	●	
3051020	1	0,5	20	55	0,8	4	0,95	3,42	20,66	21,36	22,12	22,93	23,8	24,75	●	
3051022	1	0,5	22	60	0,8	4	0,95	3,17	22,73	23,5	24,33	25,23	26,19	27,24	●	
3051202	1,2	0,6	2,4	45	1	4	1,15	11,03	2,51	2,61	2,7	2,78	2,87	2,96	●	
3051204	1,2	0,6	4	45	1	4	1,15	9,07	4,19	4,34	4,48	4,62	4,78	4,95	●	
3051206	1,2	0,6	6	45	1	4	1,15	7,41	6,27	6,48	6,69	6,92	7,17	7,44	●	
3051208	1,2	0,6	8	45	1	4	1,15	6,26	8,35	8,62	8,91	9,22	9,56	9,93	●	
3051210	1,2	0,6	10	45	1	4	1,15	5,42	10,42	10,76	11,13	11,52	11,95	12,41	●	
3051212	1,2	0,6	12	45	1	4	1,15	4,78	12,49	12,9	13,34	13,82	14,34	14,9	●	
3051214	1,2	0,6	14	50	1	4	1,15	4,27	14,55	15,04	15,56	16,12	16,73	17,38	●	
3051216	1,2	0,6	16	50	1	4	1,15	3,86	16,62	17,18	17,78	18,42	19,12	19,87	●	
3051218	1,2	0,6	18	55	1	4	1,15	3,52	18,69	19,32	19,99	20,72	21,51	22,36	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○	◎	◎	○	○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WXS-LN-EBD

WXS
- High performance
- 2 flutes
- Long neck
- for hardened material

WXS
- High performance
- 2 Schneiden
- Überlaufhals
- Legierte Werkstoffe

WXS
- Alta prestazione
- 2 denti
- Collo lungo scaricato
- Per materiali temprati

WXS
- Haute performance
- 2 lèvres
- Dégagement long
- Pour matériel trempé

WXS
- Yüksek performans
- 2 ağızlı
- Uzun boyun
- Sertleştirilmiş çelikler için

WXS
- High performance
- 2 skär
- Lång reducering
- Härdat material

WXS
- High performance
- 2 skär
- Lång reducering
- Härdat material

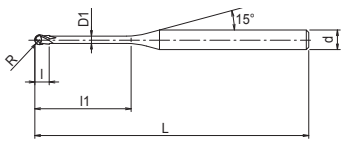
WXS
- Altas prestaciones
- 2 labio
- Cuello largo
- Aceros endurecidos

WXS
- Высокая производительность
- 2 режущих кромки
- Длинная шейка
- Для закаленных сталей

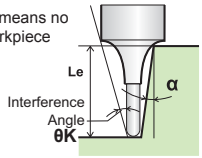
WXS
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka
- Do materiału utwardzanego

GO TO LIVE STOCK CHECK

WXS | CARBIDE | 30° | SHRINK FIT | ± 0.005 | min⁻¹ D.193-198



No numerical value means no interference with workpiece





EDP	D	R	l1	L	l	d	d1	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3051220	1,2	0,6	20	55	1	4	1,15	3,24	20,75	21,46	22,21	23,02	23,9	24,84	●	
3051503	1,5	0,75	3	45	1,2	4	1,45	10,01	3,13	3,25	3,35	3,45	3,56	3,67	●	
3051504	1,5	0,75	4	45	1,2	4	1,45	8,8	4,18	4,33	4,46	4,6	4,75	4,92	●	
3051506	1,5	0,75	6	45	1,2	4	1,45	7,08	6,27	6,47	6,68	6,9	7,14	7,4	●	
3051508	1,5	0,75	8	45	1,2	4	1,45	5,92	8,34	8,61	8,9	9,2	9,53	9,89	●	
3051510	1,5	0,75	10	45	1,2	4	1,45	5,09	10,41	10,75	11,11	11,5	11,92	12,38	●	
3051512	1,5	0,75	12	45	1,2	4	1,45	4,46	12,48	12,89	13,33	13,8	14,31	14,86	●	
3051514	1,5	0,75	14	50	1,2	4	1,45	3,96	14,55	15,03	15,55	16,1	16,7	17,35	●	
3051516	1,5	0,75	16	45	1,2	4	1,45	3,57	16,62	17,17	17,76	18,4	19,09	19,83	●	
3051518	1,5	0,75	18	55	1,2	4	1,45	3,25	18,68	19,31	19,98	20,7	21,48	22,32	●	
3051520	1,5	0,75	20	50	1,2	4	1,45	2,98	20,75	21,45	22,19	23	23,87	-	●	
3051522	1,5	0,75	22	60	1,2	4	1,45	2,75	22,82	23,59	24,41	25,3	26,26	-	●	
3051530	1,5	0,75	30	70	1,2	4	1,45	2,1	31,09	32,14	33,28	34,5	-	-	●	
3051608	1,6	0,8	8	45	1,3	4	1,55	5,8	8,34	8,61	8,89	9,19	9,52	9,88	●	
3051612	1,6	0,8	12	45	1,3	4	1,55	4,34	12,48	12,89	13,32	13,79	14,3	14,85	●	
3051616	1,6	0,8	16	50	1,3	4	1,55	3,47	16,61	17,16	17,76	18,39	19,08	19,82	●	
3051620	1,6	0,8	20	55	1,3	4	1,55	2,89	20,75	21,44	22,19	22,99	23,86	-	●	
3052004	2	1	4	45	1,6	4	1,95	7,87	4,23	4,44	4,66	4,86	5,06	5,26	●	
3052006	2	1	6	45	1,6	4	1,95	6,19	6,36	6,67	6,96	7,23	7,49	7,76	●	
3052008	2	1	8	45	1,6	4	1,95	5,1	8,48	8,87	9,22	9,55	9,88	10,24	●	
3052010	2	1	10	45	1,6	4	1,95	4,33	10,59	11,05	11,45	11,85	12,27	12,73	●	
3052012	2	1	12	45	1,6	4	1,95	3,77	12,69	13,21	13,67	14,15	14,66	15,22	●	
3052014	2	1	14	50	1,6	4	1,95	3,33	14,78	15,36	15,89	16,45	17,05	17,7	●	
3052016	2	1	16	50	1,6	4	1,95	2,98	16,88	17,51	18,1	18,75	19,44	-	●	
3052018	2	1	18	55	1,6	4	1,95	2,70	18,96	19,65	20,32	21,04	21,83	-	●	
3052020	2	1	20	55	1,6	4	1,95	2,47	21,05	21,78	22,54	23,34	-	-	●	
3052022	2	1	22	60	1,6	4	1,95	2,27	23,13	23,92	24,75	25,64	-	-	●	
3052025	2	1	25	65	1,6	4	1,95	2,03	26,24	27,13	28,08	29,09	-	-	●	
3052030	2	1	30	70	1,6	4	1,95	1,73	31,42	32,48	33,62	-	-	-	●	
3052035	2	1	35	70	1,6	4	1,95	1,5	36,59	37,83	39,16	-	-	-	●	
3052040	2	1	40	80	1,6	4	1,95	1,33	41,76	43,18	-	-	-	-	●	
3052510	2,5	1,25	10	45	2	4	2,35	3,63	10,46	10,85	11,21	11,59	11,99	12,43	●	
3052515	2,5	1,25	15	50	2	4	2,35	2,55	15,67	16,21	16,75	17,34	17,96	-	●	
3052520	2,5	1,25	20	55	2	4	2,35	1,97	20,87	21,56	22,3	-	-	-	●	
3052525	2,5	1,25	25	65	2	4	2,35	1,6	26,04	26,91	27,84	-	-	-	●	
3052530	2,5	1,25	30	70	2	4	2,35	1,35	31,21	32,26	-	-	-	-	●	
3052535	2,5	1,25	35	70	2	4	2,35	1,17	36,38	37,61	-	-	-	-	●	
3053006	3	1,5	6	50	2,4	6	2,85	8,17	6,25	6,49	6,72	6,95	7,17	7,4	●	
3053008	3	1,5	8	50	2,4	6	2,85	6,88	8,35	8,67	8,97	9,25	9,55	9,88	●	
3053010	3	1,5	10	50	2,4	6	2,85	5,94	10,44	10,83	11,19	11,55	11,94	12,37	●	
3053012	3	1,5	12	55	2,4	6	2,85	5,22	12,53	12,98	13,4	13,85	14,33	14,86	●	
3053014	3	1,5	14	55	2,4	6	2,85	4,66	14,62	15,13	15,62	16,15	16,72	17,34	●	
3053015	3	1,5	15	55	2,4	6	2,85	4,42	15,66	16,2	16,73	17,3	17,92	18,59	●	
3053016	3	1,5	16	55	2,4	6	2,85	4,21	16,7	17,26	17,84	18,45	19,11	19,83	●	
3053020	3	1,5	20	60	2,4	6	2,85	3,52	20,86	21,54	22,27	23,05	23,89	24,8	●	
3053025	3	1,5	25	65	2,4	6	2,85	2,92	26,04	26,89	27,81	28,8	29,86	-	●	
3053030	3	1,5	30	70	2,4	6	2,85	2,5	31,2	32,24	33,35	34,55	-	-	●	
3053035	3	1,5	35	80	2,4	6	2,85	2,18	36,37	37,59	38,89	40,3	-	-	●	
3053040	3	1,5	40	90	2,4	6	2,85	1,94	41,54	42,94	44,43	-	-	-	●	
3053515	3,5	1,75	15	55	2,8	6	3,35	3,93	15,65	16,18	16,7	17,26	17,87	18,53	●	
3053520	3,5	1,75	20	60	2,8	6	3,35	3,08	20,85	21,53	22,24	23,01	23,84	24,74	●	
3053525	3,5	1,75	25	65	2,8	6	3,35	2,54	26,03	26,87	27,78	28,76	29,82	-	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○	◎	◎	○	○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

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- Collo lungo scaricato
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- Dégagement long
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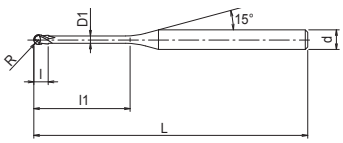
WXS
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- 2 режущих кромки
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WXS
- Wysoka wydajność
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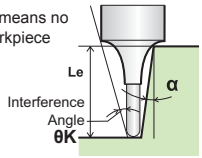
GO TO LIVE STOCK CHECK

WXS

CARBIDE | WXS | 30° | SHRINK FIT | R ± 0.005 | min⁻¹ D.193–198



No numerical value means no interference with workpiece





EDP	D	R	l1	L	l	d	d1	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3053530	3,5	1,75	30	70	2,8	6	3,35	2,16	31,2	32,22	33,32	34,51	-	-	●	
3053535	3,5	1,75	35	80	2,8	6	3,35	1,88	36,36	37,57	38,87	-	-	-	●	
3053540	3,5	1,75	40	90	2,8	6	3,35	1,66	41,53	42,92	44,41	-	-	-	●	
3053545	3,5	1,75	45	90	2,8	6	3,35	1,49	46,7	48,27	-	-	-	-	●	
3054008	4	2	8	55	3,2	6	3,85	5,67	8,33	8,63	8,91	9,18	9,46	9,77	●	
3054010	4	2	10	60	3,2	6	3,85	4,74	10,42	10,79	11,13	11,48	11,85	12,25	●	
3054012	4	2	12	60	3,2	6	3,85	4,07	12,51	12,95	13,35	13,78	14,24	14,74	●	
3054015	4	2	15	60	3,2	6	3,85	3,36	15,64	16,16	16,67	17,23	17,82	18,47	●	
3054016	4	2	16	60	3,2	6	3,85	3,18	16,68	17,23	17,78	18,38	19,02	19,71	●	
3054020	4	2	20	65	3,2	6	3,85	2,6	20,84	21,51	22,22	22,98	23,8	-	●	
3054025	4	2	25	70	3,2	6	3,85	2,12	26,02	26,86	27,76	28,72	-	-	●	
3054030	4	2	30	80	3,2	6	3,85	1,79	31,19	32,21	33,3	-	-	-	●	
3054035	4	2	35	80	3,2	6	3,85	1,55	36,36	37,55	38,84	-	-	-	●	
3054040	4	2	40	90	3,2	6	3,85	1,36	41,52	42,9	-	-	-	-	●	
3054045	4	2	45	90	3,2	6	3,85	1,22	46,69	48,25	-	-	-	-	●	
3054050	4	2	50	100	3,2	6	3,85	1,1	51,86	53,6	-	-	-	-	●	
3055010	5	2,5	10	60	4	6	4,85	2,96	10,4	10,75	11,08	11,4	11,75	-	●	
3055015	5	2,5	15	60	4	6	4,85	1,96	15,62	16,13	16,62	-	-	-	●	
3055020	5	2,5	20	70	4	6	4,85	1,46	20,82	21,47	-	-	-	-	●	
3055025	5	2,5	25	70	4	6	4,85	1,16	26	26,82	-	-	-	-	●	
3055030	5	2,5	30	80	4	6	4,85	0,97	31,17	-	-	-	-	-	●	
3055035	5	2,5	35	80	4	6	4,85	0,83	36,34	-	-	-	-	-	●	
3055040	5	2,5	40	90	4	6	4,85	0,72	41,51	-	-	-	-	-	●	
3055045	5	2,5	45	100	4	6	4,85	0,64	46,68	-	-	-	-	-	●	
3055050	5	2,5	50	100	4	6	4,85	0,58	51,84	-	-	-	-	-	●	
3056012	6	3	12	60	4,8	6	5,85	-	-	-	-	-	-	-	●	
3056020	6	3	20	70	4,8	6	5,85	-	-	-	-	-	-	-	●	
3056025	6	3	25	70	4,8	6	5,85	-	-	-	-	-	-	-	●	
3056030	6	3	30	80	4,8	6	5,85	-	-	-	-	-	-	-	●	
3056035	6	3	35	80	4,8	6	5,85	-	-	-	-	-	-	-	●	
3056040	6	3	40	90	4,8	6	5,85	-	-	-	-	-	-	-	●	
3056045	6	3	45	100	4,8	6	5,85	-	-	-	-	-	-	-	●	
3056050	6	3	50	120	4,8	6	5,85	-	-	-	-	-	-	-	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○	◎	◎	○	○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WXS-CPR

WXS
- High performance
- 2 flutes
- Long neck, pencil neck
- For mold milling

WXS
- High performance
- 2 Schneiden
- Überlaufhals, konischer Schaft
- Für den Werkzeug -und Formenbau

WXS
- Alta prestazione
- 2 denti
- Collo lungo scaricato, riduzione conica
- Fresatura stampi

WXS
- Haute performance
- 2 lèvres
- Dégagement long, conique
- Pour l'usinage de moule

WXS
- Yüksek performans
- 2 ağızlı
- Uzun boyun, kalem boyun
- Kalıp frezeleme için

WXS
- High performance
- 2 skær
- Long neck, pencil neck
- Til værktøjsfremstilling

WXS
- High performance
- 2 skär
- Lång reducering Konisk reducering
- För formverktyg

WXS
- Altas prestaciones
- 2 labio
- Cuello largo,mango reforzado con cuello conico
- De moldes y matrices

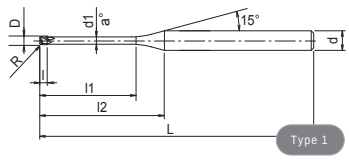
WXS
- Высокая производительность
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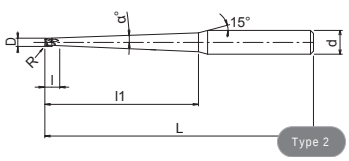
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- Długa ołówkowa szyjka
- Do frezowania form

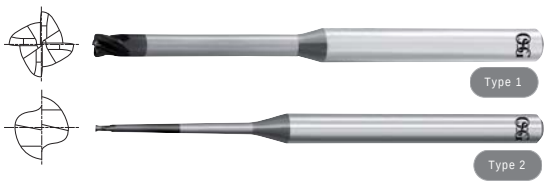
GO TO LIVE STOCK CHECK

WXS

CARBIDE | WXS | 30° | SHRINK FIT | ± 0.005 | D < 0.5 0~-0.01 | D ≥ 0.5 0~-0.0015 | min D.199 203







EDP	D	R	α	l1	d1	d2	l	l2	d	L	ZΔ	Type	Stock	Price
3100201	0,2	0,05	0°	0,5	0,18	-	0,15	7,63	4	50	2	1	●	
3100202	0,2	0,05	0°	1	0,18	-	0,15	8,13	4	50	2	1	●	
3100203	0,2	0,05	1°	1	0,18	0,23	0,15	8,04	4	50	2	2	●	
3100204	0,2	0,05	1°	2	0,18	0,26	0,15	8,97	4	50	2	2	●	
3100205	0,2	0,05	3°	1	0,18	0,27	0,15	7,96	4	50	2	2	●	
3100206	0,2	0,05	3°	2	0,18	0,39	0,15	8,73	4	50	2	2	●	
3100207	0,2	0,05	5°	1	0,18	0,35	0,15	7,81	4	50	2	1	●	
3100208	0,2	0,05	5°	2	0,18	0,52	0,15	8,49	4	50	2	1	●	
3100301	0,3	0,05	0°	1	0,28	-	0,25	7,94	4	50	2	1	●	
3100302	0,3	0,05	0°	2	0,28	-	0,25	8,94	4	50	2	1	●	
3100303	0,3	0,05	1°	2	0,28	0,36	0,25	8,79	4	50	2	2	●	
3100304	0,3	0,05	1°	3	0,28	0,40	0,25	9,73	4	50	2	2	●	
3100305	0,3	0,05	3°	2	0,28	0,48	0,25	8,56	4	50	2	2	●	
3100306	0,3	0,05	3°	3	0,28	0,59	0,25	9,37	4	50	2	2	●	
3100307	0,3	0,05	5°	2	0,28	0,61	0,25	8,33	4	50	2	2	●	
3100308	0,3	0,05	5°	3	0,28	0,78	0,25	9,01	4	50	2	2	●	
3100401	0,4	0,05	0°	1	0,37	-	0,3	7,77	4	50	2	1	●	
3100402	0,4	0,05	0°	1,5	0,37	-	0,3	8,27	4	50	2	1	●	
3100403	0,4	0,05	0°	2	0,37	-	0,3	8,77	2	50	2	1	●	
3100404	0,4	0,05	0°	3	0,37	-	0,3	9,77	4	50	2	1	●	
3100405	0,4	0,05	0°	4	0,37	-	0,3	10,77	4	50	2	1	●	
3100409	0,4	0,05	1°	3	0,37	0,49	0,3	9,54	4	50	2	2	●	
3100410	0,4	0,05	1°	4	0,37	0,53	0,3	10,47	4	50	2	2	●	
3100411	0,4	0,05	3°	3	0,37	0,68	0,3	9,18	4	50	2	2	●	
3100412	0,4	0,05	3°	4	0,37	0,79	0,3	9,99	4	50	2	2	●	
3100413	0,4	0,05	5°	3	0,37	0,87	0,3	8,83	4	50	2	2	●	
3100414	0,4	0,05	5°	4	0,37	1,05	0,3	9,5	4	50	2	2	●	
3100406	0,4	0,1	0°	2	0,37	-	0,3	8,77	4	50	2	1	●	
3100407	0,4	0,1	0°	3	0,37	-	0,3	9,77	4	50	2	1	●	
3100408	0,4	0,1	0°	4	0,37	-	0,3	10,77	4	50	2	1	●	
3100415	0,4	0,1	1°	3	0,37	0,49	0,3	9,54	4	50	2	2	●	
3100416	0,4	0,1	1°	4	0,37	0,53	0,3	10,47	4	50	2	2	●	
3100417	0,4	0,1	3°	3	0,37	0,68	0,3	9,18	4	50	2	2	●	
3100418	0,4	0,1	3°	4	0,37	0,79	0,3	9,99	4	50	2	2	●	
3100419	0,4	0,1	5°	3	0,37	0,87	0,3	8,83	4	50	2	2	●	
3100420	0,4	0,1	5°	4	0,37	1,05	0,3	9,5	4	50	2	2	●	
3100501	0,5	0,05	0°	1	0,46	-	0,4	7,6	4	50	2	1	●	
3100502	0,5	0,05	0°	2	0,46	-	0,4	8,6	4	50	2	1	●	
3100503	0,5	0,05	0°	3	0,46	-	0,4	9,6	4	50	2	1	●	
3100504	0,5	0,05	0°	4	0,46	-	0,4	10,6	4	50	2	1	●	
3100505	0,5	0,05	0°	5	0,46	-	0,4	11,6	4	50	2	1	●	
3100506	0,5	0,05	0°	6	0,46	-	0,4	12,6	4	50	2	1	●	
3100513	0,5	0,05	1°	3	0,46	0,59	0,4	9,36	4	50	2	2	●	
3100514	0,5	0,05	1°	5	0,46	0,66	0,4	11,23	4	50	2	2	●	
3100515	0,5	0,05	1°	8	0,46	0,77	0,4	14,03	4	50	2	2	●	
3100516	0,5	0,05	1°	10	0,46	0,84	0,4	15,9	4	50	2	2	●	
3100517	0,5	0,05	1°	12	0,46	0,91	0,4	17,77	4	50	2	2	●	
3100518	0,5	0,05	3°	3	0,46	0,77	0,4	9,02	4	50	2	2	●	
3100519	0,5	0,05	3°	5	0,46	0,98	0,4	10,63	4	50	2	2	●	
3100520	0,5	0,05	3°	8	0,46	1,30	0,4	13,04	4	50	2	2	●	
3100521	0,5	0,05	3°	10	0,46	1,51	0,4	14,65	4	50	2	2	●	
3100522	0,5	0,05	3°	12	0,46	1,72	0,4	16,26	4	50	2	2	●	

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◎	◎	◎	◎		◎	
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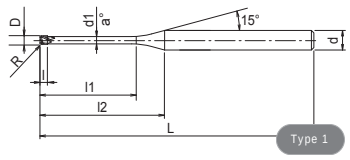
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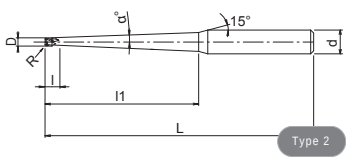
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- Wysoka wydajność
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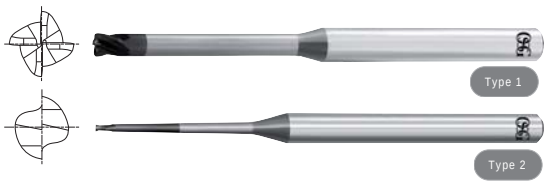
GO TO LIVE STOCK CHECK

WXS

CARBIDE | WXS | 30° | SHRINK FIT | ± 0.005 | D < 0.5 0~-0.01 | D ≥ 0,5 0~-0.0015 | min⁻¹ D.199-203







EDP	D	R	α	l1	d1	d2	l	l2	d	L	ZΔ	Type	Stock	Price
3100523	0,5	0,05	5°	3	0,46	0,96	0,4	8,68	4	50	2	2	●	
3100524	0,5	0,05	5°	5	0,46	1,31	0,4	10,02	4	50	2	2	●	
3100525	0,5	0,05	5°	8	0,46	1,83	0,4	12,04	4	50	2	2	●	
3100526	0,5	0,05	5°	10	0,46	2,18	0,4	13,39	4	50	2	2	●	
3100507	0,5	0,1	0°	1	0,46	-	0,4	7,6	4	50	2	1	●	
3100508	0,5	0,1	0°	2	0,46	-	0,4	8,6	4	50	2	1	●	
3100509	0,5	0,1	0°	3	0,46	-	0,4	9,6	4	50	2	1	●	
3100510	0,5	0,1	0°	4	0,46	-	0,4	10,6	4	50	2	1	●	
3100511	0,5	0,1	0°	5	0,46	-	0,4	11,6	4	50	2	1	●	
3100512	0,5	0,1	0°	6	0,46	-	0,4	12,6	4	50	2	1	●	
3100527	0,5	0,1	1°	3	0,46	0,59	0,4	9,36	4	50	2	2	●	
3100528	0,5	0,1	1°	5	0,46	0,66	0,4	11,23	4	50	2	2	●	
3100529	0,5	0,1	1°	8	0,46	0,77	0,4	14,03	4	50	2	2	●	
3100530	0,5	0,1	1°	10	0,46	0,84	0,4	15,9	4	50	2	2	●	
3100531	0,5	0,1	1°	12	0,46	0,91	0,4	17,77	4	50	2	2	●	
3100532	0,5	0,1	3°	3	0,46	0,77	0,4	9,02	4	50	2	2	●	
3100533	0,5	0,1	3°	5	0,46	0,98	0,4	10,63	4	50	2	2	●	
3100534	0,5	0,1	3°	8	0,46	1,30	0,4	13,04	4	50	2	2	●	
3100535	0,5	0,1	3°	10	0,46	1,51	0,4	14,65	4	50	2	2	●	
3100536	0,5	0,1	3°	12	0,46	1,72	0,4	16,26	4	50	2	2	●	
3100537	0,5	0,1	5°	3	0,46	0,96	0,4	8,68	4	50	2	2	●	
3100538	0,5	0,1	5°	5	0,46	1,31	0,4	10,02	4	50	2	2	●	
3100539	0,5	0,1	5°	8	0,46	1,83	0,4	12,04	4	50	2	2	●	
3100540	0,5	0,1	5°	10	0,46	2,18	0,4	13,39	4	50	2	2	●	
3100601	0,6	0,1	0°	2	0,56	-	0,48	8,41	4	50	2	1	●	
3100602	0,6	0,1	0°	4	0,56	-	0,48	10,41	4	50	2	1	●	
3100603	0,6	0,1	0°	6	0,56	-	0,48	12,41	4	50	2	1	●	
3100806	0,8	0,05	1°	5	0,76	0,95	0,65	10,68	4	50	2	2	●	
3100807	0,8	0,05	1°	8	0,76	1,06	0,65	13,49	4	50	2	2	●	
3100808	0,8	0,05	3°	5	0,76	1,26	0,65	10,12	4	50	2	2	●	
3100809	0,8	0,05	3°	8	0,76	1,57	0,65	12,53	4	50	2	2	●	
3100801	0,8	0,1	0°	4	0,76	-	0,65	10,04	4	50	2	1	●	
3100802	0,8	0,1	0°	6	0,76	-	0,65	12,04	4	50	2	1	●	
3100810	0,8	0,1	1°	5	0,76	0,95	0,65	10,68	4	50	2	2	●	
3100811	0,8	0,1	1°	8	0,76	1,06	0,65	13,49	4	50	2	2	●	
3100812	0,8	0,1	3°	5	0,76	1,26	0,65	10,12	4	50	2	2	●	
3100813	0,8	0,1	3°	8	0,76	1,57	0,65	12,53	4	50	2	2	●	
3100803	0,8	0,2	0°	4	0,76	-	0,65	10,04	4	50	2	1	●	
3100804	0,8	0,2	0°	6	0,76	-	0,65	12,04	4	50	2	1	●	
3100805	0,8	0,2	0°	8	0,76	-	0,65	14,04	4	50	2	1	●	
3100814	0,8	0,2	1°	5	0,76	0,95	0,65	10,68	4	50	2	2	●	
3100815	0,8	0,2	1°	8	0,76	1,06	0,65	13,49	4	50	2	2	●	
3100816	0,8	0,2	3°	5	0,76	1,26	0,65	10,12	4	50	2	2	●	
3100817	0,8	0,2	3°	8	0,76	1,57	0,65	12,53	4	50	2	2	●	
3101001	1	0,05	0°	4	0,95	-	0,8	9,69	4	50	2	1	●	
3101002	1	0,05	0°	6	0,95	-	0,8	11,69	4	50	2	1	●	
3101003	1	0,05	0°	8	0,95	-	0,8	13,69	4	50	2	1	●	
3101004	1	0,05	0°	10	0,95	-	0,8	15,69	4	50	2	1	●	
3101005	1	0,05	0°	12	0,95	-	0,8	17,69	4	50	2	1	●	
3101023	1	0,05	1°	6	0,95	1,18	0,8	11,25	4	50	2	2	●	
3101024	1	0,05	1°	10	0,95	1,32	0,8	14,99	4	60	2	2	●	
3101025	1	0,05	1°	15	0,95	1,50	0,8	19,67	4	60	2	2	●	

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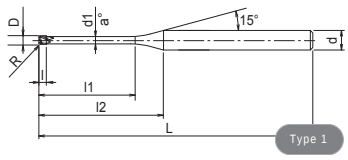
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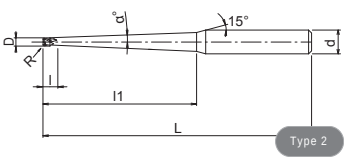
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GO TO LIVE STOCK CHECK

CARBIDE | WXS | 30° | SHRINK FIT | ± 0.005 | D ≤ 0.5 0~-0.01 | D ≥ 0.5 0~-0.0015 | min^{-1} D.199-203







EDP	D	R	α	l1	d1	d2	l	l2	d	L	ZΔ	Type	Stock	Price
3101026	1	0,05	1°	20	0,95	1,67	0,8	24,34	4	60	2	2	●	
3101027	1	0,05	1°	25	0,95	1,84	0,8	29,02	4	70	2	2	●	
3101028	1	0,05	1°	30	0,95	2,02	0,8	33,69	4	80	2	2	●	
3101029	1	0,05	1°	35	0,95	2,19	0,8	38,37	4	80	2	2	●	
3101030	1	0,05	3°	6	0,95	1,55	0,8	10,58	4	50	2	2	●	
3101031	1	0,05	3°	10	0,95	1,96	0,8	13,79	4	60	2	2	●	
3101006	1	0,1	0°	4	0,95	-	0,8	9,69	4	50	2	1	●	
3101007	1	0,1	0°	6	0,95	-	0,8	11,69	4	50	2	1	●	
3101008	1	0,1	0°	8	0,95	-	0,8	13,69	4	50	2	1	●	
3101009	1	0,1	0°	10	0,95	-	0,8	15,69	4	50	2	1	●	
3101010	1	0,1	0°	12	0,95	-	0,8	17,69	4	50	2	1	●	
3101032	1	0,1	1°	6	0,95	1,18	0,8	11,25	4	50	2	1	●	
3101033	1	0,1	1°	10	0,95	1,32	0,8	14,99	4	60	2	2	●	
3101034	1	0,1	1°	15	0,95	1,50	0,8	19,67	4	60	2	2	●	
3101035	1	0,1	1°	20	0,95	1,67	0,8	24,34	4	60	2	2	●	
3101036	1	0,1	1°	25	0,95	1,84	0,8	29,02	4	70	2	2	●	
3101037	1	0,1	1°	30	0,95	2,02	0,8	33,69	4	80	2	2	●	
3101038	1	0,1	1°	35	0,95	2,19	0,8	38,37	4	80	2	2	●	
3101039	1	0,1	3°	6	0,95	1,55	0,8	10,58	4	50	2	2	●	
3101040	1	0,1	3°	10	0,95	1,96	0,8	13,79	4	60	2	2	●	
3101011	1	0,2	0°	4	0,95	-	0,8	9,69	4	50	2	2	●	
3101012	1	0,2	0°	6	0,95	-	0,8	11,69	4	50	2	2	●	
3101013	1	0,2	0°	8	0,95	-	0,8	13,69	4	50	2	2	●	
3101014	1	0,2	0°	10	0,95	-	0,8	15,69	4	50	2	2	●	
3101015	1	0,2	0°	12	0,95	-	0,8	17,69	4	50	2	2	●	
3101016	1	0,2	0°	16	0,95	-	0,8	21,69	4	60	2	2	●	
3101017	1	0,2	0°	20	0,95	-	0,8	25,69	4	60	2	2	●	
3101041	1	0,2	1°	6	0,95	1,18	0,8	11,25	4	50	2	2	●	
3101042	1	0,2	1°	10	0,95	1,32	0,8	14,99	4	60	2	2	●	
3101043	1	0,2	1°	15	0,95	1,50	0,8	19,67	4	60	2	2	●	
3101044	1	0,2	1°	20	0,95	1,67	0,8	24,34	4	60	2	2	●	
3101045	1	0,2	1°	25	0,95	1,84	0,8	29,02	4	70	2	2	●	
3101046	1	0,2	1°	30	0,95	2,02	0,8	33,69	4	80	2	2	●	
3101047	1	0,2	1°	35	0,95	2,19	0,8	38,37	4	80	2	2	●	
3101048	1	0,2	3°	6	0,95	1,55	0,8	10,58	4	50	2	2	●	
3101049	1	0,2	3°	10	0,95	1,96	0,8	13,79	4	60	2	2	●	
3101018	1	0,3	0°	4	0,95	-	0,8	9,69	4	50	2	2	●	
3101019	1	0,3	0°	6	0,95	-	0,8	11,69	4	50	2	2	●	
3101020	1	0,3	0°	8	0,95	-	0,8	13,69	4	50	2	2	●	
3101021	1	0,3	0°	10	0,95	-	0,8	15,69	4	50	2	2	●	
3101022	1	0,3	0°	12	0,95	-	0,8	17,69	4	50	2	2	●	
3101050	1	0,3	1°	6	0,95	1,18	0,8	11,25	4	50	2	2	●	
3101051	1	0,3	1°	10	0,95	1,32	0,8	14,99	4	60	2	2	●	
3101052	1	0,3	1°	15	0,95	1,50	0,8	19,67	4	60	2	2	●	
3101053	1	0,3	1°	20	0,95	1,67	0,8	24,34	4	60	2	2	●	
3101054	1	0,3	1°	25	0,95	1,84	0,8	29,02	4	70	2	2	●	
3101055	1	0,3	1°	30	0,95	2,02	0,8	33,69	4	80	2	2	●	
3101056	1	0,3	1°	35	0,95	2,19	0,8	38,37	4	80	2	2	●	
3101057	1	0,3	3°	6	0,95	1,55	0,8	10,58	4	50	2	2	●	
3101058	1	0,3	3°	10	0,95	1,96	0,8	13,79	4	60	2	2	●	
3101201	1,2	0,2	0°	6	1,15	-	1	11,31	4	50	2	2	●	
3101202	1,2	0,2	0°	8	1,15	-	1	13,31	4	50	2	2	●	

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~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎		◎	
Cu	Al	Graphite	Ti	HRS	Plast.	

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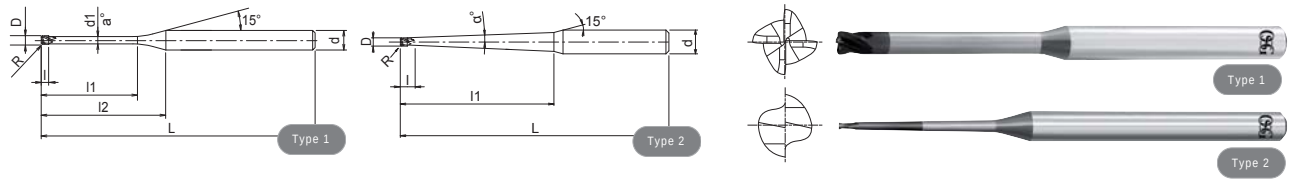
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CARBIDE | WXS | 30° | SHRINK FIT | ± 0.005 | D < 0,5 0~-0.01 | D ≥ 0,5 0~-0.0015 | min⁻¹ D.199-203



EDP	D	R	α	l1	d1	d2	l	l2	d	L	ZΔ	Type	Stock	Price
3101203	1,2	0,2	0°	10	1,15	-	1	15,31	4	50	2	2	●	
3101204	1,2	0,3	0°	6	1,15	-	1	11,31	4	50	2	2	●	
3101205	1,2	0,3	0°	8	1,15	-	1	13,31	4	50	2	2	●	
3101206	1,2	0,3	0°	10	1,15	-	1	15,31	4	50	2	2	●	
3101511	1,5	0,1	1°	10	1,45	1,81	1,2	14,09	4	60	2	2	●	
3101512	1,5	0,1	1°	15	1,45	1,98	1,2	18,76	4	60	2	2	●	
3101513	1,5	0,1	1°	20	1,45	2,16	1,2	23,44	4	60	2	2	●	
3101514	1,5	0,1	1°	25	1,45	2,33	1,2	28,11	4	70	2	2	●	
3101515	1,5	0,1	1°	30	1,45	2,51	1,2	32,78	4	80	2	2	●	
3101516	1,5	0,1	3°	10	1,45	2,42	1,2	12,94	4	60	2	2	●	
3101517	1,5	0,1	3°	15	1,45	2,95	1,2	16,96	4	60	2	2	●	
3101501	1,5	0,2	0°	6	1,45	-	1,2	10,75	4	50	2	2	●	
3101502	1,5	0,2	0°	8	1,45	-	1,2	12,75	4	50	2	2	●	
3101503	1,5	0,2	0°	10	1,45	-	1,2	14,75	4	50	2	2	●	
3101504	1,5	0,2	0°	12	1,45	-	1,2	16,75	4	50	2	2	●	
3101505	1,5	0,2	0°	16	1,45	-	1,2	20,75	4	50	2	2	●	
3101518	1,5	0,2	1°	10	1,45	1,81	1,2	14,09	4	60	2	2	●	
3101519	1,5	0,2	1°	15	1,45	1,98	1,2	18,76	4	60	2	2	●	
3101520	1,5	0,2	1°	20	1,45	2,16	1,2	23,44	4	60	2	2	●	
3101521	1,5	0,2	1°	25	1,45	2,33	1,2	28,11	4	70	2	2	●	
3101522	1,5	0,2	1°	30	1,45	2,51	1,2	32,78	4	80	2	2	●	
3101523	1,5	0,2	3°	10	1,45	2,42	1,2	12,94	4	60	2	2	●	
3101524	1,5	0,2	3°	15	1,45	2,95	1,2	16,96	4	60	2	2	●	
3101506	1,5	0,3	0°	6	1,45	-	1,2	10,75	4	50	2	1	●	
3101507	1,5	0,3	0°	8	1,45	-	1,2	12,75	4	50	2	1	●	
3101508	1,5	0,3	0°	10	1,45	-	1,2	14,75	4	50	2	1	●	
3101509	1,5	0,3	0°	12	1,45	-	1,2	16,75	4	50	2	1	●	
3101510	1,5	0,3	0°	16	1,45	-	1,2	20,75	4	50	2	1	●	
3101525	1,5	0,3	1°	10	1,45	1,81	1,2	14,09	4	60	2	2	●	
3101526	1,5	0,3	1°	15	1,45	1,98	1,2	18,76	4	60	2	2	●	
3101527	1,5	0,3	1°	20	1,45	2,16	1,2	23,44	4	60	2	2	●	
3101528	1,5	0,3	1°	25	1,45	2,33	1,2	28,11	4	70	2	2	●	
3101529	1,5	0,3	1°	30	1,45	2,51	1,2	32,78	4	80	2	2	●	
3101530	1,5	0,3	3°	10	1,45	2,42	1,2	12,94	4	60	2	2	●	
3101531	1,5	0,3	3°	15	1,45	2,95	1,2	16,96	4	60	2	2	●	
3102001	2	0,1	0°	8	1,95	-	1,6	11,82	4	50	2	1	●	
3102002	2	0,1	0°	10	1,95	-	1,6	13,82	4	50	2	1	●	
3102003	2	0,1	0°	12	1,95	-	1,6	15,82	4	50	2	1	●	
3102004	2	0,1	0°	16	1,95	-	1,6	19,82	4	60	2	1	●	
3102005	2	0,1	0°	20	1,95	-	1,6	23,82	4	60	2	1	●	
3102006	2	0,1	0°	25	1,95	-	1,6	28,82	4	70	2	1	●	
3102025	2	0,1	1°	15	1,95	2,47	1,6	17,85	4	60	2	2	●	
3102026	2	0,1	1°	20	1,95	2,64	1,6	22,53	4	60	2	2	●	
3102027	2	0,1	1°	25	1,95	2,82	1,6	27,20	4	70	2	2	●	
3102028	2	0,1	1°	30	1,95	2,99	1,6	31,88	4	80	2	2	●	
3102029	2	0,1	1°	40	1,95	3,34	1,6	41,23	4	80	2	2	●	
3102030	2	0,1	1°	50	1,95	3,69	1,6	50,57	4	100	2	2	●	
3102031	2	0,1	3°	15	1,95	3,40	1,6	16,11	4	60	2	2	●	
3102032	2	0,1	3°	20	1,95	3,93	1,6	20,13	4	60	2	2	●	
3102007	2	0,2	0°	8	1,95	-	1,6	11,82	4	50	2	1	●	
3102008	2	0,2	0°	10	1,95	-	1,6	13,82	4	50	2	1	●	
3102009	2	0,2	0°	12	1,95	-	1,6	15,82	4	50	2	1	●	

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◎	◎	◎	◎		◎	
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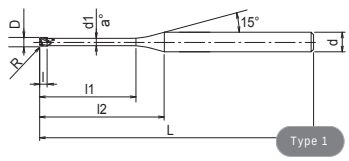
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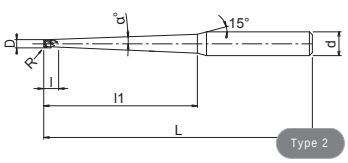
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WXS

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EDP	D	R	α	l1	d1	d2	l	l2	d	L	ZΔ	Type	Stock	Price
3102010	2	0,2	0°	16	1,95	-	1,6	19,82	4	60	2	1	●	
3102011	2	0,2	0°	20	1,95	-	1,6	23,82	4	60	2	1	●	
3102012	2	0,2	0°	25	1,95	-	1,6	28,82	4	70	2	1	●	
3102033	2	0,2	1°	15	1,95	2,47	1,6	17,85	4	60	2	2	●	
3102034	2	0,2	1°	20	1,95	2,64	1,6	22,53	4	60	2	2	●	
3102035	2	0,2	1°	25	1,95	2,82	1,6	27,2	4	70	2	2	●	
3102036	2	0,2	1°	30	1,95	2,99	1,6	31,88	4	80	2	2	●	
3102037	2	0,2	1°	40	1,95	3,34	1,6	41,23	4	80	2	2	●	
3102038	2	0,2	1°	50	1,95	3,69	1,6	50,57	4	100	2	2	●	
3102039	2	0,2	3°	15	1,95	3,4	1,6	16,11	4	60	2	2	●	
3102040	2	0,2	3°	20	1,95	3,93	1,6	20,13	4	60	2	2	●	
3102013	2	0,3	0°	8	1,95	-	1,6	11,82	4	50	2	1	●	
3102014	2	0,3	0°	10	1,95	-	1,6	13,82	4	50	2	1	●	
3102015	2	0,3	0°	12	1,95	-	1,6	15,82	4	50	2	1	●	
3102016	2	0,3	0°	16	1,95	-	1,6	19,82	4	60	2	1	●	
3102017	2	0,3	0°	20	1,95	-	1,6	23,82	4	60	2	1	●	
3102018	2	0,3	0°	25	1,95	-	1,6	28,82	4	70	2	1	●	
3102041	2	0,3	1°	15	1,95	2,47	1,6	17,85	4	60	2	2	●	
3102042	2	0,3	1°	20	1,95	2,64	1,6	22,53	4	60	2	2	●	
3102043	2	0,3	1°	25	1,95	2,82	1,6	27,2	4	70	2	2	●	
3102044	2	0,3	1°	30	1,95	2,99	1,6	31,88	4	80	2	2	●	
3102045	2	0,3	1°	40	1,95	3,34	1,6	41,23	4	80	2	2	●	
3102046	2	0,3	1°	50	1,95	3,69	1,6	50,57	4	100	2	2	●	
3102047	2	0,3	3°	15	1,95	3,4	1,6	16,11	4	60	2	2	●	
3102048	2	0,3	3°	20	1,95	3,93	1,6	20,13	4	60	2	2	●	
3102019	2	0,5	0°	8	1,95	-	1,6	11,82	4	50	2	1	●	
3102020	2	0,5	0°	10	1,95	-	1,6	13,82	4	50	2	1	●	
3102021	2	0,5	0°	12	1,95	-	1,6	15,82	4	50	2	1	●	
3102022	2	0,5	0°	16	1,95	-	1,6	19,82	4	60	2	1	●	
3102023	2	0,5	0°	20	1,95	-	1,6	23,82	4	60	2	1	●	
3102024	2	0,5	0°	25	1,95	-	1,6	28,82	4	70	2	1	●	
3102049	2	0,5	1°	15	1,95	2,47	1,6	17,85	4	60	2	2	●	
3102050	2	0,5	1°	20	1,95	2,64	1,6	22,53	4	60	2	2	●	
3102051	2	0,5	1°	25	1,95	2,82	1,6	27,2	4	70	2	2	●	
3102052	2	0,5	1°	30	1,95	2,99	1,6	31,88	4	80	2	2	●	
3102053	2	0,5	1°	40	1,95	3,34	1,6	41,23	4	80	2	2	●	
3102054	2	0,5	1°	50	1,95	3,69	1,6	50,57	4	100	2	2	●	
3102055	2	0,5	3°	15	1,95	3,4	1,6	16,11	4	60	2	2	●	
3102056	2	0,5	3°	20	1,95	3,93	1,6	20,13	4	60	2	2	●	
3102501	2,5	0,2	0°	10	2,40	-	2,2	12,98	4	50	2	1	●	
3102502	2,5	0,2	0°	20	2,40	-	2,2	22,98	4	60	2	1	●	
3102503	2,5	0,2	0°	30	2,40	-	2,2	32,98	4	70	2	1	●	
3102504	2,5	0,5	0°	10	2,40	-	2,2	12,98	4	50	2	1	●	
3102505	2,5	0,5	0°	20	2,40	-	2,2	22,98	4	60	2	1	●	
3102506	2,5	0,5	0°	30	2,40	-	2,2	32,98	4	70	2	1	●	
3103001	3	0,2	0°	8	2,85	-	2,5	13,87	6	60	2	1	●	
3103002	3	0,2	0°	12	2,85	-	2,5	17,87	6	60	2	1	●	
3103003	3	0,2	0°	16	2,85	-	2,5	21,87	6	60	2	1	●	
3103004	3	0,2	0°	20	2,85	-	2,5	25,87	6	70	2	1	●	
3103005	3	0,2	0°	25	2,85	-	2,5	30,87	6	70	2	1	●	
3103006	3	0,2	0°	30	2,85	-	2,5	35,87	6	70	2	1	●	
3103007	3	0,2	0°	35	2,85	-	2,5	40,87	6	80	2	1	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎		◎	
Cu	Al	Graphite	Ti	HRS	Plast.	

● Delivery from stock
○ Available on short notice

WXS-CPR

WXS
- High performance
- 2 flutes
- Long neck, pencil neck
- For mold milling

WXS
- High performance
- 2 Schneiden
- Überlaufhals, konischer Schaft
- Für den Werkzeug -und Formenbau

WXS
- Alta prestazione
- 2 denti
- Collo lungo scaricato, riduzione conica
- Fresatura stampi

WXS
- Haute performance
- 2 lèvres
- Dégagement long, conique
- Pour l'usinage de moule

WXS
- Yüksek performans
- 2 ağızlı
- Uzun boyun, kalem boyun
- Kalıp frezeleme için

WXS
- High performance
- 2 skær
- Long neck, pencil neck
- Til værktøjsfremstilling

WXS
- High performance
- 2 skär
- Lång reducering Konisk reducering
- För formverktyg

WXS
- Altas prestaciones
- 2 labio
- Cuello largo,mango reforzado con cuello conico
- De moldes y matrices

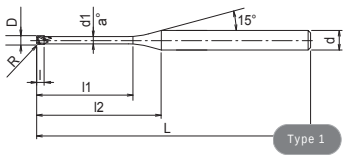
WXS
- Высокая производительность
- 2 режущих кромки
- Длинная шейка или длинная коническая шейка
- для инструментального производства

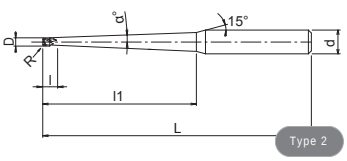
WXS
- Wysoka wydajność
- 2 ostrzowy
- Długa ołówkowa szyjka
- Do frezowania form

GO TO LIVE STOCK CHECK

WXS

CARBIDE | WXS | 30° | SHRINK FIT | ± 0.005 | D < 0,5 0~-0.01 | D ≥ 0,5 0~-0.0015 | min D.199-203







EDP	D	R	α	l1	d1	d2	l	l2	d	L	ZΔ	Type	Stock	Price
3103020	3	0,2	1°	15	2,85	3,44	2,5	19,78	6	60	2	2	●	
3103021	3	0,2	1°	20	2,85	3,61	2,5	24,45	6	60	2	2	●	
3103022	3	0,2	1°	30	2,85	3,96	2,5	33,8	6	80	2	2	●	
3103023	3	0,2	1°	40	2,85	4,31	2,5	43,15	6	80	2	2	●	
3103024	3	0,2	1°	50	2,85	4,66	2,5	52,5	6	100	2	2	●	
3103025	3	0,2	1°	60	2,85	5,01	2,5	61,85	6	110	2	2	●	
3103008	3	0,3	0°	12	2,85	-	2,5	17,87	6	60	2	1	●	
3103009	3	0,3	0°	16	2,85	-	2,5	21,87	6	60	2	1	●	
3103010	3	0,3	0°	20	2,85	-	2,5	25,87	6	70	2	1	●	
3103011	3	0,3	0°	25	2,85	-	2,5	30,87	6	70	2	1	●	
3103012	3	0,3	0°	30	2,85	-	2,5	35,87	6	70	2	1	●	
3103013	3	0,3	0°	35	2,85	-	2,5	40,87	6	80	2	1	●	
3103014	3	0,5	0°	12	2,85	-	2,5	17,87	6	60	2	1	●	
3103015	3	0,5	0°	16	2,85	-	2,5	21,87	6	60	2	1	●	
3103016	3	0,5	0°	20	2,85	-	2,5	25,87	6	70	2	1	●	
3103017	3	0,5	0°	25	2,85	-	2,5	30,87	6	70	2	1	●	
3103018	3	0,5	0°	30	2,85	-	2,5	35,87	6	70	2	1	●	
3103019	3	0,5	0°	35	2,85	-	2,5	40,87	6	80	2	1	●	
3103026	3	0,5	1°	15	2,85	3,44	2,5	19,78	6	60	2	2	●	
3103027	3	0,5	1°	20	2,85	3,61	2,5	24,45	6	60	2	2	●	
3103028	3	0,5	1°	30	2,85	3,96	2,5	33,80	6	80	2	2	●	
3103029	3	0,5	1°	40	2,85	4,31	2,5	43,15	6	80	2	2	●	
3103030	3	0,5	1°	50	2,85	4,66	2,5	52,5	6	100	2	2	●	
3103031	3	0,5	1°	60	2,85	5,01	2,5	61,85	6	110	2	2	●	
3104001	4	0,2	0°	16	3,85	-	4	20,01	6	60	4	1	●	
3104002	4	0,2	0°	20	3,85	-	4	24,01	6	60	4	1	●	
3104003	4	0,2	0°	25	3,85	-	4	29,01	6	70	4	1	●	
3104004	4	0,2	0°	30	3,85	-	4	34,01	6	70	4	1	●	
3104005	4	0,2	0°	40	3,85	-	4	44,01	6	90	4	1	●	
3104006	4	0,2	0°	50	3,85	-	4	54,01	6	100	4	1	●	
3104007	4	0,3	0°	16	3,85	-	4	20,01	6	60	4	1	●	
3104008	4	0,3	0°	20	3,85	-	4	24,01	6	60	4	1	●	
3104009	4	0,3	0°	25	3,85	-	4	29,01	6	70	4	1	●	
3104010	4	0,3	0°	30	3,85	-	4	34,01	6	70	4	1	●	
3104011	4	0,3	0°	40	3,85	-	4	44,01	6	90	4	1	●	
3104012	4	0,3	0°	50	3,85	-	4	54,01	6	100	4	1	●	
3104013	4	0,5	0°	16	3,85	-	4	20,01	6	60	4	1	●	
3104014	4	0,5	0°	20	3,85	-	4	24,01	6	60	4	1	●	
3104015	4	0,5	0°	25	3,85	-	4	29,01	6	70	4	1	●	
3104016	4	0,5	0°	30	3,85	-	4	34,01	6	70	4	1	●	
3104017	4	0,5	0°	40	3,85	-	4	44,01	6	90	4	1	●	
3104018	4	0,5	0°	50	3,85	-	4	54,01	6	100	4	1	●	
3104019	4	1	0°	16	3,85	-	4	20,01	6	60	4	1	●	
3104020	4	1	0°	20	3,85	-	4	24,01	6	60	4	1	●	
3104021	4	1	0°	25	3,85	-	4	29,01	6	70	4	1	●	
3104022	4	1	0°	30	3,85	-	4	34,01	6	70	4	1	●	
3104023	4	1	0°	40	3,85	-	4	44,01	6	90	4	1	●	
3104024	4	1	0°	50	3,85	-	4	54,01	6	100	4	1	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎		◎	
Cu	Al	Graphite	Ti	HRS	Plast.	

● Delivery from stock
○ Available on short notice

WX-G-EDSS

WX
- High performance
- Protected corner
- 2 flutes extra short

WX
- High performance
- Kantenschutzfase
- 2 scneiden extra kurz

WX
- Alta prestazione
- Angolo rinforzato con micro smusso
- 2 denti, extra corta

WX
- Haute performance
- Angle renforcé avec micro-chanfrein
- 2 lèvres extra courte

WX
- Yüksek performans
- Köşe korumalı
- 2 ağızlı, ekstra kısa

WX
- High performance
- Beskyttet hjørne
- 2 skær ekstra kort

WX
- High performance
- Starkare hörna
- 2 skär extra kort

WX
- Altas prestaciones
- Vertice protegido
- 2 labios extra corto

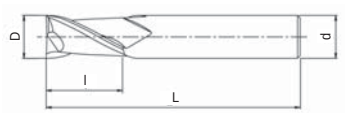
WX
- Высокая производительность
- Защищенная кромка торца
- 2 режущих кромки, короткая

WX
- Wysoka wydajność
- Chroniony narożnik
- 2 ostrzowy bardzo krótki

GO TO LIVE STOCK CHECK

WXL-1,5D-DE (page D.34) is OSG's new offering for this tool

CARBIDE | WX | 35° | SHRINK FIT | HIGH SPEED | CC | 1,5 D | 0~-0.02 | min⁻¹ D.203







EDP	D	L	l	d	Stock	Price
3019010	1	40	1,5	4	●	
3019012	1,2	40	1,8	4	○	
3019015	1,5	40	2,3	4	●	
3019018	1,8	40	2,7	4	○	
3019020	2	40	3	4	●	
3019025	2,5	40	3,7	4	●	
3019028	2,8	40	4,2	4	○	
3019030	3	50	4,5	6	●	
3019035	3,5	50	5,2	6	○	
3019040	4	50	6	6	●	
3019045	4,5	50	6,8	6	○	
3019050	5	50	7,5	6	●	
3019055	5,5	50	8,2	6	○	
3019060	6	50	9	6	●	
3019070	7	60	11	8	○	
3019080	8	60	12	8	●	
3019090	9	70	14	10	○	
3019100	10	70	15	10	●	
3019120	12	75	18	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WX
- High performance
- Sharp corner edge

WX
- High performance
- Scharfe Schneide

WX
- Alta prestazione
- Affilato angolo del tagliente

WX
- Haute performance
- Angle vif

WX
- Yüksek performans
- Keskin köşe kenar

WX
- High performance
- Skarpt hjørne

WX
- High performance
- Starkare hörna

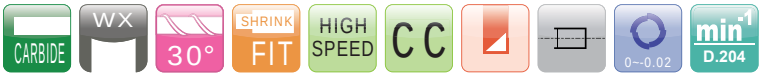
WX
- Altas prestaciones
- Vertice afilado

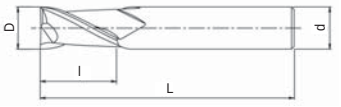
WX
- Высокая производительность
- Острая кромка

WX
- Wysoka wydajność
- Ostra krawędź narożnika

GO TO LIVE STOCK CHECK

WXL-2D-DE (page D.35) is OSG's new offering for this tool







EDP	D	L	l	d	Stock	Price
3010502	0,2	40	0,4	4	○	
3010505	0,5	40	1	4	●	
3010510	1	40	2,5	4	●	
3010515	1,5	40	4	4	●	
3010520	2	40	6	4	●	
3010525	2,5	40	8	4	●	
3010530	3	45	8	6	●	
3010540	4	45	11	6	●	
3010550	5	50	13	6	●	
3010555	5,5	50	13	6	○	
3010560	6	50	13	6	●	
3010580	8	60	19	8	●	
3010590	9	70	19	10	○	
3010600	10	70	22	10	●	
3010620	12	75	26	12	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WX-G-ETSS

WX
- High performance
- 3 flutes

WX
- High performance
- 3 Schneiden

WX
- Alta prestazione
- 3 denti

WX
- Haute performance
- 3 lèvres

WX
- Yüksek performans
- 3 ağızlı

WX
- High performance
- 3 skær

WX
- High performance
- 3 skär

WX
- Altas prestaciones
- 3 labios

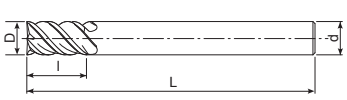
WX
- Высокая производительность
- 3 режущих кромки

WX
- Wysoka wydajność
- 3 ostrzowy

GO TO LIVE STOCK CHECK

WX

CARBIDE | WX | 45° | HIGH SPEED | RF | SC | CC | 1,5 D | 0~-0.02 | min^{-1} D.205-206







EDP	D	L	l	d	Stock	Price
48120030	3	50	4,5	6	●	
48120040	4	50	6	6	●	
48120050	5	50	7,5	6	●	
48120060	6	50	9	6	●	
48120080	8	60	12	8	●	
48120100	10	70	15	10	●	
48120120	12	75	18	12	●	
48120160	16	100	24	16	●	

CARBIDE

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○			◎	
Cu	Al	Graphite	Ti	HRS	Plast.	
			◎			

● Delivery from stock
○ Available on short notice

WX-G-EMSS

WX
- High performance
- End mills for big production
- Corner protection

WX
- High performance
- Massenproduktion
- Kantenschutzfase

WX
- Alta prestazione
- Frese per grande produzione
- Angolo rinforzato con micro smusso

WX
- Haute performance
- Fraise pour grande production
- Angle renforcé avec micro-chanfrein

WX
- Yüksek performans
- Büyük imalatlar için parmak freze
- Köşe korumalı

WX
- High performance
- Fræsere til masse produktion
- Hjørne beskyttelse

WX
- High performance
- Högproduktivitet
- Starkare hörna

WX
- Altas prestaciones
- Fresas para fabricación en serie
- Protección de vertice

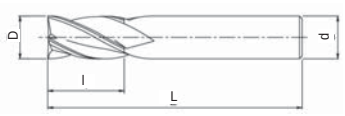
WX
- Высокая производительность
- Для массового производства
- Защищенная кромка торца

WX
- Wysoka wydajność
- Frezy do masowej produkcji
- Chroniony narożnik

GO TO LIVE STOCK CHECK

WX

CARBIDE | WX | 35° | SHRINK FIT | HIGH SPEED | CC | 1,5 D | 0~-0.02 | min⁻¹ D.206





EDP	D	L	l	d	Stock	Price
3019330	3	50	4,5	6	●	
3019340	4	50	6	6	●	
3019350	5	50	7,5	6	●	
3019360	6	50	9	6	●	
3019380	8	60	12	8	●	
3019400	10	70	15	10	●	
3019420	12	75	18	12	●	





Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WX
- High performance
- 4 flutes
- Stub length

WX
- High performance
- 4 Schneiden
- Kurzer Schaft

WX
- Alta prestazione
- 4 denti
- Serie corta

WX
- Haute performance
- 4 lèvres
- Série courte

WX
- Yüksek performans
- 4 ağızlı
- Saplama uzunluğu

WX
- High performance
- 4 skær
- Stub længde

WX
- High performance
- 4 skär
- Kort skärlängd

WX
- Altas prestaciones
- 4 labios
- Serie corta

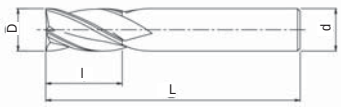
WX
- Высокая производительность
- 4 режущих кромки
- Короткая длина

WX
- Wysoka wydajność
- 4 ostrzowy
- Seria krótka

GO TO LIVE STOCK CHECK

WXL-EMS (page D.38) is OSG's new offering for this tool

CARBIDE | WX | 30° | SHRINK FIT | HIGH SPEED | CC | D > 12 0~-0.03 | D ≤ 12 0~-0.02 | min⁻¹ D.207





EDP	D	L	l	d	Stock	Price
3013020	2	40	6	4	●	
3013025	2,5	40	8	4	●	
3013030	3	45	8	6	●	
3013040	4	45	11	6	●	
3013050	5	50	13	6	●	
3013060	6	50	13	6	●	
3013070	7	60	16	8	○	
3013080	8	60	19	8	●	
3013090	9	70	19	10	○	
3013100	10	70	22	10	●	
3013120	12	75	26	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WX
- High performance
- Big cutdepth
- Protected corner

WX
- High performance
- Maximale Schnittiefe
- Kantenschutzfase

WX
- Alta prestazione
- Elevata profondita' di taglio
- Angolo rinforzato con micro smusso

WX
- Haute performance
- Grande profondeur de coupe
- Angle renforcé avec micro-chanfrein

WX
- Yüksek performans
- Büyük kesme derinliği
- Köşe korumalı

WX
- High performance
- Stor skæredybde
- Beskyttet hjørne

WX
- High performance
- Stora skärdjup
- Starkare hörna

WX
- Altas prestaciones
- Gran profundidad de pasada
- Vertice protegido

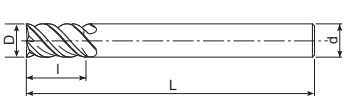
WX
- Высокая производительность
- большая глубина резания
- Защищенная кромка торца

WX
- Wysoka wydajność
- Długa część robocza
- Chroniony narożnik

GO TO LIVE STOCK CHECK

NEO-PHS (page D.29) is OSG's new offering for this tool

CARBIDE | WX | 45° | SHRINK FIT | HIGH SPEED | RF | SC | CC | 0~-0.02 | min^{-1} D.208-209





EDP	D	L	l	d	Stock	Price
3016030	3	60	8	6	●	
3016040	4	60	11	6	●	
3016050	5	60	13	6	●	
3016060	6	60	13	6	●	
3016080	8	80	19	8	●	
3016100	10	80	22	10	●	
3016120	12	100	26	12	●	
3016160	16	115	32	16	●	
3016200	20	125	38	20	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		◎	◎		

● Delivery from stock
○ Available on short notice

WX-LN-EDS

WX
- High performance
- 2 flutes
- Long neck

WX
- High performance
- 2 Schneiden
- Überlaufhals

WX
- Alta prestazione
- 2 denti
- Collo lungo scaricato

WX
- Haute performance
- 2 lèvres
- Dégagement long

WX
- Yüksek performans
- 2 ağızlı
- Uzun boyun

WX
- High performance
- 2 skær
- Long neck

WX
- High performance
- 2 skär
- Lång reducering

WX
- Altas prestaciones
- 2 labios
- Cuello largo

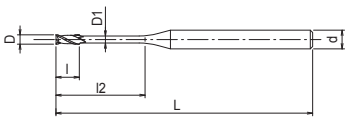
WX
- Высокая производительность
- 2 режущих кромки
- Длинная шейка

WX
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka

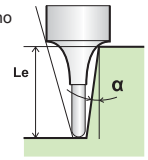
GO TO LIVE STOCK CHECK

WXL-LN-EDS (page D.40~D.42) is OSG's new offering for this tool





No numerical value means no interference with workpiece





EDP	D	l1	L	l	d1	d	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3020201	0,2	0,5	45	0,3	0,18	4	0,52	0,55	0,57	0,6	0,62	0,64	●	
3020202	0,2	1	45	0,3	0,18	4	1,05	1,09	1,13	1,17	1,22	1,27	○	
3020203	0,2	1,5	45	0,3	0,18	4	1,57	1,62	1,68	1,75	1,81	1,89	○	
3020302	0,3	1	45	0,45	0,28	4	1,03	1,08	1,12	1,16	1,21	1,25	●	
3020304	0,3	2	45	0,45	0,28	4	2,08	2,15	2,23	2,31	2,4	2,5	○	
3020306	0,3	3	45	0,45	0,28	4	3,11	3,22	3,33	3,46	3,59	3,74	○	
3020404	0,4	2	45	0,6	0,37	4	2,03	2,1	2,18	2,26	2,35	2,45	●	
3020406	0,4	3	45	0,6	0,37	4	3,07	3,17	3,29	3,41	3,55	3,69	○	
3020408	0,4	4	45	0,6	0,37	4	4,1	4,24	4,4	4,56	4,74	4,93	●	
3020502	0,5	2	45	0,7	0,45	4	2,07	2,14	2,22	2,31	2,4	2,49	●	
3020504	0,5	4	45	0,7	0,45	4	4,14	4,28	4,44	4,61	4,78	4,98	●	
3020506	0,5	6	45	0,7	0,45	4	6,21	6,42	6,66	6,9	7,17	7,47	●	
3020508	0,5	8	45	0,7	0,45	4	8,27	8,56	8,87	9,2	9,56	9,95	○	
3020602	0,6	2	45	0,9	0,55	4	2,07	2,14	2,22	2,31	2,4	2,49	●	
3020604	0,6	4	45	0,9	0,55	4	4,14	4,28	4,44	4,61	4,78	4,98	●	
3020606	0,6	6	45	0,9	0,55	4	6,21	6,42	6,66	6,9	7,17	7,47	○	
3020608	0,6	8	45	0,9	0,55	4	8,27	8,56	8,87	9,2	9,56	9,95	●	
3020610	0,6	10	45	0,9	0,55	4	10,34	10,7	11,09	11,5	11,95	12,44	○	
3020702	0,7	2	45	1	0,65	4	2,07	2,14	2,22	2,31	2,4	2,49	○	
3020704	0,7	4	45	1	0,65	4	4,14	4,28	4,44	4,61	4,78	4,98	○	
3020706	0,7	6	45	1	0,65	4	6,21	6,42	6,66	6,9	7,17	7,47	○	
3020708	0,7	8	45	1	0,65	4	8,27	8,56	8,87	9,2	9,56	9,95	○	
3020710	0,7	10	45	1	0,65	4	10,34	10,7	11,09	11,5	11,95	12,44	○	
3020804	0,8	4	45	1,2	0,75	4	4,14	4,28	4,44	4,61	4,78	4,98	●	
3020806	0,8	6	45	1,2	0,75	4	6,21	6,42	6,66	6,9	7,17	7,47	○	
3020808	0,8	8	45	1,2	0,75	4	8,27	8,56	8,87	9,2	9,56	9,95	○	
3020810	0,8	10	45	1,2	0,75	4	10,34	10,7	11,09	11,5	11,95	12,44	●	
3020812	0,8	12	45	1,2	0,75	4	12,41	12,84	13,31	13,8	14,34	14,92	○	
3020906	0,9	6	45	1,35	0,85	4	6,21	6,42	6,66	6,9	7,17	7,47	○	
3020908	0,9	8	45	1,35	0,85	4	8,27	8,56	8,87	9,2	9,56	9,95	○	
3020910	0,9	10	45	1,35	0,85	4	10,34	10,7	11,09	11,5	11,95	12,44	○	
3020915	0,9	15	50	1,35	0,85	4	15,51	16,05	16,63	17,25	17,93	18,65	○	
3021006	1	6	45	1,5	0,95	4	6,21	6,42	6,66	6,9	7,17	7,47	●	
3021008	1	8	45	1,5	0,95	4	8,27	8,56	8,87	9,2	9,56	9,95	●	
3021010	1	10	45	1,5	0,95	4	10,34	10,7	11,09	11,5	11,95	12,44	●	
3021012	1	12	45	1,5	0,95	4	12,41	12,84	13,31	13,8	14,34	14,92	●	
3021014	1	14	50	1,5	0,95	4	14,48	14,98	15,52	16,1	16,73	17,41	○	
3021016	1	16	50	1,5	0,95	4	16,54	17,12	17,74	18,4	19,12	19,9	●	
3021206	1,2	6	45	1,8	1,15	4	6,3	6,52	6,76	7,01	7,29	7,58	○	
3021208	1,2	8	45	1,8	1,15	4	8,37	8,66	8,98	9,31	9,67	10,07	○	
3021210	1,2	10	45	1,8	1,15	4	10,44	10,8	11,19	11,61	12,06	12,55	○	
3021212	1,2	12	45	1,8	1,15	4	12,51	12,94	13,41	13,91	14,45	15,04	○	
3021406	1,4	6	45	2,1	1,35	4	6,3	6,52	6,76	7,01	7,29	7,58	○	
3021408	1,4	8	45	2,1	1,35	4	8,37	8,66	8,98	9,31	9,67	10,07	○	
3021410	1,4	10	45	2,1	1,35	4	10,44	10,8	11,19	11,61	12,06	12,55	○	
3021412	1,4	12	45	2,1	1,35	4	12,51	12,94	13,41	13,91	14,45	15,04	○	
3021414	1,4	14	50	2,1	1,35	4	14,57	15,08	15,63	16,21	16,84	17,53	○	
3021416	1,4	16	50	2,1	1,35	4	16,64	17,22	17,84	18,51	19,23	20,01	○	
3021506	1,5	6	45	2,3	1,45	4	6,3	6,52	6,76	7,01	7,29	7,58	●	
3021508	1,5	8	45	2,3	1,45	4	8,37	8,66	8,98	9,31	9,67	10,07	●	
3021510	1,5	10	45	2,3	1,45	4	10,44	10,8	11,19	11,61	12,06	12,55	●	
3021512	1,5	12	45	2,3	1,45	4	12,51	12,94	13,41	13,91	14,45	15,04	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WX-LN-EDS

WX
- High performance
- 2 flutes
- Long neck

WX
- High performance
- 2 Schneiden
- Überlaufhals

WX
- Alta prestazione
- 2 denti
- Collo lungo scaricato

WX
- Haute performance
- 2 lèvres
- Dégagement long

WX
- Yüksek performans
- 2 ağızlı
- Uzun boyun

WX
- High performance
- 2 skær
- Long neck

WX
- High performance
- 2 skär
- Lång reducering

WX
- Altas prestaciones
- 2 labios
- Cuello largo

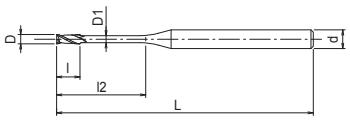
WX
- Высокая производительность
- 2 режущих кромки
- Длинная шейка

WX
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka

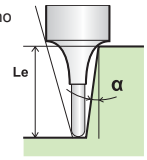
GO TO LIVE STOCK CHECK

WXL-LN-EDS (page D.40~D.42) is OSG's new offering for this tool

CARBIDE | WX | 30° | SHRINK FIT | CC | Ø2 < D | 1,5 D | 0~-0.0015 | min D.210~211



No numerical value means no interference with workpiece





EDP	D	l1	L	l	d1	d	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3021514	1,5	14	50	2,3	1,45	4	14,57	15,08	15,63	16,21	16,84	17,53	●	
3021516	1,5	16	50	2,3	1,45	4	16,64	17,22	17,84	18,51	19,23	20,01	○	
3021518	1,5	18	55	2,3	1,45	4	18,71	19,36	20,06	20,81	21,62	22,5	○	
3021520	1,5	20	55	2,3	1,45	4	20,77	21,5	22,28	23,11	24,01	-	●	
3021606	1,6	6	45	2,4	1,55	4	6,3	6,52	6,76	7,01	7,29	7,58	○	
3021608	1,6	8	45	2,4	1,55	4	8,37	8,66	8,98	9,31	9,67	10,07	●	
3021610	1,6	10	45	2,4	1,55	4	10,44	10,8	11,19	11,61	12,06	12,55	○	
3021612	1,6	12	45	2,4	1,55	4	12,51	12,94	13,41	13,91	14,45	15,04	○	
3021614	1,6	14	50	2,4	1,55	4	14,57	15,08	15,63	16,21	16,84	17,53	○	
3021616	1,6	16	50	2,4	1,55	4	16,64	17,22	17,84	18,51	19,23	20,01	●	
3021618	1,6	18	55	2,4	1,55	4	18,71	19,36	20,06	20,81	21,62	22,5	○	
3021620	1,6	20	55	2,4	1,55	4	20,77	21,5	22,28	23,11	24,01	-	○	
3021806	1,8	6	45	2,7	1,75	4	6,42	6,77	7,1	7,39	7,68	7,99	●	
3021808	1,8	8	45	2,7	1,75	4	8,53	8,96	9,34	9,69	10,07	10,48	○	
3021810	1,8	10	45	2,7	1,75	4	10,64	11,13	11,56	11,99	12,46	12,97	○	
3021812	1,8	12	45	2,7	1,75	4	12,74	13,29	13,78	14,29	14,85	15,45	○	
3021814	1,8	14	50	2,7	1,75	4	14,83	15,44	15,99	16,59	17,24	17,94	○	
3021816	1,8	16	50	2,7	1,75	4	16,92	17,58	18,21	18,89	19,63	20,43	○	
3021818	1,8	18	55	2,7	1,75	4	19,01	19,71	20,43	21,19	22,02	-	○	
3021820	1,8	20	55	2,7	1,75	4	21,09	21,85	22,64	23,49	24,41	-	○	
3022006	2	6	45	3	1,95	4	6,42	6,77	7,1	7,39	7,68	7,99	●	
3022008	2	8	45	3	1,95	4	8,53	8,96	9,34	9,69	10,07	10,48	●	
3022010	2	10	45	3	1,95	4	10,64	11,13	11,56	11,99	12,46	12,97	○	
3022012	2	12	45	3	1,95	4	12,74	13,29	13,78	14,29	14,85	15,45	●	
3022014	2	14	50	3	1,95	4	14,83	15,44	15,99	16,59	17,24	17,94	●	
3022016	2	16	50	3	1,95	4	16,92	17,58	18,21	18,89	19,63	-	●	
3022018	2	18	55	3	1,95	4	19,01	19,71	20,43	21,19	22,02	-	●	
3022020	2	20	55	3	1,95	4	21,09	21,85	22,64	23,49	-	-	●	
3022025	2	25	60	3	1,95	4	26,28	27,2	28,18	-	-	-	○	
3022030	2	30	70	3	1,95	4	31,45	32,55	33,73	-	-	-	●	
3022508	2,5	8	45	3,7	2,4	4	8,47	8,87	9,22	9,57	9,94	10,35	●	
3022510	2,5	10	45	3,7	2,4	4	10,57	11,03	11,44	11,87	12,33	12,83	○	
3022512	2,5	12	45	3,7	2,4	4	12,66	13,18	13,66	14,17	14,72	-	○	
3022514	2,5	14	50	3,7	2,4	4	14,75	15,32	15,88	16,47	17,11	-	○	
3022516	2,5	16	55	3,7	2,4	4	16,83	17,46	18,09	18,77	-	-	●	
3022518	2,5	18	55	3,7	2,4	4	18,91	19,6	20,31	21,07	-	-	○	
3022520	2,5	20	60	3,7	2,4	4	20,99	21,74	22,52	-	-	-	●	
3022525	2,5	25	70	3,7	2,4	4	26,17	27,09	28,07	-	-	-	○	
3022530	2,5	30	80	3,7	2,4	4	31,34	32,44	-	-	-	-	○	
3023008	3	8	45	4,5	2,85	6	8,42	8,79	9,13	9,47	9,84	10,24	●	
3023010	3	10	45	4,5	2,85	6	10,51	10,95	11,35	11,77	12,23	12,73	○	
3023012	3	12	45	4,5	2,85	6	12,6	13,09	13,56	14,07	14,62	15,21	●	
3023014	3	14	50	4,5	2,85	6	14,68	15,23	15,78	16,37	17,01	17,7	●	
3023016	3	16	55	4,5	2,85	6	16,76	17,37	18	18,67	19,4	20,18	○	
3023018	3	18	55	4,5	2,85	6	18,84	19,51	20,21	20,97	21,79	22,67	●	
3023020	3	20	60	4,5	2,85	6	20,91	21,65	22,43	23,27	24,18	25,16	●	
3023025	3	25	65	4,5	2,85	6	26,09	27	27,97	29,02	30,15	-	●	
3023030	3	30	80	4,5	2,85	6	31,25	32,34	33,51	34,77	-	-	○	
3023035	3	35	90	4,5	2,85	6	36,42	37,69	39,05	40,52	-	-	○	
3023040	3	40	90	4,5	2,85	6	41,59	43,04	44,6	-	-	-	○	
3024012	4	12	50	6	3,85	6	12,6	13,09	13,56	14,07	14,62	15,21	●	
3024016	4	16	60	6	3,85	6	16,76	17,37	18	18,67	19,4	-	●	
3024020	4	20	60	6	3,85	6	20,91	21,65	22,43	23,27	-	-	●	
3024025	4	25	70	6	3,85	6	26,09	27	27,97	-	-	-	●	
3024030	4	30	80	6	3,85	6	31,25	32,34	33,51	-	-	-	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WX-LN-EDS

WX
- High performance
- 2 flutes
- Long neck

WX
- High performance
- 2 Schneiden
- Überlaufhals

WX
- Alta prestazione
- 2 denti
- Collo lungo scaricato

WX
- Haute performance
- 2 lèvres
- Dégagement long

WX
- Yüksek performans
- 2 ağızlı
- Uzun boyun

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WX
- High performance
- 2 skär
- Lång reducering

WX
- Altas prestaciones
- 2 labios
- Cuello largo

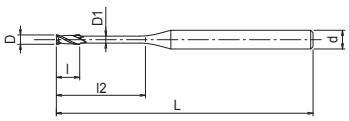
WX
- Высокая производительность
- 2 режущих кромки
- Длинная шейка

WX
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka

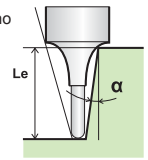
GO TO LIVE STOCK CHECK

WXL-LN-EDS (page D.40~D.42) is OSG's new offering for this tool





No numerical value means no interference with workpiece







EDP	D	l1	L	l	d1	d	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3024035	4	35	90	6	3,85	6	36,42	37,69	-	-	-	-	●	
3024040	4	40	90	6	3,85	6	41,59	43,04	-	-	-	-	○	
3024045	4	45	100	6	3,85	6	46,76	48,39	-	-	-	-	○	
3024050	4	50	100	6	3,85	6	51,93	53,74	-	-	-	-	○	
3025016	5	16	60	7,5	4,85	6	16,76	17,37	18	-	-	-	●	
3025025	5	25	70	7,5	4,85	6	26,09	27	-	-	-	-	●	
3025035	5	35	90	7,5	4,85	6	36,42	-	-	-	-	-	○	
3025050	5	50	110	7,5	4,85	6	51,93	-	-	-	-	-	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WX-EBD

WX
- High performance
- 2 flutes
- Ball nose for general purpose

WX
- High performance
- 2 Schneiden
- Kopierfräser für allgemeine Anwendungen

WX
- Alta prestazione
- 2 denti
- Frese sferiche, per applicazioni generali

WX
- Haute performance
- 2 lèvres
- Fraises hémisphériques pour application universelle

WX
- Yüksek performans
- 2 ağızlı
- Genel kullanım için küre freze

WX
- High performance
- 2 skær
- Radius fræsere, til generelt brug

WX
- High performance
- 2 skär
- Fullradie, allround

WX
- Altas prestaciones
- 2 labios
- Punta esférica, emplo general

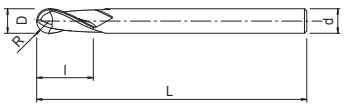
WX
- Высокая производительность
- 2 режущих кромки
- Сферические концевые фрезы, Общего назначения

WX
- Wysoka wydajność
- 2 ostrzowy
- Frez kulisty ogólnego stosowania

GO TO LIVE STOCK CHECK

WXL-EBD (page D.44) is OSG's new offering for this tool

CARBIDE | WX | 30° | SHRINK FIT | HIGH SPEED | ± 0.01 | min⁻¹ D.212





EDP	D	R	L	l	d	Stock	Price
3015004	0,4	0,2	40	0,8	4	●	
3015005	0,5	0,25	40	1,1	4	●	
3015006	0,6	0,3	40	1,1	4	●	
3015008	0,8	0,4	40	2	4	●	
3015010	1	0,5	50	2,5	4	●	
3015012	1,2	0,6	50	3	4	●	
3015014	1,4	0,7	50	3,5	4	●	
3015015	1,5	0,75	50	4	4	●	
3015016	1,6	0,8	50	4	4	●	
3015020	2	1	50	5	6	●	
3015025	2,5	1,25	60	6	6	●	
3015030	3	1,5	60	8	6	●	
3015035	3,5	1,75	70	8	6	●	
3015040	4	2	70	8	6	●	
3015041	4	2	60	8	4	●	
3015050	5	2,5	80	10	6	●	
3015060	6	3	90	12	6	●	
3015070	7	3,5	90	14	6	●	
3015080	8	4	100	14	8	●	
3015090	9	4,5	100	18	8	●	
3015100	10	5	100	18	10	●	
3015110	11	5,5	100	22	10	●	
3015120	12	6	110	22	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WX-LN-EBD

WX
- High performance
- 2 flutes
- Long neck

WX
- High performance
- 2 Schneiden
- Überlaufhals

WX
- Alta prestazione
- 2 denti
- Collo lungo scaricato

WX
- Haute performance
- 2 lèvres
- Dégagement long

WX
- Yüksek performans
- 2 ağızlı
- Uzun boyun

WX
- High performance
- 2 skær
- Long neck

WX
- High performance
- 2 skär
- Lång reducering

WX
- Altas prestaciones
- 2 labios
- Cuello largo

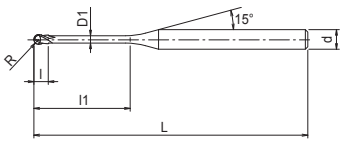
WX
- Высокая производительность
- 2 режущих кромки
- Длинная шейка

WX
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka

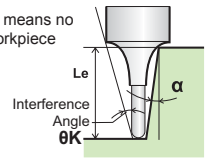
GO TO LIVE STOCK CHECK

WXL-LN-EBD (page D.45~D.50) is OSG's new offering for this tool

CARBIDE | WX | 30° | SHRINK FIT | 0,8 D | R ± 0.01 | min D.213-216



No numerical value means no interference with workpiece





EDP	D	R	l1	L	l	d1	d	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3030201	0,2	0,1	0,5	45	0,16	0,18	4	14,44	0,53	0,55	0,57	0,59	0,61	0,63	○	
3030202	0,2	0,1	1	45	0,16	0,18	4	13,31	1,05	1,09	1,13	1,17	1,21	1,26	○	
3030203	0,2	0,1	1,5	45	0,16	0,18	4	12,56	1,57	1,63	1,68	1,74	1,81	1,88	●	
3030302	0,3	0,15	1	45	0,24	0,28	4	13,34	1,05	1,09	1,12	1,16	1,2	1,24	○	
3030303	0,3	0,15	1,5	45	0,24	0,28	4	12,57	1,57	1,63	1,68	1,74	1,8	1,87	○	
3030304	0,3	0,15	2	45	0,24	0,28	4	11,87	2,09	2,16	2,23	2,31	2,4	2,49	○	
3030402	0,4	0,2	1	45	0,3	0,37	4	13,39	1,04	1,07	1,11	1,14	1,18	1,22	○	
3030403	0,4	0,2	1,5	45	0,3	0,37	4	12,59	1,56	1,61	1,66	1,72	1,77	1,84	○	
3030404	0,4	0,2	2	45	0,3	0,37	4	11,88	2,08	2,14	2,21	2,29	2,37	2,46	●	
3030405	0,4	0,2	2,5	45	0,3	0,37	4	11,24	2,6	2,68	2,77	2,87	2,97	3,08	○	
3030406	0,4	0,2	3	45	0,3	0,37	4	10,67	3,11	3,21	3,32	3,44	3,57	3,7	○	
3030502	0,5	0,25	2	45	0,4	0,45	4	11,89	2,06	2,13	2,2	2,27	2,35	2,43	○	
3030503	0,5	0,25	3	45	0,4	0,45	4	10,65	3,1	3,2	3,3	3,42	3,54	3,68	○	
3030504	0,5	0,25	4	45	0,4	0,45	4	9,64	4,13	4,27	4,41	4,57	4,74	4,92	○	
3030505	0,5	0,25	5	45	0,4	0,45	4	8,8	5,17	5,34	5,52	5,72	5,93	6,16	○	
3030506	0,5	0,25	6	45	0,4	0,45	4	8,1	6,2	6,41	6,63	6,87	7,13	7,41	○	
3030508	0,5	0,25	8	45	0,4	0,45	4	6,98	8,27	8,55	8,85	9,17	9,52	9,89	○	
3030602	0,6	0,3	2	45	0,5	0,55	4	11,88	2,06	2,12	2,19	2,26	2,34	2,42	●	
3030603	0,6	0,3	3	45	0,5	0,55	4	10,61	3,1	3,19	3,3	3,41	3,53	3,66	○	
3030604	0,6	0,3	4	45	0,5	0,55	4	9,58	4,13	4,26	4,41	4,56	4,73	4,91	○	
3030605	0,6	0,3	5	45	0,5	0,55	4	8,73	5,16	5,33	5,51	5,71	5,92	6,15	○	
3030606	0,6	0,3	6	45	0,5	0,55	4	8,02	6,2	6,4	6,62	6,86	7,12	7,39	○	
3030608	0,6	0,3	8	45	0,5	0,55	4	6,89	8,26	8,54	8,84	9,16	9,51	9,88	○	
3030802	0,8	0,4	2	45	0,6	0,75	4	11,86	2,06	2,12	2,18	2,25	2,32	2,4	○	
3030804	0,8	0,4	4	45	0,6	0,75	4	9,45	4,13	4,26	4,4	4,55	4,71	4,88	○	
3030805	0,8	0,4	5	45	0,6	0,75	4	8,58	5,16	5,33	5,5	5,7	5,9	6,13	○	
3030806	0,8	0,4	6	45	0,6	0,75	4	7,85	6,19	6,4	6,61	6,85	7,1	7,37	○	
3030807	0,8	0,4	7	45	0,6	0,75	4	7,24	7,23	7,47	7,72	8	8,29	8,61	○	
3030808	0,8	0,4	8	45	0,6	0,75	4	6,71	8,26	8,54	8,83	9,15	9,49	9,86	○	
3030810	0,8	0,4	10	45	0,6	0,75	4	5,86	10,33	10,67	11,05	11,45	11,88	12,34	○	
3031003	1	0,5	3	45	0,8	0,95	4	10,43	3,09	3,18	3,28	3,38	3,49	3,62	○	
3031004	1	0,5	4	45	0,8	0,95	4	9,32	4,12	4,25	4,39	4,53	4,69	4,86	○	
3031005	1	0,5	5	45	0,8	0,95	4	8,41	5,16	5,32	5,49	5,68	5,88	6,1	○	
3031006	1	0,5	6	45	0,8	0,95	4	7,67	6,19	6,39	6,6	6,83	7,08	7,35	●	
3031007	1	0,5	7	45	0,8	0,95	4	7,05	7,22	7,46	7,71	7,98	8,27	8,59	○	
3031008	1	0,5	8	45	0,8	0,95	4	6,52	8,26	8,53	8,82	9,13	9,47	9,83	○	
3031009	1	0,5	9	45	0,8	0,95	4	6,06	9,29	9,6	9,93	10,28	10,66	11,08	○	
3031010	1	0,5	10	45	0,8	0,95	4	5,66	10,33	10,67	11,04	11,43	11,86	12,32	●	
3031012	1	0,5	12	45	0,8	0,95	4	5,01	12,39	12,81	13,25	13,73	14,25	14,81	●	
3031014	1	0,5	14	50	0,8	0,95	4	4,49	14,46	14,95	15,47	16,03	16,64	17,29	○	
3031016	1	0,5	16	50	0,8	0,95	4	4,06	16,53	17,09	17,69	18,33	19,03	19,78	○	
3031020	1	0,5	20	55	0,8	0,95	4	4,95	20,66	21,36	22,12	22,93	23,8	24,75	○	
3031206	1,2	0,6	6	45	1	1,15	4	7,41	6,27	6,48	6,69	6,92	7,17	7,44	○	
3031208	1,2	0,6	8	45	1	1,15	4	6,26	8,35	8,62	8,91	9,22	9,56	9,93	○	
3031210	1,2	0,6	10	45	1	1,15	4	5,42	10,42	10,76	11,13	11,52	11,95	12,41	○	
3031212	1,2	0,6	12	45	1	1,15	4	4,78	12,49	12,9	13,34	13,82	14,34	14,9	○	
3031408	1,4	0,7	8	45	1,1	1,35	4	6,04	8,35	8,61	8,9	9,21	9,54	9,9	○	
3031412	1,4	0,7	12	45	1,1	1,35	4	4,57	12,48	12,89	13,33	13,81	14,32	14,87	○	
3031416	1,4	0,7	16	50	1,1	1,35	4	3,67	16,62	17,17	17,77	18,41	19,1	19,85	○	
3031508	1,5	0,75	8	45	1,2	1,45	4	5,92	8,34	8,61	8,9	9,2	9,53	9,89	○	
3031512	1,5	0,75	12	45	1,2	1,45	4	4,46	12,48	12,89	13,33	13,8	14,31	14,86	○	
3031516	1,5	0,75	16	50	1,2	1,45	4	3,57	16,62	17,17	17,76	18,4	19,09	19,83	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WX-LN-EBD

WX
- High performance
- 2 flutes
- Long neck

WX
- High performance
- 2 Schneiden
- Überlaufhals

WX
- Alta prestazione
- 2 denti
- Collo lungo scaricato

WX
- Haute performance
- 2 lèvres
- Dégagement long

WX
- Yüksek performans
- 2 ağızlı
- Uzun boyun

WX
- High performance
- 2 skær
- Long neck

WX
- High performance
- 2 skär
- Lång reducering

WX
- Altas prestaciones
- 2 labios
- Cuello largo

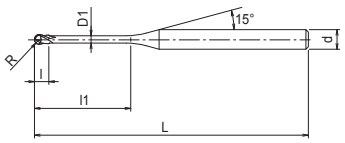
WX
- Высокая производительность
- 2 режущих кромки
- Длинная шейка

WX
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka

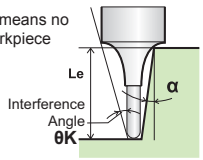
GO TO LIVE STOCK CHECK

WXL-LN-EBD (page D.45~D.50) is OSG's new offering for this tool

CARBIDE | WX | 30° | SHRINK FIT | 0,8 D | R ± 0.01 | min⁻¹ D.213-216



No numerical value means no interference with workpiece





EDP	D	R	l1	L	l	d1	d	θk	Le (α) 0,5°	1°	1,5°	2°	2,5°	3°	Stock	Price
3031520	1,5	0,75	20	55	1,2	1,45	4	2,98	20,75	21,45	22,19	23	23,87	-	○	
3031608	1,6	0,8	8	45	1,3	1,55	4	5,8	8,34	8,61	8,89	9,19	9,52	9,88	○	
3031612	1,6	0,8	12	45	1,3	1,55	4	4,34	12,48	12,89	13,32	13,79	14,3	14,85	○	
3031616	1,6	0,8	16	50	1,3	1,55	4	3,47	16,61	17,16	17,76	18,39	19,08	19,82	○	
3031620	1,6	0,8	20	55	1,3	1,55	4	2,89	20,75	21,44	22,19	22,99	23,86	-	○	
3031808	1,8	0,9	8	45	1,4	1,75	4	5,38	8,48	8,88	9,23	9,56	9,9	10,27	○	
3031812	1,8	0,9	12	45	1,4	1,75	4	4,02	12,69	13,22	13,68	14,16	14,68	15,24	○	
3031816	1,8	0,9	16	50	1,4	1,75	4	3,2	16,88	17,51	18,11	18,76	19,46	20,21	○	
3031820	1,8	0,9	20	55	1,4	1,75	4	2,66	21,05	21,79	22,55	23,36	24,24	-	○	
3032004	2	1	4	45	1,6	1,95	4	7,87	4,23	4,44	4,66	4,86	5,06	5,26	○	
3032006	2	1	6	45	1,6	1,95	4	6,19	6,36	6,67	6,96	7,23	7,49	7,76	●	
3032008	2	1	8	45	1,6	1,95	4	5,1	8,48	8,87	9,22	9,55	9,88	10,24	○	
3032010	2	1	10	45	1,6	1,95	4	4,33	10,59	11,05	11,45	11,85	12,27	12,73	●	
3032012	2	1	12	45	1,6	1,95	4	3,77	12,69	13,21	13,67	14,15	14,66	15,22	●	
3032014	2	1	14	50	1,6	1,95	4	3,33	14,78	15,36	15,89	16,45	17,05	17,7	○	
3032016	2	1	16	50	1,6	1,95	4	2,98	16,88	17,51	18,1	18,75	19,44	-	●	
3032018	2	1	18	55	1,6	1,95	4	2,7	18,96	19,65	20,32	21,04	21,83	-	○	
3032020	2	1	20	55	1,6	1,95	4	2,47	21,05	21,78	22,54	23,34	-	-	●	
3032022	2	1	22	60	1,6	1,95	4	2,27	23,13	23,92	24,75	25,64	-	-	○	
3032025	2	1	25	65	1,6	1,95	4	2,03	26,24	27,13	28,08	29,09	-	-	○	
3032030	2	1	30	70	1,6	1,95	4	1,73	31,42	32,48	33,62	-	-	-	○	
3033008	3	1,5	8	50	2,4	2,85	6	6,88	8,35	8,67	8,97	9,25	9,55	9,88	○	
3033010	3	1,5	10	50	2,4	2,85	6	5,94	10,44	10,83	11,19	11,55	11,94	12,37	○	
3033016	3	1,5	16	55	2,4	2,85	6	4,21	16,7	17,26	17,84	18,45	19,11	19,83	○	
3033020	3	1,5	20	60	2,4	2,85	6	3,52	20,86	21,54	22,27	23,05	23,89	24,8	○	
3033025	3	1,5	25	65	2,4	2,85	6	2,92	26,04	26,89	27,81	28,8	29,86	-	○	
3033030	3	1,5	30	70	2,4	2,85	6	2,5	31,2	32,24	33,35	34,55	-	-	○	
3033035	3	1,5	35	80	2,4	2,85	6	2,18	36,37	37,59	38,89	40,3	-	-	○	
3034010	4	2	10	60	3,2	3,85	6	4,74	10,42	10,79	11,13	11,48	11,85	12,25	○	
3034016	4	2	16	60	3,2	3,85	6	3,18	16,68	17,23	17,78	18,38	19,02	19,71	○	
3034020	4	2	20	65	3,2	3,85	6	2,6	20,84	21,51	22,22	22,98	23,8	-	○	
3034025	4	2	25	70	3,2	3,85	6	2,12	26,02	26,86	27,76	28,72	-	-	○	
3034030	4	2	30	80	3,2	3,85	6	1,79	31,19	32,21	33,3	-	-	-	○	
3034035	4	2	35	80	3,2	3,85	6	1,55	36,36	37,55	38,84	-	-	-	○	
3034040	4	2	40	90	3,2	3,85	6	1,36	41,52	42,9	-	-	-	-	○	
3034045	4	2	45	90	3,2	3,85	6	1,22	46,69	48,25	-	-	-	-	○	
3034050	4	2	50	100	3,2	3,85	6	1,1	51,86	53,6	-	-	-	-	○	
3035020	5	2,5	20	70	4	4,85	6	1,46	20,82	21,47	-	-	-	-	○	
3035025	5	2,5	25	70	4	4,85	6	1,16	26	26,82	-	-	-	-	○	
3035030	5	2,5	30	80	4	4,85	6	0,97	31,17	-	-	-	-	-	○	
3035035	5	2,5	35	80	4	4,85	6	0,83	36,34	-	-	-	-	-	○	
3036030	6	3	30	80	4,8	5,85	6	-	-	-	-	-	-	-	●	
3036050	6	3	50	120	4,8	5,85	6	-	-	-	-	-	-	-	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

WX-HS-CRE

WX
- High performance
- 4 flutes
- Stub length

WX
- High performance
- 4 Schneiden
- Kurzer Schaft

WX
- Alta prestazione
- 4 denti
- Serie corta

WX
- Haute performance
- 4 lèvres
- Série courte

WX
- Yüksek performans
- 4 ağızlı
- Saplama uzunluğu

WX
- High performance
- 4 skær
- Stub længde

WX
- High performance
- 4 skär
- Kort skärlängd

WX
- Altas prestaciones
- 4 labios
- Serie corta

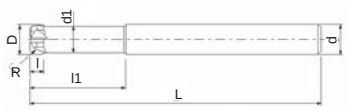
WX
- Высокая производительность
- 4 режущих кромки
- Короткая длина

WX
- Wysoka wydajność
- 4 ostrzowy
- Seria krótka

GO TO LIVE STOCK CHECK

WX

CARBIDE | WX | SHRINK FIT | HIGH SPEED | RF | CC | 0~-0.03 | min^{-1} D.217-218





EDP	D	R	L	l1	l	d1	d	ZΔ	Stock	Price
3019867	6	1,5	50	24	2,5	5,4	6	4	●	
3019889	8	2	60	32	3,5	7,2	8	4	●	
3019909	10	2	70	40	4	9	10	4	●	
3019933	12	3	80	48	5	11	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○		◎
Cu	Al	Graphite	Ti	HRS	Plast.	

● Delivery from stock
○ Available on short notice

WX
- High performance
- 3,4 flutes

WX
- High performance
- 3,4 Schneiden

WX
- Alta prestazione
- 3,4 denti

WX
- Haute performance
- 3,4 lèvres

WX
- Yüksek performans
- 3,4 ağızlı

WX
- High performance
- 3,4 skær

WX
- High performance
- 3,4 skär

WX
- Altas prestaciones
- 3,4 labios

WX
- Высокая производительность
- 3,4 режущих кромки

WX
- Wysoka wydajność
- 3,4 ostrzowy

GO TO LIVE STOCK CHECK

WX

CARBIDE | WX | SHRINK FIT | HIGH SPEED | RF | CC | 0~-0.03 | min⁻¹ D.219~220





EDP	D	R	L	l1	l	d1	d	ZΔ	Stock	Price
8549421	2	0,5	60	5	0,8	1,8	6	3	●	
8549433	3	0,75	60	7,5	1,2	2,7	6	4	●	
8549445	4	1	70	10	1,6	3,6	6	4	●	
8549457	5	1,2	80	12,5	2	4,5	6	4	●	
8549467	6	1,5	90	12	2,5	5,4	6	4	●	
8549477	7	1,5	90	-	3	-	6	4	●	
8549489	8	2	100	16	3,5	7,2	8	4	●	
8549499	9	2	100	-	4	-	8	4	●	
8549509	10	2	100	20	4	9	10	4	●	
8549519	11	2	100	-	4,5	-	10	4	●	
8549533	12	3	110	24	5	11	12	4	●	
8549543	13	3	110	-	5,5	-	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○		◎
Cu	Al	Graphite	Ti	HRS	Plast.	

○ Available on short notice

WX-CR-PHS

WX
- High performance
- 4 flutes
- For multi purpose use

WX
- High performance
- 4 Schneiden
- Für allgemeine Anwendungen

WX
- Alta prestazione
- 4 denti
- Multifunzione

WX
- Haute performance
- 4 lèvres
- Pour application universelle

WX
- Yüksek performans
- 4 ağızlı
- Çok amaçlı kullanım için

WX
- High performance
- 4 skær
- Universal anvendelig

WX
- High performance
- 4 skär
- Allround

WX
- Altas prestaciones
- 4 labios
- Para aplicaciones generales

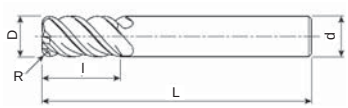
WX
- Высокая производительность
- 4 режущих кромки
- Универсальная

WX
- Wysoka wydajność
- 4 ostrzowy
- Do wielu zastosowań

GO TO LIVE STOCK CHECK

WX

CARBIDE | WX | 45° | SHRINK FIT | HIGH SPEED | SC | RF | CC | 0~-0.02 | min^{-1} D.221-222





EDP	D	R	L	l	d	Stock	Price
3016331	3	0,2	60	8	6	●	
3016333	3	0,5	60	8	6	●	
3016341	4	0,2	60	11	6	●	
3016343	4	0,5	60	11	6	●	
3016345	4	1	60	11	6	●	
3016351	5	0,2	60	13	6	●	
3016353	5	0,5	60	13	6	●	
3016355	5	1	60	13	6	●	
3016362	6	0,3	60	13	6	●	
3016363	6	0,5	60	13	6	●	
3016365	6	1	60	13	6	●	
3016382	8	0,3	80	19	8	●	
3016383	8	0,5	80	19	8	●	
3016385	8	1	80	19	8	●	
3016387	8	1,5	80	19	8	●	
3016389	8	2	80	19	8	●	
3016402	10	0,3	80	22	10	●	
3016403	10	0,5	80	22	10	●	
3016405	10	1	80	22	10	●	
3016407	10	1,5	80	22	10	●	
3016409	10	2	80	22	10	●	
3016413	10	3	80	22	10	●	
3016433	12	0,5	100	26	12	●	
3016435	12	1	100	26	12	●	
3016437	12	1,5	100	26	12	●	
3016439	12	2	100	26	12	●	
3016443	12	3	100	26	12	●	
3016462	16	1	115	32	16	●	
3016463	16	1,5	115	32	16	●	
3016464	16	2	115	32	16	●	
3016465	16	3	115	32	16	●	
3016482	20	1	125	38	20	●	
3016483	20	1,5	125	38	20	●	
3016484	20	2	125	38	20	●	
3016485	20	3	125	38	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		◎	◎		

● Delivery from stock
○ Available on short notice

FX-MG-EDS

FX
- High performance
- Slotting end mills
- 2 flutes
- Stub length

FX
- High performance
- 2 Schneiden schaftfräser
- 2 Schneiden
- Kurzer Schaft

FX
- Alta prestazione
- Frese per nervature
- 2 denti
- Serie corta

FX
- Haute performance
- Fraise à rainurer
- 2 lèvres
- Série courte

FX
- Yüksek performans
- Slot kesim için parmak freze
- 2 ağızlı
- Saplama uzunluğu

FX
- High performance
- Endeskærs fræsere
- 2 skær
- Stub længde

FX
- High performance
- Raka fräsar
- 2 skär
- Kort skärlängd

FX
- Altas prestaciones
- Fresas de ranurar
- 2 labios
- Serie corta

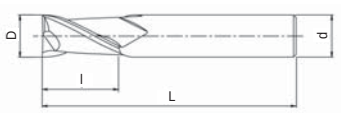
FX
- Высокая производительность
- Пазовые концевые фрезы
- 2 режущих кромки
- Короткая длина

FX
- Wysoka wydajność
- Frez do rowków
- 2 ostrzowy
- Seria krótka

GO TO LIVE STOCK CHECK

WXL-2D-DE (page D.35) is OSG's new offering for this tool

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | D ≥ 12 0~-0.03 | D ≤ 12 0~-0.02 | min⁻¹ D.223





EDP	D	L	l	d	Stock	Price
8519002	0,2	40	0,4	3	○	
8519003	0,3	40	0,6	3	○	
8519004	0,4	40	0,8	3	○	
8519005	0,5	40	1	3	○	
8519006	0,6	40	1,2	3	○	
8519007	0,7	40	1,4	3	○	
8519008	0,8	40	1,6	3	○	
8519009	0,9	40	2	3	○	
8519010	1	40	2,5	4	○	
8519011	1,1	40	2,5	4	○	
8519012	1,2	40	4	4	○	
8519013	1,3	40	4	4	○	
8519014	1,4	40	4	4	○	
8519015	1,5	40	4	4	○	
8519016	1,6	40	5	4	○	
8519017	1,7	40	5	4	○	
8519018	1,8	40	5	4	○	
8519019	1,9	40	5	4	○	
8519020	2	40	6	4	○	
8519021	2,1	40	6	4	○	
8519022	2,2	40	6	4	○	
8519023	2,3	40	6	4	○	
8519024	2,4	40	8	4	○	
8519025	2,5	40	8	4	○	
8519026	2,6	40	8	4	○	
8519027	2,7	40	8	4	○	
8519028	2,8	40	8	4	○	
8519029	2,9	40	8	4	○	
8519030	3	45	8	6	○	
8519031	3,1	45	10	6	○	
8519032	3,2	45	10	6	○	
8519033	3,3	45	10	6	○	
8519034	3,4	45	10	6	○	
8519035	3,5	45	10	6	○	
8519036	3,6	45	10	6	○	
8519037	3,7	45	10	6	○	
8519038	3,8	45	11	6	○	
8519039	3,9	45	11	6	○	
8519040	4	45	11	6	○	
8519041	4,1	45	11	6	○	
8519042	4,2	45	11	6	○	
8519043	4,3	45	11	6	○	
8519044	4,4	45	11	6	○	
8519045	4,5	45	11	6	○	
8519046	4,6	45	11	6	○	
8519047	4,7	45	11	6	○	
8519048	4,8	50	13	6	○	
8519049	4,9	50	13	6	○	
8519050	5	50	13	6	○	
8519051	5,1	50	13	6	○	
8519052	5,2	50	13	6	○	
8519053	5,3	50	13	6	○	

EDP	D	L	l	d	Stock	Price
8519054	5,4	50	13	6	○	
8519055	5,5	50	13	6	○	
8519056	5,6	50	13	6	○	
8519057	5,7	50	13	6	○	
8519058	5,8	50	13	6	○	
8519059	5,9	50	13	6	○	
8519060	6	50	13	6	○	
8519061	6,1	60	16	8	○	
8519062	6,2	60	16	8	○	
8519063	6,3	60	16	8	○	
8519064	6,4	60	16	8	○	
8519065	6,5	60	16	8	○	
8519066	6,6	60	16	8	○	
8519067	6,7	60	16	8	○	
8519068	6,8	60	16	8	○	
8519069	6,9	60	16	8	○	
8519070	7	60	16	8	○	
8519071	7,1	60	16	8	○	
8519072	7,2	60	16	8	○	
8519073	7,3	60	16	8	○	
8519074	7,4	60	16	8	○	
8519075	7,5	60	16	8	○	
8519076	7,6	60	19	8	○	
8519077	7,7	60	19	8	○	
8519078	7,8	60	19	8	○	
8519079	7,9	60	19	8	○	
8519080	8	60	19	8	○	
8519081	8,1	70	19	10	○	
8519082	8,2	70	19	10	○	
8519083	8,3	70	19	10	○	
8519084	8,4	70	19	10	○	
8519085	8,5	70	19	10	○	
8519086	8,6	70	19	10	○	
8519087	8,7	70	19	10	○	
8519088	8,8	70	19	10	○	
8519089	8,9	70	19	10	○	
8519090	9	70	19	10	○	
8519091	9,1	70	19	10	○	
8519092	9,2	70	19	10	○	
8519093	9,3	70	19	10	○	
8519094	9,4	70	19	10	○	
8519095	9,5	70	19	10	○	
8519096	9,6	70	22	10	○	
8519097	9,7	70	22	10	○	
8519098	9,8	70	22	10	○	
8519099	9,9	70	22	10	○	
8519100	10	70	22	10	○	
8519101	10,1	75	22	12	○	
8519102	10,2	75	22	12	○	
8519103	10,3	75	22	12	○	
8519104	10,4	75	22	12	○	
8519105	10,5	75	22	12	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-MG-EDS

FX
- High performance
- Slotting end mills
- 2 flutes
- Stub length

FX
- High performance
- 2 Schneiden schaftfräser
- 2 Schneiden
- Kurzer Schaft

FX
- Alta prestazione
- Frese per nervature
- 2 denti
- Serie corta

FX
- Haute performance
- Fraise à rainurer
- 2 lèvres
- Série courte

FX
- Yüksek performans
- Slot kesim için parmak freze
- 2 ağızlı
- Saplama uzunluğu

FX
- High performance
- Endeskærs fræsere
- 2 skær
- Stub længde

FX
- High performance
- Raka fräsar
- 2 skär
- Kort skärlängd

FX
- Altas prestaciones
- Fresas de ranurar
- 2 labios
- Serie corta

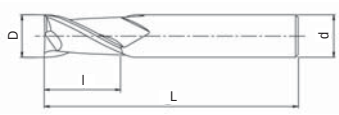
FX
- Высокая производительность
- Пазовые концевые фрезы
- 2 режущих кромки
- Короткая длина

FX
- Wysoka wydajność
- Frez do rowków
- 2 ostrzowy
- Seria krótka

GO TO LIVE STOCK CHECK

WXL-2D-DE (page D.35) is OSG's new offering for this tool

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | D > 12 0~-0.03 | D ≤ 12 0~-0.02 | min⁻¹ D.223





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
8519106	10,6	75	22	12	○		8519114	11,4	75	22	12	○	
8519107	10,7	75	22	12	○		8519115	11,5	75	22	12	○	
8519108	10,8	75	22	12	○		8519116	11,6	75	22	12	○	
8519109	10,9	75	22	12	○		8519117	11,7	75	22	12	○	
8519110	11	75	22	12	○		8519118	11,8	70	22	12	○	
8519111	11,1	75	22	12	○		8519119	11,9	75	26	12	○	
8519112	11,2	75	22	12	○		8519120	12	75	26	12	○	
8519113	11,3	75	22	12	○								

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-MG-EDL

FX
- High performance
- 2 flutes
- Long cut length

FX
- High performance
- 2 Schneiden
- Schneidenlänge lang

FX
- Alta prestazione
- 2 denti
- Serie lunga

FX
- Haute performance
- 2 lèvres
- Long. coupe longue

FX
- Yüksek performans
- 2 ağızlı
- Uzun kesme uzunluğu

FX
- High performance
- 2 skær
- Lang skærlængde

FX
- High performance
- 2 skär
- Lång skärlängd

FX
- Altas prestaciones
- 2 labios
- Longitud de corte larga

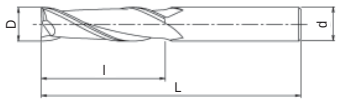
FX
- Высокая производительность
- 2 режущих кромки
- Длинная режущая часть

FX
- Wysoka wydajność
- 2 ostrzowy
- Długa część robocza

GO TO LIVE STOCK CHECK

WXL-4D-DE (page D.37) is OSG's new offering for this tool

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | 0~-0.03





EDP	D	L	l	d	Stock	Price
8522010	1	50	4	4	○	
8522015	1,5	50	6	4	○	
8522020	2	50	9	4	○	
8522025	2,5	50	12	4	○	
8522030	3	50	12	6	○	
8522035	3,5	50	14	6	○	
8522040	4	50	17	6	○	
8522045	4,5	50	17	6	○	
8522050	5	60	20	6	○	
8522055	5,5	60	20	6	○	
8522060	6	60	20	6	○	
8522065	6,5	70	24	8	○	
8522070	7	70	24	8	○	
8522075	7,5	70	24	8	○	
8522080	8	70	28	8	○	
8522085	8,5	80	28	10	○	
8522090	9	80	28	10	○	
8522095	9,5	80	28	10	○	
8522100	10	80	34	10	○	
8522105	10,5	90	34	12	○	
8522110	11	90	34	12	○	
8522115	11,5	90	34	12	○	
8522120	12	90	40	12	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○			○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-MG-EXDL

FX
- High performance
- 2 flutes
- Extra long cut length

FX
- High performance
- 2 Schneiden
- Extra Schneidenlänge lang

FX
- Alta prestazione
- 2 denti
- Serie extra lunga

FX
- Haute performance
- 2 lèvres
- Long. coupe extra longue

FX
- Yüksek performans
- 2 ağızlı
- Ekstra uzun kesme uzunluğu

FX
- High performance
- 2 skær
- Ekstra lang skærlængde

FX
- High performance
- 2 skär
- Extra lång skärlängd

FX
- Altas prestaciones
- 2 labios
- Longitud de corte extra larga

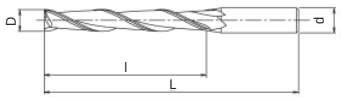
FX
- Высокая производительность
- 2 режущих кромки
- Особо длинная режущая часть

FX
- Wysoka wydajność
- 2 ostrzowy
- Extra długa część robocza

GO TO LIVE STOCK CHECK

FX

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | 0~-0.03





EDP	D	L	l	d	Stock	Price
8542830	3	60	20	6	○	
8542840	4	70	32	6	○	
8542850	5	80	40	6	○	
8542860	6	80	40	6	○	
8542880	8	110	63	8	○	
8542900	10	125	75	10	○	
8542920	12	150	90	12	○	

FX

CARBIDE

CARBIDE

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○			

FX
- High performance
- 2 flutes
- Slim shank

FX
- High performance
- 2 Schneiden
- Schaftdurchmesser kleiner als Schneide

FX
- Alta prestazione
- 2 denti
- Diametro del gambo inferiore al dia. del taglio

FX
- Haute performance
- 2 lèvres
- Dia. Queue inf. dia coupe

FX
- Yüksek performans
- 2 ağızlı
- İnce şaft

FX
- High performance
- 2 skær
- Tyndt skaft

FX
- High performance
- 2 skär
- Helreducerat skaft

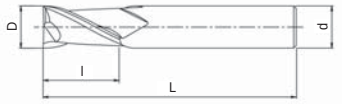
FX
- Altas prestaciones
- 2 labios
- Cuello delgado

FX
- Высокая производительность
- 2 режущих кромки
- Утоненный хвостовик

FX
- Wysoka wydajność
- 2 ostrzowy
- Średnica chwytu mniejsza od ostrza

GO TO LIVE STOCK CHECK

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | 0~-0.02 | min⁻¹ D.224





EDP	D	L	l	d	Stock	Price
8408456	6	90	15	5	●	
8408458	8	100	20	7	●	
8408460	10	100	25	9	●	
8408462	12	110	30	11	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-EDS-6

FX
- High performance
- 2 flutes
- Long neck
- Shank dia. 6

FX
- High performance
- 2 Schneiden
- Langer Hals
- Schaftdurchmesser dia. 6

FX
- Alta prestazione
- 2 denti
- Serie lunga
- Diametro del gambo dia. 6

FX
- Haute performance
- 2 lèvres
- Série longue
- Diamètre queue dia. 6

FX
- Yüksek performans
- 2 ağızlı
- Uzun boyun
- Gövde çapı 6 mm

FX
- High performance
- 2 skær
- Langt skaft
- Skaft dia. 6

FX
- High performance
- 2 skär
- Lång reducering
- Skaft dia. 6

FX
- Altas prestaciones
- 2 labio
- Serie larga
- Cuello dia. 6

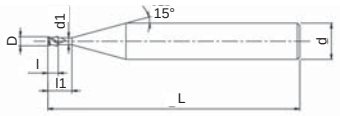
FX
- Высокая производительность
- 2 режущих кромки
- короткая длина
- Хвостовик Ø6 мм

FX
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka
- Chwyt 6mm

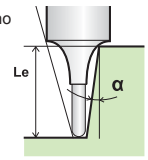
GO TO LIVE STOCK CHECK

WXL-2D-DE (page D.35) is OSG's new offering for this tool

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | Ø2 < D | 0~-0.0015



No numerical value means no interference with workpiece





EDP	D	l1	L	l	d1	d	Le 0,5°	Le 1°	Le 1,5°	Le 2°	Le 2,5°	Le 3°	Stock	Price
8544102	0,2	-	50	0,3	-	6	-	-	-	-	-	-	○	
8544103	0,3	-	50	0,4	-	6	-	-	-	-	-	-	●	
8544104	0,4	-	50	0,6	-	6	-	-	-	-	-	-	○	
8544105	0,5	1,5	50	0,7	0,45	6	1,55	1,6	1,66	1,72	1,79	1,86	●	
8544106	0,6	1,8	50	0,9	0,55	6	1,86	1,92	1,99	2,07	2,15	2,23	●	
8544108	0,8	2,4	50	1,2	0,75	6	2,48	2,56	2,66	2,76	2,86	2,98	●	
8544110	1	2,5	50	1,5	0,95	6	2,58	2,67	2,77	2,87	2,98	3,1	○	
8544112	1,2	3	50	1,8	1,15	6	3,1	3,2	3,32	3,45	3,58	3,72	●	
8544114	1,4	3,5	50	2,1	1,35	6	3,61	3,74	3,87	4,02	4,18	4,35	○	
8544115	1,5	3,8	50	2,3	1,45	6	3,92	4,06	4,21	4,36	4,54	4,72	●	
8544116	1,6	4	50	2,4	1,55	6	4,13	4,27	4,43	4,59	4,77	4,97	○	
8544118	1,8	4,5	50	2,7	1,75	6	4,65	4,81	4,98	5,17	5,37	5,59	●	
8544120	2	5	50	3	1,95	6	5,16	5,34	5,54	5,74	5,97	6,21	●	
8544125	2,5	5	50	3,7	2,4	6	5,16	5,34	5,54	5,74	5,97	6,21	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-LN-EDS-6

FX
- High performance
- 2 flutes
- Long neck
- Shank dia. 6

FX
- High performance
- 2 Schneiden
- Langer Hals
- Schaftdurchmesser dia. 6

FX
- Alta prestazione
- 2 denti
- Serie lunga
- Diametro del gambo dia. 6

FX
- Haute performance
- 2 lèvres
- Série longue
- Diamètre queue dia. 6

FX
- Yüksek performans
- 2 ağızlı
- Uzun boyun
- Gövde çapı 6 mm

FX
- High performance
- 2 skær
- Langt skaft
- Skaft dia. 6

FX
- High performance
- 2 skär
- Lång reducering
- Skaft dia. 6

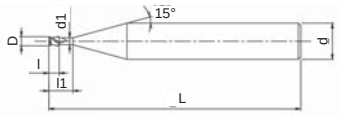
FX
- Altas prestaciones
- 2 labio
- Serie larga
- Cuello dia. 6

FX
- Высокая производительность
- 2 режущих кромки
- короткая длина
- Хвостовик Ø6 мм

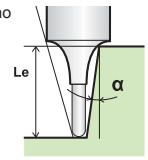
FX
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka
- Chwyt 6mm

GO TO LIVE STOCK CHECK

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | Ø2 < D | 0~-0.0015 | min⁻¹ D.225-226



No numerical value means no interference with workpiece





EDP	D	l1	L	l	d1	d	Le 0,5°	Le 1°	Le 1,5°	Le 2°	Le 2,5°	Le 3°	Stock	Price
8544205	0,5	2,5	60	0,7	0,45	6	2,58	2,67	2,77	2,87	2,98	3,1	●	
8544206	0,6	3	60	0,9	0,55	6	3,1	3,2	3,32	3,45	3,58	3,72	○	
8544208	0,8	4	60	1,2	0,75	6	4,13	4,27	4,43	4,59	4,77	4,97	●	
8544210	1	5	60	1,5	0,95	6	5,16	5,34	5,54	5,74	5,97	6,21	●	
8544212	1,2	6	60	1,8	1,15	6	6,2	6,41	6,65	6,89	7,16	7,45	○	
8544214	1,4	7	60	2,1	1,35	6	7,23	7,48	7,75	8,04	8,36	8,70	○	
8544215	1,5	7,5	60	2,3	1,45	6	7,75	8,02	8,31	8,62	8,96	9,32	●	
8544216	1,6	8	60	2,4	1,55	6	8,26	8,55	8,86	9,19	9,55	9,94	○	
8544218	1,8	9	60	2,7	1,75	6	9,3	9,62	9,97	10,35	10,75	11,19	●	
8544220	2	10	60	3	1,95	6	10,34	10,7	11,08	11,5	11,95	12,43	○	
8544225	2,5	12,5	60	3,7	2,4	6	12,92	13,37	13,85	14,37	14,93	15,54	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-MG-EMS

FX
- High performance
- 4 flutes
- Stub length

FX
- High performance
- 4 Schneiden
- Kurzer Schaft

FX
- Alta prestazione
- 4 denti
- Serie corta

FX
- Haute performance
- 4 lèvres
- Série courte

FX
- Yüksek performans
- 4 ağızlı
- Saplama uzunluğu

FX
- High performance
- 4 skær
- Stub længde

FX
- High performance
- 4 skär
- Kort skärlängd

FX
- Altas prestaciones
- 4 labios
- Serie corta

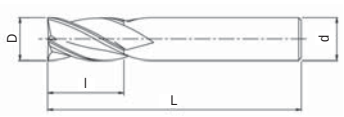
FX
- Высокая производительность
- 4 режущих кромки
- Короткая длина

FX
- Wysoka wydajność
- 4 ostrzowy
- Seria krótka

GO TO LIVE STOCK CHECK

WXL-EMS (page D.37) is OSG's new offering for this tool

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | D > 12 0~-0.03 | D ≤ 12 0~-0.02 | min⁻¹ D.227





EDP	D	L	l	d	Stock	Price
8520020	2	40	6	4	●	
8520025	2,5	40	8	4	○	
8520030	3	45	8	6	●	
8520035	3,5	45	10	6	○	
8520040	4	45	11	6	●	
8520045	4,5	45	11	6	○	
8520050	5	50	13	6	●	
8520055	5,5	50	13	6	○	
8520060	6	50	13	6	●	
8520065	6,5	60	16	8	○	
8520070	7	60	16	8	○	
8520075	7,5	60	16	8	○	
8520080	8	60	19	8	○	
8520085	8,5	70	19	10	○	
8520090	9	70	19	10	○	
8520095	9,5	70	19	10	○	
8520100	10	70	22	10	○	
8520105	10,5	75	22	12	○	
8520110	11	75	22	12	○	
8520115	11,5	75	22	12	○	
8520120	12	75	26	12	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-MG-EML

FX
- High performance
- 4 flutes
- Long cut length

FX
- High performance
- 4 Schneiden
- Schneidenlänge lang

FX
- Alta prestazione
- 4 denti
- Serie lunga

FX
- Haute performance
- 4 lèvres
- Long. coupe longue

FX
- Yüksek performans
- 4 ağızlı
- Uzun kesme uzunluğu

FX
- High performance
- 4 skær
- Lang skærlængde

FX
- High performance
- 4 skär
- Lång skärlängd

FX
- Altas prestaciones
- 4 labios
- Longitud de corte larga

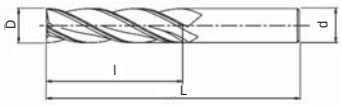
FX
- Высокая производительность
- 4 режущих кромки
- Длинная режущая часть

FX
- Wysoka wydajność
- 4 ostrzowy
- Długa część robocza

GO TO LIVE STOCK CHECK

FX

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | 0~-0.03





EDP	D	L	l	d	Stock	Price
8523030	3	50	12	6	●	
8523035	3,5	50	14	6	○	
8523040	4	50	17	6	●	
8523045	4,5	50	17	6	○	
8523050	5	60	20	6	●	
8523055	5,5	60	20	6	○	
8523060	6	60	20	6	●	
8523065	6,5	70	24	8	○	
8523070	7	70	24	8	●	
8523075	7,5	70	24	8	○	
8523080	8	70	28	8	●	
8523085	8,5	80	28	10	○	
8523090	9	80	28	10	○	
8523095	9,5	80	28	10	○	
8523100	10	80	34	10	●	
8523105	10,5	90	34	12	○	
8523110	11	90	34	12	●	
8523115	11,5	90	34	12	○	
8523120	12	90	40	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○			○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-MG-EXML

FX
- High performance
- 4 flutes
- Extra long cut length

FX
- High performance
- 4 Schneiden
- Extra Schneidenlänge lang

FX
- Alta prestazione
- 4 denti
- Serie extra lunga

FX
- Haute performance
- 4 lèvres
- Long. coupe extra longue

FX
- Yüksek performans
- 4 ağızlı
- Ekstra uzun kesme uzunluğu

FX
- High performance
- 4 skær
- Ekstra lang skærlængde

FX
- High performance
- 4 skär
- Extra lång skärlängd

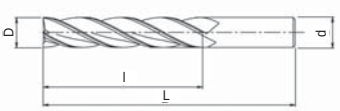
FX
- Altas prestaciones
- 4 labios
- Longitud de corte extra larga

FX
- Высокая производительность
- 4 режущих кромки
- Особо длинная режущая часть

FX
- Wysoka wydajność
- 4 ostrzowy
- Extra długa część robocza

GO TO LIVE STOCK CHECK

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | 0~-0.03





EDP	D	L	l	d	Stock	Price
8543330	3	60	20	6	○	
8543340	4	70	32	6	○	
8543350	5	80	40	6	○	
8543360	6	80	40	6	○	
8543380	8	110	63	8	○	
8543400	10	125	75	10	○	
8543420	12	150	90	12	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎				○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○			

FX
- High performance
- 4 flutes
- Slim shank

FX
- High performance
- 4 Schneiden
- Schaftdurchmesser kleiner als Schneide

FX
- Alta prestazione
- 4 denti
- Diametro del gambo inferiore al dia. del taglio

FX
- Haute performance
- 4 lèvres
- Dia. Queue inf. dia coupe

FX
- Yüksek performans
- 4 ağızlı
- İnce şaft

FX
- High performance
- 4 skær
- Tyndt skaft

FX
- High performance
- 4 skär
- Helreducerat skaft

FX
- Altas prestaciones
- 4 labios
- Cuello delgado

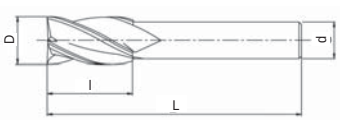
FX
- Высокая производительность
- 4 режущих кромки
- Утоненный хвостовик

FX
- Wysoka wydajność
- 4 ostrzowy
- Średnica chwytu mniejsza od ostrza

GO TO LIVE STOCK CHECK

FX

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | 0~-0.02 | min⁻¹ D.228





EDP	D	L	l	d	Stock	Price
8408506	6	90	15	5	●	
8408508	8	100	20	7	●	
8408510	10	100	25	9	●	
8408512	12	110	30	11	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○			

● Delivery from stock
○ Available on short notice

FX-LN-EMS-6

FX
- High performance
- 2 flutes
- Long neck
- Shank dia. 6

FX
- High performance
- 2 Schneiden
- Langer Hals
- Schaftdurchmesser dia. 6

FX
- Alta prestazione
- 2 denti
- Serie lunga
- Diametro del gambo dia. 6

FX
- Haute performance
- 2 lèvres
- Série longue
- Diamètre queue dia. 6

FX
- Yüksek performans
- 2 ağızlı
- Uzun boyun
- Gövde çapı 6 mm

FX
- High performance
- 2 skær
- Langt skaft
- Skaft dia. 6

FX
- High performance
- 2 skär
- Lång reducering
- Skaft dia. 6

FX
- Altas prestaciones
- 2 labio
- Serie larga
- Cuello dia. 6

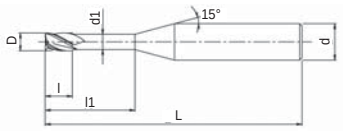
FX
- Высокая производительность
- 2 режущих кромки
- короткая длина
- Хвостовик Ø6 мм

FX
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka
- Chwyt 6mm

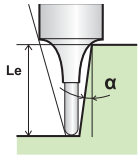
GO TO LIVE STOCK CHECK

WXL-LN-EMS-6 (page D.39) is OSG's new offering for this tool

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | Ø2 ≤ D | min⁻¹ D.229



No numerical value means no interference with workpiece





EDP	D	l1	L	l	d1	d	Le 0,5°	Le 1°	Le 1,5°	Le 2°	Le 2,5°	Le 3°	Stock	Price
8544310	1	5	60	1,5	0,95	6	5,16	5,34	5,54	5,74	5,97	6,21	●	
8544312	1,2	6	60	1,8	1,15	6	6,2	6,41	6,65	6,89	7,16	7,45	○	
8544315	1,5	7,5	60	2,3	1,45	6	7,75	8,02	8,31	8,62	8,96	9,32	○	
8544320	2	10	60	3	1,95	6	10,34	10,7	11,08	11,5	11,95	12,43	●	
8544325	2,5	12,5	60	3,7	2,40	6	12,92	13,37	13,85	14,37	14,93	15,54	●	
8544330	3	15	70	4,5	2,85	6	15,5	16,05	16,62	17,25	17,92	18,65	●	
8544335	3,5	17,5	70	5,3	3,35	6	18,09	18,72	19,4	20,12	20,91	21,76	●	
8544340	4	20	70	6	3,85	6	20,67	21,39	22,17	23	-	-	○	
8544350	5	25	80	7,5	4,85	6	25,84	26,74	-	-	-	-	●	
8544360	6	30	90	9	5,85	6	-	-	-	-	-	-	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○			

● Delivery from stock
○ Available on short notice

FX-MG-EHS

FX
- High performance
- Good chip ejection
- For difficult milling materials

FX
- High performance
- Optimal Spanabfuhr
- Für schwer zerspanbare Werkstoffe

FX
- Alta prestazione
- Per una migliore evacuazione del truciolo
- Per materiali difficili da lavorare

FX
- Haute performance
- Bonne éjection du copeau
- Pour matières difficiles à usiner

FX
- Yüksek performans
- Güzel talaş uzaklaştırma
- Zor frezelenen malzemeler için

FX
- High performance
- God spånafgang
- Til svært bearbejdelige materialer

FX
- High performance
- God spånavgång
- För svårbearbetade material

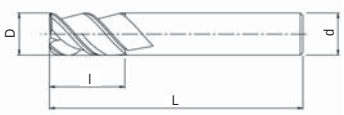
FX
- Altas prestaciones
- Buena evacuación de viruta
- Para materiales de difícil mecanización

FX
- Высокая производительность
- Хорошее выталкивание стружки
- Для трудно обрабатываемых материалов

FX
- Wysoka wydajność
- Dobry wyrzut wiórów
- W przypadku frezowania trudnych materiałów

GO TO LIVE STOCK CHECK







EDP	D	L	l	d	ZΔ	Stock	Price
8542130	3	50	8	6	3	●	
8542430	3	50	8	6	4	●	
8542140	4	50	11	6	3	●	
8542440	4	50	11	6	4	●	
8542150	5	50	13	6	3	●	
8542450	5	50	13	6	4	●	
8542160	6	50	13	6	3	●	
8542460	6	50	13	6	4	●	
8542170	7	60	16	8	3	●	
8542180	8	60	19	8	3	●	
8542480	8	60	19	8	4	●	
8542190	9	70	19	10	3	●	
8542200	10	70	22	10	3	●	
8542500	10	70	22	10	4	●	
8542210	11	75	22	12	3	○	
8542220	12	75	26	12	3	●	
8542520	12	75	26	12	4	●	
8542230	13	90	26	16	3	○	
8542240	14	90	26	16	3	○	
8542540	14	90	26	16	4	○	
8542250	15	90	26	16	3	○	
8542550	15	90	26	16	4	○	
8542260	16	100	32	16	3	○	
8542560	16	100	32	16	4	○	
8542280	18	100	32	20	3	○	
8542580	18	100	32	20	4	○	
8542300	20	105	38	20	3	○	
8542600	20	105	38	20	4	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		◎	◎		

● Delivery from stock
○ Available on short notice

FX-MG-EHL

FX
- High performance
- Good chip ejection
- For difficult milling materials

FX
- High performance
- Optimal Spanabfuhr
- Für schwer zerspanbare Werkstoffe

FX
- Alta prestazione
- Per una migliore evacuazione del truciolo
- Per materiali difficili da lavorare

FX
- Haute performance
- Bonne éjection du copeau
- Pour matières difficiles à usiner

FX
- Yüksek performans
- Güzel talaş uzaklaştırma
- Zor frezelenen malzemeler için

FX
- High performance
- God spånafgang
- Til svært bearbejdelige materialer

FX
- High performance
- God spånavgång
- För svårbearbetade material

FX
- Altas prestaciones
- Buena evacuación de viruta
- Para materiales de difícil mecanización

FX
- Высокая производительность
- Хорошее выталкивание стружки
- Для трудно обрабатываемых материалов

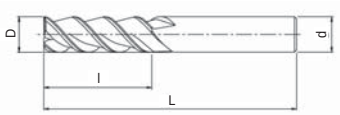
FX
- Wysoka wydajność
- Dobry wyrzut wiórów
- W przypadku frezowania trudnych materiałów

GO TO LIVE STOCK CHECK

FX

CARBIDE







EDP	D	L	l	d	ZΔ	Stock	Price
8408406	6	60	20	6	3	●	
8408408	8	70	28	8	3	●	
8408410	10	80	34	10	3	●	
8408412	12	90	40	12	3	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		◎	◎		

● Delivery from stock
○ Available on short notice

HYP-ZDS

HY-PRO
- 2 flutes
- Counterboring

HY-PRO
- 2 Schneiden
- Anspiegelfläche

HY-PRO
- 2 denti
- Lamatura

HY-PRO
- 2 lèvres
- Chanfreinage

HY-PRO
- 2 ağızlı
- Kontur Baralama

HY-PRO
- 2 skær
- Undersænkning

HY-PRO
- 2 skär
- Försänkning

HY-PRO
- 2 labios
- Taladrado plano

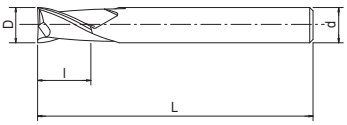
HY-PRO
- 2 режущих кромки
- для фрезерования, зенкования,обточки

HY-PRO
- 2 ostrzowy
- Pogłębianie

GO TO LIVE STOCK CHECK

HYP

CARBIDE | TiAlN | 20° | 0~-0.02 | min⁻¹ D.230 | HY-PRO





EDP	D	L	l	d	ZΔ	Stock	Price
48370040	4	50	11	6	2	●	
48370050	5	60	13	6	2	●	
48370060	6	60	13	6	2	●	
48370070	7	70	16	8	2	●	
48370080	8	70	19	8	2	●	
48370090	9	80	19	10	2	●	
48370100	10	80	22	10	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	○				◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
	○					

● Delivery from stock
○ Available on short notice

HY-PRO
- 1 Flute
- Staight shank

HY-PRO
- 1 Schneide
- Zylindrischer Schaft

HY-PRO
- 1 dento
- Gambo cilindrico

HY-PRO
- 1 lèvre
- Queue cylindrique

HY-PRO
- 1 kanal
- Düz Şaft

HY-PRO
- 1 skær
- Cylindrisk skaft

HY-PRO
- 1 skär
- Cylindriskt skaft

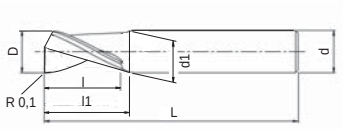
HY-PRO
- 1 labio
- Mango sencillo

HY-PRO
- 1 режущих кромки
- Прямой хвостовик

HY-PRO
- 1 ostrzow
- Chwyt walcowy

GO TO LIVE STOCK CHECK

CARBIDE | 15° | min⁻¹ D.230 | HY-PRO





EDP	D	L	l	l1	d1	d	ZΔ	Stock	Price
48360030	3	40	4	5	-	6	1	●	
48360040	4	50	5	6	-	6	1	●	
48360050	5	50	7	8	-	6	1	●	
48360060	6	50	8	15	5,4	6	1	●	
48360080	8	60	11	20	7	8	1	●	
48360100	10	70	13	25	9	10	1	●	
48360120	12	70	15	30	11	12	1	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
	○				○	

● Delivery from stock
○ Available on short notice

HYP-HP-WRESF

HY-PRO
- For general roughing

HY-PRO
- Für Schruppen

HY-PRO
- Per sgrossatura

HY-PRO
- Pour ébauche

HY-PRO
- Genel kaba frezeleme için

HY-PRO
- Til skrubfræsing

HY-PRO
- För skrubbfräsing

HY-PRO
- Para desbaste

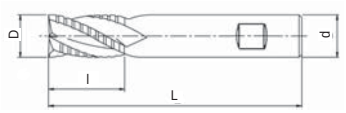
HY-PRO
- Для черновой обработки

HY-PRO
- Do ogólnego stosowania w obr. zgrubnej

GO TO LIVE STOCK CHECK

HYP

CARBIDE | TiAlN | 45° | CC | min⁻¹ D.231 | HY-PRO





EDP	D	L	l	d	ZΔ	Stock	Price
48624060	6	64	19	6	4	●	
48624080	8	64	21	8	4	●	
48624100	10	70	22	10	4	●	
48624120	12	76	25	12	4	●	
48625160	16	89	32	16	5	●	
48626200	20	102	38	20	6	●	
48626250	25	102	38	25	6	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎				○	○
Cu	Al	Graphite	Ti	HRS	Plast.	

● Delivery from stock
○ Available on short notice

HYP-CR-HI-WEMS

HY-PRO
- 4 flutes
- Variable lead type

HY-PRO
- 4 Schneiden
- Variabler Führung

HY-PRO
- 4 denti
- Passo variabile

HY-PRO
- 4 lèvres
- Hélice variable

HY-PRO
- 4 ağızlı
- Değişken helisel açılı tip

HY-PRO
- 4 skær
- Variabel helix

HY-PRO
- 4 skär
- Variabel helix

HY-PRO
- 4 labios
- Introduce la helice veriable

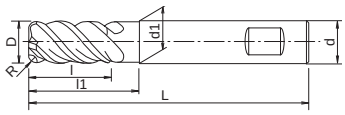
HY-PRO
- 4 режущих кромки
- С переменным углом наклона витков

HY-PRO
- 4 ostrzowy
- Z nierównomiernym rozkładem zębów

GO TO LIVE STOCK CHECK

HYP

CARBIDE | TiAlN | 35°~38° | CC | min⁻¹ D.231 | HY-PRO





EDP	D	R	L	l	l1	d1	d	Stock	Price
4832004011	4	0,5	57	11	-	-	6	●	
4832005011	5	0,5	57	13	-	-	6	●	
4832006011	6	0,5	57	13	20	5,8	6	●	
4832006012	6	1	57	13	20	5,8	6	●	
4832006013	6	1,5	57	13	20	5,8	6	●	
4832006014	6	2	57	13	20	5,8	6	●	
4832008011	8	0,5	63	19	25	7,8	8	●	
4832008012	8	1	63	19	25	7,8	8	●	
4832008013	8	1,5	63	19	25	7,8	8	●	
4832008014	8	2	63	19	25	7,8	8	●	
4832010011	10	0,5	72	22	30	9,8	10	●	
4832010012	10	1	72	22	30	9,8	10	●	
4832010013	10	1,5	72	22	30	9,8	10	●	
4832010014	10	2	72	22	30	9,8	10	●	
4832010016	10	3	72	22	30	9,8	10	●	
4832012011	12	0,5	83	26	38	11,8	12	●	
4832012012	12	1	83	26	38	11,8	12	●	
4832012013	12	1,5	83	26	38	11,8	12	●	
4832012014	12	2	83	26	38	11,8	12	●	
4832012016	12	3	83	26	38	11,8	12	●	
4832016011	16	0,5	92	32	45	15,8	16	●	
4832016012	16	1	92	32	45	15,8	16	●	
4832016014	16	2	92	32	45	15,8	16	●	
4832016016	16	3	92	32	45	15,8	16	●	
4832016018	16	4	92	32	45	15,8	16	●	
4832020012	20	1	104	38	60	19,8	20	●	
4832020014	20	2	104	38	60	19,8	20	●	
4832020016	20	3	104	38	60	19,8	20	●	
4832020018	20	4	104	38	60	19,8	20	●	
4832020020	20	5	104	38	60	19,8	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			◎	◎		

● Delivery from stock
○ Available on short notice

HYP-CR-HD-WEMS

HY-PRO
- 4 flutes
- Variable lead type

HY-PRO
- 4 Schneiden
- Variabler Führung

HY-PRO
- 4 denti
- Passo variabile

HY-PRO
- 4 lèvres
- Hélice variable

HY-PRO
- 4 ağızlı
- Değişken helisel açılı tip

HY-PRO
- 4 skær
- Variabel helix

HY-PRO
- 4 skär
- Variabel helix

HY-PRO
- 4 labios
- Introduce la helice veriable

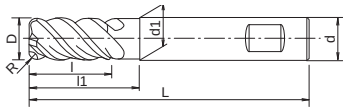
HY-PRO
- 4 режущих кромки
- С переменным углом наклона витков

HY-PRO
- 4 ostrzowy
- Z nierównomiernym rozkładem zębów

GO TO LIVE STOCK CHECK

HYP

CARBIDE | TiAlN | 35°~38° | C C | min⁻¹ D.231 | HY-PRO





EDP	D	R	L	l	l1	d1	d	Stock	Price
4833006010	6	0,25	57	13	20	5,8	6	●	
4833008010	8	0,25	63	19	25	7,8	8	●	
4833010010	10	0,25	72	22	30	9,8	10	●	
4833012010	12	0,25	83	26	38	11,8	12	●	
4833016010	16	0,25	92	32	45	15,8	16	●	
4833020010	20	0,25	104	38	60	19,8	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			◎	◎		

● Delivery from stock
○ Available on short notice

HYP-HI-(W)EMS

HY-PRO
- 4 flutes
- Variable lead type

HY-PRO
- 4 Schneiden
- Variabler Führung

HY-PRO
- 4 denti
- Passo variabile

HY-PRO
- 4 lèvres
- Hélice variable

HY-PRO
- 4 ağızlı
- Değişken helisel açılı tip

HY-PRO
- 4 skær
- Variabel helix

HY-PRO
- 4 skär
- Variabel helix

HY-PRO
- 4 labios
- Introduce la helice veriable

HY-PRO
- 4 режущих кромки
- С переменным углом наклона витков

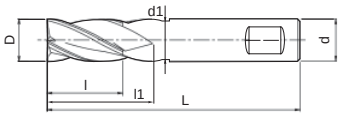
HY-PRO
- 4 ostrzowy
- Z nierównomiernym rozkładem zębów

GO TO LIVE STOCK CHECK

HYP

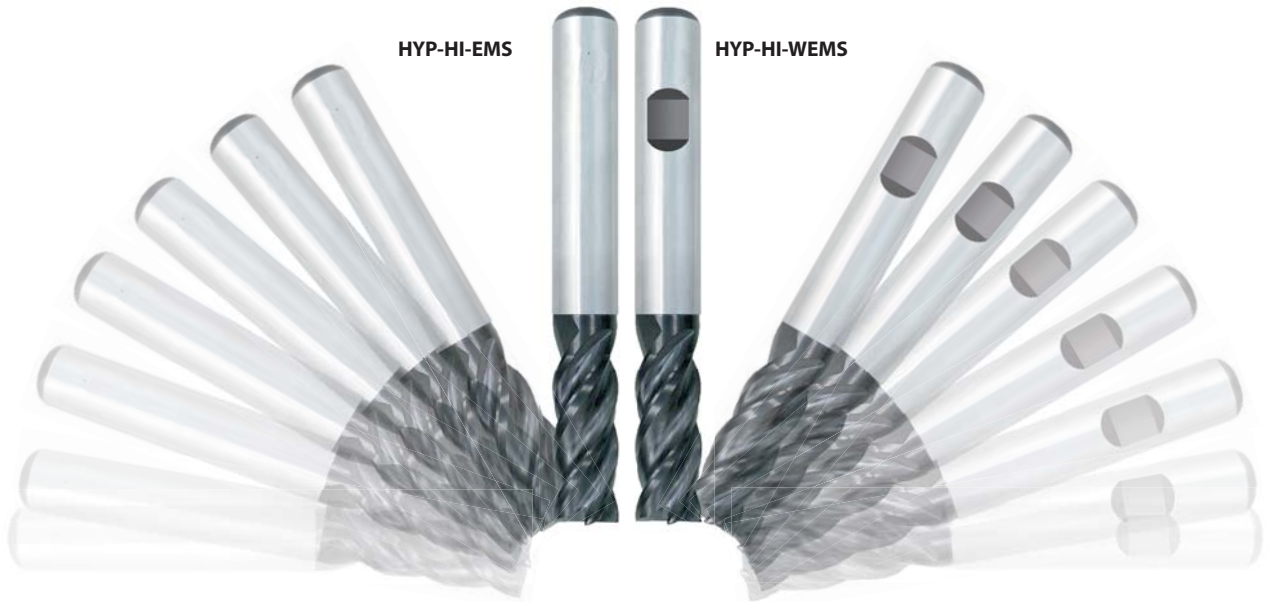
CARBIDE

CARBIDE | TiAlN | 35°~38° | C C | min⁻¹ D.231 | HY-PRO





EDP	Type	D	L	l	l1	d1	d	Stock	Price
48320040	HYP-HI-EMS	4	57	11	-	-	6	●	
48320050	HYP-HI-EMS	5	57	13	-	-	6	●	
48320060	HYP-HI-EMS	6	57	13	20	5,8	6	●	
48320080	HYP-HI-EMS	8	63	19	25	7,8	8	●	
48320100	HYP-HI-EMS	10	72	22	30	9,8	10	●	
48320120	HYP-HI-EMS	12	83	26	38	11,8	12	●	
48320160	HYP-HI-EMS	16	92	32	45	15,8	16	●	
48320200	HYP-HI-EMS	20	104	38	60	19,8	20	●	
483200401	HYP-HI-WEMS	4	57	11	-	-	6	●	
483200501	HYP-HI-WEMS	5	57	13	-	-	6	●	
483200601	HYP-HI-WEMS	6	57	13	20	5,8	6	●	
483200801	HYP-HI-WEMS	8	63	19	25	7,8	8	●	
483201001	HYP-HI-WEMS	10	72	22	30	9,8	10	●	
483201201	HYP-HI-WEMS	12	83	26	38	11,8	12	●	
483201601	HYP-HI-WEMS	16	92	32	45	15,8	16	●	
483202001	HYP-HI-WEMS	20	104	38	60	19,8	20	●	



Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○			◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			◎	◎		

● Delivery from stock
○ Available on short notice

HYP-HS-CRE

HY-PRO
- 4 flutes
- Corner radius

HY-PRO
- 4 Schneiden
- Mehrschneider mit Eckenradius

HY-PRO
- 4 denti
- Frese toriche

HY-PRO
- 4 lèvres
- Fraise à rayon

HY-PRO
- 4 ağızlı
- Değişken helisel açılı tip

HY-PRO
- 4 skær
- hjørneradius

HY-PRO
- 4 skär
- Hörnradie

HY-PRO
- 4 labios
- Vertice radio

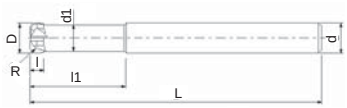
HY-PRO
- 4 режущих кромки
- Концевые фрезы с радиусом

HY-PRO
- 4 ostrzowy
- Z nierównomiernym rozkładem zębów

GO TO LIVE STOCK CHECK

HYP

CARBIDE | TiAlN | HIGH SPEED | SHRINK FIT | CC | RF | min⁻¹ D.232 | HY-PRO





EDP	D	R	L	l1	l	d1	d	ZΔ	Stock	Price
48340060	6	1,5	57	24	2,5	5	6	4	●	
48340080	8	2	63	32	3,5	7	8	4	●	
48340100	10	2	72	40	4	9	10	4	●	
48340120	12	3	83	48	5	11	12	4	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○		◎
Cu	Al	Graphite	Ti	HRS	Plast.	

● Delivery from stock
○ Available on short notice

HYP-SB-EBD

HY-PRO
- 2 flutes
- Center cutting

HY-PRO
- 2 Schneiden
- Zentrumschneidend

HY-PRO
- 2 denti
- Taglio al centro

HY-PRO
- 2 lèvres
- Coupe au centre

HY-PRO
- 2 ağızlı
- Merkezden kesme

HY-PRO
- 2 skær
- Borende

HY-PRO
- 2 skär
- Borrande

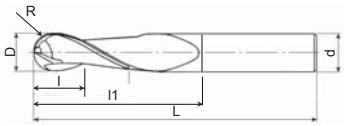
HY-PRO
- 2 labios
- Corte central

HY-PRO
- 2 режущих кромки
- Режущий цеНТр

HY-PRO
- 2 ostrzowy
- Centralne ostrze

GO TO LIVE STOCK CHECK

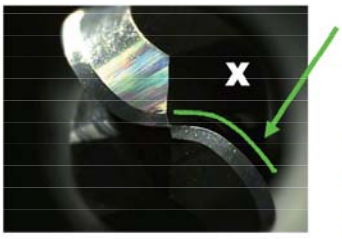
CARBIDE | TiAlN | 30° | SHRINK FIT | CC | R ± 0.01 | min⁻¹ D.232 | HY-PRO





EDP	D	R	L	l	l1	d	ZΔ	Stock	Price
48350030	3	1,5	57	4	9	6	2	●	
48350040	4	2	57	5	12	6	2	●	
48350050	5	2,5	57	6	15	6	2	●	
48350060	6	3	57	7	18	6	2	●	
48350080	8	4	63	9	20	8	2	●	
48350100	10	5	72	11	25	10	2	●	
48351200	12	6	83	13	25	12	2	●	

HY-PRO HYP-SB-EBD Geometry



Long cutting edge

X>Y

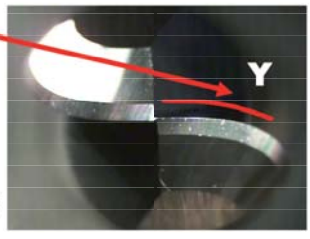
Less torque
Less heat build-up
Better surface finish
Long tool life

Standard Geometry

Short cutting edge

X>Y

Normal torque
Normal heat build-up
Average surface finish
Standard tool life



ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎			○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○					

● Delivery from stock
○ Available on short notice

FX-MG-EBD-3

FX
- High performance
- 2 flutes
- Shank dia. 3

FX
- High performance
- 2 Schneiden
- Schaftdurchmesser dia. 3

FX
- Alta prestazione
- 2 denti
- Diametro del gambo dia. 3

FX
- Haute performance
- 2 lèvres
- Diamètre queue dia. 3

FX
- Yüksek performans
- 2 ağızlı
- Gövde çapı 3 mm

FX
- High performance
- 2 skær
- Skaft dia. 3

FX
- High performance
- 2 skär
- Skaft dia. 3

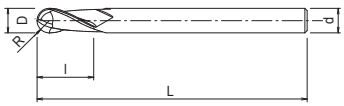
FX
- Altas prestaciones
- 2 labio
- Cuello dia. 3

FX
- Высокая производительность
- 2 режущих кромки
- Хвостовик Ø3 мм

FX
- Wysoka wydajność
- 2 ostrzowy
- Chwyt 3mm

GO TO LIVE STOCK CHECK

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | ± 0.01 | min⁻¹ D.232





EDP	D	R	L	l	d	Stock	Price
8523504	0,4	0,2	40	0,8	3	●	
8523505	0,5	0,25	40	1,1	3	●	
8523506	0,6	0,3	40	1,1	3	○	
8523507	0,7	0,35	40	1,5	3	●	
8523508	0,8	0,4	40	2	3	○	
8523509	0,9	0,45	40	2,2	3	●	
8523510	1	0,5	40	2,5	3	●	
8523511	1,1	0,55	40	3	3	●	
8523512	1,2	0,6	40	3	3	●	
8523513	1,3	0,65	40	3,5	3	●	
8523514	1,4	0,7	40	3,5	3	○	
8523515	1,5	0,75	40	4	3	○	
8523516	1,6	0,8	40	4	3	○	
8523517	1,7	0,85	40	4,5	3	○	
8523518	1,8	0,9	40	4,5	3	●	
8523519	1,9	0,95	40	5	3	○	
8523520	2	1	40	5	3	●	
8523521	2,1	1,05	40	6	3	●	
8523522	2,2	1,1	40	6	3	●	
8523523	2,3	1,15	40	6	3	●	
8523524	2,4	1,2	40	6	3	○	
8523525	2,5	1,25	40	6	3	○	
8523526	2,6	1,3	40	8	3	○	
8523527	2,7	1,35	40	8	3	○	
8523528	2,8	1,4	40	8	3	○	
8523529	2,9	1,45	40	8	3	○	
8523530	3	1,5	40	8	3	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-HS-EBDS

FX
- High performance
- Rigid end mill for hardened steel

FX
- High performance
- Stabile Schneidengeometrie für Kopierfräsen

FX
- Alta prestazione
- Frese rigide per acciaio trattato

FX
- Haute performance
- Fraise rigide pour acier traité

FX
- Yüksek performans
- Sert çelikler için rijit frezeleme

FX
- High performance
- Udviklet til hærdet stål

FX
- High performance
- Utvecklat för härdat stål

FX
- Altas prestaciones
- Fresa rígida para acero templado

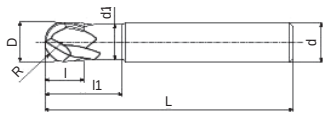
FX
- Высокая производительность
- жесткая концевая фреза для закаленных сталей

FX
- Wysoka wydajność
- Sztywny frez do stali hartowanej

GO TO LIVE STOCK CHECK

FX

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | R | ± 0.01 R ≤ 1 | ± 0.0015 R ≥ 1,5 | min⁻¹ D.233

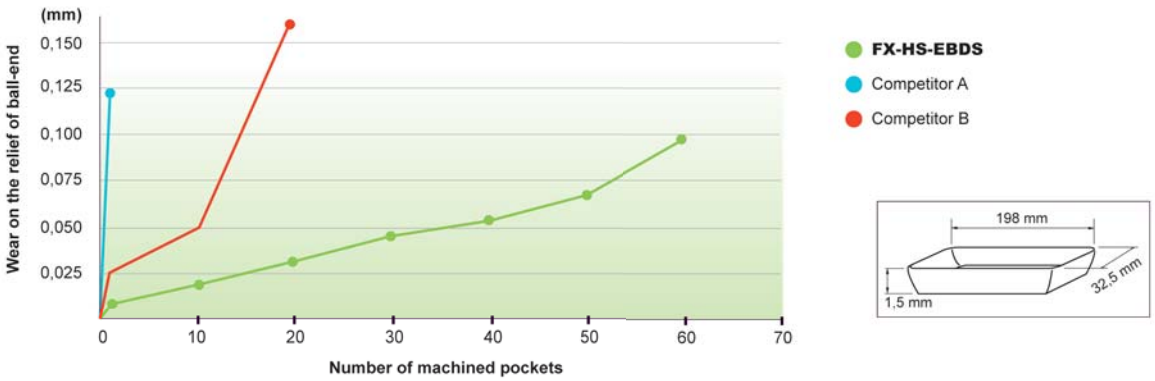




EDP	D	R	l1	L	l	d1	d	Stock	Price
8521403	3	1,5	7,5	50	3	2,85	6	○	
8521404	4	2	10	50	4	3,85	6	○	
8521405	5	2,5	12,5	50	5	4,8	6	●	
8521406	6	3	15	50	6	5,7	6	○	
8521408	8	4	20	60	8	7,6	8	●	
8521410	10	5	25	70	10	9,5	10	○	
8521412	12	6	30	80	12	11,4	12	●	

FX-HS-EBDS Performance Data

Size	R3 x 15	Milling Method	Pocket milling
Mat.	50 HRC	Depth of Cut	ap = 1,5 mm Pf = 2,5 mm
Cutting Speed	282,6 m/min (15.000 min -1)	Coolant	Air Blow
Feed	4.500 mm/min (0,15 mm/t)	Machine	Hor. Machining Center (BT40)



Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○	◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

FX-MG-EBD

FX
- High performance
- 2 flutes
- For general use

FX
- High performance
- 2 Schneiden
- Für allgemeine Anwendungen

FX
- Alta prestazione
- 2 denti
- Per applicazioni generali

FX
- Haute performance
- 2 lèvres
- Pour application universelle

FX
- Yüksek performans
- 2 ağızlı
- Genel uygulamalar için

FX
- High performance
- 2 skær
- Til generelt brug

FX
- High performance
- 2 skär
- För diverse applikationer

FX
- Altas prestaciones
- 2 labios
- Para aplicaciones generales

FX
- Высокая производительность
- 2 режущих кромки
- Общего назначения

FX
- Wysoka wydajność
- 2 ostrzowy
- Do zastosowań ogólnych

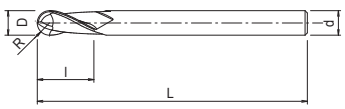
GO TO LIVE STOCK CHECK

FX

CARBIDE

WXL-EBD (page D.42) is OSG's new offering for this tool

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | ± 0.01 | min⁻¹ D.234





EDP	D	R	L	l	d	Stock	Price
8521010	1	0,5	50	2,5	4	○	
8521012	1,2	0,6	50	3	4	○	
8521014	1,4	0,7	50	3,5	4	○	
8521015	1,5	0,75	50	4	4	○	
8521016	1,6	0,8	50	4	4	○	
8521018	1,8	0,9	50	4,5	4	○	
8521020	2	1	50	5	6	○	
8521025	2,5	1,25	60	6	6	○	
8521030	3	1,5	60	8	6	●	
8521035	3,5	1,75	70	8	6	○	
8521040	4	2	70	8	6	○	
8521041	4,4	2	60	8	4	○	
8521045	4,5	2,25	80	10	6	○	
8521050	5	2,5	80	10	6	○	
8521055	5,5	2,75	90	12	6	○	
8521060	6	3	90	12	6	●	
8521065	6,5	3,25	90	14	6	○	
8521070	7	3,5	90	14	6	○	
8521075	7,5	3,75	90	14	6	○	
8521080	8	4	100	14	8	●	
8521085	8,5	4,25	100	18	8	○	
8521090	9	4,5	100	18	8	○	
8521095	9,5	4,75	100	18	8	○	
8521100	10	5	100	18	10	○	
8521110	11	5,5	100	22	10	○	
8521120	12	6	110	22	12	○	
8521130	13	6,5	110	26	12	○	
8521140	14	7	110	26	12	○	
8521150	15	7,5	110	30	12	○	
8521160	16	8	140	30	16	○	
8521180	18	9	140	34	16	○	
8521200	20	10	160	38	20	○	
8521250	25	12,5	180	50	25	○	
8521300	30	15	180	55	25	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-SS-EBD

FX
- High performance
- 2 flutes
- Slim shank

FX
- High performance
- 2 Schneiden
- Schaftdurchmesser kleiner als Schneide

FX
- Alta prestazione
- 2 denti
- Diametro del gambo inferiore al dia. del taglio

FX
- Haute performance
- 2 lèvres
- Dia. Queue inf. dia coupe

FX
- Yüksek performans
- 2 ağızlı
- İnce şaft

FX
- High performance
- 2 skær
- Tyndt skaft

FX
- High performance
- 2 skär
- Helreducerat skaft

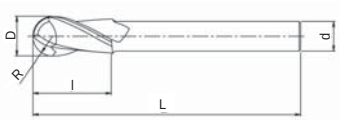
FX
- Altas prestaciones
- 2 labios
- Cuello delgado

FX
- Высокая производительность
- 2 режущих кромки
- Утоненный хвостовик

FX
- Wysoka wydajność
- 2 ostrzowy
- Średnica chwytu mniejsza od ostrza

GO TO LIVE STOCK CHECK

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | ± 0.01 | min⁻¹ D.235





EDP	D	R	L	l	d	Stock	Price
8408556	6	3	120	12	5	●	
8408558	8	4	130	14	7	●	
8408560	10	5	150	18	9	●	
8408562	12	6	150	22	11	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-EBD-6

FX
- High performance
- 2 flutes
- Shank dia. 6

FX
- High performance
- 2 Schneiden
- Schaftdurchmesser dia. 6

FX
- Alta prestazione
- 2 denti
- Diametro del gambo dia. 6

FX
- Haute performance
- 2 lèvres
- Diamètre queue dia. 6

FX
- Yüksek performans
- 2 ağızlı
- Gövde çapı 6 mm

FX
- High performance
- 2 skær
- Skaft dia. 6

FX
- High performance
- 2 skär
- Skaft dia. 6

FX
- Altas prestaciones
- 2 labio
- Cuello dia. 6

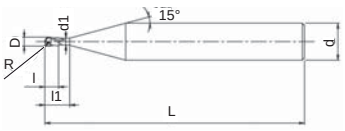
FX
- Высокая производительность
- 2 режущих кромки
- Хвостовик Ø6 мм

FX
- Wysoka wydajność
- 2 ostrzowy
- Chwyt 6mm

GO TO LIVE STOCK CHECK

WXL-EBD (page D.42) is OSG's new offering for this tool

CARBIDE | FX | 30° | SHRINK FIT | ULTRA HIGH SPEED | ± 0.005 | min⁻¹ D.235





EDP	D	R	l1	L	l	d1	d	Stock	Price
8544402	0,2	0,1	-	50	0,2	-	6	○	
8544403	0,3	0,15	-	50	0,3	-	6	●	
8544404	0,4	0,2	-	50	0,4	-	6	○	
8544405	0,5	0,25	1,5	50	0,5	0,45	6	●	
8544806	0,6	0,3	1,1	50	0,6	0,55	6	●	
8544406	0,6	0,3	1,8	50	0,6	0,55	6	●	
8544808	0,8	0,4	1,5	50	0,8	0,75	6	○	
8544408	0,8	0,4	2,4	50	0,8	0,75	6	○	
8544810	1	0,5	1,8	50	1	0,95	6	●	
8544410	1	0,5	2,5	50	1	0,95	6	○	
8544812	1,2	0,6	2,2	50	1,2	1,15	6	○	
8544412	1,2	0,6	3	50	1,2	1,15	6	●	
8544414	1,4	0,7	3,5	50	1,4	1,35	6	●	
8544815	1,5	0,75	2,7	50	1,5	1,45	6	○	
8544415	1,5	0,75	3,8	50	1,5	1,45	6	●	
8544416	1,6	0,8	4	50	1,6	1,55	6	○	
8544418	1,8	0,9	4,5	50	1,8	1,75	6	●	
8544820	2	1	3,6	50	2	1,95	6	●	
8544420	2	1	5	50	2	1,95	6	●	
8544425	2,5	1,25	5	50	2,5	2,40	6	●	
8544430	3	1,5	6	50	3	2,85	6	●	
8544435	3,5	1,75	6	50	3,5	3,35	6	●	
8544440	4	2	6	50	4	3,85	6	●	
8544450	5	2,5	7,5	50	5	4,85	6	○	
8544460	6	3	9	50	6	5,85	6	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-LN-EBD-6

FX
- High performance
- 2 flutes
- Shank dia. 6

FX
- High performance
- 2 Schneiden
- Schaftdurchmesser dia. 6

FX
- Alta prestazione
- 2 denti
- Diametro del gambo dia. 6

FX
- Haute performance
- 2 lèvres
- Diamètre queue dia. 6

FX
- Yüksek performans
- 2 ağızlı
- Gövde çapı 6 mm

FX
- High performance
- 2 skær
- Skaft dia. 6

FX
- High performance
- 2 skär
- Skaft dia. 6

FX
- Altas prestaciones
- 2 labio
- Cuello dia. 6

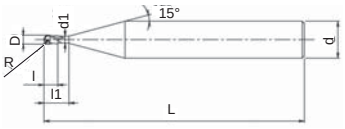
FX
- Высокая производительность
- 2 режущих кромки
- Хвостовик Ø6 мм

FX
- Wysoka wydajność
- 2 ostrzowy
- Chwyt 6mm

GO TO LIVE STOCK CHECK

WXL-LN-EBD (page D.45~D.50) is OSG's new offering for this tool

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | ± 0.005 | min⁻¹ D.236~239





EDP	D	R	l1	L	l	d1	d	Stock	Price
8544505	0,5	0,25	2,5	60	0,5	0,45	6	○	
8544506	0,6	0,3	3	60	0,6	0,55	6	●	
8544508	0,8	0,4	4	60	0,8	0,75	6	●	
8544510	1	0,5	5	60	1	0,95	6	○	
8544512	1,2	0,6	6	60	1,2	1,15	6	○	
8544514	1,4	0,7	7	60	1,4	1,35	6	●	
8544515	1,5	0,75	7,5	60	1,5	1,45	6	●	
8544516	1,6	0,8	8	60	1,6	1,55	6	●	
8544518	1,8	0,9	9	60	1,8	1,75	6	●	
8544520	2	1	10	60	2	1,95	6	●	
8544525	2,5	1,25	12,5	60	2,5	2,40	6	●	
8544530	3	1,5	15	70	3	2,85	6	●	
8544535	3,5	1,75	17,5	70	3,5	3,35	6	●	
8544540	4	2	20	70	4	3,85	6	●	
8544550	5	2,5	25	80	5	4,85	6	●	
8544560	6	3	30	90	6	5,85	6	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○			

● Delivery from stock
○ Available on short notice

FX-PC-MG-EBD

FX
- High performance
- 2 flutes
- Pencil neck

FX
- High performance
- 2 Schneiden
- Konischer Schaft

FX
- Alta prestazione
- 2 denti
- Riduzione conica

FX
- Haute performance
- 2 lèvres
- Dégagement conique

FX
- Yüksek performans
- 2 ağızlı
- Kalem boyunlu

FX
- High performance
- 2 skær
- Pencil neck

FX
- High performance
- 2 skär
- Lång reducering

FX
- Altas prestaciones
- 2 labio
- Mango refozado con cuello conico

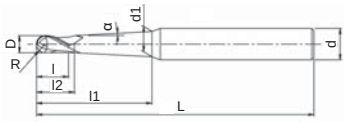
FX
- Высокая производительность
- 2 режущих кромки
- Коническая шейка

FX
- Wysoka wydajność
- 2 ostrzowy
- Szyjka ołówkowa

GO TO LIVE STOCK CHECK

WXL-PC-EBD (page D.51~D.54) is OSG's new offering for this tool







EDP	D	R	L	l	l1	l2	α	d1	d	Stock	Price
8541410	1	0,5	60	2,5	20	4	5°	3,8	6	●	
8541414	1	0,5	70	2,5	20	4	1°30'	1,8	6	○	
8541412	1	0,5	80	2,5	40	4	3°	4,8	6	○	
8541530	2	1	60	5	20	7	5°	4,3	6	●	
8541534	2	1	70	5	20	7	1°30'	2,7	6	○	
8541532	2	1	80	5	40	7	3°	5,5	6	○	
8541571	3	1,5	70	8	30	10,5	3°	5	6	○	
8541573	3	1,5	90	8	50	10,5	1°30'	5,1	6	○	
8541611	4	2	70	8	28	10,5	3°	6	6	○	
8541613	4	2	90	8	48	10,5	1°30'	6	6	○	
8541653	5	2,5	90	10	40	12,5	3°	8	8	●	
8541655	5	2,5	110	10	60	12,5	1°30'	7,5	8	●	
8541693	6	3	90	12	33,5	14,5	3°	8	8	●	
8541695	6	3	110	12	52	14,5	1°30'	8	8	●	
8541774	8	4	100	14	35,5	16,5	3°	10	10	○	
8541776	8	4	120	14	54,5	16,5	1°30'	10	10	○	
8541855	10	5	110	18	39,5	20,5	3°	12	12	○	
8541857	10	5	130	18	58,5	20,5	1°30'	12	12	○	
8541898	12	6	140	22	60	25	3°	16	16	○	
8541899	12	6	160	22	80	25	1°30'	14,9	16	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-CR-EDS-6

FX
- High performance
- 2 flutes
- Shank dia. 6

FX
- High performance
- 2 Schneiden
- Schaftdurchmesser dia. 6

FX
- Alta prestazione
- 2 denti
- Diametro del gambo dia. 6

FX
- Haute performance
- 2 lèvres
- Diamètre queue dia. 6

FX
- Yüksek performans
- 2 ağızlı
- Gövde çapı 6 mm

FX
- High performance
- 2 skær
- Skaft dia. 6

FX
- High performance
- 2 skär
- Skaft dia. 6

FX
- Altas prestaciones
- 2 labio
- Cuello dia. 6

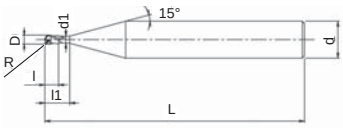
FX
- Высокая производительность
- 2 режущих кромки
- Хвостовик Ø6 мм

FX
- Wysoka wydajność
- 2 ostrzowy
- Chwyt 6mm

GO TO LIVE STOCK CHECK

WXL-CR-EDS-6 (page D.43) is OSG's new offering for this tool

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | 0~-0.0015





EDP	D	l1	R	L	l	d1	d	Le 0,5°	Le 1°	Le 1,5°	Le 2°	Le 2,5°	Le 3°	Stock	Price
8545706	0,6	1,8	0,1	50	0,9	0,55	6	1,86	1,92	1,99	2,07	2,15	2,23	●	
8545708	0,8	2,4	0,1	50	1,2	0,75	6	2,48	2,56	2,66	2,76	2,86	2,98	●	
8545710	1	2,5	0,1	50	1,5	0,95	6	2,58	2,67	2,77	2,85	2,98	3,1	●	
8545712	1,2	3	0,1	50	1,8	1,15	6	3,1	3,2	3,32	3,45	3,58	3,72	●	
8545714	1,4	3,5	0,1	50	2,1	1,35	6	3,61	3,74	3,87	4,02	4,18	4,35	●	
8545715	1,5	3,8	0,1	50	2,3	1,45	6	3,92	4,06	4,21	4,36	4,54	4,72	○	
8545716	1,6	4	0,1	50	2,4	1,55	6	4,13	4,27	4,43	4,59	4,77	4,97	○	
8545718	1,8	4,5	0,1	50	2,7	1,75	6	4,62	4,81	4,98	5,17	5,37	5,59	●	
8545720	2	5	0,1	50	3	1,95	6	5,16	5,34	5,54	5,74	5,97	6,21	●	
8545725	2,5	5	0,1	50	3,7	2,4	6	5,16	5,34	5,54	5,74	5,97	6,21	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-CR-MG-EDS

FX
- High performance
- 2 flutes
- Short cutlength

FX
- High performance
- 2 Schneiden
- Schneidenlänge Kurz

FX
- Alta prestazione
- 2 denti
- Lunghezza di taglio corta

FX
- Haute performance
- 2 lèvres
- Long. coupe courte

FX
- Yüksek performans
- 2 ağızlı
- Kısa kesme uzunluğu

FX
- High performance
- 2 skær
- Kort skærlængde

FX
- High performance
- 2 skär
- Kort skärlängd

FX
- Altas prestaciones
- 2 labio
- Longitud de corte corto

FX
- Высокая производительность
- 2 режущих кромки
- Короткая режущая часть

FX
- Wysoka wydajność
- 2 ostrzowy
- Krótka część robocza

GO TO LIVE STOCK CHECK

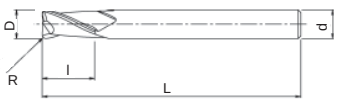
FX

CARBIDE

FX

CARBIDE

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | D > 12 0~-0.03 | D ≤ 12 0~-0.02 | min⁻¹ D.241





EDP	D	R	L	l	d	Stock	Price
8543831	3	0,2	60	8	6	●	
8543833	3	0,5	60	8	6	●	
8543841	4	0,2	70	11	6	●	
8543843	4	0,5	70	11	6	●	
8543845	4	1	70	11	6	●	
8543851	5	0,2	80	13	6	●	
8543853	5	0,5	80	13	6	●	
8543855	5	1	80	13	6	●	
8543861	6	0,2	90	13	6	●	
8543863	6	0,5	90	13	6	●	
8543865	6	1	90	13	6	●	
8543867	6	1,5	90	13	6	●	
8543869	6	2	90	13	6	●	
8543883	8	0,5	100	19	8	●	
8543885	8	1	100	19	8	●	
8543887	8	1,5	100	19	8	●	
8543889	8	2	100	19	8	●	
8543903	10	0,5	100	22	10	●	
8543905	10	1	100	22	10	●	
8543907	10	1,5	100	22	10	●	
8543909	10	2	100	22	10	●	
8543913	10	3	100	22	10	●	
8543933	12	0,5	110	26	12	●	
8543935	12	1	110	26	12	●	
8543937	12	1,5	110	26	12	●	
8543939	12	2	110	26	12	●	
8543943	12	3	110	26	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	○	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

● Delivery from stock
○ Available on short notice

FX-CR-MG-EMS

FX
- High performance
- 4 flutes
- Short cutlength

FX
- High performance
- 4 Schneiden
- Schneidenlänge Kurz

FX
- Alta prestazione
- 4 denti
- Lunghezza di taglio corta

FX
- Haute performance
- 4 lèvres
- Long. coupe courte

FX
- Yüksek performans
- 4 ağızlı
- Kısa kesme uzunluğu

FX
- High performance
- 4 skær
- Kort skærlængde

FX
- High performance
- 4 skär
- Kort skärlängd

FX
- Altas prestaciones
- 4 labio
- Longitud de corte corto

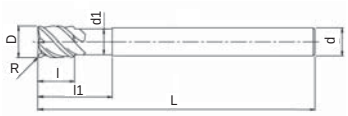
FX
- Высокая производительность
- 4 режущих кромки
- Короткая режущая часть

FX
- Wysoka wydajność
- 4 ostrzowy
- Krótka część robocza

GO TO LIVE STOCK CHECK

FX

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | CC | D > 12 0~-0.03 | D ≤ 12 0~-0.02





EDP	D	R	L	l	l1	d	d1	Stock	Price
W0280011A	4	0,5	45	4	12	6	3,8	○	
W0280012A	6	0,5	50	6	18	6	5,8	○	
W0280013A	6	1	50	6	18	6	5,8	○	
W0280014A	8	0,5	60	8	24	8	7,8	○	
W0280015A	8	1	60	8	24	8	7,8	○	
W0280016A	10	0,5	70	10	30	10	9,7	○	
W0280017A	10	1	70	10	30	10	9,7	○	
W0280018A	12	1	75	12	36	12	11,7	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○		○	○		

FXS
- Ultra high performance
- Multiflutes
- Stub length
- For both general and hardened steel

FXS
- Ultra high performance
- Multi-Schneiden
- Kurzer Hals
- Miniatur-Konusfräser

FXS
- Ultra Alta prestazione
- Multi-denti
- Serie corta
- Fresa multidenti

FXS
- Ultra haute performance
- Multi-lèvres
- Série courte
- Fraises multilèvres

FXS
- Yüksek performans
- Çok ağızlı parmak freze
- Saplama uzunluğu
- Genel ve sertleştirilmiş çelikler için

FXS
- Ultra high performance
- Flérskærs endefræsere
- Stub længde
- Til hærdet stål samt generelt brug

FXS
- Ultra high performance
- Flerskärsfräs
- Kort utförande
- För allround och härdat stål

FXS
- Ultra altas prestaciones
- Multi labio
- Serie corta
- Para aceros duros y muy duros

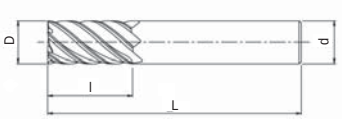
FXS
- Высокая производительность
- Многозубая
- короткая длина
- Многофункциональная концевая фреза

FXS
- Wysoka wydajność
- Wieloostrzowy
- Seria krótka
- Do ogólnego stosowania i stali hartowanej

GO TO LIVE STOCK CHECK

WXS-EMS (page D.62) is OSG's new offering for this tool







EDP	D	L	l	d	ZΔ	Stock	Price
8517510	1	60	3,5	6	4	●	
8517515	1,5	60	5	6	4	●	
8517520	2	60	7	6	4	●	
8517525	2,5	60	8	6	4	○	
8517530	3	60	10	6	4	●	
8517535	3,5	60	12	6	4	●	
8517540	4	60	12	6	4	○	
8517545	4,5	60	15	6	4	○	
8517550	5	60	15	6	4	●	
8517555	5,5	60	15	6	4	○	
8517560	6	60	15	6	6	●	
8517580	8	70	20	8	6	●	
8517600	10	80	25	10	6	●	
8517620	12	90	30	12	6	●	
8517640	14	100	35	16	6	○	
8517650	15	105	40	16	6	○	
8517660	16	105	40	16	6	●	
8517680	18	110	40	20	6	○	
8517700	20	110	45	20	6	●	
8517750	25	125	50	25	8	○	
8517800	30	140	55	32	8	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○	○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			○	○		

● Delivery from stock
○ Available on short notice

FXS-LS-EMS

FXS
- Ultra high performance
- Multiflutes
- Stub length
- For both general and hardened steel

FXS
- Ultra high performance
- Multi-Schneiden
- Kurzer Hals
- Miniatur-Konusfräser

FXS
- Ultra Alta prestazione
- Multi-denti
- Serie corta
- Fresa multidenti

FXS
- Ultra haute performance
- Multi-lèvres
- Série courte
- Fraises multilèvres

FXS
- Yüksek performans
- Çok ağızlı parmak freze
- Saplama uzunluğu
- Genel ve sertleştirilmiş çelikler için

FXS
- Ultra high performance
- Flérskærs endefræsere
- Stub længde
- Til hærdet stål samt generelt brug

FXS
- Ultra high performance
- Flerskärsfräs
- Kort utförande
- För allround och härdat stål

FXS
- Ultra altas prestaciones
- Multi labio
- Serie corta
- Para aceros duros y muy duros

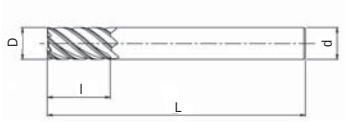
FXS
- Высокая производительность
- Многозубая
- короткая длина
- Многофункциональная концевая фреза

FXS
- Ultra wysoka wydajność
- Wieloostrzowy
- Seria krótka
- Do ogólnego stosowania i stali hartowanej

GO TO LIVE STOCK CHECK

FXS

CARBIDE | FX | 45° | SHRINK FIT | HIGH SPEED | CC | D > 12 0~-0.03 | D ≤ 12 0~-0.02





EDP	D	L	l	d	ZΔ	Stock	Price
8538530	3	80	10	6	4	○	
8538540	4	80	12	6	4	○	
8538550	5	80	15	6	4	○	
8538560	6	90	15	6	6	○	
8538580	8	100	20	8	6	○	
8538600	10	100	25	10	6	○	
8538620	12	110	30	12	6	○	
8538660	16	140	40	16	6	○	
8538680	18	160	40	16	6	○	
8538700	20	160	45	20	6	○	
8538720	22	180	45	20	6	○	
8538750	25	180	50	25	8	○	
8538780	28	200	55	25	8	○	
8538800	30	200	55	32	8	○	
8538900	30	200	55	25	8	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○	○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			○	○		

FXS-EML

FXS
- Ultra high performance
- Multiflutes
- Stub length
- For both general and hardened steel

FXS
- Ultra high performance
- Multi-Schneiden
- Kurzer Hals
- Miniatur-Konusfräser

FXS
- Ultra Alta prestazione
- Multi-denti
- Serie corta
- Fresa multidenti

FXS
- Ultra haute performance
- Multi-lèvres
- Série courte
- Fraises multilèvres

FXS
- Yüksek performans
- Çok ağızlı parmak freze
- Saplama uzunluğu
- Genel ve sertleştirilmiş çelikler için

FXS
- Ultra high performance
- Flerskærs endefræsere
- Stub længde
- Til hærdet stål samt generelt brug

FXS
- Ultra high performance
- Flerskärsfräs
- Kort utförande
- För allround och härdat stål

FXS
- Ultra altas prestaciones
- Multi labio
- Serie corta
- Para aceros duros y muy duros

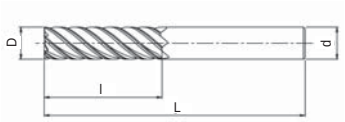
FXS
- Высокая производительность
- Многозубая
- короткая длина
- Многофункциональная концевая фреза

FXS
- Ultra wysoka wydajność
- Wieloostrzowy
- Seria krótka
- Do ogólnego stosowania i stali hartowanej

GO TO LIVE STOCK CHECK

FXS

CARBIDE | FX | 45° | SHRINK FIT | CC | 0~-0.03





EDP	D	L	l	d	ZΔ	Stock	Price
8518560	6	70	25	6	6	●	
8518580	8	80	35	8	6	●	
8518600	10	100	45	10	6	○	
8518620	12	110	55	12	6	○	
8518660	16	125	65	16	6	○	
8518700	20	140	75	20	6	○	
8518750	25	165	90	25	8	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			○	○		

● Delivery from stock
○ Available on short notice

FXS
- Ultra high performance
- 4 flutes
- Extra long shank
- For deep wall applications

FXS
- Ultra high performance
- 4 Schneiden
- Extra langer Schaft
- Für Taschenfräsen

FXS
- Ultra Alta prestazione
- 4 denti
- Gambo extra lungo
- Per fresature di pareti profondi

FXS
- Ultra haute performance
- 4 lèvres
- Queue extra longue
- Pour rainurage

FXS
- Yüksek performans
- 4 ağızlı
- Ekstra uzun şaft
- Derin duvar uygulamaları için

FXS
- Ultra high performance
- 4 skær
- Ekstra langt skaft
- Dyb sidefræsning

FXS
- Ultra high performance
- 4 skär
- Skaft extra lång
- Djup valsfräsning

FXS
- Ultra altas prestaciones
- 4 labios
- Mango extra-largo
- Fresado de paredes profundas

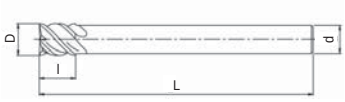
FXS
- Высокая производительность
- 4 режущих кромки
- Особо длинный хвостовик
- Фрезерование глубоких стенок

FXS
- Ultra wysoka wydajność
- 4 ostrzowy
- Extra długi chwyt
- Do głębokich aplikacji ściennych

GO TO LIVE STOCK CHECK

FXS

CARBIDE | FX | ±45° | SHRINK FIT | CC | 0~-0.02 | min⁻¹ D.243





EDP	D	L	l	d	Stock	Price
8546600	10	130	15	8	●	
8546620	12	150	18	10	●	
8546640	14	160	21	12	●	
8546680	18	180	27	16	●	
8546720	22	200	33	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			○	○		

FXS-EQD

FXS
- High performance
- 2 flutes
- 220° cutting edge

FXS
- High performance
- 2 Schneiden
- 220° Kugel

FXS
- Alta prestazione
- 2 denti
- Tagliente a 220°

FXS
- Haute performance
- 2 lèvres
- Sphérique sur 220°

FXS
- Yüksek performans
- 2 ağızlı
- 220° kesme kenarı

FXS
- High performance
- 2 skær
- 220° skærevinkel

FXS
- High performance
- 2 skär
- 220° skärvinkel

FXS
- Altas prestaciones
- 2 labio
- 220° Filo de corte

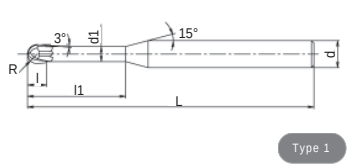
FXS
- Высокая производительность
- 2 режущих кромки
- Режущая кромка 220

FXS
- Wysoka wydajność
- 2 ostrzowy
- 220 ° ostrze

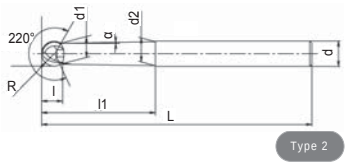
GO TO LIVE STOCK CHECK

FXS

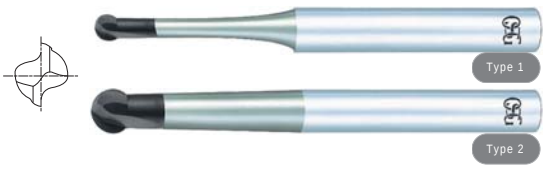
CARBIDE | FX | SHRINK FIT | min⁻¹ D.244



Type 1



Type 2


Type 1

Type 2

EDP	D	R	L	l	l1	d1	d2	α	d	Type	Stock	Price
8544005	1	0,5	60	0,7	5	0,85	0,85	-	6	1	●	
8544010	2	1	60	1,5	10	1,7	1,7	-	6	1	●	
8544015	3	1,5	70	2,3	15	2,7	2,7	-	6	1	●	
8544020	4	2	70	3	20	3,7	3,7	-	6	1	●	
8544030	6	3	90	4	30	4,6	5,9	1°30'	6	2	●	
8544040	8	4	100	5,4	40	6,2	7,9	1°30'	8	2	●	
8544050	10	5	110	6,7	50	7,7	9,9	1°30'	10	2	●	

CARBIDE

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			○	○		

● Delivery from stock
○ Available on short notice

FXS-EBT

FXS
- High performance
- Rigid end mills for hardened steel
- Feed can be increased with 50%

FXS
- High performance
- Stabile Schneidengeometrie für Kopierfräsen
- 50% Vorschubsteigerung möglich

FXS
- Alta prestazione
- Frese rigide per acciaio trattato
- L'avanzamento puo essere aumentato del 50%

FXS
- Haute performance
- Fraise rigide pour acier traité
- Avances peuvent êtres augmentées de 50%

FXS
- Yüksek performans
- Sert çelikler için rijit frezeleme
- İlerleme %50 arttırılabilir

FXS
- High performance
- Udviklet til hærdet stål
- Tilspændingen kan muligvis øges med 50%

FXS
- High performance
- Utvecklat för härdat stål
- Matningen kan höjas med upp till 50%

FXS
- Altas prestaciones
- Fresa rígida para acero templado
- El avance se puede incrementar con un 50%

FXS
- Высокая производительность
- жесткая концевая фреза для закаленных сталей
- подача может быть увеличена на 50% процентов

FXS
- Wysoka wydajność
- Sztywny frez do stali hartowanej
- Posów można zwiększyć o 50%

GO TO LIVE STOCK CHECK

FXS

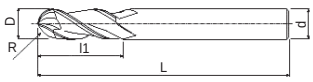
CARBIDE

HIGH SPEED

30°

0~-0.0015

min⁻¹ D.244





EDP	D	R	L	l1	d	Stock	Price
8518106	6	3	50	12	6	●	
8518108	8	4	50	14	8	●	
8518110	10	5	70	18	10	●	
8518112	12	6	80	22	12	●	
8518116	16	8	100	30	16	●	
8518120	20	10	110	38	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○		
Cu	Al	Graphite	Ti	HRS	Plast.	

FXS-HS-EBM

FXS
- High performance
- Rigid end mills for hardened steel
- High feed and speed
- Exterior mold roughing milling

FXS
- High performance
- Stabile Schneidengeometrie für Kopierfräsen
- HSC, allgemeine Anwendung
- Für Formen Aussenbearbeitung

FXS
- Alta prestazione
- Frese rigide per acciaio trattato
- Alti avanzamenti e velocita di taglio
- Sgrossature, in contornatura

FXS
- Haute performance
- Fraise rigide pour acier traité
- Hautes avances et vitesses de coupe
- Ebauche, usinage de moule extérieur

FXS
- Yüksek performans
- Sert çelikler için rijit frezeleme
- Yüksek ilerleme ve kesme hizi
- Dış kalıp kaba frezeleme

FXS
- High performance
- Udviklet til hærdet stål
- Høj tilspænding og omdrejninger
- Skrubfræsning af udvendig formpart

FXS
- High performance
- Utvecklat för härdat stål
- Höga varvtal och matningar
- Skrubbfräsning av utvändig formpart

FXS
- Altas prestaciones
- Fresa rígida para acero templado
- Alto avance y alta velocidad
- Fresado de desbaste de molde exterior

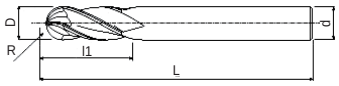
FXS
- Высокая производительность
- жесткая концевая фреза для закаленных сталей
- Высокая подача и скорость
- Наружная черновая обработка прессформ

FXS
- Wysoka wydajność
- Sztywny frez do stali hartowanej
- Wysoki posuw i prędkość
- Frezowanie zewnętrzne zgrubne form

GO TO LIVE STOCK CHECK

FXS

CARBIDE | FX | 30° | HIGH SPEED | R | R ± 0.0015 | min⁻¹ D.245-246





EDP	D	R	L	l1	d	Stock	Price
8521706	6	3	50	12	6	●	
8521708	8	4	50	14	8	●	
8521710	10	5	70	18	10	●	
8521712	12	6	80	22	12	●	
8521716	16	8	100	30	16	●	
8521720	20	10	110	38	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	◎		
Cu	Al	Graphite	Ti	HRS	Plast.	

● Delivery from stock
○ Available on short notice

FXS-EBM

FXS
- High performance
- Rigid end mills for hardened steel
- High feed and speed
- Exterior mold roughing milling

FXS
- High performance
- Stabile Schneidengeometrie für Kopierfräsen
- HSC, allgemeine Anwendung
- Für Formen Aussenbearbeitung

FXS
- Alta prestazione
- Frese rigide per acciaio trattato
- Alti avanzamenti e velocita di taglio
- Sgrossature, in contornatura

FXS
- Haute performance
- Fraise rigide pour acier traité
- Hautes avances et vitesses de coupe
- Ebauche, usinage de moule extérieur

FXS
- Yüksek performans
- Sert çelikler için rijit frezeleme
- Yüksek ilerleme ve kesme hizi
- Dış kalıp kaba frezeleme

FXS
- High performance
- Udviklet til hærdet stål
- Høj tilspænding og omdrejninger
- Skrubfræsning af udvendig formpart

FXS
- High performance
- Utvecklat för härdat stål
- Höga varvtal och matningar
- Skrubbfräsning av utvändig formpart

FXS
- Altas prestaciones
- Fresa rígida para acero templado
- Alto avance y alta velocidad
- Fresado de desbaste de molde exterior

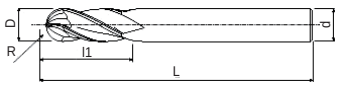
FXS
- Высокая производительность
- жесткая концевая фреза для закаленных сталей
- Высокая подача и скорость
- Наружная черновая обработка прессформ

FXS
- Wysoka wydajność
- Sztywny frez do stali hartowanej
- Wysoki posuw i prędkość
- Frezowanie zewnętrzne zgrubne form

GO TO LIVE STOCK CHECK

FXS

CARBIDE | FX | 30° | SHRINK FIT | HIGH SPEED | ± 0.0015 | min^{-1} D.246





EDP	D	R	L	l1	d	Stock	Price
8518206	6	3	90	12	6	●	
8518208	8	4	100	14	8	●	
8518210	10	5	100	18	10	●	
8518212	12	6	110	22	12	●	
8518216	16	8	140	30	16	●	
8518220	20	10	160	38	20	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	◎		
Cu	Al	Graphite	Ti	HRS	Plast.	

● Delivery from stock
○ Available on short notice

FXS-HS-PKE

FXS
- High performance
- 2 flutes
- For pocket applications

FXS
- High performance
- 2 Schneiden
- Für Taschenfräsen

FXS
- Alta prestazione
- 2 denti
- Per sgrossatura in cavità

FXS
- Haute performance
- 2 lèvres
- Pour ébauche poches

FXS
- Yüksek performans
- 2 ağızlı
- Cep boşaltma uygulamaları için

FXS
- High performance
- 2 skærs
- For lomme skrubfræsning

FXS
- High performance
- 2 skär
- For skrubbfräsning i kavitet

FXS
- Altas prestaciones
- 2 labios
- Para desbaste de cajeras

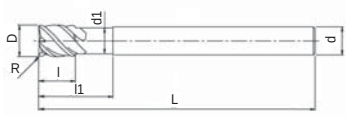
FXS
- Высокая производительность
- 2 ух зубая со
- Фрезерование карманов

FXS
- Wysoka wydajność
- 2 ostrzowy
- Obróbka kieszeni

GO TO LIVE STOCK CHECK

FXS

CARBIDE | FX | ±45° | SHRINK FIT | HIGH SPEED | 0~-0.02 | min⁻¹ D.249-250





EDP	D	R	L	l	l1	d1	d	Stock	Price
8535016	6	0,5	50	9	15	5,7	6	●	
8535216	6	1	50	9	15	5,7	6	●	
8535018	8	0,5	60	12	20	7,6	8	●	
8535218	8	1	60	12	20	7,6	8	●	
8535020	10	0,5	70	15	25	9,5	10	●	
8535220	10	1	70	15	25	9,5	10	●	
8535022	12	0,5	80	18	30	11,4	12	●	
8535222	12	1	80	18	30	11,4	12	●	
8535226	16	1	100	24	40	15,2	16	●	
8535626	16	2	100	24	40	15,2	16	●	
8535826	16	3	100	24	40	15,2	16	●	
8535230	20	1	110	30	50	19	20	●	
8535630	20	2	110	30	50	19	20	●	
8535830	20	3	110	30	50	19	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			◎	◎		

● Delivery from stock
○ Available on short notice

FXS-PKE

FXS
- High performance
- 4 flutes
- For pocket applications

FXS
- High performance
- 4 Schneiden
- Für Taschenfräsen

FXS
- Alta prestazione
- 4 denti
- Per sgrossatura in cavità

FXS
- Haute performance
- 4 lèvres
- Pour ébauche poches

FXS
- Yüksek performans
- 4 ağızlı
- Cep boşaltma uygulamaları için

FXS
- High performance
- 4 skærs
- For lomme skrubfræsning

FXS
- High performance
- 4 skär
- For skrubbfräsning i kavitet

FXS
- Altas prestaciones
- 4 labios
- Para desbaste de cajeras

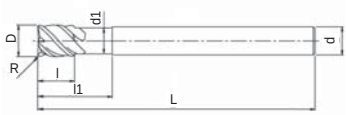
FXS
- Высокая производительность
- 4 ух зубая со
- Фрезерование карманов

FXS
- Wysoka wydajność
- 4 ostrzowy
- Obróbka kieszeni

GO TO LIVE STOCK CHECK

FXS

CARBIDE | FX | ±45° | SHRINK FIT | CC | 0~-0.02 | min^{-1} D.247-248





EDP	D	R	L	l	l1	d1	d	Stock	Price
8547803	3	0,2	60	5	9	2,85	6	●	
8547853	3	0,2	70	5	15	2,85	6	●	
8548003	3	0,5	60	5	9	2,85	6	●	
8548053	3	0,5	70	5	15	2,85	6	●	
8547804	4	0,2	70	6	12	3,8	6	●	
8547854	4	0,2	80	6	20	3,8	6	●	
8548004	4	0,5	70	6	12	3,8	6	●	
8548054	4	0,5	80	6	20	3,8	6	●	
8547805	5	0,2	80	8	15	4,8	6	●	
8547855	5	0,2	90	8	25	4,8	6	●	
8548005	5	0,5	80	8	15	4,8	6	●	
8548055	5	0,5	90	8	25	4,8	6	●	
8548006	6	0,5	90	9	18	5,8	6	●	
8548056	6	0,5	100	9	30	5,8	6	●	
8548206	6	1	90	9	18	5,8	6	●	
8548256	6	1	100	9	30	5,8	6	●	
8548008	8	0,5	100	12	24	7,7	8	●	
8548058	8	0,5	110	12	40	7,7	8	●	
8548208	8	1	100	12	24	7,7	8	●	
8548258	8	1	110	12	40	7,7	8	●	
8548010	10	0,5	100	15	30	9,7	10	●	
8548060	10	0,5	120	15	50	9,7	10	●	
8548210	10	1	100	15	30	9,7	10	●	
8548260	10	1	120	15	50	9,7	10	●	
8548610	10	2	100	15	30	9,7	10	●	
8548660	10	2	120	15	50	9,7	10	●	
8548012	12	0,5	110	18	36	11,7	12	●	
8548062	12	0,5	130	18	60	11,7	12	●	
8548212	12	1	110	18	36	11,7	12	●	
8548262	12	1	130	18	60	11,7	12	●	
8548612	12	2	110	18	36	11,7	12	●	
8548662	12	2	130	18	60	11,7	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		◎	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			◎	◎		

● Delivery from stock
○ Available on short notice

FXS-MFE

FXS
- High performance
- Radius at both ends of cutting edge
- For deep wall applications

FXS
- High performance
- Eckenradius vorne und hinten
- Für Taschenfräsen

FXS
- Alta prestazione
- Con raggio anteriore e posteriore
- Per fresature di pareti profondi

FXS
- Haute performance
- A rayon avant et arrière
- Pour fraisage cavité profonde

FXS
- Yüksek performans
- Her iki kesme kenarında radyus
- Derin duvar uygulamaları için

FXS
- High performance
- Radius i begge ender af skæret
- For dyb sidefræsning

FXS
- High performance
- Radie i båda ändar av skäret.
- För djup valsfräsning

FXS
- Altas prestaciones
- Radio a ambos extremos del filo de corte
- Para fresado de paredes profundas

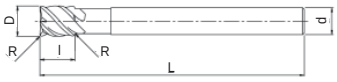
FXS
- Высокая производительность
- Радиус с обеих концов режущей части
- Для обработки глубоких стенок

FXS
- Wysoka wydajność
- Promień przy obu końcach krawędzi tnącej
- Do głębokich aplikacje ściennych

GO TO LIVE STOCK CHECK

FXS

CARBIDE | FX | 45° | SHRINK FIT | HIGH SPEED | CC | 0~-0.02 | min⁻¹ D.251





EDP	D	R	L	l	d	Stock	Price
8546103	10	0,5	130	15	8	●	
8546105	10	1	130	15	8	●	
8546123	12	0,5	150	18	10	●	
8546125	12	1	150	18	10	●	
8546143	14	0,5	160	21	12	●	
8546145	14	1	160	21	12	●	
8546183	18	0,5	180	27	16	●	
8546185	18	1	180	27	16	●	
8546223	22	0,5	200	33	20	●	
8546225	22	1	200	33	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	○		○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			○	○		

● Delivery from stock
○ Available on short notice

FXS-CR-EMS

FXS
- High performance
- 3 flutes
- For hardened steel

FXS
- High performance
- 3 Schneiden
- Für gehärteten Stahl

FXS
- Alta prestazione
- 3 denti
- Per Acciai temprati

FXS
- Haute performance
- 3 lèvres
- Pour des aciers trempés

FXS
- Yüksek performans
- 3 ağızlı
- Sertleştirilmiş çelikler

FXS
- High performance
- 3 skær
- Til hærdet stål

FXS
- High performance
- 3 skär
- Flerskärsfräs

FXS
- Altas prestaciones
- 3 labios
- De acero templado

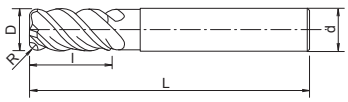
FXS
- Высокая производительность
- Многозубые
- Для закаленных сталей

FXS
- Wysoka wydajność
- 3 ostrzowy
- Stale hartowane

GO TO LIVE STOCK CHECK

WXS-CR-EMS (page D.61) is OSG's new offering for this tool

CARBIDE | FX | 45° | SHRINK FIT | HIGH SPEED | CC | D > 12 0~-0.03 | D ≤ 12 0~-0.02 | min⁻¹ D.252





EDP	D	R	L	l	d	ZΔ	Stock	Price
8545511	6	0,5	90	15	6	6	○	
8545512	6	1	90	15	6	6	○	
8545516	8	0,5	100	20	8	6	○	
8545517	8	1	100	20	8	6	○	
8545518	8	2	100	20	8	6	○	
8545521	10	0,5	100	25	10	6	○	
8545522	10	1	100	25	10	6	○	
8545523	10	2	100	25	10	6	○	
8545526	12	0,5	110	30	12	6	○	
8545527	12	1	110	30	12	6	○	
8545528	12	2	110	30	12	6	○	
8545529	12	3	110	30	12	6	○	
8545531	16	0,5	140	40	16	6	○	
8545532	16	1	140	40	16	6	○	
8545533	16	2	140	40	16	6	○	
8545534	16	3	140	40	16	6	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок -Kanal sayısı

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◎	◎	◎	◎	○	○	◎
Cu	Al	Graphite	Ti	HRS	Plast.	
			○	○		

● Delivery from stock
○ Available on short notice

CBN-SXB

CBN
- High performance
- 2 flutes
- For materials up to and over 68 HRC

CBN
- High performance
- 2 Schneiden
- Für Materialien bis und über 68 HRC

CBN
- Alta prestazione
- 2 denti
- Per materiali fino e oltre 68 HRC

CBN
- Haute performance
- 2 lèvres
- Pour matériaux jusqu'à et supérieur à 68 HRC

CBN
- Yüksek performans
- 2 ağızlı
- 68 HRC ye kadar veya üstü malzemeler için

CBN
- High performance
- 2 skærs
- Til materialer op til og over 68 HRC

CBN
- High performance
- 2 skär
- Till material upp till och över 68 HRC

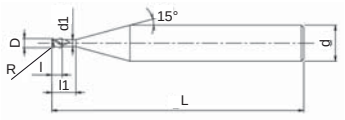
CBN
- Altas prestaciones
- 2 labios
- Para materiales hasta 68 HrC

CBN
- Высокая производительность
- 2 ух зубая со
- Для материалов > 68HRC

CBN
- Wysoka wydajność
- 2 ostrzowy
- Do materiałów do i ponad 68 HRC

GO TO LIVE STOCK CHECK

CBN | 30° | SHRINK FIT | ± 0.01 | ~68 HRC! | min⁻¹ D.253





EDP	D	R	L	l	d	Stock	Price
8525210	2,5	0,5	50	0,6	6	●	
8525220	5	1	50	1,2	6	●	
8525230	6	1,5	50	1,8	6	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	◎	◎	◎	◎		
Cu	Al	Graphite	Ti	HRS	Plast.	

● Delivery from stock
○ Available on short notice

CA-RG-EDS

CA
- High performance
- 2 flutes
- Stub length
- For alu. & Cu alloys

CA
- High performance
- 2 Schneiden
- Kurzer Hals
- Für Alu. und Kupferlegierungen

CA
- Alta prestazione
- 2 denti
- Serie corta
- Per alluminio e rame

CA
- Haute performance
- 2 lèvres
- Série courte
- Pour aluminium et des alliages de cuivre

CA
- Yüksek performans
- 2 ağızlı
- Saplama uzunluğu
- Alüminyum & Cu. alaşımları

CA
- High performance
- 2 skær
- Stub længde
- Til aluminium & kobber legeringer

CA
- High performance
- 2 skär
- Kort skärlängd
- För aluminium & koppar legeringer

CA
- Altas prestaciones
- 2 labios
- Serie corta
- Para aluminio y Aleaciones de cobre

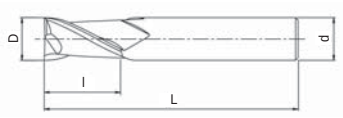
CA
- Высокая производительность
- 2 режущих кромки
- короткая длина
- Для алюминиевых и медных сплавов

CA
- Wysoka wydajność
- 2 ostrzowy
- Seria krótka
- stopy aluminium & Cu

GO TO LIVE STOCK CHECK

CA

CARBIDE | 30° | SHRINK FIT | CC | SF | 0~-0.03 | min⁻¹ D.253





EDP	D	L	l	d	Stock	Price
8502010	1	40	2	4	●	
8502015	1,5	40	4	4	●	
8502020	2	40	6	4	●	
8502025	2,5	40	8	4	●	
8502030	3	45	8	6	●	
8502035	3,5	45	10	6	●	
8502040	4	45	11	6	●	
8502045	4,5	45	11	6	●	
8502050	5	50	13	6	●	
8502055	5,5	50	13	6	●	
8502060	6	50	13	6	●	
8502065	6,5	60	16	8	●	
8502070	7	60	16	8	●	
8502075	7,5	60	16	8	●	
8502080	8	60	19	8	●	
8502085	8,5	70	19	10	●	
8502090	9	70	19	10	●	
8502095	9,5	70	19	10	●	
8502100	10	70	22	10	●	
8502105	10,5	75	22	12	●	
8502110	11	75	22	12	●	
8502115	11,5	75	22	12	●	
8502120	12	75	26	12	●	
8502130	13	85	26	12	●	
8502140	14	85	26	12	●	
8502150	15	90	26	16	●	
8502160	16	100	32	16	●	
8502170	17	100	32	16	●	
8502180	18	100	32	16	●	
8502190	19	100	32	20	●	
8502200	20	105	38	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	◎				○	

● Delivery from stock
○ Available on short notice

CA-RG-EDL

CA
- High performance
- 2 flutes
- Long length
- For alu. & Cu alloys

CA
- High performance
- 2 Schneiden
- Langer Hals
- Für Alu. und Kupferlegierungen

CA
- Alta prestazione
- 2 denti
- Serie lunga
- Per alluminio e rame

CA
- Haute performance
- 2 lèvres
- Série longue
- Pour aluminium et des alliages de cuivre

CA
- Yüksek performans
- 2 ağızlı
- Uzun kesme uzunluğu
- Alüminyum & Cu. alaşımları

CA
- High performance
- 2 skær
- Stub længde
- Til aluminium & kobber legeringer

CA
- High performance
- 2 skär
- skärlängd lang
- For aluminium & koppar legeringer

CA
- Altas prestaciones
- 2 labios
- Serie lunga
- Para aluminio y Aleaciones de cobre

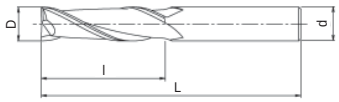
CA
- Высокая производительность
- 2 режущих кромки
- короткая длина
- Для алюминиевых и медных сплавов

CA
- Wysoka wydajność
- 2 ostrzowy
- Długa część robocza
- stopy aluminium & Cu

GO TO LIVE STOCK CHECK

CA

CARBIDE | 30° | SHRINK FIT | CC | SF | 0~-0.03 | min⁻¹ D.254





EDP	D	L	l	d	Stock	Price
8502630	3	50	12	6	●	
8502635	3,5	50	14	6	●	
8502640	4	50	17	6	●	
8502645	4,5	50	17	6	●	
8502650	5	60	20	6	●	
8502655	5,5	60	20	6	●	
8502660	6	60	20	6	●	
8502665	6,5	70	24	8	●	
8502670	7	70	24	8	●	
8502675	7,5	70	24	8	●	
8502680	8	70	28	8	●	
8502685	8,5	80	28	10	●	
8502690	9	80	28	10	●	
8502695	9,5	80	28	10	●	
8502700	10	80	34	10	●	
8502705	10,5	90	34	12	●	
8502710	11	90	34	12	●	
8502715	11,5	90	34	12	●	
8502720	12	90	40	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	◎				○	

● Delivery from stock
○ Available on short notice

CA
- High performance
- 3 flutes
- Stub length
- For alu. & Cu alloys

CA
- High performance
- 3 Schneiden
- Kurzer Hals
- Für Alu. und Kupferlegierungen

CA
- Alta prestazione
- 3 denti
- Serie corta
- Per alluminio e rame

CA
- Haute performance
- 3 lèvres
- Série courte
- Pour aluminium et des alliages de cuivre

CA
- Yüksek performans
- 3 ağızlı
- Saplama uzunluğu
- Alüminyum & Cu. alaşımları

CA
- High performance
- 3 skær
- Stub længde
- Til aluminium & kobber legeringer

CA
- High performance
- 3 skär
- Kort skärlängd
- For aluminium & koppar legeringer

CA
- Altas prestaciones
- 3 labios
- Serie corta
- Para aluminio y Aleaciones de cobre

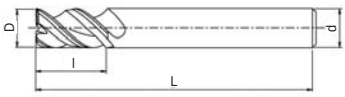
CA
- Высокая производительность
- 3 режущих кромки
- короткая длина
- Для алюминиевых и медных сплавов

CA
- Wysoka wydajność
- 3 ostrzowy
- Seria krótka
- Stopy aluminium & Cu

GO TO LIVE STOCK CHECK

CA

CARBIDE | ±40° | SHRINK FIT | SF | 0~-0.02 | min⁻¹ D.255





EDP	D	L	l	d	Stock	Price
8502806	3	50	8	6	●	
8502808	4	50	11	6	●	
8502810	5	50	13	6	●	
8502812	6	50	13	6	●	
8502816	8	60	19	8	●	
8502820	10	70	22	10	●	
8502822	12	75	26	12	●	
8502826	16	100	32	16	●	
8502830	20	105	38	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	◎				○	

● Delivery from stock
○ Available on short notice

CAP-EBD

CA
- High performance
- 2 flutes
- For alu. & Cu alloys

CA
- High performance
- 2 Schneiden
- Für Alu. und Kupferlegierungen

CA
- Alta prestazione
- 2 denti
- Per alluminio e rame

CA
- Haute performance
- 2 lèvres
- Pour aluminium et des alliages de cuivre

CA
- Yüksek performans
- 2 ağızlı
- Alüminyum & Cu. alaşımları

CA
- High performance
- 2 skær
- Til aluminium & kobber legeringer

CA
- High performance
- 2 skär
- For aluminium & koppar legeringer

CA
- Altas prestaciones
- 2 labios
- Para aluminio y Aleaciones de cobre

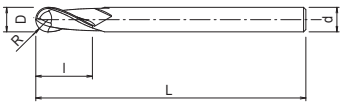
CA
- Высокая производительность
- 2 режущих кромки
- Для алюминиевых и медных сплавов

CA
- Wysoka wydajność
- 2 ostrzowy
- Stopy aluminium & Cu

GO TO LIVE STOCK CHECK

CA

CARBIDE | 30° | SHRINK FIT | SF | 0~-0.02 | min D.256





EDP	D	R	L	l	d	Stock	Price
8503410	1	0,5	60	2,5	4	●	
8503412	1,2	0,6	60	3	4	●	
8503414	1,4	0,7	60	3,5	4	●	
8503415	1,5	0,75	60	4	4	●	
8503416	1,6	0,8	60	4	4	●	
8503418	1,8	0,9	60	4,5	4	●	
8503420	2	1	60	5	6	●	
8503425	2,5	1,25	70	6	6	●	
8503430	3	1,5	70	8	6	●	
8503435	3,5	1,75	70	8	6	●	
8503440	4	2	80	8	6	●	
8503450	5	2,5	90	10	6	●	
8503460	6	3	90	12	6	●	
8503480	8	4	110	14	8	●	
8503500	10	5	125	18	10	●	
8503520	12	6	140	22	12	●	
8503560	16	8	160	30	16	●	
8503600	20	10	180	38	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	◎				◎	

● Delivery from stock
○ Available on short notice

CA
- High performance
- 3 flutes
- For pocket applications
- For alu. & Cu alloys

CA
- High performance
- 3 Schneiden
- Für Taschenfräsen
- Für Alu. und Kupferlegierungen

CA
- Alta prestazione
- 3 denti
- Per sgrossatura in cavità
- Per alluminio e rame

CA
- Haute performance
- 3 lèvres
- Pour ébauche poches
- Pour aluminium et des alliages de cuivre

CA
- Yüksek performans
- 3 ağızlı
- Cep boşaltma uygulamaları için
- Alüminyum & Cu. alaşımları

CA
- High performance
- 3 skær
- Til lomme skrubfræsning
- Til aluminium & kobber legeringer

CA
- High performance
- 3 skär
- For skrubbfräsning i kavitet
- For aluminium & koppar legeringer

CA
- Altas prestaciones
- 3 labios
- Para desbaste de cajeras
- Para aluminio y Aleaciones de cobre

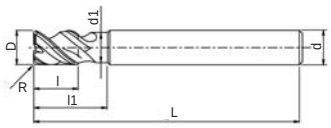
CA
- Высокая производительность
- 3 режущих кромки
- Фрезерование карманов
- Для алюминиевых и медных сплавов

CA
- Wysoka wydajność
- 3 ostrzowy
- Obróbka kieszeni
- Stopy aluminium & Cu

GO TO LIVE STOCK CHECK

CA

CARBIDE | ±40° | SHRINK FIT | 0~-0.02 | min⁻¹ D.257-258





EDP	D	R	L	l	l1	d1	d	Stock	Price
8533033	3	0,5	50	4,5	9	2,7	6	●	
8533043	4	0,5	50	6	12	3,6	6	●	
8533053	5	0,5	60	7,5	15	4,5	6	●	
8533063	6	0,5	60	9	15	5,4	6	●	
8533065	6	1	60	9	15	5,4	6	●	
8533083	8	0,5	70	12	20	7,2	8	●	
8533085	8	1	70	12	20	7,2	8	●	
8533103	10	0,5	80	15	25	9	10	●	
8533105	10	1	80	15	25	9	10	●	
8533123	12	0,5	90	18	30	11	12	●	
8533125	12	1	90	18	30	11	12	●	
8533163	16	0,5	115	24	40	15	16	●	
8533165	16	1	115	24	40	15	16	●	
8533169	16	3	115	24	40	15	16	●	
8533203	20	0,5	125	30	50	19	20	●	
8533205	20	1	125	30	50	19	20	●	
8533209	20	3	125	30	50	19	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	◎				○	

● Delivery from stock
○ Available on short notice

CA-MFE

CA
- High performance
- Radius at both ends of cutting edge
- For deep wall applications
- 3 flutes
- For alu. & Cu alloys

CA
- High performance
- Eckenradius vorne und hinten
- Für Taschenfräsen
- 3 Schneiden
- Für Alu. und Kupferlegierungen

CA
- Alta prestazione
- Con raggio anteriore e posteriore
- Per fresature di pareti profondi
- 3 denti
- Per alluminio e rame

CA
- Haute performance
- A rayon avant et arrière
- Pour fraisage cavité profonde
- 3 lèvres
- Pour aluminium et des alliages de cuivre

CA
- Yüksek performans
- Her iki kesme kenarında radyus
- Derin duvar uygulamaları için
- 3 ağızlı
- Alüminyum & Cu. alaşımları

CA
- High performance
- Radius i begge ender af skæret
- Til dyb sidefræsning
- 3 skær
- Til aluminium & kobber legeringer

CA
- High performance
- Radie i båda ändar av skäret.
- För djup valsfräsning
- 3 skär
- För aluminium & koppar legeringer

CA
- Altas prestaciones
- Radio a ambos extremos del filo de corte
- Para fresado de paredes profundas
- 3 labio
- Para aluminio y Aleaciones de cobre

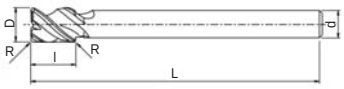
CA
- Высокая производительность
- Радиус с обеих концов режущей части
- Обработка глубоких стенок
- 3 режущих кромки
- Для алюминиевых и медных сплавов

CA
- Wysoka wydajność
- Promień przy obu końcach krawędzi tnącej
- Do głębokich aplikacje ściennych
- 3 ostrzowy
- Stopy aluminium & Cu

GO TO LIVE STOCK CHECK

CA

CARBIDE | ±40° | SHRINK FIT | HIGH SPEED | SF | 0~-0.02 | min⁻¹ D.259





EDP	D	R	L	l	d	Stock	Price
8532100	10	-	130	15	8	●	
8532103	10	0,5	130	15	8	●	
8532105	10	1	130	15	8	●	
8532120	12	-	150	18	10	●	
8532123	12	0,5	150	18	10	●	
8532125	12	1	150	18	10	●	
8532140	14	-	160	21	12	●	
8532145	14	1	160	21	12	●	
8532149	14	3	160	21	12	●	
8532180	18	-	180	27	16	●	
8532185	18	1	180	27	16	●	
8532189	18	3	180	27	16	●	
8532220	22	-	200	33	20	●	
8532225	22	1	200	33	20	●	
8532229	22	3	200	33	20	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	◎				○	

● Delivery from stock
○ Available on short notice

CRN-LN-EDS

CrN
- High performance
- 2 flutes
- Long neck
- For alu. & Cu alloys

CrN
- High performance
- 2 Schneiden
- Langer Hals
- Für Alu. und Kupferlegierungen

CrN
- Alta prestazione
- 2 denti
- Serie lunga
- Per alluminio e rame

CrN
- Haute performance
- 2 lèvres
- Série longue
- Pour aluminium et des alliages de cuivre

CrN
- Yüksek performans
- 2 ağızlı
- Uzun boyun
- Alüminyum & Cu. alaşımları

CrN
- High performance
- 2 skær
- Long neck
- Til aluminium & kobber legeringer

CrN
- High performance
- 2 skär
- Lång reducering
- For aluminium & koppar legeringer

CrN
- Altas prestaciones
- 2 labios
- Serie larga
- Para aluminio y Aleaciones de cobre

CrN
- Высокая производительность
- 2 режущих кромки
- короткая длина
- Для алюминиевых и медных сплавов

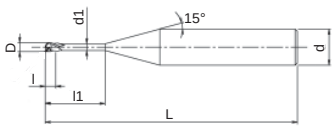
CrN
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka
- Stopy aluminium & Cu

GO TO LIVE STOCK CHECK

CrN

WXL-LN-EDS (page D.40~D.42) is OSG's new offering for this tool

CARBIDE | CrN | 35° | SHRINK FIT | SF | CC | 0~-0.0015 | min⁻¹ D.260





CrN

CARBIDE

EDP	D	l1	L	l	d1	d	Stock	Price
8530005	0,5	2,5	60	0,7	0,45	6	○	
8530008	0,8	4	60	1,2	0,75	6	●	
8530010	1	5	60	1,5	0,95	6	●	
8530015	1,5	7,5	60	2,3	1,45	6	●	
8530020	2	10	60	3	1,95	6	●	
8530025	2,5	12,5	70	3,7	2,4	6	●	
8530030	3	15	70	4,5	2,85	6	●	
8530040	4	20	80	6	3,85	6	○	
8530050	5	25	90	7,5	4,85	6	●	
8530060	6	30	90	9	5,85	6	●	
8530080	8	40	110	12	7,85	8	○	
8530100	10	50	125	15	9,85	10	●	
8530120	12	60	140	18	11,85	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○				◎	

● Delivery from stock
○ Available on short notice

CRN-EMS

CrN
- High performance
- 4 flutes
- Stub neck
- For alu. & Cu alloys

CrN
- High performance
- 4 Schneiden
- Kurzer Hals
- Für Alu. und Kupferlegierungen

CrN
- Alta prestazione
- 4 denti
- Serie corta
- Per alluminio e rame

CrN
- Haute performance
- 4 lèvres
- Série courte
- Pour aluminium et des alliages de cuivre

CrN
- Yüksek performans
- 4 ağızlı
- Saplama uzunluğu
- Alüminyum & Cu. alaşımları

CrN
- High performance
- 4 skær
- Stub lægde
- Til aluminium & kobber legeringer

CrN
- High performance
- 4 skär
- Kort skärlängd
- For aluminium & koppar legeringer

CrN
- Altas prestaciones
- 4 labios
- Serie corta
- Para aluminio y Aleaciones de cobre

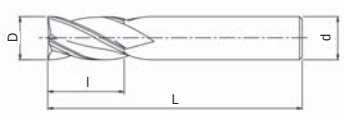
CrN
- Высокая производительность
- 4 режущих кромки
- короткая длина
- Для алюминиевых и медных сплавов

CrN
- Wysoka wydajność
- 4 ostrzowy
- Krótka szyjka
- Stopy aluminium & Cu

GO TO LIVE STOCK CHECK

WXL-EMS (page D.38) is OSG's new offering for this tool

CARBIDE | CrN | 30° | SHRINK FIT | SF | CC | 0~-0.02 | min⁻¹ D.260





EDP	D	L	l	d	Stock	Price
8530330	3	70	8	6	●	
8530340	4	80	11	6	●	
8530350	5	90	13	6	●	
8530360	6	90	13	6	●	
8530380	8	110	19	8	○	
8530400	10	125	22	10	○	
8530420	12	140	26	12	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○				◎	

● Delivery from stock
○ Available on short notice

CRN-EBD

CrN
- High performance
- 2 flutes
- For alu. & Cu alloys

CrN
- High performance
- 2 Schneiden
- Für Alu. und Kupferlegierungen

CrN
- Alta prestazione
- 2 denti
- Per alluminio e rame

CrN
- Haute performance
- 2 lèvres
- Pour aluminium et des alliages de cuivre

CrN
- Yüksek performans
- 2 ağızlı
- Alüminyum & Cu. alaşımları

CrN
- High performance
- 2 skær
- Til aluminium & kobber legeringer

CrN
- High performance
- 2 skär
- For aluminium & koppar legeringer

CrN
- Altas prestaciones
- 2 labios
- Para aluminio y Aleaciones de cobre

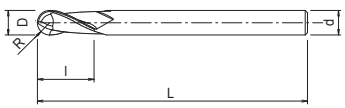
CrN
- Высокая производительность
- 2 режущих кромки
- Для алюминиевых и медных сплавов

CrN
- Wysoka wydajność
- 2 ostrzowy
- Stopy aluminium & Cu

GO TO LIVE STOCK CHECK

WXL-EBD (page D.42) is OSG's new offering for this tool

CARBIDE | CrN | 30° | SHRINK FIT | SF | ± 0.01 | min⁻¹ D.261





EDP	D	R	L	l	d	Stock	Price
8503860	6	3	90	12	6	●	
8503880	8	4	110	14	8	●	
8503900	10	5	125	18	10	●	
8503920	12	6	140	22	12	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○				○	

● Delivery from stock
○ Available on short notice

CRN-LN-EBD

CrN
- High performance
- 2 flutes
- Long neck
- For alu. & Cu alloys

CrN
- High performance
- 2 Schneiden
- Langer Hals
- Für Alu. und Kupferlegierungen

CrN
- Alta prestazione
- 2 denti
- Serie lunga
- Per alluminio e rame

CrN
- Haute performance
- 2 lèvres
- Série longue
- Pour aluminium et des alliages de cuivre

CrN
- Yüksek performans
- 2 ağızlı
- Uzun boyun
- Alüminyum & Cu. alaşımları

CrN
- High performance
- 2 skær
- Long neck
- Til aluminium & kobber legeringer

CrN
- High performance
- 2 skär
- Lång reducering
- For aluminium & koppar legeringer

CrN
- Altas prestaciones
- 2 labios
- Serie larga
- Para aluminio y Aleaciones de cobre

CrN
- Высокая производительность
- 2 режущих кромки
- короткая длина
- Для алюминиевых и медных сплавов

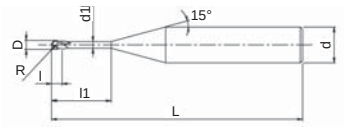
CrN
- Wysoka wydajność
- 2 ostrzowy
- Długa szyjka
- Stopy aluminium & Cu

GO TO LIVE STOCK CHECK

CrN

WXL-LN-EBD (page D.45~D.50) is OSG's new offering for this tool

CARBIDE | CrN | 30° | SHRINK FIT | SF | ± 0.01 | min⁻¹ D.261





EDP	D	R	l1	L	l	d1	d	Stock	Price
8503810	1	0,5	5	60	1,5	0,95	6	●	
8503812	1,2	0,6	6	60	1,8	1,15	6	●	
8503814	1,4	0,7	7	60	2,1	1,35	6	●	
8503815	1,5	0,75	7,5	60	2,3	1,45	6	○	
8503816	1,6	0,8	8	60	2,4	1,55	6	●	
8503818	1,8	0,9	9	60	2,7	1,75	6	●	
8503820	2	1	10	60	3	1,95	6	○	
8503825	2,5	1,25	12,5	70	3,7	2,4	6	●	
8503830	3	1,5	15	70	4,5	2,85	6	●	
8503835	3,5	1,75	17,5	70	5,3	3,35	6	●	
8503840	4	2	20	80	6	3,85	6	●	
8503850	5	2,5	25	90	7,5	4,85	6	●	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
Cu	Al	Graphite	Ti	HRS	Plast.	
◎	○				○	

● Delivery from stock
○ Available on short notice

HYP-EDS-TIAIN

HY-PRO
- Micro grain carbide
- 2 flutes
- Slotting end mills

HY-PRO
- Hartmetall, Feinstkorn
- 2 Schneiden
- Schaftfräser

HY-PRO
- Carburo micrograna
- 2 denti
- Fresa per nervature

HY-PRO
- Carbure micrograin
- 2 lèvres
- Fraise à rainurer

HY-PRO
- Mikro tanecikli karbür
- 2 ağızlı
- Slot kesim için parmak freze

HY-PRO
- HM Micro grain
- 2 skær
- Endeskærs fræsere

HY-PRO
- HM Micro grain
- 2 skär
- Raka fräsar

HY-PRO
- Metal duro Micro Grano
- 2 labios
- Fresas de ranurar

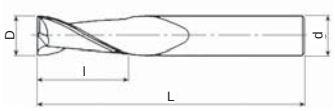
HY-PRO
- Млкозернистый карбид покрытия
- 2 режущих кромки
- Пазовые концевые фрезы

HY-PRO
- Mikroziarnisty węglik
- 2 ostrzowy
- Frez do rowków

GO TO LIVE STOCK CHECK

HYP

CARBIDE TiAIN C C HY-PRO





EDP	D	L	l	d	Stock	Price
402-0394TL	1	39	3	3	○	
402-0591TL	1,5	39	5	3	○	
402-0787TL	2	39	7	3	○	
402-0984TL	2,5	39	8	3	○	
402-1181TL	3	39	10	3	○	
402-1378TL	3,5	51	12	4	○	
402-1575TL	4	51	14	4	○	
402-1772TL	4,5	51	14	5	○	
402-1968TL	5	51	16	5	○	
402-2362TL	6	64	19	6	○	
402-2756TL	7	64	19	8	○	
402-3150TL	8	64	21	8	○	
402-3543TL	9	70	22	10	○	
402-3937TL	10	70	25	10	○	
402-4331TL	11	70	25	11	○	
402-4724TL	12	76	25	12	○	
402-5512TL	14	89	30	14	○	
402-6299TL	16	89	32	16	○	
402-7087TL	18	102	35	18	○	
402-7874TL	20	102	38	20	○	
402-8661TL	22	102	38	22	○	
402-9843TL	25	102	38	25	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○				○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
	○					

● Delivery from stock
○ Available on short notice

HYP-EDS

HY-PRO
- Micro grain carbide non coated
- 2 flutes
- Slotting end mills

HY-PRO
- Hartmetall, Feinstkorn
- 2 Schneiden
- Schaftfräser

HY-PRO
- Carburo micrograna non rivestito
- 2 denti
- Fresa per nervature

HY-PRO
- Carbure micrograin non revêtu
- 2 lèvres
- Fraise à rainurer

HY-PRO
- Kaplamasız mikro tanecikli karbür
- 2 ağızlı
- Slot kesim için parmak freze

HY-PRO
- Micro grain hårdmetal ubelagt
- 2 skær
- Endeskærs fræsere

HY-PRO
- Micro grain HM utan beläggning
- 2 skär
- Raka fräsar

HY-PRO
- Metal duro Micro Grano sin recubrir
- 2 labios
- Fresas de ranurar

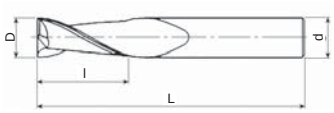
HY-PRO
- Мелкозернистый карбид без покрытия
- 2 режущих кромки
- Пазовые концевые фрезы

HY-PRO
- Mikroziarnisty węglik nie powlekane
- 2 ostrzowy
- Frez do rowków

GO TO LIVE STOCK CHECK

HYP

CARBIDE C C HY-PRO





EDP	D	L	l	d	Stock	Price
402-0394	1	39	3	3	○	
402-0591	1,5	39	5	3	○	
402-0787	2	39	7	3	○	
402-0984	2,5	39	8	3	○	
402-1181	3	39	10	3	○	
402-1378	3,5	51	12	4	○	
402-1575	4	51	14	4	○	
402-1772	4,5	51	14	5	○	
402-1968	5	51	16	5	○	
402-2362	6	64	19	6	○	
402-2756	7	64	19	8	○	
402-3150	8	64	21	8	○	
402-3543	9	70	22	10	○	
402-3937	10	70	25	10	○	
402-4331	11	70	25	11	○	
402-4724	12	76	25	12	○	
402-5512	14	89	30	14	○	
402-6299	16	89	32	16	○	
402-7087	18	102	35	18	○	
402-7874	20	102	38	20	○	
402-8661	22	102	38	22	○	
402-9843	25	102	38	25	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○				○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
	○					

● Delivery from stock
○ Available on short notice

HYP-ETS-TIAIN

HY-PRO
- Micro grain carbide
- 3 flutes
- Multiflute end mills

HY-PRO
- Hartmetall, Feinstkorn
- 3 Schneiden
- Mehrschneider

HY-PRO
- Carburo micrograna
- 3 denti
- Fresa multidenti

HY-PRO
- Carbure micrograin
- 3 lèvres
- Fraises multilèvres

HY-PRO
- Mikro tanecikli karbür
- 3 ağızlı
- Çok ağızlı parmak freze

HY-PRO
- HM Micro grain
- 3 skær
- Flérskærs endefræsere

HY-PRO
- HM Micro grain
- 3 skär
- Flerskärsfräs

HY-PRO
- Metal duro Micro Grano
- 3 labios
- Fresas multi labio

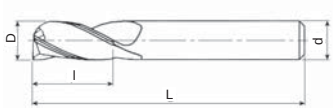
HY-PRO
- Микрозернистый карбид
- 3 режущих кромки
- Многозубые концевые фрезы

HY-PRO
- Mikroziarnisty węglik
- 3 ostrzowy
- Frez wieloostrzowy

GO TO LIVE STOCK CHECK

HYP

CARBIDE TiAIN C C HY-PRO





EDP	D	L	l	d	Stock	Price
403-0394TL	1	39	3	3	○	
403-0591TL	1,5	39	5	3	○	
403-0787TL	2	39	7	3	○	
403-0984TL	2,5	39	8	3	○	
403-1181TL	3	39	10	3	○	
403-1378TL	3,5	51	12	4	○	
403-1575TL	4	51	14	4	○	
403-1772TL	4,5	51	14	5	○	
403-1968TL	5	51	16	5	○	
403-2362TL	6	64	19	6	○	
403-2756TL	7	64	19	8	○	
403-3150TL	8	64	21	8	○	
403-3543TL	9	70	22	10	○	
403-3937TL	10	70	25	10	○	
403-4331TL	11	70	25	11	○	
403-4724TL	12	76	25	12	○	
403-5512TL	14	89	30	14	○	
403-6299TL	16	89	32	16	○	
403-7087TL	18	102	35	18	○	
403-7874TL	20	102	38	20	○	
403-8661TL	22	102	38	22	○	
403-9843TL	25	102	38	25	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○				○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
	○					

● Delivery from stock
○ Available on short notice

HYP-ETS

HY-PRO
- Micro grain carbide non coated
- 3 flutes
- Multiflute end mills

HY-PRO
- Hartmetall, Feinstkorn
- 3 Schneiden
- Mehrschneider

HY-PRO
- Carburo micrograna non rivestito
- 3 denti
- Fresa multidenti

HY-PRO
- Carbure micrograin non revêtu
- 3 lèvres
- Fraises multilèvres

HY-PRO
- Kaplamasız mikro tanecikli karbür
- 3 ağızlı
- Çok ağızlı parmak freze

HY-PRO
- Micro grain hårdmetal ubelagt
- 3 skær
- Flérskærs endefræsere

HY-PRO
- Micro grain HM utan beläggning
- 3 skär
- Flerskärsfräs

HY-PRO
- Metal duro Micro Grano sin recubrir
- 3 labios
- Fresas multi labio

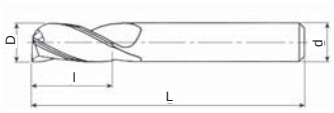
HY-PRO
- Мелкозернистый карбид без покрытия
- 3 режущих кромки
- Многозубые концевые фрезы

HY-PRO
- Mikroziarnisty węglik nie powlekane
- 3 ostrzowy
- Frez wieloostrzowy

GO TO LIVE STOCK CHECK

HYP

CARBIDE C C HY-PRO





EDP	D	L	l	d	Stock	Price
403-0394	1	39	3	3	○	
403-0591	1,5	39	5	3	○	
403-0787	2	39	7	3	○	
403-0984	2,5	39	8	3	○	
403-1181	3	39	10	3	○	
403-1378	3,5	51	12	4	○	
403-1575	4	51	14	4	○	
403-1772	4,5	51	14	5	○	
403-1968	5	51	16	5	○	
403-2362	6	64	19	6	○	
403-2756	7	64	19	8	○	
403-3150	8	64	21	8	○	
403-3543	9	70	22	10	○	
403-3937	10	70	25	10	○	
403-4331	11	70	25	11	○	
403-4724	12	76	25	12	○	
403-5512	14	89	30	14	○	
403-6299	16	89	32	16	○	
403-7087	18	102	35	18	○	
403-7874	20	102	38	20	○	
403-8661	22	102	38	22	○	
403-9843	25	102	38	25	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
◯	◯				◯	◯
Cu	Al	Graphite	Ti	HRS	Plast.	
	◯					

● Delivery from stock
○ Available on short notice

HYP-EMS-TIAIN

HY-PRO
- Micro grain carbide
- 4 flutes
- Multiflute end mills

HY-PRO
- Hartmetall, Feinstkorn
- 4 Schneiden
- Mehrschneider

HY-PRO
- Carburo micrograna
- 4 denti
- Fresa multidenti

HY-PRO
- Carbure micrograin
- 4 lèvres
- Fraises multilèvres

HY-PRO
- Mikro tanecikli karbür
- 4 ağızlı
- Çok ağızlı parmak freze

HY-PRO
- HM Micro grain
- 4 skær
- Flérskærs endefræsere

HY-PRO
- HM Micro grain
- 4 skär
- Flerskärsfräs

HY-PRO
- Metal duro Micro Grano
- 4 labios
- Fresas multi labio

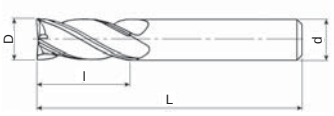
HY-PRO
- Микрозернистый карбид
- 4 режущих кромки
- Многозубые концевые фрезы

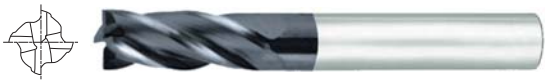
HY-PRO
- Mikroziarnisty węglik
- 4 ostrzowy
- Frez wieloostrzowy

GO TO LIVE STOCK CHECK

HYP

CARBIDE TiAIN C C HY-PRO





EDP	D	L	l	d	Stock	Price
404-0394TL	1	39	3	3	○	
404-0591TL	1,5	39	5	3	○	
404-0787TL	2	39	7	3	○	
404-0984TL	2,5	39	8	3	○	
404-1181TL	3	39	10	3	○	
404-1378TL	3,5	51	12	4	○	
404-1575TL	4	51	14	4	○	
404-1772TL	4,5	51	14	5	○	
404-1968TL	5	51	16	5	○	
404-2362TL	6	64	19	6	○	
404-2756TL	7	64	19	8	○	
404-3150TL	8	64	21	8	○	
404-3543TL	9	70	22	10	○	
404-3937TL	10	70	25	10	○	
404-4331TL	11	70	25	11	○	
404-4724TL	12	76	25	12	○	
404-5512TL	14	89	30	14	○	
404-6299TL	16	89	32	16	○	
404-7087TL	18	102	35	18	○	
404-7874TL	20	102	38	20	○	
404-8661TL	22	102	38	22	○	
404-9843TL	25	102	38	25	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○				○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
	○					

● Delivery from stock
○ Available on short notice

HY-PRO
- Micro grain carbide non coated
- 4 flutes
- Multiflute end mills

HY-PRO
- Hartmetall, Feinstkorn
- 4 Schneiden
- Mehrschneider

HY-PRO
- Carburo micrograna non rivestito
- 4 denti
- Fresa multidenti

HY-PRO
- Carbure micrograin non revêtu
- 4 lèvres
- Fraises multilèvres

HY-PRO
- Kaplamasız mikro tanecikli karbür
- 4 ağızlı
- Çok ağızlı parmak freze

HY-PRO
- Micro grain hårdmetal ubelagt
- 4 skær
- Flérskærs endefræsere

HY-PRO
- Micro grain HM utan beläggning
- 4 skär
- Flerskärsfräs

HY-PRO
- Metal duro Micro Grano sin recubrir
- 4 labios
- Fresas multi labio

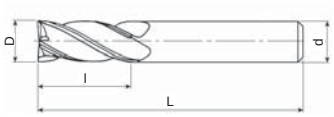
HY-PRO
- Мелкозернистый карбид без покрытия
- 4 режущих кромки
- Многозубые концевые фрезы

HY-PRO
- Mikroziarnisty węglik nie powlekane
- 4 ostrzowy
- Frez wieloostrzowy

GO TO LIVE STOCK CHECK

HYP

CARBIDE C C HY-PRO





EDP	D	L	l	d	Stock	Price
404-0394	1	39	3	3	○	
404-0591	1,5	39	5	3	○	
404-0787	2	39	7	3	○	
404-0984	2,5	39	8	3	○	
404-1181	3	39	10	3	○	
404-1378	3,5	51	12	4	○	
404-1575	4	51	14	4	○	
404-1772	4,5	51	14	5	○	
404-1968	5	51	16	5	○	
404-2362	6	64	19	6	○	
404-2756	7	64	19	8	○	
404-3150	8	64	21	8	○	
404-3543	9	70	22	10	○	
404-3937	10	70	25	10	○	
404-4331	11	70	25	11	○	
404-4724	12	76	25	12	○	
404-5512	14	89	30	14	○	
404-6299	16	89	32	16	○	
404-7087	18	102	35	18	○	
404-7874	20	102	38	20	○	
404-8661	22	102	38	22	○	
404-9843	25	102	38	25	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○				○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
	○					

● Delivery from stock
○ Available on short notice

HYP-CR-EMS

HY-PRO
- 4 flutes
- Corner radius

HY-PRO
- 4 Schneiden
- Mehrschneider mit Eckenradius

HY-PRO
- 4 denti
- Frese toriche

HY-PRO
- 4 lèvres
- Fraise à rayon

HY-PRO
- 4 ağızlı
- Köşe radyuslu

HY-PRO
- 4 skær
- Hjørneradius

HY-PRO
- 4 skär
- Hörnradie

HY-PRO
- 4 labios
- Vertice radio

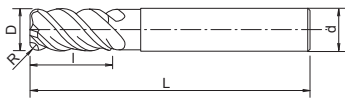
HY-PRO
- 4 режущих кромки
- Концевые фрезы с радиусом

HY-PRO
- 4 ostrzowy
- Promień naroża

GO TO LIVE STOCK CHECK

HYP

CARBIDE | TiAlN | 35°~38° | C C | HY-PRO





EDP	D	R	L	l	d	Stock	Price
404-1968R05	5	0,5	51	16	5	○	
404-2362R05	6	0,5	64	19	6	○	
404-1968R08	6	0,8	64	19	6	○	
404-2362R10	6	1	64	19	6	○	
404-1968R15	6	1,5	64	19	6	○	
404-2362R20	6	2	64	19	6	○	
404-3150R05	8	0,5	64	21	8	○	
404-3150R08	8	0,8	64	21	8	○	
404-3150R10	8	1	64	21	8	○	
404-3150R15	8	1,5	64	21	8	○	
404-3150R20	8	2	64	21	8	○	
404-3150R25	8	2,5	64	21	8	○	
404-3150R30	8	3	64	21	8	○	
404-3937R05	10	0,5	70	22	10	○	
404-3937R08	10	0,8	70	22	10	○	
404-3937R10	10	1	70	22	10	○	
404-3937R15	10	1,5	70	22	10	○	
404-3937R20	10	2	70	22	10	○	
404-3937R25	10	2,5	70	22	10	○	
404-3937R30	10	3	70	22	10	○	
404-3937R32	10	3,2	70	22	10	○	
404-4724R05	12	0,5	76	25	12	○	
404-4724R08	12	0,8	76	25	12	○	
404-4724R10	12	1	76	25	12	○	
404-4724R15	12	1,5	76	25	12	○	
404-4724R20	12	2	76	25	12	○	
404-4724R25	12	2,5	76	25	12	○	
404-4724R30	12	3	76	25	12	○	
404-4724R32	12	3,2	76	25	12	○	
404-4724R40	12	4	76	25	12	○	
404-6299R05	16	0,5	89	32	16	○	
404-6299R10	16	1	89	32	16	○	
404-6299R20	16	2	89	32	16	○	
404-6299R25	16	2,5	89	32	16	○	
404-6299R30	16	3	89	32	16	○	
404-6299R40	16	4	89	32	16	○	
404-6299R50	16	5	89	32	16	○	
404-7874R05	20	0,5	102	38	20	○	
404-7874R10	20	1	102	38	20	○	
404-7874R20	20	2	102	38	20	○	
404-7874R30	20	3	102	38	20	○	
404-7874R50	20	5	102	38	20	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○				○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
	○					

● Delivery from stock
○ Available on short notice

HYP-EBD-TIAIN

HY-PRO
- Micro grain carbide
- 2 flutes - ball nose
- Ball nose end mills

HY-PRO
- Hartmetall, Feinstkorn
- 2 Schneiden - Kopierfräser
- Kopierfräser

HY-PRO
- Carburo micrograna
- 2 denti - Frese sferiche
- Frese sferiche

HY-PRO
- Carbure micrograin
- 2 lèvres - boule
- Fraise hémisphérique

HY-PRO
- Mikro tanecikli karbür
- 2 ağızlı
- Küre

HY-PRO
- HM Micro grain
- 2 skær - Radius
- Radius fræsere

HY-PRO
- HM Micro grain
- 2 skär, - fullradie
- Fullradie fräsar

HY-PRO
- Metal duro Micro Grano
- 2 labios - punta esférica
- Fresas de punta esférica

HY-PRO
- Микрозернистый карбид
- 2 режущих кромки
- Сферические концевые фрезы

HY-PRO
- Mikroziarnisty węglik
- 2 ostrzowy
- Frez kulisty

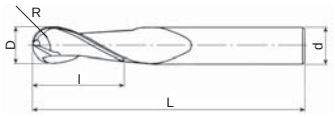
GO TO LIVE STOCK CHECK

HYP

CARBIDE

TiAIN

HY-PRO





EDP	D	R	L	l	d	Stock	Price
402-0394-BNTL	1	0,5	39	3	3	○	
402-0591-BNTL	1,5	0,75	39	5	3	○	
402-0787-BNTL	2	1	39	7	3	○	
402-0984-BNTL	2,5	1,25	39	8	3	○	
402-1181-BNTL	3	1,5	39	10	3	○	
402-1378-BNTL	3,5	1,75	51	12	4	○	
402-1575-BNTL	4	2	51	14	4	○	
402-1772-BNTL	4,5	2,25	51	14	5	○	
402-1968-BNTL	5	2,5	51	16	5	○	
402-2362-BNTL	6	3	64	19	6	○	
402-2756-BNTL	7	3,5	64	19	8	○	
402-3150-BNTL	8	4	64	21	8	○	
402-3543-BNTL	9	4,5	70	22	10	○	
402-3937-BNTL	10	5	70	25	10	○	
402-4331-BNTL	11	5,5	70	25	11	○	
402-4724-BNTL	12	6	76	25	12	○	
402-5512-BNTL	14	7	89	30	14	○	
402-6299-BNTL	16	8	89	32	16	○	
402-7874-BNTL	20	10	102	38	20	○	
402-8661-BNTL	22	11	102	38	22	○	
402-9843-BNTL	25	12,5	102	38	25	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○				○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
	○					

● Delivery from stock
○ Available on short notice

HYP-EBD

HY-PRO
- Micro grain carbide
- 2 flutes - ball nose
- Ball nose end mills

HY-PRO
- Hartmetall, Feinstkorn
- 2 Schneiden - Kopierfräser
- Kopierfräser

HY-PRO
- Carburo micrograna
- 2 denti - Frese sferiche
- Frese sferiche

HY-PRO
- Carbure micrograin
- 2 lèvres - boule
- Fraise hémisphérique

HY-PRO
- Mikro tanecikli karbür
- 2 ağızlı
- Küre

HY-PRO
- HM Micro grain
- 2 skær - Radius
- Radius fræsere

HY-PRO
- HM Micro grain
- 2 skär, - fullradie
- Fullradie fräsar

HY-PRO
- Metal duro Micro Grano
- 2 labios - punta esférica
- Fresas de punta esférica

HY-PRO
- Микрозернистый карбид
- 2 режущих кромки
- Сферические концевые фрезы

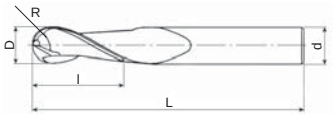
HY-PRO
- Mikroziarnisty węglik
- 2 ostrzowy
- Frez kulisty

GO TO LIVE STOCK CHECK

HYP

CARBIDE

HY-PRO





EDP	D	R	L	l	d	Stock	Price
402-0394-BN	1	0,5	39	3	3	○	
402-0591-BN	1,5	0,75	39	5	3	○	
402-0787-BN	2	1	39	7	3	○	
402-0984-BN	2,5	1,25	39	8	3	○	
402-1181-BN	3	1,5	39	10	3	○	
402-1378-BN	3,5	3,75	51	12	4	○	
402-1575-BN	4	2	51	14	4	○	
402-1772-BN	4,5	2,25	51	14	5	○	
402-1968-BN	5	2,5	51	16	5	○	
402-2362-BN	6	3	64	19	6	○	
402-2756-BN	7	3,5	64	19	8	○	
402-3150-BN	8	4	64	21	8	○	
402-3543-BN	9	4,5	70	22	10	○	
402-3937-BN	10	5	70	25	10	○	
402-4331-BN	11	5,5	70	25	11	○	
402-4724-BN	12	6	76	25	12	○	
402-5512-BN	14	7	89	30	14	○	
402-6299-BN	16	8	89	32	16	○	
402-7087-BN	18	9	102	35	18	○	
402-7874-BN	20	10	102	38	20	○	
402-8661-BN	22	11	102	38	22	○	
402-9843-BN	25	12,5	102	38	25	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○				○	○
Cu	Al	Graphite	Ti	HRS	Plast.	
	○					

● Delivery from stock
○ Available on short notice

MG-EDS

MG
- Micro grain carbide non coated
- 2 flutes
- Slotting end mills

MG
- Hartmetall, Feinstkorn
- 2 Schneiden
- Schaftfräser

MG
- Carburo micrograna non rivestito
- 2 denti
- Fresa per nervature

MG
- Carbure micrograin non revêtu
- 2 lèvres
- Fraise à rainurer

MG
- Kaplamasız mikro tanecikli karbür
- 2 ağızlı
- Slot kesim için parmak freze

MG
- Micro grain hårdmetal ubelagt
- 2 skær
- Endeskærs fræsere

MG
- Micro grain HM utan beläggning
- 2 skär
- Raka fräsar

MG
- Metal duro Micro Grano sin recubrir
- 2 labios
- Fresas de ranurar

MG
- Мелкозернистый карбид без покрытия
- 2 режущих кромки
- Пазовые концевые фрезы

MG
- Mikroziarnisty węglik nie powlekane
- 2 ostrzowy
- Frez do rowków

GO TO LIVE STOCK CHECK

MG

CARBIDE | 30° | SHRINK FIT | CC | 2≤D≤12 | 0~-0.03





EDP	D	L	l	d	Stock	Price
84002	1	40	2,5	4	○	
84003	1,5	40	4	4	○	
84004	2	40	6	4	○	
84005	2,5	40	8	4	○	
84006	3	45	8	6	○	
84007	3,5	45	10	6	○	
84008	4	45	11	6	○	
84009	4,5	45	11	6	○	
84010	5	50	13	6	○	
84011	5,5	50	13	6	○	
84012	6	50	13	6	○	
84013	6,5	60	16	8	○	
84014	7	60	16	8	○	
84015	7,5	60	16	8	○	
84016	8	60	19	8	○	
84017	8,5	70	19	10	○	
84018	9	70	19	10	○	
84019	9,5	70	19	10	○	
84020	10	70	22	10	○	
84051	10,5	75	22	12	○	
84021	11	75	22	12	○	
84052	11,5	75	26	12	○	
84022	12	75	26	12	○	
84023	13	85	26	12	○	
84024	14	85	26	12	○	
84025	15	90	26	16	○	
84026	16	100	32	16	○	
84027	17	100	32	16	○	
84028	18	100	32	16	○	
84029	19	105	38	20	○	
84030	20	105	38	20	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○					○
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○					

● Delivery from stock
○ Available on short notice

MG-EDL

MG
- Micro grain carbide non coated
- 2 flutes
- Slotting end mills

MG
- Hartmetall, Feinstkorn
- 2 Schneiden
- Schaftfräser

MG
- Carburo micrograna non rivestito
- 2 denti
- Fresa per nervature

MG
- Carbure micrograin non revêtu
- 2 lèvres
- Fraise à rainurer

MG
- Kaplamasız mikro tanecikli karbür
- 2 ağızlı
- Slot kesim için parmak freze

MG
- Micro grain hårdmetal ubelagt
- 2 skær
- Endeskærs fræsere

MG
- Micro grain HM utan beläggning
- 2 skär
- Raka fräsar

MG
- Metal duro Micro Grano sin recubrir
- 2 labios
- Fresas de ranurar

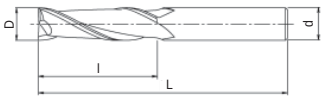
MG
- Мелкозернистый карбид без покрытия
- 2 режущих кромки
- Пазовые концевые фрезы

MG
- Mikroziarnisty węglik nie powlekane
- 2 ostrzowy
- Frez do rowków

GO TO LIVE STOCK CHECK

MG

CARBIDE | 30° | SHRINK FIT | CC | D<13 | 0~-0.03





EDP	D	L	l	d	Stock	Price
84106	3	50	12	6	○	
84108	4	50	17	6	○	
84110	5	60	20	6	○	
84112	6	60	20	6	○	
84114	7	70	24	8	○	
84116	8	70	28	8	○	
84118	9	80	28	10	○	
84120	10	80	34	10	○	
84121	11	90	34	12	○	
84122	12	90	40	12	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○					○
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○					

● Delivery from stock
○ Available on short notice

MG
- Micro grain carbide non coated
- 4 flutes
- Multiflute end mills

MG
- Hartmetall, Feinstkorn
- 4 Schneiden
- Mehrschneider

MG
- Carburo micrograna non rivestito
- 4 denti
- Fresa multidenti

MG
- Carbure micrograin non revêtu
- 4 lèvres
- Fraises multilèvres

MG
- Kaplamasız mikro tanecikli karbür
- 4 ağızlı
- Çok ağızlı parmak freze

MG
- Micro grain hårdmetal ubelagt
- 4 skær
- Flérskærs endefræsere

MG
- Micro grain HM utan beläggning
- 4 skär
- Flerskärsfräs

MG
- Metal duro Micro Grano sin recubrir
- 4 labios
- Fresas multi labio

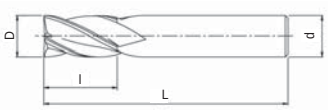
MG
- Мелкозернистый карбид без покрытия
- 4 режущих кромки
- Многозубые концевые фрезы

MG
- Mikroziarnisty węglik nie powlekane
- 4 ostrzowy
- Frez wieloostrzowy

GO TO LIVE STOCK CHECK

MG

CARBIDE | 30° | SHRINK FIT | CC | D≤9,5 | 0~-0.03





EDP	D	L	l	d	Stock	Price
84404	2	40	6	4	○	
84405	2,5	40	8	4	○	
84406	3	45	8	6	○	
84407	3,5	45	10	6	○	
84408	4	45	11	6	○	
84409	4,5	45	11	6	○	
84410	5	50	13	6	○	
84411	5,5	50	13	6	○	
84412	6	50	13	6	○	
84413	6,5	60	16	8	○	
84414	7	60	16	8	○	
84415	7,5	60	16	8	○	
84416	8	60	19	8	○	
84417	8,5	70	19	10	○	
84418	9	70	19	10	○	
84419	9,5	70	19	10	○	
84420	10	70	22	10	○	
84451	10,5	75	22	12	○	
84421	11	75	22	12	○	
84452	11,5	75	26	12	○	
84422	12	75	26	12	○	
84423	13	85	26	12	○	
84424	14	85	26	12	○	
84425	15	90	26	16	○	
84426	16	100	32	16	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○					○
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○					

● Delivery from stock
○ Available on short notice

MG
- Micro grain carbide non coated
- 4 flutes
- Multiflute end mills

MG
- Hartmetall, Feinstkorn
- 4 Schneiden
- Mehrschneider

MG
- Carburo micrograna non rivestito
- 4 denti
- Fresa multidenti

MG
- Carbure micrograin non revêtu
- 4 lèvres
- Fraises multilèvres

MG
- Kaplamasız mikro tanecikli karbür
- 4 ağızlı
- Çok ağızlı parmak freze

MG
- Micro grain hårdmetal ubelagt
- 4 skær
- Flérskærs endefræsere

MG
- Micro grain HM utan beläggning
- 4 skär
- Flerskärsfräs

MG
- Metal duro Micro Grano sin recubrir
- 4 labios
- Fresas multi labio

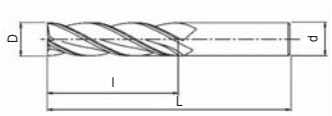
MG
- Мелкозернистый карбид без покрытия
- 4 режущих кромки
- Многозубые концевые фрезы

MG
- Mikroziarnisty węglik nie powlekane
- 4 ostrzowy
- Frez wieloostrzowy

GO TO LIVE STOCK CHECK

MG

CARBIDE | 30° | SHRINK FIT | CC | D≤9,5 | | 0~-0.03





EDP	D	L	l	d	Stock	Price
84506	3	50	12	6	○	
84508	4	50	17	6	○	
84510	5	60	20	6	○	
84512	6	60	20	6	○	
84514	7	70	24	8	○	
84516	8	70	28	8	○	
84518	9	80	28	10	○	
84520	10	80	34	10	○	
84521	11	90	34	12	○	
84522	12	90	40	12	○	

Applications - Anwendungen - Applicazioni - Applications - Applikation - Applikation - Aplicaciones - Применение - Uygulamalar - Zastosowania						
~40 HRC	~45 HRC	~55 HRC	~60 HRC	~65 HRC	SUS ~35 HRC	GG-GGG ~350 HB
○	○					○
Cu	Al	Graphite	Ti	HRS	Plast.	
○	○					

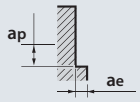
NEO-PHS/NEO-CR-PHS

Side milling - Konturfräsen - Conturnatura - Coutournage / Semi-finishing - Semi-finitura - Semi-finition - Semi-finition - Kenar frezeleme
Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование / Sletfræsning - Finfräsning - Acabado - Получистовая - Frezowanie boczne



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		SCM - SKD SKT ■ SKS ■ SCM ~30 N/mm²		30~38 HRC - SUS NAK55 ■ HPM1 ■ SKT ■ SKD 30~38 N/mm²		38~45 HRC - SUS SUS304 ■ SKD 38~45 N/mm²		45~55 HRC - HRS 45~55 N/mm²		Heat Resistant Alloy Steel Inconel	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	12.500	1.100	9.550	840	8.100	625	7.650	615	7.400	545	3.800	220
4	9.750	1.200	7.550	985	6.400	680	6.050	710	5.850	630	3.000	240
5	7.950	1.300	6.150	1.050	5.250	725	4.950	775	4.800	670	2.450	245
6	6.750	1.600	5.250	1.200	4.450	890	4.200	835	4.050	695	2.100	250
8	5.050	1.550	3.950	1.100	3.350	815	3.150	810	3.050	675	1.600	225
10	4.100	1.450	3.200	1.050	2.700	725	2.550	715	2.450	635	1.250	215
12	3.400	1.400	2.650	1.000	2.250	720	2.100	675	2.050	605	1.050	210
16	2.550	1.200	2.000	940	1.700	635	1.600	555	1.550	505	765	210
20	2.050	985	1.600	755	1.350	590	1.250	515	1.250	460	635	200
25	1.650	880	1.250	675	1.100	535	1.000	485	990	395	510	185

Max cutting depth



ap	ae
≤1,5D	≤0,2D

ap	ae
≤1,5D	≤0,1D

ap	ae
≤1,5D	≤0,05D

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used
3. Please use a suitable fluid with high smoke retardant properties
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Utilizzare una macchina ed un mandrino di elevato rigidità e di alta precisione
2. Regolare la velocità e l'avanzamento se si aumenta la profondità di passata e se utilizzata su macchina non rigide
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo
4. Durante la fresatura a secco, utilizzare dell'aria

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen
4. Bei Trockenbearbeitung Druckluft zum Entfernen der Späne verwenden

1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision
2. Ajuster vitesse et avance en cas de profondeur de coupe importante ou en utilisant une machine non rigide
3. Utiliser des fluides de coupes de haute qualité avec un coef. élevé de ralentissement d'émission de fumée
4. Lors de l'usinage à sec, veuillez utiliser de l'air pour l'évacuation des copeaux

1. Anvend stabil maskine og værktøjsholder
2. Justér omdrejninger og tilspænding ved stor skæredybde eller en ustabil maskine bruges
3. Anvend en passende skærevæske
4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner

1. Use maquina y portaherramientas rigidos y precisos
2. Ajustar el avance cuando la profundidad de corte es grande o cuando se se utilizan máquinas de poca rigidez
3. Use fluido de corte adecuado con retardador de humos
4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte

1. Använd en stabil maskin och verktygshållare
2. Justera varvtal och matning vid stora skärdjup eller om instabil maskin används
3. Använd anpassad skärvätska
4. Vid torrbearbetning använd tryckluft för att transportera bort spånor

1. Используйте жесткие и точные станки и фрезерные патроны
2. Пожалуйста отрегулируйте обороты шпинделя и подачу, когда глубина резания велика или при использовании станков с низкой жесткостью
3. используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Kesme derinliği büyük olduğunda veya rijit olmayan tezgahlarda lütfen kesme hızını ve ilerlemeyi ayarlayınız
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Proszę dostosować szybkość i posuw, kiedy głębokość frezowania jest duża lub gdy maszyna ma małą sztywność
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Podczas obróbki na sucho proszę nadmuchem usuwać wióry z obszaru frezowania i wyeliminować owijanie wiórów

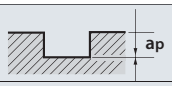
NEO-PHS/NEO-CR-PHS

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim için parmak freze
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		SCM - SKD SKT ■ SKS ■ SCM ~30 N/mm²		30~38 HRC - SUS NAK55 ■ HPM1 ■ SKT ■ SKD 30~38 N/mm²		38~45 HRC - SUS SUS304 ■ SKD 38~45 N/mm²		45~55 HRC - HRS 45~55 N/mm²		Heat Resistant Alloy Steel Inconel	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	10.500	730	8.550	680	7.850	520	7.450	460	7.200	440	2.500	125
4	7.750	730	6.400	775	5.900	520	5.550	515	5.400	495	1.900	135
5	6.200	735	5.100	755	4.700	545	4.450	545	4.300	535	1.500	145
6	5.150	740	4.250	635	3.950	575	3.700	570	3.600	545	1.250	145
8	3.850	600	3.200	550	2.950	550	2.800	525	2.700	510	945	155
10	3.100	580	2.550	540	2.350	480	2.250	475	2.150	455	760	145
12	2.600	560	2.150	475	1.950	460	1.850	440	1.800	435	630	145
16	1.950	555	1.600	430	1.500	370	1.400	370	1.350	365	475	110
20	1.550	475	1.300	380	1.200	355	1.100	330	1.100	330	380	110
25	1.250	450	1.000	365	945	315	890	285	865	235	300	105

Max cutting depth



ap
≤0,5D

ap
≤0,2D

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used
3. Please use a suitable fluid with high smoke retardant properties
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Utilizzare una macchina ed un mandrino di elevato rigidità e di alta precisione
2. Regolare la velocità e l'avanzamento se si aumenta la profondità di passata e se utilizzata su macchina non rigide
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo
4. Durante la fresatura a secco, utilizzare dell'aria

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen
4. Bei Trockenbearbeitung Druckluft zum Entfernen der Späne verwenden

1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision
2. Ajuster vitesse et avance en cas de profondeur de coupe importante ou en utilisant une machine non rigide
3. Utiliser des fluides de coupes de haute qualité avec un coef. élevé de ralentissement d'émission de fumée
4. Lors de l'usinage à sec, veuillez utiliser de l'air pour l'évacuation des copeaux

1. Anvend stabil maskine og værktøjsholder
2. Justér omdrejninger og tilspænding ved stor skæredybde eller en ustabil maskine bruges
3. Anvend en passende skærevæske
4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner

1. Use maquina y portaherramientas rigidos y precisos
2. Ajustar el avance cuando la profundidad de corte es grande o cuando se se utilizan máquinas de poca rigidez
3. Use fluido de corte adecuado con retardador de humos
4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte

1. Använd en stabil maskin och verktygshållare
2. Justera varvtal och matning vid stora skärdjup eller om instabil maskin används
3. Använd anpassad skärvätska
4. Vid torrbearbetning använd tryckluft för att transportera bort spånor

1. Используйте жесткие и точные станки и фрезерные патроны
2. Пожалуйста отрегулируйте обороты шпинделя и подачу, когда глубина резания велика или при использовании станков с низкой жесткостью
3. используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Kesme derinliği büyük olduğunda veya rijit olmayan tezgahlarda lütfen kesme hızını ve ilerlemeyi ayarlayınız
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız

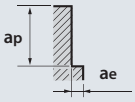
1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Proszę dostosować szybkość i posuw, kiedy głębokość frezowania jest duża lub gdy maszyna ma małą sztywność
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Podczas obróbki na sucho proszę nadmuchem usuwać wióry z obszaru frezowania i wyeliminować owijanie wiórów

NEO-EMS/NEO-CR-EMS

Side milling - Konturfräsen - Conturnatura - Coutournage / Semi-finishing - Semi-finitura - Semi-finition - Semi-finition - Kenar frezeleme
Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование / Sletfræsning - Finfräsning - Acabado - Получистовая - Frezowanie boczne



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		SCM - SKD SKT ■ SKS ■ SCM ~30 HRC		30~38 HRC NAK55 ■ HPM1 ■ SKT ■ SKD 30~38 N/mm²		38~45 HRC - SUS SUS304 ■ SKD 38~45 N/mm²		45~55 HRC - HRS 45~55 N/mm²		Heat Resistant Alloy Steel Inconel	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
6	7.100	2.300	5.500	1.750	4.700	1.300	4.400	1.250	4.300	1.050	2.200	360
8	5.350	2.250	4.150	1.600	3.500	1.200	3.300	1.200	3.200	1.000	1.650	330
10	4.300	2.100	3.350	1.550	2.850	1.100	2.650	1.050	2.600	925	1.350	310
12	3.600	2.000	2.800	1.500	2.350	1.050	2.250	980	2.150	875	1.100	305
16	2.700	1.750	2.100	1.350	1.750	925	1.650	805	1.600	735	835	305
20	2.150	1.450	1.650	1.100	1.400	850	1.350	745	1.300	665	670	300
25	1.700	1.300	1.350	975	1.150	775	1.050	705	1.050	575	535	265

Max cutting depth		ap / ae	ap / ae	ap / ae
		≤1,5D / ≤0,2D	≤1,5D / ≤0,1D	≤1,5D / ≤0,05D

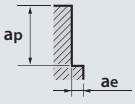
1. Use a rigid and precise machine and holder. 2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used 3. Please use a suitable fluid with high smoke retardant properties 4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.	1. Utilizzare una macchina ed un mandrino di elevato rigidità e di alta precisione 2. Regolare la velocità e l'avanzamento se si aumenta la profondità di passata e se utilizzata su macchina non rigide 3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo 4. Durante la fresatura a secco, utilizzare dell'aria
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel 2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen 3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen 4. Bei Trockenbearbeitung Druckluft zum Entfernen der Späne verwenden	1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision 2. Ajuster vitesse et avance en cas de profondeur de coupe importante ou en utilisant une machine non rigide 3. Utiliser des fluides de coupes de haute qualité avec un coef. élevé de ralentissement d'émission de fumée 4. Lors de l'usinage à sec, veuillez utiliser de l'air pour l'évacuation des copeaux
1. Anvend stabil maskine og værktøjsholder 2. Justér omdrejninger og tilspænding ved stor skæredybde eller en ustabil maskine bruges 3. Anvend en passende skærevæske 4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner	1. Use maquina y portaherramientas rigidos y precisos 2. Ajustar el avance cuando la profundidad de corte es grande o cuando se se utilizan máquinas de poca rigidez 3. Use fluido de corte adecuado con retardador de humos 4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte
1. Använd en stabil maskin och verktygshållare 2. Justera varvtal och matning vid stora skärdjup eller om instabil maskin används 3. Använd anpassad skärvätska 4. Vid torrbearbetning använd tryckluft för att transportera bort spånor	1. Используйте жесткие и точные станки и фрезерные патроны 2. Пожалуйста отрегулируйте обороты шпинделя и подачу, когда глубина резания велика или при использовании станков с низкой жесткостью 3. используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма 4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения
1. Rijit, hassas tezgah ve takım tutucu kullanınız 2. Kesme derinliği büyük olduğunda veya rijit olmayan tezgahlarda lütfen kesme hızını ve ilerlemeyi ayarlayınız 3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın 4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız	1. Użyj sztywnej i precyzyjnej maszyny i uchwytu 2. Proszę dostosować szybkość i posuw, kiedy głębokość frezowania jest duża lub gdy maszyna ma małą sztywność 3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie 4. Podczas obróbki na sucho proszę nadmuchem usuwać wióry z obszaru frezowania i wyeliminować owijanie wiórów

NEO-EMS/NEO-CR-EMS

High speed side milling - HSC Konturfräsen - Sgrossatura e contornatura alta velocità - Contournage UGV - Yüksek hizda kenar frezeleme
High speed sidefræsning - High speed valsfräsning - Contorneado a alta velocidad - Высокоскоростное контурное фрезерование - Frezowanie boczne HSC



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		SCM - SKD SKT ■ SKS ■ SCM ~30 HRC		30~38 HRC NAK55 ■ HPM1 ■ SKT ■ SKD 30~38 N/mm²		38~45 HRC - SUS SUS304 ■ SKD 38~45 N/mm²		45~55 HRC - HRS 45~55 N/mm²		Heat Resistant Alloy Steel Inconel	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
6	14.000	4.750	11.000	3.550	9.150	2.650	8.600	2.500	8.350	2.100	4.300	745
8	10.500	4.600	8.050	3.300	6.850	2.450	6.450	2.400	6.250	2.050	3.250	675
10	8.400	3.900	6.500	3.000	5.550	2.200	5.200	2.100	5.050	1.900	2.600	640
12	7.000	3.800	5.450	2.900	4.600	2.150	4.350	2.000	4.200	1.800	2.150	625
16	5.250	3.550	4.100	2.800	3.450	1.900	3.250	1.650	3.150	1.500	1.650	620
20	4.200	2.900	3.250	2.250	2.750	1.750	2.600	1.550	2.550	1.350	1.300	610
25	3.350	2.600	2.600	2.000	2.200	1.600	2.100	1.450	2.000	1.150	1.050	550

Max cutting depth		ap / ae	ap / ae	ap / ae
		≤1,5D / ≤0,05D aeMAX=0,5mm	≤1,5D / ≤0,02D	≤1D / ≤0,02D aeMAX=0,5mm

1. Use a rigid and precise machine and holder. 2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used 3. Please use a suitable fluid with high smoke retardant properties 4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.	1. Utilizzare una macchina ed un mandrino di elevato rigidità e di alta precisione 2. Regolare la velocità e l'avanzamento se si aumenta la profondità di passata e se utilizzata su macchina non rigide 3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo 4. Durante la fresatura a secco, utilizzare dell'aria
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel 2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen 3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen 4. Bei Trockenbearbeitung Druckluft zum Entfernen der Späne verwenden	1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision 2. Ajuster vitesse et avance en cas de profondeur de coupe importante ou en utilisant une machine non rigide 3. Utiliser des fluides de coupes de haute qualité avec un coef. élevé de ralentissement d'émission de fumée 4. Lors de l'usinage à sec, veuillez utiliser de l'air pour l'évacuation des copeaux
1. Anvend stabil maskine og værktøjsholder 2. Justér omdrejninger og tilspænding ved stor skæredybde eller en ustabil maskine bruges 3. Anvend en passende skærevæske 4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner	1. Use maquina y portaherramientas rigidos y precisos 2. Ajustar el avance cuando la profundidad de corte es grande o cuando se se utilizan máquinas de poca rigidez 3. Use fluido de corte adecuado con retardador de humos 4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte
1. Använd en stabil maskin och verktygshållare 2. Justera varvtal och matning vid stora skärdjup eller om instabil maskin används 3. Använd anpassad skärvätska 4. Vid torrbearbetning använd tryckluft för att transportera bort spånor	1. Используйте жесткие и точные станки и фрезерные патроны 2. Пожалуйста отрегулируйте обороты шпинделя и подачу, когда глубина резания велика или при использовании станков с низкой жесткостью 3. используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма 4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки
1. Rijit, hassas tezgah ve takım tutucu kullanınız 2. Kesme derinliği büyük olduğunda veya rijit olmayan tezgahlarda lütfen kesme hızını ve ilerlemeyi ayarlayınız 3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın 4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız	1. Użyj sztywnej i precyzyjnej maszyny i uchwytu 2. Proszę dostosować szybkość i posuw, kiedy głębokość frezowania jest duża lub gdy maszyna ma małą sztywność 3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie 4. Podczas obróbki na sucho proszę nadmuchem usuwać wióry z obszaru frezowania i wyeliminować owijanie wiórów

BACK

CARBIDE

CARBIDE

PHX-LN-DBT



			~ 38 HRC SKT4 ■ SKD61 ■ NAK80 ■ HPM1 ■ DH				38 ~ 53 HRC DH ■ DAC55				~ 53 HRC SKT4 ■ SKD61 ■ NAK80 ■ HPM1 ■ DH				~ 55 HRC SKT4 ■ SKD61 ■ NAK80 ■ HPM1 ■ DH				
			Hardend Steels - Prehardened steels																
R	l	Cutting Angle	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	Clearance
0,5	6	0,3°	18.000	1.000	0,05	0,16	18.000	900	0,05	0,16	18.000	280	0,007	0,03	18.000	1,200	0,03	0,03	0,05
0,5	10	0,3°	16.000	800	0,04	0,16	16.000	800	0,04	0,16	16.000	120	0,003	0,3	16.000	1.000	0,03	0,03	0,03
0,5	15	0,3°	8.000	420	0,03	0,16	8.000	420	0,03	0,16	–	–	–	–	8.000	500	0,03	0,03	0,03
0,5	20	0,3°	6.000	300	0,02	0,12	6.000	300	0,02	0,12	–	–	–	–	6.000	380	0,03	0,03	0,03
0,5	25	0,3°	6.000	130	0,02	0,08	6.000	130	0,02	0,08	–	–	–	–	6.000	350	0,03	0,03	0,03
0,5	30	0,3°	6.000	90	0,01	0,05	6.000	90	0,01	0,05	–	–	–	–	6.000	250	0,03	0,03	0,03
0,75	6	0,3°	18.000	1.500	0,1	0,3	16.000	1.300	0,1	0,3	16.000	650	0,07	0,15	18.000	1.100	0,04	0,04	0,05
0,75	10	0,3°	15.000	1.100	0,06	0,25	15.000	950	0,06	0,25	15.000	320	0,01	0,1	15.000	900	0,04	0,04	0,03
0,75	16	0,3°	7.500	230	0,02	0,2	7.500	200	0,02	0,2	7.500	300	0,007	0,05	7.500	450	0,04	0,04	0,03
1	6	0,3°	18.000	1.600	0,2	0,6	15.000	1.400	0,2	0,4	12.000	600	0,15	0,15	15.000	18.000	0,06	0,05	0,1
1	10	0,3°	12.000	1.250	0,14	0,4	12.000	1.100	0,14	0,4	12.000	600	0,1	0,05	12.000	1.500	0,06	0,05	0,07
1	15	0,3°	7.800	820	0,14	0,4	7.800	780	0,14	0,4	7.800	450	0,07	0,05	7.800	980	0,06	0,05	0,07
1	20	0,3°	6.200	650	0,13	0,4	6.200	600	0,13	0,3	6.200	340	0,05	0,05	6.200	600	0,06	0,05	0,05
1	25	0,3°	4.700	500	0,12	0,3	4.700	500	0,12	0,3	–	–	–	–	4.700	450	0,06	0,05	0,05
1	30	0,3°	3.500	400	0,1	0,3	3.500	400	0,1	0,3	–	–	–	–	3.500	450	0,06	0,05	0,05
1	35	0,3°	3.500	400	0,07	0,3	3.500	400	0,07	0,3	–	–	–	–	3.500	450	0,06	0,05	0,03
1	40	0,3°	3.500	300	0,07	0,25	3.500	300	0,07	0,25	–	–	–	–	3.500	450	0,06	0,05	0,03
1	45	0,3°	3.500	200	0,07	0,2	3.500	200	0,07	0,2	–	–	–	–	3.500	450	0,06	0,05	0,03
1	50	0,3°	3.500	150	0,06	0,1	3.500	150	0,06	0,1	–	–	–	–	3.500	450	0,06	0,05	0,03
1	60	0,3°	3.500	150	0,05	0,1	3.500	150	0,05	0,1	–	–	–	–	3.500	450	0,06	0,05	0,03
1,5	10	0,3°	12.000	1.900	0,21	0,5	8.000	1.200	0,21	0,5	8.000	700	0,13	0,1	11.000	2.050	0,09	0,08	0,1
1,5	15	0,3°	10.000	1.550	0,2	0,5	8.000	1.200	0,2	0,5	8.000	550	0,1	0,1	10.000	1.900	0,09	0,08	0,07
1,5	20	0,3°	7.500	1.150	0,19	0,5	7.200	1.100	0,19	0,5	7.200	480	0,06	0,07	7.500	1.400	0,09	0,08	0,07
1,5	25	0,3°	4.800	750	0,19	0,5	4.600	700	0,19	0,5	4.600	320	0,04	0,05	4.800	900	0,09	0,08	0,05
1,5	30	0,3°	4.000	630	0,16	0,4	3.400	500	0,16	0,4	3.400	240	0,02	0,03	3.800	720	0,09	0,08	0,03
1,5	40	0,3°	2.800	440	0,13	0,4	2.600	400	0,13	0,4	–	–	–	–	2.600	500	0,09	0,08	0,03
1,5	50	0,3°	2.200	350	0,1	0,4	2.200	300	0,1	0,4	–	–	–	–	2.200	400	0,09	0,08	0,03
1,5	60	0,3°	2.200	350	0,07	0,4	2.200	300	0,07	0,4	–	–	–	–	2.200	400	0,09	0,08	0,03
2	10	0,5°	9.600	2.000	0,3	0,6	6.000	1.250	0,3	0,6	6.000	800	0,15	0,1	9.500	2.400	0,12	0,1	0,1
2	15	0,5°	9.300	1.900	0,27	0,6	6.000	1.200	0,27	0,6	6.000	800	0,12	0,1	9.000	2.250	0,12	0,1	0,1
2	20	0,5°	7.600	1.550	0,25	0,6	6.000	1.150	0,25	0,6	6.000	700	0,1	0,07	8.200	2.050	0,12	0,1	0,1
2	25	0,5°	6.100	1.250	0,23	0,6	5.500	1.100	0,23	0,6	5.500	450	0,05	0,07	5.500	1.350	0,12	0,1	0,07
2	30	0,5°	5.000	1.050	0,2	0,6	4.500	800	0,2	0,6	4.500	350	0,03	0,05	4.500	1.100	0,12	0,1	0,07
2	35	0,5°	3.600	750	0,16	0,5	3.600	650	0,16	0,5	3.600	280	0,01	0,03	3.600	900	0,12	0,1	0,05
2	40	0,5°	3.000	630	0,12	0,5	3.000	550	0,12	0,5	3.000	150	0,007	0,01	3.000	750	0,12	0,1	0,05
2	45	0,5°	2.700	550	0,1	0,4	2.700	500	0,1	0,4	–	–	–	–	2.700	680	0,12	0,1	0,03
2	50	0,5°	2.500	520	0,1	0,4	2.500	450	0,1	0,4	–	–	–	–	2.500	630	0,12	0,1	0,03
2	60	0,5°	2.100	430	0,08	0,4	2.100	400	0,08	0,4	–	–	–	–	2.100	530	0,12	0,1	0,03
2,5	10	0,5°	7.700	1.900	0,35	0,8	4.800	1.100	0,35	0,8	4.800	900	0,2	0,1	7.700	2.400	0,15	1,2	0,1
2,5	15	0,5°	7.700	1.900	0,3	0,8	4.800	1.000	0,3	0,8	4.800	850	0,16	0,1	6.100	1.900	0,15	1,2	0,1
2,5	20	0,5°	7.700	1.800	0,3	0,8	4.800	950	0,3	0,8	4.800	700	0,12	0,07	6.100	1.900	0,15	1,2	0,1
2,5	25	0,5°	5.100	1.300	0,25	0,8	4.800	900	0,25	0,8	4.800	650	0,06	0,05	5.100	1.600	0,15	1,2	0,07
2,5	30	0,5°	5.100	1.200	0,2	0,6	4.800	850	0,2	0,6	4.800	500	0,03	0,05	5.100	1.600	0,15	1,2	0,07
2,5	35	0,5°	4.400	1.100	0,14	0,6	4.400	750	0,14	0,6	4.400	400	0,015	0,03	4.400	1.350	0,15	1,2	0,05
2,5	40	0,5°	3.100	750	0,1	0,6	3.100	650	0,1	0,6	3.100	260	0,007	0,03	3.100	950	0,15	1,2	0,05
3	24	0,5°	6.400	1.900	0,43	1,2	4.000	1.200	0,3	1	4.000	900	0,3	0,1	6.500	1.450	0,18	0,16	0,1
3	30	0,5°	5.100	1.500	0,34	1,2	4.000	1.150	0,3	1	4.000	900	0,25	0,1	5.100	1.950	0,18	0,16	0,1
3	36	0,5°	4.200	1.250	0,38	1,2	4.000	1.100	0,3	1	4.000	750	0,2	0,07	4.200	1.580	0,18	0,16	0,07
3	42	0,5°	3.700	1.050	0,2	0,9	3.700	1.000	0,2	1	3.700	500	0,15	0,05	3.700	1.400	0,18	0,16	0,07
3	48	0,5°	3.600	750	0,15	0,9	2.600	700	0,15	0,8	2.600	400	0,1	0,03	2.600	980	0,18	0,16	0,05
3	54	0,5°	2.100	630	0,1	0,8	2.100	600	0,1	0,8	2.100	240	0,05	0,03	2.100	800	0,18	0,16	0,05
3	66	0,5°	1.900	550	0,08	0,7	1.900	500	0,08	0,7	–	–	–	–	1.900	700	0,18	0,16	0,03
3	80	0,5°	1.700	450	0,08	0,6	1.700	400	0,08	0,6	–	–	–	–	1.700	650	0,18	0,16	0,03
4	30	0,5°	4.800	2.300	0,45	1,5	3.000	1.260	0,3	1,5	3.000	1.050	0,3	0,15	4.800	2.400	0,24	0,21	0,1
4	40	0,5°	3.800	1.800	0,38	1,3	3.000	1.200	0,3	1,3	3.000	1.050	0,3	0,1	3.800	1.900	0,24	0,21	0,1
4	48	0,5°	3.200	1.500	0,28	1,2	3.000	1.100	0,25	1,2	3.000	900	0,25	0,1	3.200	1.600	0,24	0,21	0,07
4	56	0,5°	2.700	1.300	0,2	1,1	2.700	1.000	0,2	1,1	2.700	800	0,2	0,07	2.700	1.350	0,24	0,21	0,07
4	64	0,5°	1.900	900	0,2	1	1.900	700	0,17	1	1.900	500	0,17	0,07	1.900	950	0,24	0,21	0,05
4	80	0,5°	1.500	700	0,15	0,8	1.500	550	0,14	0,8	–	–	–	–	1.500	750	0,24	0,21	0,03
4	100	0,5°	1.200	600	0,15	0,8	1.200	400	0,1	0,8	–	–	–	–	1.200	600	0,24	0,21	0,03
4	120	0,5°	1.000	500	0,1	0,7	1.000	350	0,07	0,7	–	–	–	–	1.000	500	0,24	0,21	0,03
5	35	0,5°	3.800	2.300	0,65	1,8	2.400	1.000	0,4	1,6	2.400	850	0,4	0,15	3.800	2.400	0,3	0,27	0,1
5	50	0,5°	3.100	1.900	0,55	1,8	2.400	1.000	0,3	1,6	2.400	850	0,3	0,15	3.100	1.950	0,3	0,27	0,1
5	60	0,5°	2.500	1.500	0,46	1,6	2.400	1.000	0,3	1,5	2.400	850	0,3	0,1	2.500	1.550	0,3	0,27	0,1
5	70	0,5°	2.200	1.300	0,34	1,6	2.200	900	0,3	1,5	2.200	800	0,3	0,1	2.200	1.350	0,3	0,27	0,07
5	80	0,5°	1.500	800	0,24	1,6	1.500	600	0,2	1,5	1.500	600	0,2	0,07	1.500	950	0,3	0,27	0,07
5	100	0,5°	1.200	600	0,15	1,5	1.200	500	0,12	1,5	1.200	500	0,12	0,07	1.200	750	0,3	0,27	0,05
5	120	0,5°	1.050	500	0,1	1,3	1.000	400	0,1	1,3	–	–	–	–	1.050	650	0,3	0,27	0,05
5	140	0,5°	850	400	0,07	1,3	800	350	0,07	1,3	–	–	–	–	850	500	0,3	0,27	0,03
5	160	0,5°	700	320	0,07	1	700	300	0,07	1	–	–	–	–	700	450	0,3	0,27	0,03

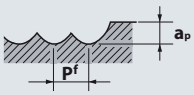
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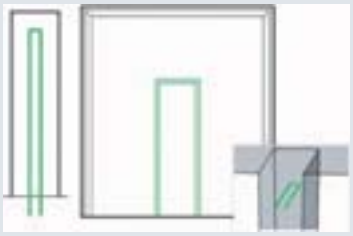


	~ 38 HRC SKT4 ■ SKD61 ■ NAK80 ■ HPM1 ■ DH					38 ~ 53 HRC DH ■ DAC55				~ 53 HRC SKT4 ■ SKD61 ■ NAK80 ■ HPM1 ■ DH				~ 55 HRC SKT4 ■ SKD61 ■ NAK80 ■ HPM1 ■ DH				
	Hardend Steels - Prehardened steels																	
R	l	Cutting Angle	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	Clearance
6	45	0,5°	3.200	1.700	0,8	2	2.000	800	0,8	1,8	2.000	800	0,6	0,15	3.200	2,400	0,36	0,32	0,15
6	60	0,5°	2.500	1.300	0,65	2	2.000	800	0,65	1,8	2.000	800	0,5	0,15	2.500	1.900	0,36	0,32	0,15
6	70	0,5°	2.100	1.100	0,57	2	2.000	800	0,57	1,8	2.000	800	0,5	0,1	2.100	1.600	0,36	0,32	0,1
6	85	0,5°	1.800	950	0,42	1,8	1.500	600	0,42	1,7	1.500	600	0,4	0,1	1.800	1.350	0,36	0,32	0,1
6	100	0,5°	1.300	690	0,3	1,8	1.200	500	0,3	1,7	1.200	500	0,3	0,1	1.300	980	0,36	0,32	0,1
6	120	0,5°	1.000	530	0,25	1,5	1.000	420	0,25	1,5	–	–	–	–	1.000	750	0,36	0,32	0,05
6	140	0,5°	900	470	0,2	1,5	900	380	0,2	1,5	–	–	–	–	900	680	0,36	0,32	0,05
6	160	0,5°	700	370	0,15	1,3	700	300	0,15	1,3	–	–	–	–	700	530	0,36	0,32	0,05
8	55	0,5°	2.400	1.600	1	2,2	1.500	600	1	1,8	1.500	600	0,8	0,15	2.400	2.400	0,48	0,4	0,2
8	80	0,5°	1.900	1.250	0,9	2,2	1.500	600	0,9	1,8	1.500	600	0,8	0,15	1.900	1.900	0,48	0,4	0,15
8	90	0,5°	1.600	1.050	0,75	2,2	1.500	600	0,75	1,8	1.500	600	0,7	0,1	1.600	1.600	0,48	0,4	0,1
8	105	0,5°	1.400	900	0,55	2	1.400	570	0,55	1,7	1.400	570	0,5	0,07	1.400	1.400	0,48	0,4	0,07
8	120	0,5°	1.000	650	0,4	2	1.000	420	0,4	1,7	1.000	420	0,4	0,05	1.000	1.000	0,48	0,4	0,05
10	70	0,5°	1.900	1.500	1,2	3,6	1.200	500	1,2	1,8	1.200	500	0,8	0,15	1.900	2.400	0,6	0,5	0,2
10	90	0,5°	1.500	1.200	1,1	3,6	1.200	500	1,1	1,8	1.200	500	0,8	0,15	1.500	1.900	0,6	0,5	0,15
10	110	0,5°	1.300	1.000	0,9	3,5	1.200	500	0,9	1,8	1.200	500	0,8	0,1	1.300	1.600	0,6	0,5	0,1
10	130	0,5°	1.100	850	0,7	3,4	1.100	450	0,7	1,8	1.100	450	0,7	0,1	1.100	1.400	0,6	0,5	0,07
10	150	0,5°	760	600	0,5	3,3	760	320	0,5	1,8	760	320	0,5	0,07	760	950	0,6	0,5	0,05

Max cutting depth



In case using ball nose endmills, it is highly recommended to use rough and finish on the same contour to improve the quality of ribs.



CARBIDE

BACK

CARBIDE

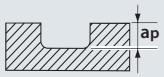
Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim için parmak freze
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frez do rowków

WXL-1,5D-DE



Ø	Cu		~32 HRC FC250 ■ SS400 ■ S55C ■ NAK55		33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH		42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH	
	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)
0,1	50.000	120	40.000	80	40.000	75	40.000	38
0,2	50.000	170	40.000	110	40.000	90	40.000	45
0,3	50.000	210	40.000	140	40.000	100	40.000	70
0,4	50.000	230	40.000	150	40.000	110	34.500	75
0,5	50.000	250	38.500	150	31.000	110	27.500	75
0,6	50.000	280	33.500	150	24.500	110	21.000	75
0,7	50.000	310	30.000	150	21.500	110	18.500	75
0,8	50.000	360	27.000	150	19.500	110	17.000	80
0,9	50.000	400	23.500	150	17.000	110	15.000	80
1	50.000	430	22.000	150	15.500	110	13.500	80
1,1	50.000	420	20.000	150	14.000	110	12.500	80
1,2	50.000	420	18.500	150	13.500	110	11.500	80
1,3	47.000	410	17.500	150	12.500	110	11.000	80
1,4	44.000	410	16.000	150	11.500	110	10.000	80
1,5	40.000	400	15.500	150	11.000	110	9.900	80
1,6	39.000	400	15.000	150	10.500	110	9.400	80
1,7	36.500	400	14.000	150	9.900	110	8.800	80
1,8	34.500	400	13.500	160	9.400	110	8.500	80
1,9	32.500	400	12.500	160	8.800	110	7.900	85
2	30.000	380	12.000	160	8.700	110	7.900	90
2,1	29.000	410	11.500	170	8.300	110	7.400	90
2,2	28.000	410	11.000	170	8.200	110	7.200	90
2,3	27.500	410	11.000	180	8.000	110	7.000	90
2,4	26.000	430	10.500	180	7.900	110	6.900	90
2,5	24.500	430	10.500	200	7.600	110	6.600	90
2,6	23.500	470	9.800	200	7.400	125	6.300	90
2,7	23.000	470	9.500	200	7.100	125	6.100	90
2,8	22.000	470	9.100	210	6.900	125	5.800	95
2,9	21.500	470	8.800	210	6.700	125	5.700	95
3	21.000	540	8.900	230	6.800	130	5.700	100
3,1	20.000	550	8.700	240	6.700	130	5.600	100
3,2	19.500	560	8.400	240	6.500	145	5.400	105
3,3	19.000	560	8.100	250	6.300	145	5.200	105
3,4	18.000	560	7.900	250	6.100	145	5.100	105
3,5	18.000	560	7.800	250	6.000	155	5.000	105
3,6	17.500	580	7.600	270	5.900	155	4.900	110
3,7	16.500	580	7.400	270	5.700	155	4.700	110
3,8	16.000	590	7.300	280	5.700	155	4.600	110
3,9	15.500	590	7.100	280	5.500	160	4.500	110
4	15.500	600	7.000	280	5.500	160	4.500	115
4,1	15.500	640	6.900	290	5.400	160	4.400	115
4,2	15.000	640	6.800	290	5.300	160	4.400	115
4,3	14.000	640	6.700	310	5.200	160	4.300	115
4,4	14.000	670	6.600	320	5.100	170	4.200	125
4,5	14.000	670	6.600	320	5.100	170	4.200	125
4,6	13.500	700	6.500	330	4.900	170	4.100	125
4,7	13.500	700	6.500	350	4.900	170	4.100	125
4,8	13.500	710	6.400	350	4.800	170	4.100	125
4,9	13.500	710	6.300	360	4.700	170	4.000	125
5	12.500	720	6.200	370	4.600	170	3.900	130
5,1	12.500	720	6.100	370	4.500	170	3.900	130
5,2	12.000	720	6.000	370	4.400	170	3.800	130
5,3	12.000	720	5.900	370	4.400	170	3.800	130
5,4	11.500	720	5.800	370	4.300	170	3.600	130
5,5	11.500	720	5.700	370	4.200	170	3.500	130
5,6	11.500	720	5.600	370	4.100	170	3.500	130
5,7	11.000	720	5.500	370	4.000	170	3.400	130
5,8	11.000	710	5.400	370	3.900	170	3.300	130
5,9	10.500	710	5.300	370	3.800	170	3.300	130
6	10.000	710	5.200	370	3.800	170	3.200	130

Max cutting depth



D < ø1	0,1D
ø1 ≤ D < ø3	0,3D
ø3 ≤ D	0,5D

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Uitiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske.

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma procenttal
3. Använd anpassad skärvätska.

1. Используйте жесткие и точные станки и фрезерные патроны
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя
3. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniesz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

BACK

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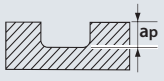
WXL-2D-DE

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim için parmak freze
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



Ø	Cu		~32 HRC FC250 ■ SS400 ■ S55C ■ NAK55		33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH		42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
0,1	50.000	100	32.000	70	32.000	60	32.000	30
0,2	50.000	140	32.000	90	32.000	75	32.000	35
0,3	50.000	170	32.000	110	32.000	80	32.000	55
0,4	50.000	190	32.000	120	32.000	90	27.500	60
0,5	50.000	200	31.000	120	25.000	90	22.000	60
0,6	50.000	230	27.000	120	19.500	90	17.000	60
0,7	50.000	250	24.000	120	17.000	90	15.000	60
0,8	50.000	290	21.500	120	15.500	90	13.500	65
0,9	49.000	320	19.000	120	13.500	90	12.000	65
1	47.500	350	17.500	120	12.500	90	11.000	65
1,1	43.000	340	16.000	120	11.500	90	9.900	65
1,2	40.500	340	15.000	120	10.500	90	9.300	65
1,3	38.000	330	14.000	120	9.900	90	8.700	65
1,4	35.000	330	13.000	120	9.200	90	8.100	65
1,5	32.000	320	12.500	120	8.900	90	7.900	65
1,6	31.000	320	12.000	120	8.500	90	7.500	65
1,7	29.000	320	11.000	120	7.900	90	7.000	65
1,8	28.000	320	10.500	130	7.500	90	6.800	68
1,9	26.000	320	10.000	130	7.100	90	6.300	68
2	24.000	310	9.700	130	7.000	90	6.300	70
2,1	23.000	330	9.300	140	6.600	90	5.900	70
2,2	22.500	330	9.000	140	6.500	90	5.700	70
2,3	22.000	330	8.800	150	6.400	90	5.600	70
2,4	20.500	350	8.600	150	6.300	90	5.500	70
2,5	20.000	350	8.200	160	6.100	90	5.300	70
2,6	19.000	380	7.900	160	5.900	100	5.000	70
2,7	18.000	380	7.600	160	5.700	100	4.900	70
2,8	17.500	380	7.300	170	5.500	100	4.700	75
2,9	17.000	380	7.100	170	5.300	100	4.500	75
3	16.000	400	6.900	170	5.300	100	4.400	75
3,1	15.500	410	6.700	180	5.100	100	4.300	75
3,2	15.000	420	6.500	180	5.000	110	4.200	80
3,3	14.500	420	6.300	190	4.800	110	4.000	80
3,4	14.000	420	6.100	190	4.600	110	3.900	80
3,5	14.000	420	6.000	190	4.600	120	3.800	80
3,6	13.500	430	5.900	200	4.500	120	3.700	85
3,7	12.500	430	5.700	200	4.400	120	3.600	85
3,8	12.500	440	5.600	210	4.400	120	3.600	85
3,9	12.000	440	5.500	210	4.200	125	3.500	85
4	12.000	450	5.400	210	4.200	125	3.500	90
4,1	11.500	480	5.300	220	4.100	125	3.400	90
4,2	11.500	480	5.300	220	4.100	125	3.300	90
4,3	11.000	480	5.200	230	4.000	125	3.300	90
4,4	11.000	500	5.100	240	3.900	130	3.200	95
4,5	10.500	500	5.100	240	3.900	130	3.200	95
4,6	10.500	520	5.000	250	3.800	130	3.200	95
4,7	10.500	520	5.000	260	3.800	130	3.100	95
4,8	10.500	530	4.900	260	3.700	130	3.100	95
4,9	10.000	530	4.900	270	3.600	130	3.100	95
5	9.500	540	4.800	270	3.500	130	3.000	100
5,1	9.500	540	4.700	270	3.500	130	3.000	100
5,2	9.300	540	4.600	270	3.400	130	2.900	100
5,3	9.200	540	4.600	270	3.400	130	2.900	100
5,4	9.000	540	4.500	270	3.300	130	2.800	100
5,5	8.800	540	4.400	270	3.200	130	2.700	100
5,6	8.700	540	4.300	270	3.100	130	2.600	100
5,7	8.500	540	4.200	270	3.100	130	2.600	100
5,8	8.400	530	4.200	270	3.000	130	2.600	100
5,9	8.200	530	4.100	270	2.900	130	2.500	100
6	7.900	530	4.000	270	2.900	130	2.500	100
6,5	7.500	530	3.700	270	2.700	130	2.300	100
7	6.900	530	3.400	270	2.500	130	2.100	100
7,5	6.400	530	3.200	270	2.300	130	2.000	100
8	5.900	520	3.000	260	2.200	125	1.900	100
8,5	5.600	520	2.800	260	2.000	125	1.700	100
9	5.300	510	2.600	260	1.900	125	1.500	100
9,5	5.100	510	2.500	260	1.800	125	1.400	95
10	4.700	500	2.400	250	1.700	125	1.500	95
11	4.400	500	2.200	250	1.600	125	1.100	95
12	4.000	510	2.000	250	1.400	125	1.200	95
16	3.000	400	1.500	200	1.100	115	800	80
18	2.700	360	1.300	180	900	100	700	70
20	2.400	300	1.200	150	800	90	600	60

Max cutting depth



D < ø1	0,1D
ø1 ≤ D < ø3	0,3D
ø3 ≤ D	0,5D

1. Use a rigid and precise machine and holder. 2. When chattering occurs, reduce the speed and feed simultaneously. 3. Use a suitable cutting fluid with high smoke retardant properties.	1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione. 2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento. 3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel. 2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren. 3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.	1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision. 2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance. 3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.
1. Anvend stabil maskine og værktøjsholder 2. Ved vibrationer reducér omdrejninger og tilspænding simultant 3. Anvend en passende skærevæske.	1. Use maquina y portaherramientas rigidos y precisos 2. En caso de vibración reduzca velocidad y avance simultaneamente 3. Use fluido de corte adecuado con retardador de humos
1. Använd en stabil maskin och verktygshållare 2. Vid vibrationer sänk varvtal och matning med samma procenttal 3. Använd anpassad skärvätska.	1. Используйте жесткие и точные станки и фрезерные патроны 2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя 3. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
1. Rijit, hassas tezgah ve takım tutucu kullanınız 2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz 3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın	1. Użyj sztywnej i precyzyjnej maszyny i uchwytu 2. Przy wystąpieniu drgań zmniesz prędkość oraz posuw 3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

BACK

CARBIDE

CARBIDE

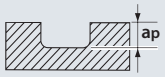
WXL-3D-DE

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim için parmak freze
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	Cu		~32 HRC FC250 ■ SS400 ■ S55C ■ NAK55		33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH		42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH	
Ø	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)
0,1	50.000	100	32.000	70	32.000	60	32.000	30
0,2	50.000	140	32.000	90	32.000	75	32.000	35
0,3	50.000	170	32.000	110	32.000	80	32.000	55
0,4	50.000	190	32.000	120	32.000	90	27.500	60
0,5	50.000	200	31.000	120	25.000	90	22.000	60
0,6	50.000	230	27.000	120	19.500	90	17.000	60
0,7	50.000	250	24.000	120	17.000	90	15.000	60
0,8	50.000	290	21.500	120	15.500	90	13.500	65
0,9	49.000	320	19.000	120	13.500	90	12.000	65
1	47.500	350	17.500	120	12.500	90	11.000	65
1,1	43.000	340	16.000	120	11.500	90	9.900	65
1,2	40.500	340	15.000	120	10.500	90	9.300	65
1,3	38.000	330	14.000	120	9.900	90	8.700	65
1,4	35.000	330	13.000	120	9.200	90	8.100	65
1,5	32.000	320	12.500	120	8.900	90	7.900	65
1,6	31.000	320	12.000	120	8.500	90	7.500	65
1,7	29.000	320	11.000	120	7.900	90	7.000	65
1,8	28.000	320	10.500	130	7.500	90	6.800	68
1,9	26.000	320	10.000	130	7.100	90	6.300	68
2	24.000	310	9.700	130	7.000	90	6.300	70
2,1	23.000	330	9.300	140	6.600	90	5.900	70
2,2	22.500	330	9.000	140	6.500	90	5.700	70
2,3	22.000	330	8.800	150	6.400	90	5.600	70
2,4	20.500	350	8.600	150	6.300	90	5.500	70
2,5	20.000	350	8.200	160	6.100	90	5.300	70
2,6	19.000	380	7.900	160	5.900	100	5.000	70
2,7	18.000	380	7.600	160	5.700	100	4.900	70
2,8	17.500	380	7.300	170	5.500	100	4.700	75
2,9	17.000	380	7.100	170	5.300	100	4.500	75
3	16.000	400	6.900	170	5.300	100	4.400	75
3,1	15.500	410	6.700	180	5.100	100	4.300	75
3,2	15.000	420	6.500	180	5.000	110	4.200	80
3,3	14.500	420	6.300	190	4.800	110	4.000	80
3,4	14.000	420	6.100	190	4.600	110	3.900	80
3,5	14.000	420	6.000	190	4.600	120	3.800	80
3,6	13.500	430	5.900	200	4.500	120	3.700	85
3,7	12.500	430	5.700	200	4.400	120	3.600	85
3,8	12.500	440	5.600	210	4.400	120	3.600	85
3,9	12.000	440	5.500	210	4.200	125	3.500	85
4	12.000	450	5.400	210	4.200	125	3.500	90
4,1	11.500	480	5.300	220	4.100	125	3.400	90
4,2	11.500	480	5.300	220	4.100	125	3.300	90
4,3	11.000	480	5.200	230	4.000	125	3.300	90
4,4	11.000	500	5.100	240	3.900	130	3.200	95
4,5	10.500	500	5.100	240	3.900	130	3.200	95
4,6	10.500	520	5.000	250	3.800	130	3.200	95
4,7	10.500	520	5.000	260	3.800	130	3.100	95
4,8	10.500	530	4.900	260	3.700	130	3.100	95
4,9	10.000	530	4.900	270	3.600	130	3.100	95
5	9.500	540	4.800	270	3.500	130	3.000	100
5,1	9.500	540	4.700	270	3.500	130	3.000	100
5,2	9.300	540	4.600	270	3.400	130	2.900	100
5,3	9.200	540	4.600	270	3.400	130	2.900	100
5,4	9.000	540	4.500	270	3.300	130	2.800	100
5,5	8.800	540	4.400	270	3.200	130	2.700	100
5,6	8.700	540	4.300	270	3.100	130	2.600	100
5,7	8.500	540	4.200	270	3.100	130	2.600	100
5,8	8.400	530	4.200	270	3.000	130	2.600	100
5,9	8.200	530	4.100	270	2.900	130	2.500	100
6	7.900	530	4.000	270	2.900	130	2.500	100
6,5	7.500	530	3.700	270	2.700	130	2.300	100
7	6.900	530	3.400	270	2.500	130	2.100	100
7,5	6.400	530	3.200	270	2.300	130	2.000	100
8	5.900	520	3.000	260	2.200	125	1.900	100
8,5	5.600	520	2.800	260	2.000	125	1.700	100
9	5.300	510	2.600	260	1.900	125	1.500	100
9,5	5.100	510	2.500	260	1.800	125	1.400	95
10	4.700	500	2.400	250	1.700	125	1.500	95
11	4.400	500	2.200	250	1.600	125	1.100	95
12	4.000	510	2.000	250	1.400	125	1.200	95
16	3.000	400	1.500	200	1.100	115	800	80
18	2.700	360	1.300	180	900	100	700	70
20	2.400	300	1.200	150	800	90	600	60

Max cutting depth



D < ø1	0,1D
ø1 ≤ D < ø3	0,3D
ø3 ≤ D	0,5D

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizzare dei lubrificanti di taglio adeguati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske.

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma procenttal
3. Använd anpassad skärvätska.

1. Используйте жесткие и точные станки и фрезерные патроны
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя
3. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniesz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

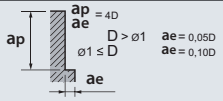
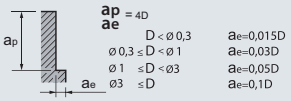
BACK

WXL-4D-DE

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim için parmak freze
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	Cu		~32 HRC FC250 ■ SS400 ■ S55C ■ NAK55		33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH		42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH	
Ø	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)
0,2	32.000	90	22.500	30	19.000	30	—	—
0,3	32.000	110	22.500	40	19.000	35	—	—
0,4	25.000	110	16.000	45	14.500	35	—	—
0,5	20.000	120	13.000	45	13.000	40	—	—
0,6	16.000	120	11.000	45	10.000	40	—	—
0,7	16.000	120	9.400	45	6.800	40	—	—
0,8	12.000	120	8.400	45	6.000	40	—	—
0,9	12.000	120	7.500	45	5.400	40	—	—
1	9.800	120	5.700	45	5.400	40	—	—
1,1	9.500	140	5.200	45	5.000	40	—	—
1,2	8.600	130	4.800	45	4.500	40	—	—
1,3	8.100	130	4.500	45	4.200	40	—	—
1,4	7.500	130	4.200	45	3.900	40	—	—
1,5	7.000	130	3.900	45	3.600	40	—	—
1,6	6.400	120	3.700	45	3.500	40	—	—
1,7	6.200	120	3.600	45	3.400	40	—	—
1,8	5.800	120	3.300	45	3.100	40	—	—
1,9	5.500	120	3.200	45	3.000	40	—	—
2	5.200	120	3.000	45	2.800	40	—	—
2,1	4.800	120	2.900	45	2.800	40	—	—
2,2	4.600	130	2.700	50	2.600	40	—	—
2,3	4.500	130	2.700	50	2.600	40	—	—
2,4	4.400	130	2.600	55	2.500	40	—	—
2,5	4.100	140	2.500	55	2.500	40	—	—
2,6	3.900	140	2.400	55	2.400	40	—	—
2,7	3.700	150	2.300	55	2.300	45	—	—
2,8	3.600	150	2.200	55	2.200	45	—	—
2,9	3.500	150	2.100	60	2.100	45	—	—
3	3.400	150	2.100	60	2.100	50	1.900	30
3,1	3.200	160	2.000	60	2.000	50	1.800	30
3,2	3.000	160	2.000	65	2.000	50	1.800	30
3,3	2.900	160	1.900	65	1.900	55	1.700	30
3,4	2.800	160	1.800	70	1.800	55	1.700	30
3,5	2.800	160	1.800	70	1.800	55	1.600	30
3,6	2.700	160	1.800	70	1.800	60	1.600	30
3,7	2.700	170	1.700	70	1.700	60	1.500	35
3,8	2.500	170	1.700	70	1.700	60	1.500	35
3,9	2.400	170	1.600	75	1.600	60	1.500	35
4	2.400	170	1.600	75	1.600	65	1.400	35
4,1	2.400	180	1.600	75	1.600	65	1.400	35
4,2	2.300	190	1.600	80	1.600	65	1.400	35
4,3	2.300	190	1.500	80	1.500	65	1.400	35
4,4	2.100	190	1.500	80	1.500	65	1.400	35
4,5	2.100	200	1.500	85	1.500	65	1.300	40
4,6	2.100	200	1.500	85	1.500	65	1.300	40
4,7	2.100	200	1.500	90	1.500	65	1.300	40
4,8	2.100	200	1.500	90	1.500	65	1.300	40
4,9	2.000	210	1.400	90	1.400	65	1.300	40
5	2.000	210	1.400	95	1.400	65	1.300	40
5,1	1.900	210	1.400	95	1.400	65	1.200	40
5,2	1.900	210	1.400	95	1.400	65	1.200	40
5,3	1.800	210	1.300	95	1.300	65	1.200	40
5,4	1.800	210	1.300	95	1.300	65	1.200	40
5,5	1.800	210	1.300	95	1.300	65	1.100	40
5,6	1.700	210	1.300	95	1.300	65	1.100	40
5,7	1.700	210	1.300	95	1.300	65	1.100	40
5,8	1.700	210	1.200	95	1.200	65	1.100	40
5,9	1.600	210	1.200	95	1.200	65	1.000	40
6	1.600	210	1.200	95	1.200	65	1.000	40
8	1.100	200	900	95	900	65	800	40
10	900	200	700	90	700	65	630	40
12	800	200	600	90	600	65	525	40

Max cutting depth		

1. Use a rigid and precise machine and holder. 2. When chattering occurs, reduce the speed and feed simultaneously. 3. Use a suitable cutting fluid with high smoke retardant properties.	1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione. 2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento. 3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel. 2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren. 3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.	1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision. 2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance. 3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.
1. Anvend stabil maskine og værktøjsholder 2. Ved vibrationer reducér omdrejninger og tilspænding simultant 3. Anvend en passende skærevæske.	1. Use maquina y portaherramientas rigidos y precisos 2. En caso de vibración reduzca velocidad y avance simultaneamente 3. Use fluido de corte adecuado con retardador de humos
1. Använd en stabil maskin och verktygshållare 2. Vid vibrationer sänk varvtal och matning med samma procenttal 3. Använd anpassad skärvätska.	1. Используйте жесткие и точные станки и фрезерные патроны 2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя 3. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
1. Rijit, hassas tezgah ve takım tutucu kullanınız 2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz 3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın	1. Użyj sztywnej i precyzyjnej maszyny i uchwytu 2. Przy wystąpieniu drgań zmniesz prędkość oraz posuw 3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

WXL-EMS

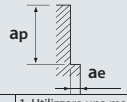
Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme
Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



Ø	Cu S (min⁻¹)	Cu F (mm/min)	~35 HRC FC250 ■ SS400 ■ S55C ■ NAK55 S (min⁻¹)	~35 HRC F (mm/min)	35~45 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH S (min⁻¹)	35~45 HRC F (mm/min)	45~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH S (min⁻¹)	45~50 HRC F (mm/min)
1	50.000	440	24.000	210	14.000	78	12.500	70
1,5	50.000	975	16.000	310	9.250	115	8.400	105
2	47.500	1.100	12.000	295	7.000	110	6.350	100
2,5	38.000	1.900	9.600	480	6.200	140	5.550	125
3	32.000	1.600	8.150	430	5.300	125	4.750	110
4	24.000	1.700	6.050	450	4.250	135	3.700	115
5	19.000	2.000	4.900	520	3.550	140	3.150	125
6	16.000	2.000	4.100	520	2.950	145	2.650	130
8	12.000	1.900	3.050	505	2.200	145	1.950	130
10	9.500	1.900	2.450	505	1.750	145	1.550	130
12	7.900	1.900	2.050	505	1.450	145	1.300	130
14	6.800	1.900	1.750	495	1.250	145	1.100	125
15	6.300	1.900	1.600	490	1.150	135	1.050	120
16	5.900	1.800	1.500	480	1.100	130	995	115
18	5.300	1.800	1.350	470	990	115	880	105
20	4.700	1.700	1.200	445	890	105	795	95
25	3.800	1.400	970	360	710	85	635	75
30	3.100	1.100	815	300	590	70	530	60

Max cutting depth

	ap	ae
D<Ø3	1,5D	0,05D
Ø3≤D	1,5D	0,1D



ap	ae
1D	0,02D

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.
4. Refer to the table above to set the milling conditions in accorance with the actual situation

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adeguati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.
4. Variare le condizioni della suddetta tabella in conformità alla effettiva situazione.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel..
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.
4. Entnehmen sie die Schnittdaten entsprechend Ihrer aktuellen Bearbeitungsaufgabe aus der oben gezeigten Tabelle.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. Utilisez de l'arrosage en brouillard (mist).
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.
4. Ajuster la vitesse, avances et la profondeur de coupe en fonction de la précision de la machine ainsi que le chemin de fraisage.

1.Anvend stabil maskine og værktøjsholder
2 Ved vibrationer reducér omdrejninger og tilspænding procenttal
3.Anvend en passende skærevæske
4.Se ovenstående tabel for skæredata tilpasset den aktuelle situation

1.Use maquina y portaherramientas rigidos y precisos
2.En caso de vibración reduzca velocidad y avance simultaneamente
3.Use fluido de corte adecuado con retardador de humos
4.Referirse a la tabla de arriba para las condiciones de fresado, de acuerdo con la situación real

1.Använd en stabil maskin och verktygshållare
2.Vid vibrationer sänk varvtal och matning med samma simultant
3.Använd anpassad skärvätska
4.Se ovanstående tabell för skärdata anpassat till det aktuella ingreppet

1.Используйте жесткие и точные станки и фрезерные патроны
2.При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя
3.Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
4.См. таблицу выше, чтобы установить параметры фрезерования в соответствии с фактической ситуацией

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Kesme koşullarını ayarlamak için yukarıda ki tabloya bakınız

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniesz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Odwołaj się do tabeli powyżej, aby ustawić warunki frezowania adekwatne ze stanem faktycznym

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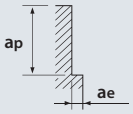
High speed side milling - HSC Konturfräsen - Sgrossatura e contornatura alta velocità - Contournage UGV
Højhastigheds sidefræsning - High speed valsfräsning - Contorneado a alta velocidad - Высокоскоростное контурное фрезерование - Frezowanie boczne



Ø	Cu S (min⁻¹)	Cu F (mm/min)	~35 HRC FC250 ■ SS400 ■ S55C ■ NAK55 S (min⁻¹)	~35 HRC F (mm/min)	35~45 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH S (min⁻¹)	35~45 HRC F (mm/min)	45~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH S (min⁻¹)	45~50 HRC F (mm/min)
6	26.000	2.900	20.000	2.300	13.000	1.500	7.950	795
8	19.500	3.000	14.500	2.300	9.900	1.450	5.950	795
10	15.500	2.900	12.000	2.300	7.950	1.450	4.750	795
12	13.000	3.000	9.900	2.300	6.600	1.450	3.950	790
14	11.000	2.800	8.500	2.200	5.650	1.350	3.400	740
15	10.500	2.800	7.950	2.150	5.250	1.350	3.150	730
16	9.700	2.700	7.450	2.100	4.950	1.350	2.950	715
18	8.600	2.700	6.600	2.100	4.400	1.300	2.650	705
20	7.800	2.600	5.950	2.000	3.950	1.300	2.350	665
25	6.200	2.000	4.750	1.600	3.150	1.050	1.900	560
30	5.200	1.700	3.950	1.350	2.650	890	1.550	455

Max cutting depth

	ap	ae
D<Ø8	1.5D	0.01D
Ø8≤D	1.5D	0.02D



	ap	ae
D<Ø8	1D	0.01D
Ø8≤D	1D	0.02D

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adeguati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.
4. Durante la fresatura a secco, utilizzare dell'aria.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmemden Zusätzen.
4. Bei Trockenbearbeitung Druckluft zum Entfernen der Späne verwenden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. Utilisez de l'arrosage en brouillard (mist).
3. Utilisez des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.
4. Lors de l'usinage à sec veuillez utiliser de l'air pour l'évacuation des copeaux.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske
4. Se ovenstående tabel for skæredata tilpasset den aktuelle situation.

1.Use maquina y portaherramientas rigidos y precisos
2.En caso de vibración reduzca velocidad y avance simultaneamente
3.Use fluido de corte adecuado con retardador de humos
4.Referirse a la tabla de arriba para las condiciones de fresado, de acuerdo con la situación real

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma simultant
3. Använd anpassad skärvätska
4. Se ovanstående tabell för skärdata anpassat till det aktuella ingreppet

1. Используйте жесткие и точные станки и фрезерные патроны
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя
3. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Kesme koşullarını ayarlamak için yukarıda ki tabloya bakınız

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniesz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Odwołaj się do tabeli powyżej, aby ustawić warunki frezowania adekwatne ze stanem faktycznym

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne

WXL-LN-EMS-6



	C≤0,2% - GG SS400 ■ S55C ■ FC250 ~750 N/mm²		~30 HRC SCM ■ SKT ■ SKS ■ SKD		30~38 HRC SKT ■ SKD ■ NAK55 ■ HPM1		38~45 HRC-SUS SUS304 ■ SKD		45~55 HRC Tiall		55~60 HRC	
	100 (m/min)		78 (m/min)		66 (m/min)		62 (m/min)		60 (m/min)		30 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
1	26.500	1.000	21.500	700	17.500	500	15.000	400	9.500	160	6.350	60
1,5	17.500	1.000	14.000	700	11.500	500	10.000	400	6.350	160	4.250	60
2	13.000	1.050	10.500	700	8.900	590	7.600	400	4.750	160	3.200	60
2,5	10.400	1.250	8.400	700	7.100	500	6.100	400	3.800	160	2.550	60
3	8.900	1.000	7.200	700	5.900	500	5.050	400	3.150	160	2.100	60
4	6.650	1.000	5.400	700	4.450	500	3.800	400	2.350	160	1.550	60
5	5.300	1.000	4.300	700	3.550	500	3.050	400	1.900	160	1.250	60
6	4.450	1.000	3.600	700	2.950	500	2.500	400	1.550	160	1.050	60

Max cutting depth	$a_p = 0,5D$		$a_p = 0,05D$

1. Use a rigid and precise machine and holder. 2. When chattering occurs, reduce the speed and feed simultaneously. 3. Use a suitable cutting fluid with high smoke retardant properties.	1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione. 2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento. 3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel. 2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren. 3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.	1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision. 2. Utiliser de l'arrosage en brouillard (mist). 3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.
1. Anvend stabil maskine og værktøjsholder 2. Ved vibrationer reducér omdrejninger og tilspænding simultant 3. Anvend en passende skærevæske	1. Use maquina y portaherramientas rigidos y precisos 2. En caso de vibración reduzca velocidad y avance simultaneamente 3. Use fluido de corte adecuado con retardador de humos
1. Använd en stabil maskin och verktygshållare 2. Vid vibrationer sänk varvtal och matning med samma simultant 3. Använd anpassad skärvätska	1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали. 2. При возникновении вибраций, снизьте скорость и подачу одновременно. 3. Используйте качественную СОЖ с низким коэффициентом дымления.
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2.Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz 3.Duman emisyon katsayısı düşük olan bir soğutucu kullanın	1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny 2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty. 3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu

BACK

CARBIDE

CARBIDE

WXL-LN-EDS

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków -



		Cu			<32 HRC FC250 ■ SS400 ■ S55C			33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH			42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH		
D	l2	S (min⁻¹)	F (mm/min)	ap	S (min⁻¹)	F (mm/min)	ap	S (min⁻¹)	F (mm/min)	ap	S (min⁻¹)	F (mm/min)	ap
0,2	0,5	35.200	490	0,022	32.000	450	0,018	32.000	450	0,015	29.000	250	0,012
0,2	1	35.200	380	0,016	32.000	350	0,013	32.000	350	0,011	29.000	200	0,009
0,2	1,5	31.000	270	0,010	28.000	250	0,008	28.000	250	0,007	25.000	150	0,005
0,3	1	38.500	480	0,032	32.000	400	0,027	32.000	350	0,023	29.000	300	0,018
0,3	2	33.500	360	0,024	28.000	300	0,02	28.000	250	0,017	25.000	200	0,013
0,3	3	26.500	300	0,011	22.000	250	0,009	22.000	160	0,007	20.000	150	0,005
0,4	2	38.500	480	0,031	32.000	400	0,026	32.000	350	0,022	29.000	300	0,018
0,4	3	33.500	360	0,02	28.000	300	0,017	28.000	250	0,014	25.000	200	0,011
0,4	4	26.500	300	0,014	22.000	250	0,012	22.000	200	0,01	20.000	150	0,008
0,5	2	38.500	600	0,054	32.000	500	0,045	32.000	400	0,038	29.000	300	0,03
0,5	4	33.500	480	0,025	28.000	400	0,021	28.000	320	0,018	25.000	250	0,014
0,5	6	26.500	420	0,007	22.000	350	0,006	22.000	220	0,005	20.000	180	0,004
0,5	8	24.000	320	0,006	20.000	270	0,005	20.000	180	0,003	20.000	150	0,003
0,6	2	38.500	720	0,065	32.000	600	0,054	32.000	400	0,045	27.000	300	0,036
0,6	4	33.500	540	0,048	28.000	450	0,04	28.000	300	0,033	25.000	200	0,026
0,6	6	26.500	300	0,022	22.000	250	0,018	22.000	200	0,015	20.000	150	0,012
0,6	8	26.500	300	0,008	22.000	250	0,007	22.000	200	0,006	20.000	150	0,005
0,6	10	24.000	240	0,006	20.000	200	0,005	18.000	150	0,004	18.000	130	0,003
0,7	2	38.500	720	0,076	32.000	600	0,063	32.000	500	0,053	26.000	400	0,042
0,7	4	33.500	540	0,055	28.000	450	0,046	28.000	300	0,039	22.000	300	0,031
0,7	6	33.500	540	0,035	28.000	450	0,029	28.000	200	0,025	22.000	200	0,02
0,7	8	26.500	300	0,02	22.000	250	0,017	22.000	200	0,014	20.000	150	0,011
0,7	10	26.500	300	0,01	22.000	250	0,008	22.000	200	0,007	20.000	150	0,006
0,8	4	38.500	720	0,064	32.000	600	0,053	32.000	600	0,044	25.000	400	0,035
0,8	6	31.000	540	0,041	26.000	450	0,034	26.000	400	0,028	21.000	300	0,022
0,8	8	26.500	420	0,029	22.000	350	0,024	22.000	300	0,02	18.000	250	0,016
0,8	10	26.500	420	0,012	22.000	350	0,01	22.000	300	0,008	18.000	240	0,006
0,8	12	20.500	360	0,008	17.000	300	0,007	17.000	300	0,006	15.000	200	0,004
0,9	6	36.000	1.200	0,071	30.000	1.000	0,059	28.000	780	0,05	22.000	600	0,04
0,9	8	31.000	960	0,046	26.000	800	0,038	25.000	600	0,032	19.000	400	0,025
0,9	10	24.000	720	0,032	20.000	600	0,027	20.000	500	0,023	16.000	300	0,018
0,9	15	20.500	360	0,01	17.000	300	0,008	17.000	300	0,006	16.000	300	0,005
1	6	32.500	1.200	0,084	27.000	1.000	0,07	26.000	900	0,06	20.000	600	0,04
1	8	27.500	960	0,048	23.000	800	0,04	22.000	700	0,04	18.000	400	0,03
1	10	23.000	720	0,036	19.000	600	0,03	18.000	500	0,028	15.000	300	0,02
1	12	23.000	720	0,024	19.000	600	0,02	18.000	500	0,019	15.000	300	0,01
1	14	18.000	480	0,012	15.000	400	0,01	15.000	400	0,009	12.000	200	0,008
1	16	18.000	360	0,01	15.000	300	0,008	15.000	300	0,007	12.000	200	0,006
1,2	6	27.500	1.200	0,096	23.000	1.000	0,08	22.000	900	0,07	17.000	600	0,05
1,2	8	24.000	840	0,084	20.000	700	0,07	19.000	700	0,05	14.000	400	0,04
1,2	10	24.000	840	0,06	20.000	700	0,05	19.000	700	0,04	14.000	400	0,03
1,2	12	20.500	720	0,048	17.000	600	0,04	16.000	500	0,03	11.000	300	0,02
1,4	6	24.000	1.200	0,156	20.000	1.000	0,13	19.000	900	0,11	15.000	600	0,09
1,4	8	21.500	960	0,108	18.000	800	0,09	17.000	700	0,08	13.000	400	0,06
1,4	10	21.500	960	0,072	18.000	800	0,06	17.000	700	0,05	13.000	400	0,04
1,4	12	21.500	960	0,06	18.000	800	0,05	17.000	700	0,04	13.000	400	0,03
1,4	14	18.000	720	0,048	15.000	600	0,04	14.000	500	0,035	11.000	300	0,03
1,4	16	18.000	720	0,036	15.000	600	0,03	14.000	500	0,02	11.000	300	0,02
1,5	6	21.500	1.200	0,168	18.000	1.000	0,14	18.000	900	0,11	14.000	600	0,09
1,5	8	19.000	960	0,12	16.000	800	0,1	15.000	700	0,08	12.000	400	0,07
1,5	10	19.000	960	0,096	16.000	800	0,08	15.000	700	0,07	12.000	400	0,05
1,5	12	19.000	960	0,072	16.000	800	0,06	15.000	700	0,05	12.000	400	0,04
1,5	14	19.000	960	0,06	16.000	800	0,05	15.000	700	0,045	12.000	400	0,035
1,5	16	17.000	720	0,06	14.000	600	0,05	13.000	500	0,04	10.000	300	0,03
1,5	18	17.000	720	0,036	14.000	600	0,03	13.000	500	0,02	10.000	300	0,02
1,5	20	14.500	500	0,024	12.000	420	0,02	11.000	380	0,015	10.000	300	0,01
1,6	6	20.500	1.200	0,18	17.000	1.000	0,15	17.000	900	0,13	13.000	600	0,1
1,6	8	18.000	960	0,168	15.000	800	0,14	15.000	700	0,12	11.000	400	0,1
1,6	10	18.000	960	0,132	15.000	800	0,11	15.000	700	0,09	11.000	400	0,07
1,6	12	18.000	960	0,084	15.000	800	0,07	15.000	700	0,06	11.000	400	0,05
1,6	14	18.000	960	0,072	15.000	800	0,06	15.000	700	0,05	11.000	400	0,04
1,6	16	15.500	720	0,06	13.000	600	0,05	13.000	500	0,04	9.000	300	0,035
1,6	18	15.500	720	0,048	13.000	600	0,04	13.000	500	0,03	9.000	300	0,03
1,6	20	15.500	720	0,024	13.000	600	0,02	13.000	500	0,02	9.000	300	0,01
1,8	6	19.000	1.300	0,264	16.000	1.100	0,22	15.000	1.000	0,18	12.000	700	0,14
1,8	8	19.000	1.300	0,252	16.000	1.100	0,21	15.000	1.000	0,17	12.000	700	0,13
1,8	10	17.000	960	0,144	14.000	800	0,12	14.000	700	0,1	10.000	500	0,08
1,8	12	17.000	960	0,12	14.000	800	0,1	14.000	700	0,08	10.000	500	0,07
1,8	14	17.000	960	0,096	14.000	800	0,08	14.000	700	0,06	10.000	500	0,05
1,8	16	17.000	960	0,084	14.000	800	0,07	14.000	700	0,05	10.000	500	0,04
1,8	18	14.500	720	0,06	12.000	600	0,05	12.000	500	0,045	8.000	400	0,035
1,8	20	14.500	720	0,048	12.000	600	0,04	12.000	500	0,04	8.000	400	0,03
2	6	18.000	1.300	0,372	15.000	1.100	0,31	14.000	1.000	0,26	11.000	700	0,21
2	8	18.000	1.300	0,312	15.000	1.100	0,26	14.000	1.000	0,22	11.000	700	0,18
2	10	15.500	960	0,288	13.000	800	0,24	12.000	700	0,2	9.000	500	0,16
2	12	15.500	960	0,156	13.000	800	0,13	12.000	700	0,11	9.000	500	0,09
2	14	15.500	960	0,132	13.000	800	0,11	12.000	700	0,09	9.000	500	0,07
2	16	15.500	960	0,096	13.000	800	0,08	12.000	700	0,07	9.000	500	0,06
2	18	15.500	960	0,084	13.000	800	0,07	12.000	700	0,06	9.000	500	0,05
2	20	13.000	720	0,06	11.000	600	0,05	10.000	500	0,05	7.000	400	0,04
2	25	13.000	720	0,036	11.000	600	0,03	10.000	500	0,02	7.000	400	0,02
2	30	13.000	720	0,024	11.000	600	0,02	10.000	500	0,01	7.000	400	0,01
2,5	8	14.500	1.300	0,468	12.000	1.100	0,39	11.000	1.000	0,33	9.000	700	0,26
2,5	10	14.500	1.300	0,396	12.000	1.100	0,33	11.000	1.000	0,28	9.000	700	0,22
2,5	12	14.500	1.300	0,276	12.000	1.100	0,23	11.000	1.000	0,19	9.000	700	0,15
2,5	14	12.000	960	0,204	10.000	800	0,17	9.000	700	0,14	7.000	500	0,11
2,5	16	12.000	960	0,144	10.000	800	0,12	9.000	700	0,1	7.000	500	0,08

BACK

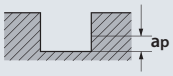
Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków -

WXL-LN-EDS



	Cu			<32 HRC FC250 ■ SS400 ■ S55C			33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH			42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH		
D	l2	S (min⁻¹)	F (mm/min)	ap	S (min⁻¹)	F (mm/min)	ap	S (min⁻¹)	F (mm/min)	ap	S (min⁻¹)	F (mm/min)	ap
2,5	18	12.000	960	0,132	10.000	800	0,11	9.000	700	0,09	7.000	500	0,07
2,5	20	12.000	960	0,108	10.000	800	0,09	9.000	700	0,08	7.000	500	0,06
2,5	25	9.600	720	0,096	8.000	600	0,08	8.000	500	0,06	6.000	400	0,05
2,5	30	9.600	720	0,036	8.000	600	0,03	8.000	500	0,03	6.000	400	0,02
3	8	12.000	1.300	0,432	10.000	1.100	0,36	10.000	1.000	0,3	8.000	700	0,24
3	10	12.000	1.300	0,348	10.000	1.100	0,29	10.000	1.000	0,24	8.000	700	0,19
3	12	12.000	1.300	0,324	10.000	1.100	0,27	10.000	1.000	0,23	8.000	700	0,18
3	14	12.000	1.300	0,3	10.000	1.100	0,25	10.000	1.000	0,21	8.000	700	0,17
3	16	12.000	960	0,24	10.000	800	0,2	9.000	700	0,17	6.000	500	0,13
3	18	12.000	960	0,168	10.000	800	0,14	9.000	700	0,12	6.000	500	0,1
3	20	12.000	960	0,156	10.000	800	0,13	9.000	700	0,11	6.000	500	0,08
3	25	12.000	960	0,132	10.000	800	0,11	9.000	700	0,09	6.000	500	0,07
3	30	9.600	720	0,108	8.000	600	0,09	7.000	500	0,08	5.000	400	0,06
3	35	9.600	720	0,084	8.000	600	0,07	7.000	500	0,06	5.000	400	0,05
3	40	9.600	720	0,048	8.000	600	0,04	7.000	500	0,03	5.000	400	0,02
4	12	8.550	1.350	0,456	7.000	1.100	0,38	7.000	1.000	0,32	6.000	700	0,26
4	16	8.550	1.350	0,432	7.000	1.100	0,36	7.000	1.000	0,3	6.000	700	0,24
4	20	8.550	970	0,408	7.000	800	0,34	6.000	700	0,28	5.000	500	0,22
4	25	8.550	970	0,312	7.000	800	0,26	6.000	700	0,22	5.000	500	0,18
4	30	8.550	970	0,228	7.000	800	0,19	6.000	700	0,16	5.000	500	0,13
4	35	8.550	970	0,204	7.000	800	0,17	6.000	700	0,14	5.000	500	0,11
4	40	7.300	730	0,168	6.000	600	0,14	5.000	600	0,12	4.000	400	0,1
4	45	7.300	730	0,144	6.000	600	0,12	5.000	600	0,1	4.000	400	0,08
4	50	7.300	730	0,06	6.000	600	0,05	5.000	600	0,04	4.000	400	0,03
5	16	7.300	1.350	0,54	6.000	1.100	0,45	5.000	900	0,38	5.000	600	0,3
5	25	6.100	970	0,504	5.000	800	0,42	5.000	700	0,35	5.000	600	0,28
5	35	6.100	970	0,396	5.000	800	0,33	5.000	700	0,28	5.000	600	0,22
5	50	4.900	610	0,180	4.000	500	0,15	3.000	400	0,13	3.000	400	0,1

Max cutting depth



1. Use a rigid and precise machine and holder.
2. When machining carbon steel or hardened steel, using MQL (Minimum Quantity Lubrification, mist coolant) or air blow is recommended.
3. When using cutting fluid, choose based on work material and cutting conditions.
4. The cutting conditions shown for 3D milling are low-load, safe conditions for references. Refer to the table above to set the milling conditions in accordance with the actual situation.
5. Please adjust conditions based on machining accuracy, machining shape and machining path.
6. When using a tool with a dia. of 0,5 or less, or an L/D (effective length/tool diameter) ratio of reater than 10, high loads can cause tool breakage.
7. When the availbale RPM are insufficient, please reduce the RPM and feed rates in proportion.

1. Utilizzare una macchina ed un mandrino di elevato rigidità e di alta precisione
2. Suggeriamo l'utilizzo di aria compressa o lubrificazione minimale (misto olio)
3. Quando si utilizza fluido da taglio, basare la scelta sul materiale e parametri di taglio
4. Le condizioni di taglio sono indicate per fresature 3D. Fare riferimento alle condizioni in tabella tenendo conto delle condizioni di lavoro specifiche.
5. Regolare la velocità, l'avanzamento e la profondità di taglio secondo le attuali condizioni di taglio
6. La presente tabella si riferisce a parametri approssimativi di operazioni di contornatura.
7. Regolare la velocità, l'avanzamento e la profondità di taglio

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel
2. Wir empfehlen Luft-oder Minimalmengenschmierung für die Bearbeitung von Kohlenstoffstahl und Gehärteter Stahl
3. Bei der Verwendung von Kühlmittel, wählen Sie auf der Werkstoffe und Schnittgeschwidigkeit
4. Die oben angegeben Schnittwerte sind für regular 3D fräsen. Entnehmen Sie die Schnittdaten entsprechend Ihrer aktuellen Bearbeitungsaufgabe aus der oben gezeigten Tabelle
5. Bitte regulieren Sie Schnittgeschwindigkeit, Vorschub und Spanntiefe entsprechend Ihrer aktuelllen Zerspannungbedingungen
6. Schnittwerde sind für Werkzeugen mit dia >0,5, oder L/D ratio (Länghe/dia) < 10. Bei andere Auskraglängen müssen Schnittgeschwindigkeit, Vorschub und Spanntiefe verändert werden
7. Bitte regulieren Sie Schnittgeschwindigkeit, Vorschub

1. Veuillez utiliser une machine rigide et des attachements précis
2. Pour l'usinage des aciers au carbone et des aciers traités, nous recommandons l'utilisation d'air mélangé à de l'huile/microlubrification ou de l'air comprimé
3. Si vous utilisez un liquide de coupe, veuillez veiller à ce qu'il soit approprié pour la matière usinée
4. Pour un diamètre d'outil donné, veuillez SVP bien accorder les paramètres du tableau ci-dessus à la longueur déport de l'outil
5. Veuillez SVP mettre en accord les performances de votre machine en accord avec la forme et le parcours de l'usinage
6. Si vous utilisez un outil de diamètre < ou égal à 0,5 mm avec un rapport longueur de sortie effective/Diamètre, supérieur à 10, veuillez SVP réduire l'avance de travail en conséquence
7. Si vous ne disposez pas des vitesses de rotation nécessaires, veuillez réduire avance et rotation proportionnellement

1. Anvend stabil maskine og værktøjsholder
2. Minimalsmøring tilrådes ved bearbejdning af legeret stål eller hærdet stål
3. Ved brug af kølemiddel, vælg da udfra emnemateriale og skæredata
4. Skæredata vist for 3D bearbejdning er lave data for sikkerhed. Se ovenstående tabel for skæredata der passer til aktuel situation
5. Venligst justér skæredata efter maskinens nøjagtighed og bearbejdningens udformning
6. Ved brug af fræser under Ø 0,5mm eller mindre, eller en L/D ratio størrer end 10, kan høj belastning kan resultere i brud. Tilpas derfor skæredata til aktuel situation
7. Hvis maskinen ikke har de tilstrækkelige omdrejninger, reducér omdrejninger og tilspænding proportionalt

1. Use maquina y portaherramientas rigidos y precisos
2. En mecanizado de aceros al carbono o de acero endurecido, recomendable MQL (cantidad mínima lubrificación / niebla refrigerante).
3. Use fluido de corte adecuado con retardador de humos
4. Datos de corte para fresado 3D con baja carga y condiciones de seguridad. Referirse a la tabla de arriba para las condiciones de fresado, conforme a la situación real
5. Por favor, ajustar las condiciones de mecanizado a la precisión, forma de mecanizado y recorrido del mecani zado
6. Con herramienta de Ø 0,5 (R 0,5) o menor, o un LD (vuelo efectivo / diámetro superior a 10, cargas elevadas pueden causar rotura de la herramienta.
7. Cuando las RPM disponibles son insuficientes, por favor, reducir la RPM y la velocidad de avance en proporción.

1. Använd en stabil maskin och verktygshållare
2. Minimalsmörjning rekommenderas vid bearbetning i legerat och härdat stål
3. Vid användning av skärvätska, välj skärvätska avsedd för arbetsmaterialet och skär möjligheterna
4. Skärdatan visar körning för 3D med liten belastning, för säkrare förhållande. Använd tabellen ovan som utgångspunkt för den aktuella situationen
5. Justera skärdatan efter detaljens utformning och maskinens stabilitet.
6. Vid användning av fräsar under Ø 0,5mm eller mindre, eller L/D (skärlängd/verktygs Ø) större än 10, kan hög belastning resultera i verktygsbrott. Anpassa därför skärdata till aktuell situation.
7. Om maskinen inte har tillräckligt med varvtal, reducera varvtal och matningar proportionellt

1. Используйте жесткие и точные станки и фрезерные патроны
2. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
3. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дымаа
4. Пожалуйста отрегулируйте обороты шпинделя, подачу и глубину резания в соответствии с условиями обработки
5. Пожалуйста установите режимы резания основываясь на жесткости станка, формы детали и траектории фрезерования
6. Если максимальная скорость вращения шпинделя недостаточна, пожалуйста уменьшите обороты шпинделя и подачу пропорционально
7. Если максимальная скорость вращения шпинделя недостаточна, пожалуйста уменьшите обороты шпинделя и подачу пропорциональн

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Karbon çeliklerini be sertleştirilmiş çelikleri işlediğinizde, MQL kullanmanız önerilmektedir
3. Kullanacağınız kesme sıvısını seçimini iş parçasına ve kesme koşullarına göre yapınız
4. Gösterilen kesme koşulları düşük yüklü 3D frezeleme içindir, güvenli koşullardır. Kesme koşullarını ayarlamak için yukarıda ki tabloya bakınız
5. Lütfen kesme koşullarını tezgahın hassasiyetine, işleme şekline ve işlenecek yere göre ayarlayınız
6. Kullanılan takımın çapı 0,5mm veya daha düşük ise, yada B/Ç (etkili boy/takım çapı) oranı 10 dan küçük ise, uygulanılacak fazla yükte takım kırılması yaşanabilir
7. Mevcut DEVİR yetersiz kaldığında, lütfen DEVİRİ ve ilerlemeyi düşürünüz

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Do obróbki stali węglowych lub stali hartowanej, jest zalecane użycie MQL (minimalna ilość smarowania / mgły olejowej
3. Podczas korzystania z chłodziwa wybierz na podstawie materiału obrabianego i warunków skrawania.
4. Warunkiem frezowania 3D są niskie obciążenia i bezpieczne warunki do odniesienia. Odwołaj się do tabeli powyżej, aby ustawić warunki frezowania zgodnie z rzeczywistą sytuacją.
5. Prosimy zmienić warunki na podstawie dokładności obróbki, kształtu obróbki i ścieżki obróbki.
6. Podczas korzystania z narzędzia o śred. z 0,5 lub mniejszej, lub stosunek L / D (długość efektywna / średnica) < 10, wysokie obciążenia mogą spowodować uszkodzenie narzędzia.
7. Kiedy dostępne obroty są niewystarczające, należy zmniejszyć obroty i posuwy proporcjonalnie.

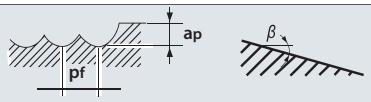
WXL-EBD

Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Düzenli frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Normalne frezowanie



R	Cu				~32 HRC FC250 ■ SS400 ■ S55C ■ NAK55				33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH				42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH			
	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
R 0,05	40.000	450	0,005	0,02	32.000	380	0,005	0,02	32.000	250	0,005	0,02	32.000	170	0,005	0,01
R 0,1	40.000	480	0,01	0,04	32.000	400	0,01	0,04	32.000	265	0,01	0,04	32.000	180	0,01	0,02
R 0,2	40.000	490	0,02	0,08	32.000	410	0,02	0,08	32.000	330	0,04	0,08	32.000	205	0,02	0,04
R 0,3	40.000	580	0,03	0,12	32.000	490	0,03	0,12	32.000	420	0,06	0,12	32.000	265	0,03	0,06
R 0,4	40.000	660	0,04	0,16	32.000	550	0,04	0,16	31.500	420	0,08	0,16	27.500	290	0,04	0,08
R 0,5	32.000	750	0,05	0,2	31.500	620	0,05	0,2	25.000	400	0,1	0,2	22.000	285	0,05	0,1
R 1	19.000	750	0,2	0,4	15.500	620	0,2	0,4	12.500	400	0,2	0,4	11.000	290	0,1	0,2
R 1,5	12.500	760	0,3	0,6	10.500	630	0,3	0,6	8.450	405	0,3	0,6	7.400	290	0,15	0,3
R 2	9.500	760	0,4	0,8	7.950	630	0,4	0,8	6.350	445	0,4	0,8	5.550	370	0,2	0,4
R 3	6.300	800	0,6	1,2	5.300	670	0,6	1,2	4.200	465	0,6	1,2	3.700	390	0,3	0,6
R 4	4.750	950	0,8	1,6	3.950	790	0,8	1,6	3.150	555	0,8	1,6	2.750	455	0,4	0,8
R 5	3.800	890	1	2	3.150	745	1	2	2.500	525	1	2	2.200	430	0,5	1
R 6	3.150	840	1,2	2,4	2.650	700	1,2	2,4	2.100	490	1,2	2,4	1.850	430	0,6	1,2
R 8	2.400	630	1,6	3,2	2.000	525	1,6	3,2	1.600	370	1,6	3,2	1.400	325	0,8	1,6
R 10	1.900	500	2	4	1.600	420	2	4	1.250	290	2	4	1.100	260	1	2

Max cutting depth



1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant properties.
3. Refer to the table above to set the milling conditions in accorance with the actual situation.
* When the length of tool extension from the machine is long, reduce the speed and feed.
** When ß is less than 15°, speedand feed in the above table can be increased 1,5 to 2 times.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. Utilizare dei lubrificanti di taglio adequanti, dotati di une elevato coefficiente di rallentamento di emessione del fumo.
3. Variare le condizioni della suddetta tabella in conformità alla effettiva situazione.
* Quando la sporgenza dell'utensile dal mandrino macchina è particolarmente lunga, ridurre ve locità e avanzamento..
** Quando ß è inferiore a 15°, la velocità e avanzamento sulla suddetta tebella possono essere aumentati di 1,2 a 1,5 volte.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.
3. Entnehmen sie die Schnittdaten entsprechend Ihrer aktuellen Bearbeitungsaufgabe aus der oben gezeigten Tabelle.
* Bei sehr langen Ausspannlängen, reduzieren sie bitte Schnittgeschwindigkeit und Vorschub.
** Wenn ß kleiner 15° ist, können die in der Tabelle angegebenen Werte um das 1,5 bis 2-fache erhöht werden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. Utilisez des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.
3. Ajuster la vitesse, avances et la profondeur de coupe en fonction de la précision de la machine ainsi que le chemin de fraisage.
* Dans le cas d'une grande longueur d'outil, reduire vitesse et avance.
** Quand ß est inférieur à 15°, la vitesse et avance citée dans la table ci-dessus, peuvent être augmentée 1,5 ~ 2 fois.

1. Anvend stabil maskine og værktøjsholder
2. Anvend en passende skærevæske
3. Se ovenstående tabel for skæredata tilpasset den aktuelle situation
* Ved langt udhæng, reducér omdrejninger og tilspænding
** Hvis β er under 15°, kan omdrejninger og tilspænding fra ovenstående tabel øges 1,5 til 2 gange

1. Använd en stabil maskin och verktygshållare
2. Använd anpassad skärvätska
3. Se ovanstående tabell för skärdata anpassat till det aktuella ingreppet
* Vid långt uthäng reducera varvtal och matning
** Om α flankvinkel understiger 15° kan varvtal och matning ökas 1,5 till 2 gånger

1. Use maquina y portaherramientas rigidos y precisos
2. Use fluido de corte adecuado con retardador de humos
3. Referirse a la tabla de arriba para las condiciones de fresado, de acuerdo con la situación real
* Con vuelo de herramienta largo, reduzca la velocidad y el avance
** Cuando β es menor de 15 °, la velocidad y avance en el cuadro anterior se puede aumentar entre 1,5 y 2 veces

1. Используйте жесткие и точные станки и фрезерные патроны
2. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
3. См. таблицу выше, чтобы установить параметры фрезерования в соответствии с фактической ситуацией
* Если длинна инструмента велика, уменьшите обороты шпинделя и подачу
** Если уклон β меньше 15°, подача и обороты шпинделя могут быть увеличены в 1.5-2 раза

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
3. Kesme koşullarını ayarlamak için yukarıda ki tabloya bakınız
* Takım uzatma boyu uzunsa, lütfen hızı ve ilerlemeyi düşürünüz
** ß 15° den düşük ise, yukarıdaki tabloda gösterilen kesme hızı ve ilerlemeyi 1,5 - 2 kat arttırabilirsiniz.

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
3. Patrz na tabelę powyżej w celu ustalenia warunków frezowania zgodnie z rzeczywistą sytuacją.
* Gdy długość wysięgu narzędzia z maszyny jest duża, zmniejsz prędkość i posuw
** Jeśli ß jest mniejszy niż 15 °, prędkość posuwu z powyższej tabeli można zwiększyć 1,5 do 2 razy.

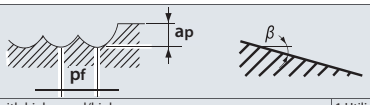
WXL-EBD

High speed light milling - HSC Standardfräsen - Fresatura alta velocità standard - Fraisage UGV - Yüksek hizda hafif frezeleme - High speed bearbejdning (HSM) - Höghastighets maskinering (HSM) - Fresado ligero a alta velocidad - Высокоскоростное «легкое» фрезерование - Frezowanie HSC



	Cu				~ 32 HRC FC250 ■ SS400 ■ S55C ■ NAK55				Hardened Steel - Prehardened Steel 33 ~ 41 HRC				 42 ~ 45 HRC			
R	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
R 0,5	50.000	3.350	0,02	0,05	50.000	2.800	0,02	0,05	50.000	2.500	0,02	0,05	47.500	2.250	0,02	0,05
R 1	31.500	3.350	0,04	0,1	25.000	2.800	0,04	0,1	24.500	2.500	0,04	0,1	23.500	2.250	0,04	0,1
R 1,5	21.000	3.350	0,06	0,15	16.500	2.800	0,06	0,15	16.000	2.500	0,06	0,15	15.500	2.250	0,06	0,15
R 2	15.500	4.080	0,06	0,2	15.500	3.400	0,08	0,2	15.000	2.750	0,08	0,2	13.500	2.450	0,08	0,2
R 2,5	10.500	5.160	0,12	0,3	13.500	4.300	0,3	0,6	11.500	2.750	0,3	0,6	9.500	2.250	0,12	0,3
R 3	7.900	3.840	0,16	0,4	10.000	3.200	0,4	0,8	8.950	2.100	0,4	0,8	7.150	1.700	0,16	0,4
R 4	6.300	3.120	0,2	0,5	8.250	2.600	0,5	1	7.150	1.700	0,5	1	5.700	1.350	0,2	0,5
R 5	5.250	2.580	0,24	0,6	6.850	2.150	0,5	2,4	5.950	1.400	0,5	2,4	4.750	1.100	0,24	0,6
R 6	4.950	1.550	0,32	0,8	4.110	1.290	0,5	3,2	4.460	1.050	0,5	3,2	3.560	820	0,32	0,8
R 8	3.950	1.240	0,4	1	3.250	1.030	0,5	4	3.570	840	0,5	4	2.850	660	0,32	1

Max cutting depth



1. The indicated speeds and feeds are for high speed light milling with high speed/high precision machining centers.
2. We recommend using an air blow. If using cutting fluids, use a high quality fluid with smoke retardant properties.
3. Refer to top the table above to set the milling conditions in accordance with the actual situation.
4. When ß is less than 15°, speed and feed i the above table can be increased 1.2 ~ 1.5 times

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione
2. Utilizzare del lubrificanti di taglio adequanti, dotati di une elevato coefficiente di rallentamento di emmissione del fumo
3. Variare le condizioni della suddetta tabella in conformità alla effectiva situazione
4. Quando β è inferiore à 15°, la velocità e avanzamento sulla suddetta tebella possono essere aumentati di 1,2 à 1,5 volte

1. Die Schnittdaten sind nur für HSC-Schlichten mit geeigneten Maschinen und Werkzeugaufnahmen
2. Wir empfehlen Luftdruch als Kühlmittel, Wenn Sie Schneidöl verwenden, bitte geeignetes Kühlmedium mit rauchhemmenden Zusätzen verwenden
3. Entnehmen Sie die Schnittdaten entsprechend Ihrer aktuellen Bearbeitungsaufgabe aus der oben gezigten Tabelle
4. Wenn β kleiner ist dan 15°, können die in der Tabelle angegebenen Werte um das 1,2 bis 1,5-fache erhöht werden

1. Les vitesses et avances indiquées sont d'application pour l'usinage haute vitesse
2. Nous conseillons l'utilisation de l'air comprimé. En cas d'utilisation des fluides de lubrification utilisez des produits avec des caractéristiques adéquats
3. Ajuster la vitesse, avances et profondeur de coupe en fonction de la précision de la machine ainsi que le chemin de fraisage
4. Quand β est inférieur à 15°, la vitesse et avance citée dans la table ci-dessus peuvent être augmentée 1,2 à 1,5 fois

1. De indikerede skæredata er for "light" højhastighedsbearbejdning i højhastigheds maskiner
2. Brug af lufttryk tilrådes. Ved brug af kølevæske, brug en høj kvalitet
3. Se ovenstående tabel for skæredata tilpasset den aktuelle situation
4. Hvis β er under 15°, kan omdrejninger og tilspænding fra ovenstående tabel øges 1,2 til 1,5 gange

1. La velocidad y de alta velocidad ligh fresado con alta velocidad de alta precisión machineing centros
2. Recomendable aire soplado, si utiliza fluidos de corte, use alta calidad con propiedades retardantes de humos
3. Referirse a la tabla de arriba para las condiciones de fresado, de acuerdo con la situación real
4. Cuando β es menor de 15 °, la velocidad y avance en el cuadro anterior se puede aumentar entre 1,52 y 1,5 veces

1. Den indikerade skärdatan är för finbearbetning i höghastighetsmaskiner
2. Tyckluft rekommenderas. Vid användning av skärvätska använd en hög kvalitet
3. Se ovanstående tabell för skärdata anpassat till det aktuella ingreppet
4. Om α flankvinkel understiger 15° kan varvtal och matning ökas 1,2 till 1,5 gånger

1. Указанные режимы резания для высокоскоростного легкого фрезерования на высокоскоростных прецизионных обрабатывающих центрах
2. Мы рекомендуем использовать обдув воздухом, при использовании жидкостного охлаждения, выбирайте качественную СОЖ с высокой устойчивостью к возникновению дыма
3. См. таблицу выше, чтобы установить параметры фрезерования в соответствии с фактической ситуацией
4. Если уклон β меньше 15°, подача и обороты шпинделя могут быть увеличены в 1,2-1,5 раза

1. Belirtilen kesme hızları ve ilerlemeler yüksek kesme hızlı hafif kesimler ve yüksek hızlı/yüksek hassasiyetli tezgahlar içindir
2. Hava üfleme kullanımını öneriyoruz. Eğer kesme sıvısı kullanılacaksa, yükse kaliteli ve duman geciktirici özelliklerinde olmalıdır
3. Kesme koşullarını ayarlamak için yukarıda ki tabloya bakınız
4. ß 15° den düşük ise, yukarıdaki tabloda gösterilen kesme hızı ve ilerlemeyi 1,5 - 2 kat arttırabilirsiniz.

1. Podane parametry są podane dla obróbki wykańczającej HSC na precyzyjnych maszynach CNC
2. Zalecamy korzystanie z nadmuchu powietrzem. Jeśli używasz płynu chłodzącego, zastosuj wysokiej jakości płyn o właściwościach zmniejszających dymienie
3. Patrz na tabelę powyżej w celu ustalenia warunków frezowania zgodnie z rzeczywistą sytuacją.
4. Jeśli ß jest mniejszy niż 15 °, prędkość posuwu z powyższej tabeli można zwiększyć 1,5 do 2 razy.

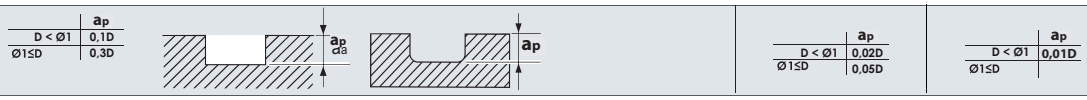
WXL-CR-EDS-6

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim - Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	C≤0,2% - GG SS400 ■ S55C ■ FC250 ~750 N/mm²		~30 HRC SCM ■ SKT ■ SKS ■ SKD		30~38 HRC SKT ■ SKD ■ NAK55 ■ HPM1		38~45 HRC SUS304 ■ SKD		45~55 HRC		55~60 HRC	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
0,2	32.000	125	32.000	115	32.000	100	32.000	90	32.000	60	24.500	30
0,3	32.000	190	32.000	170	32.000	150	32.000	135	32.000	90	18.000	40
0,4	32.000	250	32.000	230	32.000	200	32.000	180	32.000	120	14.000	40
0,5	32.000	320	32.000	290	32.000	250	32.000	225	26.000	130	12.000	40
0,6	32.000	380	32.000	345	32.000	310	27.500	250	22.000	130	10.500	40
0,8	32.000	512	32.000	460	29.000	370	22.000	280	17.500	130	8.750	45
1	30.000	600	27.000	480	25.000	400	19.000	300	14.000	130	7.600	50
1,2	26.500	630	23.500	510	21.000	400	15.500	300	11.500	130	6.600	55
1,4	22.500	630	20.000	510	18.000	400	13.500	300	10.000	130	5.900	55
1,5	21.000	630	19.000	510	16.500	400	12.500	300	9.500	130	5.700	60
1,6	19.500	630	17.500	510	15.500	400	11.500	300	8.950	130	5.550	60
1,8	17.500	630	15.500	510	14.000	400	10.500	300	7.950	130	5.300	65
2	15.500	630	14.000	510	12.500	400	9.500	300	7.150	130	4.750	65
2,5	12.500	630	11.000	510	10.000	400	7.600	300	5.700	130	3.800	65

Max cutting depth



WXL-LN-EBD

Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Düzenli frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Normalne frezowanie



		Cu				~32 HRC FC250 ■ SS400 ■ S55C ■ NAK55				33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH				42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH			
R	Lg (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
0,05	0,3	32.000	150	0,005	0,005	32.000	75	0,005	0,005	32.000	50	0,005	0,005	32.000	35	0,005	0,005
0,05	0,5	32.000	120	0,005	0,005	32.000	60	0,005	0,005	32.000	40	0,005	0,005	32.000	25	0,005	0,005
0,1	0,3	32.000	300	0,02	0,02	32.000	200	0,01	0,01	32.000	200	0,01	0,01	32.000	200	0,005	0,005
0,1	0,5	32.000	300	0,02	0,02	32.000	200	0,01	0,01	32.000	200	0,01	0,01	32.000	200	0,005	0,005
0,1	0,75	32.000	300	0,02	0,02	32.000	200	0,01	0,01	32.000	200	0,01	0,01	32.000	100	0,005	0,005
0,1	1	32.000	150	0,02	0,02	32.000	100	0,01	0,01	32.000	100	0,01	0,01	32.000	80	0,005	0,005
0,1	1,25	32.000	150	0,02	0,02	32.000	100	0,01	0,01	32.000	100	0,01	0,01	32.000	80	0,005	0,005
0,1	1,5	32.000	150	0,02	0,02	32.000	100	0,01	0,01	32.000	100	0,01	0,01	32.000	80	0,005	0,005
0,1	1,75	32.000	150	0,02	0,02	32.000	100	0,01	0,01	32.000	100	0,01	0,01	32.000	80	0,005	0,005
0,1	2	32.000	150	0,01	0,01	32.000	100	0,01	0,01	32.000	100	0,01	0,01	32.000	80	0,005	0,005
0,1	2,5	32.000	75	0,01	0,01	32.000	50	0,005	0,005	32.000	50	0,005	0,005	32.000	40	0,003	0,005
0,1	3	32.000	75	0,01	0,01	32.000	50	0,005	0,005	32.000	50	0,005	0,005	32.000	40	0,003	0,005
0,15	0,5	32.000	600	0,02	0,03	32.000	400	0,01	0,015	32.000	300	0,01	0,015	32.000	300	0,005	0,005
0,15	0,6	32.000	600	0,02	0,03	32.000	400	0,01	0,015	32.000	300	0,01	0,015	32.000	300	0,005	0,005
0,15	0,75	32.000	600	0,02	0,03	32.000	400	0,01	0,015	32.000	300	0,01	0,015	32.000	300	0,005	0,005
0,15	1	32.000	450	0,02	0,03	32.000	300	0,01	0,015	32.000	200	0,01	0,015	32.000	200	0,005	0,005
0,15	1,25	32.000	450	0,02	0,03	32.000	300	0,01	0,015	32.000	200	0,01	0,015	32.000	200	0,005	0,005
0,15	1,5	32.000	450	0,02	0,03	32.000	300	0,01	0,015	32.000	200	0,01	0,015	32.000	200	0,005	0,005
0,15	1,75	32.000	450	0,02	0,03	32.000	300	0,01	0,015	32.000	200	0,01	0,015	32.000	200	0,005	0,005
0,15	2	32.000	450	0,02	0,03	32.000	300	0,01	0,015	32.000	200	0,01	0,015	32.000	200	0,005	0,005
0,15	2,25	32.000	450	0,02	0,02	32.000	300	0,01	0,01	32.000	200	0,01	0,01	32.000	200	0,01	0,01
0,15	2,5	32.000	450	0,02	0,02	32.000	300	0,01	0,01	32.000	200	0,01	0,01	32.000	200	0,01	0,01
0,15	2,75	32.000	450	0,02	0,02	32.000	300	0,01	0,01	32.000	200	0,01	0,01	32.000	200	0,01	0,01
0,15	3	32.000	450	0,02	0,02	32.000	300	0,01	0,01	32.000	200	0,01	0,01	32.000	200	0,005	0,01
0,15	3,5	32.000	270	0,02	0,02	32.000	180	0,01	0,01	32.000	120	0,01	0,01	32.000	120	0,005	0,01
0,15	4	32.000	270	0,02	0,02	32.000	180	0,01	0,01	32.000	120	0,01	0,01	32.000	120	0,005	0,005
0,15	4,5	32.000	270	0,02	0,02	32.000	180	0,01	0,01	32.000	120	0,01	0,01	32.000	120	0,003	0,005
0,15	5	32.000	150	0,01	0,02	32.000	100	0,005	0,01	32.000	70	0,005	0,01	32.000	70	0,003	0,005
0,2	0,5	32.000	750	0,025	0,05	32.000	500	0,015	0,025	32.000	400	0,015	0,02	32.000	400	0,01	0,01
0,2	0,75	32.000	750	0,025	0,05	32.000	500	0,015	0,025	32.000	400	0,015	0,02	32.000	400	0,01	0,01
0,2	1	32.000	600	0,025	0,05	32.000	400	0,015	0,025	32.000	300	0,015	0,02	32.000	300	0,01	0,01
0,2	1,5	32.000	600	0,025	0,05	32.000	400	0,015	0,025	32.000	300	0,015	0,02	32.000	300	0,01	0,01
0,2	2	27.000	450	0,025	0,05	27.000	300	0,015	0,025	27.000	200	0,015	0,02	27.000	200	0,01	0,01
0,2	2,5	27.000	450	0,025	0,05	27.000	300	0,015	0,025	27.000	200	0,015	0,02	27.000	200	0,01	0,01
0,2	3	27.000	450	0,025	0,05	27.000	300	0,015	0,025	27.000	200	0,015	0,02	27.000	200	0,01	0,01
0,2	3,5	27.000	450	0,025	0,05	27.000	300	0,015	0,025	27.000	200	0,015	0,02	27.000	200	0,01	0,01
0,2	4	27.000	450	0,01	0,03	27.000	300	0,005	0,015	27.000	200	0,005	0,012	27.000	200	0,005	0,01
0,2	4,5	24.000	300	0,01	0,03	27.000	200	0,005	0,015	27.000	100	0,005	0,012	27.000	100	0,005	0,01
0,2	5	24.000	300	0,01	0,03	27.000	200	0,005	0,015	27.000	100	0,005	0,012	27.000	100	0,005	0,01
0,2	5,5	21.000	300	0,01	0,02	27.000	200	0,005	0,01	27.000	100	0,005	0,008	27.000	100	0,005	0,005
0,2	6	21.000	150	0,01	0,015	27.000	100	0,005	0,008	27.000	80	0,005	0,006	27.000	80	0,003	0,005
0,25	1	32.000	750	0,04	0,05	32.000	500	0,02	0,025	32.000	400	0,02	0,02	32.000	400	0,01	0,01
0,25	1,5	32.000	750	0,04	0,05	32.000	500	0,02	0,025	32.000	400	0,02	0,02	32.000	400	0,01	0,01
0,25	2	32.000	600	0,04	0,05	32.000	400	0,02	0,025	32.000	300	0,02	0,02	32.000	300	0,01	0,01
0,25	2,5	27.000	450	0,04	0,05	27.000	300	0,02	0,025	27.000	200	0,02	0,02	27.000	200	0,01	0,01
0,25	3	27.000	450	0,04	0,05	27.000	300	0,02	0,025	27.000	200	0,02	0,02	27.000	200	0,01	0,01
0,25	3,5	27.000	450	0,04	0,05	27.000	300	0,02	0,025	27.000	200	0,02	0,02	27.000	200	0,01	0,01
0,25	4	27.000	450	0,04	0,05	27.000	300	0,02	0,025	27.000	200	0,02	0,02	27.000	200	0,01	0,01
0,25	4,5	21.000	300	0,04	0,05	20.000	200	0,02	0,025	20.000	200	0,02	0,02	20.000	200	0,01	0,01
0,25	5	21.000	300	0,04	0,05	20.000	200	0,02	0,025	20.000	150	0,02	0,02	20.000	150	0,01	0,01
0,25	5,5	21.000	300	0,02	0,03	20.000	200	0,01	0,015	20.000	150	0,01	0,01	20.000	150	0,01	0,01
0,25	6	21.000	300	0,02	0,03	20.000	200	0,01	0,015	20.000	150	0,01	0,01	20.000	150	0,01	0,01
0,25	7	21.000	300	0,02	0,03	20.000	200	0,01	0,015	20.000	150	0,01	0,01	20.000	150	0,01	0,01
0,25	8	21.000	300	0,02	0,03	15.000	200	0,01	0,015	15.000	150	0,01	0,01	15.000	150	0,005	0,01
0,25	9	18.000	150	0,02	0,02	15.000	100	0,01	0,01	15.000	80	0,005	0,01	15.000	80	0,005	0,005
0,25	10	18.000	150	0,01	0,01	15.000	100	0,005	0,005	15.000	80	0,005	0,005	15.000	80	0,003	0,005
0,3	1	32.000	900	0,045	0,12	32.000	600	0,03	0,06	32.000	500	0,03	0,05	32.000	500	0,03	0,03
0,3	1,5	32.000	900	0,045	0,12	32.000	600	0,03	0,06	32.000	500	0,03	0,05	32.000	500	0,03	0,03
0,3	2	32.000	675	0,045	0,12	32.000	450	0,03	0,06	32.000	300	0,03	0,05	32.000	300	0,03	0,03
0,3	2,5	30.000	675	0,045	0,12	32.000	450	0,03	0,06	32.000	300	0,03	0,05	32.000	300	0,03	0,03
0,3	3	30.000	375	0,045	0,12	25.000	250	0,03	0,06	24.000	200	0,03	0,05	24.000	200	0,03	0,03
0,3	3,5	30.000	375	0,045	0,12	25.000	250	0,03	0,06	24.000	200	0,03	0,04	24.000	200	0,03	0,03
0,3	4	30.000	375	0,045	0,12	25.000	250	0,03	0,06	24.000	200	0,03	0,04	24.000	200	0,03	0,03
0,3	4,5	30.000	375	0,045	0,12	25.000	250	0,03	0,06	24.000	200	0,03	0,04	24.000	200	0,03	0,03
0,3	5	30.000	375	0,045	0,12	25.000	250	0,03	0,06	24.000	200	0,03	0,04	24.000	200	0,02	0,02
0,3	5,5	25.000	300	0,045	0,12	20.000	200	0,03	0,06	20.000	200	0,03	0,04	20.000	200	0,02	0,02
0,3	6	25.000	225	0,045	0,12	20.000	150	0,03	0,06	20.000	150	0,03	0,04	20.000	150	0,02	0,02
0,3	6,5	25.000	225	0,045	0,12	20.000	150	0,03	0,06	20.000	150	0,03	0,04	20.000	150	0,02	0,02
0,3	7	25.000	225	0,045	0,12	20.000	150	0,03	0,06	20.000	150	0,03	0,04	20.000	150	0,02	0,02
0,3	7,5	25.000	225	0,045	0,12	20.000	150	0,03	0,060	20.000	150	0,03	0,04	20.000	150	0,02	0,02
0,3	8	25.000	225	0,045	0,12	20.000	150	0,03	0,06	20.000	150	0,03	0,04	20.000	150	0,02	0,02
0,3	8,5	22.000	225	0,045	0,12	20.000	150	0,03	0,06	20.000	150	0,02	0,04	20.000	150	0,01	0,01
0,3	9	22.000	225	0,03	0,1	20.000	150	0,02	0,05	20.000	150	0,02	0,04	20.000	150	0,01	0,01
0,3	9,5	22.000	225	0,03	0,1	17.000	150	0,02	0,05	17.000	150	0,02	0,04	17.000	150	0,01	0,01
0,3	10	20.000	150	0,025	0,05	17.000	100	0,015	0,025	17.000	100	0,015	0,02	17.000	100	0,005	0,005
0,3	11	20.000	150	0,025	0,05	17.000	100	0,015	0,025	17.000	100	0,01	0,02	17.000	100	0,005	0,005
0,3	12	20.000	120	0,025	0,05	17.000	80	0,015	0,025	17.000	80	0,01	0,012	17.000	80	0,005	0,005
0,4	2	27.000	675	0,06	0,16	23.000	450	0,04	0,08	21.000	300	0,04	0,06	21.000	300	0,04	0,04
0,4	3	27.000	675	0,06	0,16	23.000	450	0,04	0,08	21.000	300	0,04	0,06	21.000	300	0,04	0,04
0,4	4	27.000	675	0,06	0,16	23.000	450	0,04	0,08	21.000	300	0,04	0,06	21.000	300	0,04	0,04
0,4	5	24.000	375	0,06	0,12	21.000	250	0,04	0,06	19.000	200	0,04	0,05	19.000	200	0,02	0,025
0,4	6	24.000	375	0,06	0,12	21.000	250	0,04	0,06	19.000	200	0,04	0,05	19.000	200	0,02	0,025
0,4	7	24.000	375	0,060	0,12	21.000	250	0,04	0,06	19.000	200	0,04	0,05	19.000	200	0,02	0,025
0,4	8	22.000	225	0,06	0,12	19.000	150	0,04	0,06	17.000	150	0,04	0,05	17.000	150	0,02	0,025
0,4	9	22.000	225	0,06	0,12	19.000	150	0,04	0,06	17.000	150	0,04	0,05	17.000	150	0,02	0,025
0,4	10	22.000	225	0,06	0,12	19.000	150	0,04	0,06	17.000	150	0,04	0,05	17.000	150	0,02	0,025
0,4	12	20.000	225	0,06	0,12	19.000	150	0,04	0,06	17.000	150	0,04	0,05	17.000	150	0,02	0,025

BACK

WXL-LN-EBD

Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Düzenli frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Normalne frezowanie



	Cu					~32 HRC FC250 ■ SS400 ■ S55C ■ NAK55				33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH				42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH			
R	Lg (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
0,5	2,5	28.000	900	0,075	0,2	25.000	600	0,05	0,1	21.000	400	0,05	0,08	21.000	400	0,05	0,05
0,5	3	28.000	750	0,075	0,2	25.000	500	0,05	0,1	21.000	300	0,05	0,08	21.000	300	0,05	0,05
0,5	4	28.000	750	0,075	0,2	25.000	500	0,05	0,1	21.000	300	0,05	0,08	21.000	300	0,05	0,05
0,5	5	21.000	450	0,075	0,2	19.000	300	0,05	0,1	16.000	200	0,05	0,08	16.000	200	0,05	0,05
0,5	6	21.000	450	0,075	0,2	19.000	300	0,05	0,1	16.000	200	0,05	0,08	16.000	200	0,05	0,05
0,5	7	21.000	450	0,075	0,15	19.000	300	0,05	0,075	16.000	200	0,05	0,06	16.000	200	0,03	0,03
0,5	8	21.000	450	0,075	0,15	19.000	300	0,05	0,075	16.000	200	0,05	0,06	16.000	200	0,03	0,03
0,5	9	21.000	450	0,075	0,15	19.000	300	0,05	0,075	16.000	200	0,05	0,06	16.000	200	0,03	0,03
0,5	10	18.000	300	0,06	0,12	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,015
0,5	12	18.000	300	0,06	0,12	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,015
0,5	14	18.000	300	0,06	0,12	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,015
0,5	16	16.000	300	0,06	0,12	13.000	200	0,03	0,05	10.000	150	0,03	0,04	10.000	150	0,01	0,015
0,5	18	16.000	300	0,06	0,12	13.000	200	0,03	0,05	10.000	150	0,03	0,04	10.000	150	0,01	0,015
0,5	20	16.000	300	0,06	0,12	13.000	200	0,03	0,05	10.000	150	0,03	0,04	10.000	150	0,01	0,015
0,5	22	16.000	225	0,05	0,05	13.000	150	0,02	0,025	10.000	100	0,02	0,02	10.000	100	0,005	0,005
0,6	4	20.000	750	0,09	0,24	17.000	500	0,06	0,012	14.000	300	0,06	0,1	14.000	300	0,06	0,06
0,6	6	20.000	450	0,09	0,24	17.000	300	0,06	0,012	14.000	200	0,06	0,1	14.000	200	0,06	0,06
0,6	8	20.000	450	0,09	0,24	17.000	300	0,06	0,012	14.000	200	0,06	0,1	14.000	200	0,06	0,06
0,6	10	20.000	450	0,09	0,18	17.000	300	0,06	0,09	14.000	200	0,06	0,07	14.000	200	0,03	0,03
0,6	12	16.000	300	0,09	0,18	14.000	200	0,06	0,09	11.000	150	0,06	0,07	11.000	150	0,03	0,03
0,6	14	16.000	300	0,09	0,18	14.000	200	0,06	0,09	11.000	150	0,06	0,07	11.000	150	0,1	0,03
0,6	16	16.000	300	0,09	0,18	14.000	200	0,06	0,09	11.000	150	0,06	0,07	11.000	150	0,1	0,03
0,6	18	16.000	300	0,09	0,18	14.000	200	0,06	0,09	11.000	150	0,06	0,07	11.000	150	0,1	0,03
0,6	20	16.000	300	0,09	0,28	14.000	200	0,06	0,09	11.000	150	0,06	0,07	11.000	150	0,1	0,03
0,6	24	16.000	300	0,09	0,2	14.000	200	0,06	0,09	11.000	150	0,06	0,07	11.000	150	0,1	0,03
0,7	8	18.000	450	0,1	0,28	15.500	300	0,07	0,14	12.000	250	0,07	0,1	12.000	250	0,07	0,07
0,7	12	18.000	450	0,1	0,2	15.500	300	0,07	0,1	12.000	250	0,07	0,08	12.000	250	0,07	0,07
0,7	16	13.000	300	0,09	0,18	12.000	200	0,06	0,09	9.000	150	0,04	0,07	9.000	150	0,01	0,03
0,75	3	20.000	900	0,12	0,3	15.000	600	0,08	0,15	12.000	500	0,08	0,12	12.000	300	0,08	0,1
0,75	4	20.000	900	0,12	0,3	15.000	600	0,08	0,15	12.000	500	0,08	0,12	12.000	300	0,08	0,1
0,75	6	18.000	750	0,12	0,3	15.000	500	0,08	0,15	12.000	350	0,08	0,12	12.000	300	0,08	0,1
0,75	8	17.000	450	0,12	0,3	15.000	300	0,08	0,15	12.000	250	0,08	0,12	12.000	250	0,08	0,1
0,75	10	17.000	450	0,12	0,3	15.000	300	0,08	0,15	12.000	250	0,08	0,12	12.000	250	0,08	0,1
0,75	12	17.000	450	0,12	0,24	15.000	300	0,08	0,12	12.000	250	0,08	0,09	12.000	250	0,05	0,06
0,75	14	17.000	450	0,12	0,24	15.000	300	0,08	0,12	12.000	250	0,08	0,09	12.000	250	0,05	0,06
0,75	16	13.000	300	0,09	0,18	12.000	200	0,06	0,1	9.5000	150	0,06	0,07	9.500	150	0,01	0,03
0,75	18	13.000	300	0,09	0,18	12.000	200	0,06	0,1	9.500	150	0,06	0,07	9.500	150	0,01	0,03
0,75	20	13.000	300	0,09	0,18	12.000	200	0,06	0,1	9.500	150	0,06	0,07	9.500	150	0,01	0,03
0,75	22	13.000	300	0,09	0,18	12.000	200	0,06	0,1	9.500	150	0,06	0,07	9.500	150	0,01	0,03
0,75	30	13.000	300	0,09	0,18	12.000	200	0,06	0,1	9.500	150	0,06	0,07	9.500	150	0,01	0,03
0,8	4	20.000	900	0,12	0,32	14.000	600	0,08	0,16	11.000	500	0,08	0,13	11.000	350	0,08	0,1
0,8	8	16.500	450	0,12	0,32	14.000	300	0,08	0,16	11.000	250	0,08	0,13	11.000	250	0,08	0,1
0,8	12	16.500	450	0,12	0,24	14.000	300	0,08	0,12	11.000	250	0,08	0,08	11.000	250	0,05	0,05
0,8	16	11.500	300	0,12	0,24	11.000	200	0,08	0,12	9.000	150	0,08	0,08	9.000	150	0,05	0,05
0,8	20	11.500	300	0,09	0,2	11.000	200	0,06	0,12	9.000	150	0,06	0,075	9.000	150	0,015	0,03
0,9	8	16.500	600	0,13	0,36	14.000	400	0,09	0,18	11.000	300	0,09	0,16	11.000	300	0,09	0,12
0,9	12	16.500	600	0,13	0,36	14.000	400	0,09	0,18	11.000	300	0,09	0,16	11.000	300	0,09	0,12
0,9	16	16.500	600	0,13	0,27	14.000	400	0,09	0,14	11.000	300	0,09	0,12	11.000	300	0,05	0,06
0,9	20	11.000	300	0,1	0,22	11.000	200	0,06	0,13	8.000	200	0,06	0,08	8.000	200	0,02	0,03
1	3	16.500	1.350	0,15	0,56	16.500	900	0,1	0,28	13.500	800	0,1	0,28	13.500	700	0,1	0,2
1	4	16.500	1.050	0,15	0,56	16.500	700	0,1	0,28	13.500	500	0,1	0,28	13.500	500	0,1	0,2
1	6	16.500	1.050	0,15	0,56	16.500	700	0,1	0,28	13.500	500	0,1	0,28	13.500	500	0,1	0,2
1	8	16.500	1.050	0,15	0,56	16.500	700	0,1	0,28	13.500	500	0,1	0,28	13500	500	0,1	0,2
1	10	14.000	750	0,15	0,56	13.000	500	0,1	0,28	10.000	300	0,1	0,28	10.000	300	0,1	0,2
1	12	14.000	750	0,15	0,56	13.000	500	0,1	0,28	10.000	300	0,1	0,28	10.000	300	0,1	0,2
1	14	14.000	750	0,15	0,56	13.000	500	0,1	0,28	10.000	300	0,1	0,28	10.000	300	0,1	0,2
1	16	14.000	750	0,15	0,42	13.000	500	0,1	0,21	10.000	300	0,1	0,18	10.000	300	0,06	0,1
1	18	14.000	750	0,15	0,42	13.000	500	0,1	0,21	10.000	300	0,1	0,18	10.000	300	0,06	0,1
1	20	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	22	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	25	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	30	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	35	10.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	40	10.000	300	0,15	0,42	10.000	200	0,1	0,21	8.000	160	0,1	0,18	8.000	160	0,06	0,1
1,25	6	16.000	1.050	0,18	0,7	12.000	700	0,12	0,35	10.000	600	0,12	0,3	10.000	600	0,1	0,25
1,25	10	14.000	1.050	0,18	0,7	12.000	700	0,12	0,35	10.000	600	0,12	0,3	10.000	600	0,1	0,25
1,25	15	14.000	600	0,18	0,7	10.000	400	0,12	0,35	8.500	300	0,12	0,3	8.500	300	0,1	0,25
1,25	20	12.000	600	0,18	0,56	10.000	400	0,12	0,28	8.500	300	0,12	0,2	8.500	300	0,08	0,15
1,25	25	12.000	450	0,18	0,56	8.000	300	0,12	0,28	6.500	250	0,12	0,2	6.500	250	0,08	0,15
1,25	30	12.000	375	0,18	0,56	8.000	250	0,12	0,28	6.500	200	0,12	0,2	6.500	200	0,08	0,15
1,25	35	12.000	375	0,18	0,56	8.000	250	0,12	0,28	6.500	200	0,12	0,2	6.500	200	0,08	0,15
1,5	6	15.000	1.200	0,2	0,84	9.500	800	0,15	0,42	7.500	600	0,15	0,42	7.500	600	0,15	0,3
1,5	8	12.000	900	0,2	0,84	9.500	600	0,15	0,42	7.500	400	0,15	0,36	7.500	400	0,15	0,3
1,5	10	12.000	900	0,2	0,84	9.500	600	0,15	0,42	7.500	400	0,15	0,36	7.500	400	0,15	0,3
1,5	12	10.000	900	0,2	0,84	9.500	600	0,15	0,42	7.500	400	0,15	0,36	7.500	400	0,15	0,3
1,5	14	10.000	900	0,2	0,84	9.500	600	0,15	0,42	7.500	400	0,15	0,36	7.500	400	0,15	0,3
1,5	15	10.000	600	0,2	0,84	8.500	400	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
1,5	16	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
1,5	20	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
1,5	25	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,3	6.500	250	0,09	0,15
1,5	30	9.000	375	0,2	0,84	7.500	250	0,15	0,42	6.000	200	0,15	0,3	6.000	200	0,09	0,15
1,5	35	9.000	375	0,2	0,84	7.500	250	0,15	0,42	6.000	200	0,15	0,3	6.000	200	0,09	0,15
1,5	40	9.000	375	0,2	0,84	7.500	250	0,15	0,42	6.000	200	0,15	0,3	6.000	200	0,09	0,15
1,75	10	10.000	1.050	0,4	0,98	8.500	700	0,15	0,42	6.500	500	0,15	0,42	6.500	500	0,15	0,35
1,75	15	10.000	900	0,4	0,98	8.500	600	0,15	0,42	6.500	400	0,15	0,42	6.500	400	0,15	0,35
1,75	20	8.000	750	0,4	0,98	7.500	500	0,15	0,49	5.500	300	0,15	0,42	5.500	300	0,15	0,35
1,75	25	8.000	600	0,4	0,98	7.500	400	0,15	0,49	5.500	275	0,15	0,42	5.500	275	0,15	0,35

CARBIDE

CARBIDE

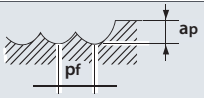
WXL-LN-EBD

Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Düzenli frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Normalne frezowanie



	Cu					~32 HRC FC250 ■ SS400 ■ S55C ■ NAK55				33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH				42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH			
R	Lg (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
1,75	30	8.000	450	0,4	0,98	7.500	300	0,15	0,49	5.500	250	0,15	0,35	5.500	250	0,1	0,2
1,75	35	8.000	375	0,4	0,98	6.000	250	0,15	0,49	5.000	200	0,15	0,35	5.000	200	0,1	0,2
1,75	40	6.000	375	0,3	0,98	6.000	250	0,15	0,49	5.000	200	0,15	0,35	5.000	200	0,1	0,2
1,75	45	6.000	375	0,3	0,98	6.000	250	0,15	0,49	5.000	200	0,15	0,35	5.000	200	0,1	0,2
2	8	11.000	1.200	0,5	1,28	7.500	800	0,2	0,64	6.000	700	0,2	0,6	6.000	700	0,2	0,4
2	10	9.000	900	0,5	1,28	7.500	600	0,2	0,64	6.000	400	0,2	0,6	6.000	400	0,2	0,4
2	12	9.000	900	0,5	1,28	7.500	600	0,2	0,64	6.000	400	0,2	0,6	6.000	400	0,2	0,4
2	14	9.000	900	0,5	1,28	7.500	600	0,2	0,64	6.000	400	0,2	0,6	6.000	400	0,2	0,4
2	15	9.000	900	0,5	1,28	7.500	600	0,2	0,64	6.000	400	0,2	0,6	6.000	400	0,2	0,4
2	16	9.000	900	0,5	1,28	7.500	600	0,2	0,64	6.000	400	0,2	0,6	6.000	400	0,2	0,4
2	20	7.000	600	0,5	1,28	6.000	400	0,2	0,64	5.000	250	0,2	0,6	5.000	250	0,2	0,4
2	25	7.000	600	0,5	1,28	6.000	400	0,2	0,64	5.000	250	0,2	0,6	5.000	250	0,2	0,4
2	30	7.000	600	0,4	1,28	6.000	400	0,2	0,64	5.000	250	0,2	0,56	5.000	250	0,12	0,2
2	35	7.000	600	0,4	1,28	6.000	400	0,2	0,64	5.000	250	0,2	0,56	5.000	250	0,12	0,2
2	40	5.000	375	0,35	1,28	5.000	250	0,2	0,64	4.000	200	0,2	0,56	4.000	200	0,12	0,2
2	45	5.000	375	0,35	1,28	5.000	250	0,2	0,64	4.000	200	0,2	0,56	4.000	200	0,12	0,2
2	50	5.000	375	0,35	1,28	5.000	250	0,2	0,64	4.000	200	0,2	0,56	4.000	200	0,12	0,2
2,5	10	9.000	1.350	0,6	1,8	6.500	900	0,25	0,90	5.000	750	0,25	0,7	5.000	750	0,25	0,5
2,5	15	9.000	1.350	0,6	1,8	6.500	900	0,25	0,90	5.000	750	0,25	0,7	5.000	750	0,25	0,5
2,5	20	7.000	750	0,6	1,8	6.500	500	0,25	0,90	5.000	400	0,25	0,7	5.000	400	0,25	0,5
2,5	25	6.000	750	0,6	1,8	5.000	500	0,25	0,90	4.000	250	0,25	0,7	4.000	250	0,25	0,5
2,5	30	6.000	750	0,6	1,8	5.000	500	0,25	0,90	4.000	250	0,25	0,7	4.000	250	0,25	0,5
2,5	35	6.000	750	0,6	1,8	5.000	500	0,25	0,90	4.000	250	0,25	0,7	4.000	250	0,25	0,5
2,5	40	5.000	600	0,4	1,8	4.000	400	0,25	0,90	4.000	200	0,25	0,6	4.000	200	0,2	0,25
2,5	45	5.000	600	0,4	1,8	4.000	400	0,25	0,90	4.000	200	0,25	0,6	4.000	200	0,2	0,25
2,5	50	5.000	450	0,4	1,8	4.000	300	0,25	0,90	4.000	200	0,25	0,6	4.000	200	0,2	0,25
3	10	7.000	1.500	0,75	2,4	5.500	1.000	0,3	1,20	4.500	800	0,3	0,96	4.500	800	0,3	0,6
3	20	7.000	1.200	0,75	2,4	5.500	800	0,3	1,20	4.500	600	0,3	0,96	4.500	600	0,3	0,6
3	25	6.000	900	0,75	2,4	5.500	600	0,3	1,20	4.500	400	0,3	0,96	4.500	400	0,3	0,6
3	30	5.000	600	0,75	2,4	4.000	400	0,3	1,20	4.000	300	0,3	0,96	4.000	300	0,3	0,6
3	35	5.000	600	0,75	2,4	4.000	400	0,3	1,20	4.000	300	0,3	0,96	4.000	300	0,3	0,6
3	40	5.000	600	0,6	2,4	4.000	400	0,3	1,20	4.000	300	0,3	0,96	4.000	300	0,3	0,6
3	45	5.000	600	0,6	2,4	4.000	400	0,3	1,20	4.000	300	0,3	0,96	4.000	300	0,3	0,6
3	50	5.000	600	0,6	2,4	4.000	400	0,3	1,20	4.000	300	0,3	0,96	4.000	300	0,3	0,6

Max cutting depth



1. Use a rigid and precise machine and holder.
2. When machining carbon steel or hardened steel, using MQL (Minimum Quantity Lubrication / mist coolant) is recommended.
3. Please adjust conditions based on machining accuracy, machining shape and machining path.
4. When using a tool with a diameter of dia. 0.5 (R0.25) or less, or an L/D (effective length/ tool diameter) ratio grater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
5. When the available RPM is insufficient, reduce the RPM and feed rates in proportion

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. Suggeriamo l'utilizzo di aria compressa o lubrifacazione minimale (misto olio).
3. Regolare la velocità, l'avanzamento e la profondità di taglio secondo le attuali condizioni di taglio.
4. Queste condizioni di fresatura di freze Ø > 0.5 (R0.25), L/D ratio. (lunga/dia) < 10. Per sporgenze ridurre velocità, l'avanzamento e la profondità di taglio.
5. Regulare la velocità, l'avanzamento e la profondità di taglio.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Wir empfehlen Luft-oder Minimalmengenschmierung für die Bearbeitung von Kohlenstoffstahl und Gehärteter Stahl.
3. Bitte regulieren Sie Schnittgeschwindigkeit, Vorschub und Spanntiefe entsprechend Ihrer aktuellen Zerspannungbedingungen.
4. Schnittwerde sind für Werkzeugen mit Ø > 0.5 (R0.25), und L/D ratio. (Länghe/dia) < 10. Bei andere Auskraglängen müssen Schnittgeschwindigkeit, Vorschub und Spanntiefe verändert werden.
5. Bitte regulieren Sie Schnittgeschwindigkeit und Vorschub.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. Utilisez de l'arrosage en brouillard (mist).
3. Ajustez la vitesse, avances et la profondeur de coupe en fonction de la précision de la machine ainsi que le chemin de fraisage.
4. Les conditions de coupes ci-dessus sont pour l'utilisation d'outil avec un Ø > 0.5 (R0.25), et un ratio L/D (longueur/dia) < 10. Ajuster ces conditions de coupes si nécessaire.
5. Ajustez la vitesse, avances et la profondeur de coupe.

1. Anvend stabil maskine og værktøjsholder
2. Minimalsmøring tilrådes ved bearbejdning af legeret stål eller hærdet stål
3. Venligst justér skæredata efter maskinens nøjagtighed og bearbejdningens udformning
4. Ved brug af fræser under Ø 0,5mm eller mindre, eller en L/D ratio størrer end 10, kan høj belastning kan resultere i brud. Tilpas derfor skæredata til aktuel situation
5. Hvis maskinen ikke har de tilstrækkelige omdrejninger, reducér omdrejninger og tilspænding proportionalt

1.Use maquina y portaherramientas rigidos y precisos
2.En mecanizado de aceros al carbono o de acero endurecido, recomendable MQL (cantidad mínima lubrificación / niebla refrigerante).
3.Por favor, ajustar las condiciones de mecanizado a la precisión, forma de mecanizado y recorrido del mecanizado
4.Con herramienta de Ø 0,5 (R 0,5) o menor, o un LD (vuelo efectivo / diámetro superior a 10, cargas elevadas pueden causar rotura de la herramienta.
5. Cuando las RPM disponibles son insuficientes, por favor, reducir la RPM y la velocidad de avance en proporción.

1. Använd en stabil maskin och verktygshållare
2. Minimalsmörjning rekommenderas vid bearbetning i legerat och härdat stål
3. Justera skärdatan efter detaljens utformning och maskinens stabilitet.
4. Vid användning av fräsar under Ø 0,5mm eller mindre, eller L/D (skärlängd/verktygs Ø) större än 10, kan hög belastning resultera i verktygsbrott. Anpassa därför skärdata till aktuell situation.
5. Om maskinen inte har tillräckligt med varvtal, reducera varvtal och matningar proportionellt

1. Используйте жесткие и точные станки и фрезерные патроны
2. При обработке углеродистой или закаленной сталей, рекомендуется использовать MQL (смазка минимальным количеством, масляный туман)
3. Пожалуйста установите режимы резания в соответствии с точностью станка, обрабатываемой детали и траектории обработки
4. При использовании инструмента Ø 0,5 или меньше, или соотношение L/D (эффективная длина / диаметр инструмента) большее, чем 10, высокие нагрузки могут вызвать поломку инструмента
5. Если максимальная скорость вращения шпинделя недостаточна, пожалуйста уменьшите обороты шпинделя и подачу пропорционально

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Karbon çeliklerini be sertleştirilmiş çelikleri işlediğinizde, MQL kullanmanız önerilmektedir
3. Lütfen kesme koşullarını tezgahın hassasiyetine, işleme şekline ve işlenecek yere göre ayarlayınız
4. Kullanılan takımın çapı 0,5mm veya daha düşük ise, yada B/Ç (etkili boy/takım çapı) oranı 10 dan küçük ise, uygulanılacak fazla yükte takım kırılması yaşanabilir
5. Mevcut DEVİR yetersiz kaldığında, lütfen DEVİRİ ve ilerlemeyi düşürünüz

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Do obróbki stali węglowych lub stali hartowanej, jest zalecane użycie MQL (minimalna ilość smarowania / mgły olejowej
3. Prosimy zmienić warunki na podstawie dokładności obróbki, kształtu obróbki i ścieżki obróbki.
4. Podczas korzystania z narzędzia o śred. 0,5 lub mniejszej, lub stosunek L / D (długość efektywna / średnica) < 10, wysokie obciążenia może spowodować uszkodzenie narzędzia.
5. Kiedy dostępne obroty są niewystarczające, należy zmniejszyć obroty i posuwy proporcjonalnie.

High speed light milling - HSC Standardfräsen - Fresatura alta velocità standard - Fraisage UGV - Yüksek hizda hafif frezeleme - High speed bearbejdning (HSM) - High speed milling (HSM) - Fresado ligero a alta velocidad - Высокоскоростное «легкое» фрезерование - Frezowanie HSC

WXL-LN-EBD



		Cu				~32 HRC FC250 ■ SS400 ■ S55C ■ NAK55				33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH				42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH			
R	Lg (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
0,05	**0,3**	50.000	280	0,003	0,005	50.000	150	0,003	0,003	50.000	100	0,003	0,003	50.000	70	0,003	0,003
0,05	**0,5**	50.000	220	0,003	0,005	50.000	120	0,003	0,003	50.000	80	0,003	0,003	50.000	50	0,003	0,003
0,1	**0,3**	50.000	490	0,0075	0,01	50.000	400	0,005	0,005	50.000	380	0,005	0,005	50.000	380	0,005	0,005
0,1	**0,5**	50.000	490	0,0075	0,01	50.000	400	0,005	0,005	50.000	380	0,005	0,005	50.000	380	0,005	0,005
0,1	**0,75**	50.000	440	0,0075	0,01	50.000	360	0,005	0,005	50.000	340	0,005	0,005	50.000	340	0,005	0,005
0,1	**1**	50.000	440	0,0075	0,01	50.000	360	0,005	0,005	50.000	340	0,005	0,005	50.000	340	0,005	0,005
0,1	**1,25**	50.000	390	0,0075	0,01	47.000	320	0,005	0,005	47.000	300	0,005	0,005	47.000	300	0,005	0,005
0,1	**1,5**	50.000	360	0,0075	0,01	45.000	300	0,005	0,005	45.000	280	0,005	0,005	45.000	280	0,005	0,005
0,1	**1,75**	50.000	350	0,0075	0,01	42.000	260	0,005	0,005	42.000	240	0,005	0,005	42.000	240	0,005	0,005
0,1	**2**	50.000	320	0,0075	0,01	38.000	230	0,005	0,005	38.000	210	0,005	0,005	37.000	200	0,005	0,005
0,15	**0,5**	50.000	750	0,0075	0,02	50.000	620	0,005	0,01	50.000	600	0,005	0,01	50.000	600	0,005	0,01
0,15	**0,6**	50.000	730	0,0075	0,02	50.000	600	0,005	0,01	50.000	570	0,005	0,01	50.000	570	0,005	0,01
0,15	**0,75**	50.000	730	0,0075	0,02	50.000	600	0,005	0,01	50.000	570	0,005	0,01	50.000	570	0,005	0,01
0,15	**1**	50.000	730	0,0075	0,02	50.000	600	0,005	0,01	50.000	570	0,005	0,01	50.000	570	0,005	0,01
0,15	**1,25**	50.000	730	0,0075	0,02	50.000	600	0,005	0,01	50.000	570	0,005	0,01	50.000	570	0,005	0,01
0,15	**1,5**	50.000	730	0,0075	0,02	50.000	600	0,005	0,01	50.000	570	0,005	0,01	50.000	570	0,005	0,01
0,15	**1,75**	50.000	610	0,0075	0,02	47.000	510	0,005	0,01	47.000	480	0,005	0,01	47.000	480	0,005	0,01
0,15	**2**	50.000	580	0,0075	0,01	45.000	480	0,005	0,005	45.000	450	0,005	0,005	45.000	450	0,005	0,005
0,15	**2,25**	50.000	490	0,0075	0,01	45.000	400	0,005	0,005	45.000	380	0,005	0,005	45.000	380	0,005	0,005
0,15	**2,5**	50.000	360	0,0075	0,01	40.000	300	0,005	0,005	40.000	280	0,005	0,005	40.000	280	0,005	0,005
0,15	**2,75**	50.000	320	0,0075	0,01	38.000	250	0,005	0,005	38.000	230	0,005	0,005	38.000	230	0,005	0,005
0,15	**3**	50.000	290	0,0075	0,01	38.000	250	0,005	0,005	38.000	230	0,005	0,005	37.000	230	0,005	0,005
0,2	**0,5**	50.000	1.100	0,015	0,04	50.000	920	0,02	0,01	50.000	870	0,01	0,02	50.000	870	0,01	0,02
0,2	**0,75**	50.000	1.090	0,015	0,04	50.000	900	0,02	0,01	50.000	850	0,01	0,02	50.000	850	0,01	0,02
0,2	**1**	50.000	1.090	0,015	0,04	50.000	900	0,02	0,01	50.000	850	0,01	0,02	50.000	850	0,01	0,02
0,2	**1,5**	50.000	970	0,015	0,04	50.000	800	0,02	0,01	50.000	760	0,01	0,02	50.000	760	0,01	0,02
0,2	**2**	50.000	850	0,015	0,04	50.000	700	0,02	0,01	50.000	660	0,01	0,02	50.000	660	0,01	0,02
0,2	**2,5**	50.000	670	0,012	0,03	45.000	550	0,015	0,008	45.000	520	0,01	0,015	45.000	520	0,008	0,015
0,2	**3**	48.000	540	0,0075	0,02	43.000	500	0,005	0,01	43.000	470	0,01	0,01	43.000	470	0,005	0,01
0,2	**3,5**	45.000	460	0,0075	0,02	40.000	420	0,005	0,01	40.000	400	0,01	0,01	40.000	400	0,005	0,01
0,2	**4**	40.000	400	0,0075	0,01	36.000	370	0,005	0,005	36.000	350	0,01	0,005	35.000	340	0,005	0,005
0,25	**1**	50.000	1.420	0,0225	0,045	50.000	1.100	0,015	0,03	50.000	1.050	0,01	0,03	50.000	1.050	0,015	0,03
0,25	**1,5**	50.000	1.420	0,0225	0,045	50.000	1.100	0,015	0,03	50.000	1.050	0,01	0,03	50.000	1.050	0,015	0,03
0,25	**2**	50.000	1.400	0,0225	0,045	50.000	1.000	0,015	0,03	50.000	950	0,01	0,03	50.000	950	0,015	0,03
0,25	**2,5**	50.000	1.380	0,0225	0,045	50.000	1.000	0,015	0,03	50.000	950	0,01	0,03	50.000	950	0,015	0,03
0,25	**3**	50.000	1.190	0,015	0,04	48.000	900	0,01	0,02	48.000	850	0,01	0,02	48.000	850	0,01	0,02
0,25	**3,5**	50.000	1.140	0,015	0,04	45.000	700	0,01	0,02	45.000	650	0,01	0,02	45.000	650	0,01	0,02
0,25	**4**	45.000	1.000	0,015	0,02	43.000	600	0,01	0,01	43.000	570	0,01	0,01	43.000	570	0,01	0,01
0,25	**4,5**	38.000	940	0,015	0,02	38.000	500	0,01	0,01	38.000	470	0,01	0,01	38.000	470	0,01	0,01
0,25	**5**	30.000	760	0,0075	0,02	30.000	400	0,005	0,01	30.000	380	0,005	0,01	29.000	360	0,005	0,01
0,3	**1**	50.000	1.660	0,045	0,1	50.000	1.400	0,03	0,05	50.000	1.300	0,03	0,05	50.000	1.300	0,03	0,05
0,3	**1,5**	50.000	1.600	0,045	0,1	50.000	1.300	0,03	0,05	50.000	1.200	0,03	0,05	50.000	1.200	0,03	0,05
0,3	**2**	50.000	1.600	0,045	0,1	50.000	1.300	0,03	0,05	50.000	1.200	0,03	0,05	50.000	1.200	0,03	0,05
0,3	**2,5**	50.000	1.550	0,045	0,1	50.000	1.200	0,03	0,05	50.000	1.100	0,03	0,05	50.000	1.100	0,03	0,05
0,3	**3**	50.000	1.550	0,03	0,06	50.000	1.200	0,02	0,03	50.000	1.100	0,02	0,03	50.000	1.100	0,02	0,03
0,3	**3,5**	50.000	1.340	0,03	0,06	45.000	1.000	0,02	0,03	45.000	950	0,02	0,03	45.000	950	0,02	0,03
0,3	**4**	50.000	1.200	0,015	0,04	40.000	900	0,01	0,02	40.000	850	0,01	0,02	40.000	850	0,01	0,02
0,3	**4,5**	45.000	1.040	0,015	0,04	34.000	780	0,01	0,02	34.000	740	0,01	0,02	34.000	740	0,01	0,02
0,3	**5**	30.000	960	0,015	0,04	30.000	680	0,01	0,02	30.000	640	0,01	0,02	30.000	640	0,01	0,02
0,3	**5,5**	30.000	820	0,015	0,04	28.000	650	0,01	0,02	28.000	610	0,01	0,02	28.000	610	0,01	0,02
0,3	**6**	30.000	720	0,015	0,04	26.000	600	0,01	0,02	26.000	570	0,01	0,02	25.000	540	0,01	0,02
0,4	**2**	50.000	2.200	0,06	0,16	50.000	2.000	0,04	0,08	50.000	1.900	0,04	0,08	50.000	1.900	0,04	0,08
0,4	**3**	50.000	1.740	0,06	0,16	48.000	1.600	0,04	0,08	48.000	1.500	0,04	0,08	48.000	1.500	0,04	0,08
0,4	**4**	50.000	1.680	0,06	0,16	40.000	1.200	0,04	0,08	40.000	1.100	0,04	0,08	40.000	1.100	0,04	0,08
0,4	**5**	43.000	1.600	0,045	0,1	34.000	950	0,03	0,05	34.000	900	0,03	0,05	34.000	900	0,03	0,05
0,4	**6**	32.000	1.260	0,045	0,1	30.000	800	0,03	0,05	30.000	760	0,03	0,05	30.000	760	0,03	0,05
0,4	**7**	30.000	1.000	0,02	0,08	25.000	600	0,01	0,02	25.000	570	0,01	0,02	25.000	570	0,01	0,02
0,4	**8**	24.000	720	0,01	0,04	23.000	450	0,005	0,01	23.000	420	0,005	0,01	23.000	420	0,005	0,01
0,5	**2,5**	50.000	3.270	0,075	0,2	50.000	3.400	0,05	0,1	50.000	3.200	0,05	0,1	50.000	3.200	0,05	0,1
0,5	**3**	50.000	3.060	0,075	0,2	45.000	3.200	0,05	0,1	45.000	3.000	0,05	0,1	45.000	3.000	0,05	0,1
0,5	**4**	50.000	3.000	0,075	0,2	40.000	3.000	0,05	0,1	40.000	2.850	0,05	0,1	40.000	2.850	0,05	0,1
0,5	**5**	47.000	2.870	0,075	0,2	36.000	2.300	0,05	0,1	36.000	2.100	0,05	0,1	36.000	2.100	0,05	0,1
0,5	**6**	43.000	2.600	0,075	0,2	30.000	2.000	0,05	0,1	30.000	1.900	0,05	0,1	30.000	1.900	0,05	0,1
0,5	**7**	30.000	2.350	0,075	0,15	27.000	1.700	0,05	0,1	27.000	1.600	0,05	0,1	27.000	1.600	0,05	0,1
0,5	**8**	27.000	2.000	0,075	0,15	26.000	1.600	0,05	0,1	26.000	1.500	0,05	0,1	26.000	1.500	0,05	0,1
0,5	**9**	26.000	1.540	0,045	0,075	24.000	1.200	0,03	0,05	24.000	1.100	0,03	0,05	24.000	1.100	0,03	0,050
0,5	**10**	24.000	1.400	0,015	0,04	22.000	1.100	0,01	0,02	22.000	1.000	0,01	0,02	21.000	950	0,01	0,02
0,6	**4**	40.000	3.000	0,12	0,21	40.000	3.000	0,06	0,12	40.000	2.850	0,06	0,12	40.000	2.850	0,06	0,12
0,6	**6**	35.000	2.600	0,09	0,21	32.000	2.100	0,06	0,12	32.000	2.000	0,06	0,12	32.000	2.000	0,06	0,12
0,6	**8**	30.000	2.000	0,09	0,21	25.000	1.700	0,06	0,12	25.000	1.600	0,06	0,12	25.000	1.600	0,06	0,12
0,6	**10**	21.000	1.400	0,075	0,12	20.000	1.200	0,05	0,1	20.000	1.100	0,05	0,1	18.000	990	0,05	0,1
0,6	**12**	20.000	1.000	0,045	0,1	19.000	900	0,03	0,05	19.000	850	0,03	0,05	16.000	800	0,03	0,05
0,7	**8**	30.000	2.100	0,14	0,245	25.000	1.700	0,07	0,14	25.000	1.600	0,07	0,14	25.000	1.600	0,07	0,14
0,7	**12**	22.000	1.210	0,06	0,14	19.000	1.000	0,03	0,07	19.000	950	0,03	0,07	19.000	950	0,03	0,07
0,75	**3**	50.000	5.330	0,15	0,3	50.000	4.800	0,075	0,15	50.000	4.800	0,075	0,15	50.000	4.800	0,075	0,15
0,75	**4**	42.000	4.110	0,15	0,3	40.000	3.900	0,075	0,15	40.000	3.700	0,075	0,15	40.000	3.700	0,075	0,15
0,75	**6**	32.000	3.000	0,15	0,3	30.000	2.900	0,075	0,15	30.000	2.700	0,075	0,15	30.000	2.700	0,075	0,15
0,75	**8**	30.000	2.650	0,15	0,3	24.000	2.300	0,075	0,15	24.000	2.100	0,075	0,15	24.000	2.100	0,075	0,15
0,75	**10**	30.000	2.400	0,15	0,3	24.000	2.000	0,075	0,15	24.000	1.900	0,075	0,15	24.000	1.900	0,075	0,15
0,75	**12**	24.000	1.400	0,15	0,2	21.000	1.400	0,075	0,1	21.000	1.300	0,075	0,1	21.000	1.300	0,075	0,1
0,75	**14**	22.000	1.400	0,1	0,2	18.000	1.200	0,05	0,1	18.000	1.100	0,05	0,1	17.000	1.100	0,05	0,10
0,8	**4**	40.000	4.500	0,16	0,32	38.000	4.000	0,08	0,16	38.000	3.800	0,08	0,16	38.000	3.600	0,08	0,16
0,8	**8**	26.000	3.000	0,16	0,32	24.000	3.000	0,08	0,16	24.000	2.800	0,08	0,16	23.000	2.600	0,08	0,16
0,8	**12**	24.000	2.400	0,12	0,2	21.000	1.800	0,05	0,1	21.000	1.700	0,05	0,1	20.000	1.600	0,05	0,1
0,8	**16**	18.000	1.600	0,1	0,2	16.000	800	0,05	0,1	16.000	760	0,05	0,1	15.000	700	0,05	0,1
0,9	**8**	25.000	3.200	0,18	0,54	24.000	3.000	0,09	0,27	24.000	2.800	0,09	0,27	23.000	2.600	0,09	0,27
0,9	**12**	22.000	2.500	0,18	0,36	18.000	1.800	0,09	0,18	15.800	1.500	0,09	0,18	14.700	1.350	0,09	0,18

BACK

High speed light milling - HSC Standardfräsen - Fresatura alta velocità standard - Fraisage UGV - Yüksek hizda hafif frezeleme - High speed bearbejdning (HSM) - High speed milling (HSM) - Fresado ligero a alta velocidad - Высокоскоростное «легкое» фрезерование - Frezowanie HSC

WXL-LN-EBD



	Cu					~32 HRC FC250 ■ SS400 ■ S55C ■ NAK55				33~41 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH				42~50 HRC SKT ■ SKD61 ■ NAK80 ■ HPM1 ■ DH			
R	Lg (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
0,9	**16**	16.000	1.200	0,1	0,24	16.000	980	0,05	0,12	14.000	850	0,05	0,12	13.000	780	0,05	0,12
1	**3**	50.000	5.800	0,2	0,4	50.000	5.600	0,1	0,2	50.000	5.600	0,1	0,2	47.000	5.300	0,1	0,2
1	**4**	50.000	5.800	0,2	0,4	50.000	5.600	0,1	0,2	50.000	5.600	0,1	0,2	47.000	5.300	0,1	0,2
1	**6**	38.000	4.000	0,2	0,4	36.000	3.000	0,1	0,2	36.000	2.800	0,1	0,2	34.000	2.600	0,1	0,2
1	**8**	27.000	3.360	0,2	0,4	25.000	2.600	0,1	0,2	25.000	2.400	0,1	0,2	23.000	2.200	0,1	0,2
1	**10**	22.000	3.050	0,2	0,4	20.000	2.400	0,1	0,2	20.000	2.200	0,1	0,2	19.000	2.000	0,1	0,2
1	**12**	16.000	2.580	0,2	0,4	16.000	2.000	0,1	0,2	16.000	1.900	0,1	0,2	15.000	1.700	0,1	0,2
1	**14**	15.000	2.400	0,2	0,3	15.000	1.800	0,1	0,2	15.000	1.700	0,1	0,2	14.000	1.500	0,1	0,2
1	**16**	14.000	2.200	0,2	0,2	14.000	1.700	0,1	0,1	14.000	1.600	0,1	0,1	13.000	1.400	0,1	0,1
1	**18**	13.000	2.000	0,2	0,2	13.000	1.600	0,1	0,1	13.000	1.500	0,1	0,1	12.000	1.300	0,1	0,1
1	**20**	12.000	1.200	0,1	0,2	12.000	1.200	0,05	0,1	11.000	1.100	0,05	0,1	10.000	1.000	0,0	0,1
1,25	**6**	32.000	5.550	0,25	0,4	28.000	4.600	0,1	0,2	28.000	4.300	0,1	0,2	25.000	3.700	0,1	0,2
1,25	**10**	21.000	4.000	0,25	0,4	20.000	3.300	0,1	0,2	20.000	3.100	0,1	0,2	18.000	2.700	0,1	0,2
1,25	**15**	17.000	3.000	0,25	0,4	17.000	2.800	0,1	0,2	17.000	2.600	0,1	0,2	16.000	2.400	0,1	0,2
1,25	**20**	15.000	1.800	0,25	0,4	15.000	1.800	0,1	0,2	15.000	1.700	0,1	0,2	14.000	1.500	0,1	0,2
1,25	**25**	12.000	1.010	0,06	0,1	12.000	1.000	0,03	0,05	12.000	950	0,03	0,05	10.000	860	0,03	0,05
1,25	**30**	10.000	800	0,06	0,1	-	-	-	-	-	-	-	-	-	-	-	-
1,5	**6**	42.000	6.800	0,3	0,6	41.500	6.200	0,15	0,3	41.500	6.200	0,15	0,3	32.000	4.800	0,15	0,3
1,5	**8**	32.000	4.600	0,3	0,6	30.000	4.500	0,15	0,3	30.000	4.200	0,15	0,3	25.000	3.500	0,15	0,3
1,5	**10**	28.000	4.000	0,3	0,6	25.000	3.800	0,15	0,3	25.000	3.600	0,15	0,3	20.000	2.800	0,15	0,3
1,5	**12**	24.000	3.100	0,3	0,6	20.000	3.000	0,15	0,3	20.000	2.800	0,15	0,3	18.000	2.500	0,15	0,3
1,5	**14**	22.000	2.900	0,3	0,6	18.000	2.700	0,15	0,3	18.000	2.500	0,15	0,3	15.000	2.000	0,15	0,3
1,5	**15**	20.000	2.800	0,25	0,6	16.000	2.400	0,1	0,3	16.000	2.200	0,1	0,3	13.000	1.700	0,1	0,3
1,5	**16**	20.000	2.600	0,25	0,4	16.000	2.000	0,1	0,2	16.000	1.900	0,1	0,2	13.000	1.500	0,1	0,2
1,5	**20**	16.000	2.200	0,25	0,4	14.000	1.800	0,1	0,2	14.000	1.700	0,1	0,2	11.000	1.300	0,1	0,2
1,5	**25**	16.000	1.800	0,125	0,2	12.000	1.200	0,05	0,1	12.000	1.100	0,05	0,1	9.000	820	0,05	0,1
1,5	**30**	12.000	1.000	0,075	0,1	10.000	800	0,03	0,05	10.000	760	0,03	0,05	7.800	590	0,03	0,05
1,75	**10**	26.000	5.400	0,375	0,6	25.000	3.750	0,15	0,3	25.000	3.500	0,15	0,3	19.500	2.660	0,15	0,3
1,75	**15**	20.000	4.000	0,3	0,6	18.000	3.000	0,1	0,3	18.000	2.800	0,1	0,3	14.000	2.180	0,1	0,3
1,75	**20**	18.000	3.000	0,3	0,4	16.000	2.700	0,1	0,2	16.000	2.500	0,1	0,2	12.000	1.850	0,1	0,2
1,75	**25**	14.000	2.800	0,2	0,2	12.000	2.000	0,1	0,1	12.000	1.900	0,1	0,1	9.000	1.400	0,1	0,1
1,75	**30**	10.000	2.200	0,125	0,2	10.000	1.600	0,05	0,10	10.000	1.500	0,05	0,1	8.000	1.200	0,05	0,1
1,75	**35**	10.000	1.200	0,1	0,1	10.000	1.000	0,05	0,05	10.000	950	0,05	0,5	7.000	670	0,05	0,5
2	**8**	31.000	5.700	0,4	1	31.000	5.700	0,2	0,5	31.000	5.700	0,2	0,5	24.000	4.400	0,2	0,5
2	**10**	25.000	4.500	0,4	1	25.000	4.500	0,2	0,5	25.000	4.200	0,2	0,5	20.000	3.300	0,2	0,5
2	**12**	20.000	4.000	0,4	1	20.000	3.600	0,2	0,5	20.000	3.400	0,2	0,5	16.000	2.700	0,2	0,5
2	**14**	20.000	4.000	0,4	1	20.000	3.600	0,2	0,5	20.000	3.400	0,2	0,5	16.000	2.700	0,2	0,5
2	**15**	20.000	4.000	0,4	1	20.000	3.600	0,2	0,5	20.000	3.400	0,2	0,5	16.000	2.700	0,2	0,5
2	**16**	20.000	3.460	0,4	0,6	18.000	3.200	0,2	0,5	18.000	3.000	0,2	0,5	14.000	2.300	0,2	0,5
2	**20**	18.000	3.000	0,4	0,5	16.000	2.800	0,2	0,4	16.000	2.600	0,2	0,4	12.000	1.900	0,2	0,4
2	**25**	18.000	3.000	0,25	0,6	16.000	2.800	0,1	0,3	16.000	2.600	0,1	0,3	12.000	1.900	0,1	0,3
2	**30**	16.000	2.850	0,25	0,4	14.000	2.400	0,1	0,2	14.000	2.200	0,1	0,2	11.000	1.700	0,1	0,2
2	**35**	14.000	2.200	0,25	0,4	12.000	1.800	0,1	0,2	12.000	1.700	0,1	0,2	9.000	1.700	0,1	0,2
2	**40**	12.000	1.600	0,125	0,2	10.000	1.300	0,05	0,1	10.000	1.200	0,05	0,1	7.000	840	0,05	0,1
2,5	**10**	25.000	5.600	0,5	1,25	25.000	5.400	0,25	0,5	25.000	5.400	0,25	0,5	19.000	4.000	0,25	0,5
2,5	**15**	20.000	4.400	0,5	1,25	20.000	4.200	0,25	0,5	20.000	3.900	0,25	0,5	16.000	3.100	0,25	0,5
2,5	**20**	18.000	3.800	0,5	1,25	16.000	3.500	0,25	0,5	16.000	3.300	0,25	0,5	12.000	2.400	0,25	0,5
2,5	**25**	20.000	3.400	0,4	0,75	15.000	3.200	0,2	0,3	15.000	3.000	0,2	0,3	12.000	2.400	0,2	0,3
2,5	**30**	16.000	2.900	0,25	0,75	14.000	2.500	0,1	0,3	14.000	2.300	0,1	0,3	11.000	1.800	0,1	0,3
2,5	**35**	14.000	2.200	0,25	0,75	12.000	1.600	0,1	0,3	12.000	1.500	0,1	0,3	9.000	1.100	0,1	0,3
2,5	**40**	12.000	1.800	0,25	0,5	10.000	1.200	0,1	0,2	10.000	1.100	0,1	0,2	8.000	880	0,1	0,2
2,5	**45**	9.000	1.200	0,2	0,25	9.000	900	0,1	0,1	9.000	850	0,1	0,1	7.000	660	0,1	0,1
2,5	**50**	8.000	1.100	0,2	0,25	8.000	800	0,1	0,1	8.000	760	0,1	0,1	6.000	570	0,1	0,1
3	**10**	22.000	5.900	0,75	1,25	20.000	5.400	0,3	0,5	20.000	5.000	0,3	0,5	15.000	3.750	0,3	0,5
3	**20**	18.000	4.400	0,75	1,25	16.000	4.200	0,3	0,5	16.000	3.900	0,3	0,5	12.000	2.900	0,3	0,5
3	**25**	14.000	4.000	0,6	1,25	12.000	3.200	0,3	0,5	12.000	3.000	0,3	0,5	9.000	2.250	0,3	0,5
3	**30**	10.000	3.200	0,6	1,25	10.000	2.600	0,3	0,5	10.000	2.400	0,3	0,5	8.000	1.900	0,3	0,5
3	**35**	9.000	3.000	0,4	1	9.000	2.300	0,2	0,4	9.000	2.100	0,2	0,4	7.000	1.600	0,2	0,4
3	**40**	9.00a	2.800	0,4	0,75	9.000	2.000	0,2	0,3	9.000	1.900	0,2	0,3	7.000	1.400	0,2	0,3
3	**45**	8.000	2.500	0,4	0,75	8.000	1.800	0,2	0,3	8.000	1.700	0,2	0,3	6.500	1.300	0,2	0,3
3	**50**	7.000	2.300	0,4	0,75	7.000	1.600	0,2	0,3	7.000	1.500	0,2	0,3	5.500	1.100	0,2	0,3

Max cutting depth



1. Use a rigid and precise machine and holder.
2. When machining carbon steel or hardened steel, using MQL (Minimum Quantity Lubrication / mist coolant) is recommended.
3. Please adjust conditions based on machining accuracy, machining shape and machining path.
4. When using a tool with a diameter of dia. 0.5 (R0.25) or less, or an L/D (effective length/ tool diameter) ratio grater than 10, high loads can cause tool breakage. Therefore, adjust the cutting conditions based on the machining situation.
5. When the available RPM is insufficient, reduce the RPM and feed rates in proportion

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. Suggeriamo l'utilizzo di aria compressa o lubrifacazione minimale (misto olio).
3. Regolare la velocità, l'avanzamento e la profondità di taglio secondo le attuali condizioni di taglio.
4. Queste condizioni di fresatura di freze Ø > 0.5 (R0.25), L/D ratio. (lunga/dia) < 10. Per sporgenze ridurre velocità, l'avanzamento e la profondità di taglio.
5. Regulare la velocità, l'avanzamento e la profondità di taglio.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Wir empfehlen Luft-oder Minimalmengenschmierung für die Bearbeitung von Kohlenstoffstahl und Gehärteter Stahl.
3. Bitte regulieren Sie Schnittgeschwindigkeit, Vorschub und Spanntiefe entsprechend Ihrer aktuellen Zerspannungbedingungen.
4. Schnittwerde sind für Werkzeugen mit Ø > 0.5 (R0.25), und L/D ratio. (Länghe/dia) < 10. Bei andere Auskraglängen müssen Schnittgeschwindigkeit, Vorschub und Spanntiefe verändert werden.
5. Bitte regulieren Sie Schnittgeschwindigkeit und Vorschub.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. Utilisez de l'arrosage en brouillard (mist).
3. Ajustez la vitesse, avances et la profondeur de coupe en fonction de la précision de la machine ainsi que le chemin de fraisage.
4. Les conditions de coupes ci-desus sont pour l'utilisation d'outil avec un Ø > 0.5 (R0.25), et un ratio L/D (longueur/dia) < 10. Ajuster ces conditions de coupes si nécessaire.
5. Ajustez la vitesse, avances et la profondeur de coupe.

1.Anvend stabil maskine og værktøjsholder
2.Minimalsmøring tilrådes ved bearbejdning af legeret stål eller hærdet stål
3.Venligst justér skæredata efter maskinens nøjagtighed og bearbejdningens udformning
4.Ved brug af fræser under Ø 0,5mm eller mindre, eller en L/D ratio større end 10, kan høj belastning kan resultere i brud. Tilpas derfor skæredata til aktuel situation
5.Hvis maskinen ikke har de tilstrækkelige omdrejninger, reducér omdrejninger og tilspænding proportionalt

1. Use maquina y portaherramientas rígidos y precisos
2. En mecanizado de aceros al carbono o de acero enduredido, recomendable MQL (cantidad mínima lubrificación / niebla refrigerante).
3. Por favor, ajustar las condiciones de mecanizado a la precisión, forma de mecanizado y recorrido del mecanizado
4. Con herramienta de Ø 0,5 (R 0,5) o menor, o un LD (vuelo efectivo / diámetro superior a 10, cargas elevadas pueden causar rotura de la herramienta.
5. Cuando las RPM disponibles son insuficientes, por favor, reducir la RPM y la velocidad de avance en proporción.

1. Använd en stabil maskin och verktygshållare
2. Minimalsmörjning rekommenderas vid bearbetning i legerat och härdat stål
3. Justera skärdatan efter detaljens utformning och maskinens stabilitet.
4. Vid användning av fräsar under Ø 0,5mm eller mindre, eller L/D (skärlängd/verktygs Ø) större än 10, kan hög belastning resultera i verktygsbrott. Anpassa därför skärdata till aktuell situation.
5. Om maskinen inte har tillräckligt med varvtal, reducera varvtal och matningar proportionellt

1. Используйте жесткие и точные станки и фрезерные патроны
2. При обработке углеродистой или закаленной сталей, рекомендуется использовать MQL (смазка минимальным количеством, масляный туман)
3. Пожалуйста установите режимы резания в соответствии с точностью станка, обрабатываемой детали и траектории обработки
4. При использовании инструмента Ø 0,5 или меньше, или соотношение L/D (эффективная длина / диаметр инструмента) большее, чем 10, высокие нагрузки могут вызвать поломку инструмента
5. Если максимальная скорость вращения шпинделя недостаточна, пожалуйста уменьшите обороты шпинделя и подачу пропорционально

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Karbon çeliklerini be sertleştirilmiş çelikleri işlediğinizde, MQL kullanmanız önerilmektedir
3. Lütfen kesme koşullarını tezgahın hassasiyetine, işleme şekline ve işlenecek yere göre ayarlayınız
4. Kullanılan takımın çapı 0,5mm veya daha düşük ise, yada B/Ç (etkili boy/takım çapı) oranı 10 dan küçük ise, uygulanılacak fazla yükte takım kırılması yaşanabilir
5. Mevcut DEVİR yetersiz kaldığında, lütfen DEVİRİ ve ilerlemeyi düşürünüz

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Do obróbki stali węglowych lub stali hartowanej, jest zalecane użycie MQL (minimalna ilość smarowania / mgły olejowej
3. Prosimy zmienić warunki na podstawie dokładności obróbki, kształtu obróbki i ścieżki obróbki.
4. Podczas korzystania z narzędzia o śred. 0,5 lub mniejszej, lub stosunek L / D (długość efektywna / średnica) < 10, wysokie obciążenia może spowodować uszkodzenie narzędzia.
5. Kiedy dostępne obroty są niewystarczające, należy zmniejszyć obroty i posuwy proporcjonalnie.

BACK

WXL-PC-EBD

Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Düzenli frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Normalne frezowanie



				Cu				~ 32 HRC FC250 ■ SS400 ■ S55C ■ NAK55				Hardened Steel 33 ~ 41 HRC				Prehardened Steel 42 ~ 50 HRC			
R	θ	l2	Cutting Angle	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
0,1	0,5°	1	0,3°	32.000	200	0,02	0,02	32.000	150	0,01	0,01	32.000	150	0,01	0,01	32.000	100	0,005	0,005
0,1	0,5°	1,5	0,3°	32.000	200	0,02	0,02	32.000	150	0,01	0,01	32.000	150	0,01	0,01	32.000	100	0,005	0,005
0,1	0,5°	2	0,3°	32.000	150	0,02	0,02	32.000	100	0,01	0,01	32.000	100	0,01	0,01	32.000	80	0,005	0,005
0,1	0,5°	2,5	0,3°	32.000	150	0,01	0,01	32.000	100	0,005	0,005	32.000	100	0,005	0,005	32.000	80	0,005	0,005
0,1	0,5°	3	0,3°	32.000	100	0,01	0,01	32.000	80	0,005	0,005	32.000	80	0,005	0,005	32.000	60	0,003	0,005
0,1	1°	2	0,3°	32.000	150	0,02	0,02	32.000	100	0,01	0,01	32.000	100	0,01	0,01	32.000	80	0,005	0,005
0,1	1°	2,5	0,3°	32.000	150	0,02	0,02	32.000	100	0,01	0,01	32.000	100	0,01	0,01	32.000	80	0,005	0,005
0,1	1°	3	0,3°	32.000	150	0,01	0,01	32.000	100	0,005	0,005	32.000	100	0,005	0,005	32.000	80	0,005	0,005
0,15	0,5°	2	0,3°	32.000	600	0,02	0,03	32.000	300	0,01	0,015	32.000	200	0,01	0,015	32.000	200	0,005	0,005
0,15	0,5°	3	0,3°	32.000	450	0,02	0,02	32.000	300	0,01	0,01	32.000	200	0,01	0,01	32.000	200	0,01	0,01
0,15	1°	3	0,3°	32.000	450	0,02	0,02	32.000	300	0,01	0,015	32.000	200	0,01	0,015	32.000	200	0,005	0,005
0,15	1°	4	0,3°	32.000	450	0,02	0,02	32.000	300	0,01	0,01	32.000	200	0,01	0,01	32.000	200	0,01	0,01
0,2	0,5°	2	0,3°	27.000	450	0,03	0,05	32.000	400	0,015	0,025	32.000	300	0,015	0,02	32.000	300	0,01	0,01
0,2	0,5°	3	0,3°	27.000	450	0,025	0,05	27.000	300	0,015	0,025	27.000	200	0,015	0,02	27.000	200	0,01	0,01
0,2	0,5°	4	0,3°	27.000	450	0,02	0,05	27.000	300	0,015	0,025	27.000	200	0,015	0,02	27.000	200	0,01	0,01
0,2	0,5°	5	0,3°	27.000	400	0,015	0,05	27.000	300	0,005	0,015	27.000	200	0,005	0,012	27.000	200	0,005	0,01
0,2	0,5°	6	0,3°	27.000	300	0,01	0,03	27.000	300	0,005	0,015	27.000	200	0,005	0,012	27.000	200	0,005	0,01
0,2	1°	4	0,3°	27.000	450	0,025	0,05	27.000	300	0,015	0,025	27.000	200	0,015	0,02	27.000	200	0,01	0,01
0,2	1°	5	0,3°	27.000	450	0,02	0,05	27.000	300	0,015	0,025	27.000	200	0,015	0,02	27.000	200	0,01	0,01
0,2	1°	6	0,3°	27.000	400	0,015	0,05	27.000	300	0,005	0,015	27.000	200	0,005	0,012	27.000	200	0,005	0,01
0,25	0,5°	4	0,3°	32.000	600	0,04	0,05	32.000	400	0,02	0,025	32.000	300	0,02	0,02	32.000	300	0,01	0,015
0,25	0,5°	6	0,3°	27.000	450	0,04	0,05	20.000	200	0,02	0,025	20.000	150	0,02	0,02	20.000	150	0,01	0,01
0,25	0,5°	8	0,3°	21.000	300	0,02	0,03	20.000	200	0,01	0,015	20.000	150	0,01	0,01	20.000	150	0,01	0,01
0,25	0,5°	10	0,3°	21.000	300	0,02	0,03	20.000	200	0,01	0,015	20.000	150	0,01	0,01	20.000	150	0,005	0,01
0,25	1°	4	0,3°	32.000	600	0,04	0,05	32.000	400	0,02	0,025	32.000	300	0,02	0,02	32.000	300	0,01	0,01
0,25	1°	6	0,3°	27.000	450	0,04	0,05	32.000	400	0,02	0,025	32.000	300	0,02	0,02	32.000	300	0,01	0,01
0,25	1°	8	0,3°	27.000	450	0,04	0,05	20.000	200	0,02	0,025	20.000	150	0,02	0,02	20.000	150	0,01	0,01
0,25	1°	10	0,3°	21.000	300	0,02	0,03	20.000	200	0,02	0,025	20.000	150	0,02	0,02	20.000	150	0,01	0,01
0,25	1°	12	0,3°	21.000	300	0,02	0,03	20.000	200	0,01	0,015	20.000	150	0,01	0,01	20.000	150	0,01	0,01
0,3	0,5°	2	0,3°	32.000	675	0,045	0,12	32.000	450	0,03	0,06	32.000	300	0,03	0,05	32.000	300	0,03	0,03
0,3	0,5°	4	0,3°	30.000	375	0,045	0,12	25.000	250	0,03	0,06	24.000	200	0,03	0,05	24.000	200	0,03	0,03
0,3	0,5°	6	0,3°	30.000	375	0,045	0,12	25.000	250	0,03	0,06	24.000	200	0,03	0,04	24.000	200	0,02	0,02
0,3	0,5°	8	0,3°	25.000	225	0,045	0,12	20.000	150	0,03	0,06	20.000	150	0,03	0,04	20.000	150	0,02	0,02
0,3	0,5°	10	0,3°	25.000	225	0,045	0,12	20.000	150	0,03	0,06	20.000	150	0,03	0,04	20.000	150	0,02	0,02
0,3	0,5°	12	0,3°	25.000	225	0,045	0,12	20.000	150	0,03	0,06	20.000	150	0,02	0,04	20.000	150	0,01	0,01
0,3	0,5°	16	0,3°	20.000	150	0,025	0,05	20.000	150	0,03	0,06	20.000	150	0,01	0,04	20.000	150	0,01	0,01
0,3	1°	4	0,3°	30.000	375	0,045	0,12	25.000	250	0,03	0,06	24.000	200	0,03	0,05	24.000	200	0,03	0,03
0,3	1°	6	0,3°	30.000	375	0,045	0,12	25.000	250	0,03	0,06	24.000	200	0,03	0,04	24.000	200	0,02	0,02
0,3	1°	8	0,3°	30.000	375	0,045	0,12	25.000	250	0,03	0,06	24.000	200	0,03	0,04	24.000	200	0,02	0,02
0,3	1°	10	0,3°	25.000	225	0,045	0,12	20.000	150	0,03	0,06	20.000	150	0,03	0,04	20.000	150	0,02	0,02
0,3	1°	12	0,3°	25.000	225	0,045	0,12	20.000	150	0,03	0,06	20.000	150	0,03	0,04	20.000	150	0,02	0,02
0,3	1°	16	0,3°	25.000	225	0,045	0,12	20.000	150	0,03	0,06	20.000	150	0,03	0,04	20.000	150	0,02	0,02
0,4	0,5°	4	0,3°	27.000	675	0,06	0,16	23.000	450	0,04	0,08	21.000	300	0,04	0,06	21.000	300	0,04	0,08
0,4	0,5°	6	0,3°	24.000	375	0,06	0,12	21.000	250	0,04	0,06	19.000	200	0,04	0,05	19.000	200	0,03	0,05
0,4	0,5°	8	0,3°	24.000	375	0,06	0,12	21.000	250	0,04	0,06	19.000	200	0,04	0,05	19.000	200	0,03	0,05
0,4	0,5°	12	0,3°	22.000	225	0,06	0,12	19.000	150	0,04	0,06	17.000	150	0,04	0,05	17.000	150	0,02	0,05
0,4	1°	8	0,3°	24.000	375	0,06	0,12	21.000	250	0,04	0,06	19.000	200	0,04	0,05	19.000	200	0,03	0,05
0,4	1°	12	0,3°	24.000	375	0,06	0,12	21.000	250	0,04	0,06	19.000	200	0,04	0,05	19.000	200	0,02	0,05
0,4	1°	16	0,3°	22.000	225	0,06	0,12	19.000	150	0,04	0,06	17.000	150	0,04	0,05	17.000	150	0,02	0,02
0,5	0,5°	6	0,3°	28.000	750	0,075	0,2	25.000	500	0,05	0,1	21.000	300	0,05	0,08	21.000	300	0,05	0,05
0,5	0,5°	8	0,3°	28.000	750	0,075	0,2	25.000	500	0,05	0,1	21.000	300	0,05	0,08	21.000	300	0,05	0,05
0,5	0,5°	10	0,3°	21.000	450	0,075	0,15	19.000	300	0,05	0,1	16.000	200	0,05	0,08	16.000	200	0,05	0,05
0,5	0,5°	12	0,3°	21.000	450	0,075	0,15	19.000	300	0,05	0,1	16.000	200	0,05	0,08	16.000	200	0,05	0,05
0,5	0,5°	16	0,3°	18.000	300	0,06	0,12	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,025
0,5	0,5°	18	0,3°	18.000	300	0,06	0,12	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,025
0,5	0,5°	20	0,3°	18.000	300	0,06	0,12	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,025
0,5	0,5°	25	0,3°	16.000	300	0,06	0,12	13.000	200	0,03	0,05	10.000	150	0,03	0,04	10.000	150	0,01	0,015
0,5	0,5°	30	0,3°	16.000	300	0,06	0,12	13.000	200	0,03	0,05	10.000	150	0,03	0,04	10.000	150	0,01	0,015
0,5	0,5°	35	0,3°	13.000	300	0,04	0,12	13.000	200	0,01	0,05	10.000	150	0,01	0,04	10.000	150	0,005	0,015
0,5	1°	10	0,3°	28.000	750	0,075	0,2	25.000	500	0,05	0,1	21.000	300	0,05	0,08	21.000	300	0,05	0,05
0,5	1°	16	0,3°	21.000	450	0,075	0,15	19.000	300	0,05	0,1	16.000	200	0,05	0,08	16.000	200	0,05	0,05
0,5	1°	20	0,3°	21.000	450	0,075	0,15	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,02
0,5	1°	25	0,3°	18.000	300	0,06	0,12	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,02
0,5	1°	30	0,3°	18.000	300	0,06	0,12	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,015
0,5	1°	35	0,3°	18.000	300	0,06	0,12	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,015
0,5	1°	40	0,3°	18.000	300	0,06	0,12	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,015
0,5	1°	50	0,3°	16.000	300	0,06	0,12	13.000	200	0,03	0,05	10.000	150	0,03	0,04	10.000	150	0,01	0,015
0,5	1°	60	0,3°	16.000	300	0,06	0,12	13.000	200	0,03	0,05	10.000	150	0,03	0,04	10.000	150	0,01	0,015
0,5	1°	70	0,3°	12.000	300	0,06	0,12	13.000	200	0,02	0,05	10.000	150	0,02	0,04	10.000	150	0,01	0,015
0,5	1,5°	8	0,3°	28.000	750	0,075	0,2	25.000	500	0,05	0,1	21.000	300	0,05	0,08	21.000	300	0,05	0,05
0,5	1,5°	10	0,3°	28.000	750	0,075	0,2	25.000	500	0,05	0,1	21.000	300	0,05	0,08	21.000	300	0,05	0,05
0,5	1,5°	12	0,3°	28.000	750	0,075	0,2	25.000	500	0,05	0,1	21.000	300	0,05	0,08	21.000	300	0,05	0,05
0,5	1,5°	16	0,3°	21.000	450	0,075	0,15	19.000	300	0,05	0,1	16.000	200	0,05	0,08	16.000	200	0,05	0,05
0,5	1,5°	20	0,3°	21.000	450	0,075	0,15	19.000	300	0,05	0,1	16.000	200	0,05	0,08	16.000	200	0,05	0,05
0,5	1,5°	25	0,3°	21.000	450	0,075	0,15	19.000	300	0,05	0,1	16.000	200	0,05	0,08	16.000	200	0,05	0,05
0,5	1,5°	30	0,3°	21.000	450	0,075	0,15	19.000	300	0,05	0,1	16.000	200	0,05	0,08	16.000	200	0,05	0,05
0,5	1,5°	35	0,3°	21.000	450	0,075	0,15	17.000	200	0,03	0,05	14.000	150	0,03	0,04	14.000	150	0,01	0,02
0,5	2°	45	0,3°	21.000	450	0,075	0,15	19.000	300	0,05	0,1	16.000	200	0,05	0,08	16.000	200	0,05	0,05
0,6	0,5°	12	0,3°	20.000	450	0,09	0,24	17.000	300	0,06	0,12	14.000	200	0,06	0,1	14.000	200	0,06	0,06
0,6	0,5°	25	0,3°	16.000	300	0,09	0,18	14.000	200	0,06	0,09	11.000	150	0,06	0,07	11.000	150	0,02	0,03
0,6	1°	12	0,3°	20.000	450	0,09	0,24	17.000	300	0,06	0,12	14.000	200	0,06	0,1	14.000	200	0,06	0,06
0,6	1°	25	0,3°	16.000	300	0,09	0,24	14.000	200	0,06	0,09	11.000	150	0,06	0,07	11.000	150	0,02	0,03
0,6	1,5°	12	0,3°	20.000	600	0,09	0,24	17.000	450	0,06	0,12	14.000	300	0,06	0,1	14.000	300	0,06	0,06
0,6	1,5°	25	0,3°	20.000	450	0,09	0,24	17.000	300	0,06	0,12	14.000	200	0,06	0,1	14.000	200	0,06	0,06
0,75	0,5°	8	0,3°	18.000	750	0,14	0,3	15.000	500	0,08	0,15	12.000	350	0,08	0,15	12.000	300	0,08	0,15
0,75	0,5°	10	0,3°	17.000	450	0,14	0,3	15.000	300	0,08	0,15	12.000	250	0,08	0,15	12.000	250	0,08	0,15
0,75	0,5°	12	0,3°	17.000	450	0,12	0,3	15.000	300	0,08	0,15	12.000	250	0,08	0,15	12.000	250	0,08	0,15

CARBIDE

CARBIDE

BACK

WXL-PC-EBD

Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Düzenli frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Normalne frezowanie



				Cu				~ 32 HRC FC250 ■ SS400 ■ S55C ■ NAK55				Hardened Steel 33 ~ 41 HRC				Prehardened Steel 42 ~ 50 HRC			
R	θ	l2	Cutting Angle	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
0,75	0,5°	16	0,3°	17.000	450	0,12	0,24	15.000	300	0,08	0,12	12.000	250	0,08	0,1	12.000	250	0,075	0,1
0,75	0,5°	20	0,3°	13.000	300	0,12	0,2	12.000	200	0,06	0,1	9.500	150	0,06	0,1	9.500	150	0,05	0,1
0,75	0,5°	25	0,3°	13.000	300	0,12	0,2	12.000	200	0,06	0,1	9.500	150	0,06	0,1	9.500	150	0,05	0,1
0,75	0,5°	30	0,3°	13.000	300	0,12	0,2	12.000	200	0,06	0,1	9.500	150	0,06	0,1	9.500	150	0,035	0,1
0,75	0,5°	35	0,3°	13.000	300	0,09	0,2	12.000	200	0,06	0,1	9.500	150	0,06	0,1	9.500	150	0,03	0,1
0,75	1°	10	0,3°	18.000	750	0,14	0,3	15.000	500	0,08	0,15	12.000	350	0,08	0,15	12.000	300	0,08	0,15
0,75	1°	12	0,3°	17.000	450	0,14	0,3	15.000	300	0,08	0,15	12.000	250	0,08	0,15	12.000	250	0,08	0,15
0,75	1°	16	0,3°	17.000	450	0,12	0,3	15.000	300	0,08	0,15	12.000	250	0,08	0,15	12.000	250	0,08	0,15
0,75	1°	20	0,3°	17.000	450	0,12	0,24	15.000	300	0,08	0,12	12.000	250	0,08	0,1	12.000	250	0,075	0,1
0,75	1°	25	0,3°	17.000	450	0,12	0,24	15.000	300	0,08	0,12	12.000	250	0,08	0,1	12.000	250	0,05	0,1
0,75	1°	30	0,3°	13.000	300	0,09	0,2	12.000	200	0,06	0,1	9.500	150	0,06	0,1	9.500	150	0,03	0,1
0,75	1°	35	0,3°	13.000	300	0,09	0,2	12.000	200	0,06	0,1	9.500	150	0,06	0,1	9.500	150	0,02	0,1
0,75	1,5°	10	0,3°	18.000	750	0,12	0,3	15.000	500	0,08	0,15	12.000	350	0,08	0,15	12.000	300	0,08	0,15
0,75	1,5°	12	0,3°	17.000	450	0,12	0,3	15.000	300	0,08	0,15	12.000	250	0,08	0,15	12.000	250	0,08	0,15
0,75	1,5°	16	0,3°	17.000	450	0,12	0,3	15.000	300	0,08	0,15	12.000	250	0,08	0,15	12.000	250	0,08	0,15
0,75	1,5°	20	0,3°	17.000	450	0,12	0,3	15.000	300	0,08	0,15	12.000	250	0,08	0,15	12.000	250	0,08	0,15
0,75	1,5°	25	0,3°	17.000	450	0,12	0,24	15.000	300	0,08	0,12	12.000	250	0,08	0,1	12.000	250	0,075	0,1
0,75	1,5°	30	0,3°	17.000	450	0,12	0,24	15.000	300	0,08	0,12	12.000	250	0,08	0,1	12.000	250	0,075	0,1
0,75	1,5°	35	0,3°	13.000	300	0,075	0,2	12.000	200	0,06	0,1	9.500	150	0,06	0,1	9.500	150	0,05	0,1
0,75	2°	38,6	0,3°	17.000	450	0,12	0,24	15.000	300	0,08	0,12	12.000	250	0,08	0,1	12.000	250	0,075	0,1
1	0,5°	8	0,3°	16.500	1.050	0,2	0,56	16.500	700	0,1	0,28	13.500	500	0,1	0,28	13.500	500	0,1	0,2
1	0,5°	10	0,3°	16.500	1.050	0,2	0,56	16.500	700	0,1	0,28	13.500	500	0,1	0,28	13.500	500	0,1	0,2
1	0,5°	12	0,3°	16.500	1.050	0,2	0,56	16.500	700	0,1	0,28	13.500	500	0,1	0,28	13.500	500	0,1	0,2
1	0,5°	16	0,3°	14.000	750	0,15	0,56	13.000	500	0,1	0,28	10.000	300	0,1	0,28	10.000	300	0,1	0,2
1	0,5°	20	0,3°	14.000	750	0,15	0,56	13.000	500	0,1	0,28	10.000	300	0,1	0,28	10.000	300	0,1	0,2
1	0,5°	25	0,3°	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	0,5°	30	0,3°	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	0,5°	35	0,3°	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	0,5°	40	0,3°	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	1°	16	0,3°	16.500	1.050	0,2	0,56	16.500	700	0,1	0,28	13.500	500	0,1	0,28	13.500	500	0,1	0,2
1	1°	20	0,3°	14.000	750	0,2	0,56	13.000	500	0,1	0,28	10.000	300	0,1	0,28	10.000	300	0,1	0,2
1	1°	25	0,3°	14.000	750	0,15	0,56	13.000	500	0,1	0,28	10.000	300	0,1	0,28	10.000	300	0,1	0,2
1	1°	30	0,3°	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,08	0,1
1	1°	35	0,3°	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,08	0,1
1	1°	40	0,3°	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	1°	50	0,3°	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	1°	60	0,3°	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	1°	70	0,3°	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	1,5°	16	0,3°	16.500	1.050	0,2	0,56	16.500	700	0,1	0,28	13.500	500	0,1	0,28	13.500	500	0,1	0,2
1	1,5°	20	0,3°	16.500	1.050	0,2	0,56	16.500	700	0,1	0,28	13.500	500	0,1	0,28	13.500	500	0,1	0,2
1	1,5°	25	0,3°	14.000	750	0,15	0,56	13.000	500	0,1	0,28	10.000	300	0,1	0,28	10.000	300	0,1	0,2
1	1,5°	30	0,3°	14.000	750	0,15	0,56	13.000	500	0,1	0,28	10.000	300	0,1	0,28	10.000	300	0,1	0,2
1	1,5°	35	0,3°	14.000	750	0,15	0,56	13.000	500	0,1	0,28	10.000	300	0,1	0,28	10.000	300	0,1	0,2
1	1,5°	41,5	0,3°	11.000	375	0,15	0,42	10.000	250	0,1	0,21	8.000	200	0,1	0,18	8.000	200	0,06	0,1
1	2°	31,5	0,3°	14.000	750	0,15	0,56	13.000	500	0,1	0,28	10.000	300	0,1	0,28	10.000	300	0,1	0,2
1,5	0,5°	8	0,3°	15.000	1.200	0,2	0,84	9.500	800	0,15	0,42	7.500	600	0,15	0,42	7.500	600	0,15	0,3
1,5	0,5°	10	0,3°	15.000	1.200	0,2	0,84	9.500	800	0,15	0,42	7.500	600	0,15	0,42	7.500	600	0,15	0,3
1,5	0,5°	12	0,3°	12.000	900	0,2	0,84	9.500	600	0,15	0,42	7.500	400	0,15	0,36	7.500	400	0,15	0,3
1,5	0,5°	16	0,3°	10.000	900	0,2	0,84	9.500	600	0,15	0,42	7.500	400	0,15	0,36	7.500	400	0,15	0,3
1,5	0,5°	20	0,3°	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
1,5	0,5°	25	0,3°	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
1,5	0,5°	30	0,3°	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,3	6.500	250	0,09	0,15
1,5	0,5°	35	0,3°	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,3	6.500	250	0,09	0,15
1,5	0,5°	40	0,3°	9.000	375	0,2	0,84	7.500	250	0,15	0,42	6.000	200	0,15	0,3	6.000	200	0,09	0,15
1,5	0,5°	50	0,3°	9.000	375	0,2	0,84	7.500	250	0,15	0,42	6.000	200	0,15	0,3	6.000	200	0,09	0,15
1,5	1°	20	0,3°	10.000	900	0,2	0,84	9.500	600	0,15	0,42	7.500	400	0,15	0,36	7.500	400	0,15	0,3
1,5	1°	25	0,3°	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
1,5	1°	30	0,3°	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
1,5	1°	35	0,3°	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,3	6.500	250	0,09	0,15
1,5	1°	40	0,3°	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,3	6.500	250	0,09	0,15
1,5	1°	50	0,3°	9.000	375	0,2	0,84	7.500	250	0,15	0,42	6.000	200	0,15	0,3	6.000	200	0,09	0,15
1,5	1°	60	0,3°	9.000	375	0,2	0,84	7.500	250	0,15	0,42	6.000	200	0,15	0,3	6.000	200	0,09	0,15
1,5	1°	70	0,3°	9.000	375	0,2	0,84	7.500	250	0,15	0,42	6.000	200	0,15	0,3	6.000	200	0,09	0,15
1,5	1,5°	20	0,3°	10.000	900	0,3	0,84	9.500	600	0,15	0,42	7.500	400	0,15	0,36	7.500	400	0,15	0,3
1,5	1,5°	25	0,3°	10.000	450	0,25	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
1,5	1,5°	30	0,3°	10.000	450	0,25	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
1,5	1,5°	35	0,3°	10.000	450	0,25	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
1,5	1,5°	40	0,3°	10.000	450	0,25	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
1,5	1,5°	50	0,3°	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,3	6.500	250	0,09	0,15
1,5	1,5°	62,5	0,3°	10.000	450	0,2	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,3	6.500	250	0,09	0,15
1,5	1,5°	47,5	0,3°	10.000	450	0,25	0,84	8.500	300	0,15	0,42	6.500	250	0,15	0,36	6.500	250	0,15	0,3
2	1°	20	0,5°	9.000	900	0,5	1,28	7.500	600	0,2	0,64	6.000	400	0,2	0,6	6.000	400	0,2	0,4
2	1°	30	0,5°	7.000	600	0,5	1,28	6.000	400	0,2	0,64	5.000	250	0,2	0,6	5.000	250	0,2	0,4
2	1°	40	0,5°	7.000	600	0,4	1,28	6.000	400	0,2	0,64	5.000	250	0,2	0,56	5.000	250	0,12	0,3
2	1°	50	0,5°	7.000	600	0,4	1,28	6.000	400	0,2	0,64	5.000	250	0,2	0,56	5.000	250	0,12	0,2
2	1°	60	0,5°	5.000	375	0,35	1,28	5.000	250	0,2	0,64	4.000	200	0,2	0,56	4.000	200	0,12	0,2
2	1,5°	44,2	0,5°	7.000	600	0,5	1,28	6.000	400	0,2	0,64	5.000	250	0,2	0,6	5.000	250	0,2	0,4
2	2°	34	0,5°	7.000	600	0,5	1,28	6.000	400	0,2	0,64	5.000	250	0,2	0,6	5.000	250	0,2	0,5
2,5	1°	30	0,5°	7.000	750	0,6	1,8	6.500	500	0,25	0,9	5.000	400	0,25	0,7	5.000	400	0,25	0,5
2,5	1°	40	0,5°	6.000	750	0,6	1,8	5.000	500	0,25	0,9	4.000	250	0,25	0,7	4.000	250	0,25	0,5
2,5	1°	60	0,5°	5.000	600	0,4	1,8	4.000	400	0,25	0,9	4.000	200	0,25	0,6	4.000	200	0,2	0,25
2,5	1,5°	26,9	0,5°	9.000	1.350	0,6	1,8	6.500	900	0,25	0,9	5.000	750	0,25	0,7	5.000	750	0,25	0,5
2,5	1,5°	65,1	0,5°	6.000	750	0,6	1,8	5.000	500	0,25	0,9	4.000	250	0,25	0,7	4.000	250	0,25	0,5
2,5	2°	50,1	0,5°	6.000	750	0,6	1,8	5.000	500	0,25	0,9	4.000	250	0,25	0,7	4.000	250	0,25	0,5
3	1°	30	0,5°	7.000	1.200	0,75	2,4	5.500	800	0,3	1,2	4.500	600	0,3	0,96	4.500	600	0,3	0,6
3	1°	40	0,5°	5.000	600	0,75	2,4	4.000	400	0,3	1,2	4.000	300	0,3	0,96	4.000	300	0,3	0,6
3	1°	50	0,5°	5.000	600	0,6	2,4	4.000	400	0,3	1,2	4.000	300	0,3	0,96	4.000	300	0,3	0,6

CARBIDE

CARBIDE

CONDITIONS

WXL-PC-EBD

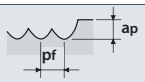
Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Düzenli frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Normalne frezowanie



Cu	~ 32 HRC FC250 ■ SS400 ■ S55C ■ NAK55	Hardened Steel 33 ~ 41 HRC	Prehardened Steel 42 ~ 50 HRC

R	θ	l2	Cutting Angle	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
3	1°	60	0,5°	5.000	600	0,6	2,4	4.000	400	0,3	1,2	4.000	300	0,3	0,96	4.000	300	0,3	0,6
3	1°	70	0,5°	5.000	600	0,6	2,4	4.000	400	0,3	1,2	4.000	300	0,3	0,96	4.000	300	0,3	0,3
3	1°	80	0,5°	5.000	600	0,45	2,4	4.000	400	0,2	1,2	4.000	300	0,2	0,96	4.000	300	0,2	0,3
3	1,5°	49	0,5°	5.000	600	0,6	2,4	4.000	400	0,3	1,2	4.000	300	0,3	0,96	4.000	300	0,3	0,6
3	2°	36	0,5°	7.000	1.200	0,75	2,4	5.500	800	0,3	1,2	4.500	600	0,3	0,96	4.500	600	0,3	0,6

Max cutting depth



1. Highly rigid machines and tool holders should be used. If not, machining should be kept below above-mentioned conditions
2. Tool vibrations should be kept at a minimum level for maximum accuracy.
3. Use a suitable cutting fluid with high smoke retardant properties.
4. For the milling of cor ners or removal of residue, reduce the cutting depth and feed to 70%..
5. More stable high-feed machining in corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
6. When cutting load fluctuates (in the corners, etc.) or when high precision is required, be sure to control the rotational speed.
7. When cutting at greater than the recommended cutting angle, reduce the feed.
8. When cutting load is fluctuating, or when higher milling accuracy is required, keep machining conditions below the above-mentioned values.
9. When the rotational speed does not meet the recommended conditions, reduce the feed in proportion to the RPM that is suitable for your machine.
10. The chart above is intended as general guidelines for reference only. The given values should be adjusted individually based on actual machining conditions.
11. The cutting conditions are intended for intermediate machining after roughing.
12. When the work includes extensive roughing including flat areas, chattering is more likely to occur.
13. If the cutting depth is shallow, increase the cutting speed appropriately to minimize chattering.

1. Macchine altamente rigide e portautensili devono essere utilizzati. In caso contrario,la lavorazione deve essere mantenuta al di sotto menzionate condizioni.
2. Le vibrazioni utensile devono essere mantenute ad un livello minimo per la massima precisione.
3. Utilizzare un opportuno fluido di taglio con elevate proprietà ritardanti di fumo.
4. Per la fresatura di angoli o di rimozione di residui, ridurre la profondità di taglio e avanzamento al 70% .
5. Maggiore stabilità di lavorazione ad alto avanzamento negli angoli possono essere raggiunti mediante il fissaggio di un inserimento R o decelerazione del CAM o della macchina.
6. Quando il carico di taglio è variabile (negli angoli, ecc) o quando l'alta precisione è richiesta, assicurarsi di controllare la velocità di rotazione.
7. Quando si taglia a una quantità maggiore dei parametri raccomandati, ridurre l'avanzamento.
8. Quando il carico di taglio varia, o quando una maggiore precisione di fresatura è richiesta, mantenere i parametri di lavorazione al di sotto dei valori menzionati.
9. Quando la velocità di rotazione non soddisfa le condizioni raccomandate, ridurre l'avanzamento in proporzione al numero di giri che è adatto per la vostra macchina.
10. Il grafico sopra è da intendersi come linea guida generali di riferimento. I valori indicati devono essere regolato individualmente in base alle condizioni di lavoro effettivo.
11. Le condizioni di taglio si intendono per la lavorazione intermedia dopo la sgrossatura.
12. Quando la lavorazione comprende vaste aree irregolari comprese aree piane, è più probabile che si verifichino vibrazioni.
13. la profondità di asportazione è superficiale, aumentare la velocità di taglio opportunamente per ridurre al minimo le vibrazioni.

1. Es sollten hochtechnologische Maschinen und Spannzangen eingesetzt werden. Wenn dies nicht möglich ist, sollten die oben genannten Schnittdaten reduzieren werden.
2. Werkzeugvibrationen sollten für höchste Genauigkeit auf ein Minimum reduziert werden.
3. Benützen Sie ein geeignetes Schneidöl um Rauchentwicklung zu vermeiden
4. Für das Zerspanen von (Ecken, Abtrag, Resten????) sollten Sie die Schnittgeschwindigkeit und den Vorschub um 70% reduzieren!
5. Stabilere High Feed Bearbeitungen können durch bestimmte Radiusfunktionen Maschinenseitig oder mit dem CAM System erreicht werden.
6. Wenn die Schnittkräfte schwanken (in den Ecken) oder wenn höchste Präzision gefragt ist sollten Sie die Umdrehungen besonders kontrollieren.
7. Wenn Sie mit einem größeren Schnittwinkel zerspanen wie angegeben sollten Sie die Schnittgeschwindigkeit senken.
8. Wenn verschiedene Schneidöle verwendet werden, oder wenn Sie genaue Fräsoperationen benötigen fahren Sie die Maschine unter den oben angegebenen Schnittdaten.
9. Falls Ihre Maschinenleistung in Bezug auf die Umdrehungen die empfohlenen Schnittdaten nicht erreicht, reduzieren Sie bitte die Schnittgeschwindigkeit in Relation zum RPM Ihrer Maschine.
10. Bei den angegebenen Schnittdaten handelt es sich um eine Richtlinie für die Bearbeitung. Die tatsächlichen Schnittdaten sollten individuell auf Ihre tatsächlichen Bearbeitungsbedingungen eingestellt werden.
11. Die Schnittkonditionen sind ausgelegt für mittlere Bearbeitung nach dem Schruppen.
12. Wenn die Arbeit umfangreiches Schruppen auf ebenen Flächen umfasst, können Rattermarken auftreten.
13. Wenn die Schnitttiefe gering ist, sollten Sie die Schnittgeschwindigkeit erhöhen um Rattern zu vermeiden.

1. Utilisation sur machines et portes outils rigides. Si cela n'est pas possible, utiliser les conditions mentionnées ci-dessous
2. Eviter les vibrations de l'outil pour une précision maximale.
3. Utilisez un fluide de coupe approprié à haute propriété ignifugée.
4. Pour le fraisage des angles ou l'enlèvement de reste de matière, réduire la profondeur de coupe et la vitesse à 70%
5. L'usinage des angles à la grande avance peut être réaliser avec stabilité, par l'accélération et la décélération du calculateur et suivant la taille de la machine
6. Quand la puissance absorbée fluctue(dans les angles, etc) ou quand la haute précision est recherché, assurez-vous de contrôler la vitesse de rotation.
7. Quand la coupe est supérieure à l'angle recommandé, réduiser l'avance
8. Quand la puissance absorbée fluctue ou quand la haute précision est recherchée, maintenir les conditions d'usinage ci-dessous
9. Quand la vitesse de rotation ne correspond pas aux conditions recommandées, réduire l'avance en proportion de la vitesse de rotation adaptée à votre machine
10. Le tableau ci-dessus est destinée aux applications générales et comme référence. Les valeurs données doivent être ajustées en fonction des conditions réelles d'usinage
11. Les conditions de coupe sont destinées à l'usinage intermédiaire après ébauche.
12. Quand l'usinage comprend de la grosse ébauche et des zones plates, des vibrations sont susceptible de se produire
13. la profondeur de coupe est peu profonde, augmenter la vitesse de coupe de façon appropriée afin de minimiser des vibrations

1. Benyt en stabil maskine og værktøjsholder. Hvis dette ikke er tilgængeligt, skal lavere skæredata end de ovenstående benyttes.
2. For maksimal nøjagtighed, hold vibrationer på et absolut minimum.
3. Benyt en passende skærevæske
4. Ved fræsning i hjørner eller restbearbejdning, reducer skæredybde og tilspænding til 70%
5. stabil High Feed bearbejdning kan opnås ved at programmerer radius baner i indvendige hjørner
6. Når skærekraften er svingende (i hjørner og lign.) eller når høj præcision er ønsket, kontroller da at omdrejninger og tilspænding er overens.
7. Hvis større rampevinkel end anbefalet benyttes, reducer tilspændingen.
8. Når skærekraften er svingende eller en højere nøjagtighed er ønsket, anvend skæredata der er lavere end ovenstående.
9. Hvis de anbefalede omdrejninger ikke er tilgængelige på maskinen, reducer da tilspændingen i forhold til de tilgængelige omdrejninger.
10. Ovenstående skæredata er ment som en generel guideline. Skæredata skal altid justeres individuelt så de passer til den aktuelle opgave og det udstyr der er til rådighed.
11. Skæredata anbefalet til mellem slet efter skrub bearbejdning.
12. Når bearbejdningen indeholder omfattende skrubbearbejdning af flade områder, kan vibrationer opstå.
13. Hvis skæredybden er lav, øg da skærehastigheden for at minimere vibrationer

1. Deben emplarse maquinas y porta-herramientas de gran rigidez. De lo contrario deben reducirse las condiciones de corte citadas.
2. Las vibraciones de herramienta deben reducirse al mínimo para obtener la maxima precisión.
3. Utilice fluido de corte edecuado con fuerte retardante de humos.
4. Para eliminar o evacuar los residuos en rincones, reduzca velocidad y avance al 70%.
5. Puede obtenerse alta velocidad en los rincones insertando función R o deceleración en el CAM o la maquina.
6. Si flutua la carga de corte (rincones etc,) o requerida alta precisión, asegurese de controlar la velocidad de giro.
7. Si la rampa de corte es mayor del angulo recomendado, reduzca el avance.
8. Si flutua la carga de corte o requerida alta precisión, reduzca los valores de corte citados.
9. Si la velocidad de giro no puede ser alcanzada por la maquina, reduzca el avance en la misma proporción.
10. Este cuadro se entiende solo como guía de referencias general. Los valores indviduales deben ajustarse a la condiciones reales de mecanizado.
11. Los datos de corte se entienden para condiciones intermedias de mecanizado despues de desbaste.
12. Si el mecanizado incluye extensas areas planas de desbaste, es usual que aparezcan vibraciones.
13. En profudidad de corte minimas, incremente la velocidad de corte para minimzar las vibraciones.

1. Använd en stabil maskin och verktygshållare. Om inte stabila förhållande finns använd lägre skärdata än ovanstående.
2. För bästa förhållande, håll nere vibrationer.
3. Använd en passande skärvätska.
4. Vid fräsning i hörn eller restbearbetning, minska skärdjup och matning till 70%.
5. Stabil High-Feed bearbetning i hörn kan uppnås genom att en större R i detaljen än fräsens R radie bana programmeras, i CAM eller maskin.
6. När skärkraften varierar (i hörnen, etc.) eller när hög precision efterfrågas, kontrollera att varvtal och matning är konsekventa.
7. Om större rampvinkel än rekommenderat behövs, reducera matningen.
8. När skärkraften varierar, eller när högre fräsnings noggrannhet krävs, använd lägre skärdata än ovanstående skärdata.
9. När varvtalet inte kan uppnås, använd det varvtal ni har tillgång till och reducra matningen i förhållandet till varvtalet.
10. Ovanstående skärdata är menat som en riktlinje. De angivna värdena ska justeras individuellt på grundval av faktiska bearbetning villkor.
11. Skärdata rekommendationer för semi finish och grovbearbetning.
12. När det finns mycket grovbearbetning av plana områden kan vibrationer uppstår.
13. Om skärdjupet är litet, öka skärhastigheten för att minimera vibrationer.

1. Необходимо использовать жесткие фрезерный станок и фрезерные патроны. В противном случае, режимы резания должны быть ниже вышеупомянутых условий.
2. Для максимальной точности необходимо обеспечить минимальное биение инструмента.
3. Используйте подходящую СОЖ с высокой стойкостью к дымлению.
4. При фрезеровании углов и удалении остатков материала уменьшите глубину резания и подачу до 70%.
5. Более стабильную обработку на высоких подачах можно достичь задавая уменьшение подачь в углах в CAM системе или на ЧПУ.
6. Если нагрузка меняется, например, в углах или требуется высокая точность, необходимо контролировать скорость вращения шпинделя.
7. При фрезеровании под углом большим, чем рекомендованный уменьшите подачу.
8. Если нагрузка меняется или требуется высокая точность, установите параметры резания не выше указанных.
9. Если скорость вращения шпинделя ниже рекомендованной, то снизьте подачу пропорционально скорости вращения.
10. Указанные выше параметры только для справки. Указанные значения должны быть изменены в соответствии с реальными условиями обработки.
11. Условия резания для получистовой обработки после черновой.
12. Если работа требует много черновой обработки, включая плоские области, то возникновение вибраций очень вероятно.
13. Если глубина резания небольшая, можно увеличить скорость резания так, чтобы свести к м инимуму выбрацию инструмента.

1. Yüksek rijitli tezgah ve takım tutucu kullanılmalıdır. Eğer kullanılmaz ise, işleme koşulları yukarıda ki belirtilen değerlenrde tutulmalıdır.
2. Maksimum doğruluk için takımın titreşimi minimum seviyede tutulmalıdır.
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Köşelerin frezelenmesinde veya kalan bölgenin temizlenmesinde, kesme derinliğini ve ilerlemeyi %70'e düşürün
5. Köşeleri yüksek ilerleme ile daha stabil işlemek için R ayarı eklenebilir yada CAM de veya tezgahda yavaşlatma yapılabilir.
6. Fazla yükün olduğu yerleri (köşeler v.b) işlerken veya yüksek hassasiyet istenilen yerlerde, takımın dönme hızını kontrol edin
7. Tavsiye edilen kesme açısından daha büyük bir yeri işliyorsanız, ilerlemeyi düşürün
8. Fazla yükün olduğu yerleri (köşeler v.b) işlerken veya yüksek hassasiyet istenilen yerlerde, yukarıda verilen değerleri kullanın
9. Dönme hızınız tavziye edilen değerlerde değilse, tezgahınıza uygun bir şekilde devirinize göre ilerlemenizi düşürün
10. Yukarıda ki grafik sadece genel rehperlik için referans olarak verilmiştir. Verilen değerler gerçek işleme koşullarına göre tekrar ayarlanması gerekmektedir
11. Kesme koşulları kaba işemeden sonra ki ara işlemler için tasarlanmıştır.
12. Yapılacak iş düz yüzeyler içeren geniş bir kaba operasyon ise, tırlamanın görülme olasılığı daha fazladır
13. Kesme derinliği az ise, tırlamayı azaltmak için kesme hızını arttırınız

1. Powinny być używane bardzo sztywne maszyny i mocowania. Jeżeli tak nie jest, to obróbka powinna być utrzymywana poniżej wymienionych warunków
2. Drgania narzędzia powinny być utrzymane na poziomie minimalnym dla maksymalnej dokładności.
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Do frezowania narożników lub usunięcie pozostałości, zmniejsz głębokości frezowania i posuw do 70%
5. Bardziej stabilny wysoki posuw przy obróbce w narożnikach może być osiągnięty poprzez określenie i wstawiania R lub zwalniania w CAM lub w czasie rzeczywistym
6. Podczas frezowania zmienia się obciążenia (w narożach , itp.) lub gdy wymagana jest wysoka dokładność, należy kontrolować prędkość obrotową.
7. Podczas frezowania pod kątem większym niż zalecany , ogranicz posuw
8. Podczas frezowania ze zmiennym obciążeniem , lub gdy wymagana jest większa dokładność frezowania , należy zadać warunki obróbki o mniejszej wartości od wymienionych powyżej.
9. Gdy dostępne obroty (RPM) są niewystarczające, należy zmniejszyć obroty i posuwy proporcjonalnie
10. Powyższy wykres jest ogólną wytyczną. Podane wartości należy dostosować indywidualnie na podstawie rzeczywistych warunków obróbki.
11. Parametry obróbki przeznaczone są do obróbki pośredniej po obróbce zgrubnej.
12. Gdy frezujemy zgrubnie w tym po płaskich obszarach, drgania są bardziej prawdopodobne.
13. Jeśli głębokość skrawania jest mała, należy odpowiednio zwiększyć prędkość skrawania aby zminimalizować drgania.

High speed light milling - HSC Standardfräsen - Fresatura alta velocità standard - Fraisage UGV - Yüksek hizda hafif frezeleme - High speed bearbejdning (HSM) - High speed milling (HSM) - Fresado ligero a alta velocidad - Высокоскоростное «легкое» фрезерование - Frezowanie HSC

WXL-PC-EBD



	Cu			~ 32 HRC FC250 ■ SS400 ■ S55C ■ NAK55				Hardened Steel 33 ~ 41 HRC				Prehardened Steel 42 ~ 50 HRC			
R	θ	l2	Cutting Angle	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
0.1	0.5°	1	0,3°	50.000	440	0,007	0,01	50.000	360	0,005	0,005	50.000	340	0,005	0,005	50.000	340	0,005	0,005
0,1	0,5°	1,5	0,3°	50.000	440	0,007	0,01	50.000	360	0,005	0,005	50.000	340	0,005	0,005	50.000	340	0,005	0,005
0,1	0,5°	2	0,3°	50.000	360	0,007	0,01	45.000	300	0,005	0,005	45.000	280	0,005	0,005	45.000	280	0,005	0,005
0,1	0,5°	2,5	0,3°	50.000	320	0,007	0,01	38.000	230	0,005	0,005	38.000	210	0,005	0,005	37.000	200	0,005	0,005
0,1	0,5°	3	0,3°	50.000	250	0,007	0,01	38.000	200	0,005	0,005	38.000	180	0,005	0,005	37.000	150	0,003	0,005
0,1	1°	3,5	0,3°	50.000	440	0,007	0,01	50.000	360	0,005	0,005	50.000	340	0,005	0,005	50.000	340	0,005	0,005
0,1	1°	4	0,3°	50.000	360	0,007	0,01	45.000	300	0,005	0,005	45.000	280	0,005	0,005	45.000	280	0,005	0,005
0,1	1°	4,5	0,3°	50.000	320	0,007	0,01	38.000	230	0,005	0,005	38.000	210	0,005	0,005	37.000	200	0,005	0,005
1,5	0,5°	2	0,3°	50.000	730	0,007	0,02	50.000	600	0,005	0,01	50.000	570	0,005	0,01	50.000	570	0,005	0,005
1,5	0,5°	3	0,3°	50.000	580	0,007	0,01	45.000	480	0,005	0,005	45.000	450	0,005	0,005	45.000	450	0,005	0,005
1,5	1°	3	0,3°	50.000	610	0,007	0,02	47.000	510	0,005	0,01	47.000	480	0,005	0,01	47.000	480	0,005	0,005
1,5	1°	4	0,3°	50.000	580	0,007	0,01	45.000	480	0,005	0,005	45.000	450	0,005	0,005	45.000	450	0,005	0,005
0,2	0,5°	2	0,3°	50.000	970	0,015	0,04	50.000	800	0,01	0,02	50.000	760	0,01	0,02	50.000	760	0,01	0,01
0,2	0,5°	3	0,3°	50.000	670	0,012	0,03	45.000	550	0,008	0,015	45.000	520	0,008	0,015	45.000	520	0,008	0,01
0,2	0,5°	4	0,3°	48.000	540	0,007	0,02	43.000	500	0,005	0,01	43.000	470	0,005	0,01	43.000	470	0,005	0,01
0,2	0,5°	5	0,3°	45.000	480	0,007	0,02	40.000	420	0,005	0,01	40.000	400	0,005	0,01	40.000	400	0,005	0,01
0,2	0,5°	6	0,3°	40.000	400	0,007	0,01	36.000	370	0,005	0,005	36.000	350	0,005	0,005	35.000	340	0,005	0,005
0,2	1°	4	0,3°	50.000	670	0,012	0,03	45.000	550	0,008	0,015	45.000	520	0,008	0,015	45.000	520	0,008	0,01
0,2	1°	5	0,3°	48.000	540	0,007	0,02	43.000	500	0,005	0,01	43.000	470	0,005	0,01	43.000	470	0,005	0,01
0,2	1°	6	0,3°	45.000	480	0,007	0,02	40.000	420	0,005	0,01	40.000	400	0,005	0,01	40.000	400	0,005	0,01
2,5	0,5°	4	0,3°	50.000	1.200	0,015	0,04	48.000	900	0,01	0,02	48.000	850	0,01	0,02	48.000	850	0,01	0,015
2,5	0,5°	6	0,3°	38.000	940	0,015	0,02	38.000	500	0,01	0,01	38.000	470	0,01	0,01	38.000	470	0,01	0,01
2,5	0,5°	8	0,3°	30.000	760	0,007	0,02	30.000	400	0,005	0,01	30.000	380	0,005	0,01	29.000	360	0,005	0,01
2,5	0,5°	10	0,3°	30.000	500	0,005	0,02	30.000	400	0,005	0,01	30.000	300	0,005	0,01	29.000	250	0,005	0,01
2,5	1°	4	0,3°	50.000	1.200	0,015	0,04	48.000	900	0,01	0,02	48.000	850	0,01	0,02	48.000	850	0,01	0,01
2,5	1°	6	0,3°	50.000	1.200	0,015	0,04	48.000	900	0,01	0,02	48.000	850	0,01	0,02	48.000	850	0,01	0,01
2,5	1°	8	0,3°	50.000	1.200	0,015	0,04	48.000	900	0,01	0,02	48.000	850	0,01	0,02	48.000	850	0,01	0,01
2,5	1°	10	0,3°	30.000	760	0,007	0,02	30.000	400	0,005	0,01	30.000	380	0,005	0,01	29.000	360	0,005	0,01
2,5	1°	12	0,3°	30.000	760	0,007	0,02	30.000	400	0,005	0,01	30.000	380	0,005	0,01	29.000	360	0,005	0,01
0,3	0,5°	2	0,3°	50.000	1.550	0,03	0,06	50.000	1.200	0,02	0,03	50.000	1.100	0,02	0,03	50.000	1.100	0,02	0,03
0,3	0,5°	4	0,3°	50.000	1.350	0,03	0,06	45.000	1.000	0,02	0,03	45.000	950	0,02	0,03	45.000	950	0,02	0,03
0,3	0,5°	6	0,3°	35.000	960	0,015	0,04	30.000	680	0,01	0,02	30.000	640	0,01	0,02	30.000	640	0,01	0,02
0,3	0,5°	8	0,3°	30.000	720	0,015	0,04	26.000	600	0,01	0,02	26.000	570	0,01	0,02	25.000	540	0,01	0,02
0,3	0,5°	10	0,3°	30.000	500	0,015	0,04	26.000	480	0,01	0,02	26.000	450	0,01	0,02	25.000	380	0,01	0,02
0,3	0,5°	12	0,3°	30.000	500	0,01	0,04	26.000	480	0,007	0,02	26.000	450	0,007	0,02	25.000	380	0,007	0,01
0,3	0,5°	16	0,3°	30.000	400	0,007	0,04	26.000	380	0,005	0,02	26.000	360	0,005	0,02	25.000	300	0,005	0,01
0,3	1°	4	0,3°	50.000	1.350	0,03	0,06	45.000	1.000	0,02	0,03	45.000	950	0,02	0,03	45.000	950	0,02	0,03
0,3	1°	6	0,3°	35.000	960	0,015	0,04	30.000	680	0,01	0,02	30.000	640	0,01	0,02	30.000	640	0,01	0,02
0,3	1°	8	0,3°	35.000	960	0,015	0,04	30.000	680	0,01	0,02	30.000	640	0,01	0,02	30.000	640	0,01	0,02
0,3	1°	10	0,3°	30.000	720	0,015	0,04	26.000	600	0,01	0,02	26.000	570	0,01	0,02	25.000	540	0,01	0,02
0,3	1°	12	0,3°	30.000	720	0,015	0,04	26.000	600	0,01	0,02	26.000	570	0,01	0,02	25.000	540	0,01	0,02
0,3	1°	16	0,3°	30.000	500	0,015	0,04	26.000	480	0,01	0,02	26.000	450	0,01	0,02	25.000	380	0,01	0,02
0,4	0,5°	4	0,3°	50.000	1.750	0,06	0,16	48.000	1.600	0,04	0,08	48.000	1.500	0,04	0,06	48.000	1.500	0,04	0,04
0,4	0,5°	6	0,3°	43.000	1.600	0,045	0,1	34.000	950	0,03	0,05	34.000	900	0,03	0,05	34.000	900	0,02	0,025
0,4	0,5°	8	0,3°	32.000	1.250	0,045	0,1	30.000	800	0,03	0,05	30.000	760	0,03	0,05	30.000	760	0,02	0,025
0,4	0,5°	12	0,3°	24.000	720	0,01	0,04	23.000	450	0,005	0,01	23.000	420	0,005	0,01	23.000	420	0,005	0,025
0,4	1°	8	0,3°	43.000	1.600	0,045	0,1	34.000	950	0,03	0,05	34.000	900	0,03	0,05	34.000	900	0,02	0,025
0,4	1°	12	0,3°	32.000	1.250	0,045	0,1	30.000	800	0,03	0,05	30.000	760	0,03	0,05	30.000	760	0,02	0,025
0,4	1°	16	0,3°	24.000	720	0,01	0,04	23.000	450	0,005	0,01	23.000	420	0,005	0,01	23.000	420	0,005	0,015
0,5	0,5°	6	0,3°	47.000	2.850	0,075	0,2	36.000	2.300	0,05	0,1	36.000	2.100	0,05	0,08	36.000	2.100	0,05	0,05
0,5	0,5°	8	0,3°	30.000	2.350	0,075	0,15	27.000	1.700	0,05	0,1	27.000	1.600	0,05	0,08	27.000	1.600	0,05	0,05
0,5	0,5°	10	0,3°	27.000	2.000	0,075	0,15	26.000	1.600	0,05	0,1	26.000	1.500	0,05	0,08	26.000	1.500	0,05	0,05
0,5	0,5°	12	0,3°	24.000	1.400	0,015	0,04	22.000	1.100	0,01	0,02	22.000	1.000	0,01	0,05	21.000	950	0,01	0,02
0,5	0,5°	16	0,3°	24.000	1.000	0,015	0,04	22.000	770	0,01	0,02	22.000	700	0,01	0,02	21.000	680	0,01	0,02
0,5	0,5°	18	0,3°	24.000	1.000	0,01	0,04	22.000	770	0,007	0,02	22.000	700	0,007	0,02	21.000	680	0,007	0,02
0,5	0,5°	20	0,3°	24.000	1.000	0,01	0,03	22.000	770	0,007	0,015	22.000	700	0,007	0,015	21.000	680	0,007	0,015
0,5	0,5°	25	0,3°	20.000	800	0,01	0,03	18.000	600	0,007	0,015	18.000	480	0,007	0,015	17.000	550	0,007	0,015
0,5	0,5°	30	0,3°	20.000	800	0,007	0,03	18.000	600	0,005	0,015	18.000	480	0,005	0,015	17.000	550	0,005	0,015
0,5	0,5°	35	0,3°	15.000	550	0,005	0,03	14.000	450	0,005	0,01	12.000	400	0,005	0,01	11.000	350	0,005	0,01
0,5	1°	10	0,3°	30.000	2.350	0,075	0,15	27.000	1.700	0,05	0,1	27.000	1.600	0,05	0,05	27.000	1.600	0,05	0,05
0,5	1°	16	0,3°	24.000	1.400	0,015	0,04	22.000	1.100	0,01	0,02	22.000	1.000	0,01	0,02	21.000	950	0,01	0,02
0,5	1°	20	0,3°	24.000	1.000	0,015	0,04	22.000	770	0,01	0,02	22.000	700	0,01	0,02	21.000	680	0,01	0,015
0,5	1°	25	0,3°	24.000	1.000	0,015	0,04	22.000	770	0,01	0,02	22.000	700	0,01	0,02	21.000	680	0,01	0,015
0,5	1°	30	0,3°	24.000	1.000	0,01	0,04	22.000	770	0,007	0,02	22.000	700	0,007	0,02	21.000	680	0,007	0,015
0,5	1°	35	0,3°	24.000	1.000	0,01	0,03	22.000	770	0,007	0,015	22.000	700	0,007	0,015	21.000	680	0,007	0,015
0,5	1°	40	0,3°	22.000	1.000	0,01	0,03	20.000	770	0,007	0,015	20.000	700	0,007	0,015	19.000	680	0,007	0,015
0,5	1°	50	0,3°	20.000	800	0,01	0,03	18.000	600	0,007	0,015	18.000	480	0,007	0,015	17.000	550	0,007	0,01
0,5	1°	60	0,3°	18.000	800	0,007	0,03	16.000	600	0,005	0,015	16.000	480	0,005	0,015	15.000	550	0,005	0,015
0,5	1°	70	0,3°	15.000	600	0,005	0,03	14.000	480	0,005	0,015	13.000	380	0,005	0,015	12.000	450	0,005	0,015
0,5	1,5°	8	0,3°	47.000	2.850	0,075	0,2	36.000	2.300	0,05	0,1	36.000	2.100	0,05	0,08	36.000	2.100	0,05	0,05
0,5	1,5°	10	0,3°	30.000	2.350	0,075	0,15	27.000	1.700	0,05	0,1	27.000	1.600	0,05	0,08	27.000	1.600	0,05	0,05
0,5	1,5°	12	0,3°	30.000	2.350	0,075	0,15	27.000	1.700	0,05	0,1	27.000	1.600	0,05	0,08	27.000	1.600	0,05	0,05
0,5	1,5°	16	0,3°	24.000	1.400	0,015	0,04	22.000	1.100	0,01	0,02	22.000	1.000	0,01	0,02	21.000	950	0,01	0,02
0,5	1,5°	20	0,3°	24.000	1.400	0,015	0,04	22.000	1.100	0,01	0,02	22.000	1.000	0,01	0,02	21.000	950	0,01	0,02
0,5	1,5°	25	0,3°	24.000	1.400	0,015	0,04	22.000	1.100	0,01	0,02	22.000	1.000	0,01	0,02	21.000	950	0,01	0,02
0,5	1,5°	30	0,3°	24.000	1.000	0,015	0,04	22.000	770	0,01	0,02	22.000	700	0,01	0,02	21.000	680	0,01	0,02
0,5	1,5°	35	0,3°	24.000	1.000	0,015	0,04	22.000	770	0,01	0,02	22.000	700	0,01	0,02	21.000	680	0,01	0,02
0,5	2°	45	0,3°	24.000	1.400	0,015	0,04	22.000	1.100	0,01	0,02	22.000	1.000	0,01	0,02	21.000	950	0,01	0,02
0,6	0,5°	12	0,3°	30.000	2.000	0,09	0,21	25.000	1.700	0,06	0,12	25.000	1.600	0,06	0,1	25.000	1.600	0,06	0,06
0,6	0,5°	25	0,3°	24.000	1.000	0,02	0,04	22.000	770	0,015	0,02	22.000	700	0,015	0,02	21.000	680	0,015	0,03
0,6	1°	12	0,3°	30.000	2.200	0,09	0,21	25.000	2.000	0,06	0,12	25.000	2.000	0,06	0,1	25.000	1.900	0,06	0,06
0,6	1°	25	0,3°	30.000	2.000	0,04	0,21	25.000	1.700	0,06	0,09	25.000	1.600	0,06	0,05	25.000	1.600	0,02	0,03
0,6	1,5°	12	0,3°	30.000	2.200	0,09	0,21	25.000	2.000	0,06	0,12	25.000	2.000	0,06	0,1	25.000	1.900	0,06	0,06
0,6	1,5°	25	0,3°	30.000	2.000	0,05	0,21	25.000	1.700	0,06	0,12	25.000	1.600	0,06	0,1	25.000	1.600	0,05	0,06

BACK

High speed light milling - HSC Standardfräsen - Fresatura alta velocità standard - Fraisage UGV - Yüksek hizda hafif frezeleme - High speed bearbejdning (HSM) - High speed milling (HSM) - Fresado ligero a alta velocidad - Высокоскоростное «легкое» фрезерование - Frezowanie HSC

WXL-PC-EBD



	Cu			~ 32 HRC FC250 ■ SS400 ■ S55C ■ NAK55				Hardened Steel 33 ~ 41 HRC				Prehardened Steel 42 ~ 50 HRC			
R	θ	l2	Cutting Angle	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
0,75	0,5°	8	0,3°	32.000	3.000	0,12	0,3	30.000	2.900	0,075	0,15	30.000	2.700	0,075	0,12	30.000	2.700	0,075	0,1
0,75	0,5°	10	0,3°	30.000	2.650	0,12	0,3	24.000	2.300	0,075	0,15	24.000	2.100	0,075	0.12	24.000	2.100	0,075	0,1
0,75	0,5°	12	0,3°	30.000	2.400	0,12	0,3	24.000	2.000	0,075	0,15	24.000	1.900	0,075	0.12	24.000	1.900	0,075	0,1
0,75	0,5°	16	0,3°	24.000	1.400	0,12	0,2	21.000	1.400	0,075	0,1	21.000	1.300	0,075	0.09	21.000	1.300	0,05	0,06
0,75	0,5°	20	0,3°	22.000	1.400	0,1	0,2	18.000	1.200	0,05	0,1	18.000	1.100	0,05	0.07	17.000	1.100	0,03	0,03
0,75	0,5°	25	0,3°	22.000	1.100	0,1	0,2	18.000	1.000	0,05	0,1	18.000	900	0,05	0.07	17.000	900	0,02	0,03
0,75	0,5°	30	0,3°	22.000	1.100	0,075	0,2	18.000	1.000	0,035	0,1	18.000	900	0,035	0.07	17.000	900	0,01	0,03
0,75	0,5°	35	0,3°	20.000	1.000	0,05	0,2	17.000	9.000	0,03	0,1	17.000	800	0,03	0.07	15.000	800	0,01	0,03
0,75	1°	10	0,3°	32.000	3.000	0,12	0,3	30.000	2.900	0,075	0,15	30.000	2.700	0,075	0.12	30.000	2.700	0,075	0,1
0,75	1°	12	0,3°	30.000	2.650	0,12	0,3	24.000	2.300	0,075	0,15	24.000	2.100	0,075	0.12	24.000	2.100	0,075	0,1
0,75	1°	16	0,3°	30.000	2.400	0,12	0,3	24.000	2.000	0,075	0,15	24.000	1.900	0,075	0.12	24.000	1.900	0,075	0,1
0,75	1°	20	0,3°	24.000	1.400	0,12	0,2	21.000	1.400	0,075	0,1	21.000	1.300	0,075	0.09	21.000	1.300	0,05	0,06
0,75	1°	25	0,3°	22.000	1.400	0,1	0,2	18.000	1.200	0,05	0,1	18.000	1.100	0,05	0.09	17.000	1.100	0,05	0,06
0,75	1°	30	0,3°	22.000	1.400	0,07	0,2	18.000	1.200	0,05	0,1	18.000	1.100	0,05	0.07	17.000	1.100	0,03	0,03
0,75	1°	35	0,3°	22.000	1.100	0,07	0,2	18.000	1.000	0,05	0,1	18.000	900	0,05	0.07	17.000	900	0,02	0,03
0,75	1,5°	10	0,3°	32.000	3.000	0,12	0,3	30.000	2.900	0,075	0,15	30.000	2.700	0,075	0.12	30.000	2.700	0,075	0,1
0,75	1,5°	12	0,3°	32.000	3.000	0,12	0,3	30.000	2.900	0,075	0,15	30.000	2.700	0,075	0.12	30.000	2.700	0,075	0,1
0,75	1,5°	16	0,3°	30.000	2.400	0,12	0,3	24.000	2.000	0,075	0,15	24.000	1.900	0,075	0.12	24.000	1.900	0,075	0,1
0,75	1,5°	20	0,3°	30.000	2.400	0,12	0,3	24.000	2.000	0,075	0,15	24.000	1.900	0,075	0.12	24.000	1.900	0,08	0,1
0,75	1,5°	25	0,3°	24.000	1.400	0,1	0,2	21.000	1.400	0,075	0,1	21.000	1.300	0,075	0.09	21.000	1.300	0,05	0,06
0,75	1,5°	30	0,3°	24.000	1.400	0,1	0,2	21.000	1.400	0,075	0,1	21.000	1.300	0,075	0.09	21.000	1.300	0,05	0,06
0,75	1,5°	35	0,3°	22.000	1.400	0,05	0,2	18.000	1.200	0,05	0,1	18.000	1.100	0,05	0.07	17.000	1.100	0,02	0,03
0,75	2°	38,6	0,3°	24.000	1.400	0,1	0,2	21.000	1.400	0,075	0,1	21.000	1.300	0,075	0,09	21.000	1.300	0,05	0,06
1	0.5°	8	0.3°	27.000	3.350	0,15	0,4	25.000	2.600	0,1	0,2	25.000	2.400	0,1	0,2	23.000	2.200	0,1	0,2
1	0,5°	10	0,3°	22.000	3.050	0,15	0,4	20.000	2.400	0,1	0,2	20.000	2.200	0,1	0,2	19.000	2.000	0,1	0,2
1	0,5°	12	0,3°	22.000	3.050	0,15	0,4	20.000	2.400	0,1	0,2	20.000	2.200	0,1	0,2	19.000	2.000	0,1	0,2
1	0,5°	16	0,3°	15.000	2.400	0,15	0,3	15.000	1.800	0,1	0,2	15.000	1.700	0,1	0,2	14.000	1.500	0,1	0,2
1	0,5°	20	0,3°	15.000	2.200	0,15	0,2	14.000	1.700	0,1	0,1	14.000	1.600	0,1	0,1	13.000	1.400	0,1	0,1
1	0,5°	25	0,3°	12.000	1.200	0,1	0,2	12.000	1.200	0,05	0,1	11.000	1.100	0,05	0,1	10.000	1.000	0,05	0,1
1	0,5°	30	0,3°	12.000	1.000	0,1	0,2	12.000	1.000	0,05	0,1	11.000	900	0,05	0,1	10.000	800	0,05	0,1
1	0,5°	35	0,3°	12.000	1.000	0,075	0,2	12.000	1.000	0,03	0,1	11.000	900	0,03	0,1	10.000	800	0,03	0,1
1	0,5°	40	0,3°	12.000	800	0,05	0,2	12.000	800	0,02	0,1	11.000	800	0,02	0,1	10.000	700	0,02	0,1
1	1°	16	0,3°	22.000	3.050	0,15	0,4	20.000	2.400	0,1	0,2	20.000	2.200	0,1	0,2	19.000	2.000	0,1	0,2
1	1°	20	0,3°	15.000	2.400	0,15	0,3	15.000	1.800	0,1	0,2	15.000	1.700	0,1	0,2	14.000	1.500	0,1	0,2
1	1°	25	0,3°	15.000	2.200	0,15	0,2	14.000	1.700	0,1	0,1	14.000	1.600	0,1	0,1	13.000	1.400	0,1	0,1
1	1°	30	0,3°	14.000	2.200	0,15	0,2	14.000	1.700	0,1	0,1	14.000	1.600	0,1	0,1	13.000	1.400	0,07	0,1
1	1°	35	0,3°	12.000	1.200	0,1	0,2	12.000	1.200	0,05	0,1	11.000	1.100	0,05	0,1	10.000	1.000	0,05	0,1
1	1°	40	0,3°	12.000	1.000	0,1	0,2	12.000	1.000	0,05	0,1	11.000	900	0,05	0,1	10.000	800	0,05	0,1
1	1°	50	0,3°	12.000	1.000	0,075	0,2	12.000	1.000	0,03	0,1	11.000	900	0,03	0,1	10.000	800	0,03	0,1
1	1°	60	0,3°	12.000	800	0,05	0,2	12.000	800	0,02	0,1	11.000	800	0,02	0,1	10.000	700	0,02	0,1
1	1°	70	0,3°	12.000	800	0,03	0,1	12.000	800	0,01	0,05	11.000	800	0,01	0,05	10.000	700	0,01	0,05
1	1,5°	16	0,3°	22.000	3.050	0,2	0,4	20.000	2.400	0,1	0,2	20.000	2.200	0,1	0,2	19.000	2.000	0,1	0,2
1	1,5°	20	0,3°	22.000	3.050	0,2	0,4	20.000	2.400	0,1	0,2	20.000	2.200	0,1	0,2	19.000	2.000	0,1	0,2
1	1,5°	25	0,3°	15.000	2.400	0,15	0,3	15.000	1.800	0,1	0,2	15.000	1.700	0,1	0,2	14.000	1.500	0,1	0,2
1	1,5°	30	0,3°	15.000	2.200	0,15	0,2	14.000	1.700	0,1	0,1	14.000	1.600	0,1	0,1	13.000	1.400	0,1	0,1
1	1,5°	35	0,3°	15.000	2.200	0,15	0,2	14.000	1.700	0,1	0,1	14.000	1.600	0,1	0,1	13.000	1.400	0,1	0,1
1	1,5°	41,5	0,3°	12.000	1.200	0,1	0,2	12.000	1.200	0,05	0,1	11.000	1.100	0,05	0,1	10.000	1.000	0,05	0,1
1	2°	31,5	0,3°	15.000	2.400	0,15	0,3	15.000	1.800	0,1	0,2	15.000	1.700	0,1	0,2	14.000	1.500	0,1	0,2
1,5	0,5°	8	0,3°	32.000	4.600	0,2	0,6	30.000	4.500	0,15	0,3	30.000	4.200	0,15	0,3	25.000	3.500	0,15	0,3
1,5	0,5°	10	0,3°	28.000	4.000	0,2	0,6	25.000	3.800	0,15	0,3	25.000	3.600	0,15	0,3	20.000	2.800	0,15	0,3
1,5	0,5°	12	0,3°	28.000	4.000	0,2	0,6	25.000	3.800	0,15	0,3	25.000	3.600	0,15	0,3	20.000	2.800	0,15	0,3
1,5	0,5°	16	0,3°	22.000	2.900	0,2	0,6	18.000	2.700	0,15	0,3	18.000	2.500	0,15	0,3	15.000	2.000	0,15	0,3
1,5	0,5°	20	0,3°	20.000	2.600	0,15	0,4	16.000	2.000	0,1	0,2	16.000	1.900	0,1	0,2	13.000	1.500	0,1	0,2
1,5	0,5°	25	0,3°	16.000	2.200	0,15	0,4	14.000	1.800	0,1	0,2	14.000	1.700	0,1	0,2	11.000	1.300	0,1	0,2
1,5	0,5°	30	0,3°	16.000	1.800	0,125	0,2	12.000	1.200	0,05	0,1	12.000	1.100	0,05	0,1	9.000	820	0,05	0,1
1,5	0,5°	35	0,3°	12.000	1.000	0,075	0,1	10.000	800	0,03	0,05	9.000	760	0,03	0,05	7.800	590	0,03	0,05
1,5	0,5°	40	0,3°	12.000	800	0,075	0,1	10.000	600	0,03	0,05	9.000	600	0,03	0,05	7.800	480	0,03	0,05
1,5	0,5°	50	0,3°	10.000	650	0,05	0,1	8.000	500	0,02	0,05	7.500	500	0,02	0,05	6.200	400	0,02	0,05
1,5	1°	20	0,3°	22.000	2.900	0,2	0,6	18.000	2.700	0,15	0,3	18.000	2.500	0,15	0,3	15.000	2.000	0,15	0,3
1,5	1°	25	0,3°	20.000	2.600	0,2	0,4	16.000	2.000	0,1	0,2	16.000	1.900	0,1	0,2	13.000	1.500	0,1	0,2
1,5	1°	30	0,3°	16.000	2.200	0,2	0,4	14.000	1.800	0,1	0,2	14.000	1.700	0,1	0,2	11.000	1.300	0,1	0,2
1,5	1°	35	0,3°	16.000	1.800	0,125	0,2	12.000	1.200	0,05	0,1	12.000	1.100	0,05	0,1	9.000	820	0,05	0,1
1,5	1°	40	0,3°	16.000	1.800	0,125	0,2	12.000	1.200	0,05	0,1	12.000	1.100	0,05	0,1	9.000	820	0,05	0,1
1,5	1°	50	0,3°	12.000	1.000	0,075	0,1	10.000	800	0,03	0,05	9.000	760	0,03	0,05	7.800	590	0,03	0,05
1,5	1°	60	0,3°	12.000	800	0,075	0,1	10.000	600	0,03	0,05	9.000	600	0,03	0,05	7.800	480	0,03	0,05
1,5	1°	70	0,3°	10.000	650	0,05	0,1	8.000	500	0,02	0,05	7.500	500	0,02	0,05	6.200	400	0,02	0,05
1,5	1,5°	20	0,3°	22.000	2.900	0,25	0,6	18.000	2.700	0,15	0,3	18.000	2.500	0,15	0,3	15.000	2.000	0,15	0,3
1,5	1,5°	25	0,3°	20.000	2.600	0,2	0,4	16.000	2.000	0,1	0,2	16.000	1.900	0,1	0,2	13.000	1.500	0,1	0,2
1,5	1,5°	30	0,3°	20.000	2.600	0,2	0,4	16.000	2.000	0,1	0,2	16.000	1.900	0,1	0,2	13.000	1.500	0,1	0,2
1,5	1,5°	35	0,3°	16.000	2.200	0,2	0,4	14.000	1.800	0,1	0,2	14.000	1.700	0,1	0,2	11.000	1.300	0,1	0,2
1,5	1,5°	40	0,3°	16.000	2.200	0,2	0,4	14.000	1.800	0,1	0,2	14.000	1.700	0,1	0,2	11.000	1.300	0,1	0,2
1,5	1,5°	50	0,3°	16.000	1.800	0,125	0,2	12.000	1.200	0,05	0,1	12.000	1.100	0,05	0,1	9.000	820	0,05	0,1
1,5	1,5°	62,5	0,3°	12.000	1.000	0,075	0,1	10.000	800	0,03	0,05	9.000	760	0,03	0,05	7.800	590	0,03	0,05
1,5	1,5°	47,5	0,3°	16.000	2.200	0,25	0,4	14.000	1.800	0,1	0,2	14.000	1.700	0,1	0,2	11.000	1.300	0,1	0,2
2	1°	20	0,5°	20.000	3.450	0,4	0,6	18.000	3.200	0,2	0,5	18.000	3.000	0,2	0,5	14.000	2.300	0,2	0,4
2	1°	30	0,5°	18.000	3.000	0,4	0,5	16.000	2.800	0,2	0,4	16.000	2.600	0,2	0,4	12.000	1.900	0,2	0,4
2	1°	40	0,5°	18.000	3.000	0,25	0,6	16.000	2.800	0,1	0,3	16.000	2.600	0,1	0,3	12.000	1.900	0,1	0,3
2	1°	50	0,5°	14.000	2.200	0,25	0,4	12.000	1.800	0,1	0,2	12.000	1.700	0,1	0,2	9.000	1.700	0,1	0,2
2	1°	60	0,5°	16.000	1.800	0,125	0,2	12.000	1.200	0,05	0,1	12.000	1.100	0,05	0,1	9.000	820	0,05	0,1
2	1,5°	44,2	0,5°	18.000	3.000	0,25	0,6	16.000	2.800	0,1	0,3	16.000	2.600	0,1	0,3	12.000	1.900	0,1	0,3
2	2°	34	0,5°	20.000	3.450	0,4	0,6	18.000	3.200	0,2	0,5	18.000	3.000	0,2	0,5	14.000	2.300	0,2	0,5
2,5	1°	30	0,5°	20.000	3.400	0,4	0,75	15.000	3.200	0,2	0,3	15.000	3.000	0,2	0,3	12.000	2.400	0,2	0,3
2,5	1°	40	0,5°	16.000	2.900	0,25	0,75	14.000	2.500	0,1	0,3	14.000	2.300	0,1	0,3	11.000	1.800	0,1	0,3
2,5	1°	60	0,5°	12.000	1.800	0,25	0,5	10.000	1.200	0,1	0,2	10.000	1.100	0,1	0,2	8.000	880	0,1	0,2
2,5	1,5°	26,9	0,5°	18.000	3.800	0,5	1,25	16.000	3.500	0,25	0,5	16.000	3.300	0,25	0,5	12.000	2.400	0,25	0,5
2,5	1,5°	65,1	0,5°	14.000	2.200	0,25	0,75	12.000	1.600	0,1	0,3	12.000	1.500	0,1	0,3	9.000	1.100	0,1	0,3
2,5	2°	50,1	0,5°	16.000	2.900	0,25	0,75	14.000	2.500	0,1	0,3	14.000	2.300	0,1	0,3	11.000	1.800	0,1	0,3

BACK

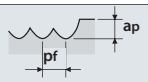
WXL-PC-EBD

High speed light milling - HSC Standardfräsen - Fresatura alta velocità standard - Fraisage UGV - Yüksek hızda hafif frezeleme - High speed bearbejdning (HSM) - High speed milling (HSM) - Fresado ligero a alta velocidad - Высокоскоростное «легкое» фрезерование - Frezowanie HSC



	Cu			~ 32 HRC FC250 ■ SS400 ■ S55C ■ NAK55 ~32 HRC				Hardened Steel 33 ~ 41 HRC				Prehardened Steel 42 ~ 50 HRC			
R	θ	l2	Cutting Angle	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
3	1°	30	0,5°	14.000	4.000	0,6	1,25	12.000	3.200	0,3	0,5	12.000	3.000	0,3	0,5	9.000	2.250	0,3	0,5
3	1°	40	0,5°	10.000	3.200	0,6	1,25	10.000	2.600	0,3	0,5	10.000	2.400	0,3	0,5	8.000	1.900	0,3	0,5
3	1°	50	0,5°	9.000	3.000	0,4	1	9.000	2.300	0,2	0,4	9.000	2.100	0,2	0,4	7.000	1.600	0,2	0,4
3	1°	60	0,5°	9.000	2.800	0,4	0,75	9.000	2.000	0,2	0,3	9.000	1.900	0,2	0,3	7.000	1.400	0,2	0,3
3	1°	70	0,5°	7.000	2.300	0,4	0,75	7.000	1.600	0,2	0,3	7.000	1.500	0,2	0,3	5.500	1.100	0,2	0,3
3	1°	80	0,5°	6.000	2.000	0,3	0,75	6.000	1.300	0,15	0,3	6.000	1.200	0,15	0,3	5.000	900	0,15	0,3
3	1,5°	49	0,5°	10.000	3.200	0,6	1,25	10.000	2.600	0,3	0,5	10.000	2.400	0,3	0,5	8.000	1.900	0,3	0,5
3	2°	36	0,5°	14.000	4.000	0,6	1,25	12.000	3.200	0.3	0.5	12.000	3.000	0.3	0.5	9.000	2.250	0.3	0.5

Max cutting depth



1. Highly rigid machines and tool holders should be used. If not, machining should be kept below above-mentioned conditions
2. Tool vibrations should be kept at a minimum level for maximum accuracy.
3. Use a suitable cutting fluid with high smoke retardant properties.
4. For the milling of corners or removal of residue, reduce the cutting depth and feed to 70%..
5. More stable high-feed machining in corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
6. When cutting load fluctuates (in the corners, etc.) or when high precision is required, be sure to control the rotational speed.
7. When cutting at greater than the recommended cutting angle, reduce the feed.
8. When cutting load is fluctuating, or when higher milling accuracy is required, keep machining conditions below the above-mentioned values.
9. When the rotational speed does not meet the recommended conditions, reduce the feed in proportion to the RPM that is suitable for your machine.
10. The chart above is intended as general guidelines for reference only. The given values should be adjusted individually based on actual machining conditions.
11. The cutting conditions are intended for intermediate machining after roughing.
12. When the work includes extensive roughing including flat areas, chattering is more likely to occur.
13. If the cutting depth is shallow, increase the cutting speed appropriately to minimize chattering.

1.Macchine altamente rigide e portautensili devono essere utilizzati. In caso contrario,la lavorazione deve essere mantenuta al di sotto menzionate condizioni.
2.Le vibrazioni utensile devono essere mantenute ad un livello minimo per la massima precisione.
3.Utilizzare un opportuno fluido di taglio con elevate proprietà ritardanti di fumo.
4.Per la fresatura di angoli o di rimozione di residui, ridurre la profondità di taglio e avanzamento al 70% .
5.Maggiore stabilità di lavorazione ad alto avanzamento negli angoli possono essere raggiunti mediante il fissaggio di un inserimento R o decelerazione del CAM o della macchina.
6.Quando il carico di taglio è variabile (negli angoli, ecc) o quando l'alta precisione è richiesta, assicurarsi di controllare la velocità di rotazione.
7.Quando si taglia a una quantità maggiore dei parametri raccomandati, ridurre l'avanzamento.
8.Quando il carico di taglio varia, o quando una maggiore precisione di fresatura è richiesta, mantenere i parametri di lavorazione al di sotto dei valori menzionati.
9.Quando la velocità di rotazione non soddisfa le condizioni raccomandate, ridurre l'avanzamento in proporzione al numero di giri che è adatto per la vostra macchina.
10.Il grafico sopra è da intendersi come linea guida generali di riferimento. I valori indicati devono essere regolato individualmente in base alle condizioni di lavoro effettivo.
11.Le condizioni di taglio si intendono per la lavorazione intermedia dopo la sgrossatura.
12.Quando la lavorazione comprende vaste aree irregolari comprese aree piane, è più probabile che si verifichino vibrazioni.
13. la profondità di asportazione è superficiale, aumentare la velocità di taglio opportunamente per ridurre al minimo le vibrazioni.

1. Es sollten hochtechnologische Maschinen und Spannzangen eingesetzt werden. Wenn dies nicht möglich ist, sollten die oben genannten Schnittdaten reduzieren werden.
2. Werkzeugvibrationen sollten für höchste Genauigkeit auf ein Minimum reduziert werden.
3. Benützen Sie ein geeignetes Schneidöl um Rauchentwicklung zu vermeiden
4. Für das Zerspanen von (Ecken, Abtrag, Resten????) sollten Sie die Schnittgeschwindigkeit und den Vorschub um 70% reduzieren!
5. Stabilere High Feed Bearbeitungen können durch bestimmte Radiusfunktionen Maschinenseitig oder mit dem CAM System erreicht werden.
6. Wenn die Schnittkräfte schwanken (in den Ecken) oder wenn höchste Präzision gefragt ist sollten Sie die Umdrehungen besonders kontrollieren.
7. Wenn Sie mit einem größeren Schnittwinkel zerspanen wie angegeben sollten Sie die Schnittgeschwindigkeit senken.
8. Wenn verschiedene Schneidöle verwendet werden, oder wenn Sie genaue Fräsoperationen benötigen fahren Sie die Maschine unter den oben angegebenen Schnittdaten.
9. Falls Ihre Maschinenleistung in Bezug auf die Umdrehungen die empfohlenen Schnittdaten nicht erreicht, reduzieren Sie bitte die Schnittgeschwindigkeit in Relation zum RPM Ihrer Maschine.
10. Bei den angegebenen Schnittdaten handelt es sich um eine Richtlinie für die Bearbeitung. Die tatsächlichen Schnittdaten sollten individuell auf Ihre tatsächlichen Bearbeitungsbedingungen eingestellt werden.
11. Die Schnittkonditionen sind ausgelegt für mittlere Bearbeitung nach dem Schruppen.
12. Wenn die Arbeit umfangreiches Schruppen auf ebenen Flächen umfasst, können Rattermarken auftreten.
13. Wenn die Schnitttiefe gering ist, sollten Sie die Schnittgeschwindigkeit erhöhen um Rattern zu vermeiden.

1. Utilisation sur machines et portes outils rigides. Si cela n'est pas possible, utiliser les conditions mentionnées ci-dessous
2. Eviter les vibrations de l'outil pour une précision maximale.
3. Utilisez un fluide de coupe approprié à haute propriété ignifugée.
4.Pour le fraisage des angles ou l'enlèvement de reste de matière, réduire la profondeur de coupe et la vitesse à 70%
5. L'usinage des angles à la grande avance peut être réaliser avec stabilité, par l'accélération et la décélération du calculateur et suivant la taille de la machine
6. Quand la puissance absorbée fluctue(dans les angles, etc) ou quand la haute précision est recherché, assurez-vous de contrôler la vitesse de rotation.
7. Quand la coupe est supérieure à l'angle recommandé, réduiser l'avance
8. Quand la puissance absorbée fluctue ou quand la haute précision est recherchée, maintenir les conditions d'usinage ci-dessous
9. Quand la vitesse de rotation ne correspond pas aux conditions recommandées, réduire l'avance en proportion de la vitesse de rotation adaptée à votre machine
10. Le tableau ci-dessus est destinée aux applications générales et comme référence. Les valeurs données doivent être ajustées en fonction des conditions réelles d'usinage
11. Les conditions de coupe sont destinées à l'usinage intermédiaire après ébauche.
12.Quand l'usinage comprend de la grosse ébauche et des zones plates, des vibrations sont susceptible de se produire
13. la profondeur de coupe est peu profonde, augmenter la vitesse de coupe de façon appropriée afin de minimiser des vibrations

1. Benyt en stabil maskine og værktøjsholder. Hvis dette ikke er tilgængeligt, skal lavere skæredata end de ovenstående benyttes.
2. For maksimal nøjagtighed, hold vibrationer på et absolut minimum.
3. Benyt en passende skærevæske
4.Ved fræsning i hjørner eller restbearbejdning, reducer skæredybde og tilspænding til 70%
5. stabil High Feed bearbejdning kan opnås ved at programmerer radius baner i indvendige hjørner
6. Når skærekraften er svingende (i hjørner og lign.) eller når høj præcision er ønsket, kontroller da at omdrejninger og tilspænding er overens.
7. Hvis større rampevinkel end anbefalet benyttes, reducer tilspændingen.
8. Når skærekraften er svingende eller en højere nøjagtighed er ønsket, anvend skæredata der er lavere end ovenstående.
9. Hvis de anbefalede omdrejninger ikke er tilgængelige på maskinen, reducer da tilspændingen i forhold til de tilgængelige omdrejninger.
10. Ovenstående skæredata er ment som en generel guideline. Skæredata skal altid justeres individuelt så de passer til den aktuelle opgave og det udstyr der er til rådighed.
11. Skæredata anbefalet til mellem slet efter skrub bearbejdning.
12. Når bearbejdningen indeholder omfattende skrubbearbejdning af flade områder, kan vibrationer opstå.
13. Hvis skæredybden er lav, øg da skærehastigheden for at minimere vibrationer

1. Deben emplarse maquinas y porta-herramientas de gran rigidez. De lo contrario deben reducirse las condiciones de corte citadas.
2. Las vibraciones de herramienta deben reducirse al mínimo para obtener la maxima precisión.
3. Utilice fluido de corte edecuado con fuerte retardante de humos.
4.Para eliminar o evacuar los residuos en rincones, reduzca velocidad y avance al 70%.
5. Puede obtenerse alta velocidad en los rincones insertando función R o deceleración en el CAM o la maquina.
6. Si flutua la carga de corte (rincones etc,) o requerida alta precisión, asegurese de controlar la velocidad de giro.
7. Si la rampa de corte es mayor del angulo recomendado, reduzca el avance.
8. Si flutua la carga de corte o requerida alta precisión, reduzca los valores de corte citados.
9. Si la velocidad de giro no puede ser alcanzada por la maquina, reduzca el avance en la misma proporción.
10. Este cuadro se entiende solo como guía de referencias general. Los valores indviduales deben ajustarse a la condiciones reales de mecanizado.
11. Los datos de corte se entienden para condiciones intermedias de mecanizado despues de desbaste.
12.Si el mecanizado incluye extensas areas planas de desbaste, es usual que aparezcan vibraciones.
13. En profudidad de corte minimas, incremente la velocidad de corte para minimzar las vibraciones.

1. Använd en stabil maskin och verktygshållare. Om inte stabila förhållande finns använd lägre skärdata än ovanstående.
2. För bästa förhållande, håll nere vibrationer.
3. Använd en passande skärvätska.
4.Vid fräsning i hörn eller restbearbetning, minska skärdjup och matning till 70%.
5. Stabil High-Feed bearbetning i hörn kan uppnås genom att en större R i detaljen än fräsens R radie bana programmeras, i CAM eller maskin.
6. När skärkraften varierar (i hörnen, etc.) eller när hög precision efterfrågas, kontrollera att varvtal och matning är konsekventa.
7. Om större rampvinkel än rekommenderat behövs, reducera matningen.
8. När skärkraften varierar, eller när högre fräsnings noggrannhet krävs, använd lägre skärdata än ovanstående skärdata.
9. När varvtalet inte kan uppnås, använd det varvtal ni har tillgång till och reducra matningen i förhållandet till varvtalet.
10. Ovanstående skärdata är menat som en riktlinje. De angivna värdena ska justeras individuellt på grundval av faktiska bearbetning villkor.
11. Skärdata rekommendationer för semi finish och grovbearbetning.
12.När det finns mycket grovbearbetning av plana områden kan vibrationer uppstår.
13. Om skärdjupet är litet, öka skärhastigheten för att minimera vibrationer.

1. Необходимо использовать жесткие фрезерный станок и фрезерные патроны. В противном случае, режимы резания должны быть ниже вышеупомянутых условий.
2. Для максимальной точности необходимо обеспечить минимальное биение инструмента.
3. Используйте подходящую СОЖ с высокой стойкостью к дымлению.
4. При фрезеровании углов и удалении остатков материала уменьшите глубину резания и подачу до 70%.
5. Более стабильную обработку на высоких подачах можно достичь задавая уменьшение подачь в углах в CAM системе или на ЧПУ.
6. Если нагрузка меняется, например, в углах или требуется высокая точность, необходимо контролировать скорость вращения шпинделя.
7. При фрезеровании под углом большим, чем рекомендованный уменьшите подачу.
8. Если нагрузка меняется или требуется высокая точность, установите параметры резания не выше указанных.
9. Если скорость вращения шпинделя ниже рекомендованной, то снизьте подачу пропорционально скорости вращения.
10. Указанные выше параметры только для справки. Указанные значения должны быть изменены в соответствии с реальными условиями обработки.
11. Условия резания для получистовой обработки после черновой.
12. Если работа требует много черновой обработки, включая плоские области, то возникновение вибраций очень вероятно.
13. Если глубина резания небольшая, можно увеличить скорость резания так, чтобы свести к м инимуму выбрацию инструмента.

1. Yüksek rijitli tezgah ve takım tutucu kullanılmalıdır. Eğer kullanılmaz ise, işleme koşulları yukarıda ki belirtilen değerlenrde tutulmalıdır.
2. Maksimum doğruluk için takımın titreşimi minimum seviyede tutulmalıdır.
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Köşelerin frezelenmesinde veya kalan bölgenin temizlenmesinde, kesme derinliğini ve ilerlemeyi %70'e düşürün
5. Köşeleri yüksek ilerleme ile daha stabil işlemek için R ayarı eklenebilir yada CAM de veya tezgahda yavaşlatma yapılabilir.
6. Fazla yükün olduğu yerleri (köşeler v.b) işlerken veya yüksek hassasiyet istenilen yerlerde, takımın dönme hızını kontrol edin
7. Tavsiye edilen kesme açısından daha büyük bir yeri işliyorsanız, ilerlemeyi düşürün
8. Fazla yükün olduğu yerleri (köşeler v.b) işlerken veya yüksek hassasiyet istenilen yerlerde, yukarıda verilen değerleri kullanın
9. Dönme hızınız tavziye edilen değerlerde değilse, tezgahınıza uygun bir şekilde devirinize göre ilerlemenizi düşürün
10. Yukarıda ki grafik sadece genel rehperlik için referans olarak verilmiştir. Verilen değerler gerçek işleme koşullarına göre tekrar ayarlanması gerekmektedir
11. Kesme koşulları kaba işemeden sonra ki ara işlemler için tasarlanmıştır.
12. Yapılacak iş düz yüzeyler içeren geniş bir kaba operasyon ise, tırlamanın görülme olasılığı daha fazladır
13. Kesme derinliği az ise, tırlamayı azaltmak için kesme hızını arttırınız

1. Powinny być używane bardzo sztywne maszyny i mocowania. Jeżeli tak nie jest, to obróbka powinna być utrzymywana poniżej wymienionych warunków
2. Drgania narzędzia powinne być utrzymana na poziomie minimalnym dla maksymalnej dokładności.
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Do frezowania narożników lub usunięcie pozostałości, zmniejsz głębokości frezowania i posuw do 70%
5. Bardziej stabilny wysoki posuw przy obróbce w narożnikach może być osiągnięty poprzez określenie i wstawiania R lub zwalniania w CAM lub w czasie rzeczywistym
6. Podczas frezowania zmienia się obciążenia (w narożach , itp.) lub gdy wymagana jest wysoka dokładność, należy kontrolować prędkość obrotową.
7.Podczas frezowania pod kątem większym niż zalecany , ogranicz posuw
8. Podczas frezowania ze zmiennym obciążeniem , lub gdy wymagana jest większa dokładność frezowania , należy zadać warunki obróbki o mniejszej wartości od wymienionych powyżej.
9. Gdy dostępne obroty (RPM) są niewystarczające, należy zmniejszyć obroty i posuwy proporcjonalnie
10. Powyższy wykres jest ogólną wytyczną. Podane wartości należy dostosować indywidualnie na podstawie rzeczywistych warunków obróbki.
11. Parametry obróbki przeznaczone są do obróbki pośredniej po obróbce zgrubnej.
12. Gdy frezujemy zgrubnie w tym po płaskich obszarach, drgania są bardziej prawdopodobne.
13. Jeśli głębokość skrawania jest mała, należy odpowiednio zwiększyć prędkość skrawania aby zminimalizować drgania.

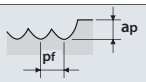
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Graphite

R x l x L	(mm)	Roughing (mm⁻¹) Short ← Long	Roughing (mm/min) Short ← Long	Roughing (mm) ap	Roughing (mm) pf	Finishing (mm⁻¹) Short ← Long	Finishing (mm/min) Short ← Long	Finishing (mm) ap	Finishing (mm) pf
R2 x 8 x 80	16 ~ 40	20.000 ~ 11.000	3.150 ~ 1.800	0,4	1,2	20.000 ~ 11.000	2.100 ~ 1.200	0,12	0,12
R3 x 12 x 80	24 ~ 36	20.000 ~ 9.600	4.500 ~ 2.100	0,6	1,8	20.000 ~ 9.600	3.000 ~ 1.400	0,18	0,18
R4 x 16 x 100	32 ~ 56	16.000 ~ 7.200	3.900 ~ 1.800	0,8	2,4	16.000 ~ 7.200	2.600 ~ 1.200	0,22	0,22
R5 x 20 x 100	40 ~ 60	12.500 ~ 5.700	3.000 ~ 1.350	1	3	12.500 ~ 5.700	2.000 ~ 900	0,26	0,26
R6 x 36 x 130	48 ~ 84	10.500 ~ 4800	2.550 ~ 1.100	1,2	3,6	10.500 ~ 4.800	1.700 ~ 750	0,3	0,3

Max cutting depth



Set the diagonal plunge angle to be approximately 0,5° and 1°.

1. Adjust the speed, the feed rate, and the depth of cut to suit your operating conditions, such as the milling shape, machine rigidity, tool holder rigidity, and work holding force.
2. If you are unable to raise the speed and feed rate higher than those indicated in the table above, lower the speed and feed rate using the same ratio.
3. If the workpiece gets chipped or if the operation requires a higher level of milling precision, lower the feed rate as necessary.
4. Depending on the shape, if the workpiece chatters, lower the speed and feed rate using the same ratio.
5. To mill graphite, use a dedicated milling machine. To prevent inhalation of dust, use a dust collector and a dust mask when working around graphite.
6. During milling, keep the runout at the tip of the end mill to be less than 0.01 mm.
7. To achieve efficient finishing, the feed rate may be adjusted as high as triple the rate.
8. For high-efficiency machining, lower the feed rate as far down as 30% for high-load operations such as slotting. This can minimize the amount of cutting remnants resulting from the flexing of the tool.
9. If gouging occurs while milling a flat area, raise the speed.
10. If a cut involves the shaping of a corner, use the corner radius process of the program, or adjust the speed so that it would not cause chattering, and reduce the speed at the corner at the same time (by approximately 60%).

1. Regolare l'avanzamento e la profondità di taglio secondo le attuali condizioni di taglio.
2. Se non non è possibile incrementare velocità e avanzamento come indicate in tabella3. Se il pezzo tende a scheggiare o se la lavorazione richiede alta precisione di fresatura, ridurre l'avanzamento secondo necessità.
4. A seconda della sagoma, se il pezzo vibra, ridurre simultaneamente velocità e avanzamento.
5. Per fresare Grafite utilizzare macchine dedicate. Per prevenire inalazioni di polveri, utilizzare un aspiratore e mascherina quando si lavora grafite.
6. Durante la fresatura, tenere la concentricità sulla punta della fresa sotto i 0.01mm.
7. Per raggiungere elevate finiture, l'avanzamento deve essere regolato tanto quanto il triplo del rapporto.
8. Per lavorazioni ad alta efficienza, ridurre l'avanzamento fino al 30% per operazioni ad alto caric come cave. Questo può ridurre il materiale residuo dovuto alla flessione dell'utensile.
9. Se si verificano scanalatura fresando una superficie piana, aumentare la velocità.
10. Se si lavorano angoli di raccordo, utilizzare programmi adeguati oppure regolare la velocità per non causare scheggiature e ridurre contemporaneamente l'avanzamento negli angoli (circa del 60%)

1. Bitte regulieren Sie Schnittgeschwidigkeit, Vorschub und Spanntiefe entsprechend Ihrer aktuellen Zerspanungsbedigungen.
2. Wenn es Ihnen nicht möglich ist die Drehzahlen und Vorschübe so zu fahren reduzieren Sie den Vorschub und die Drehzahl beim reduzieren versuchen Sie die Zahnvorschübe so einzuhalten wie in der Tabelle
3. Bei der Bearbeitung von Teilen mit hoher Präzision reduzieren Sie die Geschwindigkeit
4. Bei Vibration die Geschwindigkeiten im Verhältnis reduzieren
5. Bei der Bearbeitung von Grafit, müssen Sie darauf achten das Sie eine geeignete Maschine mit Absaugung nutzen
6. Die Rundlaufgenauigkeit des Werkzeugs beim fräsen muß kleiner 0.01mm liegen
7. Um effizientes Ergebnis zu bekommen kann der Vorschub teilweise um das 3 fache erhöht werden
8. Bei der Schwerzerspanung ist es von Vorteil den Vorschub manchmal um 30% zu senken, beim Nuten kann es sonst passieren das die Späne nicht gut abgeführt werden
9. Bei einer Geräuchentwicklung beim bearbeiten von ebenen Flächen sollte man den Vorschub erhöhen
10. Bei einer Umschlingung in der Ecke benutzen den Verrundungsradius in Ihrem CAM System oder reduzieren Sie die Geschwindigkeit um 60%

1. Ajuster le vitesse, avances et la profondeur de coupe pour être conforme aux conditions de coupe
2. Si il est imossible d'augmenter la vitesse et l'avance à des valeurs supérieres a celles indiquées dans le tableau ci-dessus, alorsv réduiser la vitesse et l'avance dans les même ratio
3. Dans le cas des copeaux sur le pièce de travail ou les opérations requises un niveau de précision élévée de fraisage, alors réduiser l'avance si nécessaire
4. Dépendant de la forme de la pièce, et si des vibrations se présentes, réduiser la vitesse et l'avance dans les mêmes ratio
5. Pour l'usinage du graphite, tilser une machine adéquate. Pour la prévention d' inhaler le poussière, utilser un aspirateur et un masque de protection
6. Lors de l'usinage, garder la non-balance de l'outil inférieur à 0,01 mm
7. Pour une finition éfficace, l'avance peut être augmenter avec un facteur de 3
8. Pour des machines de haute éfficacité, réduiser l'avance à 30% pour des usinages de grande puissance comme le rainurage. Ceci peur réduire le montant des pannes due à la flextion de l'outil
9. En cas de sons impropriété pendant le fraisage des plans plats, augmenter la vitesse
10. Quand le fraisage require l'usiange d'un coin, utilser la procédure "faire rayon" du programme ou ajuster la vitesse pour ne causer des vibrations et réduiser la vitesse dans le coin au même moment avec une valeur de approx. 60%

1. Justér hastighed, tilspænding og skæredybde således at det passer til omstændighederne såsom. Fræse kontur, maskinens stabilitet, holderens rigiditet og spændekraft.
2. Hvis maskinen ikke kan opnå de hastigheder og tilspændinger som står i ovenstående tabel, reducér da omdrejninger og tilspænding proportionalt.
3. Hvis operationen kræver en højere grad af præcision I fræsningen, reducér da tilspændingen.
4. Afhængigt af emnets udformning kan vibrationer opstå, reducér da omdrejninger og tilspænding proportionalt.
5. Ved fræsning I grafit, brug da en dedikeret maskine. For at undgå inhalation af grafit, benyt da støvfang og støvmaske.
6. Ved fræsning, sørg for at rundløbet ved spidsen af fræseren er under 0,01mm.
7. For at opnå mere effektiv sletbearbejdning, kan tilspændingen øges med faktor 3.
8. For at bearbejde "high-load" operationer såsom sporfræsning effektivt, reducér da tilspændingen helt ned til 30%. Dette kan reducere restbearbejdningen forårsaget af udbøjning på fræseren.
9. Hvis der opstår udhulning når et fladt område fræses, øg da hastigheden.
10. Hvis der bearbejdes indvendige hjørner skal der bruges radius kompensering for at forhindre vibrationer. Alternativt kan tilspænding sænkes til 60%.

1. Ajuste velocidad, avance y profundidad de corte hasta las adecuadas a su operación de fresado, rigidez de maquina y de fijaciones.
2. Si no puded aplicar las condiciones de corte recomendadas, reduzca velocidad y avance mm/min enb la misma proporción.
3. Si la pieza se descantilla y requiere un nivel superior de precisión reduzca el avance hasta conseguir el objetivo.
4. En caso de vibración reduzaca velocidad y avance en la misma proporción
5. Para fresar grafito use un maquina en exclusiva y adaptada para la extracción de polvo y humos
6. Durante el fresado mantenga el salto de fresa en la punta dentro de 0,01 mm
7. Eficiente para lograr el acabado, la velocidad de avance puede ajustarse tan alto como el triple
8. Para mecanizado de alta eficiencia en operaciones de sobrecarga que fuerzan a la flexión como ranurado, reduzca el avance un 30%.
9. Si se producen rayas en fresado plano, aumente la velocidad
10. En fresado de rincones use interpolación circular para evitar la sobrecarga. También reduzca v elocidad aproximadamente al 60% para evitar vibración.

1. Justera varvtalet, matningen och skärdjupet för att passa ditt arbetsförhållande såsom maskinens skick, skäringrepp, maskinens stabilitet eller uppspänningsanordning.
2. Om du inte uppnår varvtal eller matning enl. tabellen ovan, sänk varvtal och matning med samma föarhållande.
3. Om arbetsstycket flisas eller om operationen kräver en högre precision, minska matningen något.
4. Om det vibrerar beroende på detaljens utseende, minska varvtal och matning
5. För att fräsa i grafit använd en maskin som är till för grafit. För att motverka inandning av damm använd en dammsugare och använd även en dammfiltermask vid arbete med grafit.
7. Förr att uppnå en effektiv finbeabetning, kan matningen ökas upp till 3 gånger.
8. För högeffektiv maskinbearbetning, minska matningen så mycket som 30 % vid stora ingrepp som ger en hög belastning såsom spårfräsning.
9. Om där blir spår vid fräsning av en plan yta, öka varvtalet.
10. Om det blir fula ytor i ett hörn, använd hörn radie programmering i maskinen eller ändra varvtal så där inte uppstår vibrationer, dessutom reducera matningen i hörnorna (ungefär med 60 %)

1. Пожалуйста отрегулируйте обороты шпинделя, подачу и глубину резания в соответствии с условиями обработки
2. Если Вы не можете поднять скорость и подачу до указанных выше в таблице значений, понизьте скорость и подачу, в одинаковой пропорции.
3. Если заготовка скалывается или если необходима высокая точность, понизьте норму подачи по мере необходимости.
4. В зависимости от формы, если заготовка вибрирует, понизьте скорость и подачу, в одинаковой пропорции.
5. Чтобы фрезеровать графит, используйте специализированный фрезерный станок. Чтобы предотвратить вдыхание пыли, используйте пылеулавливатель и маску, работая рядом с графитом.
6. Во время фрезерования, биение конца фрезы не должно превышать 0.01 мм.
7. Чтобы обеспечить эффективную финишную обработку, подача может быть установлена в три раза выше, чем указано.
8. Для высокопроизводительной обработки, понизьте подачу на 30 % при работе с большой нагрузкой
9. Если выдалбливание происходит, при обработки плоской области, увеличьте скорость.
10. Если необходимо обработать углы, используйте радиусную траекторию при прохождении углов или снизьте скорость и подачу так, чтобы не возникало вибраций (примерно на 60%)

1. Kesme hızınızı, ilerlemenizi, ve kesme derinliğinizi operasyonunuza uygun olarak ayarlayınız, bu etkenler; işleme şekli, tezgahın rijitlik durumu, takım tutucunu rijitliği ve bağlama kuvvetleri
2. Eğer yukarıda ki tabloda belirtilen kesme hızı ve ilerlemeye ulaşamicaksanız, aynı oranları kullanarak düşürünüz.
3. İş parçası ufalanıyor veya işlem yüksek seviyede bir frezeleme hassasiyeti gerektiriyorsa, ilerleme hızını gereken miktarda azaltın
4. Şekle bağlı olarak, eğer parça tırlar ise, aynı oranları kullanarak kesme hızını ve ilerlemeyi azaltın
5. Grafit frezelemek için belirtilen özel freze makinasını kullanın. Grafit etrafında çalışırken toz teneffüssünü engellemek için toz toplayıcı ve toz maskesi kullanın
6. Frezeleme sırasında, frezede ki salgıyı 0,01mm altında tutun
7. Etkili bir finiş elde etmek için, ilerleme 3 katı olarak ayarlanabilir
8. Kanal işleme gibi yüksek yüklü işlemlerde, yüksek verim elde etmek için ilerleme hızını %30'a kadar düşürün. Böylece, takımın esnemesinden kaynaklanan kesme kalıntıları asgari düzeye indirilebilir
9. Düz bir alana frezeleme yapılırken oyuk oluşursa hızı arttırın
10. İşleme de köşe radyusu var ise, programda ki köşe radyusu prosesini kullanın, yada kesme hızını ayarlayın bu sayede tırlamayı engeller ve aynı zamanda köşede hızı yaklaşık olarak %60 a düşürün.

1. Dostosuj prędkość, posuw i głębokość skrawania do własnych warunków pracy, takich jak kształt, sztywność maszyny, sztywność uchwytu narzędzia i sił skrawania
2. Jeśli nie jesteś w stanie podnieść prędkości i posuwu do wskazanych w tabeli powyżej, należy zmniejszyć prędkość i posuw przy użyciu tej samej proporcji.
3. W przypadku, gdy przedmiot obrabiany staje się podzielony lub, jeśli operacja wymaga wyższego poziomu dokładności frezowania, obniżenie posuwu jest konieczne.
4. Przy wibracjach i w zależności od kształtu obrabianego detalu, zmniejsz prędkość posuwu i obrotów za pomocą tego samego stosunku
5. Do frezowania grafitu użyj dedykowaną frezarkę. Aby uniknąć wdychania pyłu, należy używać odpylacza oraz maskę przeciwpyłową
6. Podczas frezowania, utrzymać na końcu freza bicie mniejsze niż 0,01 mm.
7. Aby osiągnąć efektywne wykańczanie, posuwy można podnieść trzykrotnie
8. Dla wysokosprawnej produkcji , obniżyć posuw o 30% dla operacji o dużym obciążeniu, jak dłutowanie. Zmniejszy to ilość pozostałości materiału wynikające z uginania narzędzia.
9. Jeżeli powstają rysy, żłobienia podczas frezowania płaskiego obszaru, podnieś prędkość
10. Jeżeli frezowanie obejmuje kształtowanie narożu użyj procesu zaokrąglenie narożа (wygładzanie kształtowe), lub zmień prędkość tak, aby nie powstały drgania oraz zmniejsz prędkości posuwu w narożu w tym samym czasie (około 60%).

BACK

DG-LN-EBD



Graphite

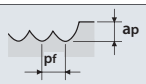
Roughing

R x l2	(mm^{-1}) Short ← Long	(mm/min) Short ← Long	(mm) ap	(mm) pf
R0,2 x 4	40.000 ~ 20.000	960 ~ 480	0,04	0,12
R0,2 x 8	30.000 ~ 18.000	430 ~ 250	0,03	0,08
R0,3 x 6	40.000 ~ 20.000	960 ~ 480	0,06	0,18
R0,3 x 10	33.000 ~ 20.000	635 ~ 385	0,05	0,15
R0,4 x 15	19.000 ~ 14.000	370 ~ 280	0,05	0,15
R0,5 x 6	40.000 ~ 20.000	1.150 ~ 575	0,1	0,3
R0,5 x 16	23.000 ~ 18.000	530 ~ 410	0,08	0,24
R0,5 x 20	18.000 ~ 12.000	310 ~ 205	0,07	0,2
R0,5 x 30	8.000 ~ 5.000	145 ~ 85	0,04	0,13
R0,75 x 6	40.000 ~ 20.000	1.800 ~ 900	0,15	0,45
R0,75 x 10	38.000 ~ 20.000	1.600 ~ 865	0,15	0,45
R0,75 x 16	30.000 ~ 20.000	1.300 ~ 865	0,15	0,45
R1 x 16	28.000 ~ 20.000	1.800 ~ 1.350	0,2	0,6
R1 x 30	16.000 ~ 11.500	840 ~ 615	0,18	0,52
R1,5 x 20	20.000 ~ 15.500	2.050 ~ 1.550	0,3	0,9
R1,5 x 40	12.500 ~ 9.200	1.000 ~ 740	0,22	0,65
R2 x 20	20.000 ~ 14.000	2.950 ~ 2.050	0,4	1,2

Finishing

R x l2	(mm^{-1}) Short ← Long	(mm/min) Short ← Long	(mm) ap	(mm) pf
R0,2 x 4	40.000 ~ 20.000	800 ~ 400	0,012	0,012
R0,2 x 8	30.000 ~ 18.000	360 ~ 210	0,012	0,012
R0,3 x 6	40.000 ~ 20.000	800 ~ 400	0,018	0,018
R0,3 x 10	33.000 ~ 20.000	530 ~ 320	0,018	0,018
R0,4 x 15	19.000 ~ 14.000	280 ~ 230	0,021	0,021
R0,5 x 6	40.000 ~ 20.000	950 ~ 480	0,03	0,03
R0,5 x 16	23.000 ~ 18.000	440 ~ 340	0,03	0,03
R0,5 x 20	18.000 ~ 12.000	260 ~ 170	0,03	0,03
R0,5 x 30	8.000 ~ 5.000	120 ~ 70	0,02	0,02
R0,75 x 6	40.000 ~ 20.000	1.500 ~ 750	0,045	0,045
R0,75 x 10	38.000 ~ 20.000	1.350 ~ 720	0,045	0,045
R0,75 x 16	30.000 ~ 20.000	1.100 ~ 720	0,045	0,045
R1 x 16	28.000 ~ 20.000	1.300 ~ 950	0,06	0,06
R1 x 30	16.000 ~ 11.500	600 ~ 440	0,06	0,06
R1,5 x 20	20.000 ~ 15.500	1.450 ~ 1.100	0,09	0,09
R1,5 x 40	12.500 ~ 9.200	720 ~ 530	0,09	0,09
R2 x 20	20.000 ~ 14.000	2.100 ~ 1.450	0,12	0,12

Max cutting depth



Set the diagonal plunge angle to be approximately 0,5° and 1°.

1. Adjust the speed, the feed rate, and the depth of cut to suit your operating conditions, such as the milling shape, machine rigidity, tool holder rigidity, and work holding force.
2. If you are unable to raise the speed and feed rate higher than those indicated in the table above, lower the speed and feed rate using the same ratio.
3. If the workpiece gets chipped or if the operation requires a higher level of milling precision, lower the feed rate as necessary.
4. Depending on the shape, if the workpiece chatters, lower the speed and feed rate using the same ratio.
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2. Si no puded aplicar las condiciones de corte recomendadas, reduzca velocidad y avance mm/min enb la misma proporción.
3. Si la pieza se descantilla y requiere un nivel superior de precisión reduzca el avance hasta conseguir el objetivo.
4. En caso de vibración reduzaca velocidad y avance en la misma proporción
5. Para fresar grafito use un maquina en exclusiva y adaptada para la extracción de polvo y humos
6. Durante el fresado mantenga el salto de fresa en la punta dentro de 0,01 mm
7. Eficiente para lograr el acabado, la velocidad de avance puede ajustarse tan alto como el triple
8. Para mecanizado de alta eficiencia en operaciones de sobrecarga que fuerzan a la flexión como ranurado, reduzca el avance un 30%.
9. Si se producen rayas en fresado plano, aumente la velocidad
10. En fresado de rincones use interpolación circular para evitar la sobrecarga. También reduzca v elocidad aproximadamente al 60% para evitar vibración.

1. Justera varvtalet, matningen och skärdjupet för att passa ditt arbetsförhållande såsom maskinens skick, skäringrepp, maskinens stabilitet eller uppspänningsanordning.
2. Om du inte uppnår varvtal eller matning enl. tabellen ovan, sänk varvtal och matning med samma föarhållande.
3. Om arbetsstycket flisas eller om operationen kräver en högre precision, minska matningen något.
4. Om det vibrerar beroende på detaljens utseende, minska varvtal och matning
5. För att fräsa i grafit använd en maskin som är till för grafit. För att motverka inandning av damm använd en dammsugare och använd även en dammfiltermask vid arbete med grafit.
7. Förr att uppnå en effektiv finbeabetning, kan matningen ökas upp till 3 gånger.
8. För högeffektiv maskinbearbetning, minska matningen så mycket som 30 % vid stora ingrepp som ger en hög belastning såsom spårfräsning.
9. Om där blir spår vid fräsning av en plan yta, öka varvtalet.
10. Om det blir fula ytor i ett hörn, använd hörn radie programmering i maskinen eller ändra varvtal så där inte uppstår vibrationer, dessutom reducera matningen i hörnorna (ungefär med 60 %)

1. Пожалуйста отрегулируйте обороты шпинделя, подачу и глубину резания в соответствии с условиями обработки
2. Если Вы не можете поднять скорость и подачу до указанных выше в таблице значений, понизьте скорость и подачу, в одинаковой пропорции.
3. Если заготовка скалывается или если необходима высокая точность, понизьте норму подачи по мере необходимости.
4. В зависимости от формы, если заготовка вибрирует, понизьте скорость и подачу, в одинаковой пропорции.
5. Чтобы фрезеровать графит, используйте специализированный фрезерный станок. Чтобы предотвратить вдыхание пыли, используйте пылеулавливатель и маску, работая рядом с графитом.
6. Во время фрезерования, биение конца фрезы не должно превышать 0.01 мм.
7. Чтобы обеспечить эффективную финишную обработку, подача может быть установлена в три раза выше, чем указано.
8. Для высокопроизводительной обработки, понизьте подачу на 30 % при работе с большой нагрузкой
9. Если выдалбливание происходит, при обработки плоской области, увеличьте скорость.
10. Если необходимо обработать углы, используйте радиусную траекторию при прохождении углов или снизьте скорость и подачу так, чтобы не возникало вибраций (примерно на 60%)

1. Kesme hızınızı, ilerlemenizi, ve kesme derinliğinizi operasyonunuza uygun olarak ayarlayınız, bu etkenler; işleme şekli, tezgahın rijitlik durumu, takım tutucunu rijitliği ve bağlama kuvvetleri
2. Eğer yukarıda ki tabloda belirtilen kesme hızı ve ilerlemeye ulaşamicaksanız, aynı oranları kullanarak düşürünüz.
3. İş parçası ufalanıyor veya işlem yüksek seviyede bir frezeleme hassasiyeti gerektiriyorsa, ilerleme hızını gereken miktarda azaltın
4. Şekle bağlı olarak, eğer parça tırlar ise, aynı oranları kullanarak kesme hızını ve ilerlemeyi azaltın
5. Grafit frezelemek için belirtilen özel freze makinasını kullanın. Grafit etrafında çalışırken toz teneffüssünü engellemek için toz toplayıcı ve toz maskesi kullanın
6. Frezeleme sırasında, frezede ki salgıyı 0,01mm altında tutun
7. Etkili bir finiş elde etmek için, ilerleme 3 katı olarak ayarlanabilir
8. Kanal işleme gibi yüksek yüklü işlemlerde, yüksek verim elde etmek için ilerleme hızını %30'a kadar düşürün. Böylece, takımın esnemesinden kaynaklanan kesme kalıntıları asgari düzeye indirilebilir
9. Düz bir alana frezeleme yapılırken oyuk oluşursa hızı arttırın
10. İşleme de köşe radyusu var ise, programda ki köşe radyusu prosesini kullanın, yada kesme hızını ayarlayın bu sayede tırlamayı engeller ve aynı zamanda köşede hızı yaklaşık olarak %60 a düşürün.

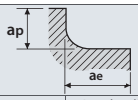
1. Dostosuj prędkość, posuw i głębokość skrawania do własnych warunków pracy, takich jak kształt, sztywność maszyny, sztywność uchwytu narzędzia i sił skrawania
2. Jeśli nie jesteś w stanie podnieść prędkości i posuwu do wskazanych w tabeli powyżej, należy zmniejszyć prędkość i posuw przy użyciu tej samej proporcji.
3. W przypadku, gdy przedmiot obrabiany staje się podzielony lub, jeśli operacja wymaga wyższego poziomu dokładności frezowania, obniżenie posuwu jest konieczne.
4. Przy wibracjach i w zależności od kształtu obrabianego detalu, zmniejsz prędkość posuwu i obrotów za pomocą tego samego stosunku
5. Do frezowania grafitu użyj dedykowaną frezarkę. Aby uniknąć wdychania pyłu, należy używać odpylacza oraz maskę przeciwpyłową
6. Podczas frezowania, utrzymać na końcu freza bicie mniejsze niż 0,01 mm.
7. Aby osiągnąć efektywne wykańczanie, posuwy można podnieść trzykrotnie
8. Dla wysokosprawnej produkcji , obniżyć posuw o 30% dla operacji o dużym obciążeniu, jak dłutowanie. Zmniejszy to ilość pozostałości materiału wynikające z uginania narzędzia.
9. Jeżeli powstają rysy, żłobienia podczas frezowania płaskiego obszaru, podnieś prędkość
10. Jeżeli frezowanie obejmuje kształtowanie narożу użyj procesu zaokrąglenie narożа (wygładzanie kształtowe), lub zmień prędkość tak, aby nie powstały drgania oraz zmniejsz prędkości posuwu w narożu w tym samym czasie (około 60%).

DG-CPR



Dc x r x θn x l2	Graphite											
	Roughing						Finishing					
	(mm⁻¹)		(mm/min)		(mm)		(mm⁻¹)		(mm/min)		(mm)	
	Short ←	Long	Short ←	Long	ap	pf	Short ←	Long	Short ←	Long	ap	pf
0,5 x R0,1 x 0° x 4	20.000 ~	16.000	720 ~	575	0,05	0,24	20.000 ~	16.000	600 ~	480	0,05	0,12
0,5 x R0,1 x 0° x 6	20.000 ~	16.000	720 ~	575	0,05	0,24	20.000 ~	16.000	600 ~	480	0,05	0,12
1 x R0,1 x 0° x 10	16.000 ~	12.000	1.150 ~	865	0,1	0,48	16.000 ~	12.000	960 ~	720	0,08	0,24
2 x R0,2 x 0° x 10	16.000 ~	12.000	2.050 ~	1.500	0,3	1,28	16.000 ~	12.000	1.450 ~	1.100	0,08	0,64
2 x R0,2 x 0° x 20	11.000 ~	8.000	1.400 ~	1.000	0,18	1,2	11.000 ~	8.000	990 ~	720	0,08	0,64
4 x R0,3 x 0° x 40	12.000 ~	8.000	3.450 ~	2.300	0,35	2,8	12.000 ~	8.000	2.450 ~	1.650	0,08	1,4
4 x R0,5 x 0° x 25	12.000 ~	8.000	2.950 ~	1.870	0,4	3	12.000 ~	8.000	2.180 ~	1.180	0,32	1,5
4 x R0,5 x 0° x 40	12.000 ~	8.000	3.450 ~	2.300	0,35	3	12.000 ~	8.000	2.410 ~	1.650	0,08	1,7
4 x R1 x 0° x 40	12.000 ~	8.000	3.450 ~	2.300	0,35	3	12.000 ~	8.000	2.410 ~	1.650	0,08	2
6 x R0,3 x 0° x 30	12.000 ~	8.000	3.450 ~	2.300	1,5	4,8	12.000 ~	8.000	2.410 ~	1.650	0,15	2,4
6 x R0,5 x 0° x 30	12.000 ~	7.000	4.300 ~	2.500	1,5	4	12.000 ~	7.000	3.050 ~	1.800	0,2	2
6 x R1 x 0° x 30	12.000 ~	7.000	4.300 ~	2.500	1,5	3,2	12.000 ~	7.000	3.050 ~	1.800	0,4	1,6
8 x R0,3 x 0° x 100	5.000 ~	3.500	2.000 ~	800	2	4,2	5.000 ~	3.500	1.500 ~	500	0,1	2
8 x R0,5 x 0° x 32	10.000 ~	7.000	3.800 ~	2.650	2	5,6	10.000 ~	7.000	2.700 ~	1.900	0,2	2,8
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10 x R0,5 x 0° x 40	8.000 ~	4.000	3.050 ~	1.500	2,5	7,2	8.000 ~	4.000	2.200 ~	1.100	0,2	4,4
10 x R1 x 0° x 40	8.000 ~	4.000	3.050 ~	1.500	2,5	6,4	8.000 ~	4.000	2.200 ~	1.100	0,4	3,2
12 x R1 x 0° x 48	6.000 ~	3.000	2.300 ~	1.150	3	8	6.000 ~	3.000	1.650 ~	815	0,4	4

Max cutting depth



Set the diagonal plunge angle to be approximately 0,5° and 1°.

1. Adjust the speed, the feed rate, and the depth of cut to suit your operating conditions, such as the milling shape, machine rigidity, tool holder rigidity, and work holding force.
2. If you are unable to raise the speed and feed rate higher than those indicated in the table above, lower the speed and feed rate using the same ratio.
3. If the workpiece gets chipped or if the operation requires a higher level of milling precision, lower the feed rate as necessary.
4. Depending on the shape, if the workpiece chatters, lower the speed and feed rate using the same ratio.
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1. Ajuste velocidad, avance y profundidad de corte hasta las adecuadas a su operación de fresado, rigidez de maquina y de fijaciones.
2. Si no puded aplicar las condiciones de corte recomendadas, reduzca velocidad y avance mm/min enb la misma proporción.
3. Si la pieza se descantilla y requiere un nivel superior de precisión reduzca el avance hasta conseguir el objetivo.
4. En caso de vibración reduzaca velocidad y avance en la misma proporción
5. Para fresar grafito use un maquina en exclusiva y adaptada para la extracción de polvo y humos
6. Durante el fresado mantenga el salto de fresa en la punta dentro de 0,01 mm
7. Eficiente para lograr el acabado, la velocidad de avance puede ajustarse tan alto como el triple
8. Para mecanizado de alta eficiencia en operaciones de sobrecarga que fuerzan a la flexión como ranurado, reduzca el avance un 30%.
9. Si se producen rayas en fresado plano, aumente la velocidad
10. En fresado de rincones use interpolación circular para evitar la sobrecarga. También reduzca v elocidad aproximadamente al 60% para evitar vibración.

1. Justera varvtalet, matningen och skärdjupet för att passa ditt arbetsförhållande såsom maskinens skick, skäringrepp, maskinens stabilitet eller uppspänningsanordning.
2. Om du inte uppnår varvtal eller matning enl. tabellen ovan, sänk varvtal och matning med samma föarhållande.
3. Om arbetsstycket flisas eller om operationen kräver en högre precision, minska matningen något.
4. Om det vibrerar beroende på detaljens utseende, minska varvtal och matning
5. För att fräsa i grafit använd en maskin som är till för grafit. För att motverka inandning av damm använd en dammsugare och använd även en dammfiltermask vid arbete med grafit.
7. Förr att uppnå en effektiv finbeabetning, kan matningen ökas upp till 3 gånger.
8. För högeffektiv maskinbearbetning, minska matningen så mycket som 30 % vid stora ingrepp som ger en hög belastning såsom spårfräsning.
9. Om där blir spår vid fräsning av en plan yta, öka varvtalet.
10. Om det blir fula ytor i ett hörn, använd hörn radie programmering i maskinen eller ändra varvtal så där inte uppstår vibrationer, dessutom reducera matningen i hörnorna (ungefär med 60 %)

1. Пожалуйста отрегулируйте обороты шпинделя, подачу и глубину резания в соответствии с условиями обработки
2. Если Вы не можете поднять скорость и подачу до указанных выше в таблице значений, понизьте скорость и подачу, в одинаковой пропорции.
3. Если заготовка скалывается или если необходима высокая точность, понизьте норму подачи по мере необходимости.
4. В зависимости от формы, если заготовка вибрирует, понизьте скорость и подачу, в одинаковой пропорции.
5. Чтобы фрезеровать графит, используйте специализированный фрезерный станок. Чтобы предотвратить вдыхание пыли, используйте пылеулавливатель и маску, работая рядом с графитом.
6. Во время фрезерования, биение конца фрезы не должно превышать 0.01 мм.
7. Чтобы обеспечить эффективную финишную обработку, подача может быть установлена в три раза выше, чем указано.
8. Для высокопроизводительной обработки, понизьте подачу на 30 % при работе с большой нагрузкой
9. Если выдалбливание происходит, при обработки плоской области, увеличьте скорость.
10. Если необходимо обработать углы, используйте радиусную траекторию при прохождении углов или снизьте скорость и подачу так, чтобы не возникало вибраций (примерно на 60%)

1. Kesme hızınızı, ilerlemenizi, ve kesme derinliğinizi operasyonunuza uygun olarak ayarlayınız, bu etkenler; işleme şekli, tezgahın rijitlik durumu, takım tutucunu rijitliği ve bağlama kuvvetleri
2. Eğer yukarıda ki tabloda belirtilen kesme hızı ve ilerlemeye ulaşamıcaksanız, aynı oranları kullanarak düşürünüz.
3. İş parçası ufalanıyor veya işlem yüksek seviyede bir frezeleme hassasiyeti gerektiriyorsa, ilerleme hızını gereken miktarda azaltın
4. Şekle bağlı olarak, eğer parça tırlar ise, aynı oranları kullanarak kesme hızını ve ilerlemeyi azaltın
5. Grafit frezelemek için belirtilen özel freze makinasını kullanın. Grafit etrafında çalışırken toz teneffüssünü engellemek için toz toplayıcı ve toz maskesi kullanın
6. Frezeleme sırasında, frezede ki salgıyı 0,01mm altında tutun
7. Etkili bir finiş elde etmek için, ilerleme 3 katı olarak ayarlanabilir
8. Kanal işleme gibi yüksek yüklü işlemlerde, yüksek verim elde etmek için ilerleme hızını %30'a kadar düşürün. Böylece, takımın esnemesinden kaynaklanan kesme kalınıtıları asgari düzeye indirilebilir
9. Düz bir alana frezeleme yapılırken oyuk oluşursa hızı arttırın
10. İşleme de köşe radyusu var ise, programda ki köşe radyusu prosesini kullanın, yada kesme hızını ayarlayın bu sayede tırlamayı engeller ve aynı zamanda köşede hızı yaklaşık olarak %60 a düşürün.

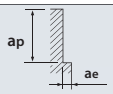
1. Dostosuj prędkość, posuw i głębokość skrawania do własnych warunków pracy, takich jak kształt, sztywność maszyny, sztywność uchwytu narzędzia i sił skrawania
2. Jeśli nie jesteś w stanie podnieść prędkości i posuwu do wskazanych w tabeli powyżej, należy zmniejszyć prędkość i posuw przy użyciu tej samej proporcji.
3. W przypadku, gdy przedmiot obrabiany staje się podzielony lub, jeśli operacja wymaga wyższego poziomu dokładności frezowania, obniżenie posuwu jest konieczne.
4. Przy wibracjach i w zależności od kształtu obrabianego detalu, zmniejsz prędkość posuwu i obrotów za pomocą tego samego stosunku
5. Do frezowania grafitu użyj dedykowaną frezarkę. Aby uniknąć wdychania pyłu, należy używać odpylacza oraz maske przeciwpyłową
6. Podczas frezowania, utrzymać na końcu freza bicie mniejsze niż 0,01 mm.
7. Aby osiągnąć efektywne wykańczanie, posuwy można podnieść trzykrotnie
8. Dla wysokosprawnej produkcji , obniżyć posuw o 30% dla operacji o dużym obciążeniu, jak dłutowanie. Zmniejszy to ilość pozostałości materiału wynikające z uginania narzędzia.
9. Jeżeli powstają rysy, żłobienia podczas frezowania płaskiego obszaru, podnieś prędkość
10. Jeżeli frezowanie obejmuje kształtowanie narożу użyj procesu zaokrąglenie naroża (wygładzanie kształtowe), lub zmień prędkość tak, aby nie powstały drgania oraz zmniejsz prędkości posuwu w narożu w tym samym czasie (około 60%).

UP-PHS

Side milling - Konturfräsen - Conturnatura - Contournage - Kenar işleme
Sidefræsning -Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		~ 30 HRC SKT ■ SKD ■ SKS ■ SCM		30~38 HRC NAK55 ■ HPM1 ■ SKT ■ SKD		38~45 HRC-SUS SUS304 ■ SKD		45~55 HRC - Tiall	
	100 (m/min)		78 (m/min)		66 (m/min)		62 (m/min)		60 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	10.600	1.170	8.300	900	7.000	650	6.600	670	6.350	580
4	7.950	1.200	6.200	980	5.250	650	4.950	700	4.750	620
5	6.350	1.260	4.950	1.000	4.200	700	3.950	750	3.800	640
6	5.300	1.500	3.100	1.100	2.650	790	2.450	770	2.400	660
8	4.000	1.500	3.100	1.100	2.650	790	2.450	770	2.400	660
10	3.200	1.320	2.500	1.000	2.100	720	1.950	700	1.900	630
12	2.650	1.320	2.050	1.000	1.750	680	1.650	650	1.600	570

Max cutting depth		ap	ae	ap	ae	ap	ae
		1.5D	0.2D	1.5D	0.1D	1D	0.05D

1. Use a rigid and precise machine and holder.
2. Adjust speed and feed when cutting depth is large or when machining with low rigidity tooling.
3. Use a suitable cutting fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Usare un mandrino portautensile preciso e rigido
2. Regolare la velocità e l'avanzamento se si aumenta la profondità di passata e se utilizzata su macchine non rigide.
3. Si consiglia di usare emulsione a scarsa emissione di fumi.
4. Per fresatura a secco utilizzare aria.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Vorschub und Geschwindigkeit der Schnittiefe und Machinen-Starrheit anpassen.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.
4. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.

1. Utiliser une machine et un attachement précis et rigide.
2. Ajuster la vitesse et l'avance en cas de profondeur de coupe importante ou en utilisant un machine non-rigide.
3. Utiliser un liquide de refroidissement adéquat.
4. En cas d'usinage à sec, utiliser de l'air comprimé pour l'évacuation des copeaux de l'aire d'usinage et pour éviter une agglomération des Copeaux.

1. Anvend stabil maskine og værktøjsholder
2. Justér omdrejninger og tilspænding ved stor skæredybde eller en ustabil maskine bruges
3. Anvend en passende skærevæske
4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner

1.Use maquina y portaherramientas rigidos y precisos
2.Ajustar el avance cuando la profundidad de corte es grande o cuando se se utilizan máquinas de poca rigidez
3.Use fluido de corte adecuado con retardador de humos
4.Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte

1. Använd en stabil maskin och verktygshållare
2. Justera skärdatan efter detaljens utformning och maskinens stabilitet.
3. Använd anpassad skärvätska
4. Vid torrbearbetning använd tryckluft för att transportera bort spånor

1.Используйте жесткие и точные станки и фрезерные патроны
2.Пожалуйста отрегулируйте обороты шпинделя и подачу, когда глубина резания велика или при использовании станков с низкой жесткостью
3.Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
4.При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Kesme derinliği yüksek veya düşük rijitli takımlar kullandığınızda kesme hızını ve ilerlemeyi ayarlayın
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız

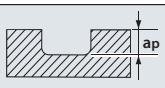
1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Dostosować prędkość i posuw, gdy głębokość frezowania jest duża lub gdy pracujemy na oprzyrządowaniu o niskiej sztywności.
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Podczas obróbki na sucho należy nadmuchem usuwać wióry z obszaru frezowania i wyeliminować owijanie wiórów

UP-PHS

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage
Skæredata - Skärdata - Ranurado - Фрезерование пазов



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		~ 30 HRC SKT ■ SKD ■ SKS ■ SCM		30~38 HRC NAK55 ■ HPMI ■ SKT ■ SKD		38~45 HRC-SUS SUS304 ■ SKD		45~55 HRC - Tiall	
	72 (m/min)		54 (m/min)		41 (m/min)		47 (m/min)		42 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	7.600	570	5.700	480	4.400	315	4.950	360	4.450	380
4	5.700	570	4.300	480	3.300	315	3.750	400	3.350	430
5	4.600	650	3.400	500	2.600	330	2.950	430	2.650	460
6	3.800	650	2.900	500	2.200	350	2.500	450	2.250	480
8	2.900	660	2.200	520	1.650	380	1.850	465	1.650	480
10	2.300	610	1.700	480	1.300	330	1.500	430	1.350	450
12	1.900	610	1.400	430	1.100	315	1.200	400	1.100	420

Max cutting depth	 ap = 1D	ap = 0.2D

WXS-CRE/WXS-HS-CRE

Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Düzenli frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Normalne frezowanie



Ø	GG S (min⁻¹)	GG F (mm/min)	30~38 HRC NAK55 ■ HPM1 ■ SKT ■ SKD S (min⁻¹)	30~38 HRC F (mm/min)	38~45 HRC SUS304 ■ SKD ■ HPM50 NAK80 S (min⁻¹)	38~45 HRC F (mm/min)	45~55 HRC S (min⁻¹)	45~55 HRC F (mm/min)	55~60 HRC S (min⁻¹)	55~60 HRC F (mm/min)	60~ HRC S (min⁻¹)	60~ HRC F (mm/min)
2 X R 0,5	16.000	5.250	12.500	3.800	11.000	3.350	7.950	2.150	4.750	860	4.270	615
3 X R 0,75	10.500	6.250	8.500	4.500	7.450	3.900	5.300	2.600	3.200	995	2.850	715
4 X R 1	7.950	6.600	6.350	4.800	5.550	4.200	4.000	2.750	2.400	1.050	2.150	755
6 X R 1,5	5.300	7.000	4.250	5.100	3.700	4.450	2.650	2.850	1.600	1.150	1.400	825
8 X R 2	4.000	7.000	3.200	5.100	2.800	4.450	2.000	2.850	1.200	1.150	1.050	825
10 X R 2	3.200	7.000	2.550	5.100	2.250	4.450	1.600	2.850	955	1.150	860	825
12 X R 2	2.650	7.000	2.100	5.100	1.850	4.450	1.350	2.850	795	1.150	715	825

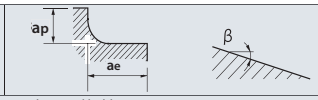
WXS-CRE/WXS-HS-CRE

High speed side milling - HSC Konturfräsen - Sgrossatura e contornatura alta velocità - Contournage UGV
High speed sidefræsning - High speed valsfräsning - Contorneado a alta velocidad - Высокоскоростное контурное фрезерование -Fresowanie HSC



Ø	GG S (min⁻¹)	GG F (mm/min)	30~38 HRC NAK55 ■ HPM1 ■ SKT ■ SKD S (min⁻¹)	30~38 HRC F (mm/min)	38~45 HRC SUS304 ■ SKD ■ HPM50 NAK80 S (min⁻¹)	38~45 HRC F (mm/min)	45~55 HRC S (min⁻¹)	45~55 HRC F (mm/min)	55~60 HRC S (min⁻¹)	55~60 HRC F (mm/min)	60~ HRC S (min⁻¹)	60~ HRC F (mm/min)
2 X R 0,5	31.850	10.500	32.000	9.550	24.000	7.150	24000	6.450	16.000	2.850	14.400	2.050
3 X R 0,75	21.000	12.500	21.000	12.000	16.000	8.400	16.000	7.850	10.500	3.300	9.450	2.370
4 X R 1	16.000	13.000	16.000	12.000	12.000	9.000	12.000	8.200	7.950	3.550	7.150	2.550
6 X R 1,5	10.600	14.000	10.600	12.700	7.950	9.550	7.950	8.600	5.300	3.800	5.300	3.800
8 X R 2	7.950	14.000	7.950	12.700	5.950	9.550	5.950	8.600	4.000	3.800	4.000	3.800
10 X R 2	6.350	14.000	6.350	12.700	4.750	9.550	4.750	8.600	3.200	3.800	3.200	3.800
12 X R 2	5.300	14.000	5.300	12.700	4.000	9.550	4.000	8.600	2.650	3.800	2.650	3.800

Max cutting depth



ap	ae
0,1xR	0,3D

	ap	ae
R≤2	0,1xR	0,3D
2<R	0,2mm	0,3D

	ap	ae
R≤2	0,05xR	0,3D
2<R	0,1mm	0,3D

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners.For milling without circular interpolation uch as right angle corners), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We suggest using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When WX(S)-CRE enters in Z axis, reduce the feed speed to 30-60% of the above conditions with machining incline angle ß < 2°
6. These milling conditions are for a tool extension length: less than 4 x D. For a longer tool extension, reduce the speed, feed rate, and the cutting depth in accordance with the respective coefficients, to prevent chattering.

1. Utilizzare una macchina ed un mandrino di elevato rigidità e di alta precisione
2. Queste condizioni di fresatura si referiscono a un'interpolazione circolare. Per una fresatura senza interpolazione circolare ridurre la velocità al 50-70 % e la profondità di taglio al 50-80 % rispetto alle condizioni sopra esposte.
3. Suggeriamo l'utilizzo di aria compressa o lubrificazione minimale (misto olio).
4. Regolare l'avanzamento e la profonditàdi taglio secondo le attuali condizioni di taglio.
5. Quando la FXS-CRE entra nell'asse Z ridurre l'avanzamento al 30-60 % con un'inclinazione
6. Queste condizioni di fresatura sono da intendersi per una sporgenza dell'utensile dal mandrino inferiore a 4 x diametro. Per sporgenze maggiori ridurre l'avanzamento

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel
2. Diese Schnittdaten basieren auf Fräsern mit cirkularer Ecken Interpolation. Bei Bearbeitungen ohne, reduzieren Sie den Vorschub auf 50-70 %, die Schnittiefe auf 50-80 % der oben genannten Schnittdaten
3. Wir empfehlen Luft- oder Minimalmengen Kühlung.
4. Bitte regulieren Sie Schnittgeschwidigkeit, Vorschub und Spanntiefe entsprechend Ihrer aktuellen Zerspanungsbedigungen.
5. Wenn in der Z-Aschse gearbeitet wird, muß der Vorschub auf 30-50 % reduziert werden Neigungswinkel (ß)<2°
6. Die Schnittwerde sind für eine max. Auskraglänge von 4xD. Bei großeren Auskraglängen müssen mit den jeweiligen Koeffizienten verändert werdenSchnittgeschwidigkeit, Vorschub und Schnittiefe zur Vermeidung von Vibrationen

1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision
2. Les conditions de coupe sont basées sur du fraisage en interpolation circulairedes angles. Pour l'usinage sans interpolation circulaire (angle droit), réduire la vitesse de 50 à 70% et la profondeur des passes de 50 à 80%.
3. Utiliser de l'arrosage en brouillard (mist).
4.Ajuster le vitesse, avances et la profondeur de coupe
5. Quand WX-CRE entre en mouvement axe Z, réduire avance de 30 à 60% pour l'usinage
6. Les conditions de coupe sont applicable pour des outils avec un lg. < 4 x D. Pour des outils plus longues réduire vitesse, avances et profondeur de coupe pour éviter bourrage

1. Anvend stabil maskine og værktøjsholder
2. De anførte skæredata er baseret på fræsning med cirkulær interpolation i hjørnerne. Ved fræsning uden cirkulær interpolation, reducér hastigheden til 50-70% og skæredybden til 50-80% af ovenstående skæredata
3. Vi anbefaler Lufttryk eller minimal smøring (MQL)
4. Venligst justér hastighed, tilspænding og skæredybde i forhold til de aktuelle forhold
5. Når WX-CRE går i indgreb i Z aksen, reducér tilspændingen til 30-60% af ovenstående skæredata med incline vinkel β ≤ 2°
6. Disse skæredata er til brug ved et udhæng under 4xD. Ved et længere udhæng reducér hastighed, tilspænding og skæredybde overensstemmelse med de respektive koeffitienter for at undgå afflisning

1. Use maquina y portaherramientas rigidos y precisos
2. Condiciones basadas en interpolación circular de los rincones. Para fresado sin interpolación circular (como rincones en ángulo recto), reducir la velocidad a 50 - 70%, y la profundidad de corte a 50 - 80% de las anteriores condiciones
3. Recomendamos aire soplado o MQL (niebla)
4. Ajustar la velocidad, profundidad de corte y avance conforme a las condiciones reales de corte
5. Cuando WX-CRE entra en el eje Z, reducir el avance a 30 - 60% de las anteriores condiciones de mecanizado dadas para rampa β <2 °
6. Estas condiciones son para el fresado con vuelo de herramienta inferior a 4 x D. Para herramienta de más vuelo, reducir la velocidad, el avance y profundidad de corte

1. Använd en stabil maskin och verktygshållare
2. Denna särdata är baserad på fräsning med cirkulär interpolering i hörnorna. Vid fräsning utan cirkulär interpolering, reducera hastigheten med 50-70% och skärdjupen med50-80% av ovanstående skärdata
3. Tyckluft rekommenderas.
4. Vänligen justera varvtal, matning och skärdjup i förhållande till de aktuella föhållanderna
5. När WX-CRE går i ingrepp i Z axeln, reducera matningen till 30-60% af ovanstående skärdata med flankvinkel ≤ 2°
6. Dessa särdata är till för uthäng under 4xDVid längre uthäng reducera varvtal, matning och skärdjup med de respektive koefficienter för att undgå avflisning

1. Используйте жесткие и точные станки и фрезерные патроны.
2. Указанные режимы резания действительны при прохождении углов по радиусу плавное изменение направления фрезерования). При резком изменении направления фрезерования в углах, уменьшите скорость и подачу до 50-70% от указанных, а глубину резания до 50-80%.
3. Мы рекомендуем использовать обдув воздухом или MQL (масляный туман) 4. Пожалуйста установите скорость резания, подачу и глубину резания в соответствии с действительными условиями обработки.
5. Если в процессе резания необходимо врезание по оси Z, уменьшите скорость и подачу до 30-60% от указанных, при угле врезания ß < 2°!
6. Указанные режимы резания для длины инструмента (вылета из патрона) меньше чем 4xD. Для выЕсли необходимо обработать углы, используйте радиусную траекторию при прохождении углов или снизьте скорость и подачу так, чтобы не возникало вибраций (примерно на 60%)лета больше, чем 4xD установите скорость, подачу и глубину резания в соответствии с указанными коэффициентами, для предотвращения вибраций

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Bu frezeleme koşulları köşelerde dairesel enterpolasyon ile frezeleme için verilmiştir. Sağ helisli köşelerde olduğu gibi dairese enterpolasyon ile işleme yapılmayacak ise yukarıda ki değerlerden kesme hızını 50-70%, kesme derinliğini 50-80% düşürün
3. Bizim tavsiyemiz have veya MQL kullanılmasıdır
4. Kesme hızını, ilerlemeyi ve kesme derinliğini fiili kesme şartlarına göre ayarlayınız
5. WX(S)-CRE Z eksenine girdiğinde, ß < 2° eğim açısı ile işlemede ilerleme hızını yukarıdaki koşulların %30-60'ına düşürün
6. Bu kesme koşulları takım boyunun 4XD den düşük olduğunda geçerlidir. Daha uzun takım boyunda tırlamayı engellemek için, kesme hızını, ilerlemeyi ve kesme derinliğini düşürün

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Warunki te są oparte na frezowaniu z interpolacją kołową przy frezowaniu naroży. Bez interpolacji kołowej w odpowiednich miejscach (np. prawym rogu naroża), należy zmniejszyć prędkość do 50-70% i głębokość frezowania do 50-80% powyższych warunków.
3. Zalecamy używanie nadmuchu lub MQL (mgła olejowa).
4. Proszę ustawić prędkość, pasuw i głębokości frezowania w zależności od rzeczywistych warunków skrawania.
5. Kiedy WX (S)-CRE wchodzi w osi Z, zmniejszyć prędkość posuwu do 30-60% z powyższych warunków obróbki Kąt nachylenia ß < 2 °
6. Warunki podane dla frezowania przy długości przedłużki narzędzi: mniej niż 4 x D. Przy większym wysięgu, proszę zmniejszyć prędkość, posuw oraz głębokość frezowania zgodnie z odpowiednimi współczynnikami, aby zapobiec uszkodzeniom.

BACK

WXS-CR-EMS

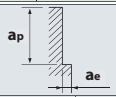
High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning -High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	47.500	6.250	42.000	5.350	31.500	2.650	26.500	1.650	15.500	830	12.500	590
4	35.500	6.250	31.500	5.750	23.500	3.350	19.500	1.650	11.500	960	9.500	595
5	28.500	6.700	25.000	6.000	19.000	3.600	15.500	1.650	9.500	995	7.600	595
6	23.500	4.400	21.000	3.750	15.500	2.800	13.000	2.000	7.950	1.200	6.350	960
8	17.500	4.300	15.500	3.750	11.500	2.800	9.900	2.050	5.950	1.250	4.750	955
10	14.000	4.250	12.500	3.750	9.500	2.800	7.950	2.100	4.750	1.250	3.800	955
12	11.500	3.950	10.500	3.500	7.950	2.600	6.600	1.950	3.950	1.150	3.150	875
14	10.000	3.750	9.050	3.350	6.800	2.500	5.650	1.750	3.400	1.050	2.700	795
16	8.950	3.500	7.950	3.100	5.950	2.300	4.950	1.600	2.950	970	2.350	740
18	7.950	3.100	7.050	2.750	5.300	2.050	4.400	1.450	2.650	885	2.100	690
20	7.150	2.800	6.350	2.500	4.750	1.850	3.950	1.350	2.350	785	1.900	625
25	5.700	2.350	5.050	2.100	3.800	1.500	3.150	1.100	1.900	675	1.500	525
30	4.750	1.950	4.200	1.750	3.150	1.250	2.650	940	1.550	550	1.250	435

Max cutting depth

	ap	ae
D ≤ Ø 12	1D	0,01D
Ø 12 < D	1D	0,02D



1. Conditions to be used if slant is = 3 x dia.
   If length is 5 x dia, than reduce feed and rotation by 10 to 20%.
   If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use ½ of aa and 1/3 of ar.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. For milling > 18 mm, machining center ISO50 is recommended
4. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

1. Condizioni da utilizzare se la lunghezza dell'estensione dell'utensile è uguale a 3 volte il diametro.
   Se la lunghezza è di 5 volte il diametro, ridurre l'avanzamento e la rotazione dal 10 al 20%.
   Se la lunghezza è di 6 volte il diametro, ridurre l'avanzamento e la rotazione dal 40 al 60%
   ed utilizzare ½ di aa e 1/3 di ar.
2. Regolare l'avanzamento e la velocità in funzione di taglio o della rigidità della macchina.
3. Per la fresatura superiore a 18 mm, è consigliato l'utilizzo di un centro di lavorazione ISO50.
4. Utilizzaree un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio,
   sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento di emissione del fumo.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 10 bis 20%. reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren,
   die Schnittiefe auf ½ aa und 1/3 ar.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Für Fräsen > 18 mm, empfehlen wir Maschinen mitt ISO50.
4. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Conditions à utiliser si le porte-à-faux est = à 3 x le dia.
   Si la longueur est de 5 x le dia, veuillez réduire l'avance et la rotation de 10 à 20.
   Si la longueur est de 6 x le dia, veuillez réduire l'avance et la rotation de 40 à 60 % et
   utiliser ½ de aa et 1/3 de ar.
2. Ajuster l'avance et la vitesse en fonction de la profondeur de coupe ou de la rigidité de la machine.
3. Pour le fraisage > 18 mm, il est recommandé d'utiliser un C.U. ISO50.
4. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coefficient élevé

1. Skæredata til brug ved udhæng = 3 x Diameter
   Hvis længden er 5 x dia, reducér tilspænding og omdrejninger med 10-20%
   Hvis længden er 6 x dia, reducér tilspænding og omdrejninger med 40-60% og reducér
   skæredybden til det ½ til aa och 1/3 til ar
2. Reducér hastigheden for at undgå forvrængninger fra dybe passager eller lav stbilitet
3. Ved fræsning > 18 mm, er det anbefalet at benytte et ISO50 bearbejdningscenter
4. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

1. Condiciones utilizables con mango = 3 D
   Si el vuelo de 5 x D, reducir avance y velocidad un 10 a 20%
   Si el vuelo de 6 x D, reducir avance y velocidad un 40 a 60% y la pasada a ½ aa e 1/3 ar
2. Reduzca velocidad para evitar distorsión entre pasadas profundas y baja rigidez
3. Para fresar > 18 mm, se recomienda el uso de centro de mecanizado con ISO 50
4. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

1. Skärdata vid uthäng = 3 x Diametern
   Vid uthäng är 5 x diametern, reducera varvtal och matning med 10-20%
   Vid uthäng är 6 x diametern, reducera varvtal och matning med 40-60% och reducera
   skärdjupet till ½ och aa
2. Reducera varvtal för att undgå vibrationer i djupa kaviteter eller vid allmän lå
   stabilitet.områder eller lav stabilitet
3. Vid fräsning > 18 mm rekommenderas att använda maskiner med ISO50 kona
4. Använd lufttryck eller kylvätska med låg rökutveckling

1. Режимы резания действительны при вылете фрезы = 3 D
   Если длина 5 x D, уменьшите подачу и обороты шпинделя на 40-50% и используйте ½ r
   лубины резания.
   Если длина 6 x D, уменьшите подачу и обороты шпинделя на 60-70% и используйте ½
   глубины резания.
2. Отрегулируйте обороты шпинделя, подачу в зависимости от глубины резания и
   жесткости станка.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к
   возникновению дыма.

1. Eğim = 3 x çap ise bu kesme değerleri kullanılır
Eğer boy 5 x çap ise, ilerlemeyi ve devri 10-20 % düşürün ve pasonun 1/2 sini kullanın
Eğer boy 6 x çap ise, ilerlemeyi ve devri 40-60 % düşürün ve pasonun 1/3 sini kullanın
2. Kesme derinliğine ve tezgahın rijitliğine göre ilerlemeyi ve devri ayarlayınız
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

1. Warunki, które należy stosować, jeśli wysięg = 3 x średnca
Jeśli długość jest większa niż 5 x średnica należy zmniejszyć posuw i obroty o 30 do 40% i używać 1/2 głębokości przejazdów.
Jeśli długość jest większa niż 6 x średnica należy zmniejszyć posuw i obroty o 40 do 60% i używać 1/3 głębokości przejazdów.
2. Regulacja posuwu i obrotów jest funkcją głębokości przejazdów lub sztywności maszyny.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

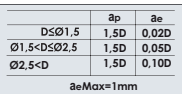
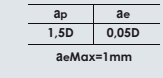
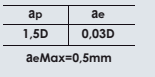
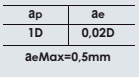
CARBIDE

WXS-EMS

Side milling - Konturfräsen - Fresatura contornatura - Fraisage contournage - Kenar frezeleme için
Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowania boczne



Ø	~ 40 HRC NAK55 ■ HPM1 ■ SKT		40 ~ 45 HRC NAK80 ■ SKD11 ■ SKD61		45~55 HRC		55~60 HRC		60~65 HRC		65~70 HRC	
	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)
1	20.000	800	20.000	800	20.000	800	20.000	560	20.000	480	16.000	335
2	20.000	1.600	20.000	1.600	16.000	1.250	12.000	670	11.000	535	7.950	335
3	15.000	1.800	13.500	1.600	10.500	1.250	7.950	670	7.450	535	5.300	335
4	11.000	1.800	9.950	1.600	7.950	1.250	5.950	670	5.550	535	4.000	335
5	8.900	1.800	7.950	1.600	6.350	1.250	4.800	670	4.450	535	3.200	335
6	7.450	2.650	6.650	2.400	5.300	1.900	4.000	1.000	3.700	800	2.650	505
8	5.550	2.650	4.950	2.400	4.000	1.900	3.000	1.000	2.800	800	2.000	505
10	4.450	2.650	4.000	2.400	3.200	1.900	2.400	1.000	2.250	800	1.600	505
12	3.700	2.650	3.300	2.400	2.650	1.900	2.000	1.000	1.850	800	1.350	505
14	3.100	2.500	2.800	2.250	2.250	1.800	1.700	1.000	1.550	800	1.100	505
15	2.850	2.400	2.600	2.200	2.100	1.750	1.550	950	1.450	800	1.050	505
16	2.700	2.400	2.400	2.100	1.950	1.700	1.450	930	1.350	800	995	505
18	2.400	2.250	2.200	2.000	1.750	1.600	1.300	895	1.200	800	885	505
20	2.200	2.150	1.950	1.900	1.550	1.500	1.150	845	1.100	695	800	505
25	1.700	2.450	1.550	2.100	1.250	1.500	955	915	890	750	635	505
30	1.400	2.300	1.300	1.750	1.050	1.250	795	760	740	620	620	430

Max cutting depth					
					
ap / ae	DSØ1,5: ap 1,5D, ae 0,02D Ø1,5<DSØ2,5: ap 1,5D, ae 0,05D Ø2,5<D: ap 1,5D, ae 0,10D aeMax=1mm	ap 1,5D, ae 0,05D aeMax=1mm		ap 1,5D, ae 0,03D aeMax=0,5mm	ap 1D, ae 0,02D aeMax=0,5mm

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Uitiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma simultant
3. Använd anpassad skärvätska

1. Используйте жесткие и точные станки и фрезерные патроны
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

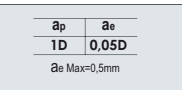
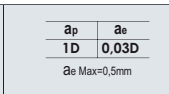
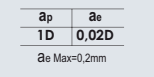
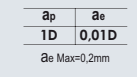
1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy występieniu drgań zmniesz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

WXS-EMS

High speed side milling - HSC Konturfräsen - Fresatura alta velocità contornatura -
Fraisage UGV contournage - Yüksek hizda kenar frezeleme - High speed sidefræsning -
High speed valsfräsning -Contorneado a alta velocidad - Высокоскоростное контурное фрезерование - Frezowanie HSC



Ø	~ 40 HRC NAK55 ■ HPM1 ■ SKT		40 ~ 45 HRC NAK80 ■ SKD11 ■ SKD61		45~55 HRC		55~60 HRC		60~65 HRC		65~70 HRC	
	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)
1	50.000	1.600	50.000	2.000	50.000	2.000	50.000	1.600	47.500	1.350	32.000	715
2	47.500	3.250	47.500	3.800	40.000	3.200	25.500	1.650	24.000	1.350	16.000	800
3	32.000	3.450	32.000	3.800	26.500	3.200	17.000	1.650	16.000	1.350	10.500	800
4	24.000	3.900	24.000	3.800	20.000	3.200	12.500	1.650	12.000	1.350	7.950	800
5	19.000	4.100	19.000	3.800	16.000	3.200	10.000	1.650	9.550	1.350	6.350	800
6	16.000	5.750	12.000	5.750	9.950	4.800	6.350	2.450	5.950	2.000	4.000	1.200
8	12.000	5.750	12.000	5.750	9.950	4.800	6.350	2.450	5.950	2.000	4.000	1.200
10	9.550	5.750	9.550	5.750	7.950	4.800	5.100	2.450	4.800	2.000	3.200	1.200
12	7.950	5.750	7.950	5.750	6.650	4.800	4.250	2.450	4.000	2.000	2.650	1.200
14	6.800	5.400	6.800	5.400	5.650	4.500	3.600	2.400	3.400	2.000	2.250	1.200
15	6.350	5.300	6.350	5.300	5.250	4.350	3.350	2.300	3.150	1.950	2.100	1.200
16	5.950	5.150	5.950	5.150	4950	4.250	3.150	2.250	2.950	1.850	1.950	1.200
18	5.300	4.850	5.300	4.850	4.400	4.050	2.800	2.200	2.650	1.750	1.750	1.200
20	4.750	4.600	4.750	4.600	3.950	3.650	2.500	2.050	2.350	1.550	1.550	1.100
25	3.800	5.350	3.800	5.050	3.150	3.800	2.000	2.000	1.900	1.250	1.250	1.050
30	3.150	4.950	3.150	4.250	2.650	3.150	1.650	1.800	1.550	1.050	1.050	1.000

Max cutting depth					
					
ap / ae	ap 1D, ae 0,05D ae Max=0,5mm	ap 1D, ae 0,03D ae Max=0,5mm		ap 1D, ae 0,02D ae Max=0,2mm	ap 1D, ae 0,01D ae Max=0,2mm

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Uitiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma simultant
3. Använd anpassad skärvätska

1. Используйте жесткие и точные станки и фрезерные патроны
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy występieniu drgań zmniesz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

BACK

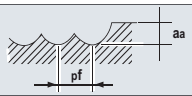
BACK

WXS-EBD/WXS-HS-EBD

High speed light milling - HSC Schnichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda hafif frezeleme - High speed bearbejdning (HSM) - Höghastighets maskinering (HSM) - Fresado ligero a alta velocidad - Высокоскоростное «легкое»фрезерование - Frezowanie HSC



	~ 45 HRC NAK80 ■ HPM50 ■ SKD		45~55 HRC		55~60 HRC		60~65 HRC		65~70 HRC	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,5 X 1	50.000	3.700	50.000	3.700	50.000	3.100	50.000	2.600	47.500	2.400
R 1 X 2	50.000	5.600	47.500	5.350	40.000	3.650	32.000	2.800	24.000	2.100
R 1,5 X 3	41.500	6.200	32.000	4.800	26.500	3.350	21.000	2.550	16.000	1.900
R 2 X 4	31.000	5.700	24.000	4.400	20.000	3.200	16.000	2.400	12.000	1.800
R 2,5 X 5	25.000	5.450	19.000	4.000	16.000	2.850	13.000	2.150	9.550	1.600
R 3 X 6	20.500	5.200	16.000	3.450	13.500	2.550	10.500	2.050	7.950	1.550
R 4 X 8	15.500	4.450	12.000	3.050	9.950	2.250	7.950	1.800	5.950	1.350
R 5 X 10	12.500	3.950	9.550	2.650	7.950	1.900	6.350	1.550	4.800	1.150
R 6 X 12	10.500	3.700	7.950	2.500	6.650	1.600	5.300	1.350	4.000	995

Max cutting depth		ap	pf	ap	pf	ap	pf
		0,02D	0,05D	0,02D	0,05D	0,01D	0,05D

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. These milling conditions are for end mill where the tool extension length is 4 times the diameter of the end mill. When length of the tool extension from the machine is long, reduce the speed and feed and milling depth.
4. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibrationor chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holdeing condition, etc.., please adjust the speed, feed and the depth of cut.
   As a guideline in selecting end mills.
   To increase the depth of cut, use the FX Heavy Cutting Strong Ball Series (FX-HS-EBDS).
   To increase the feed rate, use the FX Multiple Flute Ball Series (FX-EBT, FXS-EBM).

1. Utilizzare una macchina ed un mandrino di elevato rigidità e di alta precisione
2. Suggeriamo l'utilizzo di aria compressa o lubrificazione minimale (misto olio).
3. Queste condizioni di fresatura sono da intendersi per una sporgenza dell'utensile dal mandrino inferiore a 4 x diametro. Per sporgenze maggiori ridurre l'avanzamento
4. La presente tabella si riferisce a parametri approssimativi di operazioni di contornatura. Eventuali vibrazioni o rumore anomalo di taglio dipendono dal tipo di macchina, rigidezza e profondità di passata. Regolare velocità, avanzamento e passata di taglio

Se si desidera incrementare la profondità di taglio, utilizzare frese sferiche della serie FX ad elevata capacità di taglio. (FX-HS-EBDS)
Se si desidera incrementare l'avanzamento, utilizzare frese sferiche della serie FX ad elevata capacità di taglio. (FX-EBT, FXS-EBM)

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel
2. Wir empfehlen Luft- oder Minimalmengen Kühlung.
3. Die Schnittwerde sind für eine max. Auskraglänge von 4xD. Bei großeren Auskraglängen müssen mit den jeweiligen Koeffizienten verändert werden Schnittgeschwidigkeit, Vorschub und Schnittiefe zur Vermeidung von Vibrationen
4. Die oben angegeben Schnittwerte sind für regular 3D fräsen. Entnehmen Sie die Schnittdaten entsprechend Ihrer aktuellen Bearbeitungsaufgabe aus der oben gezeigten Tabelle
   To increase the depth of cut, use the FX Heavy Cutting Strong Ball Series (FX-HS-EBDS).
   To increase the feed rate, use the FX Multiple Flute Ball Series (FX-EBT, FXS-EBM).

1.Utiliser une machine et un porte-outil de grande rigidité et de haute précision
2.Utiliser de l'arrosage en brouillard (mist).
3.Les conditions de coupe sont applicable pour des outils avec un lg. < 4 x D. Pour des outils plus longues réduire vitesse, avances et profondeur de coupe pour éviter bourrag
4.Les conditions ci-dessus sont des standards approx. pour des opérations de contournage avec un charge machine réduite. En cas des bruits d'usinage anormoux et/ou des vibrations dépendants de la géométrie de la pièce, conditions de coupe, rigidité de la machine et/ou clamage, etc. …, ajustez la vitesse, l'avance et/ou la profondeur de coupe
   Pour augmenter la profondeur de coupe, uiliser les fraises à boule (FX-HS-EBDS).
   Pour augmenter l'avance uiliser les fraises à boule (FX-EBT, FXS-EBM)

1. Anvend stabil maskine og værktøjsholder
2. Vi anbefaler Lufttryk eller minimal smøring (MQL)
3. Disse skæredata er til brug ved et udhæng under 4xD. Ved et længere udhæng reducér hastighed, tilspænding og skæredybde overensstemmelse med de respektive koeffitienter for at undgå afflisning
4. Ovenstående skæredata viser en ca. standard for sidefræsning ved lav maskinbelastning.
   Hvis unormale lyde eller vibrationer opstår, justér omdrejninger, tilspænding og skæredybde under hensyntagen til maskine og værktøjsholder samt bearbejdningskontur.
   For at øge skæredybden, brug da FX Radius serien (FX-HS-EBDS)
   For at øge tilspænding, brug da FX Radius serien (FX-EBT, FXS-EBM)

1. Use maquina y portaherramientas rigidos y precisos
2. Recomendamos aire soplado o MQL (niebla)
3. Estas condiciones son para el fresado con vuelo de herramienta inferior a 4 x D. Para herramienta de más vuelo, reducir la velocidad, el avance y profundidad de corte
4. Lo anterior muestra condiciones estándar aproximadas para la operación de contorneado con baja carga de maquina. En caso de sonidos, vibraciones o vibraciones anormales por la forma de mecanizado, sección de corte, la rigidez de la máquina o fijación de la pieza, condiciones, etc. ..., ajuste la velocidad, avance y la profundidad de corte
   Para aumentar la profundidad de corte, utilice la (FX-HS-EBDS)
   Para aumentar lavanca, utilice la (FX-EBT, FXS-EBM)

1.Använd stabil maskin och verktygshållare.
2.Vi rekommenderar luft eller minimalsmörjning.
3. Dessa skäredata är för pinnfräsar med uthäng på 4D. Om uthänget är längre, reducera då varvtal, matning och fräsdnup.
4. Ovanstående data är ungefärliga skäredata för valsfräsning med låg belastning.
   Om unormala ljud, vibrationer eller avflisning uppstår, justéra då varvtal, matning och skäredjup.
   - Som en guideline för val av verktyg.
   För att öka skärdjupet, använd FX serien (FX-HS-EBDS)
   För att öka matningen använd FX serien (FX-EBT, FXS-EBM)

1. Используйте жесткие и точные станки и фрезерные патроны.
2. Мы рекомендуем использовать обдув воздухом или MQL (масляный туман)
3. Указанные режимы резания для длины инструмента (вылета из патрона) не более чем 4xD. Если вылет фрезы больше, чем 4xD, уменьшите скорость, подачу и глубину резания.
4.Упомянутые выше условия показывают приблизительные параметры для контурного фрезерования с низкими нагрузками резания. При возникновении ненормальных звуков при резании или вибраций, в зависимости от обрабатываемой детали, условий ее закрепления и жесткости станка, пожалуйста уменьшите скорость, подачу и глубину резания.
   При выборе фрез следуйте следующим рекомендациям:
   Для увеличения глубины резания, используйте серию FX-HS-EBDS, предназначенную для тяжелого фрезерования.
   Для увеличения подачи, используйте многозубые серии FX-EBT и FXS-EBM.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Bizim tavsiyemiz have veya MQL kullanılmasıdır
3. Bu kesme koşulları takım boyunun 4XD den düşük olduğunda geçerlidir. Daha uzun takım boyunda tırlamatı engellemek için, kesme hızını, ilerlemeyi ve kesme derinliğini düşürün
4. Yukarıda ki değerler düşük yüklü kontür işleme operasyonu için (kenar işleme) yaklaşık standart değerlerdir. İşleme şekline, tezgahın rijitliğine, parçanın bağlanmasına, kesme derinliğine v.b. bağlı olarak anormal kesme sesleri, titreşim veya tırlama oluşuyorsa lütfen kesme hızını, ilerlemeyi ve kesme derinliğini ayarlayın
   Freze seçiminde kullanılacak seçim kılavuzu
   Kesme derinliğini arttırmak istiyorsanız, FX Ağır Kesme Güçlü Küre Serisini (FX-HS-EBDS) kulllanınız
   Kesme derinliğini arttırmak istiyorsanız, FX Çok Ağızlı Küre Serisini (FX-EBT, FXS-EBM) kullanınız

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Zalecamy używanie nadmuchu lub MQL (mgła olejowa).
3. Warunki podane dla frezowania przy długości przedłużki narzędzi: mniej niż 4 x D. Przy większym wysięgu, proszę zmniejszyć prędkość, posuw oraz głębokość frezowania zgodnie z odpowiednimi współczynnikami, aby zapobiec uszkodzeniom.
4. Powyższy warunek pokazuje przybliżony standard pracy kształtowej (frezowanie boczne) z niskim obciążeniem roboczym. Przy nieprawidłowych odgłosach, wibracjach, które mogą wystąpić w zależności od kształtu obróbki, głębokości i szerokości frezowania, sztywności maszyny lub stanu oprawek mocujących, etc., Należy dostosować prędkość, posuw i głębokość skrawania.
   Jako wytyczne przy wyborze frezów
   W celu zwiększenia głębokości frezowania, użyj frezów FX Heavy Cutting Strong Ball Series (FX-HS-EBDS).
   Aby zwiększyć prędkość posuwu, użyj FX z serii Ball Flute (FX-EBT, FXS-EBM).

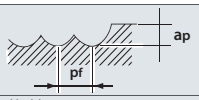
CONDITIONS

WXS-EBD/WXS-HS-EBD

Standard milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Standart frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Normalne frezowanie



Ø	~ 45 HRC NAK80 ■ HPM50 ■ SKD		45~55 HRC		55~60 HRC		60~65 HRC		65~70 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,5	32.000	2.350	32.000	2.350	32.000	2.000	32.000	1.600	32.000	1450
R 0,75	32.000	3.050	32.000	3.050	32.000	2.500	26.500	1.900	21.000	1400
R 1	32.000	3.600	32.000	3.550	24.000	2.200	2.000	1.750	16.000	1250
R 1,5	26.500	4.000	21.000	3.200	16.000	2.000	13.500	1.600	10.500	1200
R 2	20.000	3.650	16.000	2.950	12.000	1.900	9.950	1.500	7.950	1150
R 2,5	16.000	3.500	12.500	2.650	9.550	1.700	7.950	1.350	6.350	1000
R 3	13.500	3.350	10.500	2.300	7.950	1.550	6.650	1.250	5.300	955
R 4	9.950	2.850	7.950	2.050	5.950	1.350	4.950	1.050	4.000	830
R 5	7.950	2.550	6.350	1.800	4.800	1.150	4.000	875	3.200	700
R 6	6.650	2.400	5.300	1.650	4.000	955	3.300	795	2.650	635
R 8	4.950	1.800	4.000	1.250	3.000	775	2.500	595	2.000	475
R 10	4.000	1.450	3.200	1.000	2.400	620	2.000	475	1.600	380
R 12,5	3.200	1.150	2.550	815	1.900	495	1.600	380	1.250	305

Max cutting depth			
	ap: 0,05D pf: 0,1D apMax=0,6mm	ap: 0,03D pf: 0,1D apMax=0,5mm	ap: 0,02D pf: 0,05D apMax=0,3mm

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. These milling conditions are for end mill where the tool extension length is 4 times the diameter of the end mill. When length of the tool extension from the machine is long, reduce the speed and feed and milling depth.
4. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibrationor chattering occur depending on the machining shape, cutting amount, rigidity of the machine or work holdeing condition, etc.., please adjust the speed, feed and the depth of cut.
   As a guideline in selecting end mills.
   To increase the depth of cut, use the FX Heavy Cutting Strong Ball Series (FX-HS-EBDS).
   To increase the feed rate, use the FX Multiple Flute Ball Series (FX-EBT, FXS-EBM).

1. Utilizzare una macchina ed un mandrino di elevato rigidità e di alta precisione
2. Suggeriamo l'utilizzo di aria compressa o lubrificazione minimale (misto olio).
3. Queste condizioni di fresatura sono da intendersi per una sporgenza dell'utensile dal mandrino inferiore a 4 x diametro. Per sporgenze maggiori ridurre l'avanzamento
4. La presente tabella si riferisce a parametri approssimativi di operazioni di contornatura. Eventuali vibrazioni o rumore anomalo di taglio dipendono dal tipo di macchina, rigidezza e profondità di passata. Regolare velocità, avanzamento e passata di taglio

Se si desidera incrementare la profondità di taglio, utilizzare frese sferiche della serie FX ad elevata capacità di taglio. (FX-HS-EBDS)
Se si desidera incrementare l'avanzamento, utilizzare frese sferiche della serie FX ad elevata capacità di taglio. (FX-EBT, FXS-EBM)

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel
2. Wir empfehlen Luft- oder Minimalmengen Kühlung.
3. Die Schnittwerde sind für eine max. Auskraglänge von 4xD. Bei großeren Auskraglängen müssen mit den jeweiligen Koeffizienten verändert werden Schnittgeschwidigkeit, Vorschub und Schnittiefe zur Vermeidung von Vibrationen
4. Die oben angegeben Schnittwerte sind für regular 3D fräsen. Entnehmen Sie die Schnittdaten entsprechend Ihrer aktuellen Bearbeitungsaufgabe aus der oben gezeigten Tabelle
   To increase the depth of cut, use the FX Heavy Cutting Strong Ball Series (FX-HS-EBDS).
   To increase the feed rate, use the FX Multiple Flute Ball Series (FX-EBT, FXS-EBM).

1.Utiliser une machine et un porte-outil de grande rigidité et de haute précision
2.Utiliser de l'arrosage en brouillard (mist).
3.Les conditions de coupe sont applicable pour des outils avec un lg. < 4 x D. Pour des outils plus longues réduire vitesse, avances et profondeur de coupe pour éviter bourrag
4.Les conditions ci-dessus sont des standards approx. pour des opérations de contournage avec un charge machine réduite. En cas des bruits d'usinage anormoux et/ou des vibrations dépendants de la géométrie de la pièce, conditions de coupe, rigidité de la machine et/ou clamage, etc. …, ajustez la vitesse, l'avance et/ou la profondeur de coupe
   Pour augmenter la profondeur de coupe, uiliser les fraises à boule (FX-HS-EBDS).
   Pour augmenter l'avance uiliser les fraises à boule (FX-EBT, FXS-EBM)

1. Anvend stabil maskine og værktøjsholder
2. Vi anbefaler Lufttryk eller minimal smøring (MQL)
3. Disse skæredata er til brug ved et udhæng under 4xD. Ved et længere udhæng reducér hastighed, tilspænding og skæredybde overensstemmelse med de respektive koeffitienter for at undgå afflisning
4. Ovenstående skæredata viser en ca. standard for sidefræsning ved lav maskinbelastning.
   Hvis unormale lyde eller vibrationer opstår, justér omdrejninger, tilspænding og skæredybde under hensyntagen til maskine og værktøjsholder samt bearbejdningskontur.
   For at øge skæredybden, brug da FX Radius serien (FX-HS-EBDS)
   For at øge tilspænding, brug da FX Radius serien (FX-EBT, FXS-EBM)

1. Use maquina y portaherramientas rigidos y precisos
2. Recomendamos aire soplado o MQL (niebla)
3. Estas condiciones son para el fresado con vuelo de herramienta inferior a 4 x D. Para herramienta de más vuelo, reducir la velocidad, el avance y profundidad de corte
4. Lo anterior muestra condiciones estándar aproximadas para la operación de contorneado con baja carga de maquina. En caso de sonidos, vibraciones o vibraciones anormales por la forma de mecanizado, sección de corte, la rigidez de la máquina o fijación de la pieza, condiciones, etc. ..., ajuste la velocidad, avance y la profundidad de corte
   Para aumentar la profundidad de corte, utilice la (FX-HS-EBDS)
   Para aumentar lavanca, utilice la (FX-EBT, FXS-EBM)

1.Använd stabil maskin och verktygshållare.
2.Vi rekommenderar luft eller minimalsmörjning.
3. Dessa skäredata är för pinnfräsar med uthäng på 4D. Om uthänget är längre, reducera då varvtal, matning och fräsdnup.
4. Ovanstående data är ungefärliga skäredata för valsfräsning med låg belastning.
   Om unormala ljud, vibrationer eller avflisning uppstår, justéra då varvtal, matning och skäredjup.
   - Som en guideline för val av verktyg.
   För att öka skärdjupet, använd FX serien (FX-HS-EBDS)
   För att öka matningen använd FX serien (FX-EBT, FXS-EBM)

1. Используйте жесткие и точные станки и фрезерные патроны.
2. Мы рекомендуем использовать обдув воздухом или MQL (масляный туман)
3. Указанные режимы резания для длины инструмента (вылета из патрона) не более чем 4xD. Если вылет фрезы больше, чем 4xD, уменьшите скорость, подачу и глубину резания.
4.Упомянутые выше условия показывают приблизительные параметры для контурного фрезерования с низкими нагрузками резания. При возникновении ненормальных звуков при резании или вибраций, в зависимости от обрабатываемой детали, условий ее закрепления и жесткости станка, пожалуйста уменьшите скорость, подачу и глубину резания.
   *При выборе фрез следуйте следующим рекомендациям:
   Для увеличения глубины резания, используйте серию FX-HS-EBDS, предназначенную для тяжелого фрезерования.
   Для увеличения подачи, используйте многозубые серии FX-EBT и FXS-EBM.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Bizim tavsiyemiz have veya MQL kullanılmasıdır
3. Bu kesme koşulları takım boyunun 4XD den düşük olduğunda geçerlidir. Daha uzun takım boyunda tırlamatı engellemek için, kesme hızını, ilerlemeyi ve kesme derinliğini düşürün
4. Yukarıda ki değerler düşük yüklü kontür işleme operasyonu için (kenar işleme) yaklaşık standart değerlerdir. İşleme şekline, tezgahın rijitliğine, parçanın bağlanmasına, kesme derinliğine v.b. bağlı olarak anormal kesme sesleri, titreşim veya tırlama oluşuyorsa lütfen kesme hızını, ilerlemeyi ve kesme derinliğini ayarlayın
   Freze seçiminde kullanılacak seçim kılavuzu
   Kesme derinliğini arttırmak istiyorsanız, FX Ağır Kesme Güçlü Küre Serisini (FX-HS-EBDS) kulllanınız
   Kesme derinliğini arttırmak istiyorsanız, FX Çok Ağızlı Küre Serisini (FX-EBT, FXS-EBM) kullanınız

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Zalecamy używanie nadmuchu lub MQL (mgła olejowa).
3. Warunki podane dla frezowania przy długości przedłużki narzędzi: mniej niż 4 x D. Przy większym wysięgu, proszę zmniejszyć prędkość, posuw oraz głębokość frezowania zgodnie z odpowiednimi współczynnikami, aby zapobiec uszkodzeniom.
4. Powyższy warunek pokazuje przybliżony standard pracy kształtowej (frezowanie boczne) z niskim obciążeniem roboczym. Przy nieprawidłowych odgłosach, wibracjach, które mogą wystąpić w zależności od kształtu obróbki, głębokości i szerokości frezowania, sztywności maszyny lub stanu oprawek mocujących, etc., Należy dostosować prędkość, posuw i głębokość skrawania.
   Jako wytyczne przy wyborze frezów
   W celu zwiększenia głębokości frezowania, użyj frezów FX Heavy Cutting Strong Ball Series (FX-HS-EBDS).
   Aby zwiększyć prędkość posuwu, użyj FX z serii Ball Flute (FX-EBT, FXS-EBM).

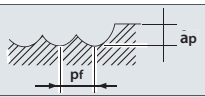
WX-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG SS400 ■ S55C ■ FC250		~ 30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPM1 ■ SKT		38~45 HRC SUS304 ■ X210CR12 ■ X40CRMOV51		45~55 HRC		55~60 HRC	
	350~500 (m/min)		300~450 (m/min)		250~400 (m/min)		150~300 (m/min)		120~220 (m/min)		80~150 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,5 X 1	50.000	2.800	50.000	2.800	50.000	2.500	47.500	2.250	32.000	1.450	25.000	1.000
R 1 X 2	31.500	3.500	25.000	2.800	24.500	2.500	23.500	2.250	17.000	1.550	12.500	1.000
R 1,5 X 3	21.000	3.500	16.500	2.800	16.000	2.500	15.500	2.250	11.000	1.550	8.450	1.000
R 2 X 4	18.000	3.700	15.500	3.400	15.000	2.750	13.500	2.450	11.000	1.900	7.950	1.100
R 2,5 X 5	15.500	4.000	15.000	4.050	14.000	2.900	11.000	2.300	10.000	2.100	7.600	1.200
R 3 X 6	15.000	4.800	13.500	4.300	11.500	2.750	9.500	2.250	9.500	2.250	6.600	1.150
R 4 X 8	11.500	3.650	10.000	3.200	8.950	2.100	7.150	1.700	7.150	1.700	4.950	890
R 5 X 10	9.500	3.000	8.250	2.600	7.150	1.700	5.700	1.350	5.700	1.350	3.950	710
R 6 X 12	7.950	2.500	6.850	2.150	5.950	1.400	4.750	1.100	4.750	1.100	3.300	590
R 7 X 14	6.800	2.150	5.900	1.850	5.100	1.200	4.050	970	4.050	970	2.800	500
R 8 X 16	5.950	1.900	5.150	1.600	4.450	1.050	3.550	850	3.550	850	2.450	440
R 9 X 18	5.300	1.650	4.550	1.450	3.950	945	3.150	755	3.150	755	2.200	395
R 10 X 20	4.750	1.500	4.100	1.300	3.550	850	2.850	680	2.850	680	1.950	350
R 12,5X 25	3.800	1.200	3.300	1.050	2.850	680	2.250	540	2.250	540	1.550	275
R 15 X 30	3.150	1.000	2.750	880	2.350	560	1.900	455	1.900	455	1.300	230

Max cutting depth	ap	pf
	0,02D	0,05D



Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausreichenden Brandschutz sicher.
1. Die Schnittdaten sind ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen..

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling.

Atención, Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

BACK

WXS-LN-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG SS400 ■ S55C ■ FC250 (~ 750N/mm²)				~ 30 HRC 35NCD16 ■ 40CMD8				30~38 HRC 35NCD16			
	120 (m/min)				110 (m/min)				100 (m/min)			
Ø	l1 (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
0,1	0,3	50.000	70	0,003	0,003	50.000	70	0,003	0,003	50.000	70	0,003	0,003
0,1	0,5	50.000	50	0,003	0,003	50.000	50	0,003	0,003	50.000	50	0,003	0,003
0,2	0,5	50.000	400	0,005	0,005	50.000	400	0,005	0,005	50.000	380	0,005	0,005
0,2	0,75	50.000	360	0,005	0,005	50.000	360	0,005	0,005	50.000	340	0,005	0,005
0,2	1	50.000	360	0,005	0,005	50.000	360	0,005	0,005	50.000	340	0,005	0,005
0,2	1,25	47.000	320	0,005	0,005	47.000	320	0,005	0,005	47.000	300	0,005	0,005
0,2	1,5	45.000	300	0,005	0,005	45.000	300	0,005	0,005	45.000	280	0,005	0,005
0,2	1,75	42.000	260	0,005	0,005	42.000	260	0,005	0,005	42.000	240	0,005	0,005
0,2	2	38.000	230	0,005	0,005	38.000	230	0,005	0,005	38.000	210	0,005	0,005
0,2	2,5	32.000	170	0,004	0,005	32.000	170	0,005	0,004	32.000	160	0,004	0,005
0,2	3	32.000	150	0,004	0,005	32.000	150	0,005	0,004	32.000	140	0,004	0,005
0,3	0,6	50.000	600	0,005	0,01	50.000	600	0,005	0,01	50.000	570	0,005	0,01
0,3	1	50.000	600	0,005	0,01	50.000	600	0,005	0,01	50.000	570	0,005	0,01
0,3	1,25	50.000	600	0,005	0,01	50.000	600	0,005	0,01	50.000	570	0,005	0,01
0,3	1,5	50.000	600	0,005	0,01	50.000	600	0,005	0,01	50.000	570	0,005	0,01
0,3	1,75	47.000	510	0,005	0,01	47.000	510	0,005	0,01	47.000	480	0,005	0,01
0,3	2	45.000	480	0,005	0,005	45.000	480	0,005	0,005	45.000	450	0,005	0,005
0,3	2,25	45.000	400	0,005	0,005	45.000	400	0,005	0,005	45.000	380	0,005	0,005
0,3	2,5	40.000	300	0,005	0,005	40.000	300	0,005	0,005	40.000	280	0,005	0,005
0,3	3	38.000	250	0,005	0,005	38.000	250	0,005	0,005	38.000	230	0,005	0,005
0,3	3,5	34.000	200	0,004	0,005	34.000	200	0,004	0,005	34.000	190	0,005	0,004
0,3	4	32.000	150	0,004	0,005	32.000	150	0,004	0,005	32.000	140	0,005	0,004
0,3	4,5	32.000	130	0,004	0,005	32.000	130	0,004	0,005	32.000	120	0,005	0,004
0,3	5	29.000	100	0,004	0,005	29.000	100	0,004	0,005	29.000	95	0,005	0,004
0,4	0,8	50.000	900	0,01	0,02	50.000	900	0,01	0,02	50.000	850	0,01	0,02
0,4	1	50.000	900	0,01	0,02	50.000	900	0,01	0,02	50.000	850	0,01	0,02
0,4	1,5	50.000	800	0,01	0,02	50.000	800	0,01	0,02	50.000	760	0,01	0,02
0,4	2	50.000	700	0,01	0,02	50.000	700	0,01	0,02	50.000	660	0,01	0,02
0,4	2,5	45.000	550	0,008	0,015	45.000	550	0,008	0,015	45.000	520	0,008	0,015
0,4	3	43.000	500	0,005	0,01	43.000	500	0,005	0,01	43.000	470	0,005	0,01
0,4	3,5	40.000	420	0,005	0,01	40.000	420	0,005	0,01	40.000	400	0,005	0,01
0,4	4	36.000	370	0,005	0,005	36.000	370	0,005	0,005	36.000	350	0,005	0,005
0,4	4,5	32.000	290	0,004	0,005	32.000	290	0,004	0,005	32.000	270	0,004	0,005
0,4	5	32.000	280	0,004	0,005	32.000	280	0,004	0,005	32.000	260	0,004	0,005
0,4	5,5	30.000	230	0,004	0,005	30.000	230	0,004	0,005	30.000	210	0,004	0,005
0,4	6	30.000	200	0,004	0,005	30.000	200	0,004	0,005	30.000	190	0,004	0,005
0,5	1	50.000	1.100	0,015	0,03	50.000	1.100	0,015	0,03	50.000	1.050	0,015	0,03
0,5	1,5	50.000	1.100	0,015	0,03	50.000	1.100	0,015	0,03	50.000	1.050	0,015	0,03
0,5	2	50.000	1.000	0,015	0,03	50.000	1.000	0,015	0,03	50.000	950	0,015	0,03
0,5	2,5	50.000	1.000	0,015	0,03	50.000	1.000	0,015	0,03	50.000	950	0,015	0,03
0,5	3	48.000	900	0,01	0,02	48.000	900	0,01	0,02	48.000	850	0,01	0,02
0,5	3,5	45.000	700	0,01	0,02	45.000	700	0,01	0,02	45.000	650	0,01	0,02
0,5	4	43.000	600	0,01	0,01	43.000	600	0,01	0,01	43.000	570	0,01	0,01
0,5	4,5	38.000	500	0,01	0,01	38.000	500	0,01	0,01	38.000	470	0,01	0,01
0,5	5	30.000	400	0,005	0,01	30.000	400	0,005	0,01	30.000	380	0,005	0,01
0,5	5,5	28.000	300	0,004	0,005	28.000	300	0,004	0,005	28.000	280	0,004	0,005
0,5	6	26.000	250	0,004	0,005	26.000	250	0,004	0,005	26.000	230	0,004	0,005
0,5	7	24.000	200	0,004	0,005	24.000	200	0,004	0,005	24.000	190	0,004	0,005
0,5	8	22.000	160	0,004	0,005	22.000	160	0,004	0,005	22.000	150	0,004	0,005
0,5	9	20.000	120	0,004	0,005	20.000	120	0,004	0,005	20.000	110	0,004	0,005
0,5	10	20.000	100	0,004	0,005	20.000	100	0,004	0,005	20.000	95	0,004	0,005
0,6	1,2	50.000	1.350	0,03	0,05	50.000	1.350	0,03	0,05	50.000	1.200	0,03	0,05
0,6	2	50.000	1.300	0,03	0,05	50.000	1.300	0,03	0,05	50.000	1.200	0,03	0,05
0,6	2,5	50.000	1.200	0,03	0,05	50.000	1.200	0,03	0,05	50.000	1.100	0,03	0,05
0,6	3	50.000	1.200	0,02	0,03	50.000	1.200	0,02	0,03	50.000	1.100	0,02	0,03
0,6	3,5	45.000	1.000	0,02	0,03	45.000	1.000	0,02	0,03	45.000	950	0,02	0,03
0,6	4	40.000	900	0,01	0,02	40.000	900	0,01	0,02	40.000	850	0,01	0,02
0,6	4,5	34.000	780	0,01	0,02	34.000	780	0,01	0,02	34.000	740	0,01	0,02
0,6	5	30.000	680	0,01	0,02	30.000	680	0,01	0,02	30.000	640	0,01	0,02
0,6	5,5	28.000	650	0,01	0,02	28.000	650	0,01	0,02	28.000	610	0,01	0,02
0,6	6	26.000	600	0,01	0,02	26.000	600	0,01	0,02	26.000	570	0,01	0,02
0,6	6,5	24.000	550	0,01	0,01	24.000	550	0,01	0,01	24.000	520	0,01	0,01
0,6	7	23.000	450	0,01	0,01	23.000	450	0,01	0,01	23.000	420	0,01	0,01
0,6	7,5	23.000	400	0,01	0,01	23.000	400	0,01	0,01	23.000	380	0,01	0,01
0,6	8	20.000	320	0,005	0,01	20.000	320	0,005	0,01	20.000	300	0,005	0,01
0,6	8,5	20.000	300	0,005	0,01	20.000	300	0,005	0,01	20.000	280	0,005	0,01
0,6	9	20.000	280	0,005	0,01	20.000	280	0,005	0,01	20.000	260	0,005	0,01
0,6	9,5	20.000	240	0,005	0,008	20.000	240	0,005	0,008	20.000	220	0,005	0,008
0,6	10	20.000	200	0,005	0,008	20.000	200	0,005	0,008	20.000	190	0,005	0,008
0,6	11	18.000	150	0,005	0,008	18.000	150	0,005	0,008	18.000	140	0,005	0,008
0,6	12	18.000	120	0,005	0,005	18.000	120	0,005	0,005	18.000	110	0,005	0,005
0,8	2	50.000	2.000	0,04	0,08	50.000	2.000	0,04	0,08	50.000	1.900	0,04	0,08
0,8	3	48.000	1.600	0,04	0,08	48.000	1.600	0,04	0,08	48.000	1.500	0,04	0,08
0,8	4	40.000	1.200	0,04	0,08	40.000	1.200	0,04	0,08	40.000	1.100	0,04	0,08
0,8	5	34.000	950	0,03	0,05	34.000	950	0,03	0,05	34.000	900	0,03	0,05
0,8	6	30.000	800	0,03	0,05	30.000	800	0,03	0,05	30.000	760	0,03	0,05
0,8	7	25.000	600	0,01	0,02	25.000	600	0,01	0,02	25.000	570	0,01	0,02
0,8	8	23.000	450	0,005	0,01	23.000	450	0,005	0,01	23.000	420	0,005	0,01
0,8	10	18.000	320	0,005	0,008	18.000	320	0,005	0,008	18.000	300	0,005	0,008
0,8	12	17.000	250	0,005	0,005	17.000	250	0,005	0,005	17.000	230	0,005	0,005
1	2	50.000	3.700	0,05	0,1	50.000	3.700	0,05	0,1	50.000	3.700	0,05	0,1
1	3	45.000	3.200	0,05	0,1	45.000	3.200	0,05	0,1	45.000	3.000	0,05	0,1
1	4	40.000	3.000	0,05	0,1	40.000	3.000	0,05	0,1	40.000	2.850	0,05	0,1
1	5	36.000	2.300	0,05	0,1	36.000	2.300	0,05	0,1	36.000	2.100	0,05	0,1
1	6	30.000	2.000	0,05	0,1	30,000	2.000	0,05	0,1	30,000	1,900	0,05	0,1

WXS-LN-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



		C≤0,2% - GG SS400 ■ S55C ■ FC250 (~ 750N/mm²)				~ 30 HRC 35NCD16 ■ 40CMD8				30~38 HRC 35NCD16			
		120 (m/min)				110 (m/min)				100 (m/min)			
Ø	l1 (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
1	7	27,000	1,700	0,05	0,1	27,000	1,700	0,05	0,1	27,000	1,600	0,05	0,1
1	8	26.000	1.600	0,05	0,1	26.000	1.600	0,05	0,1	26.000	1.500	0,05	0,1
1	9	24.000	1.200	0,03	0,05	24.000	1.200	0,03	0,05	24.000	1.100	0,03	0,05
1	10	22.000	1.100	0,01	0,02	22.000	1.100	0,01	0,02	22.000	1.000	0,01	0,02
1	12	20.000	800	0,01	0,01	20.000	800	0,01	0,01	20.000	760	0,01	0,01
1	14	18.000	600	0,005	0,01	18.000	600	0,005	0,01	18.000	570	0,005	0,01
1	16	16.000	420	0,005	0,01	16.000	420	0,005	0,01	16.000	400	0,005	0,01
1	18	14.000	320	0,005	0,005	14.000	320	0,005	0,005	14.000	300	0,005	0,005
1	20	13.000	300	0,005	0,005	13.000	300	0,005	0,005	13.000	285	0,005	0,005
1	22	12.000	200	0,005	0,005	12.000	200	0,005	0,005	12.000	190	0,005	0,005
1,2	2,4	50.000	3.800	0,06	0,12	50.000	3.800	0,06	0,12	50.000	3.600	0,06	0,12
1,2	4	40.000	3.000	0,06	0,12	40.000	3.000	0,06	0,12	40.000	2.850	0,06	0,12
1,2	6	32.000	2.100	0,06	0,12	32.000	2.100	0,06	0,12	32.000	2.000	0,06	0,12
1,2	8	25.000	1.700	0,06	0,12	25.000	1.700	0,06	0,12	25.000	1.600	0,06	0,12
1,2	10	20.000	1.200	0,05	0,1	20.000	1.200	0,05	0,1	20.000	1.100	0,05	0,1
1,2	12	19.000	900	0,03	0,05	19.000	900	0,03	0,05	19.000	850	0,03	0,05
1,2	14	18.000	650	0,03	0,05	18.000	650	0,03	0,05	18.000	610	0,03	0,05
1,2	16	16.000	450	0,02	0,05	16.000	450	0,02	0,05	16.000	420	0,02	0,05
1,2	18	16.000	350	0,005	0,005	16.000	350	0,005	0,005	16.000	330	0,005	0,005
1,2	20	14.000	320	0,005	0,005	14.000	320	0,005	0,005	14.000	300	0,005	0,005
1,4	8	25.000	1.700	0,07	0,14	25.000	1.700	0,07	0,14	25.000	1.600	0,07	0,14
1,4	12	19.000	1.000	0,03	0,07	19.000	1.000	0,03	0,07	19.000	950	0,03	0,07
1,4	16	14.000	500	0,02	0,05	14.000	500	0,02	0,05	14.000	470	0,02	0,05
1,5	3	50.000	4.800	0,075	0,15	50.000	4.800	0,075	0,15	50.000	4.800	0,075	0,15
1,5	4	40.000	3.900	0,075	0,15	40.000	3.900	0,075	0,15	40.000	3.700	0,075	0,15
1,5	6	30.000	2.900	0,075	0,15	30.000	2.900	0,075	0,15	30.000	2.700	0,075	0,15
1,5	8	24.000	2.300	0,075	0,15	24.000	2.300	0,075	0,15	24.000	2.100	0,075	0,15
1,5	10	24.000	2.000	0,075	0,15	24.000	2.000	0,075	0,15	24.000	1.900	0,075	0,15
1,5	12	21.000	1.400	0,075	0,1	21.000	1.400	0,075	0,1	21.000	1.300	0,075	0,1
1,5	14	18.000	1.200	0,05	0,1	18.000	1.200	0,05	0,1	18.000	1.100	0,05	0,1
1,5	16	16.000	800	0,05	0,1	16.000	800	0,05	0,1	16.000	760	0,05	0,1
1,5	18	14.000	500	0,03	0,05	14.000	500	0,03	0,05	14.000	470	0,03	0,05
1,5	20	13.000	360	0,02	0,05	13.000	360	0,02	0,05	13.000	340	0,02	0,05
1,5	22	13.000	320	0,02	0,05	13.000	320	0,02	0,05	13.000	300	0,02	0,05
1,5	30	12.000	200	0,005	0,01	12.000	200	0,005	0,01	12.000	190	0,005	0,01
1,6	8	24.000	3.000	0,08	0,16	24.000	3.000	0,08	0,16	24.000	2.800	0,08	0,16
1,6	12	21.000	1.800	0,05	0,1	21.000	1.800	0,05	0,1	21.000	1.700	0,05	0,1
1,6	16	16.000	800	0,05	0,1	16.000	800	0,05	0,1	16.000	760	0,05	0,1
1,6	20	13.000	380	0,03	0,05	13.000	380	0,03	0,05	13.000	360	0,03	0,05
1,8	8	21.000	3.000	0,09	0,27	21.000	3.000	0,09	0,27	21.000	2.800	0,09	0,27
1,8	12	18.000	1.800	0,09	0,18	18.000	1.800	0,09	0,18	18.000	1.700	0,09	0,18
1,8	16	16.000	900	0,05	0,12	16.000	900	0,05	0,12	16.000	850	0,05	0,12
1,8	20	12.000	380	0,04	0,05	12.000	380	0,04	0,05	12.000	360	0,04	0,05
2	4	50.000	5.600	0,1	0,2	50.000	5.600	0,1	0,2	50.000	5.600	0,1	0,2
2	6	36.000	3.000	0,1	0,2	36.000	3.000	0,1	0,2	36.000	2.800	0,1	0,2
2	8	25.000	2.600	0,1	0,2	25.000	2.600	0,1	0,2	25.000	2.400	0,1	0,2
2	10	20.000	2.400	0,1	0,2	20.000	2.400	0,1	0,2	20.000	2.200	0,1	0,2
2	12	16.000	2.000	0,1	0,2	16.000	2.000	0,1	0,2	16.000	1.900	0,1	0,2
2	14	15.000	1.800	0,1	0,2	15.000	1.800	0,1	0,2	15.000	1.700	0,1	0,2
2	16	14.000	1.700	0,1	0,1	14.000	1.700	0,1	0,1	14.000	1.600	0,1	0,1
2	18	13.000	1.600	0,1	0,1	13.000	1.600	0,1	0,1	13.000	1.500	0,1	0,1
2	20	12.000	1.200	0,05	0,1	12.000	1.200	0,05	0,1	12.000	1.100	0,05	0,1
2	22	10.000	1.000	0,05	0,1	10.000	1.000	0,05	0,1	10.000	950	0,05	0,1
2	25	10.000	800	0,03	0,05	10.000	800	0,03	0,05	10.000	760	0,03	0,05
2	30	10.000	500	0,02	0,05	10.000	500	0,02	0,05	10.000	470	0,02	0,05
2	35	8.000	250	0,02	0,03	8.000	250	0,02	0,03	8.000	230	0,02	0,03
2	40	7.000	150	0,02	0,03	7.000	150	0,02	0,03	7.000	140	0,02	0,03
2,5	10	20.000	3.300	0,1	0,2	20.000	3.300	0,1	0,2	20.000	3.100	0,1	0,2
2,5	15	17.000	2.800	0,1	0,2	17.000	2.800	0,1	0,2	17.000	2.600	0,1	0,2
2,5	20	15.000	1.800	0,1	0,2	15.000	1.800	0,1	0,2	15.000	1.700	0,1	0,2
2,5	25	12.000	1.000	0,03	0,05	12.000	1.000	0,03	0,05	12.000	950	0,03	0,05
2,5	30	10.000	800	0,03	0,05	10.000	800	0,03	0,05	10.000	760	0,03	0,05
2,5	35	8.000	500	0,02	0,03	8.000	500	0,02	0,03	8.000	470	0,02	0,03
3	6	41.500	6.200	0,15	0,3	41.500	6.200	0,15	0,3	41.500	6.200	0,15	0,3
3	8	30.000	4.500	0,15	0,3	30.000	4.500	0,15	0,3	30.000	4.200	0,15	0,3
3	10	25.000	3.800	0,15	0,3	25.000	3.800	0,15	0,3	25.000	3.600	0,15	0,3
3	12	20.000	3.000	0,15	0,3	20.000	3.000	0,15	0,3	20.000	2.800	0,15	0,3
3	14	18.000	2.700	0,15	0,3	18.000	2.700	0,15	0,3	18.000	2.500	0,15	0,3
3	15	16.000	2.400	0,1	0,3	16.000	2.400	0,1	0,3	16.000	2.200	0,1	0,3
3	16	16.000	2.000	0,1	0,2	16.000	2.000	0,1	0,2	16.000	1.900	0,1	0,2
3	20	14.000	1.800	0,1	0,2	14.000	1.800	0,1	0,2	14.000	1.700	0,1	0,2
3	25	12.000	1.200	0,05	0,1	12.000	1.200	0,05	0,1	12.000	1.100	0,05	0,1
3	30	10.000	800	0,03	0,05	10.000	800	0,03	0,05	10.000	760	0,03	0,05
3	35	8.000	600	0,02	0,05	8.000	600	0,02	0,05	8.000	570	0,02	0,05
3	40	7.000	500	0,02	0,03	7.000	500	0,02	0,03	7.000	470	0,02	0,03
3,5	15	18.000	3.000	0,1	0,3	18.000	3.000	0,1	0,3	18.000	2.800	0,1	0,3
3,5	20	16.000	2.700	0,1	0,2	16.000	2.700	0,1	0,2	16.000	2.500	0,1	0,2
3,5	25	12.000	2.000	0,1	0,1	12.000	2.000	0,1	0,1	12.000	1.900	0,1	0,1
3,5	30	10.000	1.600	0,05	0,1	10.000	1.600	0,05	0,1	10.000	1.500	0,05	0,1
3,5	35	10.000	1.000	0,05	0,05	10.000	1.000	0,05	0,05	10.000	950	0,05	0,05
3,5	40	8.000	800	0,05	0,05	8.000	800	0,05	0,05	8.000	760	0,05	0,05
3,5	45	7.000	600	0,03	0,03	7.000	600	0,03	0,03	7.000	570	0,03	0,03
4	8	31.000	5.700	0,2	0,5	31.000	5.700	0,2	0,5	31.000	5.700	0,2	0,5
4	10	25.000	4.500	0,2	0,5	25.000	4.500	0,2	0,5	25.000	4.200	0,2	0,5
4	12	20,000	3,600	0,2	0,5	20,000	3,600	0,2	0,5	20,000	3,400	0,2	0,5

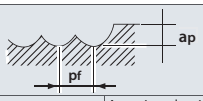
WXS-LN-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG SS400 ■ S55C ■ FC250 (~ 750N/mm²)				~ 30 HRC 35NCD16 ■ 40CMD8				30~38 HRC 35NCD16			
	120 (m/min)				110 (m/min)				100 (m/min)			
Ø	l1 (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
4	15	20.000	3.600	0,2	0,5	20,000	3,600	0,2	0,5	20,000	3,400	0,2	0,5
4	16	18.000	3.200	0,2	0,5	18.000	3.200	0,2	0,5	18.000	3.000	0,2	0,5
4	20	16.000	2.800	0,2	0,4	16.000	2.800	0,2	0,4	16.000	2.600	0,2	0,4
4	25	16.000	2.800	0,1	0,3	16.000	2.800	0,1	0,3	16.000	2.600	0,1	0,3
4	30	14.000	2.400	0,1	0,2	14.000	2.400	0,1	0,2	14.000	2.200	0,1	0,2
4	35	12.000	1.800	0,1	0,2	12.000	1.800	0,1	0,2	12.000	1.700	0,1	0,2
4	40	10.000	1.300	0,05	0,1	10.000	1.300	0,05	0,1	10.000	1.200	0,05	0,1
4	45	8.000	1.000	0,05	0,05	8.000	1.000	0,05	0,05	8.000	950	0,05	0,05
4	50	7.000	700	0,02	0,05	7.000	700	0,02	0,05	7.000	660	0,02	0,05
5	10	25.000	5.400	0,25	0,5	25.000	5.400	0,25	0,5	25.000	5.400	0,25	0,5
5	15	20.000	4.200	0,25	0,5	20.000	4.200	0,25	0,5	20.000	3.900	0,25	0,5
5	20	16.000	3.500	0,25	0,5	16.000	3.500	0,25	0,5	16.000	3.300	0,25	0,5
5	25	15.000	3.200	0,2	0,3	15.000	3.200	0,2	0,3	15.000	3.000	0,2	0,3
5	30	14.000	2.500	0,1	0,3	14.000	2.500	0,1	0,3	14.000	2.300	0,1	0,3
5	35	12.000	1.600	0,1	0,3	12.000	1.600	0,1	0,3	12.000	1.500	0,1	0,3
5	40	10.000	1.200	0,1	0,2	10.000	1.200	0,1	0,2	10.000	1.100	0,1	0,2
5	45	9.000	900	0,1	0,1	9.000	900	0,1	0,1	9.000	850	0,1	0,1
5	50	8.000	800	0,1	0,1	8.000	800	0,1	0,1	8.000	760	0,1	0,1
6	12	20.000	5.200	0,3	0,5	20.000	5.200	0,3	0,5	20.000	5.200	0,3	0,5
6	20	16.000	4.200	0,3	0,5	16.000	4.200	0,3	0,5	16.000	3.900	0,3	0,5
6	25	12.000	3.200	0,3	0,5	12.000	3.200	0,3	0,5	12.000	3.000	0,3	0,5
6	30	10.000	2.600	0,3	0,5	10.000	2.600	0,3	0,5	10.000	2.400	0,3	0,5
6	35	9.000	2.300	0,2	0,4	9.000	2.300	0,2	0,4	9.000	2.100	0,2	0,4
6	40	9.000	2.000	0,2	0,3	9.000	2.000	0,2	0,3	9.000	1.900	0,2	0,3
6	45	8.000	1.800	0,2	0,3	8.000	1.800	0,2	0,3	8.000	1.700	0,2	0,3
6	50	7.000	1.600	0,2	0,3	7.000	1.600	0,2	0,3	7.000	1.500	0,2	0,3

Max cutting depth



Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.
* Modified parameters

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio. sceglieteli di alta qualità. dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
* Parameto modificato

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausreichenden Brandschutz sicher.
1. Die Schnittdaten sind ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen..
* Modifizierten Parameters

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables. les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée
* Paramètres modifiés

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling.
*Modificerede parametre

Atención. Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo
*Parámetros modificados

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling
*Modifierade parametrar

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.
*Измененные параметры

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.
* Modifie edilmiş parametreler

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.
* Zmodyfikowane parametry

WXS-LN-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



		38 ~ 45 HRC Sus304 ■ SKD ■ NAK80 ■ HPM50				45 ~ 55 HRC				55 ~ 60 HRC			
		120 (m/min)				110 (m/min)				100 (m/min)			
Ø	L1 (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
0,1	0,3	50.000	70	0,003	0,003	50.000	60	0,003	0,003	-	-	-	-
0,1	0,5	50.000	50	0,003	0,003	50.000	40	0,003	0,003	-	-	-	-
0,2	0,5	50.000	380	0,005	0,005	50.000	260	0,005	0,005	50.000	200	0,004	0,005
0,2	0,75	50.000	340	0,005	0,005	50.000	230	0,005	0,005	50.000	180	0,004	0,005
0,2	1	50.000	340	0,005	0,005	50.000	230	0,005	0,005	50.000	180	0,004	0,005
0,2	1,25	47.000	300	0,005	0,005	47.000	210	0,005	0,005	43.000	150	0,004	0,005
0,2	1,5	45.000	280	0,005	0,005	45.000	190	0,005	0,005	41.000	130	0,004	0,005
0,2	1,75	42.000	240	0,005	0,005	42.000	170	0,005	0,005	38.000	120	0,004	0,005
0,2	2	38.000	210	0,005	0,005	37.000	140	0,005	0,005	33.000	100	0,004	0,005
0,2	2,5	32.000	160	0,004	0,005	31.000	100	0,004	0,005	31.000	80	0,004	0,005
0,2	3	32.000	140	0,004	0,005	31.000	90	0,004	0,005	31.000	70	0,004	0,005
0,3	0,6	50.000	570	0,005	0,01	50.000	390	0,005	0,01	50.000	300	0,005	0,01
0,3	1	50.000	570	0,005	0,01	50.000	390	0,005	0,01	50.000	310	0,005	0,01
0,3	1,25	50.000	570	0,005	0,01	50.000	380	0,005	0,01	50.000	300	0,005	0,01
0,3	1,5	50.000	570	0,005	0,01	50.000	370	0,005	0,01	50.000	290	0,005	0,01
0,3	1,75	47.000	480	0,005	0,01	47.000	310	0,005	0,01	43.000	220	0,005	0,01
0,3	2	45.000	450	0,005	0,005	45.000	290	0,005	0,005	41.000	210	0,004	0,005
0,3	2,25	45.000	380	0,005	0,005	45.000	250	0,005	0,005	41.000	180	0,004	0,005
0,3	2,5	40.000	280	0,005	0,005	40.000	190	0,005	0,005	36.000	130	0,004	0,005
0,3	3	38.000	230	0,005	0,005	37.000	150	0,005	0,005	33.000	100	0,004	0,005
0,3	3,5	34.000	190	0,004	0,005	33.000	120	0,004	0,005	33.000	95	0,004	0,005
0,3	4	32.000	140	0,004	0,005	31.000	90	0,004	0,005	31.000	70	0,004	0,005
0,3	4,5	32.000	120	0,004	0,005	31.000	80	0,004	0,005	31.000	60	0,004	0,005
0,3	5	29.000	95	0,004	0,005	28.000	60	0,004	0,005	28.000	50	0,004	0,005
0,4	0,8	50.000	850	0,01	0,02	50.000	590	0,01	0,02	50.000	470	0,008	0,015
0,4	1	50.000	850	0,01	0,02	50.000	550	0,01	0,02	50.000	440	0,008	0,015
0,4	1,5	50.000	760	0,01	0,02	50.000	520	0,01	0,02	50.000	410	0,008	0,015
0,4	2	50.000	660	0,01	0,02	50.000	460	0,01	0,02	45.000	330	0,008	0,015
0,4	2,5	45.000	520	0,008	0,015	45.000	360	0,008	0,015	41.000	260	0,008	0,015
0,4	3	43.000	470	0,005	0,01	43.000	320	0,005	0,01	38.000	220	0,005	0,01
0,4	3,5	40.000	400	0,005	0,01	40.000	280	0,005	0,01	36.000	200	0,005	0,01
0,4	4	36.000	350	0,005	0,005	35.000	230	0,005	0,005	31.000	160	0,005	0,005
0,4	4,5	32.000	270	0,004	0,005	31.000	180	0,004	0,005	28.000	130	0,004	0,005
0,4	5	32.000	260	0,004	0,005	31.000	170	0,004	0,005	28.000	120	0,004	0,005
0,4	5,5	30.000	210	0,004	0,005	29.000	140	0,004	0,005	26.000	100	0,004	0,005
0,4	6	30.000	190	0,004	0,005	29.000	120	0,004	0,005	26.000	100	0,004	0,005
0,5	1	50.000	1.050	0,015	0,03	50.000	730	0,015	0,03	50.000	580	0,01	0,02
0,5	1,5	50.000	1.050	0,015	0,03	50.000	700	0,015	0,03	50.000	560	0,01	0,02
0,5	2	50.000	950	0,015	0,03	50.000	650	0,015	0,03	50.000	520	0,01	0,02
0,5	2,5	50.000	950	0,015	0,03	50.000	600	0,015	0,03	45.000	430	0,01	0,02
0,5	3	48.000	850	0,01	0,02	48.000	550	0,01	0,02	43.000	390	0,01	0,02
0,5	3,5	45.000	650	0,01	0,02	45.000	450	0,01	0,02	40.000	320	0,01	0,02
0,5	4	43.000	570	0,01	0,01	43.000	390	0,01	0,01	38.000	270	0,01	0,01
0,5	4,5	38.000	470	0,01	0,01	38.000	320	0,01	0,01	34.000	220	0,01	0,01
0,5	5	30.000	380	0,005	0,01	29.000	250	0,005	0,01	26.000	170	0,005	0,01
0,5	5,5	28.000	280	0,004	0,005	27.000	180	0,004	0,005	24.000	120	0,004	0,005
0,5	6	26.000	230	0,004	0,005	25.000	150	0,004	0,005	22.000	100	0,004	0,005
0,5	7	24.000	190	0,004	0,005	23.000	130	0,004	0,005	20.000	100	0,004	0,005
0,5	8	22.000	150	0,004	0,005	21.000	110	0,004	0,005	20.000	100	0,004	0,005
0,5	9	20.000	110	0,004	0,005	21.000	100	0,004	0,005	20.000	90	0,004	0,005
0,5	10	20.000	95	0,004	0,005	21.000	100	0,004	0,005	20.000	90	0,004	0,005
0,6	1,2	50.000	1.200	0,03	0,05	50.000	840	0,03	0,05	50.000	670	0,01	0,02
0,6	2	50.000	1.200	0,03	0,05	50.000	820	0,03	0,05	50.000	650	0,01	0,02
0,6	2,5	50.000	1.100	0,03	0,05	50.000	770	0,03	0,05	50.000	610	0,01	0,02
0,6	3	50.000	1.100	0,02	0,03	50.000	750	0,02	0,03	45.000	540	0,01	0,02
0,6	3,5	45.000	950	0,02	0,03	45.000	660	0,02	0,03	41.000	480	0,01	0,02
0,6	4	40.000	850	0,01	0,02	40.000	590	0,01	0,02	36.000	420	0,01	0,02
0,6	4,5	34.000	740	0,01	0,02	34.000	510	0,01	0,02	31.000	370	0,01	0,02
0,6	5	30.000	640	0,01	0,02	30.000	440	0,01	0,02	27.000	310	0,01	0,02
0,6	5,5	28.000	610	0,01	0,02	28.000	420	0,01	0,02	25.000	300	0,01	0,02
0,6	6	26.000	570	0,01	0,02	25.000	380	0,01	0,02	22.000	260	0,01	0,02
0,6	6,5	24.000	520	0,01	0,01	23.000	340	0,01	0,01	20.000	230	0,01	0,01
0,6	7	23.000	420	0,01	0,01	22.000	280	0,01	0,01	19.000	190	0,01	0,01
0,6	7,5	23.000	380	0,01	0,01	22.000	250	0,01	0,01	19.000	170	0,01	0,01
0,6	8	20.000	300	0,005	0,01	19.000	200	0,005	0,01	17.000	140	0,005	0,01
0,6	8,5	20.000	280	0,005	0,01	19.000	180	0,005	0,01	17.000	130	0,005	0,01
0,6	9	20.000	260	0,005	0,01	19.000	170	0,005	0,01	17.000	120	0,005	0,01
0,6	9,5	20.000	220	0,005	0,008	19.000	140	0,005	0,008	17.000	110	0,005	0,008
0,6	10	20.000	190	0,005	0,008	19.000	120	0,005	0,008	17.000	100	0,005	0,008
0,6	11	18.000	140	0,005	0,008	17.000	90	0,005	0,008	17.000	80	0,005	0,008
0,6	12	18.000	110	0,005	0,005	17.000	80	0,005	0,005	17.000	70	0,004	0,005
0,8	2	50.000	1.900	0,04	0,08	50.000	1.600	0,04	0,08	50.000	1.200	0,015	0,03
0,8	3	48.000	1.500	0,04	0,08	48.000	1.100	0,04	0,08	45.000	820	0,015	0,03
0,8	4	40.000	1.100	0,04	0,08	40.000	1.000	0,04	0,08	38.000	760	0,015	0,03
0,8	5	34.000	900	0,03	0,05	34.000	800	0,03	0,05	31.000	580	0,015	0,03
0,8	6	30.000	760	0,03	0,05	30.000	650	0,03	0,05	27.000	460	0,015	0,03
0,8	7	25.000	570	0,01	0,02	25.000	450	0,01	0,02	22.000	310	0,01	0,02
0,8	8	23.000	420	0,005	0,01	23.000	300	0,005	0,01	20.000	200	0,005	0,01
0,8	10	18.000	300	0,005	0,008	17.000	200	0,005	0,008	17.000	170	0,005	0,008
0,8	12	17.000	230	0,005	0,005	16.000	160	0,005	0,005	16.000	110	0,005	0,005
1	2	50.000	3.700	0,05	0,1	50.000	3.700	0,05	0,1	50.000	3.000	0,02	0,05
1	3	45.000	3.000	0,05	0,1	45.000	2.400	0,05	0,1	45.000	1.900	0,02	0,05
1	4	40.000	2.850	0,05	0,1	40.000	2.200	0,05	0,1	40.000	1.700	0,02	0,05
1	5	36.000	2.100	0,05	0,1	36.000	1.600	0,05	0,1	36.000	1.200	0,02	0,05
1	6	30.000	1.900	0,05	0,1	30,000	1.500	0,05	0,1	30,000	1.200	0,02	0,05

BACK

WXS-LN-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



		38 ~ 45 HRC Sus304 ■ SKD ■ NAK80 ■ HPM50				45 ~ 55 HRC				55 ~ 60 HRC			
		120 (m/min)				110 (m/min)				100 (m/min)			
Ø	L1 (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
1	7	27,000	1,600	0,05	0,1	27,000	1.300	0,05	0,1	27,000	1,000	0,02	0,05
1	8	26.000	1.500	0,05	0,1	26.000	1.200	0,05	0,1	26.000	960	0,02	0,05
1	9	24.000	1.100	0,03	0,05	24.000	880	0,03	0,05	24.000	700	0,02	0,05
1	10	22.000	1.000	0,01	0,02	21.000	760	0,01	0,02	18.000	520	0,01	0,02
1	12	20.000	760	0,01	0,01	19.000	570	0,01	0,01	17.000	400	0,01	0,01
1	14	18.000	570	0,005	0,01	17.000	430	0,005	0,01	15.000	300	0,005	0,01
1	16	16.000	400	0,005	0,01	15.000	300	0,005	0,01	13.000	200	0,005	0,01
1	18	14.000	300	0,005	0,005	13.000	220	0,005	0,005	12.000	160	0,004	0,005
1	20	13.000	285	0,005	0,005	12.000	180	0,005	0,005	12.000	140	0,004	0,005
1	22	12.000	190	0,005	0,005	12.000	110	0,005	0,005	12.000	100	0,004	0,005
1,2	2,4	50.000	3.600	0,06	0,12	50.000	3.600	0,06	0,12	50.000	3.000	0,02	0,05
1,2	4	40.000	2.850	0,06	0,12	40.000	2.300	0,06	0,12	38.000	1.750	0,02	0,05
1,2	6	32.000	2.000	0,06	0,12	32.000	1.600	0,06	0,12	30.000	1.200	0,02	0,05
1,2	8	25.000	1.600	0,06	0,12	25.000	1.200	0,06	0,12	25.000	960	0,02	0,05
1,2	10	20.000	1.100	0,05	0,1	18.000	800	0,05	0,1	16.000	560	0,02	0,05
1,2	12	17.000	850	0,03	0,05	16.000	640	0,03	0,05	14.000	440	0,02	0,05
1,2	14	16.000	610	0,03	0,05	15.000	450	0,03	0,05	13.000	310	0,02	0,05
1,2	16	15.000	420	0,02	0,05	14.000	300	0,02	0,05	12.000	200	0,02	0,05
1,2	18	15.000	330	0,005	0,005	14.000	200	0,005	0,005	12.000	130	0,004	0,005
1,2	20	13.000	300	0,005	0,005	12.000	180	0,005	0,005	10.000	120	0,004	0,005
1,4	8	25.000	1.600	0,07	0,14	25.000	1.200	0,07	0,14	25.000	960	0,03	0,07
1,4	12	19.000	950	0,03	0,07	19.000	760	0,03	0,07	17.000	540	0,03	0,07
1,4	16	13.000	470	0,02	0,05	12.000	340	0,02	0,05	10.000	220	0,02	0,05
1,5	3	50.000	4.800	0,075	0,15	50.000	4.800	0,075	0,15	50.000	3.900	0,03	0,06
1,5	4	40.000	3.700	0,075	0,15	40.000	2.900	0,075	0,15	38.000	2.200	0,03	0,06
1,5	6	30.000	2.700	0,075	0,15	30.000	2.200	0,075	0,15	27.000	1.500	0,03	0,06
1,5	8	24.000	2.100	0,075	0,15	24.000	1.700	0,075	0,15	21.000	1.100	0,03	0,06
1,5	10	24.000	1.900	0,075	0,15	24.000	1.500	0,075	0,15	21.000	1.000	0,03	0,06
1,5	12	21.000	1.300	0,075	0,1	21.000	1.000	0,075	0,1	18.000	680	0,03	0,06
1,5	14	17.000	1.100	0,05	0,1	17.000	900	0,05	0,1	15.000	630	0,03	0,06
1,5	16	14.000	760	0,05	0,1	13.000	560	0,05	0,1	10.000	340	0,03	0,05
1,5	18	13.000	470	0,03	0,05	12.000	350	0,03	0,05	10.000	230	0,03	0,05
1,5	20	12.000	340	0,02	0,05	11.000	240	0,02	0,05	9.000	150	0,02	0,05
1,5	22	12.000	300	0,02	0,05	11.000	220	0,02	0,05	9.000	140	0,02	0,05
1,5	30	11.000	190	0,005	0,01	10.000	120	0,005	0,01	9.000	90	0,005	0,01
1,6	8	24.000	2.800	0,08	0,16	23.000	2.100	0,08	0,16	20.000	1.400	0,03	0,08
1,6	12	21.000	1.700	0,05	0,1	20.000	1.380	0,05	0,1	18.000	990	0,03	0,08
1,6	16	14.000	760	0,05	0,1	13.000	600	0,05	0,1	11.000	400	0,03	0,08
1,6	20	12.000	360	0,03	0,05	11.000	280	0,03	0,05	10.000	200	0,03	0,05
1,8	8	24.000	2.800	0,09	0,27	23.000	2.280	0,09	0,27	20.000	1.500	0,03	0,08
1,8	12	21.000	1.700	0,09	0,18	20.000	1.380	0,09	0,18	18.000	990	0,03	0,08
1,8	16	14.000	850	0,05	0,12	13.000	670	0,05	0,12	11.000	450	0,03	0,08
1,8	20	11.000	360	0,04	0,05	10.000	280	0,04	0,05	9.000	200	0,03	0,05
2	4	50.000	5.600	0,1	0,2	47.000	5.300	0,1	0,2	40.000	3.600	0,05	0,1
2	6	36.000	2.800	0,1	0,2	35.000	2.700	0,1	0,2	30.000	1.800	0,05	0,1
2	8	25.000	2.400	0,1	0,2	24.000	2.300	0,1	0,2	20.000	1.500	0,05	0,1
2	10	20.000	2.200	0,1	0,2	19.000	2.000	0,1	0,2	17.000	1.400	0,05	0,1
2	12	16.000	1.900	0,1	0,2	15.000	1.700	0,1	0,2	13.000	1.100	0,05	0,1
2	14	15.000	1.700	0,1	0,2	14.000	1.500	0,1	0,2	12.000	1.000	0,05	0,1
2	16	14.000	1.600	0,1	0,1	13.000	1.400	0,1	0,1	11.000	950	0,05	0,1
2	18	13.000	1.500	0,1	0,1	12.000	1.200	0,1	0,1	10.000	800	0,05	0,1
2	20	11.000	1.100	0,05	0,1	10.000	890	0,05	0,1	9.000	640	0,05	0,1
2	22	9.000	950	0,05	0,1	9.000	860	0,05	0,1	7.500	570	0,05	0,1
2	25	9.000	760	0,03	0,05	9.000	680	0,03	0,05	7.500	450	0,03	0,05
2	30	9.000	470	0,02	0,05	9.000	360	0,02	0,05	7.500	240	0,02	0,05
2	35	7.500	230	0,02	0,03	7.000	130	0,02	0,03	6.000	100	0,02	0,03
2	40	6.000	140	0,02	0,03	6.000	100	0,02	0,03	6.000	90	0,02	0,03
2,5	10	20.000	3.100	0,1	0,2	19.000	2.900	0,1	0,2	16.000	1.900	0,05	0,1
2,5	15	17.000	2.600	0,1	0,2	16.000	2.400	0,1	0,2	14.000	1.600	0,05	0,1
2,5	20	15.000	1.700	0,1	0,2	14.000	1.600	0,1	0,2	12.000	1.000	0,05	0,1
2,5	25	11.000	950	0,03	0,05	10.000	830	0,03	0,05	9.000	590	0,03	0,05
2,5	30	9.000	760	0,03	0,05	8.000	650	0,03	0,05	7.000	450	0,03	0,05
2,5	35	7.500	470	0,02	0,03	7.000	430	0,02	0,03	6.000	290	0,02	0,03
3	6	41.500	6.200	0,15	0,3	32.000	4.800	0,15	0,3	26.500	3.300	0,06	0,15
3	8	30.000	4.200	0,15	0,3	25.000	3.500	0,15	0,3	22.000	2.400	0,06	0,15
3	10	25.000	3.600	0,15	0,3	20.000	2.800	0,15	0,3	18.000	2.000	0,06	0,15
3	12	20.000	2.800	0,15	0,3	18.000	2.500	0,15	0,3	16.000	1.700	0,06	0,15
3	14	18.000	2.500	0,15	0,3	15.000	2.000	0,15	0,3	13.000	1.300	0,06	0,15
3	15	16.000	2.200	0,1	0,3	13.000	1.800	0,1	0,3	11.000	1.200	0,06	0,15
3	16	16.000	1.900	0,1	0,2	13.000	1.500	0,1	0,2	11.000	1.100	0,06	0,15
3	20	14.000	1.700	0,1	0,2	11.000	1.600	0,1	0,2	10.000	1.000	0,06	0,15
3	25	12.000	1.100	0,05	0,1	9.000	820	0,05	0,1	8.000	580	0,05	0,1
3	30	9.000	760	0,03	0,05	7.000	590	0,03	0,05	6.000	400	0,03	0,05
3	35	7.500	570	0,02	0,05	6.000	460	0,02	0,05	5.000	300	0,02	0,05
3	40	6.500	470	0,02	0,03	5.000	360	0,02	0,03	4.000	230	0,02	0,03
3,5	15	18.000	2.800	0,1	0,3	14.000	2.000	0,1	0,3	12.000	1.300	0,07	0,15
3,5	20	16.000	2.500	0,1	0,2	12.000	1.800	0,1	0,2	10.000	1.200	0,07	0,15
3,5	25	12.000	1.900	0,1	0,1	9.000	1.300	0,1	0,1	8.000	920	0,07	0,15
3,5	30	10.000	1.500	0,05	0,1	8.000	1.100	0,05	0,1	7.000	770	0,05	0,1
3,5	35	9.000	950	0,05	0,05	7.000	700	0,05	0,05	5.000	400	0,05	0,05
3,5	40	7.500	760	0,05	0,05	6.000	580	0,05	0,05	4.000	300	0,05	0,05
3,5	45	6.500	570	0,03	0,03	5.000	420	0,03	0,03	4.000	260	0,03	0,03
4	8	31.000	5.700	0,2	0,5	24.000	4.400	0,2	0,5	20.000	3.200	0,08	0,2
4	10	25.000	4.200	0,2	0,5	20.000	3.300	0,2	0,5	18.000	2.300	0,08	0,2
4	12	20.000	3.400	0,2	0,5	17.000	2.900	0,2	0,5	14.000	1.900	0,08	0,2

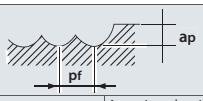
WXS-LN-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	38 ~ 45 HRC Sus304 ■ SKD ■ NAK80 ■ HPM50				45 ~ 55 HRC				55 ~ 60 HRC			
	120 (m/min)				110 (m/min)				100 (m/min)			
Ø	l1 (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	ap (mm)	pf (mm)
4	15	20.000	3.400	0,2	0,5	16.000	2.700	0,2	0,5	12.000	1.600	0,08	0,2
4	16	18.000	3.000	0,2	0,5	15.000	2.500	0,2	0,5	10.000	1.300	0,08	0,2
4	20	16.000	2.600	0,2	0,4	14.000	2.300	0,2	0,4	8.000	1.000	0,08	0,2
4	25	16.000	2.600	0,1	0,3	13.000	2.200	0,1	0,3	6.000	810	0,08	0,2
4	30	14.000	2.200	0,1	0,2	12.000	1.900	0,1	0,2	5.000	630	0,08	0,2
4	35	12.000	1.700	0,1	0,2	9.000	1.200	0,1	0,2	4.000	420	0,08	0,2
4	40	9.000	1.200	0,05	0,1	8.000	1.000	0,05	0,1	4.000	400	0,05	0,1
4	45	7.500	950	0,05	0,05	7.000	890	0,05	0,05	3.600	360	0,05	0,05
4	50	6.500	660	0,02	0,05	6.000	600	0,02	0,05	3.600	280	0,02	0,05
5	10	25.000	5.400	0,25	0,5	19.000	4.000	0,25	0,5	16.000	2.800	0,1	0,25
5	15	20.000	3.900	0,25	0,5	17.000	3.300	0,25	0,5	13.000	2.000	0,1	0,25
5	20	16.000	3.300	0,25	0,5	13.000	2.700	0,25	0,5	8.000	1.300	0,1	0,25
5	25	15.000	3.000	0,2	0,3	12.000	2.400	0,2	0,3	6.000	960	0,1	0,25
5	30	14.000	2.300	0,1	0,3	11.000	1.800	0,1	0,3	4.000	520	0,1	0,25
5	35	12.000	1.500	0,1	0,3	10.000	1.100	0,1	0,3	3.200	280	0,1	0,25
5	40	10.000	1.100	0,1	0,2	9.000	990	0,1	0,2	3.000	260	0,1	0,2
5	45	9.000	850	0,1	0,1	8.000	660	0,1	0,1	3.000	200	0,1	0,1
5	50	7.500	760	0,1	0,1	7.000	610	0,1	0,1	2.800	190	0,1	0,1
6	12	20.000	5.200	0,3	0,5	16.000	3.400	0,3	0,5	13.500	2.500	0,1	0,2
6	20	16.000	3.900	0,3	0,5	12.000	3.000	0,3	0,5	8.000	1.600	0,1	0,2
6	25	12.000	3.000	0,3	0,5	10.000	2.500	0,3	0,5	6.000	1.200	0,1	0,2
6	30	10.000	2.400	0,3	0,5	9.000	2.100	0,3	0,5	4.000	740	0,1	0,2
6	35	9.000	2.100	0,2	0,4	9.000	2.000	0,2	0,4	3.500	620	0,1	0,2
6	40	9.000	1.900	0,2	0,3	9.000	1.800	0,2	0,3	3.000	480	0,1	0,2
6	45	8.000	1.700	0,2	0,3	8.000	1.600	0,2	0,3	2.800	440	0,1	0,2
6	50	7.000	1.500	0,2	0,3	7.000	1.400	0,2	0,3	2.500	400	0,1	0,2

Max cutting depth



Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.
* Modified parameters

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio. sceglieteli di alta qualità. dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
* Parameto modificato

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausreichenden Brandschutz sicher.
1. Die Schnittdaten sind ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen..
* Modifizierten Parameters

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables. les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée
* Paramètres modifiés

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling.
*Modificerede parametre

Atención. Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo
*Parámetros modificados

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling
*Modifierade parametrar

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.
*Измененные параметры

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.
* Modifie edilmiş parametreler

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.
* Zmodyfikowane parametry

BACK

CARBIDE

CARBIDE

WXS-CPR

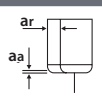
Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Düzenli frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Frezowanie standardowe



D	α°	l1	Max. cutting depth ap						ae	Work Material: ~45 HRC SKD61 ■ NAK55 ■NAK80 ■ HPMI		Work Material: 45~55 HRC SKD61 ■ STAVAX ■ HPM38		Work Material: 55~65 HRC	
										ap = 120%	ae = 120%	ap = 100%	ae = 120%	ap = 60%	ae = 80%
			R0,05	R0,1	R0,2	R0,3	R0,5	R1		S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
0,2	0°	0,5	0,005	-	-	-	-	-	0,06	40.000	560	36.000	460	31.500	380
0,2	0°	1	0,004	-	-	-	-	-	0,06	38.000	530	34.000	435	30.000	355
0,2	1°	1	0,005	-	-	-	-	-	0,06	40.000	560	40.000	510	35.000	420
0,2	1°	2	0,004	-	-	-	-	-	0,054	40.000	505	36.000	415	31.500	340
0,2	3°	1	0,005	-	-	-	-	-	0,06	40.000	560	40.000	510	35.000	420
0,2	3°	2	0,005	-	-	-	-	-	0,06	40.000	560	36.000	460	31.500	380
0,2	5°	1	0,005	-	-	-	-	-	0,06	40.000	560	40.000	510	35.000	420
0,2	5°	2	0,005	-	-	-	-	-	0,06	40.000	560	36.000	460	31.500	380
0,3	0°	1	0,005	-	-	-	-	-	0,09	36.500	710	32.500	545	30.500	475
0,3	0°	2	0,002	-	-	-	-	-	0,061	30.000	510	27.000	385	25.500	340
0,3	1°	2	0,005	-	-	-	-	-	0,09	38.500	720	34.500	545	32.500	480
0,3	1°	3	0,004	-	-	-	-	-	0,081	36.500	645	32.500	490	30.500	430
0,3	3°	2	0,005	-	-	-	-	-	0,09	38.500	765	34.500	580	32.500	510
0,3	3°	3	0,005	-	-	-	-	-	0,09	36.500	720	32.500	545	30.500	475
0,3	5°	2	0,005	-	-	-	-	-	0,09	38.500	765	32.500	580	32.500	510
0,3	5°	3	0,005	-	-	-	-	-	0,09	38.500	720	32.500	545	30.500	475
0,4	0°	1	0,007	-	-	-	-	-	0,12	29.500	750	26.000	580	24.500	470
0,4	0°	1,5	0,007	-	-	-	-	-	0,12	29.500	750	26.000	580	24.500	470
0,4	0°	2	0,005	0,008	-	-	-	-	0,102	27.500	675	24.500	520	23.000	420
0,4	0°	3	0,002	0,003	-	-	-	-	0,075	23.000	470	20.000	360	19.000	290
0,4	0°	4	0,001	0,002	-	-	-	-	0,036	21.000	380	18.500	290	17.500	235
0,4	1°	3	0,006	0,009	-	-	-	-	0,12	31.000	755	27.000	580	25.500	470
0,4	1°	4	0,005	0,007	-	-	-	-	0,108	29.500	680	26.000	520	24.500	420
0,4	3°	3	0,007	0,01	-	-	-	-	0,12	31.000	795	27.000	610	25.500	495
0,4	3°	4	0,007	0,01	-	-	-	-	0,12	29.500	750	26.000	580	24.500	470
0,4	5°	3	0,007	0,01	-	-	-	-	0,12	31.000	795	27.000	610	25.500	495
0,4	5°	4	0,007	0,01	-	-	-	-	0,12	29.500	750	26.000	580	24.500	470
0,5	0°	1	0,007	0,01	-	-	-	-	0,15	29.000	820	26.000	670	26.000	620
0,5	0°	2	0,007	0,01	-	-	-	-	0,15	29.000	820	26.000	670	26.000	620
0,5	0°	3	0,003	0,005	-	-	-	-	0,105	27.500	695	24.500	570	24.500	525
0,5	0°	4	0,002	0,003	-	-	-	-	0,09	22.500	510	20.000	420	20.000	385
0,5	0°	5	0,001	0,002	-	-	-	-	0,045	21.000	415	18.500	340	18.500	315
0,5	0°	6	0,001	0,001	-	-	-	-	0,03	19.500	360	17.000	295	17.000	270
0,5	1°	3	0,007	0,01	-	-	-	-	0,15	32.500	910	28.500	745	28.500	690
0,5	1°	5	0,005	0,007	-	-	-	-	0,15	29.000	735	26.000	605	26.000	560
0,5	1°	8	0,003	0,004	-	-	-	-	0,052	25.500	560	22.500	460	22.500	425
0,5	1°	10	0,002	0,003	-	-	-	-	0,022	22.500	475	20.000	390	20.000	360
0,5	1°	12	0,001	0,002	-	-	-	-	0,016	21.000	415	18.500	410	15.500	315
0,5	3°	3	0,007	0,01	-	-	-	-	0,15	32.500	910	28.500	745	28.500	690
0,5	3°	5	0,007	0,01	-	-	-	-	0,15	29.000	820	26.000	670	26.000	620
0,5	3°	8	0,006	0,009	-	-	-	-	0,067	25.500	710	22.500	580	22.500	535
0,5	3°	10	0,001	0,002	-	-	-	-	0,037	22.500	575	20.000	470	20.000	435
0,5	3°	12	0,001	0,002	-	-	-	-	0,031	21.000	475	18.500	390	18.500	360
0,5	5°	3	0,007	0,01	-	-	-	-	0,15	32.500	910	28.500	745	28.500	690
0,5	5°	5	0,007	0,01	-	-	-	-	0,15	29.000	820	26.000	670	26.000	620
0,5	5°	8	0,006	0,009	-	-	-	-	0,142	25.500	710	22.500	580	22.500	535
0,5	5°	10	0,005	0,007	-	-	-	-	0,112	22.500	635	20.000	520	20.000	480
0,6	0°	2	-	0,012	-	-	-	-	0,18	29.000	980	26.000	805	21.500	620
0,6	0°	4	-	0,005	-	-	-	-	0,122	24.500	695	21.500	570	18.000	440
0,6	0°	6	-	0,002	-	-	-	-	0,054	21.000	495	18.500	410	15.500	315
0,8	0°	4	-	0,016	0,032	-	-	-	0,24	23.500	1.000	20.500	800	17.000	565
0,8	0°	6	-	0,007	0,014	-	-	-	0,24	19.500	700	16.500	555	14.000	390
0,8	0°	8	-	-	0,008	-	-	-	0,216	18.000	570	15.500	450	13.000	320
0,8	1°	5	0,01	0,02	0,04	-	-	-	0,24	26.500	1.150	26.500	1.050	26.500	905
0,8	1°	8	0,007	0,015	0,03	-	-	-	0,24	25.000	1.000	25.000	940	25.000	795
0,8	3°	5	0,01	0,02	0,04	-	-	-	0,24	26.500	1.200	26.500	1.100	26.500	940
0,8	3°	8	0,01	0,02	0,04	-	-	-	0,24	25.000	1.100	25.000	1.050	25.000	880
1	0°	4	0,01	0,02	0,04	0,05	-	-	0,3	23.000	1.300	20.000	1.050	17.000	755
1	0°	6	0,005	0,01	0,02	0,025	-	-	0,21	20.500	1.050	18.000	835	15.500	605
1	0°	8	0,003	0,006	0,012	0,015	-	-	0,18	18.000	780	15.500	650	13.500	470
1	0°	10	0,002	0,004	0,008	0,01	-	-	0,09	16.500	650	14.500	530	12.500	380
1	0°	12	0,001	0,003	0,006	0,007	-	-	0,06	15.500	565	13.500	460	11.500	335
1	0°	16	-	-	0,004	-	-	-	0,03	12.000	400	10.500	325	9.150	235
1	0°	20	-	-	0,003	-	-	-	0,024	10.000	285	800	230	7.650	170
1	1°	6	0,01	0,02	0,04	0,05	-	-	0,3	25.500	1.250	22.500	1.150	19.000	840
1	1°	10	0,007	0,015	0,03	0,037	-	-	0,27	23.000	1.150	20.000	940	17.000	680
1	1°	15	0,005	0,01	0,02	0,025	-	-	0,12	20.500	915	18.000	740	15.500	540
1	1°	20	0,003	0,006	0,012	0,015	-	-	0,045	18.000	750	15.500	610	13.500	440
1	1°	25	0,002	0,002	0,004	0,005	-	-	0,03	16.500	650	14.500	530	12.500	380
1	1°	30	0,002	0,001	0,002	0,003	-	-	0,021	12.500	465	11.000	380	9.550	275
1	1°	35	0,002	0,001	0,002	0,002	-	-	0,015	11.500	385	10.000	315	8.600	230
1	3°	6	0,01	0,02	0,04	0,05	-	-	0,3	25.500	1.450	22.500	1.150	19.000	840
1	3°	10	0,01	0,02	0,04	0,05	-	-	0,3	23.000	1.300	20.000	1.050	17.000	755
1,2	0°	6	-	-	0,032	0,04	-	-	0,36	19.000	1.200	18.000	1.050	14.500	735
1,2	0°	8	-	-	0,018	0,022	-	-	0,252	17.000	965	16.000	845	13.000	580
1,2	0°	10	-	-	0,011	0,014	-	-	0,216	16.000	850	15.000	740	12.000	510
1,5	0°	6	-	-	0,04	0,06	-	-	0,45	17.000	1.450	16.000	1.250	13.500	880
1,5	0°	8	-	-	0,026	0,039	-	-	0,382	16.000	1.250	15.500	1.100	12.500	750
1,5	0°	10	-	-	0,018	0,027	-	-	0,292	14.500	1.000	13.500	900	11.000	625
1,5	0°	12	-	-	0,012	0,018	-	-	0,27	13.500	900	12.500	790	10.500	550
1,5	0°	16	-	-	0,007	0,01	-	-	0,112	9.150	525	8.650	460	7.150	320
1,5	1°	10	-	0,019	0,039	0,049	-	-	0,45	18.500	1.500	17.500	1.300	14.500	905
1,5	1°	15	-	0,015	0,03	0,037	-	-	0,405	17.000	1.150	16.000	1.000	13.500	705
1,5	1°	20	-	0,01	0,02	0,025	-	-	0,27	15.500	1.100	15.000	970	12.000	675
1,5	1°	25	-	0,008	0,008	0,01	-	-	0,135	14.500	950	13.500	835	11.500	580
1,5	1°	30	-	0,003	0,006	0,007	-	-	0,067	13.500	840	12.500	740	10.500	515
1,5	3°	10	-	0,02	0,04	0,05	-	-	0,45	18.500	1.550	17.500	1.350	14.500	940

WXS-CPR

Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Düzenli frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Frezowanie standardowe



D	α°	l1	ap						ae	Work Material: ~45 HRC SKD61 ■ NAK55 ■ NAK80 ■ HPMI		Work Material: 45~55 HRC SKD61 ■ STAVAX ■ HPM38		Work Material: 55~65 HRC	
										ap = 120%	ae = 120%	ap = 100%	ae = 120%	ap = 60%	ae = 80%
			R0,05	R0,1	R0,2	R0,3	R0,5	R1		S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
1,5	3°	15	-	0,02	0,04	0,05	-	-	0,45	17.000	1.450	16.000	1.250	13.500	880
2	0°	8	-	0,02	0,04	0,06	0,075	-	0,6	13.000	1.450	13.000	1.300	11.500	1.000
2	0°	10	-	0,016	0,032	0,048	0,06	-	0,51	12.000	1.300	12.000	1.150	11.000	905
2	0°	12	-	0,01	0,02	0,03	0,037	-	0,42	11.500	1.150	11.500	1.050	10.000	810
2	0°	16	-	0,006	0,012	0,018	0,022	-	0,36	10.000	900	10.000	800	8.900	630
2	0°	20	-	0,004	0,008	0,012	0,015	-	0,18	9.300	730	9.300	650	8.250	510
2	0°	25	-	0,002	0,004	0,007	0,009	-	0,12	8.600	625	8.600	560	7.650	440
2	1°	15	-	0,018	0,036	0,046	0,064	-	0,6	13.500	1.450	13.500	1.300	12.000	1,000
2	1°	20	-	0,015	0,03	0,037	0,052	-	0,54	13.000	1.300	13.000	1.150	11.500	910
2	1°	25	-	0,012	0,024	0,03	0,04	-	0,39	12.000	1.150	12.000	1.050	11.000	810
2	1°	30	-	0,01	0,02	0,025	0,03	-	0,24	11.500	1.050	11.500	920	10.000	720
2	1°	40	-	0,006	0,012	0,015	0,02	-	0,09	10.000	840	10.000	750	8.900	590
2	1°	50	-	0,005	0,01	0,01	0,01	-	0,06	9.300	730	9.300	650	8.250	510
2	3°	15	-	0,02	0,04	0,06	0,075	-	0,6	13.500	1.500	13.500	1.350	12.000	1,050
2	3°	20	-	0,02	0,04	0,06	0,075	-	0,6	13.000	1.450	13..000	1.300	11.500	1.000
2,5	0°	10	-	-	0,04	-	0,075	-	0,75	11.500	1.600	10.500	1.200	9.150	1.000
2,5	0°	20	-	-	0,02	-	0,037	-	0,45	8.900	1.000	8.000	740	7.150	630
2,5	0°	30	-	-	0,006	-	0,011	-	0,15	7.650	700	6.850	520	6.100	445
3	0°	8	-	-	0,04	-	-	-	0,9	9.550	1.500	8.600	1.150	7.650	825
3	0°	12	-	-	0,04	0,06	0,075	-	0,9	9.550	1.500	8.600	1.150	7.650	825
3	0°	16	-	-	0,028	0,042	0,052	-	0,72	8.500	1.200	7.650	910	6.800	660
3	0°	20	-	-	0,018	0,027	0,033	-	0,612	7.400	985	6.700	750	5.950	545
3	0°	25	-	-	0,012	0,018	0,022	-	0,54	7.100	830	6.400	635	5.700	460
3	0°	30	-	-	0,008	0,012	0,015	-	0,27	6.900	755	6.200	575	5.500	420
3	0°	35	-	-	0,006	0,009	0,011	-	0,18	6.350	655	5.700	500	5.100	365
3	1°	15	-	-	0,04	-	0,075	-	0,9	10.500	1.650	9.550	1.250	8.500	920
3	1°	20	-	-	0,039	-	0,07	-	0,9	9.950	1.500	8.950	1.150	7.950	830
3	1°	30	-	-	0,03	-	0,05	-	0,81	9.550	1.350	8.600	1.000	7.650	745
3	1°	40	-	-	0,022	-	0,04	-	0,522	8.900	1.150	8.000	890	7.150	650
3	1°	50	-	-	0,016	-	0,03	-	0,297	8.050	980	7.250	750	6.450	545
3	1°	60	-	-	0,012	-	0,02	-	0,135	7.400	870	6.700	660	5.950	480
4	0°	16	-	-	0,04	0,06	0,075	0,12	1,2	7.150	2.050	6.450	1.550	5.000	965
4	0°	20	-	-	0,032	0,048	0,06	0,2	1,02	6.750	1.950	6.100	1.450	4.750	910
4	0°	25	-	-	0,02	0,03	0,037	0,06	0,816	5.950	1.700	5.350	1.300	4.150	800
4	0°	30	-	-	0,014	0,021	0,026	0,04	0,744	5.550	1.600	5.000	1.200	3.900	750
4	0°	40	-	-	0,008	0,012	0,015	0,024	0,36	5.150	1.500	4.650	1.100	3.600	695
4	0°	50	-	-	0,004	0,007	0,009	0,014	0,216	4.550	1.300	4.100	980	3.150	610

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering ocuur depending on the machine shape, cutting amount, rigidity of the machine or work holding condition etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommanded during the approach of a Z cut.
6. Adjust the speed, feed rate, and the depth of the cut according to the shape of the work, rigidity of the machine, and how the work is held.

1. Utilizzare su macchine e mandrini ad alta precisione e rigidezza.
2. È consigliabile utilizzare lubrificazione minimale (MQL).
3. La presente tabella si riferisce a parametri approssimativi di operazioni di contornatura. Eventuali vibrazioni o rumore anomalo di taglio dipendono dal tipo di macchina, rigidezza e profondità di passata. Regolare velocità, avanzamento e passata di taglio.
4. Ridurre velocità, avanzamento e passata di taglio se si innesano vibrazioni.
5. Si consiglia di iniziare la lavorazione con un'entrata in rampa.
6. Regolare velocità e l'avanzamento in funzione del tipo di lavorazione e del tipo di macchina.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Wir empfehlen Luft-oder Minimalen Külhung für die Bearbeitung von Kohlenstoffstahl und Gehärteter Stahl.
3. Die oben angegeben Schnittwerte sind für Konturoperationen mit optimalen Aufmaßen. Bei abnormalen Geräuschen, Vibrationen die sich durch die Kontur ergeben, zu hohes Aufmaß, Stabilität der Aufspannung, Werkstück oder der Maschine müssen die Drehzahlen und der Vorschub oder Aufmaß entsprechend korrigiert werden.
4. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
5. Axiale Z-Zustellung sollte im Helixverfahren oder im Ramping durchgeführt werden.
6. Schnittdaten und Zustelltiefe bitte nach gewünschter Oberflächengüte, Stabilität der Maschine und Stabilität der Werkstückklemmung auswählen bzw. verändern.

1. Utilisez une machine et un attachement rigide et précis.
2. Pour l'usinage des arciers au carbone et des aciers trempé, l'utilisation de MQL (Pulvérisation) est recommandée.
3. Les conditions ci-dessus sont des standards approx. pour des opérations de contournage avec un charge machine réduite. En cas des bruits d'usinage anormoux et/ou des vibrations dépendants de la géométrie de la pièce, conditions de coupe, rigidité de la machine et/ou clamage, etc. …, ajustez la vitesse, l'avance et/ou la profondeur de coupe.
4. Ajustez la vitesse, avance et/ou profondeur de coupe en cas de vibrations et/ou bruits d'usinage anormaux.
5. Le fraisage hélicoïdale ou fraisage en pente est recommandé pendant l'approche en Z.
6. Ajustez la vitesse, avance et profondeur de coupe en concordance avec la forme de la pièce, la rigidité de la machine et les conditions de clamage.

1. Anvend stabil maskine og værktøjsholder
2. Minimalsmøring tilrådes ved bearbejdning af legeret stål eller hærdet stål
3. Ovenstående skæredata viser en ca. standard for sidefræsning ved lav maskinbelastning. Hvis unormale lyde eller vibrationer opstår, justér omdrejninger, tilspænding og skæredybde under hensyntagen til maskine og værktøjsholder samt bearbejdningskontur.
4. Justér hastighed, tilspænding og skæredybde hvis der opstår vibrationer eller unormale lyde
5. Ved bearbejdning i z aksen benyttes rampe fræsning eller cirkel interpolation
6. Justér hastighed, tilspænding og skæredybde i forhold til emnets udformning maskinens stabilitet og emnets opspænding

1. Use maquina y portaherramientas rigidos y precisos
2. En mecanizado de aceros al carbono o de acero endurecido, recomendable MQL (cantidad mínima lubrificación / niebla refrigerante).
3. Lo anterior muestra condiciones estándar aproximadas para la operación de contorneado con baja carga de maquina
4. Ajuste la velocidad, el avance y la profundidad de pasada en caso de vibraciones o sonidos anormales
5. Recomendable rampa o interpolación helicoidal en la aproximación a un avance en Z
6. Ajustar la velocidad, el avance y la profundidad de corte de acuerdo a la forma de mecanizado, la rigidez de la máquina y la fijación de pieza

1. Använd en stabil maskin och verktygshållare
2. Minimalsmörjning rekommenderas vid bearbetning i legerat och härdat stål
3. Ovanstående skärdata visar en ungefärlig standard för valsfräsning Vid låg maskinbelastning. Om onormala ljud och vibrationer uppstår, justera varvtal och matning
4. Justera varvtal, matning och skärdjup om vibrationer eller onormala ljud uppstår
5. Vid bearbetning i Z axeln använd rampning eller cikulärinterpolering
6. Justera varvtal, matning och skärdjup i förhållande till applikationens utformning och maskinens stabilitet

1. Используйте жесткие и точные станки и фрезерные патроны.
2. При обработке углеродистой стали или закаленной стали, рекомендуется использовать MQL (масляный туман).
3. Упомянутые выше условия показывают приблизительные параметры для контурного фрезерования с низкими нагрузками резания.
4. Отрегулируйте обороты шпинделя, подачу и глубину резания при появлении вибраций и ненормального звука при резании.
5. Для врезания по оси Z используйте фрезерование по спирали или наклонное врезание.
6. Установите обороты шпинделя, подачу и глубину резания в соответствии с формой детали, жесткости станка и условий закрепления детали.

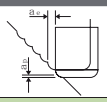
1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Karbon çeliklerini be sertleştirilmiş çelikleri işlediğinizde, MQL kullanmanız önerilmektedir
3. Yukarıda ki değerler düşük yüklü kontür işleme operasyonu için (kenar işleme) yaklaşık standart değerlerdir. İşleme şekline, tezgahın rijitliğine, parçanın bağlanmasına, kesme derinliğine v.b. bağlı olarak anormal kesme sesleri, titreşim veya tırlama oluşuyorsa lütfen kesme hızını, ilerlemeyi ve kesme derinliğini ayarlayın
4. Vibrasyon, anormal taşlama sesi ve tirlama oluyor ise kesme hızını ve ilerlemeyi ayarlayın
5. Z kesme yaklaşımı esnasında helisel veya rampa frezeleme önerilir
6. Kesme hızınızı, ilerlemenizi, ve kesme derinliğinizi operasyonunuza uygun olarak ayarlayınız, bu etkenler; işleme şekli, tezgahın rijitlik durumu, takım tutucunu rijitliği ve bağlama kuvvetleri

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Do obróbki stali węglowych lub stali hartowanej, jest zalecane użycie MQL (minimalna ilość smarowania / mgły olejowej
3. Powyższy warunek pokazuje przybliżony standard pracy kształtowej (frezowanie boczne) z niskim obciążeniem roboczym. Przy nieprawidłowych odgłosy, wibracjach, które mogą wystąpić wystąpić w zależności od kształtu obróbki, głębokość=bokości i szerokości frezowania, sztywność maszyny lub stanu oprawek mocujących, etc., Należy dostosować prędkość, posuw i głębokość skrawania.
4. Dostosuj prędkość, posuw i głębokość skrawania jeśli pojawią się, wibracje lub nieprawidłowe dźwięki przy obróbce.
5. Polecana jest obróbka helikalna lub ramping przy pracy w osi Z
6. Dostosuj prędkość, posuw i głębokość skrawania do własnych warunków pracy, takich jak kształt, sztywność maszyny, sztywność uchwytu narzędzia i sił skrawania

BACK

WXS-CPR

Side milling (Contour line finish) - Schlichten - Finatura in contornatura - Contournage (Finition) - Kenar frezeleme
Sidefræsning (sletfræsning) - Valsfräsning fin - Contorneado - Боковое фрезерование - Frezowanie boczne

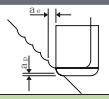
D	α°	l1	Max. cutting depth 							Work Material					
										~45 HRC SKD61 ■ NAK55 ■ NAK80 ■ HPMI		45~55 HRC SKD61 ■ STAVAX ■ HPM38		55~65 HRC	
			ap						ae	ap = 120%	ae = 120%	ap = 100%	ae = 120%	ap = 60%	ae = 80%
			R0,05	R0,1	R0,2	R0,3	R0,5	R1		S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
0,2	0°	0,5	0,005	-	-	-	-	-	0,006	50.000	700	43.000	550	43.000	515
0,2	0°	1	0,005	-	-	-	-	-	0,006	47.500	665	40.500	520	40.500	485
0,2	1°	1	0,005	-	-	-	-	-	0,006	50.000	700	47.500	610	47.500	575
0,2	1°	2	0,005	-	-	-	-	-	0,005	50.000	630	43.000	495	43.000	465
0,2	3°	1	0,005	-	-	-	-	-	0,006	50.000	700	47.500	610	47.500	575
0,2	3°	2	0,005	-	-	-	-	-	0,006	50.000	700	43.000	550	43.000	515
0,2	5°	1	0,005	-	-	-	-	-	0,006	50.000	700	47.500	610	47.500	575
0,2	5°	2	0,005	-	-	-	-	-	0,006	50.000	700	43.000	550	43.000	515
0,3	0°	1	0,005	-	-	-	-	-	0,009	43.000	850	38.000	690	33.500	520
0,3	0°	2	0,004	-	-	-	-	-	0,008	36.000	605	32.000	485	28.000	370
0,3	1°	2	0,005	-	-	-	-	-	0,009	46.000	855	40.500	690	35.500	525
0,3	1°	3	0,005	-	-	-	-	-	0,009	43.000	765	38.000	620	33.500	470
0,3	3°	2	0,005	-	-	-	-	-	0,009	46.000	910	40.500	735	35.500	555
0,3	3°	3	0,005	-	-	-	-	-	0,009	43.000	850	38.000	690	33.500	520
0,3	5°	2	0,005	-	-	-	-	-	0,009	46.000	910	40.500	735	35.500	555
0,3	5°	3	0,005	-	-	-	-	-	0,009	43.000	850	38.000	690	33.500	520
0,4	0°	1	0,006	-	-	-	-	-	0,012	39.500	1.000	32.000	775	28.500	550
0,4	0°	1,5	0,006	-	-	-	-	-	0,012	39.500	1.000	32.000	775	28.500	550
0,4	0°	2	0,006	0,01	-	-	-	-	0,012	37.000	905	30.500	695	27.000	495
0,4	0°	3	0,004	0,007	-	-	-	-	0,008	30.500	630	25.500	480	22.500	340
0,4	0°	4	0,002	0,004	-	-	-	-	0,006	28.500	510	23.500	390	20.500	280
0,4	1°	3	0,006	0,01	-	-	-	-	0,012	41.500	1.000	34.000	775	30.000	550
0,4	1°	4	0,006	0,01	-	-	-	-	0,012	39.500	910	32.000	695	28.500	495
0,4	3°	3	0,006	0,01	-	-	-	-	0,012	41.500	1.050	34.000	815	30.000	580
0,4	3°	4	0,006	0,01	-	-	-	-	0,012	39.500	1.000	32.000	775	28.500	550
0,4	5°	3	0,006	0,01	-	-	-	-	0,012	41.500	1.050	34.000	815	30.000	580
0,4	5°	4	0,006	0,01	-	-	-	-	0,012	39.500	1.000	32.000	775	28.500	550
0,5	0°	1	0,006	0,01	-	-	-	-	0,015	34.500	965	28.500	775	24.000	580
0,5	0°	2	0,006	0,01	-	-	-	-	0,015	34.500	965	28.500	775	24.000	580
0,5	0°	3	0,006	0,01	-	-	-	-	0,013	32.500	820	27.000	660	22.500	490
0,5	0°	4	0,003	0,006	-	-	-	-	0,01	26.500	600	22.500	480	18.500	360
0,5	0°	5	0,002	0,004	-	-	-	-	0,007	25.000	490	20.500	390	17.500	290
0,5	0°	6	0,001	0,003	-	-	-	-	0,006	23.000	425	19.000	340	16.000	255
0,5	1°	3	0,006	0,01	-	-	-	-	0,015	38.000	1.050	32.000	860	26.500	640
0,5	1°	5	0,006	0,01	-	-	-	-	0,015	34.500	865	28.500	695	24.000	520
0,5	1°	8	0,004	0,007	-	-	-	-	0,01	30.000	660	25.000	530	21.000	395
0,5	1°	10	0,003	0,005	-	-	-	-	0,009	26.500	560	22.500	450	18.500	340
0,5	1°	12	0,002	0,004	-	-	-	-	0,006	25.000	490	20.500	390	17.500	290
0,5	3°	3	0,006	0,01	-	-	-	-	0,015	38.000	1.050	32.000	860	26.500	640
0,5	3°	5	0,006	0,01	-	-	-	-	0,015	34.500	965	28.500	775	24.000	580
0,5	3°	8	0,004	0,008	-	-	-	-	0,015	30.000	835	25.000	670	21.000	500
0,5	3°	10	0,003	0,005	-	-	-	-	0,012	26.500	675	22.500	540	18.500	400
0,5	3°	12	0,002	0,004	-	-	-	-	0,01	25.000	555	20.500	450	17.500	335
0,5	5°	3	0,006	0,01	-	-	-	-	0,015	38.000	1.050	32.000	860	26.500	640
0,5	5°	5	0,006	0,01	-	-	-	-	0,015	34.500	965	28.500	775	24.000	580
0,5	5°	8	0,006	0,01	-	-	-	-	0,015	30.000	835	25.000	670	21.000	500
0,5	5°	10	0,004	0,008	-	-	-	-	0,012	26.500	750	22.500	600	18.500	450
0,6	0°	2	-	0,012	-	-	-	-	0,018	31.000	1.050	26.500	850	24.000	690
0,6	0°	4	-	0,009	-	-	-	-	0,012	26.000	740	22.000	600	20.000	490
0,6	0°	6	-	0,004	-	-	-	-	0,009	22.500	530	19.000	430	17.000	350
0,8	0°	4	-	0,015	0,02	-	-	-	0,02	29.000	1.200	25.500	1.050	23.500	790
0,8	0°	6	-	0,012	0,016	-	-	-	0,014	23.500	850	21.000	720	19.500	550
0,8	0°	8	-	-	0,008	-	-	-	0,01	22.000	690	19.500	590	18.000	445
0,8	1°	5	0,006	0,015	0,02	-	-	-	0,02	26.500	1.150	26.500	1.100	26.500	905
0,8	1°	8	0,006	0,015	0,02	-	-	-	0,02	25.000	1.000	25.000	975	25.000	795
0,8	3°	5	0,006	0,015	0,02	-	-	-	0,02	26.500	1.200	26.500	1.150	26.500	940
0,8	3°	8	0,006	0,015	0,02	-	-	-	0,02	25.000	1.100	25.000	1.100	25.000	880
1	0°	4	0,006	0,015	0,02	0,03	-	-	0,03	27.000	1.500	24.500	1.250	22.500	995
1	0°	6	0,006	0,015	0,02	0,03	-	-	0,027	24.000	1.200	21.500	1.000	20.000	800
1	0°	8	0,003	0,009	0,012	0,018	-	-	0,021	21.000	950	19.000	790	17.500	620
1	0°	10	0,003	0,006	0,008	0,012	-	-	0,015	19.500	770	17.500	640	16.500	505
1	0°	12	0,003	0,004	0,006	0,009	-	-	0,013	18.000	670	16.000	560	15.000	440
1	0°	16	-	-	0,004	-	-	-	0,01	14.500	470	13.000	390	12.000	310
1	0°	20	-	-	0,003	-	-	-	0,009	12.000	340	11.000	280	10.000	220
1	1°	6	0,006	0,015	0,02	0,03	-	-	0,03	30.000	1.700	27.000	1.400	25.000	1.100
1	1°	10	0,006	0,015	0,02	0,03	-	-	0,03	27.000	1.350	24.500	1.150	22.500	895
1	1°	15	0,004	0,01	0,014	0,021	-	-	0,021	24.000	1.100	21.500	900	20.000	710
1	1°	20	0,003	0,007	0,01	0,015	-	-	0,018	21.000	890	19.000	740	17.500	580
1	1°	25	0,002	0,006	0,008	0,012	-	-	0,012	19.500	770	17.500	640	16.500	505
1	1°	30	0,002	0,003	0,004	0,006	-	-	0,009	15.000	550	13.500	460	12.500	360
1	1°	35	0,002	0,001	0,002	0,003	-	-	0,007	13.500	460	12.000	380	11.500	300
1	3°	6	0,006	0,015	0,02	0,03	-	-	0,3	30.000	1.700	27.000	1.400	25.000	1.100
1	3°	10	0,006	0,015	0,008	0,012	-	-	0,015	27.000	1.500	24.500	1.250	22.500	995
1,2	0°	6	-	-	0,016	0,024	-	-	0,036	22.500	1.450	21.000	1.250	19.000	960
1,2	0°	8	-	-	0,009	0,013	-	-	0,028	20.000	1.150	18.500	980	17.000	760
1,2	0°	10	-	-	0,005	0,008	-	-	0,021	18.500	1.000	17.500	860	16.000	670
1,5	0°	6	-	-	0,02	0,03	-	-	0,045	21.000	1.750	18.500	1.450	16.000	1.050
1,5	0°	8	-	-	0,02	0,03	-	-	0,045	20.000	1.500	17.500	1.250	15.500	910
1,5	0°	10	-	-	0,018	0,027	-	-	0,036	17.500	1.250	15.500	1.050	13.500	760
1,5	0°	12	-	-	0,012	0,018	-	-	0,031	16.500	1.100	14.500	910	12.500	670
1,5	0°	16	-	-	0,008	0,012	-	-	0,022	11.000	640	10.000	530	8.650	390
1,5	1°	10	-	0,015	0,02	0,03	-	-	0,045	22.500	1.800	20.000	1.500	17.500	1.100
1,5	1°	15	-	0,015	0,02	0,03	-	-	0,045	21.000	1.400	18.500	1.150	16.000	860
1,5	1°	20	-	0,012	0,016	0,024	-	-	0,036	19.000	1.300	17.000	1.100	15.000	820
1,5	1°	25	-	0,01	0,014	0,021	-	-	0,031	17.500	1.150	16.000	960	13.500	705
1,5	1°	30	-	0,007	0,01	0,015	-	-	0,027	16.500	1.050	14.500	850	12.500	625
1,5	3°	10	-	0,015	0,02	0,03	-	-	0,045	22.500	1.900	20.000	1.550	17.500	1.150

BACK

WXS-CPR

Side milling (Contour line finish) - Schlichten - Finatura in contornatura - Contournage (Finition) - Kenar frezeleme
Sidefræsning (sletfræsning) - Valsfräsning fin - Contorneado - Боковое фрезерование - Frezowanie konturowe

Max. cutting depth



D	α°	l1	ap						ae	Work Material: ~45 HRC SKD61 ■ NAK55 ■ NAK80 ■ HPMI		Work Material: 45~55 HRC SKD61 ■ STAVAX ■ HPM38		Work Material: 55~65 HRC	
			R0,05	R0,1	R0,2	R0,3	R0,5	R1		ap = 120% ae = 120% S (min⁻¹)	F (mm/min)	ap = 100% ae = 120% S (min⁻¹)	F (mm/min)	ap = 60% ae = 80% S (min⁻¹)	F (mm/min)
1,5	3°	15	-	0,015	0,008	0,012	-	-	0,045	21.000	1.750	18.500	1.450	16.000	1.050
2	0°	8	-	0,015	0,02	0,03	0,05	-	0,06	16.500	1.850	16.000	1.600	15.000	1.350
2	0°	10	-	0,015	0,02	0,03	0,05	-	0,06	15.500	1.650	15.500	1.450	14.500	1.200
2	0°	12	-	0,015	0,02	0,03	0,05	-	0,054	14.500	1.500	14.500	1.300	13.500	1.050
2	0°	16	-	0,009	0,012	0,018	0,03	-	0,042	13.000	1.150	12.500	1.000	12.000	830
2	0°	20	-	0,006	0,008	0,012	0,02	-	0,03	12.000	935	11.500	820	11.000	675
2	0°	25	-	0,004	0,006	0,009	0,015	-	0,027	11.000	800	11.000	700	10.000	580
2	1°	15	-	0,015	0,02	0,03	0,05	-	0,06	17.500	1.850	17.000	1.600	16.000	1.350
2	1°	20	-	0,015	0,02	0,03	0,05	-	0,06	16.500	1.650	16.000	1.450	15.000	1.200
2	1°	25	-	0,012	0,017	0,025	0,042	-	0,054	15.500	1.500	15.500	1.300	14.500	1.050
2	1°	30	-	0,012	0,016	0,024	0,04	-	0,048	14.500	1.300	14.500	1.150	13.500	950
2	1°	40	-	0,007	0,01	0,015	0,025	-	0,036	13.000	1.100	12.500	945	12.000	780
2	1°	50	-	0,006	0,008	0,012	0,02	-	0,024	12.000	935	11.500	820	11.000	675
2	3°	15	-	0,015	0,02	0,03	0,05	-	0,06	17.500	1.950	17.000	1.700	16.000	1.400
2	3°	20	-	0,015	0,008	0,012	0,003	-	0,06	16.500	1.850	16..000	1.600	15.000	1.350
2,5	0°	10	-	-	0,02	-	0,05	-	0,075	13.000	1.850	13.000	1.400	12.000	1.350
2,5	0°	20	-	-	0,012	-	0,03	-	0,052	10.000	1.150	10.000	885	9.450	830
2,5	0°	30	-	-	0,006	-	0,015	-	0,033	8.800	800	8.650	630	8.100	590
3	0°	8	-	-	0,02	-	-	-	0,08	12.000	2.000	11.000	1.400	10.000	1.100
3	0°	12	-	-	0,02	0,03	0,05	-	0,08	12.000	2.000	11.000	1.400	10.000	1.100
3	0°	16	-	-	0,02	0,03	0,05	-	0,08	10.500	1.600	9.600	1.150	9.000	875
3	0°	20	-	-	0,02	0,03	0,05	-	0,064	9.300	1.350	8.400	940	7.850	725
3	0°	25	-	-	0,012	0,018	0,03	-	0,048	8.900	1.100	8.050	795	7.550	610
3	0°	30	-	-	0,008	0,012	0,02	-	0,04	8.600	1.000	7.800	720	7.300	555
3	0°	35	-	-	0,006	0,009	0,015	-	0,036	7.950	880	7.200	630	6.750	480
3	1°	15	-	-	0,02	-	0,05	-	0,08	13.500	2.250	12.000	1.600	11.000	1.200
3	1°	20	-	-	0,02	-	0,05	-	0,08	12.500	2.000	11.500	1.450	10.500	1.100
3	1°	30	-	-	0,02	-	0,05	-	0,08	12.000	1.800	11.000	1.300	10.000	985
3	1°	40	-	-	0,018	-	0,045	-	0,064	11.000	1.550	10.000	1.100	9.450	860
3	1°	50	-	-	0,014	-	0,035	-	0,056	10.000	1.300	9.100	940	8.550	720
3	1°	60	-	-	0,01	-	0,025	-	0,048	9.300	1.150	8.400	830	7.850	640
4	0°	16	-	-	0,02	0,03	0,05	0,08	0,08	7.900	2.500	7.150	2.050	6.450	1.450
4	0°	20	-	-	0,02	0,03	0,05	0,08	0,08	7.450	2.400	6.750	1.950	6.100	1.350
4	0°	25	-	-	0,02	0,03	0,05	0,08	0,072	6.550	2.000	5.950	1.650	5.350	1.150
4	0°	30	-	-	0,014	0,021	0,035	0,056	0,056	6.100	1.650	5.550	1.350	5.000	955
4	0°	40	-	-	0,008	0,012	0,02	0,032	0,04	5.700	1.300	5.150	1.050	4.650	730
4	0°	50	-	-	0,006	0,009	0,015	0,024	0,036	5.000	960	4.450	785	4.100	550

1. Use a rigid and precise machine and holder.
2. When machining carbon steels or hardened steels, using MQL (Minimum Quantity Lubrication / mist coolant) is recommended.
3. The above condition shows an approximate standard for contouring operation (side milling) with a low machining load. If abnormal cutting sounds, vibration or chattering ocuur depending on the machine shape, cutting amount, rigidity of the machine or work holding condition etc., please adjust the speed, feed and the depth of cut.
4. Adjust the speed, feed rate, and depth of cut if chattering, vibration or abnormal grinding sounds occur.
5. Helical or ramp milling is recommanded during the approach of a Z cut.
6. Adjust the speed, feed rate, and the depth of the cut according to the shape of the work, rigidity of the machine, and how the work is held.

1. Utilizzare su macchine e mandrini ad alta precisione e rigidezza.
2. È consigliabile utilizzare lubrificazione minimale (MQL).
3. La presente tabella si riferisce a parametri approssimativi di operazioni di contornatura. Eventuali vibrazioni o rumore anomalo di taglio dipendono dal tipo di macchina, rigidezza e profondità di passata. Regolare velocità, avanzamento e passata di taglio.
4. Ridurre velocità, avanzamento e passata di taglio se si innesano vibrazioni.
5. Si consiglia di iniziare la lavorazione con un'entrata in rampa.
6. Regolare velocità e l'avanzamento in funzione del tipo di lavorazione e del tipo di macchina.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Wir empfehlen Luft-oder Minimalen Külhung für die Bearbeitung von Kohlenstoffstahl und Gehärteter Stahl.
3. Die oben angegeben Schnittwerte sind für Konturoperationen mit optimalen Aufmaßen. Bei abnormalen Geräuschen, Vibrationen die sich durch die Kontur ergeben, zu hohes Aufmaß, Stabilität der Aufspannung, Werkstück oder der Maschine müssen die Drehzahlen und der Vorschub oder Aufmaß entsprechend korrigiert werden.
4. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
5. Axiale Z-Zustellung sollte im Helixverfahren oder im Ramping durchgeführt werden.
6. Schnittdaten und Zustelltiefe bitte nach gewünschter Oberflächengüte, Stabilität der Maschine und Stabilität der Werkstückklemmung auswählen bzw. verändern.

1. Utilisez une machine et un attachement rigide et précis.
2. Pour l'usinage des arciers au carbone et des aciers trempé, l'utilisation de MQL (Pulvérisation) est recommandée.
3. Les conditions ci-dessus sont des standards approx. pour des opérations de contournage avec un charge machine réduite. En cas des bruits d'usinage anormoux et/ou des vibrations dépendants de la géométrie de la pièce, conditions de coupe, rigidité de la machine et/ou clamage, etc. …, ajustez la vitesse, l'avance et/ou la profondeur de coupe.
4. Ajustez la vitesse, avance et/ou profondeur de coupe en cas de vibrations et/ou bruits d'usinage anormaux.
5. Le fraisage hélicoïdale ou fraisage en pente est recommandé pendant l'approche en Z.
6. Ajustez la vitesse, avance et profondeur de coupe en concordance avec la forme de la pièce, la rigidité de la machine et les conditions de clamage.

1. Anvend stabil maskine og værktøjsholder
2. Minimalsmøring tilrådes ved bearbejdning af legeret stål eller hærdet stål
3. Ovenstående skæredata viser en ca. standard for sidefræsning ved lav maskinbelastning. Hvis unormale lyde eller vibrationer opstår, justér omdrejninger, tilspænding og skæredybde under hensyntagen til maskine og værktøjsholder samt bearbejdningskontur.
4. Justér hastighed, tilspænding og skæredybde hvis der opstår vibrationer eller unormale lyde
5. Ved bearbejdning i z aksen benyttes rampe fræsning eller cirkel interpolation
6. Justér hastighed, tilspænding og skæredybde i forhold til emnets udformning maskinens stabilitet og emnets opspænding

1. Use maquina y portaherramientas rigidos y precisos
2. En mecanizado de aceros al carbono o de acero endurecido, recomendable MQL (cantidad mínima lubrificación / niebla refrigerante).
3. Lo anterior muestra condiciones estándar aproximadas para la operación de contorneado con baja carga de maquina
4. Ajuste la velocidad, el avance y la profundidad de pasada en caso de vibraciones o sonidos anormales
5. Recomendable rampa o interpolación helicoidal en la aproximación a un avance en Z
6. Ajustar la velocidad, el avance y la profundidad de corte de acuerdo a la forma de mecanizado, la rigidez de la máquina y la fijación de pieza

1. Använd en stabil maskin och verktygshållare
2. Minimalsmörjning rekommenderas vid bearbetning i legerat och härdat stål
3. Ovanstående skärdata visar en ungefärlig standard för valsfräsning Vid låg maskinbelastning. Om onormala ljud och vibrationer uppstår, justera varvtal och matning
4. Justera varvtal, matning och skärdjup om vibrationer eller onormala ljud uppstår
5. Vid bearbetning i Z axeln använd rampning eller cikulärinterpolering
6. Justera varvtal, matning och skärdjup i förhållande till applikationens utformning och maskinens stabilitet

1. Используйте жесткие и точные станки и фрезерные патроны.
2. При обработке углеродистой стали или закаленной стали, рекомендуется использовать MQL (масляный туман).
3. Упомянутые выше условия показывают приблизительные параметры для контурного фрезерования с низкими нагрузками резания.
4. Отрегулируйте обороты шпинделя, подачу и глубину резания при появлении вибраций и ненормального звука при резании.
5. Для врезания по оси Z используйте фрезерование по спирали или наклонное врезание.
6. Установите обороты шпинделя, подачу и глубину резания в соответствии с формой детали, жесткости станка и условий закрепления детали.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Karbon çeliklerini be sertleştirilmiş çelikleri işlediğinizde, MQL kullanmanız önerilmektedir
3. Yukarıda ki değerler düşük yüklü kontür işleme operasyonu için (kenar işleme) yaklaşık standart değerlerdir. İşleme şekline, tezgahın rijitliğine, parçanın bağlanmasına, kesme derinliğine v.b. bağlı olarak anormal kesme sesleri, titreşim veya tırlama oluşuyorsa lütfen kesme hızını, ilerlemeyi ve kesme derinliğini ayarlayın
4. Vibrasyon, anormal taşlama sesi ve tirlama oluyor ise kesme hızını ve ilerlemeyi ayarlayın
5. Z kesme yaklaşımı esnasında helisel veya rampa frezeleme önerilir
6. Kesme hızınızı, ilerlemenizi, ve kesme derinliğinizi operasyonunuza uygun olarak ayarlayınız, bu etkenler; işleme şekli, tezgahın rijitlik durumu, takım tutucunu rijitliği ve bağlama kuvvetleri

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Do obróbki stali węglowych lub stali hartowanej, jest zalecane użycie MQL (minimalna ilość smarowa-nia / mgły olejowej
3. Powyższy warunek pokazuje przybliżony standard pracy kształtowej (frezowanie boczne) z niskim obciążeniem roboczym. Przy nieprawidłowych odgłosach, wibracjach, które mogą wystąpić w zależności od kształtu obróbki, głębokości i szerokości frezowania, sztywność maszyny lub stanu oprawek mocujących, etc., Należy dostosować prędkość, posuw i głębokość skrawania.
4. Dostosuj prędkość, posuw i głębokość skrawania jeśli pojawią się, wibracje lub nieprawidłowe dźwięki przy obróbce.
5. Polecana jest obróbka helikalna lub ramping przy pracy w osi Z
6. Dostosuj prędkość, posuw i głębokość skrawania do własnych warunków pracy, takich jak kształt, sztywność maszyny, sztywność uchwytu narzędzia i sił skrawania

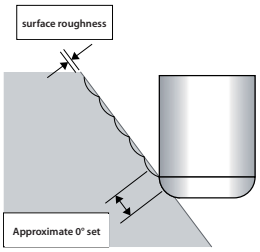
BACK

BACK

WXS-CPR

Offset

(mm)	Surface Roughness (µm)													
	0,1	0,25	0,5	0,75	1	1,25	1,5	1,75	2	2,50	3	3,5	4	5
R 0,05	0,006	0,01	0,014	0,017	0,02	0,022	0,024	0,026	0,028	-	-	-	-	-
R 0,1	0,009	0,014	0,02	0,024	0,028	0,032	0,035	0,037	0,04	0,045	0,049	-	-	-
R 0,2	0,012	0,02	0,028	0,035	0,04	0,045	0,049	0,053	0,057	0,063	0,07	0,075	0,08	0,9
R 0,3	0,015	0,025	0,035	0,042	0,049	0,055	0,06	0,065	0,07	0,077	0,085	0,092	0,098	0,11
R 0,5	0,02	0,032	0,045	0,055	0,065	0,07	0,078	0,084	0,09	0,1	0,11	0,118	0,125	0,141
R 1	0,028	0,045	0,063	0,078	0,09	0,1	0,11	0,011	0,125	0,142	0,155	0,168	0,18	0,2



WX-G-EDSS

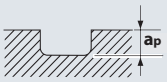
Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	C≤0,2% - GG E24 ■ XC48 ■ FT25 750 N/mm²			~30 HRC 350NCD16 ■ 40CMD8			30~38 HRC 35NCD16			30~38 HRC 35NCD16			45~55 HRC-SUS Z38CDV5			55~60 HRC Z160CDV12		
	150 (m/min)			130 (m/min)			110 (m/min)			80 (m/min)			60 (m/min)			30 (m/min)		
Ø	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)
0,2	40.000	113	0,0014	40.000	113	0,0014	40.000	94	0,0012	40.000	44	0,0005	40.000	38	0,0005	40.000	40	0,0005
0,3	40.000	144	0,0018	40.000	144	0,0018	40.000	100	0,0013	40.000	69	0,0009	40.000	52	0,0007	31.847	48	0,0008
0,4	40.000	156	0,002	40.000	156	0,002	40.000	113	0,0014	40.000	87	0,0011	40.000	69	0,0009	23.885	48	0,001
0,5	40.000	156	0,002	40.000	169	0,0021	40.000	144	0,0018	40.000	109	0,0014	38.217	82	0,0011	19.108	48	0,0013
0,6	40.000	156	0,002	40.000	204	0,0026	40.000	171	0,0021	40.000	130	0,0016	31.847	83	0,0013	15.924	47	0,0015
0,8	40.000	204	0,0026	40.000	270	0,0034	40.000	232	0,0029	31.847	153	0,0024	23.885	82	0,0017	11.943	47	0,002
1	40.000	267	0,0033	40.000	345	0,0043	35.032	252	0,0036	25.478	151	0,003	19.108	82	0,0021	9.554	47	0,0025
1,5	31.847	296	0,0046	27.601	329	0,006	23.355	236	0,0051	16.985	139	0,0041	12.739	101	0,004	6.369	45	0,0035
2	23.885	293	0,0061	20.701	308	0,0074	17.516	225	0,0064	12.739	140	0,0055	9.554	97	0,0051	4.777	43	0,0045
3	15.924	430	0,0135	13.800	326	0,0118	11.677	220	0,0094	8.493	143	0,0084	6.369	104	0,0082	3.185	48	0,0075
4	11.943	472	0,0197	10.350	391	0,0189	8.758	258	0,0147	6.369	164	0,0129	4.777	109	0,0114	2.389	46	0,0097
5	9.554	568	0,0297	8.280	453	0,0273	7.006	257	0,0183	5.096	167	0,0164	3.822	111	0,0145	1.911	46	0,012
6	7.962	555	0,0348	6.900	450	0,0326	5.839	257	0,022	4.246	170	0,02	3.185	113	0,0177	1.592	38	0,0119
8	5.971	534	0,0447	5.175	450	0,0435	4.379	249	0,0284	3.185	168	0,0263	2.389	104	0,0217	1.194	38	0,0157
10	4.777	505	0,0528	4.140	443	0,0535	3.503	250	0,0357	2.548	161	0,0317	1.911	100	0,0262	955	38	0,0197
12	3.981	507	0,0636	3.450	441	0,0639	2.919	252	0,0431	2.123	161	0,038	1.592	90	0,0283	796	30	0,0189
14	3.412	503	0,0737	2.957	424	0,0717	2.502	220	0,044	1.820	165	0,0452	1.365	80	0,0294	682	27	0,0198
16	2.986	470	0,0788	2.588	383	0,0741	2.189	199	0,0455	1.592	142	0,0445	1.194	70	0,0294	597	24	0,0203
18	2.654	421	0,0793	2.300	345	0,075	1.946	177	0,0455	1.415	126	0,0444	1.062	60	0,0283	531	21	0,02
20	2.389	377	0,0788	2.070	306	0,0738	1.752	157	0,0449	1.274	109	0,0428	955	60	0,0316	478	20	0,0206
22	2.171	344	0,0792	1.882	278	0,074	1.592	138	0,0432	1.158	101	0,0435	869	50	0,0291	434	17	0,0193
24	1.990	317	0,0795	1.725	259	0,075	1.460	128	0,0439	1.062	92	0,0433	796	50	0,0316	398	17	0,0208
25	1.911	300	0,0786	1.656	249	0,0751	1.401	128	0,0458	1.019	92	0,0451	764	40	0,0263	382	15	0,0196
30	1.592	250	0,0787	1.380	201	0,0729	1.168	99	0,0424	849	76	0,0446	637	40	0,0317	318	15	0,0238

Max cutting depth

	ap
D ≤ Ø6	0,3D
Ø6 < D	0,5D



	ap
D ≤ Ø6	0,1D
Ø6 < D	0,2D

	ap
D ≤ Ø6	0,05D
Ø6 < D	0,10D

1. Use high precision machine set up to ensure maximum rigidity.
2. In case of vibration, reduce both feed and speed.
3. Use a coolant that has a low co-efficient of smoke emission.
* Modified parameters

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazioni, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
* Paramèto modificato

1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindligkeit reduzieren.
3. Kühlmittel mit niedriger Rauchentwicklung verwenden.
* Modifizierten Parameters

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utilisez des lubrifiants de coupe appropriés dotés d'un coef. élevé de ralentissement d'émission de fumée.
* Paramètres modifiés

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Ved vibrationer, justér både hastighed og tilspænding
3. Benyt en kølevæske med lav koefficient af røgudvikling
* Modificerede parametre

1. Use máquina de alta precisión y asegure la máxima rigidez
2. En el caso de vibraciones, reducir velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos
* Parámetros modificados

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Vid vibrationer, justera både varvtal och matning
3. Använd kylvätska med låg koefficient av rökutveckling.
* Modifierade parametrar

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма
*Измененные параметры

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz
3. Duman emisyon katsayısı düşük olan bir soğutucu kullanın
* Modifie edilmiş parametreler

1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty.
3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.
* Zmodyfikowane parametry

BACK

CARBIDE

CARBIDE

WX-EDS

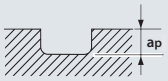
Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	C≤0,2% - GG E24 ■ XC48 ■ FT25 750 N/mm²			~30 HRC 350NCD16 ■ 40CMD8			30~38 HRC 35NCD16			30~38 HRC 35NCD16			45~55 HRC-SUS Z38CDV5			55~60 HRC Z160CDV12		
	150 (m/min)			130 (m/min)			110 (m/min)			80 (m/min)			60 (m/min)			30 (m/min)		
Ø	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)
0,2	40.000	113	0,0014	40.000	113	0,0014	40.000	94	0,0012	40.000	44	0,0005	40.000	38	0,0005	40.000	40	0,0005
0,3	40.000	144	0,0018	40.000	144	0,0018	40.000	100	0,0013	40.000	69	0,0009	40.000	52	0,0007	31.847	48	0,0008
0,4	40.000	156	0,002	40.000	156	0,002	40.000	113	0,0014	40.000	87	0,0011	40.000	69	0,0009	23.885	48	0,001
0,5	40.000	156	0,002	40.000	169	0,0021	40.000	144	0,0018	40.000	109	0,0014	38.217	82	0,0011	19.108	48	0,0013
0,6	40.000	156	0,002	40.000	204	0,0026	40.000	171	0,0021	40.000	130	0,0016	31.847	83	0,0013	15.924	47	0,0015
0,8	40.000	204	0,0026	40.000	270	0,0034	40.000	232	0,0029	31.847	153	0,0024	23.885	82	0,0017	11.943	47	0,002
1	40.000	267	0,0033	40.000	345	0,0043	35.032	252	0,0036	25.478	151	0,003	19.108	82	0,0021	9.554	47	0,0025
1,5	31.847	296	0,0046	27.601	329	0,006	23.355	236	0,0051	16.985	139	0,0041	12.739	101	0,004	6.369	45	0,0035
2	23.885	293	0,0061	20.701	308	0,0074	17.516	225	0,0064	12.739	140	0,0055	9.554	97	0,0051	4.777	43	0,0045
3	15.924	430	0,0135	13.800	326	0,0118	11.677	220	0,0094	8.493	143	0,0084	6.369	104	0,0082	3.185	48	0,0075
4	11.943	472	0,0197	10.350	391	0,0189	8.758	258	0,0147	6.369	164	0,0129	4.777	109	0,0114	2.389	46	0,0097
5	9.554	568	0,0297	8.280	453	0,0273	7.006	257	0,0183	5.096	167	0,0164	3.822	111	0,0145	1.911	46	0,012
6	7.962	555	0,0348	6.900	450	0,0326	5.839	257	0,0220	4.246	170	0,02	3.185	113	0,0177	1.592	38	0,0119
8	5.971	534	0,0447	5.175	450	0,0435	4.379	249	0,0284	3.185	168	0,0263	2.389	104	0,0217	1.194	38	0,0157
10	4.777	505	0,0528	4.140	443	0,0535	3.503	250	0,0357	2.548	161	0,0317	1.911	100	0,0262	955	38	0,0197
12	3.981	507	0,0636	3.450	441	0,0639	2.919	252	0,0431	2.123	161	0,038	1.592	90	0,0283	796	30	0,0189
14	3.412	503	0,0737	2.957	424	0,0717	2.502	220	0,044	1.820	165	0,0452	1.365	80	0,0294	682	27	0,0198
16	2.986	470	0,0788	2.588	383	0,0741	2.189	199	0,0455	1.592	142	0,0445	1.194	70	0,0294	597	24	0,0203
18	2.654	421	0,0793	2.300	345	0,075	1.946	177	0,0455	1.415	126	0,0444	1.062	60	0,0283	531	21	0,02
20	2.389	377	0,0788	2.070	306	0,0738	1.752	157	0,0449	1.274	109	0,0428	955	60	0,0316	478	20	0,0206
22	2.171	344	0,0792	1.882	278	0,074	1.592	138	0,0432	1.158	101	0,0435	869	50	0,0291	434	17	0,0193
24	1.990	317	0,0795	1.725	259	0,075	1.460	128	0,0439	1.062	92	0,0433	796	50	0,0316	398	17	0,0208
25	1.911	300	0,0786	1.656	249	0,0751	1.401	128	0,0458	1.019	92	0,0451	764	40	0,0263	382	15	0,0196
30	1.592	250	0,0787	1.380	201	0,0729	1.168	99	0,0424	849	76	0,0446	637	40	0,0317	318	15	0,0238

Max cutting depth

	ap
D < Ø1	0,1D
Ø1 ≤ D < Ø3	0,2D
Ø3 ≤ D	0,5D



	ap
D < Ø1	0,02D
Ø1 ≤ D	0,05D

	ap
D < Ø1	0,01D
Ø1 ≤ D < Ø3	0,02D
Ø3 ≤ D	0,05D

1. Use high precision machine set up to ensure maximum rigidity.
2. In case of vibration, reduce both feed and speed.
3. Use a coolant that has a low co-efficient of smoke emission.
* Modified parameters

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazioni, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
* Paramèto modificato

1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindligkeit reduzieren.
3. Kühlmittel mit niedriger Rauchentwicklung verwenden.
* Modifizierten Parameters

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utilisez des lubrifiants de coupe appropriés dotés d'un coef. élevé de ralentissement d'émission de fumée.
* Paramètres modifiés

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Ved vibrationer, justér både hastighed og tilspænding
3. Benyt en kølevæske med lav koefficient af røgudvikling
* Modificerede parametre

1. Use máquina de alta precisión y asegure la máxima rigidez
2. En el caso de vibraciones, reducir velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos
* Parámetros modificados

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Vid vibrationer, justera både varvtal och matning
3. Använd kylvätska med låg koefficient av rökutveckling.
* Modifierade parametrar

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма
*Измененные параметры

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.
* Modifie edilmiş parametreler

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.
* Zmodyfikowane parametry

BACK

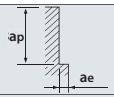
WX-G-ETSS

Side milling - Konturfräsen - Contornatura - Contournage - Kenar frezeleme
Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



	C≤0,2% - GG E24 ■ XC48 ■ GG25 750 N/mm²			~30 HRC 350NCD16 ■ 40CMD8			SUS 316 ■ 304 800 N/mm²			30~38 HRC Z38CDV5 ■ Z40CDV5			45~55 HRC Z38CDV5			55~60 HRC Z160CDV12		
	100 (m/min)			80 (m/min)			80 (m/min)			60 (m/min)			60 (m/min)			30 (m/min)		
Ø	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)
3	10.610	589	0,027	8.488	458	0,018	6.366	267	0,014	6.366	344	0,018	6.366	210	0,011	3.183	105	0,011
4	7.958	907	0,038	6.366	477	0,025	4.775	272	0,019	4.775	358	0,025	4.775	229	0,016	2.387	107	0,015
5	6.366	955	0,05	5.093	519	0,034	3.820	298	0,026	3.820	390	0,034	3.820	241	0,021	1.910	115	0,02
6	5.305	987	0,062	4.244	547	0,043	3.183	306	0,032	3.183	411	0,043	3.183	248	0,026	1.592	119	0,025
8	3.979	883	0,074	3.183	535	0,056	2.387	272	0,038	2.387	401	0,056	2.387	222	0,031	1.194	107	0,03
10	3.183	793	0,083	2.546	519	0,068	1.910	241	0,042	1.910	390	0,068	1.910	195	0,034	955	95	0,033
12	2.653	796	0,1	2.122	497	0,078	1.592	239	0,05	1.592	372	0,078	1.592	196	0,041	796	95	0,04
16	1.989	657	0,1	1.592	525	0,11	1.194	286	0,08	1.194	394	0,11	1.194	190	0,053	597	90	0,05

Max cutting depth



	ap	ae
D < Ø6	1,5D	0,02D
Ø6 ≤ D	1,5D	0,05D

ap	ae
1,5D	0,02D

arMax=0,5mm

ap	ae
1D	0,02D

arMax=0,5mm

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausreichenden Brandschutz sicher.
1. Die Schnittdaten sind ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft ofer Kühlmittel mit rauchhemdenden Zusätzen.

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée.

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudviklingg

Atención, Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Frasar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

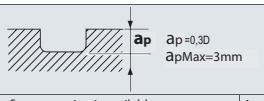
Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

WX-G-ETSS

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	C≤0,2% - GG E24 ■ XC48 ■ GG25 750 N/mm²			~30 HRC 350NCD16 ■ 40CMD8			SUS 316 ■ 304 800 N/mm²			30~38 HRC Z38CDV5 ■ Z40CDV5			45~55 HRC Z38CDV5			55~60 HRC Z160CDV12		
	80 (m/min)			65 (m/min)			50 (m/min)			55 (m/min)			45 (m/min)			20 (m/min)		
Ø	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)
3	8.488	688	0,027	6.897	372	0,018	5.305	223	0,014	5.836	245	0,014	4.775	158	0,011	2.122	70	0.011
4	6.366	726	0,038	5.173	388	0,025	3.979	227	0,019	4.377	249	0,019	3.581	172	0,016	1.592	72	0,015
5	5.093	764	0,050	4.138	422	0,034	3.183	248	0,026	3.501	273	0,026	2.865	180	0,021	1.273	76	0,02
6	4.244	789	0,062	3.448	445	0,043	2.653	255	0,032	2.918	280	0,032	2.387	186	0,026	1.061	80	0,025
8	3.183	707	0,074	2.586	434	0,056	1.989	233	0,039	2.188	256	0,039	1.790	167	0,031	796	72	0,03
10	2.546	672	0,088	2.069	422	0,068	1.592	224	0,047	1.751	247	0,047	1.432	146	0,034	637	63	0,033
12	2.122	637	0,1	1.724	403	0,078	1.326	215	0,054	1.459	236	0,054	1.194	147	0,041	531	64	0,04
16	1.592	573	0,12	1.293	388	0,1	995	239	0,08	1.094	263	0,08	895	142	0,053	398	60	0,05

Max cutting depth	 ap =0,3D apMax=3mm	ap =0,2D

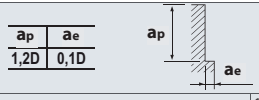
Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available. 1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up. 2. Do not use inflammable coolant. Using worn tools may generate sparks. 3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.	Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione. 1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione. 2. Non utilizzare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille. 3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausreichenden Brandschutz sicher. 1. Die Schnittdaten sind ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel. 2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden. 3. Benutzen Sie Druckluft ofer Kühlmittel mit rauchhemdenden Zusätzen.	Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées. 1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision. 2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles. 3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée.
Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde 1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter 2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister 3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudviklingg	Atención, Las chispas pueden causar el incendio del refrigerante. Asegurese que una adecuada prevencion de incendios está disponible 1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión 2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas 3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo
Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning 1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner 2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp 3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling	Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности. 1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали. 2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр. 3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.
Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun 1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır. 2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir. 3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın. * Modifie edilmiş parametreler	Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową 1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach 2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry. 3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu. * Zmodyfikowane parametry

WX-G-EMSS

Side milling - Konturfräsen - Conturnatura - Contournage - Kenar işleme
Sidefræsning -Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



	GG GG-GGG		C≤0,2% S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
2	15.500	370	13.000	310	11.000	280	7.000	110	6.350	100	3.950	60	2.750	40
3	10.500	595	8.900	505	7.400	355	5.300	125	4.750	110	2.750	60	2.000	45
4	7.950	635	6.650	530	5.550	370	4.250	135	3.700	115	2.200	70	1.550	45
5	6.350	740	5.300	620	4.450	425	3.550	140	3.150	125	1.900	75	1.250	40
6	5.300	735	4.450	615	3.700	425	2.950	145	2.650	130	1.550	70	1.050	40
8	3.950	710	3.300	590	2.750	420	2.200	145	1.950	130	1.150	65	795	35
10	3.150	710	2.650	590	2.200	420	1.750	145	1.550	130	955	65	635	35
12	2.650	710	2.200	590	1.850	420	1.450	145	1.300	130	795	60	530	30
14	2.250	680	1.900	575	1.550	415	1.250	145	1.100	125	680	50	455	25
16	1.950	655	1.650	550	1.350	415	1.100	130	995	115	595	45	395	20
18	1.750	655	1.450	540	1.200	405	990	115	880	105	530	40	350	20
20	1.550	620	1.300	520	1.100	370	890	105	795	95	475	35	315	19
22	1.400	560	1.200	480	1.000	340	810	95	720	85	430	30	285	17
24	1.300	520	1.100	440	925	315	740	85	660	75	395	30	265	16
25	1.250	500	1.050	420	890	300	710	85	635	75	380	30	255	15
30	1.050	420	890	355	740	250	590	70	530	60	315	25	210	13

Max cutting depth		

1. Use high precision machine set up to ensure maximum rigidity. 2. In case of vibration, reduce both feed and speed. 3. Use a coolant that has a low co-efficient of smoke emission.	1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione. 2. In caso di vibrazioni, ridurre simultaneamente la velocità di taglio e l'avanzamento. 3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel. 2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindligkeit reduzieren. 3. Kühlmittel mit niedriger Rauchentwicklung verwenden.	1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision. 2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance. 3. Utilisez des lubrifiants de coupe appropriés dotés d'un coef. élevé de ralentissement d'émission de fumée.
1. Benyt højt præcisions set-up for at sikre maksimum stabilitet 2. Ved vibrationer, justér både hastighed og tilspænding 3. Benyt en kølevæske med lav koefficient af røgudvikling	1. Use máquina de alta precisión y asegure la máxima rigidez 2. En el caso de vibraciones, reducir velocidad y avance simultaneamente 3. Utilizar un refrigerante con un bajo coeficiente de emisión de humo
1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet. 2. Vid vibrationer, justera både varvtal och matning. 3. Använd kylvätska med låg koefficient av rökutveckling.	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость. 2. При возникновении вибраций, снизьте скорость и подачу одновременно. 3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2. Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz 3. Duman emisyon katsayısı düşük olan bir soğutucu kullanın	1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny 2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty. 3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

BACK

WX-EMS

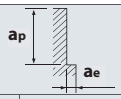
Side milling - Konturfräsen - Conturnatura - Contournage - Kenar işleme
Sidefræsning -Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



Ø	GG GG-GGG		C≤0,2% S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
2	15.500	370	13.000	310	11.000	280	7.000	110	6.350	100	3.950	60	2.750	40
3	10.500	595	8.900	505	7.400	355	5.300	125	4.750	110	2.750	60	2.000	45
4	7.950	635	6.650	530	5.550	370	4.250	135	3.700	115	2.200	70	1.550	45
5	6.350	740	5.300	620	4.450	425	3.550	140	3.150	125	1.900	75	1.250	40
6	5.300	735	4.450	615	3.700	425	2.950	145	2.650	130	1.550	70	1.050	40
8	3.950	710	3.300	590	2.750	420	2.200	145	1.950	130	1.150	65	795	35
10	3.150	710	2.650	590	2.200	420	1.750	145	1.550	130	955	65	635	35
12	2.650	710	2.200	590	1.850	420	1.450	145	1.300	130	795	60	530	30
14	2.250	680	1.900	575	1.550	415	1.250	145	1.100	125	680	50	455	25
16	1.950	655	1.650	550	1.350	415	1.100	130	995	115	595	45	395	20
18	1.750	655	1.450	540	1.200	405	990	115	880	105	530	40	350	20
20	1.550	620	1.300	520	1.100	370	890	105	795	95	475	35	315	19
22	1.400	560	1.200	480	1.000	340	810	95	720	85	430	30	285	17
24	1.300	520	1.100	440	925	315	740	85	660	75	395	30	265	16
25	1.250	500	1.050	420	890	300	710	85	635	75	380	30	255	15
30	1.050	420	890	355	740	250	590	70	530	60	315	25	210	13

Max cutting depth

	ap	ae
D < Ø3	1,5D	0,05D
Ø3 ≤ D	1,5D	0,1D



ap	ae
1D	0,02D

1. Use high precision machine set up to ensure maximum rigidity.
2. In case of vibration, reduce both feed and speed.
3. Use a coolant that has a low co-efficient of smoke emission.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazioni, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindligkeit reduzieren.
3. Kühlmittel mit niedriger Rauchentwicklung verwenden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utilisez des lubrifiants de coupe appropriés dotés d'un coef. élevé de ralentissement d'émission de fumée.

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Ved vibrationer, justér både hastighed og tilspænding
3. Benyt en kølevæske med lav koefficient af røgudvikling

1. Use máquina de alta precisión y asegure la máxima rigidez
2. En el caso de vibraciones, reducir velocidad y avance simultaneamente
3. Utilizar un refrigerante con un bajo coeficiente de emisión de humo

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet.
2. Vid vibrationer, justera både varvtal och matning.
3. Använd kylvätska med låg koefficient av rökutveckling.

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибраций, снизьте скорость и подачу одновременно.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz
3. Duman emisyon katsayısı düşük olan bir soğutucu kullanın

1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty.
3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

WX-EMS

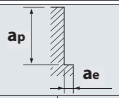
Side milling - Konturfräsen - Conturnatura - Contournage - Kenar işleme
Sidefræsning -Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



Ø	C≤0,2% - GG S55C ■ SS400 ■ GG25 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC X210Cr12 ■ X40CrMoV51		45~55 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
6	21.000	2.450	18.500	2.150	13.000	1.500	7.950	795	4.200	420
8	15.500	2.450	13.500	2.100	9.900	1.450	5.950	795	3.150	425
10	12.500	2.500	11.000	2.100	7.950	1.450	4.750	800	2.500	420
12	10.500	2.450	9.250	2.100	6.600	1.450	3.950	790	2.100	410
14	9.050	2.350	7.950	2.000	5.650	1.350	3.400	740	1.800	390
16	7.950	2.250	6.950	1.950	4.950	1.350	2.950	715	1.550	375
18	7.050	2.250	6.150	1.900	4.400	1.300	2.650	705	1.400	375
20	6.350	2.100	5.550	1.850	3.950	1.300	2.350	665	1.250	355
22	5.750	1.950	5.050	1.700	3.600	1.200	2.150	635	1.150	325
24	5.300	1.800	4.600	1.550	3.300	1.100	1.950	575	1.050	295
25	5.050	1.700	4.450	1.500	3.150	1.050	1.900	560	1.000	280
30	4.200	1.400	3.700	1.250	2.650	890	1.550	455	845	240

Max cutting depth

	ap	ae
D ≤ Ø8	1,5D	0,01D
Ø8 < D ≤ Ø16	1,5D	0,03D
Ø16< D	1,5D	0,05D



	ap	ae
D ≤ Ø8	1D	0,01D
Ø8 < D	1D	0,02D

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utilizzare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, scegliteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausreichenden Brandschutz sicher.
1. Die Schnittdaten sind ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft ofer Kühlmittel mit rauchhemdenden Zusätzen.

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée.

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudviklingg

Atención, Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

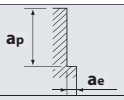
Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na prerecyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

WX-PHS

Side milling - Konturfräsen - Conturnatura - Contournage - Kenar işleme
Sidefræsning -Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



	C≤0,2% - GG SS400 ■ S55C ■ FC250 ~750 N/mm²		~30 HRC SCM ■ SKT ■ SKS ■ SKD		30~38 HRC SKT ■ SKD ■ NAK55 ■ HPMI		38~45 HRC - SUS SUS304 ■ SKD		45~55 HRC - Tiall		55~60 HRC - HRS	
	100 (m/min)		78 (m/min)		66 (m/min)		62 (m/min)		60 (m/min)		30 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	10.600	975	8.300	760	7.000	560	6.600	555	6.350	485	3.200	190
4	7.950	1.000	6.200	820	5.250	565	4.950	590	4.750	515	2.400	190
5	6.350	1.050	4.950	845	4.200	590	3.950	630	3.800	535	1.900	190
6	5.300	1.250	4.150	945	3.500	700	3.300	660	3.200	545	1.600	190
8	4.000	1.250	3.100	895	2.650	660	2.450	640	2.400	555	1.200	175
10	3.200	1.100	2.500	855	2.100	605	1.950	590	1.900	525	955	160
12	2.650	1.100	2.050	850	1.750	565	1.650	535	1.600	475	795	160
16	2.000	955	1.550	745	1.300	500	1.250	445	1.200	400	595	160
20	1.600	765	1.250	595	1.050	455	985	395	955	355	475	160

Max cutting depth												
	ap 1,5D	ae 0,2D					ap 1,5D	ae 0,1D			ap 1D	ae 0,05D

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Usare un mandrino portautensile preciso e rigido/
2. Regolare la velocità e l'avanzamento se si aumenta la profondità di passata e se utilizzata su macchine non rigide.
3. Si consiglia di usare emulsione a scarsa emissione di fumi.
4. Per fresatura a secco utilizzare aria.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.
4. Bei Trockenbearbeitung Druckluft zum Entfermen der Späne verwenden.

1. Utiliser une machine et un attachement précis et rigide.
2. Ajuster la vitesse et l'avance en cas de profondeur de coupe importante ou en utilisant un machine non-rigide.
3. Utiliser un liquide de refroidissement adéquat.
4. En cas d'usinage à sec, utiliser de l'air comprimé pour l'évacuation des copeaux de l'aire d'usinage et pour éviter une agglomération des copeaux.

1. Anvend stabil maskine og værktøjsholder
2. Justér omdrejninger og tilspænding ved stor skæredybde eller en ustabil maskine bruges
3. Anvend en passende skærevæske
4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner

1. Use maquina y portaherramientas rigidos y precisos
2. Ajustar el avance cuando la profundidad de corte es grande o cuando se se utilizan máquinas de poca rigidez
3. Use fluido de corte adecuado con retardador de humos
4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte

1. Använd en stabil maskin och verktygshållare
2. Justera varvtal och matning vid stora skärdjup eller om instabil maskin används
3. Använd anpassad skärvätska
4. Vid torrbearbetning använd tryckluft för att transportera bort spånor

1. Используйте жесткие и точные станки и фрезерные патроны.
2. Пожалуйста отрегулируйте обороты шпинделя и подачу, когда глубина резания велика или при использовании станков с низкой жесткостью.
3. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма.
4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Kesme derinliği yüksek veya düşük rijitli takımlar kullandığınızda kesme hızını ve ilerlemeyi ayarlayın
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız

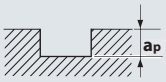
1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Dostosować prędkość i posuw, gdy głębokość frezowania jest duża lub gdy pracujemy na oprzyrządowaniu o niskiej sztywności.
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Podczas obróbki na sucho należy nadmuchem usuwać wióry z obszaru frezowania i wyeliminować owijanie wiórów

WX-PHS

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim için parmak freze
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frez do rowków



	C≤0,2% - GG SS400 ■ S55C ■ FC250 ~750 N/mm²		~30 HRC SCM ■ SKT ■ SKS ■ SKD		30~38 HRC SKT ■ SKD ■ NAK55 ■ HPMI		38~45 HRC - SUS SUS304 ■ SKD		45~55 HRC - Tiall		55~60 HRC - HRS	
	80 (m/min)		60 (m/min)		55 (m/min)		52 (m/min)		42 (m/min)		20 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	8.500	705	6.350	595	5.850	455	5.500	400	4.450	320	2.100	110
4	6.350	705	4.750	675	4.400	455	4.150	450	3.350	360	1.600	120
5	5.100	715	3.800	660	3.500	475	3.300	475	2.650	385	1.250	125
6	4.250	715	3.200	560	2.900	500	2.750	495	2.250	400	1.050	125
8	3.200	660	2.400	550	2.200	545	2.050	515	1.650	415	795	125
10	2.550	610	1.900	535	1.750	475	1.650	470	1.350	380	635	115
12	2.100	610	1.600	475	1.450	450	1.400	440	1.100	355	530	115
16	1.600	610	1.200	430	1.100	370	1.050	370	835	300	400	88
20	1.250	510	955	380	875	350	830	330	670	265	320	89

Max cutting depth												
	ap 0,5D										ap 0,05D	

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Usare un mandrino portautensile preciso e rigido/
2. Regolare la velocità e l'avanzamento se si aumenta la profondità di passata e se utilizzata su macchine non rigide.
3. Si consiglia di usare emulsione a scarsa emissione di fumi.
4. Per fresatura a secco utilizzare aria.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.
4. Bei Trockenbearbeitung Druckluft zum Entfermen der Späne verwenden.

1. Utiliser une machine et un attachement précis et rigide.
2. Ajuster la vitesse et l'avance en cas de profondeur de coupe importante ou en utilisant un machine non-rigide.
3. Utiliser un liquide de refroidissement adéquat.
4. En cas d'usinage à sec, utiliser de l'air comprimé pour l'évacuation des copeaux de l'aire d'usinage et pour éviter une agglomération des copeaux.

1. Anvend stabil maskine og værktøjsholder
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4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner

1. Use maquina y portaherramientas rigidos y precisos
2. Ajustar el avance cuando la profundidad de corte es grande o cuando se se utilizan máquinas de poca rigidez
3. Use fluido de corte adecuado con retardador de humos
4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte

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1. Используйте жесткие и точные станки и фрезерные патроны.
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3. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма.
4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки.

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2. Kesme derinliği yüksek veya düşük rijitli takımlar kullandığınızda kesme hızını ve ilerlemeyi ayarlayın
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Dostosować prędkość i posuw, gdy głębokość frezowania jest duża lub gdy pracujemy na oprzyrządowaniu o niskiej sztywności.
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Podczas obróbki na sucho należy nadmuchem usuwać wióry z obszaru frezowania i wyeliminować owijanie wiórów

WX-PHS

High speed side milling - HSC Konturfräsen - Sgrossatura e contornatura alta velocità - Contournage UGV - Yüksek hizda kenar frezeleme - High speed sidefræsning - High speed valsfräsning - Contorneado a alta velocidad - Высокоскоростное контурное фрезерование - Frezowanie boczne HSC

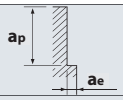


	C≤0,2% - GG SS400 ■ S55C ■ FC250 ~750 N/mm²		~30 HRC SCM ■ SKT ■ SKS ■ SKD		30~38 HRC SKT ■ SKD ■ NAK55 ■ HPMI		38~45 HRC - SUS SUS304 ■ SKD		45~55 HRC - Tiall		55~60 HRC - HRS	
	200 (m/min)		200 (m/min)		200 (m/min)		150 (m/min)		100 (m/min)		80 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	21.200	2.150	21.200	2.400	21.200	1.300	15.900	1.150	10.600	680	8.500	440
4	15.900	2.050	15.900	2.300	15.900	1.300	11.900	1.250	7.950	795	6.350	460
5	12.700	1.900	12.700	2.150	12.700	1.250	9.550	1.350	6.350	840	5.100	510
6	10.600	3.050	10.600	2.650	10.600	2.000	7.950	1.450	5.300	910	4.250	610
8	7.950	2.800	7.950	2.400	7.950	1.900	5.950	1.400	4.000	860	3.200	575
10	6.350	2.550	5.300	2.200	5.300	1.800	4.000	1.350	2.650	830	2.100	510
12	5.300	2.550	5.300	2.200	5.300	1.800	4.000	1.350	2.650	830	2.100	510
16	4.000	1.900	4.000	1.900	4.000	1.700	3.000	1.350	2.000	830	1.600	510
20	3.200	1.550	3.200	1.550	3.200	1.550	2.400	1.150	1.600	730	1.250	510

Max cutting depth

	ap	ae
Dc < Ø6	1,5D	0,02D
Ø6 ≤ Dc	1,5D	0,05D

aeMAX=0,5mm



	ap	ae
Dc < Ø6	1,5D	0,01D
Ø6 ≤ D	1,5D	0,02D

aeMAX=0,5mm

	ap	ae
D < Ø6	1D	0,01D
Ø6 ≤ D	1D	0,02D

aeMAX=0,5mm

1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Usare un mandrino portautensile preciso e rigido/
2. Regolare la velocità e l'avanzamento se si aumenta la profondità di passata e se utilizzata su macchine non rigide.
3. Si consiglia di usare emulsione a scarsa emissione di fumi.
4. Per fresatura a secco utilizzare aria.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.
4. Bei Trockenbearbeitung Druckluft zum Entfernen der Späne verwenden.

1. Utiliser une machine et un attachement précis et rigide.
2. Ajuster la vitesse et l'avance en cas de profondeur de coupe importante ou en utilisant un machine non-rigide.
3. Utiliser un liquide de refroidissement adéquat.
4. En cas d'usinage à sec, utiliser de l'air comprimé pour l'évacuation des copeaux de l'aire d'usinage et pour éviter une agglomération des copeaux.

1. Anvend stabil maskine og værktøjsholder
2. Justér omdrejninger og tilspænding ved stor skæredybde eller en ustabil maskine bruges
3. Anvend en passende skærevæske
4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner

1. Use maquina y portaherramientas rigidos y precisos
2. Ajustar el avance cuando la profundidad de corte es grande o cuando se se utilizan máquinas de poca rigidez
3. Use fluido de corte adecuado con retardador de humos
4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte

1. Använd en stabil maskin och verktygshållare
2. Justera varvtal och matning vid stora skärdjup eller om instabil maskin används
3. Använd anpassad skärvätska
4. Vid torrbearbetning använd tryckluft för att transportera bort spånor

1. Используйте жесткие и точные станки и фрезерные патроны.
2. Пожалуйста отрегулируйте обороты шпинделя и подачу, когда глубина резания велика или при использовании станков с низкой жесткостью.
3. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма.
4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Kesme derinliği yüksek veya düşük rijitli takımlar kullandığınızda kesme hızını ve ilerlemeyi ayarlayın
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Dostosować prędkość i posuw, gdy głębokość frezowania jest duża lub gdy pracujemy na oprzyrządowaniu o niskiej sztywności.
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Podczas obróbki na sucho należy nadmuchem usuwać wióry z obszaru frezowania i wyeliminować owijanie wiórów

WX-PHS

High speed Slotting - HSC Nutenfräsen - Fresatura alta velocità per scanalature profonde - Fraisage UGV rainurage - Yüksek hizda slot frezeleme
High speed sporfræsning - High Speed Milling spårfräsning - Fresado en ranurado a alta velocidada - Высокоскоростное Фрезерование пазов

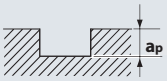


	C≤0,2% - GG SS400 ■ S55C ■ FC250 ~750 N/mm²		~30 HRC SCM ■ SKT ■ SKS ■ SKD		30~38 HRC SKT ■ SKD ■ NAK55 ■ HPMI		38~45 HRC - SUS SUS304 ■ SKD	
	120 (m/min)		110 (m/min)		90~100 (m/min)		60~70 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	12.700	1.050	10.600	935	9.550	745	6.350	460
4	9.550	1.150	7.950	1.000	7.150	745	5.150	560
5	7.650	1.200	7.000	1.100	6.350	865	4.150	595
6	6.350	1.550	5.850	1.150	5.300	910	3.700	670
8	4.750	1.450	4.400	1.300	4.000	985	2.800	690
10	3.800	1.400	3.500	1.200	3.200	865	2.250	635
12	3.200	1.250	2.900	1.150	2.650	815	1.850	595
16	2.400	1.050	2.200	965	2.000	675	1.400	500
20	1.900	840	1.750	770	1.600	635	1.100	445

Max cutting depth

ap
0,2D

aeMAX=3mm



1. Use a rigid and precise machine and holder.
2. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Usare un mandrino portautensile preciso e rigido/
2. Regolare la velocità e l'avanzamento se si aumenta la profondità di passata e se utilizzata su macchine non rigide.
3. Si consiglia di usare emulsione a scarsa emissione di fumi.
4. Per fresatura a secco utilizzare aria.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.
4. Bei Trockenbearbeitung Druckluft zum Entfernen der Späne verwenden.

1. Utiliser une machine et un attachement précis et rigide.
2. Ajuster la vitesse et l'avance en cas de profondeur de coupe importante ou en utilisant un machine non-rigide.
3. Utiliser un liquide de refroidissement adéquat.
4. En cas d'usinage à sec, utiliser de l'air comprimé pour l'évacuation des copeaux de l'aire d'usinage et pour éviter une agglomération des copeaux.

1. Anvend stabil maskine og værktøjsholder
2. Justér omdrejninger og tilspænding ved stor skæredybde eller en ustabil maskine bruges
3. Anvend en passende skærevæske
4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner

1. Use maquina y portaherramientas rigidos y precisos
2. Ajustar el avance cuando la profundidad de corte es grande o cuando se se utilizan máquinas de poca rigidez
3. Use fluido de corte adecuado con retardador de humos
4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte

1. Använd en stabil maskin och verktygshållare
2. Justera varvtal och matning vid stora skärdjup eller om instabil maskin används
3. Använd anpassad skärvätska
4. Vid torrbearbetning använd tryckluft för att transportera bort spånor

1. Используйте жесткие и точные станки и фрезерные патроны.
2. Пожалуйста отрегулируйте обороты шпинделя и подачу, когда глубина резания велика или при использовании станков с низкой жесткостью.
3. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма.
4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Kesme derinliği yüksek veya düşük rijitli takımlar kullandığınızda kesme hızını ve ilerlemeyi ayarlayın
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Dostosować prędkość i posuw, gdy głębokość frezowania jest duża lub gdy pracujemy na oprzyrządowaniu o niskiej sztywności.
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Podczas obróbki na sucho należy nadmuchem usuwać wióry z obszaru frezowania i wyeliminować owijanie wiórów

BACK

WX-LN-EDS

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG E24 ■ XC48 ■ FT25 ~750 N/mm²				~30 HRC 350NCD16 ■ 40CMD8				30~38 HRC 35NCD16				38~45 HRC - SUS 35NCD16				45~55 HRC Z38CDV5				55~60 HRC Z160CDV12			
	120 (m/min)				110 (m/min)				100 (m/min)				100 (m/min)				70 (m/min)				50 (m/min)			
Ø	Lg (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)
0,2	0,5	50.000	600	0,006	0,02	50.000	540	0,005	0,018	50.000	480	0,005	0,015	50.000	480	0,005	0,012	50.000	450	0,005	0,008	50.000	360	0,004	0,004
0,2	1	50.000	450	0,005	0,014	50.000	405	0,004	0,013	50.000	360	0,004	0,011	50.000	360	0,004	0,008	50.000	338	0,003	0,006	50.000	270	0,003	0,003
0,2	1,5	50.000	300	0,003	0,009	50.000	270	0,003	0,008	50.000	240	0,002	0,007	50.000	240	0,002	0,005	50.000	225	0,002	0,004	50.000	180	0,002	0,002
0,3	1	50.000	600	0,006	0,029	50.000	540	0,005	0,026	50.000	480	0,005	0,022	50.000	480	0,005	0,017	50.000	450	0,005	0,012	50.000	360	0,004	0,006
0,3	2	50.000	600	0,006	0,021	50.000	540	0,005	0,019	50.000	480	0,005	0,016	50.000	480	0,005	0,013	50.000	450	0,005	0,009	50.000	360	0,004	0,004
0,3	3	50.000	500	0,005	0,01	50.000	450	0,005	0,009	50.000	400	0,004	0,008	50.000	400	0,004	0,006	50.000	375	0,004	0,004	50.000	300	0,003	0,002
0,4	2	50.000	700	0,007	0,029	50.000	630	0,006	0,026	50.000	560	0,006	0,022	50.000	560	0,006	0,017	40.000	420	0,005	0,012	40.000	336	0,004	0,006
0,4	3	50.000	600	0,006	0,018	50.000	540	0,005	0,016	50.000	480	0,005	0,014	50.000	480	0,005	0,011	40.000	360	0,005	0,007	40.000	288	0,004	0,004
0,4	4	50.000	600	0,006	0,013	50.000	540	0,005	0,012	50.000	480	0,005	0,01	50.000	480	0,005	0,008	40.000	360	0,005	0,005	39.809	287	0,004	0,003
0,5	2	50.000	900	0,009	0,049	50.000	810	0,008	0,044	40.000	576	0,007	0,037	40.000	576	0,007	0,029	40.000	540	0,007	0,02	31.847	344	0,005	0,01
0,5	4	50.000	900	0,009	0,023	50.000	810	0,008	0,021	40.000	576	0,007	0,017	40.000	576	0,007	0,014	40.000	540	0,007	0,009	31.847	344	0,005	0,005
0,5	6	50.000	900	0,009	0,007	40.000	648	0,008	0,006	40.000	576	0,007	0,005	40.000	576	0,007	0,004	40.000	540	0,007	0,003	31.847	344	0,005	0,001
0,5	8	50.000	800	0,008	0,005	40.000	576	0,007	0,005	40.000	512	0,006	0,004	40.000	512	0,006	0,003	40.000	480	0,006	0,002	31.847	306	0,005	0,001
0,6	2	40.000	800	0,01	0,059	40.000	720	0,009	0,053	40.000	640	0,008	0,044	40.000	640	0,008	0,035	37.155	557	0,008	0,024	26.539	318	0,006	0,012
0,6	4	40.000	800	0,01	0,043	40.000	720	0,009	0,039	40.000	640	0,008	0,032	40.000	640	0,008	0,026	37.155	557	0,008	0,018	26.539	318	0,006	0,009
0,6	6	40.000	720	0,009	0,02	40.000	648	0,008	0,018	40.000	576	0,007	0,015	40.000	576	0,007	0,012	37.155	502	0,007	0,008	26.539	287	0,005	0,004
0,6	8	40.000	720	0,009	0,008	40.000	648	0,008	0,007	40.000	576	0,007	0,006	40.000	576	0,007	0,005	37.155	502	0,007	0,003	26.539	287	0,005	0,002
0,6	10	40.000	640	0,008	0,005	40.000	576	0,007	0,005	40.000	512	0,006	0,004	40.000	512	0,006	0,003	37.155	446	0,006	0,002	26.539	255	0,005	0,001
0,7	2	40.000	960	0,012	0,068	40.000	864	0,011	0,061	40.000	768	0,01	0,051	40.000	768	0,01	0,041	31.847	573	0,009	0,028	22.748	328	0,007	0,014
0,7	4	40.000	800	0,01	0,05	40.000	720	0,009	0,045	40.000	640	0,008	0,038	40.000	640	0,008	0,03	31.847	478	0,008	0,021	22.748	273	0,006	0,01
0,7	6	40.000	800	0,01	0,032	40.000	720	0,009	0,029	40.000	640	0,008	0,024	40.000	640	0,008	0,019	31.847	478	0,008	0,013	22.748	273	0,006	0,006
0,7	8	40.000	720	0,009	0,018	40.000	648	0,008	0,016	40.000	576	0,007	0,014	40.000	576	0,007	0,011	31.847	430	0,007	0,007	22.748	246	0,005	0,004
0,7	10	40.000	720	0,009	0,009	40.000	648	0,008	0,008	40.000	576	0,007	0,007	40.000	576	0,007	0,005	31.847	430	0,007	0,004	22.748	246	0,005	0,002
0,8	4	40.000	1.120	0,014	0,057	40.000	1.008	0,013	0,051	39.809	892	0,011	0,043	39.809	892	0,011	0,034	27.866	585	0,011	0,023	19.904	334	0,008	0,011
0,8	6	40.000	1.120	0,014	0,036	40.000	1.008	0,013	0,032	39.809	892	0,011	0,027	39.809	892	0,011	0,022	27.866	585	0,011	0,015	19.904	334	0,008	0,007
0,8	8	40.000	1.120	0,014	0,026	40.000	1.008	0,013	0,023	39.809	892	0,011	0,02	39.809	892	0,011	0,016	27.866	585	0,011	0,011	19.904	334	0,008	0,005
0,8	10	40.000	960	0,012	0,010	40.000	864	0,011	0,009	39.809	764	0,01	0,008	39.809	764	0,01	0,006	27.866	502	0,009	0,004	19.904	287	0,007	0,002
0,8	12	40.000	960	0,012	0,007	40.000	864	0,011	0,006	39.809	764	0,01	0,005	39.809	764	0,01	0,004	27.866	502	0,009	0,003	19.904	287	0,007	0,001
0,9	6	40.000	1.280	0,016	0,064	38.924	1121	0,014	0,058	35.386	906	0,013	0,048	35.386	906	0,013	0,038	24.770	594	0,012	0,026	17.693	340	0,01	0,013
0,9	8	40.000	1.280	0,016	0,041	38.924	1121	0,014	0,037	35.386	906	0,013	0,031	35.386	906	0,013	0,025	24.770	594	0,012	0,017	17.693	340	0,01	0,008
0,9	10	40.000	1.280	0,016	0,029	38.924	1121	0,014	0,026	35.386	906	0,013	0,022	35.386	906	0,013	0,017	24.770	594	0,012	0,012	17.693	340	0,01	0,006
0,9	15	40.000	1.120	0,014	0,007	38.924	981	0,013	0,006	35.386	793	0,011	0,005	35.386	793	0,011	0,004	24.770	520	0,011	0,003	17.693	297	0,008	0,001
1	6	38.217	1.376	0,018	0,07	35.032	1.135	0,016	0,063	31.847	917	0,014	0,053	31.847	917	0,014	0,042	22.293	602	0,014	0,029	15.924	344	0,011	0,014
1	8	38.217	1.376	0,018	0,05	35.032	1.135	0,016	0,045	31.847	917	0,014	0,038	31.847	917	0,014	0,03	22.293	602	0,014	0,021	15.924	344	0,011	0,01
1	10	38.217	1.376	0,018	0,03	35.032	1.135	0,016	0,027	31.847	917	0,014	0,023	31.847	917	0,014	0,018	22.293	602	0,014	0,012	15.924	344	0,011	0,006
1	12	38.217	1.376	0,018	0,02	35.032	1.135	0,016	0,018	31.847	917	0,014	0,015	31.847	917	0,014	0,012	22.293	602	0,014	0,008	15.924	344	0,011	0,004
1	14	38.217	1.223	0,016	0,015	35.032	1.009	0,014	0,014	31.847	815	0,013	0,011	31.847	815	0,013	0,009	22.293	535	0,012	0,006	15.924	306	0,01	0,003
1	16	38.217	1.223	0,016	0,01	35.032	1.009	0,014	0,009	31.847	815	0,013	0,008	31.847	815	0,013	0,006	22.293	535	0,012	0,004	15.924	306	0,01	0,002
1,2	6	31.847	1.338	0,021	0,09	29.193	1.104	0,019	0,081	26.539	892	0,017	0,068	26.539	892	0,017	0,054	18.577	585	0,016	0,037	13.270	334	0,013	0,018
1,2	8	31.847	1.338	0,021	0,07	29.193	1.104	0,019	0,063	26.539	892	0,017	0,053	26.539	892	0,017	0,042	18.577	585	0,016	0,029	13.270	334	0,013	0,014
1,2	10	31.847	1.338	0,021	0,06	29.193	1.104	0,019	0,054	26.539	892	0,017	0,045	26.539	892	0,017	0,036	18.577	585	0,016	0,025	13.270	334	0,013	0,012
1,2	12	31.847	1.338	0,021	0,04	29.193	1.104	0,019	0,036	26.539	892	0,017	0,030	26.539	892	0,017	0,024	18.577	585	0,016	0,016	13.270	334	0,013	0,008
1,4	6	27.298	1.310	0,024	0,14	25.023	1.081	0,022	0,126	22.748	874	0,019	0,105	22.748	874	0,019	0,084	15.924	573	0,018	0,058	11.374	328	0,014	0,028
1,4	8	27.298	1.310	0,024	0,1	25.023	1.081	0,022	0,09	22.748	874	0,019	0,075	22.748	874	0,019	0,06	15.924	573	0,018	0,041	11.374	328	0,014	0,02
1,4	10	27.298	1.310	0,024	0,07	25.023	1.081	0,022	0,063	22.748	874	0,019	0,053	22.748	874	0,019	0,042	15.924	573	0,018	0,029	11.374	328	0,014	0,014
1,4	12	27.298	1.310	0,024	0,06	25.023	1.081	0,022	0,054	22.748	874	0,019	0,045	22.748	874	0,019	0,036	15.924	573	0,018	0,025	11.374	328	0,014	0,012
1,4	14	27.298	1.310	0,024	0,05	25.023	1.081	0,022	0,045	22.748	874	0,019	0,038	22.748	874	0,019	0,03	15.924	573	0,018	0,021	11.374	328	0,014	0,01
1,4	16	27.298	1.201	0,022	0,03	25.023	991	0,02	0,027	22.748	801	0,018	0,023	22.748	801	0,018	0,018	15.924	525	0,017	0,012	11.374	300	0,013	0,006
1,5	6	25.478	1.325	0,026	0,15	23.355	1.093	0,023	0,135	21.231	883	0,021	0,113	21.231	883	0,021	0,09	14.862	580	0,02	0,062	10.616	331	0,016	0,03
1,5	8	25.478	1.325	0,026	0,11	23.355	1.093	0,023	0,099	21.231	883	0,021	0,083	21.231	883	0,021	0,066	14.862	580	0,02	0,045	10.616	331	0,016	0,022
1,5	10	25.478	1.325	0,026	0,09	23.355	1.093	0,023	0,081	21.231	883	0,021	0,068	21.231	883	0,021	0,054	14.862	580	0,02	0,037	10.616	331	0,016	0,018
1,5	12	25.478	1.325	0,026	0,07	23.355	1.093	0,023	0,063	21.231	883	0,021	0,053	21.231	883	0,021	0,042	14.862	580	0,02	0,029	10.616	331	0,016	0,014
1,5	14	25.478	1.325	0,026	0,06	23.355	1.093	0,023	0,054	21.231	883	0,021	0,045	21.231	883	0,021	0,036	14.862	580	0,02	0,025	10.616	331	0,016	0,012
1,5	16	25.478	1.325	0,026	0,05	23.355	1.093	0,023	0,045	21.231	883	0,021	0,038	21.231	883	0,021	0,03	14.862	580	0,02	0,021	10.616	331	0,016	0,01
1,5	18	25.478	1.325	0,026	0,03	23.355	1.093	0,023	0,027	21.231	883	0,021	0,023	21.231	883	0,021	0,018	14.862	580	0,02	0,012	10.616	331	0,016	0,006
1,5	20	25.478	1.325	0,026	0,02	23.355	1.093	0,023	0,018	21.231	883	0,021	0,015	21.231	883	0,021	0,012	14.862	580	0,02	0,008	10.616	331	0,016	0,004
1,6	6	23.885	1.338	0,028	0,17	21.895	1.104	0,025	0,153	19.904	892	0,022	0,128	19.904	892	0,022	0,102	13.933	585	0,021	0,07	9.952	334	0,017	0,034
1,6	8	23.885	1.338	0,028	0,16	21.895	1.104	0,025	0,144	19.904	892	0,022	0,12	19.904	892	0,022	0,096	13.933	585	0,021	0,066	9.952	334	0,017	0,032
1,6	10	23.885	1.338	0,028	0,11	21.895	1.104	0,025	0,099	19.904	892	0,022	0,083	19.904	892	0,022	0,066	13.933	585	0,021	0,045	9.952	334	0,017	0,022
1,6	12	23.885	1.338	0,028	0,07	21.895	1.104	0,025	0,063	19.904	892	0,022	0,053	19.904	892	0,022	0,042	13.933	585	0,021	0,029	9.952	334	0,017	0,014
1,6	14	23.885	1.338	0,028	0,06	21.895	1.104	0,025	0,054	19.904	892	0,022	0,045	19.904	892	0,022	0,036	13.933	585	0,021	0,025	9.952	334	0,017	0,012
1,6	16	23.885	1.338	0,028	0,05	21.895	1.104	0,025	0,045	19.904	892	0,022	0,038	19.904	892	0,022	0,03	13.933	585	0,021	0,021	9.952	334	0,017	0,01
1,6	18	23.885	1.338	0,028	0,04	21.895	1.104	0,025	0,036	19.904	892	0,022	0,03	19.904	892	0,022	0,024	13.933	585	0,021	0,016	9.952	334	0,017	0,008
1,6	20	23.885	1.338	0,028	0,02	21.895	1.104	0,025	0,018	19.904	892	0,022	0,015	19.904	892	0,022	0,012	13.933	585	0,021	0,008	9.952	334	0,017	0,004
1,8	6	21.231	1.316	0,031	0,23	19.462	1.086	0,028	0,207	17.693	878	0,025	0,173	17.693	878	0,025	0,138	12.385	576	0,023	0,095	8.846	329	0,019	0,046
1,8	8	21.231	1.316	0,031	0,22	19.462	1.086	0,028	0,198	17.693	878	0,025	0,165	17.693	878	0,025	0,132	12.385	576	0,023	0,091	8.846	329	0,019	0,044
1,8	10	21.231	1.316	0,031	0,13	19.462	1.086	0,028	0,117	17.693	878	0,025	0,098	17.693	878	0,025	0,078	12.385	576	0,023	0,054	8.846	329	0,019	0,026
1,8	12	21.231	1.316	0,031	0,11	19.462	1.086	0,028	0,099	17.693	878	0,025	0,083	17.693	878	0,025	0,066	12.385	576	0,023	0,045	8.846	329	0,019	0,022
1,8	14	21.231	1.316	0,031	0,08	19.462	1.086	0,028	0,072	17.693	878	0,025	0,06	17.693	878	0,025	0,048	12.385	576	0,023	0,033	8.846	329	0,019	0,016
1,8	16	21.231	1.316	0,031	0,07	19.462	1.086	0,028	0,063	17.693	878	0,025	0,053	17.693	878	0,025	0,042	12.385	576	0,023	0,029	8.846	329	0,019	0,014
1,8	18	21.231	1.316	0,031	0,06	19.462	1.086	0,028	0,054	17.693	878	0,025	0,045	17.693	878	0,025	0,036	12.385	576	0,023	0,025	8.846	329	0,019	0,012
1,8	20	21.231	1.316	0,031	0,05	19.462	1.086	0,028	0,045	17.693	878	0,025	0,038	17.693	878	0,025	0,03	12.385	576	0,023	0,021	8.846	329	0,019	0,01
2	6	19.108	1.299	0,034	0,34	17.516	1.072	0,031	0,306	15.924	866	0,027	0,255	15.924	866	0,027	0,204	11.146	568	0,026	0,14	7.962	325	0,02	0,068
2	8	19.108	1.299	0,034	0,29	17.516	1.072	0,031	0,261	15.924	866	0,027	0,218	15.924	866	0,027	0,174	11.146	568	0,026	0,119	7.962	325	0,02	0,058
2	10	19.108	1.299	0,034	0,26	17.516	1.072	0,031	0,234	15.924	866	0,027	0,195	15.924	866	0,027	0,156	11.146	568	0,026	0,107	7.962	325	0,02	0,052
2	12	19.108	1.299	0,034	0,14	17.516	1.072	0,031	0,126	15.924	866	0,027	0,105	15.924	866	0,027	0,084	11.146	568	0,026	0,058	7.962	325	0,02	0,028
2	14	19.108	1.299	0,034	0,1	17.516	1.072	0,031	0,090	15.924	866	0,027	0,075	15.924	866	0,027	0,06	11.146	568	0,026	0,041	7.962	325	0,02	0,02
2	16	19.108	1.299	0,034	0,09	17.516	1.072	0,031	0,081	15.924	866	0,027	0,068	15.924	866	0,027	0,054	11.146	568	0,026	0,037	7.962	325	0,02	0,018
2	18	19.108	1.299	0,034	0,08	17.516	1.072	0,031	0,072	15.924	866	0,027	0,06	15.924	866	0,027	0,048	11.146	568	0,026	0,033	7.962	325	0,02	0,016
2	20	19.108	1.299	0,034	0,07	17.516	1.072	0,031	0,063	15.924	866	0,027	0,053	15.924	866	0,027	0,042	11.146	568	0,026	0,029	7.962	325	0,02	0,014
2	25	19.108	1.299	0,034	0,03	17.516	1.072	0,031	0,027	15.924	866	0,027	0,023	15.924	866	0,027	0,018	11.146	568	0,026	0,012	7.962	325	0,02	0,006
2	30	19.108	1.299	0,034	0,02	17.516	1.072	0,031	0,018	15.924	866	0,027	0,015	15.924	866	0,027	0,012	11.146	568	0,026	0,008	7.962	325	0,02	0,004
2,5	8	15.287	1.834	0,06	0,42	14.013	1.513	0,054	0,378	12.739	1.223	0,048	0,315	12.739	1.223	0,048	0,252	8.917	803	0,045	0,173	6.369	459	0,036	0,084
2,5	10	15.287	1.834	0,06	0,36	14.013	1.513	0,054	0,324	12.739	1.223	0,048	0,27	12.739	1.223	0,048	0,216	8.917	803	0,045	0,148	6.369	459	0,036	0,072
2,5	12	15.287	1.834	0,06	0,24	14.013	1.513	0,054	0,216	12.739	1.223	0,048	0,18	12.739	1.223	0,048	0,144	8.917	803	0,045	0,099	6.369	459	0,036	0,048

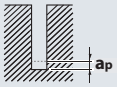
WX-LN-EDS

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG E24 ■ XC48 ■ FT25 ~750 N/mm²				~30 HRC 350NCD16 ■ 40CMD8				30~38 HRC 35NCD16				38~45 HRC - SUS 35NCD16				45~55 HRC Z38CDV5				55~60 HRC Z160CDV12			
	120 (m/min)				110 (m/min)				100 (m/min)				100 (m/min)				70 (m/min)				50 (m/min)			
Ø	Lg (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)
3	40	12.739	2.038	0,08	0,04	11.677	1.682	0,072	0,036	10.616	1.359	0,064	0,03	7.962	1.359	0,064	0,024	7.431	892	0,06	0,016	5.308	510	0,048	0,008
4	12	9.554	1.911	0,1	0,42	8.758	1.576	0,09	0,378	7.962	1.274	0,08	0,315	7.962	1.274	0,08	0,252	5.573	836	0,075	0,173	3.981	478	0,06	0,084
4	16	9.554	1.911	0,1	0,39	8.758	1.576	0,09	0,351	7.962	1.274	0,08	0,293	7.962	1.274	0,08	0,234	5.573	836	0,075	0,161	3.981	478	0,06	0,078
4	20	9.554	1.911	0,1	0,36	8.758	1.576	0,09	0,324	7.962	1.274	0,08	0,27	7.962	1.274	0,08	0,216	5.573	836	0,075	0,148	3.981	478	0,06	0,072
4	25	9.554	1.720	0,09	0,29	8.758	1.419	0,081	0,261	7.962	1.146	0,072	0,218	7.962	1.146	0,072	0,174	5.573	752	0,068	0,119	3.981	430	0,054	0,058
4	30	9.554	1.529	0,08	0,21	8.758	1.261	0,072	0,189	7.962	1.019	0,064	0,158	7.962	1.019	0,064	0,126	5.573	669	0,06	0,086	3.981	382	0,048	0,042
4	35	9.554	1.338	0,07	0,18	8.758	1.104	0,063	0,162	7.962	892	0,056	0,135	7.962	892	0,056	0,108	5.573	585	0,053	0,074	3.981	334	0,042	0,036
4	40	9.554	1.146	0,06	0,16	8.758	946	0,054	0,144	7.962	764	0,048	0,12	7.962	764	0,048	0,096	5.573	502	0,045	0,066	3.981	287	0,036	0,032
4	45	9.554	1.146	0,06	0,13	8.758	946	0,054	0,117	7.962	764	0,048	0,098	7.962	764	0,048	0,078	5.573	502	0,045	0,054	3.981	287	0,036	0,026
4	50	9.554	955	0,05	0,05	8.758	788	0,045	0,045	7.962	637	0,04	0,038	7.962	637	0,04	0,03	5.573	418	0,038	0,021	3.981	239	0,03	0,01
5	16	7.643	1.987	0,13	0,49	7.006	1.639	0,117	0,441	6.369	1.325	0,104	0,368	6.369	1.325	0,104	0,294	4.459	869	0,098	0,202	3.185	497	0,078	0,098
5	25	7.643	1.834	0,12	0,46	7.006	1.513	0,108	0,414	6.369	1.223	0,096	0,345	6.369	1.223	0,096	0,276	4.459	803	0,09	0,189	3.185	459	0,072	0,092
5	35	7.643	1.529	0,1	0,36	7.006	1.261	0,09	0,324	6.369	1.019	0,08	0,27	6.369	1.019	0,08	0,216	4.459	669	0,075	0,148	3.185	382	0,06	0,072
5	50	7.643	1.529	0,1	0,16	7.006	1.261	0,09	0,144	6.369	1.019	0,08	0,12	6.369	1.019	0,08	0,096	4.459	669	0,075	0,066	3.185	382	0,06	0,032

Max cutting depth



1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.
* Modified parameters

1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglietli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
* Parameto modificato

1. Die Schnittdaten sin ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemdenden Zusätzen.
* Modifizierten Parameters

1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée.
* Paramètres modifiés

1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling
* Modificerede parametre

1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo
* Parámetros modificados

1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling
* Modifierade parametrar

1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.
* Modifie edilmiş parametreler

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.
* Zmodyfikowane parametryx

WX-EBD

	GG GG-GGG		C≤0,2% S55C ■ SS400 ~700 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC SKT ■ NAK55 ■ HPMI		38~45 HRC - SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC - HRC		55~60 HRC	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,2 X 0,4	32.000	460	32.000	460	32.000	410	32.000	330	32.000	205	24.500	135	24.500	115
R 0,3 X 0,6	32.000	535	32.000	535	31.500	490	32.000	420	32.000	265	24.500	175	23.500	150
R 0,5 X 1	32.000	765	32.000	765	31.500	620	25.000	400	22.000	285	19.000	210	14.000	140
R 1 X 2	23.500	940	19.000	765	15.500	620	12.500	400	11.000	290	9.500	210	7.150	140
R 1,5 X 3	15.500	940	12.500	765	10.500	630	8.450	405	7.400	290	6.350	210	4.750	140
R 2 X 4	11.500	940	9.500	765	7.950	630	6.350	445	5.550	370	4.750	270	3.550	175
R 2,5 X 5	9.500	1.050	7.600	855	6.350	635	5.050	445	4.450	370	3.800	285	2.850	175
R 3 X 6	7.950	1.050	6.350	855	5.300	670	4.200	465	3.700	390	3.150	295	2.350	185
R 4 X 8	5.950	1.300	4.750	1.050	3.950	790	3.150	555	2.750	455	2.350	325	1.750	210
R 5 X 10	4.750	1.200	3.800	960	3.150	745	2.500	525	2.200	430	1.900	335	1.400	210
R 6 X 12	3.950	1.100	3.150	890	2.650	700	2.100	490	1.850	430	1.550	310	1.150	195
R 7 X 14	3.400	1.050	2.700	865	2.250	675	1.800	475	1.550	390	1.350	300	1.000	190
R 8 X 16	2.950	1.050	2.350	840	1.950	645	1.550	475	1.350	380	1.150	270	895	185
R 9 X 18	2.650	1.000	2.100	795	1.750	610	1.400	475	1.200	380	1.050	260	795	175
R 10 X 20	2.350	940	1.900	765	1.550	570	1.250	450	1.100	370	955	250	715	170
R 12,5X 25	1.900	760	1.500	670	1.250	465	1.000	360	890	295	760	210	570	145
R 15 X 30	1.550	650	1.250	630	1.050	435	845	310	740	250	635	175	475	115

Max cutting depth

	ap	ae
R ≤ 0,5	0,05D	0,2D
0,5 ≤ R	0,10D	0,2D



ap	pf
0,05D	0,1D

1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.

1. Usare un mandrino portautensile preciso e rigido/
2. Si consiglia di usare emulsione a scarsa emissione di fumi.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Utiliser une machine et un attachement précis et rigide.
2. Utiliser un liquide de refroidissement adéquat.

1. Anvend stabil maskine og værktøjsholder
2. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Använd anpassad skärvätska

1. Используйте жесткие и точные станки и фрезерные патроны.
2. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

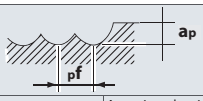
WX-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC

	C≤0,2% - GG SKD ■ NAK80 ■ HPM50 ~45 HRC		~30 HRC SKD ■ SKS ■ SNCM ~30 HRC		30~38 HRC NAK55 ■ HPM1 ■ SKT		38~45 HRC-SUS SUS304 ■ X210CR12 ■ X40CRMOV51		45~55 HRC-HRS		55~60 HRC	
	350~500 (m/min)		300~450 (m/min)		250~400 (m/min)		150~300 (m/min)		120~220 (m/min)		80~150 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,5 X 1	50.000	2.800	50.000	2.800	50.000	2.500	47.500	2.250	32.000	1.450	25.000	1.000
R 1 X 2	31.500	3.500	25.000	2.800	24.500	2.500	23.500	2.250	17.000	1.550	12.500	1.000
R 1,5 X 3	21.000	3.500	16.500	2.800	16.000	2.500	15.500	2.250	11.000	1.550	8.450	1.000
R 2 X 4	18.000	3.700	15.500	3.400	15.000	2.750	13.500	2.450	11.000	1.900	7.950	1.100
R 2,5 X 5	15.500	4.000	15.000	4.050	14.000	2.900	11.000	2.300	10.000	2.100	7.600	1.200
R 3 X 6	15.000	4.800	13.500	4.300	11.500	2.750	9.500	2.250	9.500	2.250	6.600	1.150
R 4 X 8	11.500	3.650	10.000	3.200	8.950	2.100	7.150	1.700	7.150	1.700	4.950	890
R 5 X 10	9.500	3.000	8.250	2.600	7.150	1.700	5.700	1.350	5.700	1.350	3.950	710
R 6 X 12	7.950	2.500	6.850	2.150	5.950	1.400	4.750	1.100	4.750	1.100	3.300	590
R 7 X 14	6.800	2.150	5.900	1.850	5.100	1.200	4.050	970	4.050	970	2.800	500
R 8 X 16	5.950	1.900	5.150	1.600	4.450	1.050	3.550	850	3.550	850	2.450	440
R 9 X 18	5.300	1.650	4.550	1.450	3.950	945	3.150	755	3.150	755	2.200	395
R 10 X 20	4.750	1.500	4.100	1.300	3.550	850	2.850	680	2.850	680	1.950	350
R 12,5 X 25	3.800	1.200	3.300	1.050	2.850	680	2.250	540	2.250	540	1.550	275
R 15 X 30	3.150	1.000	2.750	880	2.350	560	1.900	455	1.900	455	1.300	230

Max cutting depth

ap	pf
0,02D	0,05D



	ap	pf
R ≤ 8	0,02D	0,05D
8 < R	0,5 mm	0,05D

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausreichenden Brandschutz sicher.
1. Die Schnittdaten sind ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen..

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling.

Atención, Las chispas pueden causar el incendio del refrigerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Frasar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
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WX-LN-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG E24 ■ XC38 ■ FT25 ■ 75MPA					~30 HRC 33NCD16 ■ 40CMD8					30~38 HRC 35NCD16				
	120 (m/min)					110 (m/min)					100 (m/min)				
Ø	Lg (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)
0,2	0,5	50.000	400	0,004	0,02	0,060	50.000	360	0,004	0,018	0,054	50.000	320	0,003	0,016	0,048
0,2	1	50.000	400	0,004	0,01	0,024	50.000	360	0,004	0,009	0,022	50.000	320	0,003	0,008	0,019
0,2	1,5	50.000	400	0,004	0,008	0,01	50.000	360	0,004	0,007	0,009	50.000	320	0,003	0,006	0,008
0,3	1	50.000	600	0,006	0,02	0,063	50.000	540	0,005	0,018	0,057	50.000	480	0,005	0,016	0,05
0,3	1,5	50.000	600	0,006	0,015	0,04	50.000	540	0,005	0,014	0,036	50.000	480	0,005	0,012	0,032
0,3	2	50.000	600	0,006	0,012	0,036	50.000	540	0,005	0,011	0,032	50.000	480	0,005	0,01	0,029
0,4	1	50.000	900	0,009	0,04	0,12	50.000	810	0,008	0,036	0,108	50.000	720	0,007	0,032	0,096
0,4	1,5	50.000	900	0,009	0,02	0,1	50.000	810	0,008	0,018	0,09	50.000	720	0,007	0,016	0,08
0,4	2	50.000	900	0,009	0,02	0,06	50.000	810	0,008	0,018	0,054	50.000	720	0,007	0,016	0,048
0,4	2,5	50.000	800	0,008	0,02	0,05	50.000	720	0,007	0,018	0,045	50.000	640	0,006	0,016	0,04
0,4	3	50.000	800	0,008	0,02	0,048	50.000	720	0,007	0,018	0,043	50.000	640	0,006	0,016	0,038
0,5	2	50.000	1.500	0,015	0,02	0,07	50.000	1.350	0,014	0,018	0,063	40.000	960	0,012	0,016	0,056
0,5	3	50.000	1.200	0,012	0,02	0,065	50.000	1.080	0,011	0,018	0,059	40.000	768	0,01	0,016	0,052
0,5	4	50.000	1.100	0,011	0,02	0,06	50.000	990	0,01	0,018	0,054	40.000	704	0,009	0,016	0,048
0,5	5	50.000	1.100	0,011	0,02	0,05	40.000	792	0,01	0,018	0,045	40.000	704	0,009	0,016	0,04
0,5	6	50.000	1.100	0,011	0,013	0,039	40.000	792	0,01	0,012	0,035	40.000	704	0,009	0,01	0,031
0,5	8	50.000	900	0,009	0,01	0,03	40.000	648	0,008	0,009	0,027	40.000	576	0,007	0,008	0,024
0,6	2	40.000	1.280	0,016	0,03	0,1	40.000	1.152	0,014	0,027	0,09	40.000	1.024	0,013	0,024	0,08
0,6	3	40.000	1.200	0,015	0,03	0,1	40.000	1.080	0,014	0,027	0,09	40.000	960	0,012	0,024	0,08
0,6	4	40.000	1.040	0,013	0,03	0,1	40.000	936	0,012	0,027	0,09	40.000	832	0,01	0,024	0,08
0,6	5	40.000	960	0,012	0,03	0,1	40.000	864	0,011	0,027	0,09	40.000	768	0,01	0,024	0,08
0,6	6	40.000	880	0,011	0,03	0,1	40.000	792	0,01	0,027	0,09	40.000	704	0,009	0,024	0,08
0,6	8	40.000	880	0,011	0,017	0,1	40.000	792	0,01	0,015	0,09	40.000	704	0,009	0,014	0,08
0,8	2	40.000	1.440	0,018	0,05	0,15	40.000	1.296	0,016	0,045	0,135	40.000	1.152	0,014	0,04	0,12
0,8	4	40.000	1.440	0,018	0,04	0,1	40.000	1.296	0,016	0,036	0,09	40.000	1.152	0,014	0,032	0,08
0,8	5	40.000	1.440	0,018	0,04	0,1	40.000	1.296	0,016	0,036	0,09	40.000	1.152	0,014	0,032	0,08
0,8	6	40.000	1.440	0,018	0,035	0,1	40.000	1.296	0,016	0,032	0,09	40.000	1.152	0,014	0,028	0,08
0,8	7	40.000	1.360	0,017	0,03	0,009	40.000	1.224	0,015	0,027	0,008	40.000	1.088	0,014	0,024	0,007
0,8	8	40.000	1.200	0,015	0,03	0,07	40.000	1.080	0,014	0,027	0,063	40.000	960	0,012	0,024	0,056
0,8	10	40.000	1.200	0,015	0,02	0,06	40.000	1.080	0,014	0,018	0,054	40.000	960	0,012	0,016	0,048
1	3	40.000	2.000	0,025	0,1	0,2	40.000	1.800	0,023	0,09	0,18	40.000	1.600	0,02	0,08	0,16
1	4	40.000	1.760	0,022	0,07	0,2	40.000	1.584	0,02	0,063	0,18	40.000	1.408	0,018	0,056	0,16
1	5	40.000	1.760	0,022	0,05	0,2	40.000	1.584	0,02	0,045	0,18	40.000	1.408	0,018	0,04	0,16
1	6	40.000	1.760	0,022	0,05	0,2	40.000	1.584	0,02	0,045	0,18	40.000	1.408	0,018	0,04	0,16
1	7	40.000	1.600	0,02	0,05	0,15	40.000	1.440	0,018	0,045	0,135	40.000	1.280	0,016	0,04	0,12
1	8	40.000	1.600	0,02	0,04	0,15	40.000	1.440	0,018	0,036	0,135	40.000	1.280	0,016	0,032	0,12
1	9	40.000	1.600	0,02	0,04	0,15	40.000	1.440	0,018	0,036	0,135	40.000	1.280	0,016	0,032	0,12
1	10	40.000	1.600	0,02	0,03	0,1	40.000	1.440	0,018	0,027	0,09	40.000	1.280	0,016	0,024	0,08
1	12	40.000	1.200	0,015	0,03	0,1	40.000	1.080	0,014	0,027	0,09	40.000	960	0,012	0,024	0,08
1	14	40.000	1.200	0,015	0,03	0,1	40.000	1.080	0,014	0,027	0,09	40.000	960	0,012	0,024	0,08
1	16	40.000	1.200	0,015	0,025	0,1	40.000	1.080	0,014	0,023	0,09	40.000	960	0,012	0,02	0,08
1	20	40.000	1.200	0,015	0,02	0,08	40.000	1.080	0,014	0,018	0,072	40.000	960	0,012	0,016	0,064
1,2	6	31.847	1.911	0,03	0,05	0,12	29.193	1.576	0,027	0,045	0,108	26.539	1.274	0,024	0,04	0,096
1,2	8	31.847	1.656	0,026	0,04	0,12	29.193	1.366	0,023	0,036	0,108	26.539	1.104	0,021	0,032	0,096
1,2	10	31.847	1.401	0,022	0,03	0,09	29.193	1.156	0,02	0,027	0,081	26.539	934	0,018	0,024	0,072
1,2	12	31.847	1.274	0,02	0,02	0,09	29.193	1.051	0,018	0,018	0,081	26.539	849	0,016	0,016	0,072
1,4	8	27.298	1.638	0,03	0,06	0,2	25.023	1.351	0,027	0,054	0,18	22.748	1.092	0,024	0,048	0,16
1,4	12	27.298	1.638	0,03	0,05	0,18	25.023	1.351	0,027	0,045	0,162	22.748	1.092	0,024	0,04	0,144
1,4	16	27.298	1.638	0,03	0,04	0,14	25.023	1.351	0,027	0,036	0,126	22.748	1.092	0,024	0,032	0,112
1,5	8	25.478	1.682	0,033	0,07	0,18	23.355	1.387	0,03	0,063	0,162	21.231	1.121	0,026	0,056	0,144
1,5	12	25.478	1.682	0,033	0,07	0,18	23.355	1.387	0,03	0,063	0,162	21.231	1.121	0,026	0,056	0,144
1,5	16	25.478	1.427	0,028	0,05	0,14	23.355	1.177	0,025	0,045	0,126	21.231	951	0,022	0,04	0,112
1,5	20	25.478	1.274	0,025	0,04	0,12	23.355	1.051	0,023	0,036	0,108	21.231	849	0,02	0,032	0,096
1,6	8	23.885	1.672	0,035	0,07	0,2	21.895	1.379	0,032	0,063	0,18	19.904	1.115	0,028	0,056	0,16
1,6	12	23.885	1.529	0,032	0,07	0,2	21.895	1.261	0,029	0,063	0,18	19.904	1.019	0,026	0,056	0,16
1,6	16	23.885	1.433	0,03	0,05	0,15	21.895	1.182	0,027	0,045	0,135	19.904	955	0,024	0,04	0,12
1,6	20	23.885	1.194	0,025	0,04	0,12	21.895	985	0,023	0,036	0,108	19.904	796	0,02	0,032	0,096
1,8	8	21.231	1.741	0,041	0,08	0,25	19.462	1.436	0,037	0,072	0,225	17.693	1.161	0,033	0,064	0,2
1,8	12	21.231	1.486	0,035	0,08	0,2	19.462	1.226	0,032	0,072	0,18	17.693	991	0,028	0,064	0,16
1,8	16	21.231	1.274	0,03	0,06	0,15	19.462	1.051	0,027	0,054	0,135	17.693	849	0,024	0,048	0,12
1,8	20	21.231	1.146	0,027	0,05	0,135	19.462	946	0,024	0,045	0,122	17.693	764	0,022	0,04	0,108
1,6	8	23.885	1.672	0,035	0,07	0,2	21.895	1.379	0,032	0,063	0,18	19.904	1.115	0,028	0,056	0,16
1,6	12	23.885	1.529	0,032	0,07	0,2	21.895	1.261	0,029	0,063	0,18	19.904	1.019	0,026	0,056	0,16
1,6	16	23.885	1.433	0,03	0,05	0,15	21.895	1.182	0,027	0,045	0,135	19.904	955	0,024	0,04	0,12
1,6	20	23.885	1.194	0,025	0,04	0,12	21.895	985	0,023	0,036	0,108	19.904	796	0,02	0,032	0,096
1,8	8	21.231	1.741	0,041	0,08	0,25	19.462	1.436	0,037	0,072	0,225	17.693	1.161	0,033	0,064	0,2
1,8	12	21.231	1.486	0,035	0,08	0,2	19.462	1.226	0,032	0,072	0,18	17.693	991	0,028	0,064	0,16
1,8	16	21.231	1.274	0,03	0,06	0,15	19.462	1.051	0,027	0,054	0,135	17.693	849	0,024	0,048	0,12
1,8	20	21.231	1.146	0,027	0,05	0,135	19.462	946	0,024	0,045	0,122	17.693	764	0,022	0,04	0,108
2	4	19.108	1.911	0,05	0,18	0,5	17.516	1.576	0,045	0,162	0,45	15.924	1.274	0,04	0,144	0,4
2	6	19.108	1.720	0,045	0,15	0,5	17.516	1.419	0,041	0,135	0,45	15.924	1.146	0,036	0,12	0,4
2	8	19.108	1.643	0,043	0,15	0,4	17.516	1.356	0,039	0,135	0,36	15.924	1.096	0,034	0,12	0,32
2	10	19.108	1.911	0,05	0,15	0,4	17.516	1.576	0,045	0,135	0,36	15.924	1.274	0,04	0,12	0,32
2	12	19.108	1.796	0,047	0,12	0,35	17.516	1.482	0,042	0,108	0,315	15.924	1.197	0,038	0,096	0,28
2	14	19.108	1.529	0,04	0,1	0,35	17.516	1.261	0,036	0,09	0,315	15.924	1.019	0,032	0,08	0,28
2	16	19.108	1.338	0,035	0,1	0,30	17.516	1.104	0,032	0,09	0,270	15.924	892	0,028	0,08	0,24
2	18	19.108	1.146	0,03	0,1	0,25	17.516	946	0,027	0,09	0,225	15.924	764	0,024	0,08	0,2
2	20	19.108	1.146	0,03	0,07	0,25	17.516	946	0,027	0,063	0,225	15.924	764	0,024	0,056	0,2
2	22	19.108	1.032	0,027	0,05	0,2	17.516	851	0,024	0,045	0,180	15.924	688	0,022	0,04	0,16
2	25	19.108	1.032	0,027	0,05	0,15	17.516	851	0,024	0,045	0,135	15.924	688	0,022	0,04	0,12
2	30	19.108	955	0,025	0,04	0,1	17.516	788	0,023	0,036	0,090	15.924	637	0,02	0,032	0,08
3	8	12.739	2.038	0,08	0,2	0,6	11.677	1.682	0,072	0,18	0,540	10.616	1.359	0,064	0,16	0,48
3	10	12.739	2.038	0,08	0,2	0,5	11.677	1.682	0,072	0,18	0,450	10.616	1.359	0,064	0,16	0,4
3	16	12.739	1.783	0,07	0,15	0,5	11.677	1.471	0,063	0,135	0,450	10.616	1.189	0,056	0,12	0,4
3	20	12.739	1.656	0,065	0,15	0,4	11.677	1.366	0,059	0,135	0,360	10.616	1.104	0,052	0,12	0,32

BACK

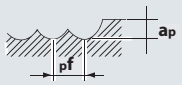
WX-LN-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG E24 ■ XC38 ■ FT25 ■ 75MPA						~30 HRC 33NCD16 ■ 40CMD8						30~38 HRC 35NCD16				
	120 (m/min)						110 (m/min)						100 (m/min)				
Ø	Lg (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)
3	25	12.739	1.529	0,060	0,13	0,3	11.677	1.261	0,054	0,117	0,27	10.616	1.019	0,048	0,104	0,24
3	30	12.739	1.452	0,057	0,1	0,25	11.677	1.198	0,051	0,09	0,225	10.616	968	0,046	0,08	0,2
3	35	12.739	1.401	0,055	0,08	0,25	11.677	1.156	0,05	0,072	0,225	10.616	934	0,044	0,064	0,2
4	10	9.554	2.293	0,12	0,2	0,8	8.758	1.892	0,108	0,18	0,72	7.962	1.529	0,096	0,16	0,64
4	16	9.554	1.911	0,1	0,2	0,6	8.758	1.576	0,09	0,18	0,54	7.962	1.274	0,08	0,16	0,48
4	20	9.554	1.911	0,1	0,2	0,6	8.758	1.576	0,09	0,18	0,54	7.962	1.274	0,08	0,16	0,48
4	25	9.554	1.720	0,09	0,2	0,5	8.758	1.419	0,081	0,18	0,45	7.962	1.146	0,072	0,16	0,4
4	30	9.554	1.529	0,08	0,2	0,4	8.758	1.261	0,072	0,18	0,36	7.962	1.019	0,064	0,16	0,32
4	35	9.554	1.338	0,07	0,15	0,4	8.758	1.104	0,063	0,135	0,36	7.962	892	0,056	0,12	0,32
4	40	9.554	1.146	0,06	0,15	0,4	8.758	946	0,054	0,135	0,36	7.962	764	0,048	0,12	0,32
4	45	9.554	1.146	0,06	0,1	0,3	8.758	946	0,054	0,09	0,27	7.962	764	0,048	0,08	0,24
4	50	9.554	955	0,05	0,1	0,3	8.758	788	0,045	0,09	0,27	7.962	637	0,04	0,08	0,24
5	20	7.643	1.987	0,13	0,25	1	7.006	1.639	0,117	0,225	0,9	6.369	1.325	0,104	0,2	0,8
5	25	7.643	1.834	0,12	0,25	0,9	7.006	1.513	0,108	0,225	0,81	6.369	1.223	0,096	0,2	0,72
5	30	7.643	1.529	0,1	0,25	0,8	7.006	1.261	0,09	0,225	0,72	6.369	1.019	0,08	0,2	0,64
5	35	7.643	1.529	0,1	0,25	0,6	7.006	1.261	0,09	0,225	0,54	6.369	1.019	0,08	0,2	0,48
6	30	6.369	1.783	0,14	0,42	1,3	5.839	1.471	0,126	0,378	1,17	5.308	1.189	0,112	0,336	1,04
6	50	6.369	1.401	0,11	0,2	0,5	5.839	1.156	0,099	0,18	0,45	5.308	934	0,088	0,16	0,4

Max cutting depth



Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.
* Modified parameters

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
* Parameto modificato

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausreichenden Brandschutz sicher.
1. Die Schnittdaten sin ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemdenden Zusätzen.
* Modifizierten Parameters

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée.
* Paramètres modifiés

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1.Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2.Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3.Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling
*Modificerede parametre

Atención: Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1.Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2 No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3.XUtilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo
*Parámetros modificados

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1.Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2.Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3.Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling
*Modifierade parametrar

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.
*Измененные параметры

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.
* Modifie edilmiş parametreler

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.
* Zmodyfikowane parametry

BACK

WX-LN-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



38~45 HRC - SUS

35NCD16+

100 (m/min)

Ø	Lg (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)
0,2	0,5	50.000	320	0,003	0,016	0,048
0,2	1	50.000	320	0,003	0,008	0,019
0,2	1,5	50.000	320	0,003	0,006	0,008
0,3	1	50.000	480	0,005	0,016	0,05
0,3	1,5	50.000	480	0,005	0,012	0,032
0,3	2	50.000	480	0,005	0,01	0,029
0,4	1	50.000	720	0,007	0,032	0,096
0,4	1,5	50.000	720	0,007	0,016	0,08
0,4	2	50.000	720	0,007	0,016	0,048
0,4	2,5	50.000	640	0,006	0,016	0,04
0,4	3	50.000	640	0,006	0,016	0,038
0,5	2	40.000	960	0,012	0,016	0,056
0,5	3	40.000	768	0,01	0,016	0,052
0,5	4	40.000	704	0,009	0,016	0,048
0,5	5	40.000	704	0,009	0,016	0,04
0,5	6	40.000	704	0,009	0,01	0,031
0,5	8	40.000	576	0,007	0,008	0,024
0,6	2	40.000	1.024	0,013	0,024	0,08
0,6	3	40.000	960	0,012	0,024	0,08
0,6	4	40.000	832	0,01	0,024	0,08
0,6	5	40.000	768	0,01	0,024	0,08
0,6	6	40.000	704	0,009	0,024	0,08
0,6	8	40.000	704	0,009	0,014	0,08
0,8	2	40.000	1.152	0,014	0,04	0,12
0,8	4	40.000	1.152	0,014	0,032	0,08
0,8	5	40.000	1.152	0,014	0,032	0,08
0,8	6	40.000	1.152	0,014	0,028	0,08
0,8	7	40.000	1.088	0,014	0,024	0,007
0,8	8	40.000	960	0,012	0,024	0,056
0,8	10	40.000	960	0,012	0,016	0,048
1	3	40.000	1.600	0,02	0,08	0,16
1	4	40.000	1.408	0,018	0,056	0,16
1	5	40.000	1.408	0,018	0,04	0,16
1	6	40.000	1.408	0,018	0,04	0,16
1	7	40.000	1.280	0,016	0,04	0,12
1	8	40.000	1.280	0,016	0,032	0,12
1	9	40.000	1.280	0,016	0,032	0,12
1	10	40.000	1.280	0,016	0,024	0,08
1	12	40.000	960	0,012	0,024	0,08
1	14	40.000	960	0,012	0,024	0,08
1	16	40.000	960	0,012	0,02	0,08
1	20	40.000	960	0,012	0,016	0,064
1,2	6	26.539	1.274	0,024	0,04	0,096
1,2	8	26.539	1.104	0,021	0,032	0,096
1,2	10	26.539	934	0,018	0,024	0,072
1,2	12	26.539	849	0,016	0,016	0,072
1,4	8	22.748	1.092	0,024	0,048	0,16
1,4	12	22.748	1.092	0,024	0,04	0,144
1,4	16	22.748	1.092	0,024	0,032	0,112
1,5	8	21.231	1.121	0,026	0,056	0,144
1,5	12	21.231	1.121	0,026	0,056	0,144
1,5	16	21.231	951	0,022	0,04	0,112
1,5	20	21.231	849	0,02	0,032	0,096
1,6	8	19.904	1.115	0,028	0,056	0,16
1,6	12	19.904	1.019	0,026	0,056	0,16
1,6	16	19.904	955	0,024	0,04	0,12
1,6	20	19.904	796	0,02	0,032	0,096
1,8	8	17.693	1.161	0,033	0,064	0,2
1,8	12	17.693	991	0,028	0,064	0,16
1,8	16	17.693	849	0,024	0,048	0,12
1,8	20	17.693	764	0,022	0,04	0,108
2	4	15.924	1.274	0,04	0,144	0,4
2	6	15.924	1.146	0,036	0,12	0,4
2	8	15.924	1.096	0,034	0,12	0,32
2	10	15.924	1.274	0,04	0,12	0,32
2	12	15.924	1.197	0,038	0,096	0,28
2	14	15.924	1.019	0,032	0,08	0,28
2	16	15.924	892	0,028	0,08	0,24
2	18	15.924	764	0,024	0,08	0,2
2	20	15.924	764	0,024	0,056	0,2
2	22	15.924	688	0,022	0,04	0,16
2	25	15.924	688	0,022	0,04	0,12
2	30	15.924	637	0,02	0,032	0,08
3	8	10.616	1.359	0,064	0,16	0,48
3	10	10.616	1.359	0,064	0,16	0,4
3	16	10.616	1.189	0,056	0,12	0,4
3	20	10.616	1.104	0,052	0,12	0,32
3	25	10.616	1.019	0,048	0,104	0,24
3	30	10.616	968	0,046	0,08	0,2
3	35	10.616	934	0,044	0,064	0,2
4	10	7.962	1.529	0,096	0,16	0,64
4	16	7.962	1.274	0,08	0,16	0,48
4	20	7.962	1.274	0,08	0,16	0,48
4	25	7.962	1.146	0,072	0,16	0,4
4	30	7.962	1.019	0,064	0,16	0,32

WX-LN-EBD

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



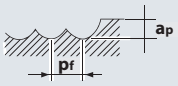
38~45 HRC - SUS

35NCD16+

100 (m/min)

Ø	Lg (mm)	S (min^{-1})	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)
4	**35**	7.962	892	0,056	0,12	0,32
4	**40**	7.962	764	0,048	0,12	0,32
4	**45**	7.962	764	0,048	0,08	0,24
4	**50**	7.962	637	0,04	0,08	0,24
5	**20**	6.369	1.325	0,104	0,2	0,8
5	**25**	6.369	1.223	0,096	0,2	0,72
5	**30**	6.369	1.019	0,08	0,2	0,64
5	**35**	6.369	1.019	0,08	0,2	0,48
6	**30**	5.308	1.189	0,112	0,336	1,04
6	**50**	5.308	934	0,088	0,16	0,4

Max cutting depth



Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.
* Modified parameters

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
* Parameto modificato

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausreichenden Brandschutz sicher.
1. Die Schnittdaten sin ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemdenden Zusätzen.
* Modifizierten Parameters

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée.
* Paramètres modifiés

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1.Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2.Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3.Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling
*Modificerede parametre

Atención: Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1.Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2 No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3.XUtilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo
*Parámetros modificados

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1.Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2.Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3.Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling
*Modifierade parametrar

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.
*Измененные параметры

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.
* Modifie edilmiş parametreler

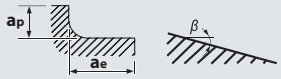
Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.
* Zmodyfikowane parametry

WX-HS-CRE

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC

	GG		30~38 HRC SKT ■ SKD ■ NAK55 ■ HPM50		38~45 HRC - SUS SUS304 ■ SKD ■ NAK80 ■ HPM50		45~55 HRC		55~60 HRS	
Ø	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)	S (min^{-1})	F (mm/min)
2 X R 0,5	31.850	10.500	32.000	9.550	24.000	7.150	24.000	6.450	16.000	2.850
3 X R 0,75	21.000	12.500	21.000	12.000	16.000	8.400	16.000	7.850	10.500	3.300
4 X R 1	16.000	13.000	16.000	12.000	12.000	9.000	12.000	8.200	7.950	3.550
5 X R 1,2	12.500	14.000	12.500	12.500	9.550	9.550	9.550	8.600	6.350	3.800
6 X R 1,5	10.600	14.000	10.600	12.700	7.950	9.550	7.950	8.600	5.300	3.800
7 X R 1,5	9.100	12.000	9.100	10.900	6.800	8.200	6.800	7.350	4.550	3.250
8 X R 2	7.950	14.000	7.950	12.700	5.950	9.550	5.950	8.600	4.000	3.800
9 X R 2	7.050	12.400	7.050	11.300	5.300	8.500	5.300	7.650	3.550	3.400
10 X R 2	6.350	14.000	6.350	12.700	4.750	9.550	4.750	8.600	3.200	3.800
11 X R 2	5.800	12.700	5.800	11.600	4.350	8.700	4.350	7.800	2.900	3.500
12 X R 3	5.300	14.000	5.300	12.700	4.000	9.550	4.000	8.600	2.650	3.800
13 X R 3	4.900	12.900	4.900	11.800	3.650	8.800	3.650	7.950	2.450	3.550

Max cutting depth



	ap	ae
	0,1 x R	0,3D

	ap	ae
R ≤ 2	0,1 x R	0,3D
2 < R	0,2 mm	0,3D

	ap	ae
R ≤ 2	0,05 x R	0,3D
2 < R	0,1 mm	0,3D

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners. For milling without circular interpolation (such as right angle corners), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We suggest using air blow or MQL (mist).
4. Adjust the speed, feed and cutting depth according to actual cutting conditions.
5 These milling conditions are for a tool extension length : less than 4 x D. For a longer tool extension, reduce the speed, feed rate, and the cutting depth in accordance with the respective coefficients, to prevent chattering.

Attentionzione: le scintille prodotte durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. Queste condizioni di fresatura si referiscono a un'interpolazione circolare. Per una fresatura senza interpolazione circolare ridurre la velocità al 50-70 % e la profondità di taglio al 50-80 % rispetto alle condizioni sopra esposte.
3. Suggeriamo l'utilizzo di aria compressa o lubrificazione minimale (misto olio).
4. Regolare l'avanzamento e la profonditàdi taglio secondo le attuali condizioni di taglio.
5. Queste condizioni di fresatura sono da intendersi per una sporgenza dell'utensile dal mandrino inferiore a 4 x diametro. Per sporgenze maggiori ridurre l'avanzamento.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. Stellen sie einen ausreichenden Brandschutz sicher.
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Diese Schnittdaten basieren auf Fräsern mit cirkularer Ecken Interpolation. Bei Bearbeitungen ohne, reduzieren Sie den Vorschub auf 50-70 %, die Schnittiefe auf 50-80 % der oben genannten Schnittdaten.
3. Wir empfehlen Luft- oder Minimalmengen Kühlung.
4. Bitte regulieren Sie Schnittgeschwidigkeit, Vorschub und Spanntiefe entsprechend Ihrer aktuellen Zerspanungsbedigungen.
5. Die Schnittwerde sind für eine max. Auskraglänge von 4xD. Bei großeren Auskraglängen müssen Schnittgeschwidigkeit, Vorschub und Schnittiefe zur Vermeidung von Vibrationen mit den jeweiligen Koeffizienten verändert werden.

Attention: étincelles et/ou chaleur peuvent enflammer le lubrifiant. S' assurer que des mesures de prévention adéquate sont appliquées
1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. Les conditions de coupe sont basées sur du fraisage en interpolation circulairedes angles. Pour l'usinage sans interpolation circulaire (angle droit), réduire la vitesse de 50 à 70% et la profondeur des passes de 50 à 80%.
3. Utiliser de l'arrosage en brouillard (mist).
4. Ajuster le vitesse, avances et la profondeur de coupe.
5. Les conditions de coupe sont applicable pour des outils avec un lg. < 4 x D. Pour des outils plus longues réduire vitesse, avances et profondeur de coupe pour éviter bourrage.

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Anvend stabil maskine og værktøjsholder
2. De anførte skæredata er baseret på fræsning med cirkulær interpolation i hjørnerne. Ved fræsning uden cirkulær interpolation, reducér hastigheden til 50-70% og skæredybden til 50-80% af ovenstående skæredata
3. Vi anbefaler Lufttryk eller minimal smøring (MQL)
4. Justér tilspænding og omdrejninger i forhold til skæredybde og maskin stabilitet
5. Disse skæredata er til brug ved et udhæng under 4xD. Ved et længere udhæng reducér hastighed, tilspænding og skæredybde overensstemmelse med de respektive koeffitienter for at undgå afflisning

Atención: Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Use maquina y portaherramientas rigidos y precisos
2. Condiciones basadas en interpolación circular de los rincones. Para fresado sin interpolación circular (como rincones en ángulo recto), reducir la velocidad a 50 - 70%, y la profundidad de corte a 50 - 80% de las anteriores condiciones
3. Recomendamos aire soplado o MQL (niebla)
4. Ajustar la velocidad, profundidad de corte y avance conforme a las condiciones reales de corte
5. Estas condiciones son para el fresado con vuelo de herramienta inferior a 4 x D. Para herramienta de más vuelo, reducir la velocidad, el avance y profundidad de corte proporcionalmente

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Använd en stabil maskin och verktygshållare
2. Denna särdata är baserad på fräsning med cirkulär interpolering i hörnorna. Vid fräsning utan cirkulär interpolering, reducera hastigheten med 50-70% och skärdjupen med50-80% av ovanstående skärdata
3. Vi rekommenderar luft eller minimalsmörjning (MQL)
4. Justera varvtal och matning i förhållande till skärdjup och maskinens stabilitet
5. Dessa särdata är till för uthång under 4xDVid längre uthång reducera varvtal, matning och skärdjup med de respektive koefficienter för att undgå avflisning

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности
1. Используйте жесткие и точные станки и фрезерные патроны.
2. Указанные режимы резания действительны при прохождении углов по радиусу (плавное изменение направления фрезерования). При резком изменении направления фрезерования в углах, уменьшите скорость и подачу до 50-70% от указанных, а глубину резания до 50-80%.
3. Мы рекомендуем использовать обдув воздухом или MQL (масляный туман) 4. Пожалуйста установите скорость резания, подачу и глубину резания в соответствии с действительными условиями обработки.
5. Если в процессе резания необходимо врезание по оси Z, уменьшите скорость и подачу до 30-60% от указанных, при угле врезания ß < 2°!
6. Указанные режимы резания для длины инструмента (вылета из патрона) меньше чем 4xD. Для вылета больше, чем 4xD установите скорость, подачу и глубину резания в соответствии с указанными коэффициентами, для предотвращения вибраций.

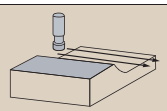
Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Bu frezeleme koşulları köşelerde dairesel enterpolasyon ile frezeleme için verilmiştir. Sağ helisli köşelerde olduğu gibi dairese enterpolasyon ile işleme yapılmayacak ise yukarıda ki değerlerden kesme hızını 50-70%, kesme derinliğini 50-80% düşürün
3. Bizim tavsiyemiz have veya MQL kullanılmasıdır
4. Kesme hızını, ilerlemeyi ve kesme derinliğini fiili kesme şartlarına göre ayarlayınız
5. Bu kesme koşulları takım boyunun 4XD den düşük olduğunda geçerlidir. Daha uzun takım boyunda tırlamayı engellemek için, kesme hızını, ilerlemeyi ve kesme derinliğini düşürün

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Warunki te są oparte na frezowaniu z interpolacją kołową przy frezowaniu naroży. Bez interpolacji kołowej w odpowiednich miejscach (np. prawym rogu naroża) , należy zmniejszyć prędkość do 50-70% i głębokość frezowania do 50-80% powyższych warunków.
3. Zalecamy używanie nadmuchu lub MQL (mgła olejowa).
4. Proszę ustawić prędkość, pasuw i głębokości frezowania w zależności od rzeczywistych warunków skrawania.
5. Warunki podane dla frezowania przy długości przedłużki narzędzi: mniej niż 4 x D. Przy większym wysięgu, proszę zmniejszyć prędkość, posuw oraz głębokość frezowania zgodnie z odpowiednimi współczynnikami, aby zapobiec uszkodzeniom.

WX-HS-CRE

(%)Tool extension coefficients - (%) Werkzeug Ausspann Koeffizient - Coefficients lg outil %
% Værktøjs udvidelse koefficient - % Verktygs förlängnings koefficient - % herramienta largo coeficiente - % Если вылет больше коэффициент -
% wyspółczynnik zalezny od L/D

Overhang Length	Cutting Speed	ap	Feed
L/D ≤ 4	100	100	100
L/D = 5	60~80	60~80	70~90
L/D = 6	40~60	40~60	60~80



1. When milling flat areas with a stable load, the speed and the feed rate of the high-speed conditions can be further increased to 150 - 200%.
2. The ultra-high speed conditions are for a tool extension length : less than 4 x D. If the tool extension length is over 4 x D, do not refer to it.

1. In caso di fresatura di un'area piatta con un carico stabile, la velocità e l'avanzamento in condizioni di alta velocità possono essere ulteriormente aumentati a 150-200%
2. Le condizioni di altissima velocità si riferiscono ad una lunghezza estendibile dell'utensile inferiore a 4xD. Se l'estensione dell'utensile è superiore a 4xD non bisogna farvi riferimento.

1. Für das Fräsen von geraden Bereichen mit gleichmäßiger Belastung kann die Schnittgeschwindigkeit und der Vorschub gegenüber den angegeben HSC - Schnittdaten auf 150-200% erhöht werden.
2. Die ultra HSC Konditionen sind ausschließlich für eine Ausspannlänge, kleiner als 4D geeignet.

1. Pour du fraisage des surfaces planes avec une charge stable les avances peuvent être augmentées de 150 à 200%
2. Ces conditions de fraisage ultra UGV sont applicables pour des longueur d'outils inférieur à 4 x D. Pour des longueur d'outils supérieur à 4 x D ces conditions ne sont pas applicables.

1.Ved fræsning af fladt areal med stabil belastning, kan high speed skæredata øges yderligere til 150-200%
2. Disse skæredata er til brug ved et udhæng under 4xD. Ved et længere udhæng

1. Vid fräsning av plana ytor med stabila förhållande , kan varvtal och matning ökas med ytterliggare 150 - 200%.
2. Ultra-high speed skäredata användsnär uthänget är mindre än 4 x D. Om uthänget är större än 4 x D används inte denna tabell.

1. Vid fräsning av plana ytor med stabila förhållande , kan varvtal och matning ökas med ytterliggare 150 - 200%.
2. Ultra-high speed skäredata användsnär uthänget är mindre än 4 x D. Om uthänget är större än 4 x D används inte denna tabell.

1.При обработки плоскостей со стабильной нагрузкой, обороты шпинделя и подачу указанные для высокоскоростной обработки можно увеличить до 150-200%
2.Ультра высокоскоростные условия для вылета фрезы менее 4 x D. Если вылет больше 4 x D эти условия применять нельзя

1. Düz bir alan istikrarlı bir yük ile işleniyor ise, kesme hızını ve ilerlemeyi 150-200% arttırabilirsiniz.
2. Bu yüksek kesme koşulları takım boyunun 4XD den düşük olduğunda geçerlidir. Daha uzun takım boyunda tavsiye edilmez

1. Przy frezowaniu płaskich obszarów i stabilnym obciążeniu, prędkość i posuw można zwiększyć do 150 - 200%.
2. Ekstremalnie wysokie prędkości są podane dla długości przedłużki narzędzi: mniej niż 4 x D. Nie odnoszą się do nich jeśli długość przedłużki narzędzia jest większa niż 4 x D

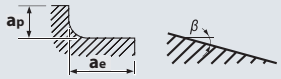
WX-HS-CRE

Low speed, high feed milling - Fräsen mit niedrige Geschwindigkeit, hohe Vorschub -
Fresatura bassa velocità, alta avanzamento - Fraisage vitesse basse, avance élévée - Düsük hizda, yüksek ilerleneli frezeleme -
Fræsning lav hastighed, høj tilspænding - Fresado a alta velocidad HSM - Высокоскоростное фрезер - Frezowanie 2 2 driymi posuwami



Ø	GG S (min⁻¹)	GG F (mm/min)	30~38 HRC SKT ■ SKD ■ NAK55 ■ HPM50 S (min⁻¹)	30~38 HRC F (mm/min)	38~45 HRC - SUS SUS304 ■ SKD ■ NAK80 ■ HPM50 S (min⁻¹)	38~45 HRC - SUS F (mm/min)	45~55 HRC S (min⁻¹)	45~55 HRC F (mm/min)	55~60 HRS S (min⁻¹)	55~60 HRS F (mm/min)
2 X R 0,5	16.000	5.250	12.500	3.800	11.000	3.350	7.950	2.150	4.750	860
3 X R 0,75	10.500	6.250	8.500	4.500	7.450	3.900	5.300	2.600	3.200	995
4 X R 1	7.950	6.600	6.350	4.800	5.550	4.200	4.000	2.750	2.400	1.050
5 X R 1,2	6.350	7.000	5.100	5.100	4.450	4.450	3.200	2.850	1.900	1.150
6 X R 1,5	5.300	7.000	4.250	5.100	3.700	4.450	2.650	2.850	1.600	1.150
7 X R 1,5	4.550	6.000	3.650	4.350	3.200	3.800	2.250	2.450	1.350	980
8 X R 2	4.000	7.000	3.200	5.100	2.800	4.450	2.000	2.850	1.200	1.150
9 X R 2	3.550	6.200	2.850	4.550	2.500	3.950	1.750	2.550	1.050	1.000
10 X R 2	3.200	7.000	2.550	5.100	2.250	4.450	1.600	2.850	955	1.150
11 X R 2	2.900	6.350	2.300	4.650	2.050	4.050	1.450	2.600	870	1.050
12 X R 3	2.650	7.000	2.100	5.100	1.850	4.450	1.350	2.850	795	1.150
13 X R 3	2.450	6.450	1.950	4.700	1.700	4.100	1.200	2.650	735	1.050

Max cutting depth



	ap	ae
	0,1 x R	0,3D

	ap	ae
R ≤ 2	0,1 x R	0,3D
2 < R	0,2 mm	0,3D

	ap	ae
R ≤ 2	0,05 x R	0,3D
2 < R	0,1 mm	0,3D

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners. For milling without circular interpolation (such as right angle corners), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We suggest using air blow or MQL (mist).
4. Adjust the speed, feed and cutting depth according to actual cutting conditions.
5 These milling conditions are for a tool extension length : less than 4 x D. For a longer tool extension, reduce the speed, feed rate, and the cutting depth in accordance with the respective coefficients, to prevent chattering.

Attentionzione: le scintille prodotte durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. Queste condizioni di fresatura si referiscono a un'interpolazione circolare. Per una fresatura senza interpolazione circolare ridurre la velocità al 50-70 % e la profondità di taglio al 50-80 % rispetto alle condizioni sopra esposte.
3. Suggeriamo l'utilizzo di aria compressa o lubrificazione minimale (misto olio).
4. Regolare l'avanzamento e la profonditàdi taglio secondo le attuali condizioni di taglio.
5. Queste condizioni di fresatura sono da intendersi per una sporgenza dell'utensile dal mandrino inferiore a 4 x diametro. Per sporgenze maggiori ridurre l'avanzamento.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. Stellen sie einen ausreichenden Brandschutz sicher.
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Diese Schnittdaten basieren auf Fräsern mit cirkularer Ecken Interpolation. Bei Bearbeitungen ohne, reduzieren Sie den Vorschub auf 50-70 %, die Schnittiefe auf 50-80 % der oben genannten Schnittdaten.
3. Wir empfehlen Luft- oder Minimalmengen Kühlung.
4. Bitte regulieren Sie Schnittgeschwidigkeit, Vorschub und Spanntiefe entsprechend Ihrer aktuellen Zerspanungsbedigungen.
5. Die Schnittwerde sind für eine max. Auskraglänge von 4xD. Bei großeren Auskraglängen müssen Schnittgeschwidigkeit, Vorschub und Schnittiefe zur Vermeidung von Vibrationen mit den jeweiligen Koeffizienten verändert werden.

Attention: étincelles et/ou chaleur peuvent enflammer le lubrifiant. S' assurer que des mesures de prévention adéquate sont appliquées
1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. Les conditions de coupe sont basées sur du fraisage en interpolation circulairedes angles. Pour l'usinage sans interpolation circulaire (angle droit), réduire la vitesse de 50 à 70% et la profondeur des passes de 50 à 80%.
3. Utiliser de l'arrosage en brouillard (mist).
4. Ajuster le vitesse, avances et la profondeur de coupe.
5. Les conditions de coupe sont applicable pour des outils avec un lg. < 4 x D. Pour des outils plus longues réduire vitesse, avances et profondeur de coupe pour éviter bourrage.

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Anvend stabil maskine og værktøjsholder
2. De anførte skæredata er baseret på fræsning med cirkulær interpolation i hjørnerne. Ved fræsning uden cirkulær interpolation, reducér hastigheden til 50-70% og skæredybden til 50-80% af ovenstående skæredata
3. Vi anbefaler Lufttryk eller minimal smøring (MQL)
4. Justér tilspænding og omdrejninger i forhold til skæredybde og maskin stabilitet
5. Disse skæredata er til brug ved et udhæng under 4xD. Ved et længere udhæng reducér hastighed, tilspænding og skæredybde overensstemmelse med de respektive koeffitienter for at undgå afflisning

Atención: Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Use maquina y portaherramientas rigidos y precisos
2. Condiciones basadas en interpolación circular de los rincones. Para fresado sin interpolación circular (como rincones en ángulo recto), reducir la velocidad a 50 - 70%, y la profundidad de corte a 50 - 80% de las anteriores condiciones
3. Recomendamos aire soplado o MQL (niebla)
4. Ajustar la velocidad, profundidad de corte y avance conforme a las condiciones reales de corte
5. Estas condiciones son para el fresado con vuelo de herramienta inferior a 4 x D. Para herramienta de más vuelo, reducir la velocidad, el avance y profundidad de corte proporcionalmente

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Använd en stabil maskin och verktygshållare
2. Denna särdata är baserad på fräsning med cirkulär interpolering i hörnorna. Vid fräsning utan cirkulär interpolering, reducera hastigheten med 50-70% och skärdjupen med50-80% av ovanstående skärdata
3. Vi rekommenderar luft eller minimalsmörjning (MQL)
4. Justera varvtal och matning i förhållande till skärdjup och maskinens stabilitet
5. Dessa särdata är till för uthång under 4xDVid längre uthång reducera varvtal, matning och skärdjup med de respektive koefficienter för att undgå avflisning

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности
1. Используйте жесткие и точные станки и фрезерные патроны.
2. Указанные режимы резания действительны при прохождении углов по радиусу (плавное изменение направления фрезерования). При резком изменении направления фрезерования в углах, уменьшите скорость и подачу до 50-70% от указанных, а глубину резания до 50-80%.
3. Мы рекомендуем использовать обдув воздухом или MQL (масляный туман) 4. Пожалуйста установите скорость резания, подачу и глубину резания в соответствии с действительными условиями обработки.
5. Если в процессе резания необходимо врезание по оси Z, уменьшите скорость и подачу до 30-60% от указанных, при угле врезания ß < 2°!
6. Указанные режимы резания для длины инструмента (вылета из патрона) меньше чем 4xD. Для вылета больше, чем 4xD установите скорость, подачу и глубину резания в соответствии с указанными коэффициентами, для предотвращения вибраций.

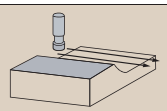
Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Bu frezeleme koşulları köşelerde dairesel enterpolasyon ile frezeleme için verilmiştir. Sağ helisli köşelerde olduğu gibi dairese enterpolasyon ile işleme yapılmayacak ise yukarıda ki değerlerden kesme hızını 50-70%, kesme derinliğini 50-80% düşürün
3. Bizim tavsiyemiz have veya MQL kullanılmasıdır
4. Kesme hızını, ilerlemeyi ve kesme derinliğini fiili kesme şartlarına göre ayarlayınız
5. Bu kesme koşulları takım boyunun 4XD den düşük olduğunda geçerlidir. Daha uzun takım boyunda tırlamayı engellemek için, kesme hızını, ilerlemeyi ve kesme derinliğini düşürün

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Warunki te są oparte na frezowaniu z interpolacją kołową przy frezowaniu naroży. Bez interpolacji kołowej w odpowiednich miejscach (np. prawym rogu naroża) , należy zmniejszyć prędkość do 50-70% i głębokość frezowania do 50-80% powyższych warunków.
3. Zalecamy używanie nadmuchu lub MQL (mgła olejowa).
4. Proszę ustawić prędkość, pasuw i głębokości frezowania w zależności od rzeczywistych warunków skrawania.
5. Warunki podane dla frezowania przy długości przedłużki narzędzi: mniej niż 4 x D. Przy większym wysięgu, proszę zmniejszyć prędkość, posuw oraz głębokość frezowania zgodnie z odpowiednimi współczynnikami, aby zapobiec uszkodzeniom.

WX-HS-CRE

(%)Tool extension coefficients - (%) Werkzeug Ausspann Koeffizient - Coefficients lg outil %
% Værktøjs udvidelse koefficient - % Verktygs förlängnings koefficient - % herramienta largo coeficiente - % Если вылет больше коэффициент -
% wyspółczynnik zalezny od L/D

Overhang Length	Cutting Speed	ap	Feed
L/D ≤ 4	100	100	100
L/D = 5	60~80	60~80	70~90
L/D = 6	40~60	40~60	60~80



1. When milling flat areas with a stable load, the speed and the feed rate of the high-speed conditions can be further increased to 150 - 200%.
2. The ultra-high speed conditions are for a tool extension length : less than 4 x D. If the tool extension length is over 4 x D, do not refer to it.

1. In caso di fresatura di un'area piatta con un carico stabile, la velocità e l'avanzamento in condizioni di alta velocità possono essere ulteriormente aumentati a 150-200%
2. Le condizioni di altissima velocità si riferiscono ad una lunghezza estendibile dell'utensile inferiore a 4xD. Se l'estensione dell'utensile è superiore a 4xD non bisogna farvi riferimento.

1. Für das Fräsen von geraden Bereichen mit gleichmäßiger Belastung kann die Schnittgeschwindigkeit und der Vorschub gegenüber den angegeben HSC - Schnittdaten auf 150-200% erhöht werden.
2. Die ultra HSC Konditionen sind ausschließlich für eine Ausspannlänge, kleiner als 4D geeignet.

1. Pour du fraisage des surfaces planes avec une charge stable les avances peuvent être augmentées de 150 à 200%
2. Ces conditions de fraisage ultra UGV sont applicables pour des longueur d'outils inférieur à 4 x D. Pour des longueur d'outils supérieur à 4 x D ces conditions ne sont pas applicables.

1.Ved fræsning af fladt areal med stabil belastning, kan high speed skæredata øges yderligere til 150-200%
2. Disse skæredata er til brug ved et udhæng under 4xD. Ved et længere udhæng

1. Vid fräsning av plana ytor med stabila förhållande , kan varvtal och matning ökas med ytterliggare 150 - 200%.
2. Ultra-high speed skäredata användsnär uthänget är mindre än 4 x D. Om uthänget är större än 4 x D används inte denna tabell.

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1.При обработки плоскостей со стабильной нагрузкой, обороты шпинделя и подачу указанные для высокоскоростной обработки можно увеличить до 150-200%
2.Ультра высокоскоростные условия для вылета фрезы менее 4 x D. Если вылет больше 4 x D эти условия применять нельзя

1. Düz bir alan istikrarlı bir yük ile işleniyor ise, kesme hızını ve ilerlemeyi 150-200% arttırabilirsiniz.
2. Bu yüksek kesme koşulları takım boyunun 4XD den düşük olduğunda geçerlidir. Daha uzun takım boyunda tavsiye edilmez

1. Przy frezowaniu płaskich obszarów i stabilnym obciążeniu, prędkość i posuw można zwiększyć do 150 - 200%.
2. Ekstremalnie wysokie prędkości są podane dla długości przedłużki narzędzi: mniej niż 4 x D. Nie odnoszą się do nich jeśli długość przedłużki narzędzia jest większa niż 4 x D

BACK

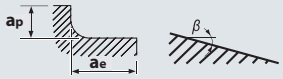
WX-CRE

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



Ø	GG S (min⁻¹)	GG F (mm/min)	30~38 HRC SKT ■ SKD ■ NAK55 ■ HPM50 S (min⁻¹)	30~38 HRC F (mm/min)	38~45 HRC - SUS SUS304 ■ SKD ■ NAK80 ■ HPM50 S (min⁻¹)	38~45 HRC - SUS F (mm/min)	45~55 HRC S (min⁻¹)	45~55 HRC F (mm/min)	55~60 HRS S (min⁻¹)	55~60 HRS F (mm/min)
2 X R 0,5	31.850	10.500	32.000	9.550	24.000	7.150	24.000	6.450	16.000	2.850
3 X R 0,75	21.000	12.500	21.000	12.000	16.000	8.400	16.000	7.850	10.500	3.300
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5 X R 1,2	12.500	14.000	12.500	12.500	9.550	9.550	9.550	8.600	6.350	3.800
6 X R 1,5	10.600	14.000	10.600	12.700	7.950	9.550	7.950	8.600	5.300	3.800
7 X R 1,5	9.100	12.000	9.100	10.900	6.800	8.200	6.800	7.350	4.550	3.250
8 X R 2	7.950	14.000	7.950	12.700	5.950	9.550	5.950	8.600	4.000	3.800
9 X R 2	7.050	12.400	7.050	11.300	5.300	8.500	5.300	7.650	3.550	3.400
10 X R 2	6.350	14.000	6.350	12.700	4.750	9.550	4.750	8.600	3.200	3.800
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13 X R 3	4.900	12.900	4.900	11.800	3.650	8.800	3.650	7.950	2.450	3.550

Max cutting depth



	ap	ae
	0,1 x R	0,3D

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	ap	ae
R ≤ 2	0,05 x R	0,3D
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3. Suggeriamo l'utilizzo di aria compressa o lubrificazione minimale (misto olio).
4. Regolare l'avanzamento e la profonditàdi taglio secondo le attuali condizioni di taglio.
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1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
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3. Vi anbefaler Lufttryk eller minimal smøring (MQL)
4. Justér tilspænding og omdrejninger i forhold til skæredybde og maskin stabilitet
5. Disse skæredata er til brug ved et udhæng under 4xD. Ved et længere udhæng reducér hastighed, tilspænding og skæredybde overensstemmelse med de respektive koeffitienter for at undgå afflisning

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3. Recomendamos aire soplado o MQL (niebla)
4. Ajustar la velocidad, profundidad de corte y avance conforme a las condiciones reales de corte
5. Estas condiciones son para el fresado con vuelo de herramienta inferior a 4 x D. Para herramienta de más vuelo, reducir la velocidad, el avance y profundidad de corte proporcionalmente

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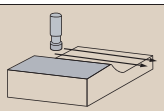
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WX-CRE

(%)Tool extension coefficients - (%) Werkzeug Ausspann Koeffizient - Coefficients lg outil %
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Overhang Length	Cutting Speed	ap	Feed
L/D ≤ 4	100	100	100
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1. Przy frezowaniu płaskich obszarów i stabilnym obciążeniu, prędkość i posuw można zwiększyć do 150 - 200%.
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CONDITIONS

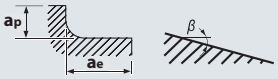
WX-CRE

Low speed, high feed milling - Fräsen mit niedrige Geschwindigkeit, hohe Vorschub -
Fresatura bassa velocità, alta avanzamento - Fraisage vitesse basse, avance élévée - Düsük hizda, yüksek ilerleneli frezeleme -
Fræsning lav hastighed,høj tilspænding - Fresado a alta velocidad HSM - Высокоскоростное фрезер - Frezowanie 2 2 driymi posuwami



Ø	GG S (min⁻¹)	GG F (mm/min)	30~38 HRC SKT ■ SKD ■ NAK55 ■ HPM50 S (min⁻¹)	30~38 HRC F (mm/min)	38~45 HRC - SUS SUS304 ■ SKD ■ NAK80 ■ HPM50 S (min⁻¹)	38~45 HRC - SUS F (mm/min)	45~55 HRC S (min⁻¹)	45~55 HRC F (mm/min)	55~60 HRS S (min⁻¹)	55~60 HRS F (mm/min)
2 X R 0,5	16.000	5.250	12.500	3.800	11.000	3.350	7.950	2.150	4.750	860
3 X R 0,75	10.500	6.250	8.500	4.500	7.450	3.900	5.300	2.600	3.200	995
4 X R 1	7.950	6.600	6.350	4.800	5.550	4.200	4.000	2.750	2.400	1.050
5 X R 1,2	6.350	7.000	5.100	5.100	4.450	4.450	3.200	2.850	1.900	1.150
6 X R 1,5	5.300	7.000	4.250	5.100	3.700	4.450	2.650	2.850	1.600	1.150
7 X R 1,5	4.550	6.000	3.650	4.350	3.200	3.800	2.250	2.450	1.350	980
8 X R 2	4.000	7.000	3.200	5.100	2.800	4.450	2.000	2.850	1.200	1.150
9 X R 2	3.550	6.200	2.850	4.550	2.500	3.950	1.750	2.550	1.050	1.000
10 X R 2	3.200	7.000	2.550	5.100	2.250	4.450	1.600	2.850	955	1.150
11 X R 2	2.900	6.350	2.300	4.650	2.050	4.050	1.450	2.600	870	1.050
12 X R 3	2.650	7.000	2.100	5.100	1.850	4.450	1.350	2.850	795	1.150
13 X R 3	2.450	6.450	1.950	4.700	1.700	4.100	1.200	2.650	735	1.050

Max cutting depth



	ap	ae
	0,1 x R	0,3D

	ap	ae
R ≤ 2	0,1 x R	0,3D
2 < R	0,2 mm	0,3D

	ap	ae
R ≤ 2	0,05 x R	0,3D
2 < R	0,1 mm	0,3D

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners. For milling without circular interpolation (such as right angle corners), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We suggest using air blow or MQL (mist).
4. Adjust the speed, feed and cutting depth according to actual cutting conditions.
5 These milling conditions are for a tool extension length : less than 4 x D. For a longer tool extension, reduce the speed, feed rate, and the cutting depth in accordance with the respective coefficients, to prevent chattering.

Attentionzione: le scintille prodotte durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. Queste condizioni di fresatura si referiscono a un'interpolazione circolare. Per una fresatura senza interpolazione circolare ridurre la velocità al 50-70 % e la profondità di taglio al 50-80 % rispetto alle condizioni sopra esposte.
3. Suggeriamo l'utilizzo di aria compressa o lubrificazione minimale (misto olio).
4. Regolare l'avanzamento e la profonditàdi taglio secondo le attuali condizioni di taglio.
5. Queste condizioni di fresatura sono da intendersi per una sporgenza dell'utensile dal mandrino inferiore a 4 x diametro. Per sporgenze maggiori ridurre l'avanzamento.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. Stellen sie einen ausreichenden Brandschutz sicher.
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Diese Schnittdaten basieren auf Fräsern mit cirkularer Ecken Interpolation. Bei Bearbeitungen ohne, reduzieren Sie den Vorschub auf 50-70 %, die Schnittiefe auf 50-80 % der oben genannten Schnittdaten.
3. Wir empfehlen Luft- oder Minimalmengen Kühlung.
4. Bitte regulieren Sie Schnittgeschwidigkeit, Vorschub und Spanntiefe entsprechend Ihrer aktuellen Zerspanungsbedigungen.
5. Die Schnittwerde sind für eine max. Auskraglänge von 4xD. Bei großeren Auskraglängen müssen Schnittgeschwidigkeit, Vorschub und Schnittiefe zur Vermeidung von Vibrationen mit den jeweiligen Koeffizienten verändert werden.

Attention: étincelles et/ou chaleur peuvent enflammer le lubrifiant. S' assurer que des mesures de prévention adéquate sont appliquées
1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. Les conditions de coupe sont basées sur du fraisagè en interpolation circulairedes angles. Pour l'usinage sans interpolation circulaire (angle droit), réduire la vitesse de 50 à 70% et la profondeur des passes de 50 à 80%.
3. Utiliser de l'arrosage en brouillard (mist).
4. Ajuster le vitesse, avances et la profondeur de coupe.
5. Les conditions de coupe sont applicable pour des outils avec un lg. < 4 x D. Pour des outils plus longues réduire vitesse, avances et profondeur de coupe pour éviter bourrage.

Pas på: gnister kan antænde kølevæsken. Sørg for brandsluknings materiel er inden for rækkevidde
1. Anvend stabil maskine og værktøjsholder
2. De anførte skæredata er baseret på fræsning med cirkulær interpolation i hjørnerne. Ved fræsning uden cirkulær interpolation, reducér hastigheden til 50-70% og skæredybden til 50-80% af ovenstående skæredata
3. Vi anbefaler Lufttryk eller minimal smøring (MQL)
4. Justér tilspænding og omdrejninger i forhold til skæredybde og maskin stabilitet
5. Disse skæredata er til brug ved et udhæng under 4xD. Ved et længere udhæng reducér hastighed, tilspænding og skæredybde overensstemmelse med de respektive koeffitienter for at undgå afflisning

Atención: Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Use maquina y portaherramientas rigidos y precisos
2. Condiciones basadas en interpolación circular de los rincones. Para fresado sin interpolación circular (como rincones en ángulo recto), reducir la velocidad a 50 - 70%, y la profundidad de corte a 50 - 80% de las anteriores condiciones
3. Recomendamos aire soplado o MQL (niebla)
4. Ajustar la velocidad, profundidad de corte y avance conforme a las condiciones reales de corte
5. Estas condiciones son para el fresado con vuelo de herramienta inferior a 4 x D. Para herramienta de más vuelo, reducir la velocidad, el avance y profundidad de corte proporcionalmente

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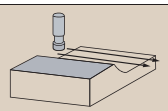
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1. Düz bir alan istikrarlı bir yük ile işleniyor ise, kesme hızını ve ilerlemeyi 150-200% arttırabilirsiniz.
2. Bu yüksek kesme koşulları takım boyunun 4XD den düşük olduğunda geçerlidir. Daha uzun takım boyunda tavsiye edilmez

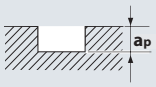
1. Przy frezowaniu płaskich obszarów i stabilnym obciążeniu, prędkość i posuw można zwiększyć do 150 - 200%.
2. Ekstremalnie wysokie prędkości są podane dla długości przedłużki narzędzi: mniej niż 4 x D. Nie odnoszą się do nich jeśli długość przedłużki narzędzia jest większa niż 4 x D

WX-CR-PHS

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim -
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków HSC



	C≤0,2% - GG SS400 ■ S55C0 ■ FC250 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SKT ■ SCM		30~38 HRC NAK55 ■ HPM1 ■ SKT ■ SK		38~45 HRC-SUS SUS304 ■ SKD ■ NAK80 HPM80		45~55 HRC		55~60 HRC	
	100 (m/min)		80 (m/min)		70 (m/min)		60 (m/min)		60 (m/min)		30 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	8.488	781	6.366	586	5.836	490	5.517	463	4.456	374	2.122	110
4	6.366	891	4.775	668	4.377	490	4.138	463	3.342	374	1.592	127
5	5.093	876	3.820	657	3.501	490	3.310	463	2.674	374	1.273	127
6	4.244	849	3.183	637	2.918	490	2.759	463	2.674	374	1.273	127
8	3.183	764	2.387	573	2.188	455	2.069	430	1.671	348	796	127
10	2.546	713	1.910	535	1.751	420	1.655	397	1.337	321	637	127
12	2.122	637	1.592	477	1.459	438	1.379	414	1.114	334	531	117
16	1.592	637	1.194	477	1.094	394	1.035	414	836	334	398	95
20	1.273	560	955	420	875	385	828	364	668	321	318	89

Max cutting depth	ap =0,5D		ap =0,05D

1. Use high precision machine set up to ensure maximum rigidity.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a coolant that has a low co-efficient of smoke emission.

1. Utilizzare una macchina e un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizzare dei lubrificanti di taglio adeguati, dotati di un elevato coefficiente di rallentamento di emissione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Bitte geeignetes Kühlmedium mit rauchhemmenden Zusätzen verwenden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des lubrifiants de coupe adéquats, dotés d'un coef. élevé de ralentissement d'émission de fumée.

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Benyt en kølevæske med lav koefficient af røgudvikling

1. Use máquina de alta precisión y asegure la máxima rigidez
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Utilizar un refrigerante con un bajo coeficiente de emisión de humo

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Vid vibrationer sänk varvtal och matning med samma simultant
3. Använd skärvätska med låg rökutvecklingskoefficient.

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

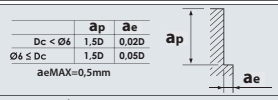
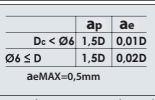
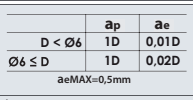
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Duman emisyon katsayısı düşük olan bir soğutucu kullanın

1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw
3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

WX-CR-PHS

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme -
Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne

	C≤0,2% - GG SS400 ■ S55C0 ■ FC250 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SKT ■ SCM		30~38 HRC NAK55 ■ HPM1 ■ SKT ■ SK		38~45 HRC-SUS SUS304 ■ SKD ■ NAK80 HPM80		45~55 HRC		55~60 HRC	
	100 (m/min)		80 (m/min)		70 (m/min)		60 (m/min)		60 (m/min)		30 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	10.610	976	8.488	781	7.427	594	6.366	509	6.366	458	3.183	191
4	7.958	1.019	6.366	815	5.570	597	4.775	477	4.775	477	2.987	191
5	6.366	1.044	5.093	832	4.456	606	3.820	489	3.820	489	1.910	199
6	5.305	1.252	4.244	1.002	3.714	713	3.183	586	3.183	586	1.592	210
8	3.979	1.257	3.183	1.006	2.785	668	2.387	544	2.387	544	1.194	181
10	3.183	1.108	2.546	886	2.228	624	1.910	512	1.910	512	955	172
12	2.653	1.061	2.122	849	1.857	743	1.592	554	1.592	477	796	169
16	1.989	915	1.592	732	1.393	641	1.194	454	1.194	430	597	167
20	1.592	764	1.273	611	1.114	535	955	420	955	382	477	166

Max cutting depth						
	ap	ae	ap	ae	ap	ae
	Dc < Ø6	1,5D	0,02D	Dc < Ø6	1,5D	0,01D	D < Ø6	1D	0,01D
	Ø6 ≤ Dc	1,5D	0,05D	Ø6 ≤ D	1,5D	0,02D	Ø6 ≤ D	1D	0,02D
	aeMAX=0,5mm			aeMAX=0,5mm			aeMAX=0,5mm		

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2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
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3. Duman emisyon katsayısı düşük olan bir soğutucu kullanın

1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw
3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

WX-CR-PHS

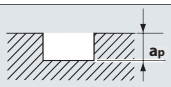
High speed Slotting - HSC Nutenfräsen - Fresatura alta velocità per scanalature profonde - Fraisage UGV rainurage - Yüksek hizda slot kesim - High speed sporfræsning - High Speed Milling spårfräsning - Fresado en ranurado a alta velocidada - Высокоскоростное Фрезерование пазов - Frezowanie rowków HSC



	C≤0,2% - GG SS400 ■ S55C0 ■ FC250 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SKT ■ SCM		30~38 HRC NAK55 ■ HPM1 ■ SKT ■ SK		38~45 HRC SUS304 ■ SKD	
	120 (m/min)		110 (m/min)		90~100 (m/min)		60~70 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	12.700	1.050	10.600	935	9.550	745	6.350	460
4	9.550	1.150	7.950	1.000	7.150	745	5.150	560
5	7.650	1.200	7.000	1.100	6.350	865	4.150	595
6	6.350	1.550	5.850	1.150	5.300	910	3.700	670
8	4.750	1.450	4.400	1.300	4.000	985	2.800	690
10	3.800	1.400	3.500	1.200	3.200	865	2.250	635
12	3.200	1.250	2.900	1.150	2.650	815	1.850	595
16	2.400	1.050	2.200	965	2.000	675	1.400	500
20	1.900	840	1.750	770	1.600	635	1.100	445

Max cutting depth

ap	
0,2D	
aeMAX=3mm	



1. Use a rigid and precise machine and holder.
2. Adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Usare un mandrino portautensile preciso e rigido/
2. Regolare la velocità e l'avanzamento se si aumenta la profondità di passata e se utilizzata su macchine non rigide.
3. Si consiglia di usare emulsione a scarsa emissione di fumi.
4. Per fresatura a secco utilizzare aria.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.
4. Bei Trockenbearbeitung Druckluft zum Entfermen der Späne verwenden.

1. Utiliser une machine et un attachement précis et rigide.
2. Ajuster la vitesse et l'avance en cas de profondeur de coupe importante ou en utilisant un machine non-rigide.
3. Utiliser un liquide de refroidissement adéquat.
4. En cas d'usinage à sec, utiliser de l'air comprimé pour l'évacuation des copeaux de l'aire d'usinage et pour éviter une agglomération des copeaux.

1. Anvend stabil maskine og værktøjsholder
2. Justér omdrejninger og tilspænding ved stor skæredybde eller en ustabil maskine bruges
3. Anvend en passende skærevæske
4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner

1. Use maquina y portaherramientas rigidos y precisos
2. Ajustar el avance cuando la profundidad de corte es grande o cuando se se utilizan máquinas de poca rigidez
3. Use fluido de corte adecuado con retardador de humos
4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte

1. Använd en stabil maskin och verktygshållare
2. Justera varvtal och matning vid stora skärdjup eller om instabil maskin används
3. Använd anpassad skärvätska
4. Vid torrbearbetning använd tryckluft för att transportera bort spånor

1.Используйте жесткие и точные станки и фрезерные патроны
2.Пожалуйста отрегулируйте обороты шпинделя и подачу, когда глубина резания велика или при использовании станков с низкой жесткостью
3.используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
4.При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Kesme derinliği büyük olduğunda veya rijit olmayan tezgahlarda lütfen kesme hızını ve ilerlemeyi ayarlayınız
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Proszę dostosować szybkość i posuw, kiedy głębokość frezowania jest duża lub gdy maszyna ma małą sztywność
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Podczas obróbki na sucho proszę nadmuchem usuwać wióry z obszaru frezowania i wyeliminować owijanie wiórów

WX-CR-PHS

High speed side milling - HSC Konturfräsen - Sgrossatura e contornatura alta velocità - Contournage UGV - Yüksek hizda kenar frezeleme - High speed sidefræsning - High speed valsfräsning - Contorneado a alta velocidad - Высокоскоростное контурное фрезерование - Frezowanie boczne

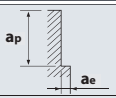


	C≤0,2% - GG SS400 ■ S55C0 ■ FC250 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SKT ■ SCM		30~38 HRC NAK55 ■ HPM1 ■ SKT ■ SK		38~45 HRC-SUS SUS304 ■ SKD ■ NAK80 HPM80		45~55 HRC		55~60 HRC	
	200 (m/min)		200 (m/min)		200 (m/min)		150 (m/min)		100 (m/min)		80 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	21.200	2.150	21.200	2.400	21.200	1.300	15.900	1.150	10.600	680	8.500	440
4	15.900	2.050	15.900	2.300	15.900	1.300	11.900	1.250	7.950	795	6.350	460
5	12.700	1.900	12.700	2.150	12.700	1.250	9.550	1.350	6.350	840	5.100	510
6	10.600	3.050	10.600	2.650	10.600	2.000	7.950	1.450	5.300	910	4.250	610
8	7.950	2.800	7.950	2.400	7.950	1.900	5.950	1.400	4.000	860	3.200	575
10	6.350	2.550	6.350	2.200	6.350	1.850	4.750	1.350	3.200	830	2.550	510
12	5.300	2.550	5.300	2.200	5.300	1.800	4.000	1.350	2.650	830	2.100	510
16	4.000	1.900	4.000	1.900	4.000	1.700	3.000	1.350	2.000	830	1.600	510
20	3.200	1.550	3.200	1.550	3.200	1.550	2.400	1.150	1.600	730	1.250	510

Max cutting depth

	ap	ae
D < Ø6	1,5D	0,02D
Ø6 ≤ D	1,5D	0,05D

aeMAX=0,5mm



	ap	ae
D < Ø6	1,5D	0,01D
Ø6 ≤ D	1,5D	0,02D

aeMAX=0,5mm

	ap	ae
D < Ø6	1D	0,01D
Ø6 ≤ D	1D	0,02D

aeMAX=0,5mm

1. Use a rigid and precise machine and holder.
2. Adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.
3. Please use a suitable fluid with high smoke retardant properties.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Usare un mandrino portautensile preciso e rigido/
2. Regolare la velocità e l'avanzamento se si aumenta la profondità di passata e se utilizzata su macchine non rigide.
3. Si consiglia di usare emulsione a scarsa emissione di fumi.
4. Per fresatura a secco utilizzare aria.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.
4. Bei Trockenbearbeitung Druckluft zum Entfermen der Späne verwenden.

1. Utiliser une machine et un attachement précis et rigide.
2. Ajuster la vitesse et l'avance en cas de profondeur de coupe importante ou en utilisant un machine non-rigide.
3. Utiliser un liquide de refroidissement adéquat.
4. En cas d'usinage à sec, utiliser de l'air comprimé pour l'évacuation des copeaux de l'aire d'usinage et pour éviter une agglomération des copeaux.

1. Anvend stabil maskine og værktøjsholder
2. Justér omdrejninger og tilspænding ved stor skæredybde eller en ustabil maskine bruges
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1. Use maquina y portaherramientas rigidos y precisos
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3. Use fluido de corte adecuado con retardador de humos
4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte

1. Använd en stabil maskin och verktygshållare
2. Justera varvtal och matning vid stora skärdjup eller om instabil maskin används
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1.Используйте жесткие и точные станки и фрезерные патроны
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4.При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Kesme derinliği büyük olduğunda veya rijit olmayan tezgahlarda lütfen kesme hızını ve ilerlemeyi ayarlayınız
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın
4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Proszę dostosować szybkość i posuw, kiedy głębokość frezowania jest duża lub gdy maszyna ma małą sztywność
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie
4. Podczas obróbki na sucho proszę nadmuchem usuwać wióry z obszaru frezowania i wyeliminować owijanie wiórów

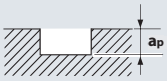
FX-MG-EDS

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim -
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	C≤0,2% - GG E24 ■ XC48 ■ FT25 ~750 N/mm²			~30 HRC 35NCD16 ■ 40CMD8			30~38 HRC 35NCD16			38~45 HRC 35NCD16			45~55 HRC-SUS Z38CDV5			55~60 HRC Z160CDV12		
	150 (m/min)			130 (m/min)			110 (m/min)			80 (m/min)			60 (m/min)			30 (m/min)		
Ø	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)
0,2	40.000	113	0,0014	40.000	113	0,0014	40.000	94	0,0012	40.000	44	0,0005	40.000	38	0,0005	40.000	40	0,0005
0,3	40.000	144	0,0018	40.000	144	0,0018	40.000	100	0,0013	40.000	69	0,0009	40.000	52	0,0007	31.847	48	0,0008
0,4	40.000	156	0,002	40.000	156	0,002	40.000	113	0,0014	40.000	87	0,0011	40.000	69	0,0009	23.885	48	0,001
0,5	40.000	156	0,002	40.000	169	0,0021	40.000	144	0,0018	40.000	109	0,0014	38.217	82	0,0011	19.108	48	0,0013
0,6	40.000	156	0,002	40.000	204	0,0026	40.000	171	0,0021	40.000	130	0,0016	31.847	83	0,0013	15.924	47	0,0015
0,8	40.000	204	0,0026	40.000	270	0,0034	40.000	232	0,0029	31.847	153	0,0024	23.885	82	0,0017	11.943	47	0,002
1	40.000	267	0,0033	40.000	345	0,0043	35.032	252	0,0036	25.478	151	0,003	19.108	82	0,0021	9.554	47	0,0025
1,5	31.847	296	0,0046	27.601	329	0,006	23.355	236	0,0051	16.985	139	0,0041	12.739	101	0,004	6.369	45	0,0035
2	23.885	293	0,0061	20.701	308	0,0074	17.516	225	0,0064	12.739	140	0,0055	9.554	97	0,0051	4.777	43	0,0045
3	15.924	430	0,0135	13.800	326	0,0118	11.677	220	0,0094	8.493	143	0,0084	6.369	104	0,0082	3.185	48	0,0075
4	11.943	472	0,0197	10.350	391	0,0189	8.758	258	0,0147	6.369	164	0,0129	4.777	109	0,0114	2.389	46	0,0097
5	9.554	568	0,0297	8.280	453	0,0273	7.006	257	0,0183	5.096	167	0,0164	3.822	111	0,0145	1.911	46	0,012
6	7.962	555	0,0348	6.900	450	0,0326	5.839	257	0,022	4.246	170	0,02	3.185	113	0,0177	1.592	38	0,0119
8	5.971	534	0,0447	5.175	450	0,0435	4.379	249	0,0284	3.185	168	0,0263	2.389	104	0,0217	1.194	38	0,0157
10	4.777	505	0,0528	4.140	443	0,0535	3.503	250	0,0357	2.548	161	0,0317	1.911	100	0,0262	955	38	0,0197
12	3.981	507	0,0636	3.450	441	0,0639	2.919	252	0,0431	2.123	161	0,038	1.592	90	0,0283	796	30	0,0189
14	3.412	503	0,0737	2.957	424	0,0717	2.502	220	0,044	1.820	165	0,0452	1.365	80	0,0294	682	27	0,0198
16	2.986	470	0,0788	2.588	383	0,0741	2.189	199	0,0455	1.592	142	0,0445	1.194	70	0,0294	597	24	0,0203
18	2.654	421	0,0793	2.300	345	0,075	1.946	177	0,0455	1.415	126	0,0444	1.062	60	0,0283	531	21	0,02
20	2.389	377	0,0788	2.070	306	0,0738	1.752	157	0,0449	1.274	109	0,0428	955	60	0,0316	478	20	0,0206
22	2.171	344	0,0792	1.882	278	0,074	1.592	138	0,0432	1.158	101	0,0435	869	50	0,0291	434	17	0,0193
24	1.990	317	0,0795	1.725	259	0,075	1.460	128	0,0439	1.062	92	0,0433	796	50	0,0316	398	17	0,0208
25	1.911	300	0,0786	1.656	249	0,0751	1.401	128	0,0458	1.019	92	0,0451	764	40	0,0263	382	15	0,0196
30	1.592	250	0,0787	1.380	201	0,0729	1.168	99	0,0424	849	76	0,0446	637	40	0,0317	318	15	0,0238

Max cutting depth				
	ap		ap	
	D < Ø1	0,1D	D < Ø1	0,01D
	Ø1≤D < Ø3	0,3D	Ø1≤D	0,02D
	Ø3 ≤ D	0.5D	Ø3 ≤ D	0,05D



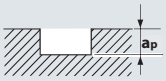
1. Use high precision machine set up to ensure maximum rigidity. 2. In case of vibration, reduce both feed and speed. 3. Use a coolant that has a low co-efficient of smoke emission. * Modified parameters	1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione. 2. In caso di vibrazioni, ridurre simultaneamente la velocità di taglio e l'avanzamento. 3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo. * Paramèto modificato
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel. 2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren. 3. Kuhlmittel mit niedriger Rauchentwicklung verwenden. * Modifizierten Parameters	1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision. 2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance. 3. Utilisez des lubrifiants de coupe appropriés dotés d'un coef. élevé de ralentissement d'émission de fumée. * Paramètres modifiés
1. Benyt højt præcisions set-up for at sikre maksimum stabilitet 2. Ved vibrationer, justér både hastighed og tilspænding 3. Benyt en kølevæske med lav koefficient af røgudvikling * Modificerede parametre	1. Use máquina de alta precisión y asegure la máxima rigidez 2. En el caso de vibraciones, reducir velocidad y avance simultaneamente 3. Utilizar un refrigerante con un bajo coeficiente de emisión de humo * Parámetros modificados
1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet 2. Vid vibrationer, justera både varvtal och matning 3. Använd skärvätska med låg rökutvecklingskoefficient. * Modifierad parameter	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость. 2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя. 3. Используйте качественную СОЖ с высокой *устойчивостью к возникновению дыма
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2.Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz 3.Duman emisyon katsayısı düşük olan bir soğutucu kullanın * Modifie edilmiş parametreler	1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny 2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty. 3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu. * Zmodyfikowane parametry

FX-SS-EDS

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim -
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	C≤0,2% - GG E24 ■ XC48 ■ FT25 ~750 N/mm²			~30 HRC 35NCD16 ■ 40CMD8			30~38 HRC 35NCD16			30~38 HRC 35NCD16			45~55 HRC-SUS Z38CDV5			55~60 HRC Z160CDV12		
	150 (m/min)			130 (m/min)			110 (m/min)			80 (m/min)			60 (m/min)			30 (m/min)		
Ø	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)
0,2	40.000	113	0,0014	40.000	113	0,0014	40.000	94	0,0012	40.000	44	0,0006	40.000	38	0,0005	40.000	40	0,0005
0,3	40.000	144	0,0018	40.000	144	0,0018	40.000	100	0,0013	40.000	69	0,0009	40.000	52	0,0007	31.847	48	0,0008
0,4	40.000	156	0,002	40.000	156	0,002	40.000	113	0,0014	40.000	87	0,0011	40.000	69	0,0009	23.885	48	0,001
0,5	40.000	156	0,002	40.000	169	0,0021	40.000	144	0,0018	40.000	109	0,0014	38.217	82	0,0011	19.108	48	0,0013
0,6	40.000	156	0,002	40.000	204	0,0026	40.000	171	0,0021	40.000	130	0,0016	31.847	83	0,0013	15.924	47	0,0015
0,8	40.000	204	0,0026	40.000	270	0,0034	40.000	232	0,0029	31.847	153	0,0024	23.885	82	0,0017	11.943	47	0,002
1	40.000	267	0,0033	40.000	345	0,0043	35.032	252	0,0036	25.478	151	0,0030	19.108	82	0,0021	9.554	47	0,0025
1,5	31.847	296	0,0046	27.601	329	0,006	23.355	236	0,0051	16.985	139	0,0041	12.739	101	0,004	6.369	45	0,0035
2	23.885	293	0,0061	20.701	308	0,0074	17.516	225	0,0064	12.739	140	0,0055	9.554	97	0,0051	4.777	43	0,0045
3	15.924	430	0,0135	13.800	326	0,0118	11.677	220	0,0094	8.493	143	0,0084	6.369	104	0,0082	3.185	48	0,0075
4	11.943	472	0,0197	10.350	391	0,0189	8.758	258	0,0147	6.369	164	0,0129	4.777	109	0,0114	2.389	46	0,0097
5	9.554	568	0,0297	8.280	453	0,0273	7.006	257	0,0183	5.096	167	0,0164	3.822	111	0,0145	1.911	46	0,012
6	7.962	555	0,0348	6.900	450	0,0326	5.839	257	0,022	4.246	170	0,0200	3.185	113	0,0177	1.592	38	0,0119
8	5.971	534	0,0447	5.175	450	0,0435	4.379	249	0,0284	3.185	168	0,0264	2.389	104	0,0217	1.194	38	0,0157
10	4.777	505	0,0528	4.140	443	0,0535	3.503	250	0,0357	2.548	161	0,0316	1.911	100	0,0262	955	38	0,0197
12	3.981	507	0,0636	3.450	441	0,0639	2.919	252	0,0431	2.123	161	0,0379	1.592	90	0,0283	796	30	0,0189
14	3.412	503	0,0737	2.957	424	0,0717	2.502	220	0,044	1.820	165	0,0453	1.365	80	0,0294	682	27	0,0198
16	2.986	470	0,0788	2.588	383	0,0741	2.189	199	0,0455	1.592	142	0,0446	1.194	70	0,0294	597	24	0,0203
18	2.654	421	0,0793	2.300	345	0,075	1.946	177	0,0455	1.415	126	0,0445	1.062	60	0,0283	531	21	0,02
20	2.389	377	0,0788	2.070	306	0,0738	1.752	157	0,0449	1.274	109	0,0428	955	60	0,0316	478	20	0,0206
22	2.171	344	0,0792	1.882	278	0,074	1.592	138	0,0432	1.158	101	0,0436	869	50	0,0291	434	17	0,0193
24	1.990	317	0,0795	1.725	259	0,075	1.460	128	0,0439	1.062	92	0,0433	796	50	0,0316	398	17	0,0208
25	1.911	300	0,0786	1.656	249	0,0751	1.401	128	0,0458	1.019	92	0,0451	764	40	0,0263	382	15	0,0196
30	1.592	250	0,0787	1.380	201	0,0729	1.168	99	0,0424	849	76	0,0448	637	40	0,0317	318	15	0,0238

Max cutting depth	$\frac{a_p}{0,5D}$		$\frac{a_p}{0,05D}$

1. Use high precision machine set up to ensure maximum rigidity. 2. In case of vibration, reduce both feed and speed. 3. Use a coolant that has a low co-efficient of smoke emission. * Modified parameters	1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione. 2. In caso di vibrazioni, ridurre simultaneamente la velocità di taglio e l'avanzamento. 3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo. * Paramèto modificato
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel. 2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren. 3. Kuhlmittel mit niedriger Rauchentwicklung verwenden. * Modifizierten Parameters	1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision. 2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance. 3. Utilisez des lubrifiants de coupe appropriés dotés d'un coef. élevé de ralentissement d'émission de fumée. * Paramètres modifiés
1. Benyt højt præcisions set-up for at sikre maksimum stabilitet 2. Ved vibrationer, justér både hastighed og tilspænding 3. Benyt en kølevæske med lav koefficient af røgudvikling * Modificerede parametre	1. Use máquina de alta precisión y asegure la máxima rigidez 2. En el caso de vibraciones, reducir velocidad y avance simultaneamente 3. Utilizar un refrigerante con un bajo coeficiente de emisión de humo * Parámetros modificados
1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet 2. Vid vibrationer, justera både varvtal och matning 3. Använd skärvätska med låg rökutvecklingskoefficient. * Modifierad parameter	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость. 2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя. 3. Используйте качественную СОЖ с высокой *устойчивостью к возникновению дыма
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2.Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz 3.Duman emisyon katsayısı düşük olan bir soğutucu kullanın * Modifie edilmiş parametreler	1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny 2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty. 3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu. * Zmodyfikowane parametry

CONDITIONS

FX-LN-EDS-6

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG E24 ■ XC48 ■ FT25 ~750 N/mm²				~30 HRC 35NCD16 ■ 40CMD8				30~38 HRC 35NCD16				38~45 HRC SUS 35NCD16				45~55 HRC-SUS Z38CDV5				55~60 HRC Z160CDV12			
	120 (m/min)				110 (m/min)				100 (m/min)				100 (m/min)				70 (m/min)				50 (m/min)			
Ø	Lg (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)
0,2	0.5	50.000	600	0,006	0,02	50.000	540	0,005	0,018	50.000	480	0,005	0,015	50.000	480	0,005	0,012	50.000	450	0,005	0,008	50.000	360	0,004	0,004
0,2	1	50.000	450	0,005	0,014	50.000	405	0,004	0,013	50.000	360	0,004	0,011	50.000	360	0,004	0,008	50.000	338	0,003	0,006	50.000	270	0,003	0,003
0,2	1.5	50.000	300	0,003	0,009	50.000	270	0,003	0,008	50.000	240	0,002	0,007	50.000	240	0,002	0,005	50.000	225	0,002	0,004	50.000	180	0,002	0,002
0,3	1	50.000	600	0,006	0,029	50.000	540	0,005	0,026	50.000	480	0,005	0,022	50.000	480	0,005	0,017	50.000	450	0,005	0,012	50.000	360	0,004	0,006
0,3	2	50.000	600	0,006	0,021	50.000	540	0,005	0,019	50.000	480	0,005	0,016	50.000	480	0,005	0,013	50.000	450	0,005	0,009	50.000	360	0,004	0,004
0,3	3	50.000	500	0,005	0,01	50.000	450	0,005	0,009	50.000	400	0,004	0,008	50.000	400	0,004	0,006	50.000	375	0,004	0,004	50.000	300	0,003	0,002
0,4	2	50.000	700	0,007	0,029	50.000	630	0,006	0,026	50.000	560	0,006	0,022	50.000	560	0,006	0,017	40.000	420	0,005	0,012	40.000	336	0,004	0,006
0,4	3	50.000	600	0,006	0,018	50.000	540	0,005	0,016	50.000	480	0,005	0,014	50.000	480	0,005	0,011	40.000	360	0,005	0,007	40.000	288	0,004	0,004
0,4	4	50.000	600	0,006	0,013	50.000	540	0,005	0,012	50.000	480	0,005	0,01	50.000	480	0,005	0,008	40.000	360	0,005	0,005	39.809	287	0,004	0,003
0,5	2	50.000	900	0,009	0,049	50.000	810	0,008	0,044	40.000	576	0,007	0,037	40.000	576	0,007	0,029	40.000	540	0,007	0,02	31.847	344	0,005	0,01
0,5	4	50.000	900	0,009	0,023	50.000	810	0,008	0,021	40.000	576	0,007	0,017	40.000	576	0,007	0,014	40.000	540	0,007	0,009	31.847	344	0,005	0,005
0,5	6	50.000	900	0,009	0,007	40.000	648	0,008	0,006	40.000	576	0,007	0,005	40.000	576	0,007	0,004	40.000	540	0,007	0,003	31.847	344	0,005	0,001
0,5	8	50.000	800	0,008	0,005	40.000	576	0,007	0,005	40.000	512	0,006	0,004	40.000	512	0,006	0,003	40.000	480	0,006	0,002	31.847	306	0,005	0,001
0,6	2	40.000	800	0,01	0,059	40.000	720	0,009	0,053	40.000	640	0,008	0,044	40.000	640	0,008	0,035	37.155	557	0,008	0,024	26.539	318	0,006	0,012
0,6	4	40.000	800	0,01	0,043	40.000	720	0,009	0,039	40.000	640	0,008	0,032	40.000	640	0,008	0,026	37.155	557	0,008	0,018	26.539	318	0,006	0,009
0,6	6	40.000	720	0,009	0,02	40.000	648	0,008	0,018	40.000	576	0,007	0,015	40.000	576	0,007	0,012	37.155	502	0,007	0,008	26.539	287	0,005	0,004
0,6	8	40.000	720	0,009	0,008	40.000	648	0,008	0,007	40.000	576	0,007	0,006	40.000	576	0,007	0,005	37.155	502	0,007	0,003	26.539	287	0,005	0,002
0,6	10	40.000	640	0,008	0,005	40.000	576	0,007	0,005	40.000	512	0,006	0,004	40.000	512	0,006	0,003	37.155	446	0,006	0,002	26.539	255	0,005	0,001
0,7	2	40.000	960	0,012	0,068	40.000	864	0,011	0,061	40.000	768	0,01	0,051	40.000	768	0,01	0,041	31.847	573	0,009	0,028	22.748	328	0,007	0,014
0,7	4	40.000	800	0,01	0,05	40.000	720	0,009	0,045	40.000	640	0,008	0,038	40.000	640	0,008	0,03	31.847	478	0,008	0,021	22.748	273	0,006	0,01
0,7	6	40.000	800	0,01	0,032	40.000	720	0,009	0,029	40.000	640	0,008	0,024	40.000	640	0,008	0,019	31.847	478	0,008	0,013	22.748	273	0,006	0,006
0,7	8	40.000	720	0,009	0,018	40.000	648	0,008	0,016	40.000	576	0,007	0,014	40.000	576	0,007	0,011	31.847	430	0,007	0,007	22.748	246	0,005	0,004
0,7	10	40.000	720	0,009	0,009	40.000	648	0,008	0,008	40.000	576	0,007	0,007	40.000	576	0,007	0,005	31.847	430	0,007	0,004	22.748	246	0,005	0,002
0,8	4	40.000	1.120	0,014	0,057	40.000	1.008	0,013	0,051	39.809	892	0,011	0,043	39.809	892	0,011	0,034	27.866	585	0,011	0,023	19.904	334	0,008	0,011
0,8	6	40.000	1.120	0,014	0,036	40.000	1.008	0,013	0,032	39.809	892	0,011	0,027	39.809	892	0,011	0,022	27.866	585	0,011	0,015	19.904	334	0,008	0,007
0,8	8	40.000	1.120	0,014	0,026	40.000	1.008	0,013	0,023	39.809	892	0,011	0,02	39.809	892	0,011	0,016	27.866	585	0,011	0,011	19.904	334	0,008	0,005
0,8	10	40.000	960	0,012	0,01	40.000	864	0,011	0,009	39.809	764	0,01	0,008	39.809	764	0,01	0,006	27.866	502	0,009	0,004	19.904	287	0,007	0,002
0,8	12	40.000	960	0,012	0,007	40.000	864	0,011	0,006	39.809	764	0,01	0,005	39.809	764	0,01	0,004	27.866	502	0,009	0,003	19.904	287	0,007	0,001
0,9	6	40.000	1.280	0,016	0,064	38.924	1121	0,014	0,058	35.386	906	0,013	0,048	35.386	906	0,013	0,038	24.770	594	0,012	0,026	17.693	340	0,01	0,013
0,9	8	40.000	1.280	0,016	0,041	38.924	1121	0,014	0,037	35.386	906	0,013	0,031	35.386	906	0,013	0,025	24.770	594	0,012	0,017	17.693	340	0,01	0,008
0,9	10	40.000	1.280	0,016	0,029	38.924	1121	0,014	0,026	35.386	906	0,013	0,022	35.386	906	0,013	0,017	24.770	594	0,012	0,012	17.693	340	0,01	0,006
0,9	15	40.000	1.120	0,014	0,007	38.924	981	0,013	0,006	35.386	793	0,011	0,005	35.386	793	0,011	0,004	24.770	520	0,011	0,003	17.693	297	0,008	0,001
1	6	38.217	1.376	0,018	0,07	35.032	1.135	0,016	0,063	31.847	917	0,014	0,053	31.847	917	0,014	0,042	22.293	602	0,014	0,029	15.924	344	0,011	0,014
1	8	38.217	1.376	0,018	0,05	35.032	1.135	0,016	0,045	31.847	917	0,014	0,038	31.847	917	0,014	0,03	22.293	602	0,014	0,021	15.924	344	0,011	0,01
1	10	38.217	1.376	0,018	0,03	35.032	1.135	0,016	0,027	31.847	917	0,014	0,023	31.847	917	0,014	0,018	22.293	602	0,014	0,012	15.924	344	0,011	0,006
1	12	38.217	1.376	0,018	0,02	35.032	1.135	0,016	0,018	31.847	917	0,014	0,015	31.847	917	0,014	0,012	22.293	602	0,014	0,008	15.924	344	0,011	0,004
1	14	38.217	1.223	0,016	0,015	35.032	1.009	0,014	0,014	31.847	815	0,013	0,011	31.847	815	0,013	0,009	22.293	535	0,012	0,006	15.924	306	0,01	0,003
1	16	38.217	1.223	0,016	0,01	35.032	1.009	0,014	0,009	31.847	815	0,013	0,008	31.847	815	0,013	0,006	22.293	535	0,012	0,004	15.924	306	0,01	0,002
1,2	6	31.847	1.338	0,021	0,09	29.193	1.104	0,019	0,081	26.539	892	0,017	0,068	26.539	892	0,017	0,054	8.577	585	0,016	0,037	13.270	334	0,013	0,018
1,2	8	31.847	1.338	0,021	0,07	29.193	1.104	0,019	0,063	26.539	892	0,017	0,053	26.539	892	0,017	0,042	18.577	585	0,016	0,029	13.270	334	0,013	0,014
1,2	10	31.847	1.338	0,021	0,06	29.193	1.104	0,019	0,054	26.539	892	0,017	0,045	26.539	892	0,017	0,036	18.577	585	0,016	0,025	13.270	334	0,013	0,012
1,2	12	31.847	1.338	0,021	0,04	29.193	1.104	0,019	0,036	26.539	892	0,017	0,03	26.539	892	0,017	0,024	18.577	585	0,016	0,016	13.270	334	0,013	0,008
1,4	6	27.298	1.310	0,024	0,14	25.023	1.081	0,022	0,126	22.748	874	0,019	0,105	22.748	874	0,019	0,084	15.924	573	0,018	0,058	11.374	328	0,014	0,028
1,4	8	27.298	1.310	0,024	0,1	25.023	1.081	0,022	0,09	22.748	874	0,019	0,075	22.748	874	0,019	0,06	15.924	573	0,018	0,041	11.374	328	0,014	0,02
1,4	10	27.298	1.310	0,024	0,07	25.023	1.081	0,022	0,063	22.748	874	0,019	0,053	22.748	874	0,019	0,042	15.924	573	0,018	0,029	11.374	328	0,014	0,014
1,4	12	27.298	1.310	0,024	0,06	25.023	1.081	0,022	0,054	22.748	874	0,019	0,045	22.748	874	0,019	0,036	15.924	573	0,018	0,025	11.374	328	0,014	0,012
1,4	14	27.298	1.310	0,024	0,05	25.023	1.081	0,022	0,045	22.748	874	0,019	0,038	22.748	874	0,019	0,03	15.924	573	0,018	0,021	11.374	328	0,014	0,01
1,4	16	27.298	1.201	0,022	0,03	25.023	991	0,02	0,027	22.748	801	0,018	0,023	22.748	801	0,018	0,018	15.924	525	0,017	0,012	11.374	300	0,013	0,006
1,5	6	25.478	1.325	0,026	0,15	23.355	1.093	0,023	0,135	21.231	883	0,021	0,113	21.231	883	0,021	0,09	14.862	580	0,02	0,062	10.616	331	0,016	0,030
1,5	8	25.478	1.325	0,026	0,11	23.355	1.093	0,023	0,099	21.231	883	0,021	0,083	21.231	883	0,021	0,066	14.862	580	0,02	0,045	10.616	331	0,016	0,022
1,5	10	25.478	1.325	0,026	0,09	23.355	1.093	0,023	0,081	21.231	883	0,021	0,068	21.231	883	0,021	0,054	14.862	580	0,02	0,037	10.616	331	0,016	0,018
1,5	12	25.478	1.325	0,026	0,07	23.355	1.093	0,023	0,063	21.231	883	0,021	0,053	21.231	883	0,021	0,042	14.862	580	0,02	0,029	10.616	331	0,016	0,014
1,5	14	25.478	1.325	0,026	0,06	23.355	1.093	0,023	0,054	21.231	883	0,021	0,045	21.231	883	0,021	0,036	14.862	580	0,02	0,025	10.616	331	0,016	0,012
1,5	16	25.478	1.325	0,026	0,05	23.355	1.093	0,023	0,045	21.231	883	0,021	0,038	21.231	883	0,021	0,03	14.862	580	0,02	0,021	10.616	331	0,016	0,01
1,5	18	25.478	1.325	0,026	0,03	23.355	1.093	0,023	0,027	21.231	883	0,021	0,023	21.231	883	0,021	0,018	14.862	580	0,02	0,012	10.616	331	0,016	0,006
1,5	20	25.478	1.325	0,026	0,02	23.355	1.093	0,023	0,018	21.231	883	0,021	0,015	21.231	883	0,021	0,012	14.862	580	0,02	0,008	10.616	331	0,016	0,004
1,6	6	23.885	1.338	0,028	0,17	21.895	1.104	0,025	0,153	19.904	892	0,022	0,128	19.904	892	0,022	0,102	13.933	585	0,021	0,07	9.952	334	0,017	0,034
1,6	8	23.885	1.338	0,028	0,16	21.895	1.104	0,025	0,144	19.904	892	0,022	0,12	19.904	892	0,022	0,096	13.933	585	0,021	0,066	9.952	334	0,017	0,032
1,6	10	23.885	1.338	0,028	0,11	21.895	1.104	0,025	0,099	19.904	892	0,022	0,083	19.904	892	0,022	0,066	13.933	585	0,021	0,045	9.952	334	0,017	0,022
1,6	12	23.885	1.338	0,028	0,07	21.895	1.104	0,025	0,063	19.904	892	0,022	0,053	19.904	892	0,022	0,042	13.933	585	0,021	0,029	9.952	334	0,017	0,014
1,6	14	23.885	1.338	0,028	0,06	21.895	1.104	0,025	0,054	19.904	892	0,022	0,045	19.904	892	0,022	0,036	13.933	585	0,021	0,025	9.952	334	0,017	0,012
1,6	16	23.885	1.338	0,028	0,05	21.895	1.104	0,025	0,045	19.904	892	0,022	0,038	19.904	892	0,022	0,03	13.933	585	0,021	0,021	9.952	334	0,017	0,01
1,6	18	23.885	1.338	0,028	0,04	21.895	1.104	0,025	0,036	19.904	892	0,022	0,03	19.904	892	0,022	0,024	13.933	585	0,021	0,016	9.952	334	0,017	0,008
1,6	20	23.885	1.338	0,028	0,02	21.895	1.104	0,025	0,018	19.904	892	0,022	0,015	19.904	892	0,022	0,012	13.933	585	0,021	0,008	9.952	334	0,017	0,004
1,8	6	21.231	1.316	0,031	0,23	19.462	1.086	0,028	0,207	17.693	878	0,025	0,173	17.693	878	0,025	0,138	12.385	576	0,023	0,095	8.846	329	0,019	0,046
1,8	8	21.231	1.316	0,031	0,22	19.462	1.086	0,028	0,198	17.693	878	0,025	0,165	17.693	878	0,025	0,132	12.385	576	0,023	0,091	8.846	329	0,019	0,044
1,8	10	21.231	1.316	0,031	0,13	19.462	1.086	0,028	0,117	17.693	878	0,025	0,098	17.693	878	0,025	0,078	12.385	576	0,023	0,054	8.846	329	0,019	0,026
1,8	12	21.231	1.316	0,031	0,11	19.462	1.086	0,028	0,099	17.693	878	0,025	0,083	17.693	878	0,025	0,066	12.385	576	0,023	0,045	8.846	329	0,019	0,022
1,8	14	21.231	1.316	0,031	0,08	19.462	1.086	0,028	0,072	17.693	878	0,025	0,06	17.693	878	0,025	0,048	12.385	576	0,023	0,033	8.846	329	0,019	0,016
1,8	16	21.231	1.316	0,031	0,07	19.462	1.086	0,028	0,063	17.693	878	0,025	0,053	17.693	878	0,025	0,042	12.385	576	0,023	0,029	8.846	329	0,019	0,014
1,8	18	21.231	1.316	0,031	0,06	19.462	1.086	0,028	0,054	17.693	878	0,025	0,045	17.693	878	0,025	0,036	12.385	576	0,023	0,025	8.846	329	0,019	0,012
1,8	20	21.231	1.316	0,031	0,05	19.462	1.086	0,028	0,045	17.693	878	0,025	0,038	17.693	878	0,025	0,03	12.385	576	0,023	0,021	8.846	329	0,019	0,01
2	6	19.108	1.299	0,034	0,34	17.516	1.072	0,031	0,306	15.924	866	0,027	0,255	15.924	866	0,027	0,204	11.146	568	0,026	0,14	7.962	325	0,02	0,068
2	8	19.108	1.299	0,034	0,29	17.516	1.072	0,031	0,261	15.924	866	0,027	0,218	15.924	866	0,027	0,174	11.146	568	0,026	0,119	7.962	325	0,02	0,058
2	10	19.108	1.299	0,034	0,26	17.516	1.072	0,031	0,234	15.924	866	0,027	0,195	15.924	866	0,027	0,156	11.146	568	0,026	0,107	7.962	325	0,02	0,052
2	12	19.108	1.299	0,034	0,14	17.516	1.072	0,031	0,126	15.924	866	0,027	0,105	15.924	866	0,027	0,084	11.146	568	0,026	0,058	7.962	325	0,02	0,028
2	14	19.108	1.299	0,034	0,1	17.516	1.072	0,031	0,090	15.924	866	0,027	0,075	15.924	866	0,027	0,06	11.146	568	0,026	0,041	7.962	325	0,02	0,02
2	16	19.108	1.299	0,034	0,09	17.516	1.072	0,031	0,081	15.924	866	0,027	0,068	15.924	866	0,027	0,054	11.146	568	0,026	0,037	7.962	325	0,02	0,018
2	18	19.108	1.299	0,034	0,08	17.516	1.072	0,031	0,072	15.924	866	0,027	0,06	15.924	866	0,027	0,048	11.146	568	0,026	0,033	7.962	325	0,02	0,016
2	20	19.108	1.299	0,034	0,07	17.516	1.072	0,031	0,063	15.924	866	0,027	0,053	15.924	866	0,027	0,042	11.146	568	0,026	0,029	7.962	325	0,02	0,014
2	25	19.108	1.299	0,034	0,03	17.516	1.072	0,031	0,027	15.924	866	0,027	0,023	15.924	866	0,027	0,018	11.146	568	0,026	0,012	7.962	325	0,02	0,006
2	30	19.108	1.299	0,034	0,02	17.516	1.072	0,031	0,018	15.924	866	0,027	0,015	15.924	866	0,027	0,012	11.146	568	0,026	0,008	7.962	325	0,02	0,004
2,5	8	15.287	1.834	0,06	0,42	14.013	1.513	0,054	0,378	12.739	1.223	0,048	0,315	12.739	1.223	0,048	0,252	8.917	803	0,045	0,173	6.369	459	0,036	0,084
2,5	10	15.287	1.834	0,06	0,36	14.013	1.513	0,054	0,324	12.739	1.223	0,048	0,27	12.739	1.223	0,048	0,216	8.917	803	0,045	0,148	6.369	459	0,036	0,072
2,5	12	15.287	1.834	0,06	0,24	14.013	1.513	0,054	0,216	12.739	1.223	0,048	0,18	12.739	1.223	0,048	0,144	8.917	803	0,045	0,099	6.369	459	0,036	0,048

BACK

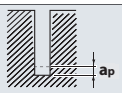
FX-LN-EDS-6

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG E24 ■ XC48 ■ FT25 ~750 N/mm²				~30 HRC 35NCD16 ■ 40CMD8				30~38 HRC 35NCD16				38~45 HRC SUS 35NCD16				45~55 HRC-SUS Z38CDV5				55~60 HRC Z160CDV12			
	120 (m/min)				110 (m/min)				100 (m/min)				100 (m/min)				70 (m/min)				50 (m/min)			
Ø	Lg (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)
2,5	14	15.287	1.834	0,06	0,18	14.013	1.513	0,054	0,162	12.739	1.223	0,048	0,135	12.739	1.223	0,048	0,108	8.917	803	0,045	0,074	6.369	459	0,036	0,036
2,5	16	15.287	1.834	0,06	0,13	14.013	1.513	0,054	0,117	12.739	1.223	0,048	0,098	12.739	1.223	0,048	0,078	8.917	803	0,045	0,054	6.369	459	0,036	0,026
2,5	18	15.287	1.834	0,06	0,11	14.013	1.513	0,054	0,099	12.739	1.223	0,048	0,083	12.739	1.223	0,048	0,066	8.917	803	0,045	0,045	6.369	459	0,036	0,022
2,5	20	15.287	1.834	0,06	0,1	14.013	1.513	0,054	0,09	12.739	1.223	0,048	0,075	12.739	1.223	0,048	0,06	8.917	803	0,045	0,041	6.369	459	0,036	0,02
2,5	25	15.287	1.834	0,06	0,08	14.013	1.513	0,054	0,072	12.739	1.223	0,048	0,06	12.739	1.223	0,048	0,048	8.917	803	0,045	0,033	6.369	459	0,036	0,016
2,5	30	15.287	1.834	0,06	0,03	14.013	1.513	0,054	0,027	12.739	1.223	0,048	0,023	12.739	1.223	0,048	0,018	8.917	803	0,045	0,012	6.369	459	0,036	0,006
3	8	12.739	2.038	0,08	0,39	11.677	1.682	0,072	0,351	10.616	1.359	0,064	0,293	10.616	1.359	0,064	0,234	7.431	892	0,06	0,161	5.308	510	0,048	0,078
3	10	12.739	2.038	0,08	0,31	11.677	1.682	0,072	0,279	10.616	1.359	0,064	0,233	10.616	1.359	0,064	0,186	7.431	892	0,06	0,128	5.308	510	0,048	0,062
3	12	12.739	2.038	0,08	0,29	11.677	1.682	0,072	0,261	10.616	1.359	0,064	0,218	10.616	1.359	0,064	0,174	7.431	892	0,06	0,119	5.308	510	0,048	0,058
3	14	12.739	2.038	0,08	0,27	11.677	1.682	0,072	0,243	10.616	1.359	0,064	0,203	10.616	1.359	0,064	0,162	7.431	892	0,06	0,111	5.308	510	0,048	0,054
3	16	12.739	2.038	0,08	0,22	11.677	1.682	0,072	0,198	10.616	1.359	0,064	0,165	10.616	1.359	0,064	0,132	7.431	892	0,06	0,091	5.308	510	0,048	0,044
3	18	12.739	2.038	0,08	0,16	11.677	1.682	0,072	0,144	10.616	1.359	0,064	0,12	10.616	1.359	0,064	0,096	7.431	892	0,06	0,066	5.308	510	0,048	0,032
3	20	12.739	2.038	0,08	0,14	11.677	1.682	0,072	0,126	10.616	1.359	0,064	0,105	10.616	1.359	0,064	0,084	7.431	892	0,06	0,058	5.308	510	0,048	0,028
3	25	12.739	2.038	0,08	0,13	11.677	1.682	0,072	0,117	10.616	1.359	0,064	0,098	10.616	1.359	0,064	0,078	7.431	892	0,06	0,054	5.308	510	0,048	0,026
3	30	12.739	2.038	0,08	0,1	11.677	1.682	0,072	0,09	10.616	1.359	0,064	0,075	10.616	1.359	0,064	0,06	7.431	892	0,06	0,041	5.308	510	0,048	0,02
3	35	12.739	2.038	0,08	0,08	11.677	1.682	0,072	0,072	10.616	1.359	0,064	0,06	10.616	1.359	0,064	0,048	7.431	892	0,06	0,033	5.308	510	0,048	0,016
3	40	12.739	2.038	0,08	0,04	11.677	1.682	0,072	0,036	10.616	1.359	0,064	0,03	10.616	1.359	0,064	0,024	7.431	892	0,06	0,016	5.308	510	0,048	0,008
4	12	9.554	1.911	0,1	0,42	8.758	1.576	0,09	0,378	7.962	1.274	0,08	0,315	7.962	1.274	0,08	0,252	5.573	836	0,075	0,173	3.981	478	0,06	0,084
4	16	9.554	1.911	0,1	0,39	8.758	1.576	0,09	0,351	7.962	1.274	0,08	0,293	7.962	1.274	0,08	0,234	5.573	836	0,075	0,161	3.981	478	0,06	0,078
4	20	9.554	1.911	0,1	0,36	8.758	1.576	0,09	0,324	7.962	1.274	0,08	0,27	7.962	1.274	0,08	0,216	5.573	836	0,075	0,148	3.981	478	0,06	0,072
4	25	9.554	1.720	0,09	0,29	8.758	1.419	0,081	0,261	7.962	1.146	0,072	0,218	7.962	1.146	0,072	0,174	5.573	752	0,068	0,119	3.981	430	0,054	0,058
4	30	9.554	1.529	0,08	0,21	8.758	1.261	0,072	0,189	7.962	1.019	0,064	0,158	7.962	1.019	0,064	0,126	5.573	669	0,06	0,086	3.981	382	0,048	0,042
4	35	9.554	1.338	0,07	0,18	8.758	1.104	0,063	0,162	7.962	892	0,056	0,135	7.962	892	0,056	0,108	5.573	585	0,053	0,074	3.981	334	0,042	0,036
4	40	9.554	1.146	0,06	0,16	8.758	946	0,054	0,144	7.962	764	0,048	0,12	7.962	764	0,048	0,096	5.573	502	0,045	0,066	3.981	287	0,036	0,032
4	45	9.554	1.146	0,06	0,13	8.758	946	0,054	0,117	7.962	764	0,048	0,098	7.962	764	0,048	0,078	5.573	502	0,045	0,054	3.981	287	0,036	0,026
4	50	9.554	955	0,05	0,05	8.758	788	0,045	0,045	7.962	637	0,04	0,038	7.962	637	0,04	0,030	5.573	418	0,038	0,021	3.981	239	0,03	0,01
5	16	7.643	1.987	0,13	0,49	7.006	1.639	0,117	0,441	6.369	1.325	0,104	0,368	6.369	1.325	0,104	0,294	4.459	869	0,098	0,202	3.185	497	0,078	0,098
5	25	7.643	1.834	0,12	0,46	7.006	1.513	0,108	0,414	6.369	1.223	0,096	0,345	6.369	1.223	0,096	0,276	4.459	803	0,09	0,189	3.185	459	0,072	0,092
5	35	7.643	1.529	0,1	0,36	7.006	1.261	0,09	0,324	6.369	1.019	0,08	0,27	6.369	1.019	0,08	0,216	4.459	669	0,075	0,148	3.185	382	0,06	0,072
5	50	7.643	1.529	0,1	0,16	7.006	1.261	0,09	0,144	6.369	1.019	0,08	0,12	6.369	1.019	0,08	0,096	4.459	669	0,075	0,066	3.185	382	0,06	0,032
3	3	12.739	2.038	0,08	0,04	11.677	1.682	0,072	0,036	10.616	1.359	0,064	0,03	10.616	1.359	0,064	0,024	7.431	892	0,06	0,016	5.308	510	0,048	0,008
4	4	9.554	1.911	0,1	0,42	8.758	1.576	0,09	0,378	7.962	1.274	0,08	0,315	7.962	1.274	0,08	0,252	5.573	836	0,075	0,173	3.981	478	0,06	0,084
4	4	9.554	1.911	0,1	0,39	8.758	1.576	0,09	0,351	7.962	1.274	0,08	0,293	7.962	1.274	0,08	0,234	5.573	836	0,075	0,161	3.981	478	0,06	0,078
4	4	9.554	1.911	0,1	0,36	8.758	1.576	0,09	0,324	7.962	1.274	0,08	0,27	7.962	1.274	0,08	0,216	5.573	836	0,075	0,148	3.981	478	0,06	0,072
4	4	9.554	1.720	0,09	0,29	8.758	1.419	0,081	0,261	7.962	1.146	0,072	0,218	7.962	1.146	0,072	0,174	5.573	752	0,068	0,119	3.981	430	0,054	0,058
4	4	9.554	1.529	0,08	0,21	8.758	1.261	0,072	0,189	7.962	1.019	0,064	0,158	7.962	1.019	0,064	0,126	5.573	669	0,06	0,086	3.981	382	0,048	0,042
4	4	9.554	1.338	0,07	0,18	8.758	1.104	0,063	0,162	7.962	892	0,056	0,135	7.962	892	0,056	0,108	5.573	585	0,053	0,074	3.981	334	0,042	0,036
4	4	9.554	1.146	0,06	0,16	8.758	946	0,054	0,144	7.962	764	0,048	0,12	7.962	764	0,048	0,096	5.573	502	0,045	0,066	3.981	287	0,036	0,032
4	4	9.554	1.146	0,06	0,13	8.758	946	0,054	0,117	7.962	764	0,048	0,098	7.962	764	0,048	0,078	5.573	502	0,045	0,054	3.981	287	0,036	0,026
4	4	9.554	955	0,05	0,05	8.758	788	0,045	0,045	7.962	637	0,04	0,038	7.962	637	0,04	0,03	5.573	418	0,038	0,021	3.981	239	0,03	0,01
5	5	7.643	1.987	0,13	0,49	7.006	1.639	0,117	0,441	6.369	1.325	0,104	0,368	6.369	1.325	0,104	0,294	4.459	869	0,098	0,202	3.185	497	0,078	0,098
5	5	7.643	1.834	0,12	0,46	7.006	1.513	0,108	0,414	6.369	1.223	0,096	0,345	6.369	1.223	0,096	0,276	4.459	803	0,09	0,189	3.185	459	0,072	0,092
5	5	7.643	1.529	0,1	0,36	7.006	1.261	0,09	0,324	6.369	1.019	0,08	0,27	6.369	1.019	0,08	0,216	4.459	669	0,075	0,148	3.185	382	0,06	0,072
5	5	7.643	1.529	0,1	0,16	7.006	1.261	0,09	0,144	6.369	1.019	0,08	0,12	6.369	1.019	0,08	0,096	4.459	669	0,075	0,066	3.185	382	0,06	0,032

Max cutting depth



1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.
* Modified parameters

1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
* Parameto modificato

1. Die Schnittdaten sind ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.
* Modifizierten Parameters

1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée.
* Paramètres modifiés

1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling
* Modificerede parametre

1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo
* Parámetros modificados

1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling
* Modifierade parametrar

1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой
*устойчивостью к возникновению дыма.

1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.
* Modifie edilmiş parametreler

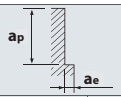
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.
* Zmodyfikowane parametry

FX-MG-EMS

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne

Ø	GG GG-GGG S (min⁻¹)	F (mm/min)	C≤0,2% S55C ■ SS400 ~750 N/mm² S (min⁻¹)	F (mm/min)	~30 HRC SKD ■ SKS ■ SNCM S (min⁻¹)	F (mm/min)	30~38 HRC NAK55 ■ HPMI ■ SKT S (min⁻¹)	F (mm/min)	38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51 S (min⁻¹)	F (mm/min)	45~55 HRC HRS S (min⁻¹)	F (mm/min)	55~60 HRC S (min⁻¹)	F (mm/min)
2	15.500	370	13.000	310	11.000	280	7.000	110	6.350	100	3.950	60	2.750	40
3	10.500	595	8.900	505	7.400	355	5.300	125	4.750	110	2.750	60	2.000	45
4	7.950	635	6.650	530	5.550	370	4.250	135	3.700	115	2.200	70	1.550	45
5	6.350	740	5.300	620	4.450	425	3.550	140	3.150	125	1.900	75	1.250	40
6	5.300	735	4.450	615	3.700	425	2.950	145	2.650	130	1.550	70	1.050	40
8	3.950	710	3.300	590	2.750	420	2.200	145	1.950	130	1.150	65	795	35
10	3.150	710	2.650	590	2.200	420	1.750	145	1.550	130	955	65	635	35
12	2.650	710	2.200	590	1.850	420	1.450	145	1.300	130	795	60	530	30
14	2.250	680	1.900	575	1.550	415	1.250	145	1.100	125	680	50	455	25
16	1.950	655	1.650	550	1.350	415	1.100	130	995	115	595	45	395	20
18	1.750	655	1.450	540	1.200	405	990	115	880	105	530	40	350	20
20	1.550	620	1.300	520	1.100	370	890	105	795	95	475	35	315	19
22	1.400	560	1.200	480	1.000	340	810	95	720	85	430	30	285	17
24	1.300	520	1.100	440	925	315	740	85	660	75	395	30	265	16
25	1.250	500	1.050	420	890	300	710	85	635	75	380	30	255	15
30	1.050	420	890	355	740	250	590	70	530	60	315	25	210	13

Max cutting depth	ap	ae
D < Ø3	1,5D	0,05D
Ø3 ≤ D	1,5D	0,10D



ap	ae
1D	0,02D

1. Use high precision machine set up to ensure maximum rigidity.
2. In case of vibration, reduce both feed and speed.
3. Use a coolant that has a low co-efficient of smoke emission.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazioni, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Kuhlmittel mit niedriger Rauchentwicklung verwenden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utilisez des lubrifiants de coupe appropriés dotés d'un coef. élevé de ralentissement d'émission de fumée.

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Ved vibrationer, justér både hastighed og tilspænding
3. Benyt en kølevæske med lav koefficient af røgudvikling

1. Use máquina de alta precisión y asegure la máxima rigidez
2. En el caso de vibraciones, reducir velocidad y avance simultaneamente
3. Utilizar un refrigerante con un bajo coeficiente de emisión de humo

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Vid vibrationer, justera både varvtal och matning
3. Använd skärvätska med låg rökutvecklingskoefficient.

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2.Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz
3.Duman emisyon katsayısı düşük olan bir soğutucu kullanın

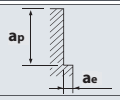
1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty.
3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu

FX-MG-EMS

High speed side milling - HSC Konturfräsen - Fresatura alta velocità contornatura- Fraisage UGV contournage - Yüksek hizda kenar frezeleme - Højhastigheds sidefræsning - High speed valsfräsning - Contorneado a alta velocidad - Высокоскоростное контурное фрезерование - Frezowanie boczne HSC

Ø	C≤0,2% S55C ■ SS400 ■ GG25 ~750 N/mm² S (min⁻¹)	F (mm/min)	~30 HRC SKD ■ SKS ■ SNCM S (min⁻¹)	F (mm/min)	30~38 HRC NAK55 ■ HPMI ■ SKT S (min⁻¹)	F (mm/min)	38~45 HRC X210Cr12 ■ X40CrMoV51 S (min⁻¹)	F (mm/min)	45~55 HRC S (min⁻¹)	F (mm/min)
6	21.000	2.450	18.500	2.150	13.000	1.500	7.950	795	4.200	420
8	15.500	2.450	13.500	2.100	9.900	1.450	5.950	795	3.150	425
10	12.500	2.500	11.000	2.100	7.950	1.450	4.750	800	2.500	420
12	10.500	2.450	9.250	2.100	6.600	1.450	3.950	790	2.100	410
14	9.050	2.350	7.950	2.000	5.650	1.350	3.400	740	1.800	390
16	7.950	2.250	6.950	1.950	4.950	1.350	2.950	715	1.550	375
18	7.050	2.250	6.150	1.900	4.400	1.300	2.650	705	1.400	375
20	6.350	2.100	5.550	1.850	3.950	1.300	2.350	665	1.250	355
22	5.750	1.950	5.050	1.700	3.600	1.200	2.150	635	1.150	325
24	5.300	1.800	4.600	1.550	3.300	1.100	1.950	575	1.050	295
25	5.050	1.700	4.450	1.500	3.150	1.050	1.900	560	1.000	280
30	4.200	1.400	3.700	1.250	2.650	890	1.550	455	845	240

Max cutting depth	ap	ae
D ≤ Ø8	1,5D	0,01D
Ø8 < D ≤ Ø16	1,5D	0,03D
Ø16 < D	1,5D	0,05D



	ap	ae
D ≤ Ø8	1D	0,01D
Ø8 < D	1D	0,02D

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.
* Modified parameters

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
* Parameto modificato

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausgereichenden Brandschutz sicher.
1. Die Schnittdaten sin ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft ofer Kühlmittel mit rauchhemmenden Zusätzen.
* Modifizierten Parameters

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée. * Paramètres modifiés

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling
* Modificerede parametre

Atención: Las chispas pueden causar el incendio del refrigerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo
* Parámetros modificados

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd skärvätska med låg rökutvecklingskoefficient.
* Modifierade parametrar

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.
* Modifie edilmiş parametreler

1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.
* Zmodyfikowane parametry

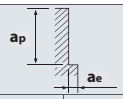
FX-SS-EMS

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne

	GG GG-GGG		C≤0,2% S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
2	15.500	370	13.000	310	11.000	280	7.000	110	6.350	100	3.950	60	2.750	40
3	10.500	595	8.900	505	7.400	355	5.300	125	4.750	110	2.750	60	2.000	45
4	7.950	635	6.650	530	5.550	370	4.250	135	3.700	115	2.200	70	1.550	45
5	6.350	740	5.300	620	4.450	425	3.550	140	3.150	125	1.900	75	1.250	40
6	5.300	735	4.450	615	3.700	425	2.950	145	2.650	130	1.550	70	1.050	40
8	3.950	710	3.300	590	2.750	420	2.200	145	1.950	130	1.150	65	795	35
10	3.150	710	2.650	590	2.200	420	1.750	145	1.550	130	955	65	635	35
12	2.650	710	2.200	590	1.850	420	1.450	145	1.300	130	795	60	530	30
14	2.250	680	1.900	575	1.550	415	1.250	145	1.100	125	680	50	455	25
16	1.950	655	1.650	550	1.350	415	1.100	130	995	115	595	45	395	20
18	1.750	655	1.450	540	1.200	405	990	115	880	105	530	40	350	20
20	1.550	620	1.300	520	1.100	370	890	105	795	95	475	35	315	19
22	1.400	560	1.200	480	1.000	340	810	95	720	85	430	30	285	17
24	1.300	520	1.100	440	925	315	740	85	660	75	395	30	265	16
25	1.250	500	1.050	420	890	300	710	85	635	75	380	30	255	15
30	1.050	420	890	355	740	250	590	70	530	60	315	25	210	13

Max cutting depth

	ap	ae
D < Ø3	1,5D	0,05D
Ø3 ≤ D	1,5D	0,10D



ap	ae
1D	0,02D

1. Use high precision machine set up to ensure maximum rigidity.
2. In case of vibration, reduce both feed and speed.
3. Use a coolant that has a low co-efficient of smoke emission.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazioni, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Kuhlmittel mit niedriger Rauchentwicklung verwenden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utilisez des lubrifiants de coupe appropriés dotés d'un coef. élevé de ralentissement d'émission de fumée.

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Ved vibrationer, justér både hastighed og tilspænding
3. Benyt en kølevæske med lav koefficient af røgudvikling

1. Use máquina de alta precisión y asegure la máxima rigidez
2. En el caso de vibraciones, reducir velocidad y avance simultaneamente
3. Utilizar un refrigerante con un bajo coeficiente de emisión de humo

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Vid vibrationer, justera både varvtal och matning
3. Använd skärvätska med låg rökutvecklingskoefficient.

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2.Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz
3.Duman emisyon katsayısı düşük olan bir soğutucu kullanın

1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty.
3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu

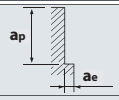
FX-SS-EMS

High speed side milling - HSC Konturfräsen - Fresatura alta velocità contornatura- Fraisage UGV contournage - Yüksek hizda kenar frezeleme - Højhastigheds sidefræsning - High speed valsfräsning - Contorneado a alta velocidad - Высокоскоростное контурное фрезерование - Frezowanie boczne HSC

	C≤0,2% S55C ■ SS400 ■ GG25 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC X210Cr12 ■ X40CrMoV51		45~55 HRC	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
6	21.000	2.450	18.500	2.150	13.000	1.500	7.950	795	4.200	420
8	15.500	2.450	13.500	2.100	9.900	1.450	5.950	795	3.150	425
10	12.500	2.500	11.000	2.100	7.950	1.450	4.750	800	2.500	420
12	10.500	2.450	9.250	2.100	6.600	1.450	3.950	790	2.100	410
14	9.050	2.350	7.950	2.000	5.650	1.350	3.400	740	1.800	390
16	7.950	2.250	6.950	1.950	4.950	1.350	2.950	715	1.550	375
18	7.050	2.250	6.150	1.900	4.400	1.300	2.650	705	1.400	375
20	6.350	2.100	5.550	1.850	3.950	1.300	2.350	665	1.250	355
22	5.750	1.950	5.050	1.700	3.600	1.200	2.150	635	1.150	325
24	5.300	1.800	4.600	1.550	3.300	1.100	1.950	575	1.050	295
25	5.050	1.700	4.450	1.500	3.150	1.050	1.900	560	1.000	280
30	4.200	1.400	3.700	1.250	2.650	890	1.550	455	845	240

Max cutting depth

	ap	ae
D ≤ Ø8	1,5D	0,01D
Ø8 < D ≤ Ø16	1,5D	0,03D
Ø16 < D	1,5D	0,05D



	ap	ae
D ≤ Ø8	1D	0,01D
Ø8 < D	1D	0,02D

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.
* Modified parameters

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
* Parameto modificato

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausgereichenden Brandschutz sicher.
1. Die Schnittdaten sin ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft ofer Kühlmittel mit rauchhemmenden Zusätzen.
* Modifizierten Parameters

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée. * Paramètres modifiés

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling
* Modificerede parametre

Atención: Las chispas pueden causar el incendio del refrigerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo
* Parámetros modificados

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd skärvätska med låg rökutvecklingskoefficient.
* Modifierade parametrar

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.
* Modifie edilmiş parametreler

1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.
* Zmodyfikowane parametry

FX-LN-EMS-6

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



	C≤0,2% - GG SS400 ■ S55C ■ FC250 ~750 N/mm²		~30 HRC SCM ■ SKT ■ SKS ■ SKD		30~38 HRC SKT ■ SKD ■ NAK55 ■ HPM1		38~45 HRC-SUS SUS304 ■ SKD		45~55 HRC Tiall		55~60 HRC	
	100 (m/min)		78 (m/min)		66 (m/min)		62 (m/min)		60 (m/min)		30 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
1	26.500	1.000	21.500	700	17.500	500	15.000	400	9.500	160	6.350	60
1,5	17.500	1.000	14.000	700	11.500	500	10.000	400	6.350	160	4.250	60
2	13.000	1.050	10.500	700	8.900	590	7.600	400	4.750	160	3.200	60
2,5	10.400	1.250	8.400	700	7.100	500	6.100	400	3.800	160	2.550	60
3	8.900	1.000	7.200	700	5.900	500	5.050	400	3.150	160	2.100	60
4	6.650	1.000	5.400	700	4.450	500	3.800	400	2.350	160	1.550	60
5	5.300	1.000	4.300	700	3.550	500	3.050	400	1.900	160	1.250	60
6	4.450	1.000	3.600	700	2.950	500	2.500	400	1.550	160	1.050	60

Max cutting depth	a_p = 0,5D	a_p = 0,05D



1. Use a rigid and precise machine and holder. 2. When chattering occurs, reduce the speed and feed simultaneously. 3. Use a suitable cutting fluid with high smoke retardant properties.	1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione. 2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento. 3. Utilizare dei lubrificanti di taglio adeguati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel. 2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren. 3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.	1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision. 2. Utiliser de l'arrosage en brouillard (mist). 3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.
1. Anvend stabil maskine og værktøjsholder 2. Ved vibrationer reducér omdrejninger og tilspænding simultant 3. Anvend en passende skærevæske	1. Use maquina y portaherramientas rigidos y precisos 2. En caso de vibración reduzca velocidad y avance simultaneamente 3. Use fluido de corte adecuado con retardador de humos
1. Använd en stabil maskin och verktygshållare 2. Vid vibrationer sänk varvtal och matning med samma simultant 3. Använd anpassad skärvätska	1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали. 2. При возникновении вибраций, снизьте скорость и подачу одновременно. 3. Используйте качественную СОЖ с низким коэффициентом дымления.
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2.Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz 3.Duman emisyon katsayısı düşük olan bir soğutucu kullanın	1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny 2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty. 3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu

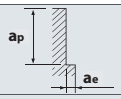
FX-MG-EHS

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



		C≤0,2% - GG S55C ■ SS400 ■ GG25 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
	Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3 flutes - 3 Schneiden - 3 denti - 3 lèvres 3 skär - 3 skär - 3 labios - 3 режущих кромки 3 Ostrzy - 3 Ağızlı	3 X 3	8.900	665	6.650	595	5.900	350	3.800	90	3.150	55	2.000	30
	4 X 3	6.650	695	5.000	675	4.450	400	2.850	100	2.350	70	1.550	35
	5 X 3	5.300	715	4.000	660	3.550	360	2.250	105	1.900	70	1.250	35
	6 X 3	5.300	755	4.000	660	3.550	315	2.200	150	1.900	90	1.250	30
	8 X 3	3.950	700	3.000	595	2.650	205	1.650	155	1.400	100	955	35
	10 X 3	3.150	640	2.400	565	2.100	260	1.300	140	1.100	100	760	35
	12 X 3	2.650	605	2.000	515	1.750	235	1.100	125	955	85	635	30
	14 X 3	2.250	570	1.700	450	1.500	205	955	105	815	75	545	25
	16 X 3	1.950	520	1.500	415	1.300	180	835	95	715	70	475	20
	18 X 3	1.750	480	1.300	370	1.150	170	740	85	635	70	420	20
	20 X 3	1.550	445	1.200	340	1.050	160	665	80	570	70	380	20
	25 X 3	1.250	415	965	280	850	140	535	85	455	70	305	20
4 flutes - 4 Schneiden - 4 denti - 4 lèvres 4 skär - 4 skär - 4 labios - 4 режущих кромки 4 Ostrzy - 4 Ağızlı	3 X 4	8.900	890	6.650	795	5.900	470	3.800	120	3.150	75	2.000	40
	4 X 4	6.650	930	5.000	900	4.450	530	2.850	135	2.350	90	1.550	50
	5 X 4	5.300	950	4.000	880	3.550	480	2.250	140	1.900	95	1.250	50
	6 X 4	5.300	900	4.000	800	3.550	220	2.200	175	1.900	110	1.250	50
	8 X 4	3.950	835	3.000	710	2.650	445	1.650	185	1.400	120	955	55
	10 X 4	3.150	760	2.400	680	2.100	310	1.300	165	1.100	115	760	55
	12 X 4	2.650	730	2.000	620	1.750	285	1.100	145	955	105	635	45
	14 X 4	2.250	675	1.700	550	1.500	245	955	125	815	95	545	40
	16 X 4	1.950	615	1.500	500	1.300	215	835	110	715	85	475	35
	18 X 4	1.750	580	1.300	440	1.150	195	740	100	635	85	420	35
	20 X 4	1.550	530	1.200	410	1.050	185	665	95	570	85	380	35
	25 X 4	1.250	500	965	340	850	170	535	100	455	85	305	35

Max cutting depth	ap / ae: 1,5D / 0,2D	ap / ae: 1,5D / 0,1D	ap / ae: 1D / 0,05D



1. Use high precision machine set up to ensure maximum rigidity. 2. In case of vibration, reduce both feed and speed. 3. Use a coolant that has a low co-efficient of smoke emission. 4. For stainless steels & heat resisting steels, non-water soluble coolant is highly recommended. 5. For dry milling, use compressed air to aid chip clearance.	1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione. 2. In caso di vibrazioni, ridurre simultaneamente la velocità di taglio e l'avanzamento. 3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo. 4. Per la fresatura di acciai inossidabili o acciai legati resistenti alle alte temperature (es. Inconel) è consigliato l'utilizzo di lubrificanti non solubili in acqua. 5. Per la lavorazione a secco, utilizzate un getto d'aria compressa per evitare un ingorgo di trucioli
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel. 2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren. 3. Kuhlmittel mit niedriger Rauchentwicklung verwenden. 4. Für VA und gehärterer Stahl, empfehlen wir keine wasserlöslichen Kühlmittel. 5. Bei Trockenbearbeiting Druckluft zum Entfernen der Späne verwenden.	1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision. 2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance. 3. Utilisez des lubrifiants de coupe appropriés dotés d'un coef. élevé de ralentissement d'émission de fumée. 4. Pour le fraisage d'aciers inoxydables ou d'alliages d'acier résistant aux hautes températures (ex. Inconel) il est recommandé d'employer des lubrifiants non solubles dans l'eau. 5. Pour l'usinage à sec, utilisez un jet d'air comprimé pour éviter un bourrage de copeaux.
1. Benyt højt præcisions set-up for at sikre maksimum stabilitet 2. Ved vibrationer, justér både hastighed og tilspænding 3. Benyt en kølevæske med lav koefficient af røgudvikling 4. For rustfrit stål og varmebestandige ståltyper anbefales kølevæske der ikke er vandbaseret 5. Ved tørbearbejdning brug trykluft for bortskaffelse af spåner	1. Use máquina de alta precisión y asegure la máxima rigidez 2. En el caso de vibraciones, reducir velocidad y avance simultaneamente 3. Utilizar un refrigerante con un bajo coeficiente de emisión de humo 4. For rustfrit stål og varmebestandige ståltyper anbefales kølevæske der ikke er vandbaseret 5. Ved tørbearbejdning brug trykluft for bortskaffelse af spåner
1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet 2. Vid vibrationer, justera både varvtal och matning 3. Använd skärvätska med låg rökutvecklingskoefficient. 4. För rostfria och värmebeständiga stål rekommenderas mkylvätska som inte är vatten baserat 5. Vid torrbearbetning använd tryckluft för spån borttagning	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость. 2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя. 3. Используйте качественную СОЖ с высокой 4. Для нержавеющей и жаростойкой сталей, настоятельно рекомендуем использовать не водную эмульсия в качестве СОЖ. 5. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки.
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2. Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz 3. Duman emisyon katsayısı düşük olan bir soğutucu kullanın	1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny 2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty. 3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FX-MG-EHS

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim -
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	Ø	C≤0,2% - GG S55C ■ SS400 ■ GG25 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
		S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3 & 4 flutes - 3 & 4 Schneiden - 3 & 4 denti - 3 & 4 lèvres - 3, 4 skär - 3, 4 skär - 3, 4 labios - 3, 4 режущих кромки - 3,4 Ostrzy - 3,4 Ağızlı	**3**	8.900	665	6.650	595	5.900	350	3.800	90	3.150	55	2.000	30
	4	6.650	695	5.000	675	4.450	400	2.850	100	2.350	70	1.550	35
	5	5.300	715	4.000	660	3.550	360	2.250	105	1.900	70	1.250	35
	6	4.450	740	3.300	550	2.950	345	1.900	110	1.550	70	1.050	35
	8	3.300	660	2.500	500	2.200	360	1.400	115	1.150	75	795	35
	10	2.650	630	2.000	475	1.750	325	1.100	115	955	75	635	35
	12	2.200	590	1.650	440	1.450	300	955	110	795	75	530	35
	14	1.900	560	1.400	445	1.250	270	815	95	680	70	455	30
	16	1.650	525	1.250	400	1.100	245	715	85	595	65	395	25
	18	1.450	480	1.100	365	990	225	635	80	530	60	350	25
	20	1.300	450	1.000	345	890	205	570	75	475	55	315	25
	25	1.050	395	800	300	710	170	455	60	380	50	255	25

Max cutting depth	a_a = 0,5D	a_p	a_a	a_p = 0,05D

1. Use high precision machine set up to ensure maximum rigidity. 2. In case of vibration, reduce both feed and speed. 3. Use a coolant that has a low co-efficient of smoke emission. 4. For stainless steels & heat resisting steels, non-water soluble coolant is highly recommended. 5. For dry milling, use compressed air to aid chip clearance.	1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione. 2. In caso di vibrazioni, ridurre simultaneamente la velocità di taglio e l'avanzamento. 3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo. 4. Per la fresatura di acciai inossidabili o acciai legati resistenti alle alte temperature (es. Inconel) è consigliato l'utilizzo di lubrificanti non solubili in acqua. 5. Per la lavorazione a secco, utilizzate un getto d'aria compressa per evitare un ingorgo di trucioli
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel. 2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren. 3. Kuhlmittel mit niedriger Rauchentwicklung verwenden. 4. Für VA und gehärterer Stahl, empfehlen wir keine wasserlöslichen Kühlmittel. 5. Bei Trockenbearbeiting Druckluft zum Entfernen der Späne verwenden.	1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision. 2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance. 3. Utilisez des lubrifiants de coupe appropriés dotés d'un coef. élevé de ralentissement d'émission de fumée. 4. Pour le fraisage d'aciers inoxydables ou d'alliages d'acier résistant aux hautes températures (ex. Inconel) il est recommandé d'employer des lubrifiants non solubles dans l'eau. 5. Pour l'usinage à sec, utilisez un jet d'air comprimé pour éviter un bourrage de copeaux.
1. Benyt højt præcisions set-up for at sikre maksimum stabilitet 2. Ved vibrationer, justér både hastighed og tilspænding 3. Benyt en kølevæske med lav koefficient af røgudvikling 4. For rustfrit stål og varmebestandige ståltyper anbefales kølevæske der ikke er vandbaseret 5. Ved tørbearbejdning brug trykluft for bortskaffelse af spåner	1. Use máquina de alta precisión y asegure la máxima rigidez 2. En el caso de vibraciones, reducir velocidad y avance simultaneamente 3. Utilizar un refrigerante con un bajo coeficiente de emisión de humo 4. For rustfrit stål og varmebestandige ståltyper anbefales kølevæske der ikke er vandbaseret 5. Ved tørbearbejdning brug trykluft for bortskaffelse af spåner
1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet 2. Vid vibrationer, justera både varvtal och matning 3. Använd skärvätska med låg rökutvecklingskoefficient. 4. För rostfria och värmebeständiga stål rekommenderas mkylvätska som inte är vatten baserat 5. Vid torrbearbetning använd tryckluft för spån borttagning	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость. 2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя. 3. Используйте качественную СОЖ с высокой 4. Для нержавеющей и жаростойкой сталей, настоятельно рекомендуем использовать не водную эмульсия в качестве СОЖ. 5. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки.
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2. Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz 3. Duman emisyon katsayısı düşük olan bir soğutucu kullanın 4. Paslanmaz çelik ve alaşımli çelikler için, kuru kesim önerilir 5. Sulu kesim için, talaşı uzaklastirvak için basinçli hava kullanim	1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny 2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty. 3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu

HYP-ZDS

Counterboring - Anspiegelfläche - Lamatura - Chanfreinage - Kontur
Undersænkning - Försänkning - Taladrado plano - для фрезерования, зенкования,обточки - Pogłębianie



	Ø	C≤0,2% - GG S55C ■ SS400 ■ GG25 ~750 N/mm²		~30 HRC SCM ■ SKS ■ SKT ■ SKD		30~38 HRC NAK55 ■ HPMI ■ SKT ■ SKD		38~45 HRC SUS SUS304 ■ SKD		Aluminium Alloy A7075		Aluminium Alloy Casting <Si 13%	
		60~80 (m/min)		40~60 (m/min)		30~50 (m/min)		20~40 (m/min)		80~200 (m/min)		40~150 (m/min)	
		S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
	4	5.950	360	4.950	295	4.000	240	3.200	155	12.500	915	9.550	575
	5	4.800	360	3.950	295	3.200	240	2.550	155	10.000	915	7.650	575
	6	4.000	360	3.300	295	2.700	240	2.150	155	8.400	915	6.400	575
	7	3.400	360	2.800	295	2.300	240	1.850	155	7.200	915	5.500	575
	8	3.000	360	2.450	295	2.000	240	1.600	155	6.350	915	4.750	575
	9	2.650	360	2.200	295	1.800	240	1.450	155	5.600	915	4.200	575
	10	2.400	360	2.000	295	1.600	240	1.300	155	5.000	915	3.800	575

HYP-FI

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim -
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



Ø	AL		PLASTIC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	40.000	2.500	20.000	2.000
4	35.000	2.500	20.000	2.000
5	30.000	3.000	20.000	3.000
6	25.000	3.000	20.000	3.000
8	25.000	3.000	20.000	3.000
10	22.300	3.000	16.000	2.400
12	18.600	3.000	13.500	2.400

Max cutting depth	$a_{p\ 0,5D}$

BACK BACK BACK BACK BACK

CARBIDE

HYP-HP-WRESF

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



	GG GG-GGG		C≤0,2% S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC - SUS SUS304 ■ X210CR12 ■ X40CRMOV51	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
6	4.200	585	4.200	585	3.700	370	2.900	230	2.650	210
8	3.150	565	3.150	565	2.750	350	2.150	230	1.950	210
10	2.500	500	2.500	500	2.200	350	1.750	230	1.550	210
12	2.100	500	2.100	500	1.850	330	1.450	230	1.300	210
16	1.550	400	1.550	400	1.350	320	1.050	230	995	210
20	1.250	375	1.250	375	1.100	320	875	240	795	220

HYP-HP-WRESF

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim - Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	GG GG-GGG		C≤0,2% S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC - SUS SUS304 ■ X210CR12 ■ X40CRMOV51	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
6	3.150	315	3.150	315	2.650	265	2.300	180	2.100	165
8	2.350	300	2.350	300	1.950	250	1.750	175	1.550	155
10	1.900	300	1.900	300	1.550	245	1.400	165	1.250	150
12	1.550	280	1.550	280	1.300	235	1.150	160	1.050	145
16	1.150	280	1.150	280	995	235	875	140	795	125
20	955	280	955	280	795	235	700	140	635	125
25	700	245	700	245	640	225	510	125	460	115

CARBIDE

HYP-CR-HI-WEMS/HYP-CR-HD-WEMS

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne

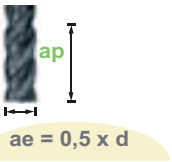


	Low Carbon - Alloy - Tool Steel									GG-GGG-GTW			Stainless steel			Aluminium - Mg			Ti Alloys		
	HB 150-250			HB 20-30			HRC 30-40			>HB 180			HRC 20						HRC 40-50		
	500~800 N/mm²			800~1000 N/mm²			1000~1300 N/mm²			Non - Alloyed			400~700 N/mm²			Non - Alloyed					
	160			120			100			140			50			180			65		
Ø	FZ	S=n	F=Vf	FZ	S=n	F=Vf	FZ	S=n	F=Vf	FZ	S=n	F=Vf	FZ	S=n	F=Vf	FZ	S=n	F=Vf	FZ	S=n	F=Vf
4	0,035	12.730	1.790	0,03	9.550	1.150	0,030	7.960	960	0,035	11.150	1.570	0,03	3.980	480	0,035	14.330	2.010	0,025	5.180	520
6	0,04	8.490	1.360	0,035	6.370	900	0,035	5.310	750	0,04	7.430	1.190	0,035	2.660	380	0,04	9.550	1.530	0,027	3.450	380
8	0,07	6.370	1.790	0,065	4.780	1.250	0,065	3.980	1040	0,7	5.580	1.570	0,065	1.990	520	0,07	7.170	2.010	0,031	2.590	330
10	0,1	5.090	2.040	0,08	3.820	1.230	0,08	3.190	1030	0,1	4.460	1.790	0,08	1.600	520	0,1	5.730	2.300	0,038	2.070	320
12	0,12	4.240	2.040	0,1	3.190	1.280	0,1	2.660	1070	0,12	3.720	1.790	0,1	1.330	540	0,12	4.780	2.300	0,045	1.730	320
16	0,13	3.180	1.660	0,12	2.390	1.150	0,12	1.990	960	0,13	2.790	1.460	0,12	1.000	480	0,13	3.590	1.870	0,052	1.300	280
20	0,15	2.550	1.530	0,12	1.910	920	0,12	1.600	770	0,15	2.230	1.340	0,12	800	390	0,15	2.870	1.730	0,059	1.040	250

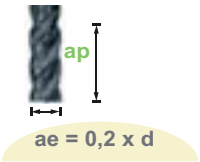
ap x d with F(fz) Correction



ap	Fakt.
0.5	1.0
1,0	0,7
1,5	0,5
2,0	0,3



ap	Fakt.
0,5	1,2
1.0	1.0
1,5	0,7
2,0	0,5



ap	Fakt.
0,5	1,3
1,0	1,2
1.5	1.0
2,0	0,8

The above stated application data are as per RED marked parameters.

HYP-HI-EMS/HYP-HI-WEMS

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim - Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków

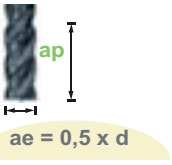


	Low Carbon - Alloy - Tool Steel									GG-GGG-GTW			Stainless steel			Aluminium - Mg			Titane		
	HB 150-250			HB 20-30			HRC 30-40			>HB 180			HRC 20						HRC 40-50		
	500~800 N/mm²			800~1000 N/mm²			1000~1300 N/mm²			Non - Alloyed			400~700 N/mm²			Non - Alloyed					
	160			120			100			140			50			180			65		
Ø	FZ	S=n	F=Vf	FZ	S=n	F=Vf	FZ	S=n	F=Vf	FZ	S=n	F=Vf	FZ	S=n	F=Vf	FZ	S=n	F=Vf	FZ	S=n	F=Vf
4	0,035	12.730	1.790	0,03	9.550	1.150	0,03	7.960	960	0,035	11.150	1.570	0,03	3.980	480	0,035	14.330	2.010	0,025	5.180	520
6	0,04	8.490	1.360	0,035	6.370	900	0,035	5.310	750	0,04	7.430	1.190	0,035	2.660	380	0,04	9.550	1.530	0,027	3.450	380
8	0,07	6.370	1.790	0,065	4.780	1.250	0,065	3.980	1040	0,7	5.580	1.570	0,065	1.990	520	0,07	7.170	2.010	0,031	2.590	330
10	0,1	5.090	2.040	0,08	3.820	1.230	0,08	3.190	1030	0,1	4.460	1.790	0,08	1.600	520	0,1	5.730	2.300	0,038	2.070	320
12	0,12	4.240	2.040	0,1	3.190	1.280	0,1	2.660	1070	0,12	3.720	1.790	0,1	1.330	540	0,12	4.780	2.300	0,045	1.730	320
16	0,13	3.180	1.660	0,12	2.390	1.150	0,12	1.990	960	0,13	2.790	1.460	0,12	1.000	480	0,13	3.590	1.870	0,052	1.300	280
20	0,15	2.550	1.530	0,12	1.910	920	0,12	1.600	770	0,15	2.230	1.340	0,12	800	390	0,15	2.870	1.730	0,059	1.040	250

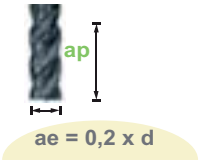
ap x d with F(fz) Correction



ap	Fakt.
0.5	1.0
1,0	0,7
1,5	0,5
2,0	0,3



ap	Fakt.
0,5	1,2
1.0	1.0
1,5	0,7
2,0	0,5



ap	Fakt.
0,5	1,3
1,0	1,2
1.5	1.0
2,0	0,8

The above stated application data are as per RED marked parameters.

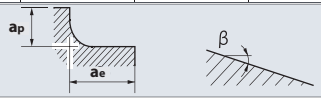
HYP-HS-CRE

High speed side milling - HSC Konturfräsen - Sgrossatura e contornatura alta velocità - Contournage UGV - Yüksek hizda kenar frezeleme - High speed sidefræsning - High speed valsfräsning - Contorneado a alta velocidad - Высокоскоростное контурное фрезерование - Frezowanie boczne HSC



Ø	GG S (min⁻¹)	GG F (mm/min)	30~38 HRC SKT ■ SKD ■ NAK55 ■ HPM1 S (min⁻¹)	30~38 HRC F (mm/min)	38~45 HRC - SUS SUS30 ■ SKD ■ NAK80 ■ HPM50 S (min⁻¹)	38~45 HRC - SUS F (mm/min)	45~55 HRC S (min⁻¹)	45~55 HRC F (mm/min)	55~60 HRC - HRS S (min⁻¹)	55~60 HRC - HRS F (mm/min)
6 X R 1,5	5.300	6.300	4.250	4.600	3.700	4.000	2.650	2.600	1.600	1.050
8 X R 2	4.000	6.300	3.200	4.600	2.800	4.000	2.000	2.600	1.200	1.050
10 X R 2	3.200	6.300	2.550	4.600	2.250	4.000	1.600	2.600	955	1.050
12 X R 3	2.650	6.300	2.100	4.600	1.850	4.000	1.350	2.600	795	1.050

Max cutting depth



aa	ar
0,1xR	0,3D

	ae	ar
R ≤ 2	0,1 x R	0,3D
2 < R	0,2 mm	0,3D

	ae	ar
R ≤ 2	0,05 x R	0,3D
2 < R	0,1 mm	0,3D

HYP-SB-EBD

Center cutting - Zentrumschneidend - Taglio al centro - Coupe au centre - Merkezden kesme Borende - Borrande - Corte central - Режущий цеНТр - Frezowanie centralne



Ø	Cu Z	Cu Vc (m/min.)	Cu fz (mm)	Cu ap (mm)	Cu ae (mm)	Cu n (min⁻¹)	Cu F. (mm/min.)	30~35 HRC Z	30~35 HRC Vc (m/min.)	30~35 HRC fz (mm)	30~35 HRC ap (mm)	30~35 HRC ae (mm)	30~35 HRC n (min⁻¹)	30~35 HRC F. (mm/min.)	35~42 HRC Z	35~42 HRC Vc (m/min.)	35~42 HRC fz (mm)	35~42 HRC ap (mm)	35~42 HRC ae (mm)	35~42 HRC n (min⁻¹)	35~42 HRC F. (mm/min.)	42~55 HRC Z	42~55 HRC Vc (m/min.)	42~55 HRC fz (mm)	42~55 HRC ap (mm)	42~55 HRC ae (mm)	42~55 HRC n (min⁻¹)	42~55 HRC F. (mm/min.)
3	2	300	0,045	0,15	0,6	31.847	2866	2	280	0,045	0,15	0,6	29.724	2675	2	260	0,045	0,15	0,6	27.601	2484	2	240	0,045	0,15	0,6	25.478	2293
4	2	300	0,06	0,2	0,8	23.885	2866	2	280	0,06	0,2	0,8	22.293	2675	2	260	0,06	0,2	0,8	20.701	2484	2	240	0,06	0,2	0,8	19.108	2293
5	2	300	0,075	0,25	1	19.108	2866	2	280	0,075	0,25	1	17.834	2675	2	260	0,075	0,25	1	16.561	2484	2	240	0,075	0,25	1	15.287	2293
6	2	300	0,09	0,3	1,2	15.924	2866	2	280	0,09	0,3	1,2	14.862	2675	2	260	0,09	0,3	1,2	13.800	2484	2	240	0,09	0,3	1,2	12.739	2293
8	2	300	0,12	0,4	1,6	11.943	2866	2	280	0,12	0,4	1,6	11.146	2675	2	260	0,12	0,4	1,6	10.350	2484	2	240	0,12	0,4	1,6	9.554	2293
10	2	300	0,15	0,5	2	9.554	2866	2	2080	0,15	0,5	2	8.917	2675	2	260	0,15	0,5	2	8.280	2484	2	240	0,15	0,5	2	7.643	2293
12	2	300	0,18	0,6	2,4	7.962	2866	2	280	0,18	0,6	2,4	7.431	2675	2	260	0,18	0,6	2,4	6.900	2484	2	240	0,18	0,6	2,4	6.369	2293

FX-MG-EBD-3

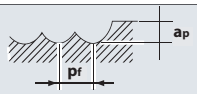
High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



Ø	GG GG-GGG S (min⁻¹)	GG F (mm/min)	C≤0,2% S55C ■ SS400 ~700 N/mm² S (min⁻¹)	C≤0,2% F (mm/min)	~30 HRC SKD ■ SKS ■ SNCM S (min⁻¹)	~30 HRC F (mm/min)	30~38 HRC SKT ■ NAK55 ■ HPMI S (min⁻¹)	30~38 HRC F (mm/min)	38~45 HRC - SUS SUS304 ■ X210CR12 X40CRMOV51 S (min⁻¹)	38~45 HRC - SUS F (mm/min)	45~55 HRC - HRS S (min⁻¹)	45~55 HRC - HRS F (mm/min)	55~60 HRC S (min⁻¹)	55~60 HRC F (mm/min)
R 0,2 X 0,4	32.000	460	32.000	460	32.000	410	32.000	330	32.000	205	24.500	135	24.500	115
R 0,3 X 0,6	32.000	535	32.000	535	31.500	490	32.000	420	32.000	265	24.500	175	23.500	150
R 0,4 X 0,8	32.000	610	32.000	610	31.500	550	32.000	460	27.500	285	23.500	210	17.500	140
R 0,5 X 1	32.000	765	32.000	765	31.500	630	25.000	400	22.000	285	19.000	210	14.000	140
R 0,6 X 1,2	32.000	765	31.500	755	26.500	635	21.000	400	18.500	285	15.500	210	11.500	140
R 0,7 X 1,4	32.000	895	27.000	755	22.500	630	18.000	400	15.500	285	13.500	210	10.000	140
R 0,8 X 1,6	29.500	940	23.500	755	19.500	630	15.500	400	13.500	285	11.500	210	8.950	140
R 0,9 X 1,8	26.500	950	21.000	755	17.500	630	14.000	400	12.000	285	10.500	210	7.950	140
R 1 X 2	23.500	945	19.000	755	15.500	620	12.500	400	11.000	285	9.500	210	7.150	140
R 1,1 X 2,2	21.500	945	17.000	755	14.000	620	11.500	400	10.000	285	8.650	210	6.500	140
R 1,2 X 2,4	19.500	935	15.500	755	13.000	620	10.500	400	9.250	285	7.950	210	5.950	140
R 1,3 X 2,6	18.000	935	14.500	755	12.000	620	9.750	400	8.550	285	7.300	210	5.500	140
R 1,4 X 2,8	17.000	935	13.500	755	11.000	620	9.050	400	7.950	285	6.800	210	5.100	140
R 1,5 X 3	15.500	930	12.500	750	10.500	620	8.450	400	7.400	280	6.350	210	4.750	140

Max cutting depth

	ap	pf
R < 0,5	0,05D	0,2D
0,5 ≤ R	0,10D	0,2D



ap	pf
0,05D	0,1D

1. Use highest possible speed.
2. On lower speed machines, use maximum speed & feed settings.
3. Cutter mis-alignment must not exceed 10µ.
4. Always use coolant

1. Utilizza la velocità più alta possibile.
2. Quando utilizzate delle macchine di basse velocità, utilizzate la velocità più alta e regolatevi il passo di avanzamento.
3. Dopo il suo passaggio nel mandrino, la fresa non può avere un run-out superiore a 0.01 mm.
4. Utilizzare sempre dei liquidi da taglio.

1. Maximale Geschwindigkeit benützen.
2. Bei koventionelen Maschinen, maximale Drehzahl-verwenden und den Vorschub entsprechend anpassen.
3. Fräserrundlauf darf max. 0.01 mm betragen.
4. Immer Kühlmittel benutzen.

1. Utilisez la vitesse la plus élévée possible.
2. Lorque vous employez des machines de basses vitesses, utilisez la vitesse la plus haute et ajustez-y le taux d'avance.
3. Après sa fixation dans le porte-outil, la fraise ne peut avoir un faux rond supérieur à 10µ.
4. Utiliser toujours des fluides de coupe

1. Anvend højest mulige antal omdrejninger
2. På maskiner med lavt antal omdrejninger til rådighed, anvend maximum antal.
3.Nøjagtighed på opretning af fræseren må ikke overskride 10µ
4. Anvend altid kølevæske

1. Utilice velocidad más alta posible
2. Con máquina de velocidad convencional trabaje a la maxima velocidad posible y ajuste el avance en consecuencia
3. La desalineación de herramienta no debe exceder de 10 µ
4. Utilice siempre refrigerante

1. Använd högsta möjliga varvtal
2. På maskiner med lågt varvtal, använd max varvtal.
3. Rundgångsnogrannheten få ej överstiga 10µ
4. Använd alltid skärvätska

1. Используйте максимально возможную скорость вращения шпинделя.
2. На станках с низкооборотным шпинделем используйте максимальные обороты шпинделя и снизьте подачу пропорционально снижению скорости резания.
3. Биение фрезы не должно превышать 10 µ.
4. Всегда используйте СОЖ.

1. Mümkün olan en yüksek kesme hızını kullanınız.
2. Düşük hızlı tezgahlarda, maksimum kesme hızını ve ilerlemeyi kullanınız
3. Takımın ayarı 10µ geçmemelidir
4. Her zaman soğutma suyu kullanınız

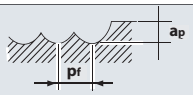
1. Używaj najwyższej możliwej prędkości.
2. Na słabszych (konwencjonalnych) maszynach użyj maksymalną prędkość obrotową i dostosuj posuw
3. Bicie freza nie może przekraczać 10µ.
4. Zawsze używaj chłodziwa

High speed milling roughing - HSC Schlichtfräsen Schruppen - Fresatura alta velocità sgrossatura - Fraisage UGV ébauche - Yüksek hizda kaba kesim - High speed skrubfræsning - High Speed Milling grovfräsning - Fresado en desbaste a alta velocidad - Высокоскоростное черновое фрезерование - Frezowanie zgrubne HSC

FX-HS-EBDS



mm	C≤0,2% - GG S55C ■ SS400 ■ GG25 ~750 N/mm²		30~38 HRC		38~45 HRC		45~55 HRC		55~60 HRC		60~65 HRC		65~70 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 1,5	33.400	4.610	32.400	4.470	31.800	3.630	26.500	2.860	20.200	1.940	18.000	1.570	12.700	1.110
R 2	25.100	4.410	24.300	4.270	23.900	3.530	19.900	2.710	15.100	1.870	13.500	1.520	9.550	1.070
R 2,5	20.100	4.210	19.400	4.080	19.100	3.340	15.900	2.550	12.100	1.810	10.800	1.460	7.640	1.030
R 3	16.700	3.810	16.180	3.690	15.900	3.250	13.300	2.390	10.100	1.690	9.020	1.410	6.370	995
R 4	12.500	3.710	12.100	3.590	11.900	3.150	9.950	2.310	7.560	1.630	6.760	1.350	4.770	955
R 5	10.000	3.610	9.710	3.500	9.550	3.060	7.960	2.230	6.050	1.570	5.410	1.300	3.820	915
R 6	8.360	3.340	8.090	3.240	7.960	2.670	6.630	2.070	5.040	1.450	4.510	1.080	3.180	765

Max cutting depth				
	ap 0,1D / pf 0,2D	ap 0,08D / pf 0,2D	ap 0,05D / pf 0,1D	ap 0,03D / pf 0,1D

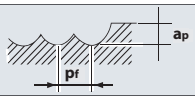
1. Use high precision machine set up to ensure maximum rigidity. 2. Use a coolant that has a low co-efficient of smoke emission.	1. Utilizzare una macchina e un mandrino di elevata rigidità e di alta precisione. 2. Utilizzare dei lubrificanti di taglio adeguati, dotati di un elevato coefficiente di rallentamento di emissione del fumo.
1. Benutzen Sie stabile und präzise Machinen, Werkzeugaufnahmen und Spannmittel. 2. Bitte geeignetes Kühlmedium mit rauchhemmenden Zusätzen verwenden.	1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision. 2. Utiliser des lubrifiants de coupe adéquats, dotés d'un coef. élevé de ralentissement
1. Benyt højt præcisions set-up for at sikre maksimum stabilitet 2. Benyt en kølevæske med lav koefficient af røgudvikling	1. Use máquina de alta precisión y asegure la máxima rigidez 2. Utilizar un refrigerante con un bajo coeficiente de emisión de humo
1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet 2. Använd skärvätska med låg rökutvecklingskoefficient.	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость 2. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2. Duman emisyon katsayısı düşük olan bir soğutucu kullanın	1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny 2. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

High speed milling finishing - HSC Schlichtfräsen schlichten - Fresatura alta velocità sgrossatura e finitura - Fraisage UGV finition - Yüksek hizda finiş kesim - High speed sletfræsning - High Speed Milling finfräsning - Fresado en acabado a alta velocidad - Высокоскоростное чистовое фрезерование - Frezowanie wykończajqce HSC

FX-HS-EBDS



mm	C≤0,2% - GG S55C ■ SS400 ■ GG25 ~750 N/mm²		30~38 HRC		38~45 HRC		45~55 HRC		55~60 HRC		60~65 HRC		65~70 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 1,5	36.100	5.840	34.000	5.300	32.900	4.930	27.600	4.140	22.300	3.070	20.100	2.420	13.800	1.490
R 2	27.100	5.410	25.500	4.890	24.700	4.540	20.700	3.810	16.700	2810	15.100	2.180	10.300	1.410
R 2,5	21.800	5.190	20.400	4.690	19.700	4.340	16.500	3.390	13.400	2.540	12.100	2.060	8.280	1.320
R 3	18.000	1.980	17.000	4.480	16.400	4.140	13.800	3.140	11.100	2.270	10.100	1.940	6.900	1.240
R 4	13.500	4.330	12.700	4.070	12.300	3.550	10.300	2.650	8.360	2.010	7.560	1.690	5.170	1.080
R 5	10.800	3.900	10.200	3.670	9.870	3.160	8.280	2.320	6.680	1.740	6.050	1.450	4.140	995
R 6	9.020	3.610	8.490	3.400	7.980	2.870	6.900	2.150	5.570	1.600	5.040	1.210	3.450	830

Max cutting depth		
	ap 0,02D / pf 0,05D	

1. Use high precision machine set up to ensure maximum rigidity. 2. Use a coolant that has a low co-efficient of smoke emission.	1. Utilizzare una macchina e un mandrino di elevata rigidità e di alta precisione. 2. Utilizzare dei lubrificanti di taglio adeguati, dotati di un elevato coefficiente di rallentamento di emissione del fumo.
1. Benutzen Sie stabile und präzise Machinen, Werkzeugaufnahmen und Spannmittel. 2. Bitte geeignetes Kühlmedium mit rauchhemmenden Zusätzen verwenden.	1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision. 2. Utiliser des lubrifiants de coupe adéquats, dotés d'un coef. élevé de ralentissement
1. Benyt højt præcisions set-up for at sikre maksimum stabilitet 2. Benyt en kølevæske med lav koefficient af røgudvikling	1. Use máquina de alta precisión y asegure la máxima rigidez 2. Utilizar un refrigerante con un bajo coeficiente de emisión de humo
1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet 2. Använd skärvätska med låg rökutvecklingskoefficient.	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость 2. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2. Duman emisyon katsayısı düşük olan bir soğutucu kullanın	1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny 2. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FX-MG-EBD

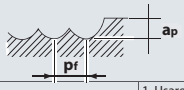
Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Genel frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Frezowanie standardowe



Ø	GG GGG-GGG		C≤0,2% S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC		55~60 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,2 X 0,4	32.000	460	32.000	460	32.000	410	32.000	330	32.000	205	24.500	135	24.500	115
R 0,3 X 0,6	32.000	535	32.000	535	31.500	490	32.000	420	32.000	265	24.500	175	23.500	150
R 0,5 X 1	32.000	765	32.000	765	31.500	620	25.000	400	22.000	285	19.000	210	14.000	140
R 1 X 2	23.500	940	19.000	765	15.500	620	12.500	400	11.000	290	9.500	210	7.150	140
R 1,5 X 3	15.500	940	12.500	765	10.500	630	8.450	405	7.400	290	6.350	210	4.750	140
R 2 X 4	11.500	940	9.500	765	7.950	630	6.350	445	5.550	370	4.750	270	3.550	175
R 2,5 X 5	9.500	1.050	7.600	855	6.350	635	5.050	445	4.450	370	3.800	285	2.850	175
R 3 X 6	7.950	1.050	6.350	855	5.300	670	4.200	465	3.700	390	3.150	295	2.350	185
R 4 X 8	5.950	1.300	4.750	1.050	3.950	790	3.150	555	2.750	455	2.350	325	1.750	210
R 5 X 10	4.750	1.200	3.800	960	3.150	745	2.500	525	2.200	430	1.900	335	1.400	210
R 6 X 12	3.950	1.100	3.150	890	2.650	700	2.100	490	1.850	430	1.550	310	1.150	195
R 7 X 14	3.400	1.050	2.700	865	2.250	675	1.800	475	1.550	390	1.350	300	1.000	190
R 8 X 16	2.950	1.050	2.350	840	1.950	645	1.550	475	1.350	380	1.150	270	895	185
R 9 X 18	2.650	1.000	2.100	795	1.750	610	1.400	475	1.200	380	1.050	260	795	175
R 10 X 20	2.350	940	1.900	765	1.550	570	1.250	450	1.100	370	955	250	715	170
R 12,5X 25	1.900	760	1.500	670	1.250	465	1.000	360	890	295	760	210	570	145
R 15 X 30	1.550	650	1.250	630	1.050	435	845	310	740	250	635	175	475	115

Max cutting depth

ap	ae
1,2D	0,01D



ap	pf
0,05D	0,1D

1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.

1. Usare un mandrino portautensile preciso e rigido/
2. Si consiglia di usare emulsione a scarsa emissione di fumi.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Benutzen Sie Kühlmittel mit rauchhemmemden Zusätzen.

1. Utiliser une machine et un attachement précis et rigide.
2. Utiliser un liquide de refroidissement adéquat.

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Benyt en kølevæske med lav koefficient af røgudvikling

1. Use máquina de alta precisión y asegure la máxima rigidez
2. Utilizar un refrigerante con un bajo coeficiente de emisión de humo

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Använd skärvätska med låg rökutvecklingskoefficient.

1. Используйте жесткие и точные станки и фрезерные патроны.
2. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

FX-MG-EBD

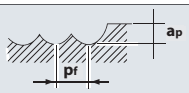
High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hızda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



Ø	C≤0,2% - GG S55C ■ SS400 ■ GG25 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC		55~60 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,5 X 1	50.000	2.800	50.000	2.800	50.000	2.500	47.500	2.250	32.000	1.450	25.000	1.000
R 1 X 2	31.500	3.500	25.000	2.800	24.500	2.500	23.500	2.250	17.000	1.550	12.500	1.000
R 1,5 X 3	21.000	3.500	16.500	2.800	16.000	2.500	15.500	2.250	11.000	1.550	8.450	1.000
R 2 X 4	18.000	3.700	15.500	3.400	15.000	2.750	13.500	2.450	11.000	1.900	7.950	1.100
R 2,5 X 5	15.500	4.000	15.000	4.050	14.000	2.900	11.000	2.300	10.000	2.100	7.600	1.200
R 3 X 6	15.000	4.800	13.500	4.300	11.500	2.750	9.500	2.250	9.500	2.250	6.600	1.150
R 4 X 8	11.500	3.650	10.000	3.200	8.950	2.100	7.150	1.700	7.150	1.700	4.950	890
R 5 X 10	9.500	3.000	8.250	2.600	7.150	1.700	5.700	1.350	5.700	1.350	3.950	710
R 6 X 12	7.950	2.500	6.850	2.150	5.950	1.400	4.750	1.100	4.750	1.100	3.300	590
R 7 X 14	6.800	2.150	5.900	1.850	5.100	1.200	4.050	970	4.050	970	2.800	500
R 8 X 16	5.950	1.900	5.150	1.600	4.450	1.050	3.550	850	3.550	850	2.450	440
R 9 X 18	5.300	1.650	4.550	1.450	3.950	945	3.150	755	3.150	755	2.200	395
R 10 X 20	4.750	1.500	4.100	1.300	3.550	850	2.850	680	2.850	680	1.950	350
R 12,5X 25	3.800	1.200	3.300	1.050	2.850	680	2.250	540	2.250	540	1.550	275
R 15 X 30	3.150	1.000	2.750	880	2.350	560	1.900	455	1.900	455	1.300	230

Max cutting depth

	ap	pf
R ≤ 12,5	0,02D	0,2D
12,5 < R	0,50 mm	0,2D



	ap	pf
R ≤ 8	0,02D	0,05D
8 < R	0,5 mm	0,05D

Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausgereichenden Brandschutz sicher.
1. Die Schnittdaten sin ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen..

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

Atención: Las chispas pueden causar el incendio del refrigerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FX-SS-EBD

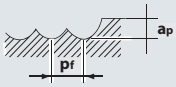
Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Genel frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Frezowanie standardowe



mm	GG GG-GGG		C≤0,2% S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,2 X 0,4	32.000	460	32.000	460	32.000	410	32.000	330	32.000	205	24.500	135	24.500	115
R 0,3 X 0,6	32.000	535	32.000	535	31.500	490	32.000	420	32.000	265	24.500	175	23.500	150
R 0,5 X 1	32.000	765	32.000	765	31.500	620	25.000	400	22.000	285	19.000	210	14.000	140
R 1 X 2	23.500	940	19.000	765	15.500	620	12.500	400	11.000	290	9.500	210	7.150	140
R 1,5 X 3	15.500	940	12.500	765	10.500	630	8.450	405	7.400	290	6.350	210	4.750	140
R 2 X 4	11.500	940	9.500	765	7.950	630	6.350	445	5.550	370	4.750	270	3.550	175
R 2,5 X 5	9.500	1.050	7.600	855	6.350	635	5.050	445	4.450	370	3.800	285	2.850	175
R 3 X 6	7.950	1.050	6.350	855	5.300	670	4.200	465	3.700	390	3.150	295	2.350	185
R 4 X 8	5.950	1.300	4.750	1.050	3.950	790	3.150	555	2.750	455	2.350	325	1.750	210
R 5 X 10	4.750	1.200	3.800	960	3.150	745	2.500	525	2.200	430	1.900	335	1.400	210
R 6 X 12	3.950	1.100	3.150	890	2.650	700	2.100	490	1.850	430	1.550	310	1.150	195
R 7 X 14	3.400	1.050	2.700	865	2.250	675	1.800	475	1.550	390	1.350	300	1.000	190
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R 15 X 30	1.550	650	1.250	630	1.050	435	845	310	740	250	635	175	475	115

Max cutting depth

ap	ae
1,2D	0,01D



ap	pf
0,05D	0,1D

1. Use a rigid and precise machine and holder.
2. Please use a suitable fluid with high smoke retardant properties.

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2. Please use a suitable fluid with high smoke retardant properties.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Benutzen Sie Kühlmittel mit rauchhemmemden Zusätzen.

1. Utiliser une machine et un attachement précis et rigide.
2. Utiliser un liquide de refroidissement adéquat.

1. Anvend stabil maskine og værktøjsholder
2. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Använd anpassad skärvätska

1. Используйте жесткие и точные станки и фрезерные патроны.
2. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

FX-EBD-6

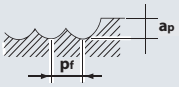
High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



mm	C≤0,2% - GG S55C ■ SS400 ■ GG25 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,1	50.000	640	50.000	560	50.000	560	50.000	480	32.000	290	32.000	290
R 0,15	50.000	930	50.000	840	50.000	720	50.000	720	32.000	440	32.000	440
R 0,2	50.000	1.200	50.000	1.100	50.000	1.100	50.000	960	32.000	585	32.000	585
R 0,25	50.000	1.450	50.000	1.400	50.000	1.400	50.000	1.200	32.000	735	32.000	735
R 0,3	50.000	1.650	50.000	1.650	50.000	1.650	50.000	1.400	32.000	880	32.000	880
R 0,4	50.000	2.200	50.000	2.200	50.000	2.000	50.000	1.900	32.000	1.150	32.000	1.150
R 0,5	50.000	2.800	50.000	2.800	50.000	2.500	50.000	2.400	38.000	1.700	32.000	1.450
R 0,75	50.000	4.200	50.000	4.200	46.500	3.450	46.500	3.300	28.500	1.700	26.500	1.800
R 1,	44.500	4.950	41.000	4.550	35.000	3.500	35.000	3.350	25.000	2.600	19.500	1.800
R 1,5	29.500	4.950	27.500	4.600	23.000	3.500	23.000	3.350	19.000	2.600	13.000	1.800
R 2	22.000	4.900	20.500	4.600	17.500	3.500	17.500	3.350	14.000	2.600	9.900	1.800
R 2,5	17.500	4.900	16.500	4.600	14.000	3.500	14.000	3.350	11.000	2.600	7.950	1.800
R 3	14.500	4.850	13.500	4.500	11.500	3.450	11.500	3.300	9.500	2.600	6.600	1.800

Max cutting depth

ap	pf
0,02D	0,05D



Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausgereichenden Brandschutz sicher.
1. Die Schnittdaten sin ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen..

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

Atención: Las chispas pueden causar el incendio del refrigerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FX-LN-EBD-6

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Yüksek hizda frezeleme -
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



		C≤0,2% - GG E24 ■ XC48 ■ FT25 ■ 75MPA					~30 HRC 35NCD16 ■ 40CMD8					30~38 HRC 35NCD16				
		120 (m/min)					110 (m/min)					100 (m/min)				
Ø	Lg (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)
0,2	0,5	50.000	400	0,004	0,02	0,06	50.000	360	0,004	0,018	0,054	50.000	320	0,003	0,016	0,048
0,2	1	50.000	400	0,004	0,01	0,024	50.000	360	0,004	0,009	0,022	50.000	320	0,003	0,008	0,019
0,2	1,5	50.000	400	0,004	0,008	0,01	50.000	360	0,004	0,007	0,009	50.000	320	0,003	0,006	0,008
0,3	1	50.000	600	0,006	0,02	0,063	50.000	540	0,005	0,018	0,057	50.000	480	0,005	0,016	0,05
0,3	1,5	50.000	600	0,006	0,015	0,04	50.000	540	0,005	0,014	0,036	50.000	480	0,005	0,012	0,032
0,3	2	50.000	600	0,006	0,012	0,036	50.000	540	0,005	0,011	0,032	50.000	480	0,005	0,010	0,029
0,4	1	50.000	900	0,009	0,04	0,12	50.000	810	0,008	0,036	0,108	50.000	720	0,007	0,032	0,096
0,4	1,5	50.000	900	0,009	0,02	0,1	50.000	810	0,008	0,018	0,09	50.000	720	0,007	0,016	0,08
0,4	2	50.000	900	0,009	0,02	0,06	50.000	810	0,008	0,018	0,054	50.000	720	0,007	0,016	0,048
0,4	2,5	50.000	800	0,008	0,02	0,05	50.000	720	0,007	0,018	0,045	50.000	640	0,006	0,016	0,04
0,4	3	50.000	800	0,008	0,02	0,048	50.000	720	0,007	0,018	0,043	50.000	640	0,006	0,016	0,038
0,5	2	50.000	1.500	0,015	0,02	0,07	50.000	1.350	0,014	0,018	0,063	40.000	960	0,012	0,016	0,056
0,5	3	50.000	1.200	0,012	0,02	0,065	50.000	1.080	0,011	0,018	0,059	40.000	768	0,01	0,016	0,052
0,5	4	50.000	1.100	0,011	0,02	0,06	50.000	990	0,01	0,018	0,054	40.000	704	0,009	0,016	0,048
0,5	5	50.000	1.100	0,011	0,02	0,05	40.000	792	0,01	0,018	0,045	40.000	704	0,009	0,016	0,04
0,5	6	50.000	1.100	0,011	0,013	0,039	40.000	792	0,01	0,012	0,035	40.000	704	0,009	0,01	0,031
0,5	8	50.000	900	0,009	0,01	0,03	40.000	648	0,008	0,009	0,027	40.000	576	0,007	0,008	0,024
0,6	2	40.000	1.280	0,016	0,03	0,1	40.000	1.152	0,014	0,027	0,09	40.000	1.024	0,013	0,024	0,08
0,6	3	40.000	1.200	0,015	0,03	0,1	40.000	1.080	0,014	0,027	0,09	40.000	960	0,012	0,024	0,08
0,6	4	40.000	1.040	0,013	0,03	0,1	40.000	936	0,012	0,027	0,09	40.000	832	0,01	0,024	0,08
0,6	5	40.000	960	0,012	0,03	0,1	40.000	864	0,011	0,027	0,09	40.000	768	0,01	0,024	0,08
0,6	6	40.000	880	0,011	0,03	0,1	40.000	792	0,01	0,027	0,09	40.000	704	0,009	0,024	0,08
0,6	8	40.000	880	0,011	0,017	0,1	40.000	792	0,01	0,015	0,09	40.000	704	0,009	0,014	0,08
0,8	2	40.000	1.440	0,018	0,05	0,15	40.000	1.296	0,016	0,045	0,135	40.000	1.152	0,014	0,04	0,12
0,8	4	40.000	1.440	0,018	0,04	0,1	40.000	1.296	0,016	0,036	0,09	40.000	1.152	0,014	0,032	0,08
0,8	5	40.000	1.440	0,018	0,04	0,1	40.000	1.296	0,016	0,036	0,09	40.000	1.152	0,014	0,032	0,08
0,8	6	40.000	1.440	0,018	0,035	0,1	40.000	1.296	0,016	0,032	0,09	40.000	1.152	0,014	0,028	0,08
0,8	7	40.000	1.360	0,017	0,03	0,09	40.000	1.224	0,015	0,027	0,008	40.000	1.088	0,014	0,024	0,007
0,8	8	40.000	1.200	0,015	0,03	0,07	40.000	1.080	0,014	0,027	0,063	40.000	960	0,012	0,024	0,056
0,8	10	40.000	1.200	0,015	0,02	0,06	40.000	1.080	0,014	0,018	0,054	40.000	960	0,012	0,016	0,048
1	3	40.000	2.000	0,025	0,1	0,2	40.000	1.800	0,023	0,09	0,18	40.000	1.600	0,02	0,08	0,16
1	4	40.000	1.760	0,022	0,07	0,2	40.000	1.584	0,02	0,063	0,18	40.000	1.408	0,018	0,056	0,16
1	5	40.000	1.760	0,022	0,05	0,2	40.000	1.584	0,02	0,045	0,18	40.000	1.408	0,018	0,04	0,16
1	6	40.000	1.760	0,022	0,05	0,2	40.000	1.584	0,02	0,045	0,18	40.000	1.408	0,018	0,04	0,16
1	7	40.000	1.600	0,02	0,05	0,15	40.000	1.440	0,018	0,045	0,135	40.000	1.280	0,016	0,04	0,12
1	8	40.000	1.600	0,02	0,04	0,15	40.000	1.440	0,018	0,036	0,135	40.000	1.280	0,016	0,032	0,12
1	9	40.000	1.600	0,02	0,04	0,15	40.000	1.440	0,018	0,036	0,135	40.000	1.280	0,016	0,032	0,12
1	10	40.000	1.600	0,02	0,03	0,1	40.000	1.440	0,018	0,027	0,09	40.000	1.280	0,016	0,024	0,08
1	12	40.000	1.200	0,015	0,03	0,1	40.000	1.080	0,014	0,027	0,09	40.000	960	0,012	0,024	0,08
1	14	40.000	1.200	0,015	0,03	0,1	40.000	1.080	0,014	0,027	0,09	40.000	960	0,012	0,024	0,08
1	16	40.000	1.200	0,015	0,025	0,1	40.000	1.080	0,014	0,023	0,09	40.000	960	0,012	0,02	0,08
1	20	40.000	1.200	0,015	0,02	0,08	40.000	1.080	0,014	0,018	0,072	40.000	960	0,012	0,016	0,064
1,2	6	31.847	1.911	0,03	0,05	0,12	29.193	1.576	0,027	0,045	0,108	26.539	1.274	0,024	0,04	0,096
1,2	8	31.847	1.656	0,026	0,04	0,12	29.193	1.366	0,023	0,036	0,108	26.539	1.104	0,021	0,032	0,096
1,2	10	31.847	1.401	0,022	0,03	0,09	29.193	1.156	0,02	0,027	0,081	26.539	934	0,018	0,024	0,072
1,2	12	31.847	1.274	0,02	0,02	0,09	29.193	1.051	0,018	0,018	0,081	26.539	849	0,016	0,016	0,072
1,4	8	27.298	1.638	0,03	0,06	0,2	25.023	1.351	0,027	0,054	0,18	22.748	1.092	0,024	0,048	0,16
1,4	12	27.298	1.638	0,03	0,05	0,18	25.023	1.351	0,027	0,045	0,162	22.748	1.092	0,024	0,04	0,144
1,4	16	27.298	1.638	0,03	0,04	0,14	25.023	1.351	0,027	0,036	0,126	22.748	1.092	0,024	0,032	0,112
1,5	8	25.478	1.682	0,033	0,07	0,18	23.355	1.387	0,03	0,063	0,162	21.231	1.121	0,026	0,056	0,144
1,5	12	25.478	1.682	0,033	0,07	0,18	23.355	1.387	0,03	0,063	0,162	21.231	1.121	0,026	0,056	0,144
1,5	16	25.478	1.427	0,028	0,05	0,14	23.355	1.177	0,025	0,045	0,126	21.231	951	0,022	0,04	0,112
1,5	20	25.478	1.274	0,025	0,04	0,12	23.355	1.051	0,023	0,036	0,108	21.231	849	0,02	0,032	0,096
1,6	8	23.885	1.672	0,035	0,07	0,2	21.895	1.379	0,032	0,063	0,18	19.904	1.115	0,028	0,056	0,16
1,6	12	23.885	1.529	0,032	0,07	0,2	21.895	1.261	0,029	0,063	0,18	19.904	1.019	0,026	0,056	0,16
1,6	16	23.885	1.433	0,03	0,05	0,15	21.895	1.182	0,027	0,045	0,135	19.904	955	0,024	0,04	0,12
1,6	20	23.885	1.194	0,025	0,04	0,12	21.895	985	0,023	0,036	0,108	19.904	796	0,02	0,032	0,096
1,8	8	21.231	1.741	0,041	0,08	0,25	19.462	1.436	0,037	0,072	0,225	17.693	1.161	0,033	0,064	0,2
1,8	12	21.231	1.486	0,035	0,08	0,2	19.462	1.226	0,032	0,072	0,18	17.693	991	0,028	0,064	0,16
1,8	16	21.231	1.274	0,03	0,06	0,15	19.462	1.051	0,027	0,054	0,135	17.693	849	0,024	0,048	0,12
1,8	20	21.231	1.146	0,027	0,05	0,135	19.462	946	0,024	0,045	0,122	17.693	764	0,022	0,04	0,108
1,6	8	23.885	1.672	0,035	0,07	0,2	21.895	1.379	0,032	0,063	0,18	19.904	1.115	0,028	0,056	0,16
1,6	12	23.885	1.529	0,032	0,07	0,2	21.895	1.261	0,029	0,063	0,18	19.904	1.019	0,026	0,056	0,16
1,6	16	23.885	1.433	0,03	0,05	0,15	21.895	1.182	0,027	0,045	0,135	19.904	955	0,024	0,04	0,12
1,6	20	23.885	1.194	0,025	0,04	0,12	21.895	985	0,023	0,036	0,108	19.904	796	0,02	0,032	0,096
1,8	8	21.231	1.741	0,041	0,08	0,25	19.462	1.436	0,037	0,072	0,225	17.693	1.161	0,033	0,064	0,2
1,8	12	21.231	1.486	0,035	0,08	0,2	19.462	1.226	0,032	0,072	0,18	17.693	991	0,028	0,064	0,16
1,8	16	21.231	1.274	0,03	0,06	0,15	19.462	1.051	0,027	0,054	0,135	17.693	849	0,024	0,048	0,12
1,8	20	21.231	1.146	0,027	0,05	0,135	19.462	946	0,024	0,045	0,122	17.693	764	0,022	0,04	0,108
2	4	19.108	1.911	0,05	0,18	0,5	17.516	1.576	0,045	0,162	0,45	15.924	1.274	0,04	0,144	0,4
2	6	19.108	1.720	0,045	0,15	0,5	17.516	1.419	0,041	0,135	0,45	15.924	1.146	0,036	0,12	0,4
2	8	19.108	1.643	0,043	0,15	0,4	17.516	1.356	0,039	0,135	0,36	15.924	1.096	0,034	0,12	0,32
2	10	19.108	1.911	0,05	0,15	0,4	17.516	1.576	0,045	0,135	0,36	15.924	1.274	0,04	0,12	0,32
2	12	19.108	1.796	0,047	0,12	0,35	17.516	1.482	0,042	0,108	0,315	15.924	1.197	0,038	0,096	0,28
2	14	19.108	1.529	0,04	0,1	0,35	17.516	1.261	0,036	0,09	0,315	15.924	1.019	0,032	0,08	0,28
2	16	19.108	1.338	0,035	0,1	0,3	17.516	1.104	0,032	0,09	0,27	15.924	892	0,028	0,08	0,24
2	18	19.108	1.146	0,03	0,1	0,25	17.516	946	0,027	0,09	0,225	15.924	764	0,024	0,08	0,2
2	20	19.108	1.146	0,03	0,07	0,25	17.516	946	0,027	0,063	0,225	15.924	764	0,024	0,056	0,2
2	22	19.108	1.032	0,027	0,05	0,2	17.516	851	0,024	0,045	0,18	15.924	688	0,022	0,04	0,16
2	25	19.108	1.032	0,027	0,05	0,15	17.516	851	0,024	0,045	0,135	15.924	688	0,022	0,04	0,12
2	30	19.108	955	0,025	0,04	0,1	17.516	788	0,023	0,036	0,09	15.924	637	0,02	0,032	0,08
3	8	12.739	2.038	0,08	0,2	0,6	11.677	1.682	0,072	0,18	0,54	10.616	1.359	0,064	0,16	0,48
3	10	12.739	2.038	0,08	0,2	0,5	11.677	1.682	0,072	0,18	0,45	10.616	1.359	0,064	0,16	0,4
3	16	12.739	1.783	0,07	0,15	0,5	11.677	1.471	0,063	0,135	0,45	10.616	1.189	0,056	0,12	0,4
3	20	12.739	1.656	0,065	0,15	0,4	11.677	1.366	0,059	0,135	0,36	10.616	1.104	0,052	0,12	0,32

BACK

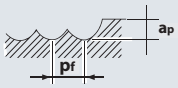
FX-LN-EBD-6

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG E24 ■ XC48 ■ FT25 ■ 75MPA						~30 HRC 35NCD16 ■ 40CMD8						30~38 HRC 35NCD16				
		120 (m/min)					110 (m/min)						100 (m/min)				
Ø	Lg (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)		S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)
3	**25**	12.739	1.529	0,06	0,13	0,3	11.677	1.261	0,054	0,117	0,27		10.616	1.019	0,048	0,104	0,24
3	**30**	12.739	1.452	0,057	0,1	0,25	11.677	1.198	0,051	0,09	0,225		10.616	968	0,046	0,08	0,2
3	**35**	12.739	1.401	0,055	0,08	0,25	11.677	1.156	0,05	0,072	0,225		10.616	934	0,044	0,064	0,2
4	**10**	9.554	2.293	0,12	0,2	0,8	8.758	1.892	0,108	0,18	0,72		7.962	1.529	0,096	0,16	0,64
4	**16**	9.554	1.911	0,1	0,2	0,6	8.758	1.576	0,09	0,18	0,54		7.962	1.274	0,08	0,16	0,48
4	**20**	9.554	1.911	0,1	0,2	0,6	8.758	1.576	0,09	0,18	0,54		7.962	1.274	0,08	0,16	0,48
4	**25**	9.554	1.720	0,09	0,2	0,5	8.758	1.419	0,081	0,18	0,45		7.962	1.146	0,072	0,16	0,4
4	**30**	9.554	1.529	0,08	0,2	0,4	8.758	1.261	0,072	0,18	0,36		7.962	1.019	0,064	0,16	0,32
4	**35**	9.554	1.338	0,07	0,15	0,4	8.758	1.104	0,063	0,135	0,36		7.962	892	0,056	0,12	0,32
4	**40**	9.554	1.146	0,06	0,15	0,4	8.758	946	0,054	0,135	0,36		7.962	764	0,048	0,12	0,32
4	**45**	9.554	1.146	0,06	0,1	0,3	8.758	946	0,054	0,09	0,27		7.962	764	0,048	0,08	0,24
4	**50**	9.554	955	0,05	0,1	0,3	8.758	788	0,045	0,09	0,27		7.962	637	0,04	0,08	0,24
5	**20**	7.643	1.987	0,13	0,25	1	7.006	1.639	0,117	0,225	0,9		6.369	1.325	0,104	0,2	0,8
5	**25**	7.643	1.834	0,12	0,25	0,9	7.006	1.513	0,108	0,225	0,81		6.369	1.223	0,096	0,2	0,72
5	**30**	7.643	1.529	0,1	0,25	0,8	7.006	1.261	0,09	0,225	0,72		6.369	1.019	0,08	0,2	0,64
5	**35**	7.643	1.529	0,1	0,25	0,6	7.006	1.261	0,09	0,225	0,54		6.369	1.019	0,08	0,2	0,48
6	**30**	6.369	1.783	0,14	0,42	1,3	5.839	1.471	0,126	0,378	1,17		5.308	1.189	0,112	0,336	1,04
6	**50**	6.369	1.401	0,11	0,2	0,5	5.839	1.156	0,099	0,18	0,45		5.308	934	0,088	0,16	0,4

Max cutting depth



Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausgereichenden Brandschutz sicher.
1. Die Schnittdaten sin ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen..

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

Atención: Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

BACK

CARBIDE

CARBIDE

FX-LN-EBD-6

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



		38~45 HRC - SUS 35NCD16					45~55 HRC Z38CDV5					55~60 HRC Z160CDV12				
		100 (m/min)					70 (m/min)					50 (m/min)				
Ø	Lg (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)
0,2	0,5	50.000	320	0,003	0,016	0,048	50.000	300	0,003	0,014	0,043	50.000	240	0,002	0,01	0,03
0,2	1	50.000	320	0,003	0,008	0,019	50.000	300	0,003	0,007	0,017	50.000	240	0,002	0,005	0,012
0,2	1,5	50.000	320	0,003	0,006	0,008	50.000	300	0,003	0,006	0,007	50.000	240	0,002	0,004	0,005
0,3	1	50.000	480	0,005	0,016	0,05	50.000	450	0,005	0,014	0,045	50.000	360	0,004	0,01	0,032
0,3	1,5	50.000	480	0,005	0,012	0,032	50.000	450	0,005	0,011	0,029	50.000	360	0,004	0,008	0,02
0,3	2	50.000	480	0,005	0,01	0,029	50.000	450	0,005	0,009	0,026	50.000	360	0,004	0,006	0,018
0,4	1	50.000	720	0,007	0,032	0,096	40.000	540	0,007	0,029	0,086	40.000	432	0,005	0,02	0,06
0,4	1,5	50.000	720	0,007	0,016	0,08	40.000	540	0,007	0,014	0,071	40.000	432	0,005	0,01	0,05
0,4	2	50.000	720	0,007	0,016	0,048	40.000	540	0,007	0,014	0,043	40.000	432	0,005	0,01	0,03
0,4	2,5	50.000	640	0,006	0,016	0,04	40.000	480	0,006	0,014	0,036	40.000	384	0,005	0,01	0,025
0,4	3	50.000	640	0,006	0,016	0,038	40.000	480	0,006	0,014	0,034	39.809	382	0,005	0,01	0,024
0,5	2	40.000	960	0,012	0,016	0,056	40.000	900	0,011	0,014	0,05	31.847	573	0,009	0,01	0,035
0,5	3	40.000	768	0,01	0,016	0,052	40.000	720	0,009	0,014	0,046	31.847	459	0,007	0,01	0,033
0,5	4	40.000	704	0,009	0,016	0,048	40.000	660	0,008	0,014	0,043	31.847	420	0,007	0,01	0,03
0,5	5	40.000	704	0,009	0,016	0,04	40.000	660	0,008	0,014	0,036	31.847	420	0,007	0,01	0,025
0,5	6	40.000	704	0,009	0,01	0,031	40.000	660	0,008	0,009	0,028	31.847	420	0,007	0,007	0,02
0,5	8	40.000	576	0,007	0,008	0,024	40.000	540	0,007	0,007	0,021	31.847	344	0,005	0,005	0,015
0,6	2	40.000	1.024	0,013	0,024	0,08	40.000	960	0,012	0,021	0,071	26.539	510	0,01	0,015	0,05
0,6	3	40.000	960	0,012	0,024	0,08	40.000	900	0,011	0,021	0,071	26.539	478	0,009	0,015	0,05
0,6	4	40.000	832	0,01	0,024	0,08	40.000	780	0,01	0,021	0,071	26.539	414	0,008	0,015	0,05
0,6	5	40.000	768	0,01	0,024	0,08	40.000	720	0,009	0,021	0,071	26.539	382	0,007	0,015	0,05
0,6	6	40.000	704	0,009	0,024	0,08	40.000	660	0,008	0,021	0,071	26.539	350	0,007	0,015	0,05
0,6	8	40.000	704	0,009	0,014	0,08	37.155	613	0,008	0,012	0,071	26.539	350	0,007	0,009	0,05
0,8	2	40.000	1.152	0,014	0,04	0,12	27.866	752	0,014	0,036	0,107	19.904	430	0,011	0,025	0,075
0,8	4	40.000	1.152	0,014	0,032	0,08	27.866	752	0,014	0,029	0,071	19.904	430	0,011	0,02	0,05
0,8	5	40.000	1.152	0,014	0,032	0,08	27.866	752	0,014	0,029	0,071	19.904	430	0,011	0,02	0,05
0,8	6	40.000	1.152	0,014	0,028	0,08	27.866	752	0,014	0,025	0,071	19.904	430	0,011	0,018	0,05
0,8	7	40.000	1.088	0,014	0,024	0,007	27.866	711	0,013	0,021	0,006	19.904	406	0,01	0,015	0,005
0,8	8	40.000	960	0,012	0,024	0,056	27.866	627	0,011	0,021	0,05	19.904	358	0,009	0,015	0,035
0,8	10	40.000	960	0,012	0,016	0,048	27.866	627	0,011	0,014	0,043	19.904	358	0,009	0,01	0,03
1	3	40.000	1.600	0,02	0,08	0,16	22.293	836	0,019	0,071	0,143	15.924	478	0,015	0,05	0,1
1	4	40.000	1.408	0,018	0,056	0,16	22.293	736	0,017	0,05	0,143	15.924	420	0,013	0,035	0,1
1	5	40.000	1.408	0,018	0,04	0,16	22.293	736	0,017	0,036	0,143	15.924	420	0,013	0,025	0,1
1	6	40.000	1.408	0,018	0,04	0,16	22.293	736	0,017	0,036	0,143	15.924	420	0,013	0,025	0,1
1	7	40.000	1.280	0,016	0,04	0,12	22.293	669	0,015	0,036	0,107	15.924	382	0,012	0,025	0,075
1	8	40.000	1.280	0,016	0,032	0,12	22.293	669	0,015	0,029	0,107	15.924	382	0,012	0,02	0,075
1	9	40.000	1.280	0,016	0,032	0,12	22.293	669	0,015	0,029	0,107	15.924	382	0,012	0,02	0,075
1	10	40.000	1.280	0,016	0,024	0,08	22.293	669	0,015	0,021	0,071	15.924	382	0,012	0,015	0,05
1	12	40.000	960	0,012	0,024	0,08	22.293	502	0,011	0,021	0,071	15.924	287	0,009	0,015	0,05
1	14	40.000	960	0,012	0,024	0,08	22.293	502	0,011	0,021	0,071	15.924	287	0,009	0,015	0,05
1	16	40.000	960	0,012	0,02	0,08	22.293	502	0,011	0,018	0,071	15.924	287	0,009	0,013	0,05
1	20	40.000	960	0,012	0,016	0,064	22.293	502	0,011	0,014	0,057	15.924	287	0,009	0,01	0,04
1,2	6	26.539	1.274	0,024	0,04	0,096	18.577	836	0,023	0,036	0,086	13.270	478	0,018	0,025	0,06
1,2	8	26.539	1.104	0,021	0,032	0,096	18.577	725	0,02	0,029	0,086	13.270	414	0,016	0,02	0,06
1,2	10	26.539	934	0,018	0,024	0,072	18.577	613	0,017	0,021	0,064	13.270	350	0,013	0,015	0,045
1,2	12	26.539	849	0,016	0,016	0,072	18.577	557	0,015	0,014	0,064	13.270	318	0,012	0,01	0,045
1,4	8	22.748	1.092	0,024	0,048	0,16	15.924	717	0,023	0,043	0,143	11.374	409	0,018	0,03	0,1
1,4	12	22.748	1.092	0,024	0,04	0,144	15.924	717	0,023	0,036	0,129	11.374	409	0,018	0,025	0,09
1,4	16	22.748	1.092	0,024	0,032	0,112	15.924	717	0,023	0,029	0,1	11.374	409	0,018	0,02	0,07
1,5	8	21.231	1.121	0,026	0,056	0,144	14.862	736	0,025	0,05	0,129	10.616	420	0,02	0,035	0,09
1,5	12	21.231	1.121	0,026	0,056	0,144	14.862	736	0,025	0,05	0,129	10.616	420	0,02	0,035	0,09
1,5	16	21.231	951	0,022	0,04	0,112	14.862	624	0,021	0,036	0,1	10.616	357	0,017	0,025	0,07
1,5	20	21.231	849	0,02	0,032	0,096	14.862	557	0,019	0,029	0,086	10.616	318	0,015	0,02	0,06
1,6	8	19.904	1.115	0,028	0,056	0,16	13.933	731	0,026	0,05	0,143	9.952	418	0,021	0,035	0,1
1,6	12	19.904	1.019	0,026	0,056	0,16	13.933	669	0,024	0,05	0,143	9.952	382	0,019	0,035	0,1
1,6	16	19.904	955	0,024	0,04	0,12	13.933	627	0,023	0,036	0,107	9.952	358	0,018	0,025	0,075
1,6	20	19.904	796	0,02	0,032	0,096	13.933	522	0,019	0,029	0,086	9.952	299	0,015	0,02	0,06
1,8	8	17.693	1.161	0,033	0,064	0,2	12.385	762	0,031	0,057	0,179	8.846	435	0,025	0,04	0,125
1,8	12	17.693	991	0,028	0,064	0,16	12.385	650	0,026	0,057	0,143	8.846	372	0,021	0,04	0,1
1,8	16	17.693	849	0,024	0,048	0,12	12.385	557	0,023	0,043	0,107	8.846	318	0,018	0,03	0,075
1,8	20	17.693	764	0,022	0,04	0,108	12.385	502	0,0	0,036	0,096	8.846	287	0,016	0,025	0,068
2	4	15.924	1.274	0,04	0,144	0,4	11.146	836	0,038	0,129	0,357	7.962	478	0,03	0,09	0,25
2	6	15.924	1.146	0,036	0,12	0,4	11.146	752	0,034	0,107	0,357	7.962	430	0,027	0,075	0,25
2	8	15.924	1.096	0,034	0,12	0,32	11.146	719	0,032	0,107	0,286	7.962	411	0,026	0,075	0,2
2	10	15.924	1.274	0,04	0,12	0,32	11.146	836	0,038	0,107	0,286	7.962	478	0,03	0,075	0,2
2	12	15.924	1.197	0,038	0,096	0,28	11.146	786	0,035	0,086	0,25	7.962	449	0,028	0,06	0,175
2	14	15.924	1.019	0,032	0,08	0,28	11.146	669	0,03	0,071	0,25	7.962	382	0,024	0,05	0,175
2	16	15.924	892	0,028	0,08	0,24	11.146	585	0,026	0,071	0,214	7.962	334	0,021	0,05	0,15
2	18	15.924	764	0,024	0,08	0,2	11.146	502	0,023	0,071	0,179	7.962	287	0,018	0,05	0,125
2	20	15.924	764	0,024	0,056	0,2	11.146	502	0,023	0,05	0,179	7.962	287	0,018	0,035	0,125
2	22	15.924	688	0,022	0,04	0,16	11.146	451	0,02	0,036	0,143	7.962	258	0,016	0,025	0,1
2	25	15.924	688	0,022	0,04	0,12	11.146	451	0,02	0,036	0,107	7.962	258	0,016	0,025	0,075
2	30	15.924	637	0,02	0,032	0,08	11.146	418	0,019	0,029	0,071	7.962	239	0,015	0,02	0,05
3	8	10.616	1.359	0,064	0,16	0,48	7.431	892	0,06	0,143	0,429	5.308	510	0,048	0,1	0,3
3	10	10.616	1.359	0,064	0,16	0,4	7.431	892	0,06	0,143	0,357	5.308	510	0,048	0,1	0,25
3	16	10.616	1.189	0,056	0,12	0,4	7.431	780	0,053	0,107	0,357	5.308	446	0,042	0,075	0,25
3	20	10.616	1.104	0,052	0,12	0,32	7.431	725	0,049	0,107	0,286	5.308	414	0,039	0,075	0,2
3	25	10.616	1.019	0,048	0,104	0,24	7.431	669	0,045	0,093	0,214	5.308	382	0,036	0,065	0,15
3	30	10.616	968	0,046	0,080	0,2	7.431	635	0,043	0,071	0,179	5.308	363	0,034	0,05	0,125
3	35	10.616	934	0,044	0,064	0,2	7.431	613	0,041	0,057	0,179	5.308	350	0,033	0,04	0,125
4	10	7.962	1.529	0,096	0,16	0,64	5.573	1.003	0,09	0,143	0,571	3.981	573	0,072	0,1	0,4
4	16	7.962	1.274	0,08	0,16	0,48	5.573	836	0,075	0,143	0,429	3.981	478	0,06	0,1	0,3
4	20	7.962	1.274	0,08	0,16	0,48	5.573	836	0,075	0,143	0,429	3.981	478	0,06	0,1	0,3
4	25	7.962	1.146	0,072	0,16	0,40	5.573	752	0,068	0,143	0,357	3.981	430	0,054	0,1	0,25
4	30	7.962	1.019	0,064	0,16	0,32	5.573	669	0,06	0,143	0,286	3.981	382	0,048	0,1	0,2

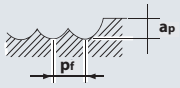
FX-LN-EBD-6

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	38~45 HRC - SUS						45~55 HRC						55~60 HRC				
	35NCD16						Z38CDV5						Z160CDV12				
	100 (m/min)						70 (m/min)						50 (m/min)				
Ø	Lg (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	ap (mm)	pf (mm)	
4	**35**	7.962	892	0,056	0,12	0,32	5.573	585	0,053	0,107	0,286	3.981	334	0,042	0,075	0,2	
4	**40**	7.962	764	0,048	0,12	0,32	5.573	502	0,045	0,107	0,286	3.981	287	0,036	0,075	0,2	
4	**45**	7.962	764	0,048	0,08	0,24	5.573	502	0,045	0,071	0,214	3.981	287	0,036	0,05	0,15	
4	**50**	7.962	637	0,04	0,08	0,24	5.573	418	0,038	0,071	0,214	3.981	239	0,03	0,05	0,15	
5	**20**	6.369	1.325	0,104	0,2	0,8	4.459	869	0,098	0,179	0,714	3.185	497	0,078	0,125	0,5	
5	**25**	6.369	1.223	0,096	0,2	0,72	4.459	803	0,09	0,179	0,643	3.185	459	0,072	0,125	0,45	
5	**30**	6.369	1.019	0,08	0,2	0,64	4.459	669	0,075	0,179	0,571	3.185	382	0,06	0,125	0,4	
5	**35**	6.369	1.019	0,08	0,2	0,48	4.459	669	0,075	0,179	0,429	3.185	382	0,06	0,125	0,3	
6	**30**	5.308	1.189	0,112	0,336	1,04	3.715	780	0,105	0,3	0,929	2.654	446	0,084	0,21	0,65	
6	**50**	5.308	934	0,088	0,16	0,4	3.715	613	0,083	0,143	0,357	2.654	350	0,066	0,1	0,25	

Max cutting depth



Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausgereichenden Brandschutz sicher.
1. Die Schnittdaten sin ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen..

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé

Pas på: gnister kan antænde kølevæsken. Sørg for brandsluknings materiel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

Atención: Las chispas pueden causar el incendio del refirgerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3. Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

BACK

FX-PC-MG-EBD

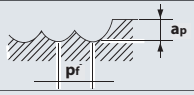
Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Genel frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Frezowanie standardowe



Ø	GG GG-GGG		C≤0,2% S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC X210CR12 ■ X40CRMOV51	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,5 X 1	32.000	410~610	25.000~32.000	360~610	25.000~31.500	300~500	20.000~25.000	190~320
R 1 X 2	19.000~23.500	410~675	15.500~19.000	370~610	12.500~15.500	300~500	10.000~12.500	190~320
R 1,5 X 3	12.500~15.500	450~710	10.500~12.500	375~610	8.450~10.500	300~500	6.750~ 8.450	190~320
R 2 X 4	9.500 ~11.500	450~725	7.950~9.500	380~610	6.350~7.950	300~505	5.050~6.350	210~355
R 2,5 X 5	7.600~9.500	510~850	6.350~7.600	425~680	5.050~ 6350	300~505	4.050~ 5.050	215~360
R 3 X 6	6.350~7.950	510~850	5.300~6.350	425~680	4.200~5.300	315~535	3.350~4.200	215~365
R 4 X 8	4.750~5.950	640~1.050	3.950~4.750	510~820	3.150~3.950	375~630	2.500~3.150	265~445
R 5 X 10	3.800~4.750	575~960	3.150~3.800	475~770	2.500~3.150	355~595	2.000~2.500	250~420
R 6 X 12	3.150~3.950	540~900	2.650~3.150	450~710	2.100~2.650	330~ 560	1.650~2.100	230~395

Max cutting depth

ap	pf
0,1D	0,2D



1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma simultant
3. Använd anpassad skärvätska

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy występieniu drgań zmniejsz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

CARBIDE

FX-PC-MG-EBD

Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Genel frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Frezowanie standardowe

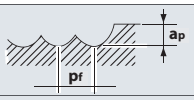


Ø	30~38 HRC - SUS SUS304 ■ X210CR12 ■ X40CRMOV51		45~55 HRC - HRS		55~60 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,5 X 1	14.500~22.000	110~225	14.500~19.000	95~170	11.000~14.000	65~110
R 1 X 2	8.900~11.000	140~235	7.600~9.500	100~170	5.700~7.150	65~110
R 1,5 X 3	5.900~7.400	140~235	5.050~6.350	100~170	3.800~4.750	65~110
R 2 X 4	4.450~5.550	175~295	3.800~4.750	130~215	2.850~3.550	85~140
R 2,5 X 5	3.550~4.450	175~295	3.050~3.800	135~230	2.250~2.850	85~140
R 3 X 6	2.950~3.700	185~310	2.500~3.150	140~235	1.900~2.350	90~145
R 4 X 8	2.200~2.750	215~360	1.900~2.350	160~260	1.400~1.750	100~165
R 5 X 10	1.750~2.200	205~345	1.500~1.900	160~270	1.100~1.400	100~170
R 6 X 12	1.450~1.850	190~330	1.250~1.550	150~245	955~1.150	95~155

Max cutting depth

ap	pf
0,1D	0,2D

ap	pf
0,05D	0,1D



1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

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3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

FX-CR-MG-EDS

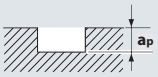
Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim -
Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	C≤0,2% - GG E24 ■ XC48 ■ FT25 ~750 N/mm²			~30 HRC 35NCD16 ■ 40CMD8			30~38 HRC 35NCD16			30~38 HRC 35NCD16			45~55 HRC SUS Z38CDV5			55~60 HRC Z160CDV12		
	150 (m/min)			130 (m/min)			110 (m/min)			80 (m/min)			60 (m/min)			30 (m/min)		
Ø	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)	S (min⁻¹)	F (mm/min)	AZ (mm)
0,2	40.000	113	0,0014	40.000	113	0,0014	40.000	94	0,0012	40.000	44	0,0005	40.000	38	0,0005	40.000	40	0,0005
0,3	40.000	144	0,0018	40.000	144	0,0018	40.000	100	0,0013	40.000	69	0,0009	40.000	52	0,0007	31.847	48	0,0008
0,4	40.000	156	0,002	40.000	156	0,002	40.000	113	0,0014	40.000	87	0,0011	40.000	69	0,0009	23.885	48	0,001
0,5	40.000	156	0,002	40.000	169	0,0021	40.000	144	0,0018	40.000	109	0,0014	38.217	82	0,0011	19.108	48	0,0013
0,6	40.000	156	0,002	40.000	204	0,0026	40.000	171	0,0021	40.000	130	0,0016	31.847	83	0,0013	15.924	47	0,0015
0,8	40.000	204	0,0026	40.000	270	0,0034	40.000	232	0,0029	31.847	153	0,0024	23.885	82	0,0017	11.943	47	0,002
1	40.000	267	0,0033	40.000	345	0,0043	35.032	252	0,0036	25.478	151	0,003	19.108	82	0,0021	9.554	47	0,0025
1,5	31.847	296	0,0046	27.601	329	0,006	23.355	236	0,0051	16.985	139	0,0041	12.739	101	0,004	6.369	45	0,0035
2	23.885	293	0,0061	20.701	308	0,0074	17.516	225	0,0064	12.739	140	0,0055	9.554	97	0,0051	4.777	43	0,0045
3	15.924	430	0,0135	13.800	326	0,0118	11.677	220	0,0094	8.493	143	0,0084	6.369	104	0,0082	3.185	48	0,0075
4	11.943	472	0,0197	10.350	391	0,0189	8.758	258	0,0147	6.369	164	0,0129	4.777	109	0,0114	2.389	46	0,0097
5	9.554	568	0,0297	8.280	453	0,0273	7.006	257	0,0183	5.096	167	0,0164	3.822	111	0,0145	1.911	46	0,012
6	7.962	555	0,0348	6.900	450	0,0326	5.839	257	0,022	4.246	170	0,02	3.185	113	0,0177	1.592	38	0,0119
8	5.971	534	0,0447	5.175	450	0,0435	4.379	249	0,0284	3.185	168	0,0263	2.389	104	0,0217	1.194	38	0,0157
10	4.777	505	0,0528	4.140	443	0,0535	3.503	250	0,0357	2.548	161	0,0317	1.911	100	0,0262	955	38	0,0197
12	3.981	507	0,0636	3.450	441	0,0639	2.919	252	0,0431	2.123	161	0,038	1.592	90	0,0283	796	30	0,0189
14	3.412	503	0,0737	2.957	424	0,0717	2.502	220	0,044	1.820	165	0,0452	1.365	80	0,0294	682	27	0,0198
16	2.986	470	0,0788	2.588	383	0,0741	2.189	199	0,0455	1.592	142	0,0445	1.194	70	0,0294	597	24	0,0203
18	2.654	421	0,0793	2.300	345	0,075	1.946	177	0,0455	1.415	126	0,0444	1.062	60	0,0283	531	21	0,02
20	2.389	377	0,0788	2.070	306	0,0738	1.752	157	0,0449	1.274	109	0,0428	955	60	0,0316	478	20	0,0206
22	2.171	344	0,0792	1.882	278	0,074	1.592	138	0,0432	1.158	101	0,0435	869	50	0,0291	434	17	0,0193
24	1.990	317	0,0795	1.725	259	0,075	1.460	128	0,0439	1.062	92	0,0433	796	50	0,0316	398	17	0,0208
25	1.911	300	0,0786	1.656	249	0,0751	1.401	128	0,0458	1.019	92	0,0451	764	40	0,0263	382	15	0,0196
30	1.592	250	0,0787	1.380	201	0,0729	1.168	99	0,0424	849	76	0,0446	637	40	0,0317	318	15	0,0238

Max cutting depth

	ap
D < Ø1	0,1D
Ø1≤D < Ø3	0,3D
Ø3 ≤ D	0.5D



	ap
D < Ø1	0,02D
Ø1 ≤ D	0,05D

	ap
D < Ø1	0,01D
Ø1 ≤ D < Ø3	0,02D
Ø3 ≤ D	0,05D

1. Use high precision machine set up to ensure maximum rigidity.
2. In case of vibration, reduce both feed and speed.
3. Use a coolant that has a low co-efficient of smoke emission.
* Modified parameters

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazioni, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
* Paramèto modificato

1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindligkeit reduzieren.
3. Kuhlmittel mit niedriger Rauchentwicklung verwenden.
* Modifizierten Parameters

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utilisez des lubrifiants de coupe appropriés dotés d'un coef. élevé de ralentissement d'émission de fumée.
* Paramètres modifiés

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Ved vibrationer, justér både hastighed og tilspænding
3. Benyt en kølevæske med lav koefficient af røgudvikling
* Modificerede parametre

1. Use máquina de alta precisión y asegure la máxima rigidez
2. En el caso de vibraciones, reducir velocidad y avance simultaneamente
3. Utilizar un refrigerante con un bajo coeficiente de emisión de humo
* Parámetros modificados

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Vid vibrationer, justera både varvtal och matning
3. Använd kylvätska med låg koefficient av rökutveckling.
* Modifierad parameter

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz
3. Duman emisyon katsayısı düşük olan bir soğutucu kullanın
* Modifie edilmiş parametreler

1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty.
3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.
* Zmodyfikowane parametry

BACK

FXS-EMS

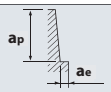
High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC		55~60 HRC	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	47.500	6.250	42.000	5.350	31.500	2.650	26.500	1.650	15.500	830	12.500	590
4	35.500	6.250	31.500	5.750	23.500	3.350	19.500	1.650	11.500	960	9.500	595
5	28.500	6.700	25.000	6.000	19.000	3.600	15.500	1.650	9.500	995	7.600	595
6	23.500	4.400	21.000	3.750	15.500	2.800	13.000	2.000	7.950	1.200	6.350	960
8	17.500	4.300	15.500	3.750	11.500	2.800	9.900	2.050	5.950	1.250	4.750	955
10	14.000	4.250	12.500	3.750	9.500	2.800	7.950	2.100	4.750	1.250	3.800	955
12	11.500	3.950	10.500	3.500	7.950	2.600	6.600	1.950	3.950	1.150	3.150	875
14	10.000	3.750	9.050	3.350	6.800	2.500	5.650	1.750	3.400	1.050	2.700	795
16	8.950	3.500	7.950	3.100	5.950	2.300	4.950	1.600	2.950	970	2.350	740
18	7.950	3.100	7.050	2.750	5.300	2.050	4.400	1.450	2.650	885	2.100	690
20	7.150	2.800	6.350	2.500	4.750	1.850	3.950	1.350	2.350	785	1.900	625
25	5.700	2.350	5.050	2.100	3.800	1.500	3.150	1.100	1.900	675	1.500	525
30	4.750	1.950	4.200	1.750	3.150	1.250	2.650	940	1.550	550	1.250	435

Max cutting depth

	ap	ae
D ≤ Ø 12	1D	0,01D
Ø 12 < D	1D	0,02D



Attention : sparks and/or flames can cause coolant fire. Be sure adequate fire prevention is available.
1. Speeds and feeds are designed to be used in conjunction with small passes on a high speed & precision machine set-up.
2. Do not use inflammable coolant. Using worn tools may generate sparks.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

Attenzione: le scintille prodotto durante l'operazione o il calore causato dalla rottura dell'utensile possono infiammare il lubrificante. Assicurasi che siano applicate delle adeguate misure di prevenzione.
1. Queste velocità e questi avanzamenti sono indicati per fresatura di piccole passate ad alta velocità e centri di lavorazione di alta precisione.
2. Non utillizare lubrificanti da taglio infiammabili; gli utensili troppo usurati possono produrre scintille.
3. Utilizzare un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.

Achtung: Funken und/oder Flammen können den Kühlschmierstoff entzünden. stellen Sie einen ausgereichenden Brandschutz sicher.
1. Die Schnittdaten sind ausgelegt für geringe Zustellungen in Verbindung mit HSC tauglichen Maschinen und Spannmittel.
2. Bitte gegeignetes Kühlmittel mit rauchhemmenden Zusätzen verwenden.
3. Benutzen Sie Druckluft ofer Kühlmittel mit rauchhemenden Zusätzen.

Attention : étincelles et/ou chaleur peuvent enflammer le lubrifiant. S'assurer que des mesures de prévention adéquates sont appliquées.
1. Les vitesses et avances sont indiquées pour le fraisage de petites passes à haute vitesse / centres d'usinage de haute précision.
2. Ne pas utiliser de lubrifiants de coupe inflammables, les outils fortement usés peuvent produire des étincelles.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé

Pas på: gnister kan antænde kølevæsken. Sørg for brandslukningsmateriel er inden for rækkevidde
1. Skæredata er designet til brug i samarbejde med små bearbejdninger i et præcisions setup på et højhastigheds bearbejdningscenter
2. Brug ikke brændbare kølevæsker. Brugte værktøjer kan resultere i gnister
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

Atención: Las chispas pueden causar el incendio del refrigerante. Asegurese que una adecuada prevencion de incendios está disponible
1. Velocidades y avances establecidos junto a pasadas ligeras en maquinas de lata velocidad y gran precisión
2. No utilizar refrigerante inflamable. Las herramientas calientes pueden generar chispas
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

Observera: Gnistor kan antända kylvätskan. Se till att ha en bra brandsläckningsutrustning
1. Skärdatan är designat för små ingrepp vid precisions bearbetning i höghastighetsmaskiner
2. Använd inte brandfarliga kylvätskor. Fräsar kan vara mycket varma eter ingrepp
3.Använd tryckluft eller kylvätska med hög kvalitet och låg rökutveckling

Внимание! Искры и пламя могут воспламенить СОЖ. Примите меры противопожарной безопасности.
1. Указанные режимы резания предназначены для точных высокоскоростных станков и жесткого закрепления обрабатываемой детали.
2. Не используйте легко воспламеняемую СОЖ. При использовании изношенных фрез возможно возникновение искр.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

Uyarı: kıvılcım ve/veya alev yanıgına sebeb olabilir. Yangın koruma önlemlerinin olduğuna emin olun
1. Kesme hızı ve ilerleme yüksek kesme hızlı ve hassas tezgahlarda küçük pasolarda işleme yapabilmek için tasarlanmıştır.
2. Yanıcı soğutma sıvısı kullanmayın. Yıpranmış takımların kullanılması kıvılcım oluşturabilir.
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

Uwaga: iskry i / lub ogień mogą spowodować pożar chłodziwa. Zastosuj odpowiednią profilaktykę przeciwpożarową
1. Prędkości i posuwy są przeznaczone do stosowania w połączeniu z niewielkimi przejazdami na dużej prędkości na precyzyjnie skonfigurowanych maszynach
2. Nie używaj łatwopalnych cieczy chłodzących. Zużyte narzędzia mogą generować iskry.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

CARBIDE

BACK

BACK

CARBIDE

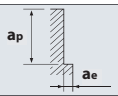
CARBIDE

FXS-HPE

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



	C≤0,2% - GG S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC		55~60 HRC	
	100 (m/min)		75 (m/min)		65 (m/min)		40 (m/min)		35 (m/min)		25 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
10	3.150	760	2.400	680	2.100	310	1.300	165	1.100	115	760	55
12	2.650	730	2.000	620	1.750	285	1.100	145	955	105	635	45
14	2.250	675	1.700	550	1.500	245	955	125	815	95	545	40
18	1.750	580	1.300	440	1.150	195	740	100	635	85	420	35
22	1.450	520	1.080	360	940	170	580	100	500	85	360	35

Max cutting depth				
	a_p =1,2D a_e =0,1D		a_p =1,20D a_e =0,05D	a_p =1,20D a_e =0,02D

1. Use high precision machine set up to ensure maximum rigidity.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a coolant that has a low co-efficient of smoke emission.

1. Utilizzare una macchina e un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizzare dei lubrificanti di taglio adeguati, dotati di un elevato coefficiente di rallentamento di emissione del fumo.

1. Benutzen Sie stabile und präzise Machinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Bitte geeignetes Kühlmedium mit rauchhemmenden Zusätzen verwenden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des lubrifiants de coupe adéquats, dotés d'un coef. élevé de ralentissement d'émission de fumée.

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Benyt en kølevæske med lav koefficient af røgudvikling

1. Use máquina de alta precisión y asegure la máxima rigidez
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Utilizar un refrigerante con un bajo coeficiente de emisión de humo

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Vid vibrationer sänk varvtal och matning med samma simultant
3. Använd skärvätska med låg rökutvecklingskoefficient.

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Vibrasyon sırasında ilerlemeyi ve kesme hızını düşürünüz
3. Duman emisyon katsayısı düşük olan bir soğutucu kullanın

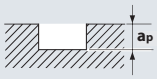
1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. W przypadku wibracji, zmniejszamy zarówno posuwy i obroty.
3. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FXS-HPE

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim - Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	C≤0,2% - GG S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC		55~60 HRC	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
10	2.650	630	2.000	475	1.750	1.750	1.100	115	955	75	635	35
12	2.200	590	1.650	440	1.450	1.450	955	110	795	75	530	35
14	1.900	560	1.400	445	1.250	1.250	815	95	680	70	455	30
18	1.450	480	1.100	365	990	990	635	80	530	60	350	25
22	1.150	410	860	310	790	790	500	65	430	50	290	25

Max cutting depth				
	a_p =0,5D		a_p =0,1D	a_p =0,05D

1. Conditions to be used if slant is = 3 x dia.
   If length is 5 x dia, than reduce feed and rotation by 40 to 50% and use 1/2 of depth of passes.
   If length is 6 x dia, than reduce feed and rotation by 60 to 70% and use 1/2 of depth of passes.
2. Adjust feed en rotation in function of depth of passes or machine rigidity.
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

1. Condizioni da utilizzare se la lunghezza dell'estensione dell'utensile è uguale a 3 volte il diametro.
   Se la lunghezza è di 5 volte il diametro ridurre l'avanzamento e la rotazione dal 40 al 50% ed utilizzate 1/2 della profondità di passata.
   Se la lunghezza è di 6 volte il diametro ridurre l'avanzamento e la rotazione dal 60 al 70% ed utilizzate 1/2 della profondità di passata.
2. Regolare l'avanzamento e la velocità in funzione di taglio o della rigidità della macchina.
3. Utilizzaree un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento di emissione del fumo.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 50% reduzieren, die Schnittiefe auf ein 1/2 reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 60 bis 70% reduzieren, die Schnittiefe auf ein 1/2 reduzieren.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschine-Starrheit anpassen.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Conditions à utiliser si le porte-à-faux est = à 3 x le dia.
   Si la longueur est de 5 x le dia, veuillez réduire l'avance et la rotation de 40 à 50 % et utiliser 1/2 de la profondeur de passe.
   Si la longueur est de 6 x le dia, veuillez réduire l'avance et la rotation de 60 à 70 % et utiliser 1/2 de la profondeur de passe.
2. Ajuster l'avance et la vitesse en fonction de la profondeur de coupe ou de la rigidité de la machine.
3. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coef. élevé de ralentissement d'émission de fumée.

1.Skæredata til brug ved udhæng = 3 x Diameter
   Hvis længden er 5 x dia, reducér tilspænding og omdrejninger med 40-50% og reducér skæredybden til det halve
   Hvis længden er 6 x dia, reducér tilspænding og omdrejninger med 60-70% og reducér skæredybden til det halve
2. Justér tilspænding og omdrejninger i forhold til skæredybde og maskin stabilitet
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

1. Condiciones utilizables con mango = 3 D
   Si el vuelo de 5 x D, reducir avance y velocidad un 40 a 50% y la pasada a 1 / 2
   Si el vuelo de 6 x D, reducir avance y velocidad un 60 a 70% y la pasada a 1 / 2
2. Ajustar la velocidad y el avance en función de la rigidez de maquina
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

1. Skärdata vid uthäng = 3 x Diametern
   Vid uthäng är 5 x diametern, reducera varvtal och matning med 40-50% och reducera skärdjupet till 50%
   Vid uthäng är 6 x diametern, reducera varvtal och matning med 60-70% och reducera skärdjupet till 50%
2. Justera varvtal och matning i förhållande till skärdjup och maskinens stabilitet
3. Använd lufttryck eller kylvätska med låg rökutveckling

1. Режимы резания действительны при вылете фрезы = 3 D
   Если длина 5 x D, уменьшите подачу и обороты шпинделя на 40-50% и используйте ½ глубины резания.
   Если длина 6 x D, уменьшите подачу и обороты шпинделя на 60-70% и используйте ½ глубины резания.
2. Отрегулируйте обороты шпинделя, подачу в зависимости от глубины резания и жесткости станка.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Eğim = 3 x çap ise bu kesme değerleri kullanılır
Eğer boy 5 x çap ise, ilerlemeyi ve devri 40-50 % düşürün ve pasonun 1/2 sini kullanın
Eğer boy 6 x çap ise, ilerlemeyi ve devri 60-70 % düşürün ve pasonun 1/2 sini kullanın
2. Kesme derinliğine ve tezgahın rijitliğine göre ilerlemeyi ve devri ayarlayınız
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

1. Warunki, które należy stosować, jeśli wysięg = 3 x średnca
Jeśli długość jest większa niż 5 x średnica należy zmniejszyć posuw i obroty o 40 do 50% i używać 1/2 głębokości przejazdów.
Jeśli długość jest większa niż 6 x średnica należy zmniejszyć posuw i obroty o 60 do 70% i używać 1/2 głębokości przejazdów.
2. Regulacja posuwu i obrotów jest funkcją głębokości przejazdów lub sztywność maszyny.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FXS-EQD

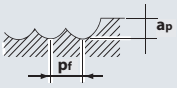
Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regular - Genel frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Frezowanie standardowe



	C≤0,2% - GG S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
mm	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,5	32.000	860	32.000	860	32.000	860	32.000	86	32.000	860	32.000	765
R 1	31.500	2.250	24.000	1.350	24.000	1.350	24.000	1.350	24.000	1.350	22.000	1.200
R 2	17.500	2.500	15.500	1.800	14.000	1.550	13.500	1.450	12.500	1.350	11.000	1.150
R 3	11.500	2.150	10.500	1.850	9.500	1.700	9.000	1.600	8.450	1.500	7.400	1.300
R 4	8.750	1.800	7.950	1.400	7.150	1.250	6.850	1.200	6.350	1.100	5.550	995
R 5	7.000	1.500	6.350	1.100	5.700	1.000	5.500	980	5.050	905	4.450	800
R 6	6.650	1.170	5.950	1.050	4.750	840	4.550	800	4.200	745	3.800	680

Max cutting depth

$a_p = 0{,}05D$
$p_f = 0{,}10D$



$a_p = 0{,}02D$
$p_f = 0{,}10D$

1. Use high precision machine set up to ensure maximum rigidity. 2. Set up speed & feed in accordance with with cutting conditions and and a high rigidity machine set up.	1. Utilizzare una macchina e un mandrino di elevata rigidità e di alta precisione. 2. Regolare la velocità e gli avanzamenti a seconda delle condizioni di taglio, della profondità di taglio e della rigidità della macchina.
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel. 2. Bitte regulieren Sie Schnittgeschwindigkeit, Vorschub und Spantiefe entsprechend Ihrer aktuellen Zerspanungsbedingen.	1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision. 2. Réglez les vitesses et les avances d'après les conditions de coupe, la profondeur de coupe et la rigidité de la machine.
1. Benyt højt præcisions set-up for at sikre maksimum stabilitet 2. Indstil skærehastighed og tilspænding i forhold til skæredata og en stabil opspænding	1. Use máquina de alta precisión y asegure la máxima rigidez 2. Indstil skærehastighed og tilspænding i forhold til skæredata og en stabil opspænding
1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet 2. Ställ in varvtal och matning för fräs förutsättningarna	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость. 2. Установите параметры фрезерования в соответствии с условиями обработки и жесткостью системы.
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2. Kesme hizini ve ilereneyi tezgahin rigitligine göre ayarlayin	1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny 2. Dostosuj obroty i posuw do warunków skrawania, mocowania oraz obrabiavki

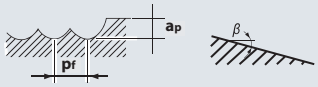
FXS-EBT

High speed milling roughing - HSC Schlichtfräsen Schruppen - Fresatura alta velocità sgrossatura - Fraisage UGV ébauche - Yüksek hizda kaba frezeleme - High speed skrubfræsning - High Speed Milling grovfräsning - Fresado en desbaste a alta velocidad - Высокоскоростное черновое фрезерование - Frezowanie zgróbne HSC



	SKD - GG S55C ■ SS400 ~750 N/mm²		30~38 HRC		38~45 HRC		45~55 HRC HRS		55~60 HRC		60~65 HRC		65~70 HRC	
mm	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 1	33.400	3.700	25.100	2.800	23.900	2.200	19.100	1.650	15.900	1.200	12.700	885	7.950	555
R 1,5	22.300	3.700	16.800	2.800	15.900	2.200	12.700	1.650	10.600	1.200	8.500	885	5.300	555
R 2	16.700	3.550	12.600	2.650	11.900	2.100	9.550	1.550	7.950	1.200	6.350	885	4.000	535
R 2,5	13.400	3.350	10.100	2.550	9.550	2.000	7.650	1.450	6.350	1.150	5.100	825	3.200	515
R 3	11.100	3.050	8.400	2.300	7.950	1.950	6.350	1.400	5.300	1.050	4.250	795	2.650	495
R 4	8.350	2.950	6.300	2.250	5.590	1.900	4.750	1.350	4.000	1.050	3.200	765	2.000	475
R 5	6.700	2.900	5.050	2.200	4.750	1.850	3.800	1.300	3.200	995	2.550	735	1.600	460
R 6	5.550	2.650	4.200	2.000	4.000	1.600	3.200	1.200	2.650	915	2.100	610	1.350	380
R 8	4.200	2.000	3.150	1.500	3.000	1.300	2.400	915	2.000	715	1.600	460	995	285
R 10	3.350	1.600	2.500	1.200	2.400	1.050	1.900	735	1.600	570	1.250	365	795	230

Max cutting depth



	ap	pf
6D < Ø	0,15D	0,2D
Ø6 ≤ D	0,10D	0,2D

aeMAX=0,5mm

	ap	pf
D < Ø4	0,10D	0,1D
Ø4 ≤ D	0,05D	0,1D

aeMAX=0,5mm

ap	pf
0,05D	0,1D

1. Use high precision machine set up to ensure maximum rigidity. 2. Use a coolant that has a low co-efficient of smoke emission.	1. Utilizzare una macchina e un mandrino di elevata rigidità e di alta precisione. 2. Utilizzare dei lubrificanti di taglio adeguati, dotati di un elevato coefficiente di rallentamento di emissione del fumo.
1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel. 2. Bitte geeignetes Kühlmedium mit rauchhemmenden Zusätzen verwenden.	1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision. 2. Utiliser des lubrifiants de coupe adéquats, dotés d'un coef. élevé de ralentissement
1. Benyt højt præcisions set-up for at sikre maksimum stabilitet 2. Benyt en kølevæske med lav koefficient af røgudvikling	1. Use máquina de alta precisión y asegure la máxima rigidez 2. Utilizar un refrigerante con un bajo coeficiente de emisión de humo
1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet 2. Använd skärvätska med låg rökutvecklingskoefficient.	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость. 2. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2. Duman emisyon katsayısı düşük olan bir soğutucu kullanın	1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny 2. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

BACK

BACK

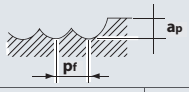
High speed milling finishing - HSC Schlichtfräsen Schlichten - Fresatura alta velocità sgrossatura e finitura - Fraisage UGV finition - Yüksek hizda finiş frezeleme - High speed sletfræsning - High Speed Milling finfräsning -Fresado en acabado a alta velocidad - Высокоскоростное чистовое фрезерование - Frezowanie zgróbne HSC

FXS-EBT



mm	SKD - GG S55C ■ SS400 ~750 N/mm² S (min⁻¹)	F (mm/min)	30~38 HRC S (min⁻¹)	F (mm/min)	38~45 HRC S (min⁻¹)	F (mm/min)	45~55 HRC HRS S (min⁻¹)	F (mm/min)	55~60 HRC S (min⁻¹)	F (mm/min)	60~65 HRC S (min⁻¹)	F (mm/min)	65~70 HRC S (min⁻¹)	F (mm/min)
R 1	50.000	6.480	50.000	7.000	43.900	5.900	41.400	4.950	33.400	3.700	30.200	2.900	20.700	1.800
R 1,5	36.100	7.000	34.000	6.750	32.900	5.900	27.600	4.950	22.300	3.700	20.200	2.900	13.800	1.800
R 2	27.100	6.500	25.500	5.850	24.700	5.450	20.700	4.550	16.700	3.350	15.100	2.600	10.300	1.700
R 2,5	21.600	6.200	10.400	5.600	19.700	5.200	16.600	4.050	13.400	3.050	12.100	2.450	8.300	1.600
R 3	18.000	5.950	17.000	5.400	16.400	4.950	13.800	3.750	11.100	2.750	10.100	2.300	6.900	1.500
R 4	13.500	5.200	12.700	4.900	12.300	4.250	10.300	3.200	8.350	2.400	7.550	2.050	5.150	1.300
R 5	10.800	4.700	10.200	4.400	9.850	3.800	8.300	2.800	6.700	2.100	6.050	1.750	4.150	1.200
R 6	9.000	4.350	8.500	4.050	8.200	3.550	6.900	2.600	5.550	1.950	5.050	1.450	3.450	995
R 8	6.750	3.250	6.350	3.050	6.150	2.650	5.150	1.950	4.200	1.500	3.800	1.100	2.600	745
R 10	5.400	2.600	5.100	2.450	4.950	2.150	4.150	1.600	3.350	1.200	3.000	870	2.050	595

Max cutting depth



ap	pf
0,02D	0,05D

1. Use high precision machine set up to ensure maximum rigidity.
2. Use a coolant that has a low co-efficient of smoke emission.

1. Utilizzare una macchina e un mandrino di elevata rigidità e di alta precisione.
2. Utilizzare dei lubrificanti di taglio adeguati, dotati di un elevato coefficiente di rallentamento di emissione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Bitte geeignetes Kühlmedium mit rauchhemmenden Zusätzen verwenden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. Utiliser des lubrifiants de coupe adéquats, dotés d'un coef. élevé de ralentissement

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Benyt en kølevæske med lav koefficient af røgudvikling

1. Use máquina de alta precisión y asegure la máxima rigidez
2. Utilizar un refrigerante con un bajo coeficiente de emisión de humo

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Använd skärvätska med låg rökutvecklingskoefficient.

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Duman emisyon katsayısı düşük olan bir soğutucu kullanın

1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

CARBIDE

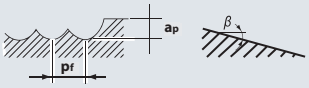
High speed milling roughing - HSC Schlichtfräsen Schruppen - Fresatura alta velocità sgrossatura - Fraisage UGV ébauche - Yüksek hizda kaba frezeleme - High speed skrubfræsning - High Speed Milling grovfräsning - Fresado en desbaste a alta velocidad - Высокоскоростное черновое фрезерование - Frezowanie zgróbne HSC

FXS-HS-EBM



mm	SKD - GG S55C ■ SS400 ~750 N/mm² S (min⁻¹)	F (mm/min)	30~38 HRC S (min⁻¹)	F (mm/min)	38~45 HRC S (min⁻¹)	F (mm/min)	45~55 HRC HRS S (min⁻¹)	F (mm/min)	55~60 HRC S (min⁻¹)	F (mm/min)	60~65 HRC S (min⁻¹)	F (mm/min)	65~70 HRC S (min⁻¹)	F (mm/min)
R 3	11.100	4.050	8.400	3.050	7.950	2.600	6.350	1.850	5.300	1.450	4.250	1.050	2.650	660
R 4	8.350	3.950	6.300	3.000	5.950	2.500	4.750	1.750	4.000	1.400	3.200	1.000	2.000	635
R 5	6.700	3.850	5.050	2.900	4.750	2.450	3.800	1.700	3.200	1.300	2.550	975	1.600	610
R 6	5.550	3.550	4.200	2.650	4.000	2.150	3.200	1.600	2.650	1.200	2.100	815	1.350	510
R 8	4.200	2.650	3.150	2.000	3.000	1.700	2.400	1.200	2.000	955	1.600	610	995	380
R 10	3.350	2.150	2.500	1.600	2.400	1.400	1.900	975	1.600	765	1.250	490	795	310

Max cutting depth



	ap	pf
6D < Ø	0,15D	0,2D
Ø6 ≤ D	0,10D	0,2D

aeMAX=0,5mm

	ap	pf
D < Ø4	0,10D	0,1D
Ø4 ≤ D	0,05D	0,1D

aeMAX=0,5mm

ap	pf
0,05D	0,1D

aaMax=0,5mm

1. Use high precision machine set up to ensure maximum rigidity.
2. Use a coolant that has a low co-efficient of smoke emission.

1. Utilizzare una macchina e un mandrino di elevata rigidità e di alta precisione.
2. Utilizzare dei lubrificanti di taglio adeguati, dotati di un elevato coefficiente di rallentamento di emissione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Bitte geeignetes Kühlmedium mit rauchhemmenden Zusätzen verwenden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. Utiliser des lubrifiants de coupe adéquats, dotés d'un coef. élevé de ralentissement

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Benyt en kølevæske med lav koefficient af røgudvikling

1. Use máquina de alta precisión y asegure la máxima rigidez
2. Utilizar un refrigerante con un bajo coeficiente de emisión de humo

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Använd skärvätska med låg rökutvecklingskoefficient.

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Duman emisyon katsayısı düşük olan bir soğutucu kullanın

1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

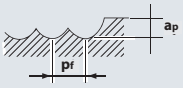
High speed milling finishing - HSC Schlichtfräsen Schlichten - Fresatura alta velocità sgrossatura e finitura - Fraisage UGV finition - Yüksek hızda finiş frezeleme - High speed sletfræsning - High Speed Milling finfräsning - Fresado en acabado a alta velocidad - Высокоскоростное чистовое фрезерование - Frezowanie wykończające HSC

FXS-HS-EBM



mm	SKD - GG S55C ■ SS400 ~750 N/mm²		30~38 HRC		38~45 HRC		45~55 HRC HRS		55~60 HRC		60~65 HRC		65~70 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 3	16.700	6.100	16.200	5.900	15.900	5.200	13.300	3.800	10.100	2.700	9.000	2.250	6.350	1.600
R 4	12.500	5.950	12.100	5.750	11.900	5.050	9.950	3.700	7.550	2.600	6.750	2.150	4.750	1.550
R 5	10.000	5.800	9.700	5.590	9.550	4.900	7.950	3.550	6.050	2.500	5.400	2.100	3.800	1.450
R 6	8.350	5.350	8.100	5.200	7.950	4.300	6.650	3.300	5.050	2.300	4.500	1.750	3.200	1.200
R 8	6.250	4.000	6.050	3.900	5.950	3.800	4.950	2.550	3.800	1.800	3.400	1.300	2.400	915
R 10	5.000	3.200	4.850	3.100	4.750	3.050	4.000	2.050	3.000	1.450	2.700	1.050	1.900	735

Max cutting depth



ap	pf
0,1D	0,2D

aeMAX=1mm

ap	pf
0,08D	0,2D

aeMAX=0,8mm

ap	pf
0,05D	0,1D

aeMAX=0,5mm

ap	pf
0,03D	0,1D

aeMAX=0,3mm

1. Use high precision machine set up to ensure maximum rigidity.
2. Use a coolant that has a low co-efficient of smoke emission.

1. Utilizzare una macchina e un mandrino di elevata rigidità e di alta precisione.
2. Utilizzare dei lubrificanti di taglio adeguati, dotati di un elevato coefficiente di rallentamento di emissione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Bitte geeignetes Kühlmedium mit rauchhemmenden Zusätzen verwenden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. Utiliser des lubrifiants de coupe adéquats, dotés d'un coef. élevé de ralentissement

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Benyt en kølevæske med lav koefficient af røgudvikling

1. Use máquina de alta precisión y asegure la máxima rigidez
2. Utilizar un refrigerante con un bajo coeficiente de emisión de humo

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Använd skärvätska med låg rökutvecklingskoefficient.

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Duman emisyon katsayısı düşük olan bir soğutucu kullanın

1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

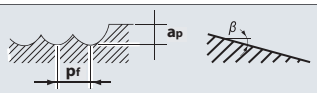
High speed milling roughing - HSC Schlichtfräsen Schruppen - Fresatura alta velocità sgrossatura - Fraisage UGV ébauche - Yüksek hızda kaba frezeleme - High speed skrubfræsning - High Speed Milling grovfräsning - Fresado en desbaste a alta velocidad - Высокоскоростное черновое фрезерование - - Frezowanie zgróbne HSC

FXS-EBM



mm	SKD - GG S55C ■ SS400 ~750 N/mm²		30~38 HRC		38~45 HRC		45~55 HRC HRS		55~60 HRC		60~65 HRC		65~70 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 3	11.100	4.050	8.400	3.050	7.950	2.600	6.350	1.850	5.300	1.450	4.250	1.050	2.650	660
R 4	8.350	3.950	6.300	3.000	5.950	2.500	4.750	1.750	4.000	1.400	3.200	1.000	2.000	635
R 5	6.700	3.850	5.050	2.900	4.750	2.450	3.800	1.700	3.200	1.300	2.550	975	1.600	610
R 6	5.550	3.550	4.200	2.650	4.000	2.150	3.200	1.600	2.650	1.200	2.100	815	1.350	510
R 8	4.200	2.650	3.150	2.000	3.000	1.700	2.400	1.200	2.000	955	1.600	610	995	380
R 10	3.350	2.150	2.500	1.600	2.400	1.400	1.900	975	1.600	765	1.250	490	795	310

Max cutting depth



	ap	pf
6D < Ø	0,15D	0,2D
Ø6 ≤ D	0,10D	0,2D

apMAX=0,5mm

	ap	pf
D < Ø4	0,10D	0,1D
Ø4 ≤ D	0,05D	0,1D

apMAX=0,5mm

ap	pf
0,05D	0,1D

apMAX=0,5mm

1. Use high precision machine set up to ensure maximum rigidity.
2. Use a coolant that has a low co-efficient of smoke emission.

1. Utilizzare una macchina e un mandrino di elevata rigidità e di alta precisione.
2. Utilizzare dei lubrificanti di taglio adeguati, dotati di un elevato coefficiente di rallentamento di emissione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Bitte geeignetes Kühlmedium mit rauchhemmenden Zusätzen verwenden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. Utiliser des lubrifiants de coupe adéquats, dotés d'un coef. élevé de ralentissement

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Benyt en kølevæske med lav koefficient af røgudvikling

1. Use máquina de alta precisión y asegure la máxima rigidez
2. Utilizar un refrigerante con un bajo coeficiente de emisión de humo

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Använd skärvätska med låg rökutvecklingskoefficient.

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Duman emisyon katsayısı düşük olan bir soğutucu kullanın

1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

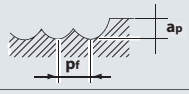
High speed milling finishing - HSC Schlichtfräsen Schlichten - Fresatura alta velocità sgrossatura e finitura - Fraisage UGV finition - Yüksek hızda finiş frezeleme - High speed sletfræsning - High Speed Milling finfräsning - Fresado en acabado a alta velocidad - Высокоскоростное чистовое фрезерование - Frezowanie wykończające HSC

FXS-EBM



mm	SKD - GG S55C ■ SS400 ~750 N/mm²		30~38 HRC		38~45 HRC		45~55 HRC HRS		55~60 HRC		60~65 HRC		65~70 HRC	
	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 3	16.700	6.100	16.200	5.900	15.900	5.200	13.300	3.800	10.100	2.700	9.000	2.250	6.350	1.600
R 4	12.500	5.950	12.100	5.750	11.900	5.050	9.950	3.700	7.550	2.600	6.750	2.150	4.750	1.550
R 5	10.000	5.800	9.700	5.590	9.550	4.900	7.950	3.550	6.050	2.500	5.400	2.100	3.800	1.450
R 6	8.350	5.350	8.100	5.200	7.950	4.300	6.650	3.300	5.050	2.300	4.500	1.750	3.200	1.200
R 8	6.250	4.000	6.050	3.900	5.950	3.800	4.950	2.550	3.800	1.800	3.400	1.300	2.400	915
R 10	5.000	3.200	4.850	3.100	4.750	3.050	4.000	2.050	3.000	1.450	2.700	1.050	1.900	735

Max cutting depth



ap	pf
0,1D	0,2D

apMAX=1mm

ap	pf
0,08D	0,2D

apMAX=0,8mm

ap	pf
0,05D	0,1D

apMAX=0,5mm

ap	pf
0,03D	0,1D

apMAX=0,3mm

1. Use high precision machine set up to ensure maximum rigidity.
2. Use a coolant that has a low co-efficient of smoke emission.

1. Utilizzare una macchina e un mandrino di elevata rigidità e di alta precisione.
2. Utilizzare dei lubrificanti di taglio adeguati, dotati di un elevato coefficiente di rallentamento di emissione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Bitte geeignetes Kühlmedium mit rauchhemmenden Zusätzen verwenden.

1. Utilisez une machine et un porte-outil de grande rigidité et de haute précision.
2. Utiliser des lubrifiants de coupe adéquats, dotés d'un coef. élevé de ralentissement

1. Benyt højt præcisions set-up for at sikre maksimum stabilitet
2. Benyt en kølevæske med lav koefficient af røgudvikling

1. Use máquina de alta precisión y asegure la máxima rigidez
2. Utilizar un refrigerante con un bajo coeficiente de emisión de humo

1. Använd uppsänningsanordning av hög kvalitet för bästa stabilitet
2. Använd skärvätska med låg rökutvecklingskoefficient.

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Duman emisyon katsayısı düşük olan bir soğutucu kullanın

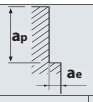
1. W celu zapewnienia maksymalnej sztywności stosujemy wysokiej precyzji urządzenia i maszyny
2. Użyj wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FXS-PKE

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
	100 (m/min)		75 (m/min)		65 (m/min)		50 (m/min)		40 (m/min)		25 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	8.900	890	6.650	795	5.900	470	3.800	120	3.400	80	2.000	40
4	6.650	930	5.000	900	4.450	530	2.850	135	2.650	100	1.550	50
5	5.300	950	4.000	880	3.550	480	2.250	140	2.150	110	1.250	50
6	5.300	900	4.000	800	3.550	220	2.200	175	2.100	130	1.250	50
8	3.950	835	3.000	710	2.650	445	1.650	185	1.600	140	955	55
10	3.150	760	2.400	680	2.100	310	1.300	165	1.300	135	760	55
12	2.650	730	2.000	620	1.750	285	1.100	145	1.000	125	635	45
16	1.700	680	1.500	600	1.300	310	840	170	800	135	477	55
20	1.350	540	1.200	480	1.050	310	670	170	640	135	382	55

Max cutting depth				
	ap 1D, ae 0,2D		ap 1D, ae 0,1D	ap 1D, ae 0,05D

1. Conditions to be used if slant is = 3 x dia.
   If length is 5 x dia, than reduce feed and rotation by 30 to 40% and use 1/2 of depth of passes.
   If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use 1/4 of depth of passes.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

1. Condizioni da utilizzare se la lunghezza dell'estensione dell'utensile è uguale a 3 volte il diametro.
   Se la lunghezza è di 5 volte il diametro ridurre l'avanzamento e la rotazione dal 30 al 40% ed utilizzate 1/2 della profondità di passata.
   Se la lunghezza è di 6 volte il diametro ridurre l'avanzamento e la rotazione dal 40 al 60% ed utilizzate 1/4 della profondità di passata.
2. Regolare l'avanzamento e la velocità in funzione di taglio o della rigidità della macchina.
3. Utilizzaree un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento di emissione del fumo.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 30 bis 40% reduzieren, die Schnittiefe auf ein 1/2 reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren, die Schnittiefe auf ein 1/4 reduzieren.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 30 bis 40% reduzieren, die Schnittiefe auf ein 1/2 reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren, die Schnittiefe auf ein 1/4 reduzieren.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Skæredata til brug ved udhæng = 3 x Diameter
   Hvis længden er 5 x dia, reducér tilspænding og omdrejninger med 30-40% og reducér skæredybden til det halve
   Hvis længden er 6 x dia, reducér tilspænding og omdrejninger med 40-60% og reducér skæredybden til det 3/4
2. Reducér hastigheden for at undgå forvrængninger fra dybe passager eller lav stbilitet
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

1. Condiciones utilizables con mango = 3 D
   Si el vuelo de 5 x D, reducir avance y velocidad un 30 a 40% y la pasada a 1/2
   Si el vuelo de 6 x D, reducir avance y velocidad un 40 a 60% y la pasada a 3/4
2. Reduzca velocidad para evitar distorsión entre pasadas profundas y baja rigidez
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

1. Skärdata vid uthäng = 3 x Diametern
   Vid uthäng är 5 x diametern, reducera varvtal och matning med 30-40% och reducera skärdjupet till 50%
   Vid uthäng är 6 x diametern, reducera varvtal och matning med 40-60% och reducera skärdjupet till 75%
2. Reducera varvtal för att undgå vibrationer i djupa kaviteter eller vid allmän lå stabilitet.områder eller lav stabilitet
3. Använd lufttryck eller kylvätska med låg rökutveckling

1. Режимы резания действительны при вылете фрезы = 3 D
   Если длина 5 x D, уменьшите подачу и обороты шпинделя на 40-50% и используйте ½ глубины резания.
   Если длина 6 x D, уменьшите подачу и обороты шпинделя на 60-70% и используйте ½ глубины резания.
2. Отрегулируйте обороты шпинделя, подачу в зависимости от глубины резания и жесткости станка.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Eğim = 3 x çap ise bu kesme değerleri kullanılır
   Eğer boy 5 x çap ise, ilerlemeyi ve devri 30-40 % düşürün ve pasonun 1/2 sini kullanın
   Eğer boy 6 x çap ise, ilerlemeyi ve devri 40-60 % düşürün ve pasonun 1/2 sini kullanın
2. Kesme derinliğine ve tezgahın rijitliğine göre ilerlemeyi ve devri ayarlayınız
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

1. Warunki, które należy stosować, jeśli wysięg = 3 x średnca
   Jeśli długość jest większa niż 5 x średnica należy zmniejszyć posuw i obroty o 30 do 40% i używać 1/2 głębokości przejazdów.
   Jeśli długość jest większa niż 6 x średnica należy zmniejszyć posuw i obroty o 40 do 60% i używać 1/2 głębokości przejazdów.
2. Regulacja posuwu i obrotów jest funkcją głębokości przejazdów lub sztywności maszyny.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FXS-PKE

Slotting milling - HSC Nutenfräsen - Fresatura alta velocità, per scanalature profonde - Fraisage UGV rainurage - Slot kesim - High speed sporfræsning - High Speed Milling spårfräsning - Fresado en ranurado a alta velocidad - Высокоскоростное Фрезерование пазов - Frezowanie rowków HSC



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
	80 (m/min)		60 (m/min)		50 (m/min)		40 (m/min)		30 (m/min)		20 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	8.900	665	6.650	595	5.900	350	3.800	90	3.150	55	2.000	30
4	6.650	695	5.000	675	4.450	400	2.850	100	2.350	70	1.550	35
5	5.300	715	4.000	660	3.550	360	2.250	105	1.900	70	1.250	35
6	4.450	740	3.300	550	2.950	345	1.900	110	1.600	90	1.050	35
8	3.300	660	2.500	500	2.200	360	1.400	115	1.200	95	795	35
10	2.650	630	2.000	475	1.750	325	1.100	115	955	95	635	35
12	2.200	590	1.650	440	1.450	300	955	110	800	95	530	35
16	1.650	640	1.250	480	1.100	335	720	120	600	95	400	40
20	1.350	535	1.000	400	875	280	570	120	480	80	320	40

Max cutting depth			
	ap =0,5D		ap 0,5D

1. Conditions to be used if slant is = 3 x dia.
   If length is 5 x dia, than reduce feed and rotation by 30 to 40% and use 1/2 of depth of passes.
   If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use 1/4 of depth of passes.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

1. Condizioni da utilizzare se la lunghezza dell'estensione dell'utensile è uguale a 3 volte il diametro.
   Se la lunghezza è di 5 volte il diametro ridurre l'avanzamento e la rotazione dal 30 al 40% ed utilizzate 1/2 della profondità di passata.
   Se la lunghezza è di 6 volte il diametro ridurre l'avanzamento e la rotazione dal 40 al 60% ed utilizzate 1/4 della profondità di passata.
2. Regolare l'avanzamento e la velocità in funzione di taglio o della rigidità della macchina.
3. Utilizzaree un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento di emissione del fumo.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 30 bis 40% reduzieren, die Schnittiefe auf ein 1/2 reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren, die Schnittiefe auf ein 1/4 reduzieren.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 30 bis 40% reduzieren, die Schnittiefe auf ein 1/2 reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren, die Schnittiefe auf ein 1/4 reduzieren.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Skæredata til brug ved udhæng = 3 x Diameter
   Hvis længden er 5 x dia, reducér tilspænding og omdrejninger med 30-40% og reducér skæredybden til det halve
   Hvis længden er 6 x dia, reducér tilspænding og omdrejninger med 40-60% og reducér skæredybden til det 3/4
2. Reducér hastigheden for at undgå forvrængninger fra dybe passager eller lav stbilitet
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

1. Condiciones utilizables con mango = 3 D
   Si el vuelo de 5 x D, reducir avance y velocidad un 30 a 40% y la pasada a 1/2
   Si el vuelo de 6 x D, reducir avance y velocidad un 40 a 60% y la pasada a 3/4
2. Reduzca velocidad para evitar distorsión entre pasadas profundas y baja rigidez
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

1. Skärdata vid uthäng = 3 x Diametern
   Vid uthäng är 5 x diametern, reducera varvtal och matning med 30-40% och reducera skärdjupet till 50%
   Vid uthäng är 6 x diametern, reducera varvtal och matning med 40-60% och reducera skärdjupet till 75%
2. Reducera varvtal för att undgå vibrationer i djupa kaviteter eller vid allmän lå stabilitet.områder eller lav stabilitet
3. Använd lufttryck eller kylvätska med låg rökutveckling

1. Режимы резания действительны при вылете фрезы = 3 D
   Если длина 5 x D, уменьшите подачу и обороты шпинделя на 40-50% и используйте ½ глубины резания.
   Если длина 6 x D, уменьшите подачу и обороты шпинделя на 60-70% и используйте ½ глубины резания.
2. Отрегулируйте обороты шпинделя, подачу в зависимости от глубины резания и жесткости станка.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма

1. Eğim = 3 x çap ise bu kesme değerleri kullanılır
   Eğer boy 5 x çap ise, ilerlemeyi ve devri 30-40 % düşürün ve pasonun 1/2 sini kullanın
   Eğer boy 6 x çap ise, ilerlemeyi ve devri 40-60 % düşürün ve pasonun 1/4 sini kullanın
2. Kesme derinliğine ve tezgahın rijitliğine göre ilerlemeyi ve devri ayarlayınız
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

1. Warunki, które należy stosować, jeśli wysięg = 3 x średnca
   Jeśli długość jest większa niż 5 x średnica należy zmniejszyć posuw i obroty o 30 do 40% i używać 1/2 głębokości przejazdów.
   Jeśli długość jest większa niż 6 x średnica należy zmniejszyć posuw i obroty o 40 do 60% i używać 1/4 głębokości przejazdów.
2. Regulacja posuwu i obrotów jest funkcją głębokości przejazdów lub sztywności maszyny.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FXS-PKE

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning -High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
	200 (m/min)		200 (m/min)		200 (m/min)		150 (m/min)		150 (m/min)		100 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	20.000	2.180	20.000	1.750	20.000	1.100	15.900	880	15.900	705	10.600	460
4	15.900	2.420	15.900	1.940	15.900	1.220	11.900	915	11.900	765	7.960	485
5	12.700	2.550	12.700	2.040	12.700	1.270	9.550	975	9.550	800	6.370	510
6	10.600	2.650	10.600	2.200	10.600	1.370	8.000	1.000	8.000	800	5.300	530
8	8.000	2.650	8.000	2.200	8.000	1.370	6.000	1.000	6.000	800	4.000	530
10	6.400	2.120	6.400	1.700	6.400	1.060	4.800	800	4.800	640	3.180	420
12	5.300	2.120	5.300	1.700	5.300	1.060	4.000	800	4.000	640	2.650	420
16	4.000	2.050	4.000	1.600	4.000	1.000	3.000	765	3.000	610	2.000	400
20	3.200	1.900	3.200	1.550	3.200	970	2.400	725	2.400	575	1.600	380

Max cutting depth	ap / 1D | ae / 0,1D		ap / 1D | ae / 0,02D

1. Conditions to be used if slant is = 3 x dia.
   If length is 5 x dia, than reduce feed and rotation by 30 to 40% and use 1/2 of depth of passes.
   If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use 1/4 of depth of passes.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

1. Condizioni da utilizzare se la lunghezza dell'estensione dell'utensile è uguale a 3 volte il diametro.
   Se la lunghezza è di 5 volte il diametro ridurre l'avanzamento e la rotazione dal 30 al 40%
   ed utilizzate 1/2 della profondità di passata.
   Se la lunghezza è di 6 volte il diametro ridurre l'avanzamento e la rotazione dal 40 al 60%
   ed utilizzate 1/4 della profondità di passata.
2. Regolare l'avanzamento e la velocità in funzione di taglio o della rigidità della macchina.
3. Utilizzaree un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio,
   sceglietели di alta qualità, dotati di un coefficiente elevato di rallentamento di emissione del fumo.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 30 bis 40% reduzieren, die
   Schnittiefe auf ein 1/2 reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren, die
   Schnittiefe auf ein 1/4 reduzieren.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 30 bis 40% reduzieren, die
   Schnittiefe auf ein 1/2 reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren, die
   Schnittiefe auf ein 1/4 reduzieren.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Skæredata til brug ved udhæng = 3 x Diameter
   Hvis længden er 5 x dia, reducér tilspænding og omdrejninger med 30-40% og reducér
   skæredybden til det halve
   Hvis længden er 6 x dia, reducér tilspænding og omdrejninger med 40-60% og reducér
   skæredybden til det 3/4
2. Reducér hastigheden for at undgå forvrængninger fra dybe passager eller lav stbilitet
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

1. Condiciones utilizables con mango = 3 D
   Si el vuelo de 5 x D, reducir avance y velocidad un 30 a 40% y la pasada a 1/2
   Si el vuelo de 6 x D, reducir avance y velocidad un 40 a 60% y la pasada a 3/4
2. Reduzca velocidad para evitar distorsión entre pasadas profundas y baja rigidez
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

1. Skärdata vid uthäng = 3 x Diametern
   Vid uthäng är 5 x diametern, reducera varvtal och matning med 30-40% och reducera
   skärdjupet till 50%
   Vid uthäng är 6 x diametern, reducera varvtal och matning med 40-60% och reducera
   skärdjupet till 75%
2. Reducera varvtal för att undgå vibrationer i djupa kaviteter eller vid allmän låg
   stabilitet.områder eller lav stabilitet
3. Använd lufttryck eller kylvätska med låg rökutveckling

1. Режимы резания действительны при вылете фрезы = 3 D
   Если длина 5 x D, уменьшите подачу и обороты шпинделя на 40-50% и используйте ½
   глубины резания.
   Если длина 6 x D, уменьшите подачу и обороты шпинделя на 60-70% и используйте ½
   глубины резания.
2. Отрегулируйте обороты шпинделя, подачу в зависимости от глубины резания и
   жесткости станка.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к
   возникновению дыма.

1. Eğim = 3 x çap ise bu kesme değerleri kullanılır
   Eğer boy 5 x çap ise, ilerlemeyi ve devri 30-40 % düşürün ve pasonun 1/2 sini kullanın
   Eğer boy 6 x çap ise, ilerlemeyi ve devri 40-60 % düşürün ve pasonun 1/4 sini kullanın
2. Kesme derinliğine ve tezgahın rijitliğine göre ilerlemeyi ve devri ayarlayınız
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

1. Warunki, które należy stosować, jeśli wysięg = 3 x średnca
   Jeśli długość jest większa niż 5 x średnica należy zmniejszyć posuw i obroty o 30 do 40% i używać 1/2 głębokości
   przejazdów.
   Jeśli długość jest większa niż 6 x średnica należy zmniejszyć posuw i obroty o 40 do 60% i używać 1/4 głębokości
   przejazdów.
2. Regulacja posuwu i obrotów jest funkcją głębokości przejazdów lub sztywności maszyny.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FXS-PKE

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning -High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
	200 (m/min)		200 (m/min)		200 (m/min)		150 (m/min)		150 (m/min)		100 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	20.000	1.340	20.000	1.080	20.000	840	15.900	800	15.900	440	10.600	280
4	15.900	1.500	15.900	1.200	15.900	940	11.900	820	11.900	460	7.960	300
5	12.700	1.580	12.700	1.250	12.700	995	9.550	860	9.550	475	6.370	300
6	10.600	1.600	10.600	1.280	10.600	1.000	8.000	1.000	8.000	500	5.300	310
8	8.000	1.600	8.000	1.280	8.000	1.000	6.000	1.000	6.000	500	4.000	310
10	6.400	1.300	6.400	1.000	6.400	800	4.800	700	4.800	400	3.180	250
12	5.300	1.300	5.300	1.000	5.300	800	4.000	700	4.000	400	2.650	250
16	4.000	1.300	4.000	1.000	4.000	790	3.000	690	3.000	400	2.000	255
20	3.200	1.250	3.200	970	3.200	765	2.400	610	2.400	380	1.600	255

Max cutting depth	ap / 1D | ae / 0,3D~0,5D		ap / 0,05D | ae / 0,2D~0,3D	ap / 0,02D | ae / 0,2D~0,3D

1. Conditions to be used if slant is = 3 x dia.
   If length is 5 x dia, than reduce feed and rotation by 30 to 40% and use 1/2 of depth of passes.
   If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use 1/4 of depth of passes.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

1. Condizioni da utilizzare se la lunghezza dell'estensione dell'utensile è uguale a 3 volte il diametro.
   Se la lunghezza è di 5 volte il diametro ridurre l'avanzamento e la rotazione dal 30 al 40%
   ed utilizzate 1/2 della profondità di passata.
   Se la lunghezza è di 6 volte il diametro ridurre l'avanzamento e la rotazione dal 40 al 60%
   ed utilizzate 1/4 della profondità di passata.
2. Regolare l'avanzamento e la velocità in funzione di taglio o della rigidità della macchina.
3. Utilizzaree un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio,
   sceglietели di alta qualità, dotati di un coefficiente elevato di rallentamento di emissione del fumo.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 30 bis 40% reduzieren, die
   Schnittiefe auf ein 1/2 reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren, die
   Schnittiefe auf ein 1/4 reduzieren.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Skæredata til brug ved udhæng = 3 x Diameter
   Hvis længden er 5 x dia, reducér tilspænding og omdrejninger med 30-40% og reducér
   skæredybden til det halve
   Hvis længden er 6 x dia, reducér tilspænding og omdrejninger med 40-60% og reducér skæredybden til det 3/4
2. Reducér hastigheden for at undgå forvrængninger fra dybe passager eller lav stbilitet
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

1. Condiciones utilizables con mango = 3 D
   Si el vuelo de 5 x D, reducir avance y velocidad un 30 a 40% y la pasada a 1/2
   Si el vuelo de 6 x D, reducir avance y velocidad un 40 a 60% y la pasada a 3/4
2. Reduzca velocidad para evitar distorsión entre pasadas profundas y baja rigidez
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

1. Skärdata vid uthäng = 3 x Diametern
   Vid uthäng är 5 x diametern, reducera varvtal och matning med 30-40% och reducera skärdjupet till 50%
   Vid uthäng är 6 x diametern, reducera varvtal och matning med 40-60% och reducera skärdjupet till 75%
2. Reducera varvtal för att undgå vibrationer i djupa kaviteter eller vid allmän låg stabilitet.områder eller lav stabilitet
3. Använd lufttryck eller kylvätska med låg rökutveckling

1. Режимы резания действительны при вылете фрезы = 3 D
   Если длина 5 x D, уменьшите подачу и обороты шпинделя на 40-50% и используйте ½ глубины резания.
   Если длина 6 x D, уменьшите подачу и обороты шпинделя на 60-70% и используйте ½ глубины резания.
2. Отрегулируйте обороты шпинделя, подачу в зависимости от глубины резания и жесткости станка.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Eğim = 3 x çap ise bu kesme değerleri kullanılır
   Eğer boy 5 x çap ise, ilerlemeyi ve devri 30-40 % düşürün ve pasonun 1/2 sini kullanın
   Eğer boy 6 x çap ise, ilerlemeyi ve devri 40-60 % düşürün ve pasonun 1/4 sini kullanın
2. Kesme derinliğine ve tezgahın rijitliğine göre ilerlemeyi ve devri ayarlayınız
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

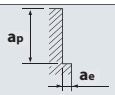
1. Warunki, które należy stosować, jeśli wysięg = 3 x średnca
   Jeśli długość jest większa niż 5 x średnica należy zmniejszyć posuw i obroty o 30 do 40% i używać 1/2 głębokości przejazdów.
   Jeśli długość jest większa niż 6 x średnica należy zmniejszyć posuw i obroty o 40 do 60% i używać 1/4 głębokości przejazdów.
2. Regulacja posuwu i obrotów jest funkcją głębokości przejazdów lub sztywności maszyny.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FXS-HS-PKE

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



	C≤0,2% S55C ■ SS400 ■ FC250 ~750 N/mm²		~30 HRC SCM ■ SKT ■ SKS ■ HPM1		30~38 HRC SKT ■ SKD ■ NAK55 ■ HPM1		38~45 HRC SUS SUS304 ■ SKD		45~55 HRC Tiall		55~60 HRC SCM	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
6	4.500	905	4.000	805	3.500	410	2.250	195	2.100	125	1.250	50
8	3.400	940	3.000	730	2.650	400	1.650	180	1.600	140	955	55
10	2.700	755	2.400	670	2.100	310	1.350	175	1.250	130	760	55
12	2.250	896	2.000	670	1.750	310	1.100	175	1.050	125	635	45
16	1.700	680	1.500	600	1.300	310	850	175	800	135	475	35
20	1.350	540	1.200	480	1.050	310	650	165	650	135	380	35

Max cutting depth												
	ap 1,2D	ae 0,2D							ap 1D	ae 0,2D	ap 1D	ae 0,05D

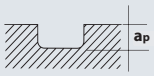
1. Use highest possible speed. 2. On lower speed machines, use maximum speed & feed settings. 3. Cutter mis-alignment must not exceed 10µ. 4. Always use coolant.	1. Utilizza la velocità più alta possibile. 2. Quando utilizzate delle macchine di basse velocità, utilizzate la velocità più alta e regolatevi il passo di avanzamento. 3. Dopo il suo passaggio nel mandrino, la fresa non può avere un run-out superiore a 0.01 mm. 4. Utilizzare sempre dei liquidi da taglio.
1. Maximale Geschwindigkeit benützen. 2. Bei konventionelen Maschinen, maximale Drehzahl - verwenden und den Vorschub entsprechend anpassen. 3. Fräserrundlauf darf max. 0.01 mm betragen. 4. Immer Külmittel benutzen.	1. Utilisez la vitesse la plus élévée possible. 2. Lorque vous employez des machines de basses vitesses, utilisez la vitesse la plus haute et ajustez-y le taux d'avance. 3. Après sa fixation dans le porte-outil, la fraise ne peut avoir un faux rond supérieur à 10µ. 4. Utiliser toujours des fluides de coupe.
1. Anvend højest mulige antal omdrejninger 2. På maskiner med lavt antal omdrejninger til rådighed, anvend maximum antal. 3. Nøjagtighed på opretning af fræseren må ikke overskride 10µ 4. Anvend altid kølevæske	1. Utilice velocidad más alta posible 2. Con máquina de velocidad convencional trabaje a la maxima velocidad posible y ajuste el avance en consecuencia 3. La desalineación de herramienta no debe exceder de 10 µ 4. Utilice siempre refrigerante
1. Använd högsta möjliga varvtal 2. På maskiner med lågt varvtal, använd max varvtal. 3. Rundgångsnogrannheten få ej överstiga 10µ 4. Använd alltid skärvätska	1. Используйте максимально возможную скорость вращения шпинделя. 2. На станках с низкооборотным шпинделем используйте максимальные обороты шпинделя и снизьте подачу пропорционально снижению скорости резания. 3. Биение фрезы не должно превышать 10 µ. 4. Всегда используйте СОЖ.
1. Mümkün olan en yüksek kesme hızını kullanınız. 2. Düşük hızlı tezgahlarda, maksimum kesme hızını ve ilerlemeyi kullanınız 3. Takımın ayarı 10µ geçmemelidir 4. Her zaman soğutma suyu kullanınız	1. Używaj najwyższej możliwej prędkości. 2. Na słabszych (konwencjonalnych) maszynach użyj maksymalną prędkość obrotową i dostosuj posuw 3. Bicie freza nie może przekraczać 10µ. 4. Zawsze używaj chłodziwa

FXS-HS-PKE

Slotting milling - HSC Nutenfräsen - Fresatura alta velocità, per scanalature profonde - Fraisage UGV rainurage - Slot kesim - High speed sporfræsning - High Speed Milling spårfräsning - Fresado en ranurado a alta velocidad - Высокоскоростное Фрезерование пазов - Frezowanie rowków



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		~30 HRC SCM ■ SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT ■ SKD		38~45 HRC SUS SUS304 ■ SKD		45~55 HRC HRS		55~60 HRC	
	200 (m/min)		200 (m/min)		200 (m/min)		150 (m/min)		150 (m/min)		100 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
6	4.450	770	3.350	580	2.900	400	1.900	120	1.600	95	1.050	40
8	3.350	710	2.500	530	2.200	350	1.450	120	1.200	95	800	40
10	2.700	650	2.000	480	1.750	350	1.150	120	950	95	650	40
12	2.250	650	1.650	475	1.450	350	950	120	800	95	530	40
16	1.650	635	1.250	480	1.100	350	700	120	600	95	400	40
20	1.350	540	1.000	400	900	300	550	115	500	85	300	40

Max cutting depth												
	ap 0,5D								ap 0,5D			

1. Conditions to be used if slant is = 3 x dia. If length is 5 x dia, than reduce feed and rotation by 30 to 40% and use 1/2 of depth of passes. If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use 1/4 of depth of passes. 2. Reduce speed to avoid distortion from deep passes or low rigidity 3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.	1. Condizioni da utilizzare se la lunghezza dell'estensione dell'utensile è uguale a 3 volte il diametro. Se la lunghezza è di 5 volte il diametro ridurre l'avanzamento e la rotazione dal 30 al 40% ed utilizzate 1/2 della profondità di passata. Se la lunghezza è di 6 volte il diametro ridurre l'avanzamento e la rotazione dal 40 al 60% ed utilizzate 1/4 della profondità di passata. 2. Regolare l'avanzamento e la velocità in funzione di taglio o della rigidità della macchina. 3. Utilizzaree un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglietli di alta qualità, dotati di un coefficiente elevato di rallentamento di emissione del fumo.
1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D. Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 30 bis 40% reduzieren, die Schnittiefe auf ein 1/2 reduzieren. Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren, die Schnittiefe auf ein 1/4 reduzieren. 2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen. 3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.	1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D. Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 30 bis 40% reduzieren, die Schnittiefe auf ein 1/2 reduzieren. Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren, die Schnittiefe auf ein 1/4 reduzieren. 2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen. 3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.
1. Skæredata til brug ved udhæng = 3 x Diameter Hvis længden er 5 x dia, reducér tilspænding og omdrejninger med 30-40% og reducér skæredybden til det halve Hvis længden er 6 x dia, reducér tilspænding og omdrejninger med 40-60% og reducér skæredybden til det 3/4 2. Reducér hastigheden for at undgå forvrængninger fra dybe passager eller lav stbilitet 3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling	1. Condiciones utilizables con mango = 3 D Si el vuelo de 5 x D, reducir avance y velocidad un 30 a 40% y la pasada a 1/2 Si el vuelo de 6 x D, reducir avance y velocidad un 40 a 60% y la pasada a 3/4 2. Reduzca velocidad para evitar distorsión entre pasadas profundas y baja rigidez 3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo
1. Skärdata vid uthäng = 3 x Diametern Vid uthäng är 5 x diametern, reducera varvtal och matning med 30-40% och reducera skärdjupet till 50% Vid uthäng är 6 x diametern, reducera varvtal och matning med 40-60% och reducera skärdjupet till 75% 2. Reducera varvtal för att undgå vibrationer i djupa kaviteter eller vid allmän låg stabilitet.områder eller lav stabilitet 3. Använd lufttryck eller kylvätska med låg rökutveckling	1. Режимы резания действительны при вылете фрезы = 3 D Если длина 5 x D, уменьшите подачу и обороты шпинделя на 40-50% и используйте ½ глубины резания. Если длина 6 x D, уменьшите подачу и обороты шпинделя на 60-70% и используйте ½ глубины резания. 2. Отрегулируйте обороты шпинделя, подачу в зависимости от глубины резания и жесткости станка. 3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.
1. Eğim = 3 x çap ise bu kesme değerleri kullanılır Eğer boy 5 x çap ise, ilerlemeyi ve devri 30-40 % düşürün ve pasonun 1/2 sini kullanın Eğer boy 6 x çap ise, ilerlemeyi ve devri 40-60 % düşürün ve pasonun 1/4 sini kullanın 2. Kesme derinliğine ve tezgahın rijitliğine göre ilerlemeyi ve devri ayarlayınız 3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.	1. Warunki, które należy stosować, jeśli wysięg = 3 x średnca Jeśli długość jest większa niż 5 x średnica należy zmniejszyć posuw i obroty o 30 do 40% i używać 1/2 głębokości przejazdów. Jeśli długość jest większa niż 6 x średnica należy zmniejszyć posuw i obroty o 40 do 60% i używać 1/4 głębokości przejazdów. 2. Regulacja posuwu i obrotów jest funkcją głębokości przejazdów lub sztywności maszyny. 3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

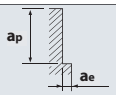
CONDITIONS

FXS-HS-PKE

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning -High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% S55C ■ SS400 ■ FC250 ~750 N/mm²		~30 HRC SCM ■ SKT ■ SKS ■ HPM1		30~38 HRC SKT ■ SKD ■ NAK55 ■ HPM1		38~45 HRC SUS SUS304 ■ SKD		45~55 HRC Tiall		55~60 HRC SCM	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
6	10.600	3.050	10.600	2.650	10.600	2.000	7.950	1.450	7.950	1.400	5.300	765
8	7.950	2.800	7.950	2.400	7.950	1.900	5.950	1.400	5.950	1.300	4.000	715
10	6.350	2.550	6.350	2.200	6.350	1.850	4.750	1.350	4.750	1.250	3.200	635
12	5.300	2.550	5.300	2.200	5.300	1.850	4.000	1.350	4.000	1.250	2.650	635
16	4.000	2.400	4.000	2.200	4.000	1.850	3.000	1.350	3.000	1.250	2.000	635
20	3.200	1.900	3.200	1.900	3.200	1.600	2.400	1.200	2.400	1.100	1.600	635

Max cutting depth				
	ap 1D | ae 0,1D aeMAX=1,5mm		ap 1D | ae 0,05D aeMAX=1,5mm	ap 1D | ae 0,02D

1. Use highest possible speed.
2. On lower speed machines, use maximum speed & feed settings.
3. Cutter mis-alignment must not exceed 10µ.
4. Always use coolant.

1. Utilizza la velocità più alta possibile.
2. Quando utilizzate delle macchine di basse velocità, utilizzate la velocità più alta e regolatevi il passo di avanzamento.
3. Dopo il suo passaggio nel mandrino, la fresa non può avere un run-out superiore a 0.01 mm.
4. Utilizzare sempre dei liquidi da taglio.

1. Maximale Geschwindigkeit benützen.
2. Bei konventionelen Maschinen, maximale Drehzahl - verwenden und den Vorschub entsprechend anpassen.
3. Fräserrundlauf darf max. 0.01 mm betragen.
4. Immer Külmittel benutzen.

1. Utilisez la vitesse la plus élévée possible.
2. Lorque vous employez des machines de basses vitesses, utilisez la vitesse la plus haute et ajustez-y le taux d'avance.
3. Après sa fixation dans le porte-outil, la fraise ne peut avoir un faux rond supérieur à 10µ.
4. Utiliser toujours des fluides de coupe.

1. Anvend højest mulige antal omdrejninger
2. På maskiner med lavt antal omdrejninger til rådighed, anvend maximum antal.
3. Nøjagtighed på opretning af fræseren må ikke overskride 10µ
4. Anvend altid kølevæske

1. Utilice velocidad más alta posible
2. Con máquina de velocidad convencional trabaje a la maxima velocidad posible y ajuste el avance en consecuencia
3. La desalineación de herramienta no debe exceder de 10 µ
4. Utilice siempre refrigerante

1. Använd högsta möjliga varvtal
2. På maskiner med lågt varvtal, använd max varvtal.
3. Rundgångsnogrannheten få ej överstiga 10µ
4. Använd alltid skärvätska

1. Используйте максимально возможную скорость вращения шпинделя.
2. На станках с низкооборотным шпинделем используйте максимальные обороты шпинделя и снизьте подачу пропорционально снижению скорости резания.
3. Биение фрезы не должно превышать 10 µ.
4. Всегда используйте СОЖ.

1. Mümkün olan en yüksek kesme hızını kullanınız.
2. Düşük hızlı tezgahlarda, maksimum kesme hızını ve ilerlemeyi kullanınız
3. Takımın ayarı 10µ geçmemelidir
4. Her zaman soğutma suyu kullanınız

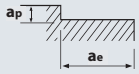
1. Używaj najwyższej możliwej prędkości.
2. Na słabszych (konwencjonalnych) maszynach użyj maksymalną prędkość obrotową i dostosuj posuw
3. Bicie freza nie może przekraczać 10µ.
4. Zawsze używaj chłodziwa

FXS-HS-PKE

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning -High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG S55C ■ SS400 ■ FC250 ~750 N/mm²		~30 HRC SCM ■ SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT ■ SKD		38~45 HRC SUS SUS304 ■ SKD		45~55 HRC HRS		55~60 HRC	
	200 (m/min)		200 (m/min)		200 (m/min)		150 (m/min)		150 (m/min)		100 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
6	10.600	2.250	10.600	2.100	10.600	2.050	7.950	1.550	7.950	1.400	5.300	635
8	7.950	2.150	7.950	2.000	7.950	1.950	5.950	1.450	5.950	1.250	4.000	585
10	6.350	2.050	6.350	1.900	6.350	1.850	4.750	1.400	4.750	1.150	3.200	535
12	5.300	2.050	5.300	1.900	5.300	1.850	4.000	1.400	4.000	1.150	2.650	535
16	4.000	2.050	4.000	1.900	4.000	1.850	3.000	1.400	3.000	1.150	2.000	535
20	3.200	1.800	3.200	1.800	3.200	1.600	2.400	1.200	2.400	955	1.600	535

Max cutting depth				
	ap 0,1D | ae 0,03D~0,5D		ap 0,05D | ae 0,2D~0,3D	ap 0,02D | ae 0,2D~0,3D

1. Conditions to be used if slant is = 3 x dia.
   If length is 5 x dia, than reduce feed and rotation by 30 to 40% and use 1/2 of depth of passes.
   If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use 1/4 of depth of passes.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

1. Condizioni da utilizzare se la lunghezza dell'estensione dell'utensile è uguale a 3 volte il diametro.
   Se la lunghezza è di 5 volte il diametro ridurre l'avanzamento e la rotazione dal 30 al 40% ed utilizzate 1/2 della profondità di passata.
   Se la lunghezza è di 6 volte il diametro ridurre l'avanzamento e la rotazione dal 40 al 60% ed utilizzate 1/4 della profondità di passata.
2. Regolare l'avanzamento e la velocità in funzione di taglio o della rigidità della macchina.
3. Utilizzaree un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio, sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento di emissione del fumo.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 30 bis 40% reduzieren, die Schnittiefe auf ein 1/2 reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren, die Schnittiefe auf ein 1/4 reduzieren.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 30 bis 40% reduzieren, die Schnittiefe auf ein 1/2 reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren, die Schnittiefe auf ein 1/4 reduzieren.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Skæredata til brug ved udhæng = 3 x Diameter
   Hvis længden er 5 x dia, reducér tilspænding og omdrejninger med 30-40% og reducér skæredybden til det halve
   Hvis længden er 6 x dia, reducér tilspænding og omdrejninger med 40-60% og reducér skæredybden til det 3/4
2. Reducér hastigheden for at undgå forvrængninger fra dybe passager eller lav stbilitet
3. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

1. Condiciones utilizables con mango = 3 D
   Si el vuelo de 5 x D, reducir avance y velocidad un 30 a 40% y la pasada a 1/2
   Si el vuelo de 6 x D, reducir avance y velocidad un 40 a 60% y la pasada a 3/4
2. Reduzca velocidad para evitar distorsión entre pasadas profundas y baja rigidez
3. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

1. Skärdata vid uthäng = 3 x Diametern
   Vid uthäng är 5 x diametern, reducera varvtal och matning med 30-40% och reducera skärdjupet till 50%
   Vid uthäng är 6 x diametern, reducera varvtal och matning med 40-60% och reducera skärdjupet till 75%
2. Reducera varvtal för att undgå vibrationer i djupa kaviteter eller vid allmän lå stabilitet.områåder eller lav stabilitet
3. Använd lufttryck eller kylvätska med låg rökutveckling

1. Режимы резания действительны при вылете фрезы = 3 D
   Если длина 5 x D, уменьшите подачу и обороты шпинделя на 40-50% и используйте ½ глубины резания.
   Если длина 6 x D, уменьшите подачу и обороты шпинделя на 60-70% и используйте ½ глубины резания.
2. Отрегулируйте обороты шпинделя, подачу в зависимости от глубины резания и жесткости станка.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Eğim = 3 x çap ise bu kesme değerleri kullanılır
Eğer boy 5 x çap ise, ilerlemeyi ve devri 30-40 % düşürün ve pasonun 1/2 sini kullanın
Eğer boy 6 x çap ise, ilerlemeyi ve devri 40-60 % düşürün ve pasonun 1/4 sini kullanın
2. Kesme derinliğine ve tezgahın rijitliğine göre ilerlemeyi ve devri ayarlayınız
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

1. Warunki, które należy stosować, jeśli wysięg = 3 x średnca
Jeśli długość jest większa niż 5 x średnica należy zmniejszyć posuw i obroty o 30 do 40% i używać 1/2 głębokości przejazdów.
Jeśli długość jest większa niż 6 x średnica należy zmniejszyć posuw i obroty o 40 do 60% i używać 1/4 głębokości przejazdów.
2. Regulacja posuwu i obrotów jest funkcją głębokości przejazdów lub sztywności maszyny.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

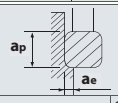
BACK

FXS-MFE

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning -High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC -



	C≤0,2% S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
	200 (m/min)		200 (m/min)		200 (m/min)		150 (m/min)		150 (m/min)		100 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
10	6.400	2.120	6.400	1.700	6.400	1.060	4.800	800	4.800	640	3.180	420
12	5.300	2.120	5.300	1.700	5.300	1.060	4.000	800	4.000	640	2.650	420
14	4.550	2.120	4.550	1.700	4.550	1.060	3.400	800	3.400	640	2.270	420
18	3.500	1.750	3.500	1.400	3.500	1.060	2.650	800	2.650	640	1.750	420
22	2.900	1.450	2.900	1.150	2.900	1.060	2.170	800	2.170	640	1.450	420

Max cutting depth	a_p = / (1,5D) a_e = 0,05D		a_p = / (1,5D) a_e = 0,02D

1. Conditions to be used if slant is = 3 x dia.
   If length is 5 x dia, than reduce feed and rotation by 10 to 20%.
   If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use ½ of aa and 1/3 of ar.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. For milling > 18 mm, machining center ISO50 is recommended
4. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

1. Condizioni da utilizzare se la lunghezza dell'estensione dell'utensile è uguale a 3 volte il diametro.
   Se la lunghezza è di 5 volte il diametro, ridurre l'avanzamento e la rotazione dal 10 al 20%.
   Se la lunghezza è di 6 volte il diametro, ridurre l'avanzamento e la rotazione dal 40 al 60%
   ed utilizzare ½ di aa e 1/3 di ar.
2. Regolare l'avanzamento e la velocità in funzione di taglio o della rigidità della macchina.
3. Per la fresatura superiore a 18 mm, è consigliato l'utilizzo di un centro di lavorazione ISO50.
4. Utilizzaree un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio,
   sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento di emissione del fumo.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 10 bis 20%. reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren,
   die Schnittiefe auf ½ aa und 1/3 ar.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Für Fräsen > 18 mm, empfehlen wir Maschinen mitt ISO50.
4. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Conditions à utiliser si le porte-à-faux est = à 3 x le dia.
   Si la longueur est de 5 x le dia, veuillez réduire l'avance et la rotation de 10 à 20.
   Si la longueur est de 6 x le dia, veuillez réduire l'avance et la rotation de 40 à 60 % et
   utiliser ½ de aa et 1/3 de ar.
2. Ajuster l'avance et la vitesse en fonction de la profondeur de coupe ou de la rigidité de la machine.
3. Pour le fraisage > 18 mm, il est recommandé d'utiliser un C.U. ISO50.
4. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coefficient élevé

1. Skæredata til brug ved udhæng = 3 x Diameter
   Hvis længden er 5 x dia, reducér tilspænding og omdrejninger med 10-20%
   Hvis længden er 6 x dia, reducér tilspænding og omdrejninger med 40-60% og reducér
   skæredybden til det ½ til aa och 1/3 til ar
2. Reducér hastigheden for at undgå forvrængninger fra dybe passager eller lav stbilitet
3. Ved fræsning > 18 mm, er det anbefalet at benytte et ISO50 bearbejdningscenter
4. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

1. Condiciones utilizables con mango = 3 D
   Si el vuelo de 5 x D, reducir avance y velocidad un 10 a 20%
   Si el vuelo de 6 x D, reducir avance y velocidad un 40 a 60% y la pasada a ½ aa e 1/3 ar
2. Reduzca velocidad para evitar distorsión entre pasadas profundas y baja rigidez
3. Para fresar > 18 mm, se recomienda el uso de centro de mecanizado con ISO 50
4. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

1. Skärdata vid uthäng = 3 x Diametern
   Vid uthäng är 5 x diametern, reducera varvtal och matning med 10-20%
   Vid uthäng är 6 x diametern, reducera varvtal och matning med 40-60% och reducera
   skärdjupet till ½ och aa
2. Reducera varvtal för att undgå vibrationer i djupa kaviteter eller vid allmän lå
   stabilitet.områder eller lav stabilitet
3. Vid fräsning > 18 mm rekommenderas att använda maskiner med ISO50 kona
4. Använd lufttryck eller kylvätska med låg rökutveckling

1. Режимы резания действительны при вылете фрезы = 3 D
   Если длина 5 x D, уменьшите подачу и обороты шпинделя на 40-50% и используйте ½ г
   лубины резания.
   Если длина 6 x D, уменьшите подачу и обороты шпинделя на 60-70% и используйте ½
   глубины резания.
2. Отрегулируйте обороты шпинделя, подачу в зависимости от глубины резания и
   жесткости станка.
3. Используйте сжатый воздух или качественную СОЖ с высокой устойчивостью к
   возникновению дыма.

1. Eğim = 3 x çap ise bu kesme değerleri kullanılır
Eğer boy 5 x çap ise, ilerlemeyi ve devri 10-20 % düşürün ve pasonun 1/2 sini kullanın
Eğer boy 6 x çap ise, ilerlemeyi ve devri 40-60 % düşürün ve pasonun 1/3 sini kullanın
2. Kesme derinliğine ve tezgahın rijitliğine göre ilerlemeyi ve devri ayarlayınız
3. Basınçlı hava veya duman emisyonu düşük bir katsayı ile yüksek kaliteli bir soğutucu kullanın.

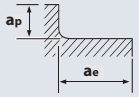
1. Warunki, które należy stosować, jeśli wysięg = 3 x średnca
Jeśli długość jest większa niż 5 x średnica należy zmniejszyć posuw i obroty o 30 do 40% i używać 1/2 głębokości przejazdów.
Jeśli długość jest większa niż 6 x średnica należy zmniejszyć posuw i obroty o 40 do 60% i używać 1/3 głębokości przejazdów.
2. Regulacja posuwu i obrotów jest funkcją głębokości przejazdów lub sztywności maszyny.
3. Użyj sprężonego powietrza lub wysokiej jakości chłodziwa z niskim współczynnikiem emisji dymu.

FXS-MFE

High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning -High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
	200 (m/min)		200 (m/min)		200 (m/min)		150 (m/min)		150 (m/min)		100 (m/min)	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
10	6.400	1.300	6.400	1.000	4.800	800	4.800	700	4.800	400	3.180	250
12	5.300	1.300	5.300	1.000	4.000	800	4.000	700	4.000	400	2.650	250
14	4.550	1.300	4.550	1.000	3.400	800	3.400	700	3.400	400	2.270	250
18	3.500	1.300	3.500	1.000	2.650	800	2.650	700	2.650	400	1.750	250
22	2.900	1.300	2.900	1.000	2.170	800	2.170	700	2.170	400	1.450	250

Max cutting depth	a_p = 0,1D a_e = 0,3D~0,5D		a_p = 0,05D a_e = 0,2D~0,3D	a_p = 0,02D a_e = 0,2D~0,3D

1. Conditions to be used if slant is = 3 x dia.
   If length is 5 x dia, than reduce feed and rotation by 10 to 20%.
   If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use ½ of aa and 1/3 of ar.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. For milling > 18 mm, machining center ISO50 is recommended
4. Use compresed air or a high quality coolant with a low co-efficient of smoke emmision.

1. Condizioni da utilizzare se la lunghezza dell'estensione dell'utensile è uguale a 3 volte il diametro.
   Se la lunghezza è di 5 volte il diametro, ridurre l'avanzamento e la rotazione dal 10 al 20%.
   Se la lunghezza è di 6 volte il diametro, ridurre l'avanzamento e la rotazione dal 40 al 60%
   ed utilizzare ½ di aa e 1/3 di ar.
2. Regolare l'avanzamento e la velocità in funzione di taglio o della rigidità della macchina.
3. Per la fresatura superiore a 18 mm, è consigliato l'utilizzo di un centro di lavorazione ISO50.
4. Utilizzaree un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio,
   sceglieteli di alta qualità, dotati di un coefficiente elevato di rallentamento di emissione del fumo.

1. Die angegebenen Schnittdaten sind für eine max. Ausspanlänge von 3 x D.
   Bei 5 x D die Schnittgeschwindigkeit und den Vorschub um 10 bis 20%. reduzieren.
   Bei 6 x D die Schnittgeschwindigkeit und den Vorschub um 40 bis 60% reduzieren,
   die Schnittiefe auf ½ aa und 1/3 ar.
2. Vorschub und Geschwindigkeit der Schnittiefe und Maschinen-Starrheit anpassen.
3. Für Fräsen > 18 mm, empfehlen wir Maschinen mitt ISO50.
4. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

1. Conditions à utiliser si le porte-à-faux est = à 3 x le dia.
   Si la longueur est de 5 x le dia, veuillez réduire l'avance et la rotation de 10 à 20.
   Si la longueur est de 6 x le dia, veuillez réduire l'avance et la rotation de 40 à 60 % et
   utiliser ½ de aa et 1/3 de ar.
2. Ajuster l'avance et la vitesse en fonction de la profondeur de coupe ou de la rigidité de la machine.
3. Pour le fraisage > 18 mm, il est recommandé d'utiliser un C.U. ISO50.
4. Utilisez un jet d'air comprimé ou des fluides de coupe de haute qualité avec un coefficient élevé

1. Skæredata til brug ved udhæng = 3 x Diameter
   Hvis længden er 5 x dia, reducér tilspænding og omdrejninger med 10-20%
   Hvis længden er 6 x dia, reducér tilspænding og omdrejninger med 40-60% og reducér
   skæredybden til det ½ til aa och 1/3 til ar
2. Reducér hastigheden for at undgå forvrængninger fra dybe passager eller lav stbilitet
3. Ved fræsning > 18 mm, er det anbefalet at benytte et ISO50 bearbejdningscenter
4. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

1. Condiciones utilizables con mango = 3 D
   Si el vuelo de 5 x D, reducir avance y velocidad un 10 a 20%
   Si el vuelo de 6 x D, reducir avance y velocidad un 40 a 60% y la pasada a ½ aa e 1/3 ar
2. Reduzca velocidad para evitar distorsión entre pasadas profundas y baja rigidez
3. Para fresar > 18 mm, se recomienda el uso de centro de mecanizado con ISO 50
4. Utilizar aire comprimido o un refrigerante con un bajo coeficiente de emisión de humo

1. Skärdata vid uthäng = 3 x Diametern
   Vid uthäng är 5 x diametern, reducera varvtal och matning med 10-20%
   Vid uthäng är 6 x diametern, reducera varvtal och matning med 40-60% och reducera
   skärdjupet till ½ och aa
2. Reducera varvtal för att undgå vibrationer i djupa kaviteter eller vid allmän lå
   stabilitet.områder eller lav stabilitet
3. Vid fräsning > 18 mm rekommenderas att använda maskiner med ISO50 kona
4. Använd lufttryck eller kylvätska med låg rökutveckling

1. Режимы резания действительны при вылете фрезы = 3 D
   Если длина 5 x D, уменьшите подачу и обороты шпинделя на 40-50% и используйте ½ г
   лубины резания.
   Если длина 6 x D, уменьшите подачу и обороты шпинделя на 60-70% и используйте ½
   глубины резания.
2. Отрегулируйте обороты шпинделя, подачу в зависимости от глубины резания и
   жесткости станка.
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Jeśli długość jest większa niż 5 x średnica należy zmniejszyć posuw i obroty o 30 do 40% i używać 1/2 głębokości przejazdów.
Jeśli długość jest większa niż 6 x średnica należy zmniejszyć posuw i obroty o 40 do 60% i używać 1/3 głębokości przejazdów.
2. Regulacja posuwu i obrotów jest funkcją głębokości przejazdów lub sztywności maszyny.
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FXS-CR-EMS

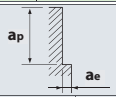
High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hizda frezeleme -
High speed fræsning -High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC



	C≤0,2% - GG S55C ■ SS400 ~750 N/mm²		~30 HRC SKD ■ SKS ■ SNCM		30~38 HRC NAK55 ■ HPMI ■ SKT		38~45 HRC SUS SUS304 ■ X210CR12 X40CRMOV51		45~55 HRC HRS		55~60 HRC	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	47.500	6.250	42.000	5.350	31.500	2.650	26.500	1.650	15.500	830	12.500	590
4	35.500	6.250	31.500	5.750	23.500	3.350	19.500	1.650	11.500	960	9.500	595
5	28.500	6.700	25.000	6.000	19.000	3.600	15.500	1.650	9.500	995	7.600	595
6	23.500	4.400	21.000	3.750	15.500	2.800	13.000	2.000	7.950	1.200	6.350	960
8	17.500	4.300	15.500	3.750	11.500	2.800	9.900	2.050	5.950	1.250	4.750	955
10	14.000	4.250	12.500	3.750	9.500	2.800	7.950	2.100	4.750	1.250	3.800	955
12	11.500	3.950	10.500	3.500	7.950	2.600	6.600	1.950	3.950	1.150	3.150	875
14	10.000	3.750	9.050	3.350	6.800	2.500	5.650	1.750	3.400	1.050	2.700	795
16	8.950	3.500	7.950	3.100	5.950	2.300	4.950	1.600	2.950	970	2.350	740
18	7.950	3.100	7.050	2.750	5.300	2.050	4.400	1.450	2.650	885	2.100	690
20	7.150	2.800	6.350	2.500	4.750	1.850	3.950	1.350	2.350	785	1.900	625
25	5.700	2.350	5.050	2.100	3.800	1.500	3.150	1.100	1.900	675	1.500	525
30	4.750	1.950	4.200	1.750	3.150	1.250	2.650	940	1.550	550	1.250	435

Max cutting depth

	ap	ae
D ≤ Ø 12	1D	0,01D
Ø 12 < D	1D	0,02D



1. Conditions to be used if slant is = 3 x dia.
   If length is 5 x dia, than reduce feed and rotation by 10 to 20%.
   If length is 6 x dia, than reduce feed and rotation by 40 to 60% and use ½ of aa and 1/3 of ar.
2. Reduce speed to avoid distortion from deep passes or low rigidity
3. For milling > 18 mm, machining center ISO50 is recommended
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2. Regolare l'avanzamento e la velocità in funzione di taglio o della rigidità della macchina.
3. Per la fresatura superiore a 18 mm, è consigliato l'utilizzo di un centro di lavorazione ISO50.
4. Utilizzaree un getto di aria compressa. Se la vostra scelta ricade su dei liquidi da taglio,
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4. Benutzen Sie Druckluft oder Kühlmittel mit rauchhemmenden Zusätzen.

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4. Brug lufttryk eller kølevæske af høj kvalitet med lav røgudvikling

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   Если длина 6 x D, уменьшите подачу и обороты шпинделя на 60-70% и используйте ½
   глубины резания.
2. Отрегулируйте обороты шпинделя, подачу в зависимости от глубины резания и
   жесткости станка.
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Jeśli długość jest większa niż 5 x średnica należy zmniejszyć posuw i obroty o 30 do 40% i używać 1/2 głębokości przejazdów.
Jeśli długość jest większa niż 6 x średnica należy zmniejszyć posuw i obroty o 40 do 60% i używać 1/3 głębokości przejazdów.
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CBN-SXB

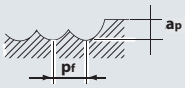
Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage régulier - Genel frezeleme
Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Frezowanie standardowe



	30~45 HRC SKT ■ SKD ■ NAK80 ■ HPM50		45~55 HRC		55~60 HRC		60~68 HRC	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
R 0,2 X 1,2	50.000	2.000	50.000	2.000	50.000	2.000	50.000	2.000
R 0,3 X 1,8	50.000	2.000	50.000	2.000	50.000	2.000	50.000	2.000
R 0,5 X 2,5	50.000	3.000	50.000	3.000	50.000	3.000	50.000	3.000
R 1 X 5	50.000	4.000	50.000	4.000	40.000	3.200	32.000	2.500
R 1,5 X 6	32.000	2.550	32.000	2.550	26.500	2.100	21.500	1.700

Max cutting depth

ap	pf
0,015D	0,04D



ap	pf
0,01D	0,03D

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma simultant
3. Använd anpassad skärvätska

1. Используйте жесткие и точные станки и фрезерные патроны
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя
3. Используйте соответствующую СОЖ с высокой устойчивостью к возникновению дыма

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

CA-RG-EDS

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage -
Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado -
Боковое фрезерование - Frezowanie boczne

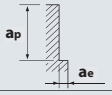
Slotting - Nutenfräsen -
Per scanalature profonde -
Rainurage - Slot kesim - Skæredata - Skärdata - Ranurado -
Фрезерование пазов - Frezowanie rowków



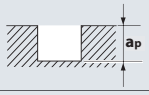
	AL A7075		Cu C1100		AL A7075		Cu C1100	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
1	32.000	220	23.500	220	32.000	220	23.500	220
2	32.000	420	11.500	215	23.500	310	11.500	215
3	21.000	700	7.950	250	15.500	515	7.950	250
4	15.500	725	5.950	280	11.500	540	5.950	280
5	12.500	760	4.750	295	9.500	575	4.750	295
6	10.500	830	3.950	310	7.950	630	3.950	310
8	7.950	890	2.950	350	5.950	665	2.950	350
10	6.350	995	2.350	365	4.750	745	2.350	365
12	5.300	1.050	1.950	390	3.950	790	1.950	390
14	4.500	1.050	1.700	395	3.400	795	1.700	395
16	3.950	1.050	1.450	390	2.950	795	1.450	390
18	3.500	1.050	1.300	390	2.650	795	1.300	390
20	3.150	1.050	1.150	385	2.350	785	1.150	385

Max cutting depth

ap = 1,5D
ae = 0,1D



ap = 1D



1. Use a high rigidity machine set up.
2. Use soluble oil.

1. Utilizzare una macchina precisa e rigida.
2. Utilizzare dell'olio solubile.

1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel.
2. Wasserlösliches Kühlmittel benutzen

1. Utilisez une machine précise et rigide.
2. Utilisez de l'huile soluble.

1.Brug en stabil opspænding
2. Brug passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. Aplique taladrina

1. Använd en stabil maskin och verktyghållare.
2. Använd en passande skärvätska

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. Используйте водную эмульсию в качестве СОЖ.

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Çözünen yağ kullanınız

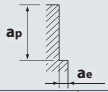
1. Używaj wysokiej sztywności maszyn i konfiguracji
2. Użyj rozpuszczalnego oleju.

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne

CA-RG-EDL



	AL A7075		Cu C1100	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	13.000	390	6.350	195
4	9.900	400	4.750	210
5	7.950	400	3.800	245
6	6.600	450	3.150	260
8	4.950	500	2.350	275
10	3.950	600	1.900	295
12	3.300	630	1.550	305

Max cutting depth	**ap** = 2,5D **ae** = 0,1D	

1. Use a high rigidity machine set up. 2. Use soluble oil. 3. For side milling, modify feed to obtain required finish quality	1. Utilizzare una macchina precisa e rigida. 2. Utilizzare dell'olio solubile. 3. Per la contornatura, modificate l'avanzamento per raggiungere lo stato della superfichie richiesto.
1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel. 2. Wasserlösliches Kühlmittel benutzen. 3. Bei Seitenfräsen Vorschub anpassen um die erforderliche Finishing Qualität zu erreichen.	1. Utilisez une machine précise et rigide. 2. Utilisez de l'huile soluble. 3. Pour le contournage, modifiez l'avance pour ateindre l'état de surface requis.
1.Brug en stabil opspænding 2. Brug passende skærevæske 3.Ved sidefræsning, modificér tilspændingen for at opnå den ønskede overflade finish	1. Use maquina y portaherramientas rigidos y precisos 2. Aplique taladrina 3. Para la contorneado, modificar la alimentación necesaria para obtener la calidad de acabado
1. Använd en stabil maskin och verktyghållare. 2. Använd en passande skärvätska. 3. Vid valsfräsning, modifiera matningen för rätt ytfinish..	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость. 2. Используйте водную эмульсию в качестве СОЖ. 3. При контурном фрезеровании, для достижения требуемого качества поверхности подберите подачу
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2. Çözünen yağ kullanınız 3. Kenar frezeleme için, finiş yüzey elde etmek için ilerlemeyi modifiye ediniz	1. Używaj wysokiej sztywności maszyn i konfiguracji 2. Użyj rozpuszczalnego oleju. 3. Do frezowania bocznego, modyfikować posuw aby uzyskać wymaganą jakość wykończenia (powierzchni)

BACK

Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne

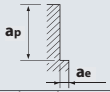
CA-ETS



Ø	AL A7075 S (min⁻¹)	AL A7075 F (mm/min)	AC <Si 13% S (min⁻¹)	AC <Si 13% F (mm/min)	Cu C1100 S (min⁻¹)	Cu C1100 F (mm/min)
3	21.000	950	21.000	950	7.950	320
4	15.500	1.080	15.500	1.080	5.950	350
5	12.500	1.100	12.500	1.100	4.750	380
6	10.500	1.200	10.500	1.200	3.950	400
8	7.950	1.300	7.950	1.300	2.950	450
10	6.350	1.500	6.350	1.500	2.350	480
12	5.300	1.550	5.300	1.550	1.950	510
16	3.950	1.550	3.950	1.550	1.450	510
20	3.150	1.550	3.150	1.550	1.150	510

Max cutting depth

ap	ae
1,5D	0,1D



1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Uitiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma procenttal
3. Använd anpassad skärvätska

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

CARBIDE

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim - Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków

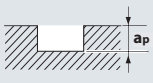
CA-ETS



Ø	AL A7075 S (min⁻¹)	AL A7075 F (mm/min)	AC <Si 13% S (min⁻¹)	AC <Si 13% F (mm/min)	Cu C1100 S (min⁻¹)	Cu C1100 F (mm/min)
3	21.000	670	21.000	670	7.950	325
4	15.500	700	15.500	700	5.950	365
5	12.500	745	12.500	745	4.750	385
6	10.500	820	10.500	820	3.950	405
8	7.950	865	7.950	865	2.950	455
10	6.350	970	6.350	970	2.350	475
12	5.300	1.030	5.300	1.030	1.950	510
16	3.950	1.030	3.950	1.030	1.450	510
20	3.150	1.030	3.150	1.030	1.150	500

Max cutting depth

$a_{p\ =0,5D}$



1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Uitiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma procenttal
3. Använd anpassad skärvätska

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

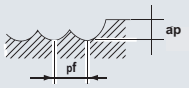
CARBIDE

BACK

Regular milling - Normale Bearbeitung - Parametri di taglio - Fraisage regulier - Genel frezeleme - Almindelig fræsning - Konventionell fräsning - Fresado regular - Нормальное фрезерование - Frezowanie standardowe	High speed milling - HSC Schlichtfräsen - Fresatura alta velocità - Fraisage UGV - Yüksek hisda frezeleme - High speed fræsning - High Speed Milling - Fresado a alta velocidad HSM - Высокоскоростное фрезерование - Frezowanie HSC	CAP-EBD



Ø	AL A7075 S (min⁻¹)	AL A7075 F (mm/min)	Cu C1100 S (min⁻¹)	Cu C1100 F (mm/min)	AL A7075 S (min⁻¹)	AL A7075 F (mm/min)	Cu C1100 S (min⁻¹)	Cu C1100 F (mm/min)
R 3 X 6	10.000	1.500	7.950	1.150	26.500	7.950	13.000	3.950
R 4 X 8	7.950	1.950	5.950	1.450	19.500	9.750	9.900	4.950
R 5 X 10	6.350	1.750	4.750	1.300	15.500	8.650	7.950	4.450
R 6 X 12	5.300	1.650	3.950	1.200	13.000	7.800	6.600	3.950
R 8 X 16	3.950	1.500	2.950	1.150	9.900	7.500	4.950	3.750
R10 X 20	3.150	1.350	2.350	1.000	7.950	6.350	3.950	3.150

Max cutting depth	a_p = 0,1D p_f = 0,2D	

1. Use a high rigidity machine set up. 2. Use soluble oil. 3. When chattering occurs, reduce the speed and feed simultaneously.	1. Utilizzare una macchina precisa e rigida. 2. Utilizzare dell'olio solubile. 3. Utilizzare dei lubrificanti da taglio adeguati, dotati di un coefficiente elevato di rallentamento d'emissione del fumo.
1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel. 2. Wasserlösliches Kühlmittel benutzen 3. Kühlmittel mit niedriger Rauchentwicklung verwenden.	1. Utilisez une machine précise et rigide. 2. Utilisez de l'huile soluble. 3. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
1.Brug en stabil opspænding 2. Brug passende skæreveæske 3. Ved vibrationer reducér omdrejninger og tilspænding simultant	1. Use maquina y portaherramientas rigidos y precisos 2. Aplique taladrina 3. En caso de vibración reduzca velocidad y avance simultaneamente
1. Använd en stabil maskin och verktyghållare. 2. Använd en passande skärvätska 3. Vid vibrationer sänk varvtal och matning med samma procenttal	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость. 2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя. 3. Используйте водную эмульсию в качестве СОЖ.
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2. Çözünen yağ kullanınız 3. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz	1. Używaj wysokiej sztywności maszyn i konfiguracji 2. Użyj rozpuszczalnego oleju. 3. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw

CA-PKE

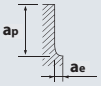
Side milling - Konturfräsen - Sgrossatura e contornatura - Contournage - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Frezowanie boczne



	AL A7075		AC <Si 13%		Cu C1100	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	21.000	1.100	21.000	1.100	7.950	325
4	15.500	1.250	15.500	1.250	5.950	365
5	12.500	1.280	12.500	1.275	4.750	385
6	10.500	1.400	10.500	1.400	3.950	400
8	7.950	1.500	7.950	1.500	2.950	460
10	6.350	1.700	6.350	1.700	2.350	475
12	5.300	1.750	5.300	1.750	1.950	510
16	3.950	1.750	3.950	1.750	1.450	510
20	3.150	1.750	3.150	1.750	1.150	510

Max cutting depth

ap	ae
1D	0,2D



1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma procenttal
3. Använd anpassad skärvätska

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

CA-PKE

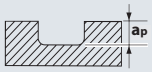
Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim - Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków



	AL A7075		AC <Si 13%		Cu C1100	
Ø	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)	S (min⁻¹)	F (mm/min)
3	21.000	770	21.000	770	7.950	325
4	15.500	810	15.500	810	5.950	375
5	12.500	860	12.500	860	4.750	385
6	10.500	950	10.500	950	3.950	400
8	7.950	1.000	7.950	1.000	2.950	460
10	6.350	1.130	6.350	1.130	2.350	475
12	5.300	1.180	5.300	1.180	1.950	510
16	3.950	1.180	3.950	1.180	1.450	510
20	3.150	1.180	3.150	1.180	1.150	510

Max cutting depth

ap = 0,5D



1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma procenttal
3. Använd anpassad skärvätska

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

High speed side milling - HSC Konturfräsen - Fresatura alta velocità contornatura - Fraisage UGV contournage - Yüksek hizda kenar frezeleme - High speed sidefræsning - High speed valsfräsning - Contorneado a alta velocidad - Высокоскоростное контурное фрезерование - Frezowanie HSC

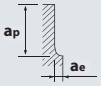
CA-PKE



Ø	AL A7075 S (min⁻¹)	AL A7075 F (mm/min)	AC <Si 13% S (min⁻¹)	AC <Si 13% F (mm/min)	Cu C1100 S (min⁻¹)	Cu C1100 F (mm/min)
3	40.000	2.080	24.000	1.260	17.000	625
4	32.000	2.550	19.200	1.550	14.300	800
5	32.000	3.250	19.200	1.950	12.700	925
6	26.500	3.500	15.900	2.150	10.600	959
8	20.000	3.750	12.000	2.250	8.000	1.130
10	16.000	4.300	9.600	2.580	6.350	1.150
12	13.300	4.400	7.980	2.650	5.300	1.250
16	10.000	4.400	6.000	2.650	4.000	1.250
20	8.000	4.400	4.800	2.650	3.200	1.250

Max cutting depth

ap	ae
1D	0,1D



1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma procenttal
3. Använd anpassad skärvätska

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesim - Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków

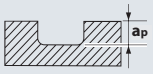
CA-PKE



Ø	AL A7075 S (min⁻¹)	AL A7075 F (mm/min)	AC <Si 13% S (min⁻¹)	AC <Si 13% F (mm/min)
3	40.000	1.450	24.000	880
4	32.000	1.680	19.200	1.000
5	32.000	2.200	19.200	1.330
6	26.500	2.400	15.900	1.450
8	20.000	2.500	12.000	1.500
10	16.000	2.800	9.600	1.700
12	13.300	2.950	7.980	1.780
16	10.000	3.000	6.000	1.800
20	8.000	3.000	4.800	1.800

Max cutting depth

ap = 0,25D



1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma procenttal
3. Använd anpassad skärvätska

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

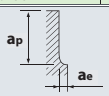
High speed side milling - HSC Konturfräsen - Fresatura alta velocità contornatura - Fraisage UGV contournage - Yüksek hizda kenar frezeleme - High speed sidefræsning - High speed valsfräsning - Contorneado a alta velocidad - Высокоскоростное контурное фрезерование - Frezowanie HSC

CA-MFE



Ø	AL A7075 S (min⁻¹)	AL A7075 F (mm/min)	AC <Si 13% S (min⁻¹)	AC <Si 13% F (mm/min)	Cu C1100 S (min⁻¹)	Cu C1100 F (mm/min)
10	16.000	4.300	9.600	2.580	6.350	1.150
12	13.300	4.400	8.000	2.650	5.300	1.250
14	11.500	4.400	6.900	2.650	4.000	1.250
18	8.850	4.400	5.300	2.650	3.500	1.250
22	7.400	4.000	4.500	2.400	3.000	1.200

Max cutting depth



ap	ae
1,2D	0,1D

Maximum cutting depth	Maximum cutting depth ap	Maximum cutting depth ae	S.	F.
D X 4	1,2 D	0,100 D	100%	100%
D X 5	1,2 D	0,050 D	60~80%	60~80%
D X 6	1,2 D	0,025 D	40~60%	40~60%

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma procenttal
3. Använd anpassad skärvätska

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

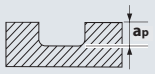
High speed slotting milling - HSC Nutenfräsen - Fresatura alta velocità, per scanalature profonde - Fraisage UGV rainurage - Yüksek hizda slot frezeleme - High speed sporfræsning - High Speed Milling spårfräsning - Fresado en ranurado a alta velocidad - Высокоскоростное Фрезерование пазов - Frezowanie rowków HSC

CA-MFE



Ø	AL A7075 S (min⁻¹)	AL A7075 F (mm/min)	AC <Si 13% S (min⁻¹)	AC <Si 13% F (mm/min)
10	16.000	2.800	9.600	1.700
12	13.300	2.950	7.980	1.780
14	11.500	3.000	6.000	1.800
18	8.850	3.000	5.300	1.800
22	7.400	3.000	4.450	1.800

Max cutting depth



ap = 0,1D

Maximum cutting depth	Maximum cutting depth ap	S.	F.
D X 4	0,100 D	100%	100%
D X 5	0,050 D	60~80%	60~80%
D X 6	0,025 D	40~60%	40~60%

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant properties.

1. Utilizzare una macchina ed un mandrino di elevata rigidità e di alta precisione.
2. In caso di vibrazione, ridurre simultaneamente la velocità di taglio e l'avanzamento.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.

1. Benutzen Sie stabile und präzise Maschinen, Werkzeugaufnahmen und Spannmittel.
2. Falls Vibrationen auftreten sollten, Vorschub und Schnittgeschwindigkeit reduzieren.
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.

1. Utiliser une machine et un porte-outil de grande rigidité et de haute précision.
2. En cas de vibrations, réduisez, simultanément, la vitesse de coupe et l'avance.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.

1. Anvend stabil maskine og værktøjsholder
2. Ved vibrationer reducér omdrejninger og tilspænding simultant
3. Anvend en passende skærevæske

1. Use maquina y portaherramientas rigidos y precisos
2. En caso de vibración reduzca velocidad y avance simultaneamente
3. Use fluido de corte adecuado con retardador de humos

1. Använd en stabil maskin och verktygshållare
2. Vid vibrationer sänk varvtal och matning med samma procenttal
3. Använd anpassad skärvätska

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
3. Используйте качественную СОЖ с высокой устойчивостью к возникновению дыма.

1. Rijit, hassas tezgah ve takım tutucu kullanınız
2. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
3. Yoğun duman geciktirici özelliklere sahip bir soğutma sıvısı kullanın

1. Użyj sztywnej i precyzyjnej maszyny i uchwytu
2. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw
3. Proszę użyć odpowiedniego płynu o wysokich właściwościach zmniejszających dymienie

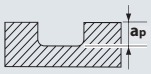
CRN-LN-EDS

Cu
C1100

Ø	Slotting conventional Milling S (min⁻¹)	Slotting conventional Milling F (mm/min)	Side Milling conventional Milling S (min⁻¹)	Side Milling conventional Milling F (mm/min)	Side Milling High Speed Milling S (min⁻¹)	Side Milling High Speed Milling F (mm/min)	Side Milling Dry Milling S (min⁻¹)	Side Milling Dry Milling F (mm/min)
0,5	32.000	125	32.000	125	50.000	200	32.000	125
0,8	32.000	150	31.500	150	50.000	240	31.500	150
1	32.000	190	25.000	150	50.000	300	25.000	150
1,5	15.500	140	16.500	145	42.000	375	16.500	145
2	11.500	135	12.500	150	31.500	375	12.500	150
2,5	9.500	175	10.000	185	25.000	470	10.000	185
3	7.950	220	8.450	235	21.000	585	8.450	235
4	5.950	235	6.350	250	15.500	620	6.350	250
5	4.750	285	5.050	300	12.500	750	5.050	300
6	3.950	250	4.200	265	10.500	670	4.200	265
8	2.950	260	3.150	275	7.950	700	3.150	275
10	2.350	245	2.500	265	6.350	670	2.500	265
12	1.950	250	2.100	265	5.300	675	2.100	265

Max cutting depth

D < Ø1 a_p = 0,05D
Ø1 ≤ D a_p = 0,10D



a_p = 0,1D

D < Ø1 a_p = 1,5D a_e = 0,02D
Ø1 ≤ D a_p = 1,5D a_e = 0,05D

D < Ø1 a_p = 1,5D a_e = 0,01D
Ø1 ≤ D a_p = 1,5D a_e = 0,02D



1. Use a high rigidity machine set up.
2. Use soluble oil.
3. When chattering occurs, reduce the speed and feed simultaneously.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Utilizzare una macchina precisa e rigida.
2. Utilizzare dell'olio solubile.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.
4. Per fresatura a secco utilizzare aria.

1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel.
2. Wasserlösliches Kühlmittel benutzen
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.
4. Bei Trockenbearbeitung Druckluft zum Entfermen der Späne verwenden.

1. Utilisez une machine précise et rigide.
2. Utilisez de l'huile soluble.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.
4. En cas d'usinage à sec, utiliser de l'air comprimé pour l'évacuation des copeaux de l'aire d'usinage et pour éviter une agglomération des Copeaux.

1. Brug en stabil opspænding
2. Brug passende skærevæske
3. Ved vibrationer reducér omdrejninger og tilspænding simultant
4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner

1. Use maquina y portaherramientas rigidos y precisos
2. Aplique taladrina
3. En caso de vibración reduzca velocidad y avance simultaneamente
4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte

1. Använd en stabil maskin och verktyghållare.
2. Använd en passande skärvätska.
3. Vid vibrationer sänk varvtal och matning med samma procenttal
4. Vid torrbearbetning använd tryckluft för att transportera bort spånor

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. Используйте водную эмульсию в качестве СОЖ.
3. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки.

1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız
2. Çözünen yağ kullanınız
3. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz
4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız

1. Używaj wysokiej sztywności maszyn i konfiguracji
2. Użyj rozpuszczalnego oleju.
3. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw
4. Podczas frezowania, utrzymać na końcu freza bicie mniejsze niż 0,01 mm.

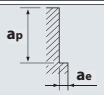
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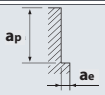
Ø	conventional Milling S (min⁻¹)	conventional Milling F (mm/min)	conventional Milling S (min⁻¹)	conventional Milling F (mm/min)	Dry Milling S (min⁻¹)	Dry Milling F (mm/min)
3	10.500	600	26.500	1.200	10.500	475
4	7.950	635	19.500	1.200	7.950	505
5	6.350	740	15.500	1.450	6.350	590
6	5.300	735	13.000	1.450	5.300	590
8	3.950	705	9.900	1.500	3.950	615
10	3.150	705	7.950	1.550	3.150	630
12	2.650	710	6.600	1.550	2.650	625

Max cutting depth

a_p = 1,5D a_e = 0,1D



D < Ø8 a_p = 1,5D a_e = 0,01D
Ø8 ≤ D a_p = 1,5D a_e = 0,02D



1. Use a high rigidity machine set up.
2. Use soluble oil.
3. When chattering occurs, reduce the speed and feed simultaneously.
4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

1. Utilizzare una macchina precisa e rigida.
2. Utilizzare dell'olio solubile.
3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo.
4. Per fresatura a secco utilizzare aria.

1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel.
2. Wasserlösliches Kühlmittel benutzen
3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen.
4. Bei Trockenbearbeitung Druckluft zum Entfermen der Späne verwenden.

1. Utilisez une machine précise et rigide.
2. Utilisez de l'huile soluble.
3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée.
4. En cas d'usinage à sec, utiliser de l'air comprimé pour l'évacuation des copeaux de l'aire d'usinage et pour éviter une agglomération des Copeaux.

1. Brug en stabil opspænding
2. Brug passende skærevæske
3. Ved vibrationer reducér omdrejninger og tilspænding simultant
4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner

1. Use maquina y portaherramientas rigidos y precisos
2. Aplique taladrina
3. En caso de vibración reduzca velocidad y avance simultaneamente
4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte

1. Använd en stabil maskin och verktyghållare.
2. Använd en passande skärvätska.
3. Vid vibrationer sänk varvtal och matning med samma procenttal
4. Vid torrbearbetning använd tryckluft för att transportera bort spånor

1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость.
2. Используйте водную эмульсию в качестве СОЖ.
3. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя.
4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки.

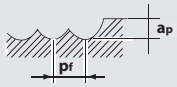
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Ø	conventional Milling S (min⁻¹)	conventional Milling F (mm/min)	High speed Milling S (min⁻¹)	High speed Milling F (mm/min)	Dry Milling S (min⁻¹)	Dry Milling F (mm/min)
R 3 X 6	7.950	1.150	13.000	3.900	6.360	460
R 4 X 8	5.950	1.450	9.900	4.950	4.760	580
R 5 X 10	4.750	1.300	7.950	4.450	3.800	520
R 6 X 12	3.950	1.200	6.600	3.950	3.160	480

Max cutting depth	
	a_p = 0,1D p_f = 0,2D



1. Use a high rigidity machine set up. 2. Use soluble oil. 3. When chattering occurs, reduce the speed and feed simultaneously. 4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.	1. Utilizzare una macchina precisa e rigida. 2. Utilizzare dell'olio solubile. 3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo. 4. Per fresatura a secco utilizzare aria.
1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel. 2. Wasserlösliches Kühlmittel benutzen 3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen. 4. Bei Trockenbearbeitung Druckluft zum Entfermen der Späne verwenden.	1. Utilisez une machine précise et rigide. 2. Utilisez de l'huile soluble. 3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée. 4. En cas d'usinage à sec, utiliser de l'air comprimé pour l'évacuation des copeaux de l'aire d'usinage et pour éviter une agglomération des Copeaux.
1. Brug en stabil opspænding 2. Brug passende skærevæske 3. Ved vibrationer reducér omdrejninger og tilspænding simultant 4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner	1. Use maquina y portaherramientas rigidos y precisos 2. Aplique taladrina 3. En caso de vibración reduzca velocidad y avance simultaneamente 4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte
1. Använd en stabil maskin och verktyghållare. 2. Använd en passande skärvätska. 3. Vid vibrationer sänk varvtal och matning med samma procenttal 4. Vid torrbearbetning använd tryckluft för att transportera bort spånor	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость. 2. Используйте водную эмульсию в качестве СОЖ. 3. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя. 4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки.
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2. Çözünen yağ kullanınız 3. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz 4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız	1. Używaj wysokiej sztywności maszyn i konfiguracji 2. Użyj rozpuszczalnego oleju. 3. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw 4. Podczas frezowania, utrzymać na końcu freza bicie mniejsze niż 0,01 mm.

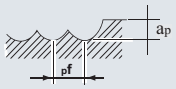
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mm	conventional Milling S (min⁻¹)	conventional Milling F (mm/min)	High speed Milling S (min⁻¹)	High speed Milling F (mm/min)	Dry Milling S (min⁻¹)	Dry Milling F (mm/min)
R 0,5	32.000	690	50.000	1.050	31.500	680
R 0,6	31.500	700	50.000	1.100	26.500	590
R 0,7	27.000	680	45.000	1.100	22.500	565
R 0,75	25.000	675	42.000	1.100	21.000	565
R 0,8	23.500	675	39.500	1.100	19.500	560
R 0,9	21.000	680	35.000	1.100	17.500	565
R 1	19.000	680	31.500	1.100	15.500	555
R 1,25	15.000	675	25.000	1.100	12.500	560
R 1,5	12.500	675	21.000	1.100	10.500	565
R 1,75	10.500	660	18.000	1.100	9.050	570
R 2	9.500	680	15.500	1.100	7.950	570
R 2,5	7.600	770	12.500	1.250	6.350	640

Max cutting depth		
	a_p = 0,05D p_f = 0,2D	a_p = 0,02D p_f = 0,05D



1. Use a high rigidity machine set up. 2. Use soluble oil. 3. When chattering occurs, reduce the speed and feed simultaneously. 4. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.	1. Utilizzare una macchina precisa e rigida. 2. Utilizzare dell'olio solubile. 3. Utilizare dei lubrificanti di taglio adequati, dotati di une elevato coefficiente di rallentamento di emessione del fumo. 4. Per fresatura a secco utilizzare aria.
1. Benutzen Sie stabile und präzise Maschinen, Werkzaugaufnahmen und Spannmittel. 2. Wasserlösliches Kühlmittel benutzen 3. Benutzen Sie Kühlmittel mit rauchhemmenden Zusätzen. 4. Bei Trockenbearbeitung Druckluft zum Entfermen der Späne verwenden.	1. Utilisez une machine précise et rigide. 2. Utilisez de l'huile soluble. 3. Utiliser des fluides de coupes de haute qualité avec un coef, élevé de ralentissement d'emission de fumée. 4. En cas d'usinage à sec, utiliser de l'air comprimé pour l'évacuation des copeaux de l'aire d'usinage et pour éviter une agglomération des Copeaux.
1. Brug en stabil opspænding 2. Brug passende skærevæske 3. Ved vibrationer reducér omdrejninger og tilspænding simultant 4. Under tørbearbejdning anvend lufttryk for at bortskaffe spåner	1. Use maquina y portaherramientas rigidos y precisos 2. Aplique taladrina 3. En caso de vibración reduzca velocidad y avance simultaneamente 4. Fresado en seco (sin líquido), por favor, utilice el aire soplado para eliminar la viruta de la zona de corte
1. Använd en stabil maskin och verktyghållare. 2. Använd en passande skärvätska. 3. Vid vibrationer sänk varvtal och matning med samma procenttal 4. Vid torrbearbetning använd tryckluft för att transportera bort spånor	1. Используйте высокоточные станки и оснастку, чтобы гарантировать максимальную жесткость. 2. Используйте водную эмульсию в качестве СОЖ. 3. При возникновении вибрации, снизьте одновременно подачу и обороты шпинделя. 4. При сухом (без СОЖ) фрезеровании, используйте воздушную струю для удаления стружки и предотвращения спрессовывания стружки.
1. Maksimum rijitlik için yüksek hassasiyetli tezgah kullanınız 2. Çözünen yağ kullanınız 3. Tırlama başladığında, kesme hızını ve ilerlemeyi aynı anda düşürünüz 4. Kuru frezeleme sırasında, frezeleme alanından talaşları uzaklaştırmak için lütfen hava üfleme kullanınız	1. Używaj wysokiej sztywności maszyn i konfiguracji 2. Użyj rozpuszczalnego oleju. 3. Przy wystąpieniu drgań zmniejsz prędkość oraz posuw 4. Podczas frezowania, utrzymać na końcu freza bicie mniejsze niż 0,01 mm.

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PHOENIX

INDEX

TYPE		SPECIFICATION		
DRILLING				
PXD NEW		3 & 5xD High Performance Indexable Drill, 2 flutes 3 & 5xD alta performance punta ad inserti	3 & 5xD Hochleistungswendeplattenbohrer Foret à plaquettes amovibles 3 & 5xD haute performance	3 & 5xD High Performance bor med vendeskær Broca insertable para altas prestaciones 3 & 5xD
P5D NEW		5xD High Performance Indexable Drill, 2 flutes 5xD alta performance punta ad inserti	5xD Hochleistungswendeplattenbohrer Foret à plaquettes amovibles 5xD haute performance	5xD High Performance bor med vendeskær Broca insertable para altas prestaciones 5 xD
PHP		3xD High Performance Indexable Drill, 2 flutes 3xD alta performance punta ad inserti	3xD Hochleistungswendeplattenbohrer Foret à plaquettes amovibles 3xD haute performance	3xD High Performance bor med vendeskær Broca insertable para altas prestaciones 3 xD

TYPE		SPECIFICATION		
MILLING				
PXNL NEW		Unequal spacing, 4 flutes, variable helix, roughing type, low helix Passo variabile, 4 denti, elica variabile, sgrossatura, elica a bassa torsione	Ungleicher Drall, 4 Schneiden, ungleich gedrallte Spiralwinkel, Schruppfräser, kleiner Spiralwinkel Espacement inégal, 4 lèvres, élice variable, ébauche, hélice réduite	Ulige inddeling, 4 skær,variabel snoning, skrubfræsning, let snoet spiral Paso constante, 4 labios, variable helice, desbaste, lenta helice
PXNH NEW		Unequal spacing, 4 flutes, variable helix, roughing type, high helix Passo variabile, 4 denti, elica variabile, sgrossatura, elica elevata torsione	Ungleicher Drall, 4 Schneiden, ungleich gedrallte Spiralwinkel, Schruppfräser, großer Spiralwinkel Espacement inégal, 4 lèvres, élice variable, ébauche, hélice haute	Ulige inddeling, 4 skær,variabel snoning, skrubfræsning, høj helix Paso constante, 4 labios, variable helice, desbaste, alta helice
PXSE NEW		Unequal spacing, 4 flutes, square type, corner radius type Passo variabile, 4 denti, piana, Tipo torico	Ungleicher Drall, 4 Schneiden, Schaftfräser, Eckradiusfräser Espacement inégal, 4 lèvres, type carré, fraise à rayon	Ulige inddeling, 4 skær, skarp type, Hjørneradius Paso constante, 4 labios, escuadrado, Vertice radio
PXSM NEW		Unequal spacing, multi flutes, square type, corner radius type Passo variabile, multidenti, tipo piano, tipo torico	Ungleicher Drall, Vielzahnfräser, Schaftfräser, Eckradiusfräser Espacement inégal, lèvres multiples, type carré, fraise à rayon	Ulige inddeling, flerskærs, skarp type, Hjørneradius Paso constante, ranúras múltiples, tipo cuadrado, Vertice radio
PXRE NEW		High feed corner radius type Tipo torico Alto Avanzamento	Hochvorschubsfräser Fraises grandes avances	High feed fræser med hjørneradius Radio en el vértice para alta velocidad
PXBE NEW		Ball nose, 3 flutes Frese sferiche, 3 denti	Kopierfräser, 3 Schneiden Fraise hémisphérique, 3 lèvres	Radiusfræser, 3 skær Esferica, 3 labios
PXBM NEW		Ball nose, multi flutes Frese sferiche, multidenti	Kopierfräser, mehrschneidig Fraise hémisphérique, lèvres multiples	Radiusfræser, flerskærs Esferica, ranúras múltiples
PAS BORE NEW		Phoenix 45° Face Milling Square Insert Type with Bore Type Phoenix 45° spianare, a manicotto, inserto quadro	Phönix 45° Planfräser Vierkant Wendeplatte mit Aufschraubbohrung Poenix 45°, surfaçage, plaquettes de type carrées	Phoenix 45° planfræser til dorn med kvadratiske skær Planeado Phoenix a 45º con fresa hueca y placa cuadrada
PAO BORE NEW		Phoenix 45° Face Milling Octagon Insert Type with Bore Type Phoenix 45° spianare, a manicotto inserto ottagonale	Phönix 45° Planfräser Achteck (Octagon) Wendeplatte mit Aufschraubbohrung Poenix 45°, surfaçage, plaquettes de type octogonales	Phoenix 45° planfræser til dorn med octagon skær Planeado Phoenix a 45º con fresa hueca y placa octagonal
PFB		Finishing ball nose cutter, 2 flutes Fresa sferica di finitura, 2 eliche	2-schneidiger Kugelfräser für Schlichtbearbeitungen Finition hémisphérique 2 dents	Radiusfræser til sletbearbejdning, 2 skær Fresa de punta esférica 2 labios para acabado.
PSF SS NEW		90° shoulder cutter, 4 corner, straight shank 90° spallamento retto, 4 angoli, gambo cilindrico	90° Schulterfräser, 4-Ecken, Zylinderschaft Surface à dresser à 90°, 4 angles, queue cylindrique	90° vendeskærsfræser, 4 hjørne, cylindrisk skaft Fresa a 90° para escuadrar, 4 esquina, mango cilíndrico
PSF BORE NEW		90° shoulder cutter, 4 corner, bore type 90° spallamento retto, 4 angoli, a manicotto	90° Schulterfräser, 4-Ecken, Aufnahmebohrung Surface à dresser à 90°, 4 angles, trou lisse	90° vendeskærsfræser, hjørne, til dorn Fresa a 90° para escuadrar, 4 esquina, hueca
PSEL SS NEW		90° shoulder cutter, porcupine type 90° spallamento retto, a riccio	90° Schulterfräser, Igelfräser Surface à dresser à 90°, fraise hérisson	90° vendeskærsfræser, pindsvind type Fresa a 90° para escuadrar, tipo cocodrilo
PSEL BORE NEW		90° shoulder cutter, porcupine type 90° spallamento retto, a riccio	90° Schulterfräser, Igelfräser Surface à dresser à 90°, fraise hérisson	90° vendeskærsfræser, pindsvind type Fresa a 90° para escuadrar, tipo cocodrilo
PSE/WS/ SS		90° Shoulder cutter, Weldon shank 90° Fresa spallamento retto, gambo cilindrico Weldon	90° Schulterfräser, Weldonschaft Surfacer dresser à 90° queue weldon	90° vendeskærsfræser, Weldon skaft Fresa a 90° para escuadrar, mango Weldon
PSE Screw Fit		90° Shoulder cutter, screw fit type 90° Fresa spallamento retto, sistema modulare	90° Schulterfräser, Aufschraubkopf Surfacer dresser à 90° tête vissée	90° vendeskærsfræser, Indskrunings type Fresa a 90° para escuadrar, Cabeza roscada
PSE BORE		90° Shoulder cutter, bore type 90° Fresa spallamento retto, a manicotto	90 ° Schulterfräser, Aufnahmebohrung Surfacer dresser à 90° à trou lisse	90° vendeskærsfræser, til dorn Fresa a 90° para escuadrar, hueca

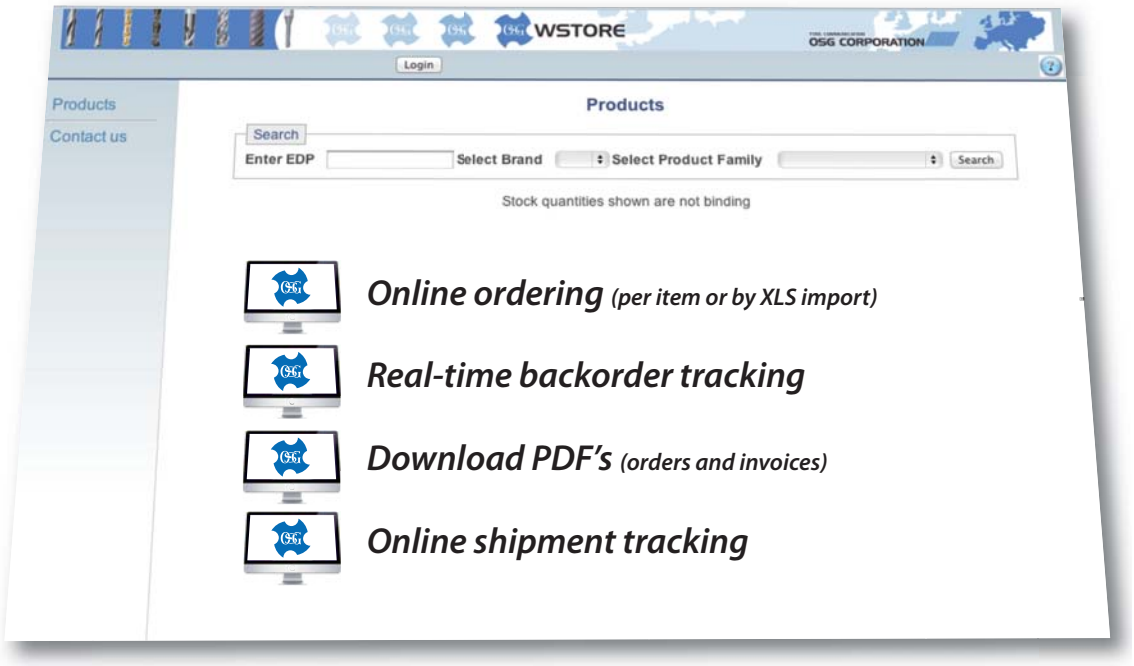
	DIAMETER RANGE	APPLICATION	PAGE
	Ø 8 Ø 60 Ø 125 Ø 200	**DRILLING**	
3 & 5xD high performance borr Высокая производительность, Сверло, 2-зуба, 3 & 5xD	3 & 5XD yüksek performanslı takma uçlu matkap, 2 ağızlı 3 & 5x D Wysokiej jakości wiertła , dwuostrzowe	Ø14 Ø25	Boring	E.49
5xD high performance borr Высокая производительность, Сверло, 2-зуба,5xD	5XD yüksek performanslı takma uçlu matkap, 2 ağızlı 5 x D Wysokiej jakości wiertła , dwuostrzowe	Ø21 Ø33,5	Boring Plunging	E.54
3xD high performance borr Высокая производительность, Сверло, 2-зуба,3xD	3XD yüksek performanslı takma uçlu matkap, 2 ağızlı 3 x D Wysokiej jakości wiertła , dwuostrzowe	Ø14 Ø40	Boring Plunging	E.56

	DIAMETER RANGE	APPLICATION	PAGE
	Ø 8 Ø 60 Ø 125 Ø 200	**MILLING**	
Differentierade skär, 4 skär, variabel helix, skrubbfräsning, liten helix неравномерно расположенный, 4 кромки, Черновая обработка, Пологая спираль	Dengesiz aralık, 4 ağızlı, değişken spiral kanallar, Kaba, düşük helis Nierównomierny rozstaw, 4-ostrzowy, zmienny kąt spirali, zgrubna	Ø12 Ø25	Side Milling Contouring Slotting	E.9
Differentierade skär, 4 skär, variabel helix, skrubbfräsning, skärlängd неравномерно расположенный, 4 кромки, Черновая обработка, Пологая спираль	Dengesiz aralık, 4 ağızlı, değişken spiral kanallar, Kaba, yüksek helis açısı Nierównomierny rozstaw, 4-ostrzowy, zmienny kąt spirali, duża spirala	Ø12 Ø25	Side Milling Contouring Slotting	E.9
Differentierade skär, 4 skär, skarp typ, hörnradie неравномерно расположенный, 4 кромки, В форме квадрата, Концевые фрезы с радиусом	Dengesiz aralık, 4 ağızlı, kare tip, Köşe radyüslü tipi Nierównomierny rozstaw, 4-ostrzowy, płytka kwadratowa, z promieniem naroża	Ø12 Ø25	Face Milling Side Milling Side Milling Contouring Slotting Slotting Profile Milling	E.10
Differentierade skär, Flerskärs, skarp typ, hörnradie неравномерно расположенный, Многозубые, В форме квадрата, Концевые фрезы с радиусом	Dengesiz aralık, çok ağızlı , kare tip, Köşe radyüslü tipi Nierównomierny rozstaw, wieloostrzowy, płytka kwadratowa, z promieniem naroża	Ø12 Ø25	Side Milling Side Milling Profile Milling	E.11
High feed fräs med hörnradie Фрезы с высокой подачей и радиусом на кромке	Yüksek ilerlemeli freze Frez do wysokich posuwów	Ø12 Ø20	Face Milling Contouring Profile Milling	E.11
Fullradie, 3 skär сферические, 3 кромки	Finiş küre uçlu kesici, 3 ağızlı 3-ostrzowy frez kulowy, obróbka wykańczająca	Ø12 Ø20	Profile Milling Contouring Slotting	E.12
Fullradie, flerskärs сферические, Многозубые	Finiş küre uçlu kesici, çok ağızlı wieloostrzowy frez kulowy, obróbka wykańczająca	Ø12 Ø20	Profile Milling	E.12
Phoenix 45° planfräsar med kvadratiska skär Phoenix 45° торцовое фрезерование с квадратной пластиной (насадная фреза)	phoenix 45° kare uçlu yüzey frezeleme takımları, delme tipi ile birlikte Phoenix 45 °, kwadratowa płytka z otworem do frezowania czołowego	Ø50 Ø125	Face Milling	E.24
Phoenix 45° planfräsar med oktagon skär Phoenix 45° торцовое фрезерование с восьмигранной пластиной (насадная фреза)	phoenix 45° sekizgen uçlu yüzey frezeleme takımları, delme tipi ile birlikte Phoenix 45 ° oktagonalna płytka z otworem do frezowania czołowego	Ø50 Ø200	Face Milling	E.25
Finkörnings vändskärs fullradie fräs, 2 skär Чистовая сферическая фреза, 2-зубая	Finiş küre uçlu kesici, 2 ağızlı 2-ostrzowy frez kulowy, obróbka wykańczająca	Ø8 Ø30	Profile Milling	E.26
90° vändskärsfräs, 4 hörn, rakt skaft Торцевая фреза 90°, 4-угловых, цилиндрический хвостовик	90° omuz frezesi, 4 köşe, düz şaftlı 90° Frez walcowo-czołowy, 4-corner, chwyt walcowy	Ø25 Ø40	Side Milling Side Milling Face Milling Slotting	E.29
90° vändskärsfräs, 4 hörn, skruvfäste Торцевая фреза 90°, 4-угловых, насадная	90° omuz frezesi, 4 köşe, delikli tip 90° Frez walcowo-czołowy, 4-corner, nasadzany walcowy	Ø50 Ø80	Profile Milling	E.29
90° vändskärsfräs, Igelkott typ Торцевая фреза 90°	90° omuz frezesi, kirpi 90° Frez walcowo-czołowy, jezowy	Ø25 Ø50	Side Milling Side Milling Face Milling Slotting	E.33
90° vändskärsfräs, Igelkott typ Торцевая фреза 90°	90° omuz frezesi, kirpi 90° Frez walcowo-czołowy, jezowy	Ø50 Ø80	Side Milling Side Milling Face Milling Slotting	E.33
90° vändskärsfräs, Weldon skaft Торцевая фреза 90°, хвостовик Weldon	90° omuz frezesi, Weldon şaft 90° Frez walcowo-czołowy, chwyt Weldon walcowy	Ø16 Ø63	Side Milling Side Milling Face Milling Contouring Slotting	E.35
90° vändskärsfräs huvud med gänginfästning Торцевая фреза 90°, резьбовая головка	90° omuz frezesi, vidalı tip 90° Frez walcowo-czołowy, chwyt wkręcany walcowy	Ø16 Ø40	Side Milling Side Milling Face Milling Contouring Slotting	E.36
90° vändskärsfräs huvud med skruvfäste Торцевая фреза 90°, насадная	90° omuz frezesi, delikli tip 90° Frez walcowo-czołowy, nasadzany walcowy	Ø40 Ø125	Side Milling Side Milling Face Milling Contouring Slotting	E.37

TYPE	SPECIFICATION		
MILLING			
PRC-SS 	Radius cutter, straight shank	Rundplattenfräser , Zylinderschaft	Radius fræser, cylindrisk skaft
	Fresa con inserto tondo, gambo cilindrico	Fraise à plaquettes rondes, queue cylindrique	Fresa tórica, mango cilíndrico.
PRC Screw Fit 	Radius cutter, screw fit type	Rundplattenfräser , Aufschraubkopf	Radius fræser, Indskrunings type
	Fresa con inserto tondo, sistema modulare	Fraise à plaquettes rondes, tête vissée	Fresa tórica, Cabeza roscada
PRC BORE 	Radius cutter, bore type	Rundplattenfräser, Aufnahmebohrung	Radius fræser, til dorn
	Fresa con inserto tondo, a manicotto	Fraise à plaquettes rondes, trou lisse	Fresa tórica, hueca
PHC-SS 	High feed radius cutter, straight shank	Hochvorschubsfräser , Zylinderschaft	High feed radius fræser, cylindrisk skaft
	Fresa alto avanzamento, gambo cilindrico	Fraise grandes avances, queue cylindrique	Fresa de gran avance, mango cilíndrico
PHC Screw Fit 	High feed radius cutter, screw fit type	Hochvorschubsfräser , Aufschraubkopf	High feed radius fræser, Indskrunings type
	Fresa alto avanzamento, sistema modulare	Fraise grandes avances, tête vissée	Fresa de gran avance, Cabeza roscada
PHC BORE 	High feed radius cutter, bore type	Hochvorschubsfräser , Aufnahmebohrung	High feed radius fræser, til dorn
	Fresa alto avanzamento, a manicotto	Fraise grandes avances, trou lisse	Fresa de gran avance, hueca
PDR-SS/ MT/NC 	Deep feed radius cutter, shank type	Torusfräser für maximale Zustellungen, Zylinderschaft	Deep feed radiusfræser, cylindrisk skaft
	Fresa ad alta asportazione, stelo	Fraise torique, grande avance, queue cylindrique	Fresa de gran avance con radio, con mango
PDR BORE 	Deep feed radius cutter, bore type	Torusfräser für maximale Zustellungen, Aufnahmebohrung	Deep feed radiusfræser, til dorn
	Fresa ad alta asportazione, a manicotto	Fraise torique grande avance, trou lisse	Fresa de gran avance con radio, hueca

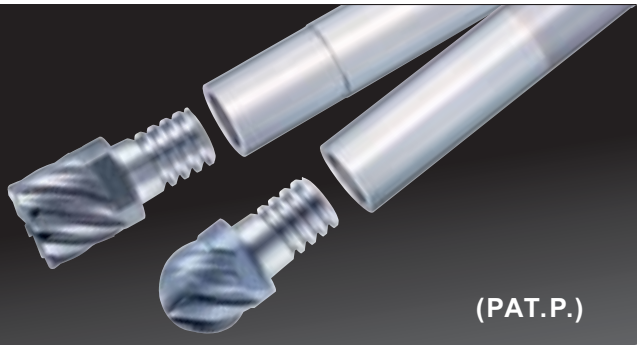
	DIAMETER RANGE	APPLICATION	PAGE
	Ø 8 Ø 60 Ø 125 Ø 200	MILLING	
Vändskärsfräs med runda skär, rakt skaft Торовая фреза, цилиндрический хвостовик	Radyus freze, düz şaftlı Frez na płytki okrągłe, chwyt walcowy	Ø20 Ø63	Side Milling, Face Milling, Contouring, Slotting, Profile Milling	E.39
Vändskärsfräs med runda skär huvud med gänginfästning Торовая фреза, резьбовая головка	Radyus freze, vidalı tip Frez na płytki okrągłe, chwyt walcowy	Ø20 Ø40	Side Milling, Face Milling, Contouring, Slotting, Profile Milling	E.40
Vändskärsfräs med runda skär med skruvfäste Торовая фреза, насадная	Radyus freze, delikli tip Frez na płytki okrągłe, chwyt wkręcany	Ø50 Ø100	Side Milling, Face Milling, Contouring, Slotting, Profile Milling	E.41
Högmatningsfräs, rakt skaft Фреза с высокой подачей, цилиндрический хвостовик	Yüksek ilerlemeli freze, düz şaftlı Frez do wysokich posuwów, chwyt walcowy	Ø25 Ø63	Side Milling, Face Milling, Contouring, Slotting, Profile Milling, Plunging	E.43
Högmatningsfräs med gänginfästning Фреза с высокой подачей, резьбовая головка	Yüksek ilerlemeli freze, vidalı tip Frez do wysokich posuwów, chwyt wkręcany	Ø25 Ø40	Side Milling, Face Milling, Contouring, Slotting, Profile Milling, Plunging	E.44
Högmatningsfräs med skruvfäste Фреза с высокой подачей, насадная	Yüksek ilerlemeli freze, delikli tip Frez do wysokich posuwów, nasadzany	Ø40 Ø100	Side Milling, Face Milling, Contouring, Slotting, Profile Milling, Plunging	E.45
Avverknings och hörnradie vändskärsfräs med skaft Фреза с высокой подачей и увеличенной глубиной резания, цилиндрический стовик	Derin ilerlemeli freze, şaft tip Frez do głębokich wybrań, różne chwyty	Ø40 Ø50	Side Milling, Face Milling, Contouring, Slotting, Profile Milling	E.47
Avverknings och hörnradie vändskärs-fräshuvud med skruvfäste Фреза с высокой подачей и увеличенной глубиной резания, насадная	Derin ilerlemeli freze, şaft tip, delikli tip Frez do głębokich wybrań, nasadzany	Ø63 Ø105	Side Milling, Face Milling, Contouring, Slotting, Profile Milling	E.48

ICONS										
Face milling - Planfräsen - Spianatura - Surfaçage - Planfræsning - Planfräsning - Fresado plano - Фрезерование плоскостей - Yüzey frezeleme - Frezowanie czołowe										
Face Milling	Face milling	Planfräsen	Spianatura	Surfaçage	Planfræsning	Planfräsning	Fresado plano	Фрезерование плоскостей	Yüzey frezeleme	Frezowanie czołowe
Side milling - Konturfräsen - Fresatura laterale - Fraisage contournage - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование - Kenar frezeleme - Frezowanie boczne										
Side Milling	Side milling	Konturfräsen	Fresatura laterale	Fraisage contournage	Sidefræsning	Valsfräsning	Contorneado	Боковое фрезерование	Kenar frezeleme	Frezowanie boczne
Side Milling	Side milling	Konturfräsen	Fresatura laterale	Fraisage contournage	Sidefræsning	Valsfräsning	Contorneado	Боковое фрезерование	Kenar frezeleme	Frezowanie boczne
Side Milling	Side milling	Konturfräsen	Fresatura laterale	Fraisage contournage	Sidefræsning	Valsfräsning	Contorneado	Боковое фрезерование	Kenar frezeleme	Frezowanie boczne
Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Skæredata - Skärdata - Ranurado - Фрезерование пазов - Slot kesme -										
Slotting	Slotting	Nutenfräsen	Per scanalature profonde	Rainurage	Skæredata	Skärdata	Ranurado	Фрезерование пазов	Slot kesme	Frezowanie rowków
Slotting	Slotting	Nutenfräsen	Per scanalature profonde	Rainurage	Skæredata	Skärdata	Ranurado	Фрезерование пазов	Slot kesme	Frezowanie rowków
Slotting	Slotting	Nutenfräsen	Per scanalature profonde	Rainurage	Skæredata	Skärdata	Ranurado	Фрезерование пазов	Slot kesme	Frezowanie rowków
Contouring - Konturfräsen - Contornatura - Contournage - Konturfræsning - Konturfräsning - Contorneado -										
Contouring	Contouring	Konturfräsen	Contornatura	Contournage	Konturfræsning	Konturfräsning	Contorneado	фрезерования	Kontür dönme	Frezowanie konturowe
Profile milling - Profilfräsen - Profilatura - Usinage de forme - Profil fræsning - Profilfräsning - Copiado de figura - Профильное фрезерование - - Frezowanie profilowe										
Profile Milling	Profile milling	Profilfräsen	Profilatura	Usinage de forme	Profil fræsning	Profilfräsning	Copiado de figura	Профильное фрезерование	Profil frezeleme	Frezowanie profilowe
Profile Milling	Profile milling	Profilfräsen	Profilatura	Usinage de forme	Profil fræsning	Profilfräsning	Copiado de figura	Профильное фрезерование	Profil frezeleme	Frezowanie profilowe
Boring & Plunging - Bohren & Tauchfräsen - Foratura & Fresatura in spinta - Perçage et Plongée - Boring & Plunging - Borrning & Plunging - Taladrado & Penetraci - Сверление -										
Boring	Boring	Bohren	Foratura	Perçage	Boring	Borrning	Taladrado	Сверление	Delme	Wiercenie
Plunging	Plunging	Tauchfräsen	Fresatura in spinta	plongée	Plunging	Plunging	Penetración axial	Плунжерное фрезерование	Dalma	Frezowanie wgłębne – plunging
Plunging	Plunging	Tauchfräsen	Fresatura in spinta	plongée	Plunging	Plunging	Penetración axial	Плунжерное фрезерование	Dalma	Frezowanie wgłębne – plunging


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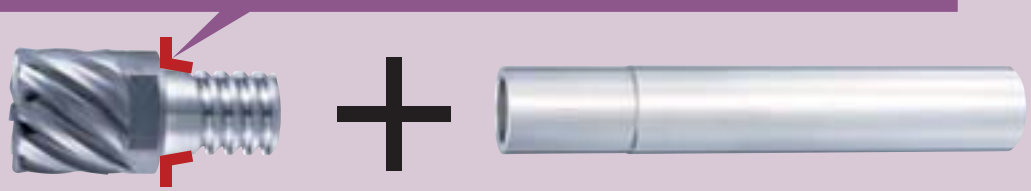
Phoenix Exchangeable Milling

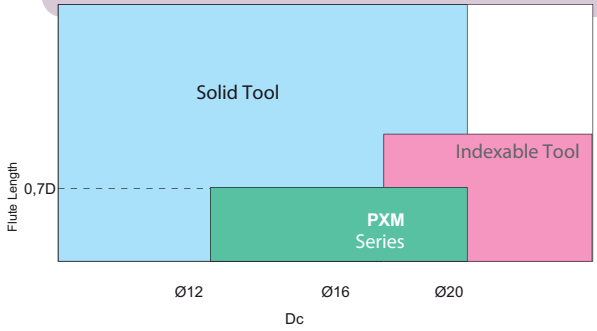


- Held at two surfaces to ensure runout precision and strength.
- Provided with buttress screws to facilitate coupling.
- Shortened tool replacement time. (Replaceable on machine)
- Numerous variations are possible by combining different heads and bodies.
- The lineup of cutter forms, which is backed by OSG's experience with carbide solid end mills, supports various types of milling.

Held at two surfaces, the end face and the taper, to ensure a high level of rigidity and precision.

Precision = Runout under 0,015 mm
Axial direction ±0,03 mm





Compared to solid tools	The large diameter offers cost advantages. To reduce the tool changing time, only the cutter tip needs to be replaced.
Compared to indexable tools	It provides flute quantity advantages to improve productivity, as well as a selection of cutter tips. It offers additional advantages in terms of initial costs and running costs.

	NEW PXNL	Unequal Spacing Variable helix Roughing Type-Low helix Type	Suitable for rough milling with a long tool life	Page. E.9
	NEW PXNH	Unequal Spacing Variable helix Roughing Type-High helix Type	Suitable for rough milling in a wide range of cutting conditions	Page. E.9
	NEW PXSE	Unequal Spacing Four flutes Square Type-Corner Radius Type	As a general-purpose tool, it can be used for heavy cutting from slotting to side milling	Page. E.10
	NEW PXSM	Unequal Spacing Multiple flutes Square Type-Corner Radius Type	As a general-purpose tool, it can bring the advantages of multiple cutters into full play.	Page. E.11
	NEW PXRE	High Feed Corner Radius Type	It can mill high hardness materials.	Page. E.11
	NEW PXBE	Three flutes Ball nose Type	It can perform highly efficient roughing.	Page. E.12
	NEW PXBM	Multiple flutes Ball nose Type	It can be used for intermediate-finish and finish milling.	Page. E.12

PXNL

PHOENIX
- High performance
- Unequal spacing
- Variable helix
- Roughing type
- Low helix

PHOENIX
- High performance
- Ungleicher Drall
- Ungleich gedrallte Spiralwinkel
- Schruppfräser
- Kleiner Spiralwinkel

PHOENIX
- Alta prestazione
- Passo variabile
- Elica variabile
- Sgrossatura
- Elica a bassa torsione

PHOENIX
- Haute performance
- Espacement inégal
- Hélice variable
- Ebauche
- Hélice réduite

PHOENIX
- Yüksek performans
- Dengesiz aralık
- Değişken spiral kanallar
- Kaba
- Düşük helis

PHOENIX
- High performance
- Ulige inddeling
- Variabel snoning
- Skrubfræsning
- Let snoet spiral

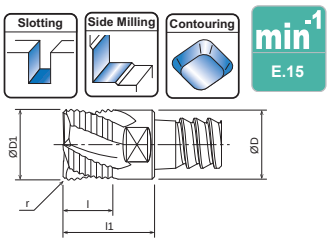
PHOENIX
- High performance
- Differentierade skär
- Variabel helix
- Skrubbfräsning
- Liten helix

PHOENIX
- Altas prestaciones
- Passo constante
- Variable helice
- Desbaste
- Lenta helice

PHOENIX
- Высокая производительность
- неравномерно расположенный
- Черновая обработка
- Черновая типа
- Температура спирали

PHOENIX
- Wysoka wydajność
- Nierównomierny rozstaw
- zmienny kąt spirali
- Zgrubna
- Mała spirala

GO TO LIVE STOCK CHECK





EDP	Designation	D1	r	ZΔ	l	l1	D	Helix Angle	Grades	Stock	Price
7830401	PXNL120C12-04C005	12	0,5	4	8,4	14,4	11,7	19/21	XP3225	●	
7830402	PXNL160C16-04C006	16	0,6	4	11,2	18,7	15,7	19/21	XP3225	●	
7830403	PXNL200C20-04C006	20	0,6	4	14	21,5	19,6	19/21	XP3225	●	
7830404	PXNL250C25-04C006	25	0,6	4	17,5	27,5	24	19/21	XP3225	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PXNH

PHOENIX
- High performance
- Unequal spacing
- Variable helix
- Roughing type
- High helix

PHOENIX
- High performance
- Ungleicher Drall
- Ungleich gedrallte Spiralwinkel
- Schruppfräser
- Großer Spiralwinkel

PHOENIX
- Alta prestazione
- Passo variabile
- Elica variabile
- Sgrossatura
- Elica elevata torsione

PHOENIX
- Haute performance
- Espacement inégal
- Hélice variable
- Ebauche
- Hélice haute

PHOENIX
- Yüksek performans
- Dengesiz aralık
- Değişken spiral kanallar
- Kaba
- Yüksek helis açısı

PHOENIX
- High performance
- Ulige inddeling
- Variabel snoning
- Skrubfræsning
- Høj helix

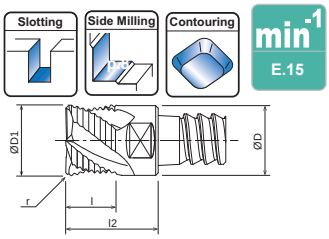
PHOENIX
- High performance
- Differentierade skär
- Variabel helix
- Skrubbfräsning
- Skärlängd

PHOENIX
- Altas prestaciones
- Passo constante
- Variable helice
- Desbaste
- Alta helice

PHOENIX
- Высокая производительность
- неравномерно расположенный
- Черновая обработка
- Черновая типа
- Пологая спираль

PHOENIX
- Wysoka wydajność
- Nierównomierny rozstaw
- zmienny kąt spirali
- Zgrubna
- Duża spirala

GO TO LIVE STOCK CHECK





EDP	Designation	D1	r	ZΔ	l	l1	D	Helix Angle	Grades	Stock	Price
7830451	PXNH120C12-04C005	12	0,5	4	8,4	14,4	11,7	40/42	XP3225	●	
7830452	PXNH160C16-04C006	16	0,6	4	11,2	18,7	15,7	40/42	XP3225	●	
7830453	PXNH200C20-04C006	20	0,6	4	14	21,5	19,6	40/42	XP3225	●	
7830454	PXNH250C25-04C006	25	0,6	4	17,5	47,5	27,5	40/42	XP3225	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PHOENIX
- High performance
- Unequal spacing
- 4 flutes
- Corner radius type
- Square Type

PHOENIX
- High performance
- Ungleicher Drall
- 4 Schneiden
- Eckradiusfräser
- Schaftfräser

PHOENIX
- Alta prestazione
- Passo variabile
- 4 denti
- Tipo torico
- Tipo piano

PHOENIX
- Haute performance
- Espacement inégal
- 4 lèvres
- Fraise à rayon
- Type carré

PHOENIX
- Yüksek performans
- Dengesiz aralık
- 4 ağızlı
- Köşe radyuslu tipi
- Kare tip

PHOENIX
- High performance
- Ulige inddeling
- 4 Skær
- Hjørneradius
- Skarp type

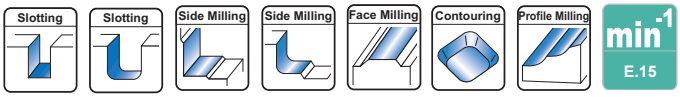
PHOENIX
- High performance
- Differentierade skär
- 4 Skär
- Hörnradie
- Skarp typ

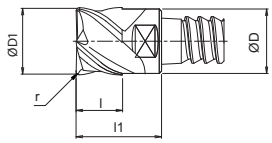
PHOENIX
- Altas prestaciones
- Passo constante
- 4 Labio
- Con radio en el vérice
- Escuadrado

PHOENIX
- Высокая производительность
- неравномерно расположенный
- 4 режущих кромки
- Концевые фрезы с радиусом
- В форме квадрата

PHOENIX
- Wysoka wydajność
- Nierównomierny rozstaw
- 4-ostrzowy
- Z promieniem naroża
- Walcowy

GO TO LIVE STOCK CHECK







EDP	Designation	D1	r	ZΔ	l	l1	D	Helix Angle	Grades	Stock	Price
7830004	PXSE120C12-04R000	12	0	4	8,4	14,4	11,7	38	XP3225	●	
7830005	PXSE120C12-04R005	12	0,5	4	8,4	14,4	11,7	38	XP3225	●	
7830006	PXSE120C12-04R010	12	1	4	8,4	14,4	11,7	38	XP3225	●	
7830007	PXSE120C12-04R020	12	2	4	8,4	14,4	11,7	38	XP3225	●	
7830008	PXSE120C12-04R030	12	3	4	8,4	14,4	11,7	38	XP3225	●	
7830009	PXSE160C16-04R000	16	0	4	11,2	18,7	15,7	38	XP3225	●	
7830010	PXSE160C16-04R005	16	0,5	4	11,2	18,7	15,7	38	XP3225	●	
7830011	PXSE160C16-04R010	16	1	4	11,2	18,7	15,7	38	XP3225	●	
7830012	PXSE160C16-04R015	16	1,5	4	11,2	18,7	15,7	38	XP3225	●	
7830013	PXSE160C16-04R020	16	2	4	11,2	18,7	15,7	38	XP3225	●	
7830014	PXSE160C16-04R030	16	3	4	11,2	18,7	15,7	38	XP3225	●	
7830015	PXSE200C20-04R000	20	0	4	14	21,5	19,6	38	XP3225	●	
7830016	PXSE200C20-04R005	20	0,5	4	14	21,5	19,6	38	XP3225	●	
7830017	PXSE200C20-04R010	20	1	4	14	21,5	19,6	38	XP3225	●	
7830018	PXSE200C20-04R020	20	2	4	14	21,5	19,6	38	XP3225	●	
7830019	PXSE200C20-04R030	20	3	4	14	21,5	19,6	38	XP3225	●	
7830020	PXSE250C25-04R000	25	0	4	17,5	27,5	24	38	XP3225	●	
7830021	PXSE250C25-04R010	25	1	4	17,5	27,5	24	38	XP3225	●	
7830022	PXSE250C25-04R020	25	2	4	17,5	27,5	24	38	XP3225	●	
7830023	PXSE250C25-04R030	25	3	4	17,5	27,5	24	38	XP3225	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

● on stock
○ available on short notice

PXSM

PHOENIX
- High performance
- Unequal spacing
- Multi flutes
- Corner radius type
- Square Type

PHOENIX
- High performance
- Ungleicher Drall
- Vielzahnfräser
- Eckradiusfräser
- Schaftfräser

PHOENIX
- Alta prestazione
- Passo variabile
- Multidenti
- Tipo torico
- Tipo piano

PHOENIX
- Haute performance
- Espacement inégal
- Lèvres multiples
- Fraise à rayon
- Type carré

PHOENIX
- Yüksek performans
- Dengesiz aralık
- çok ağızlı
- Köşe radyuslu tipi
- Kare tip

PHOENIX
- High performance
- Ulige inddeling
- Flerskærs
- Hjørneradius
- Skarp type

PHOENIX
- High performance
- Differentierade skär
- Flerskärs
- Hörnradie
- Skarp typ

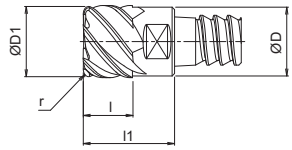
PHOENIX
- Altas prestaciones
- Passo constante
- Ranúras múltiples
- Con radio en el vérice
- Escuadrado

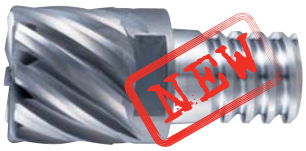
PHOENIX
- Высокая производительность
- неравномерно расположенный
- Многозубые
- Концевые фрезы с радиусом
- В форме квадрата

PHOENIX
- Wysoka wydajność
- Nierównomierny rozstaw
- Wieloostrzowy
- Z promieniem naroża
- Walcowy

GO TO LIVE STOCK CHECK

Side Milling | Side Milling | Profile Milling | min^{-1} E.16





EDP	Designation	D1	r	ZΔ	l	l1	D	Helix Angle	Grades	Stock	Price
7830104	PXSM120C12-06R000	12	0	6	8,4	14,4	11,7	38	XP3225	●	
7830105	PXSM120C12-06R005	12	0,5	6	8,4	14,4	11,7	38	XP3225	●	
7830106	PXSM120C12-06R010	12	1	6	8,4	14,4	11,7	38	XP3225	●	
7830107	PXSM120C12-06R020	12	2	6	8,4	14,4	11,7	38	XP3225	●	
7830108	PXSM120C12-06R030	12	3	6	8,4	14,4	11,7	38	XP3225	●	
7830109	PXSM160C16-06R000	16	0	6	11,2	18,7	15,7	38	XP3225	●	
7830110	PXSM160C16-06R005	16	0,5	6	11,2	18,7	15,7	38	XP3225	●	
7830111	PXSM160C16-06R010	16	1	6	11,2	18,7	15,7	38	XP3225	●	
7830112	PXSM160C16-06R015	16	1,5	6	11,2	18,7	15,7	38	XP3225	●	
7830113	PXSM160C16-06R020	16	2	6	11,2	18,7	15,7	38	XP3225	●	
7830114	PXSM160C16-06R030	16	3	6	11,2	18,7	15,7	38	XP3225	●	
7830115	PXSM160C16-08R000	16	0	8	11,2	18,7	15,7	42	XP3225	●	
7830116	PXSM160C16-08R005	16	0,5	8	11,2	18,7	15,7	42	XP3225	●	
7830117	PXSM160C16-08R010	16	1	8	11,2	18,7	15,7	42	XP3225	●	
7830118	PXSM160C16-08R015	16	1,5	8	11,2	18,7	15,7	42	XP3225	●	
7830119	PXSM160C16-08R020	16	2	8	11,2	18,7	15,7	42	XP3225	●	
7830120	PXSM160C16-08R030	16	3	8	11,2	18,7	15,7	42	XP3225	●	
7830121	PXSM200C20-10R000	20	0	10	14	21,5	19,6	42	XP3225	●	
7830122	PXSM200C20-10R005	20	0,5	10	14	21,5	19,6	42	XP3225	●	
7830123	PXSM200C20-10R010	20	1	10	14	21,5	19,6	42	XP3225	●	
7830124	PXSM200C20-10R020	20	2	10	14	21,5	19,6	42	XP3225	●	
7830125	PXSM200C20-10R030	20	3	10	14	21,5	19,6	42	XP3225	●	
7830126	PXSM250C25-10R000	25	0	10	17,5	27,5	24	42	XP3225	●	
7830127	PXSM250C25-10R010	25	1	10	17,5	27,5	24	42	XP3225	●	
7830128	PXSM250C25-10R020	25	2	10	17,5	27,5	24	42	XP3225	●	
7830129	PXSM250C25-10R030	25	3	10	17,5	27,5	24	42	XP3225	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PXRE

PHOENIX
- High performance
- Straight flute
- High feed corner radius type

PHOENIX
- High performance
- Ohne Drall
- Hochvorschubsfräser

PHOENIX
- Alta prestazione
- Taglio diritto
- Tipo torico alto avanzamento

PHOENIX
- Haute performance
- Lèvre droite
- Fraise grandes avances

PHOENIX
- Yüksek performans
- Düz ağızlı
- Yüksek ilerlemeli freze

PHOENIX
- High performance
- Lige skærs
- High feed fræser med hjørneradius

PHOENIX
- High performance
- Rakt skär
- High feed fräs med hörnradie

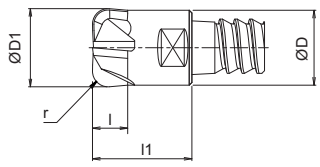
PHOENIX
- Altas prestaciones
- Ranura recta
- Radio en el vértice para alta velocidad

PHOENIX
- Высокая производительность
- прямая канавка
- Фрезы с высокой подачей и радиусом на кромке

PHOENIX
- Wysoka wydajność
- Rowki proste
- Frez do wysokich posuwów

GO TO LIVE STOCK CHECK

Profile Milling | Face Milling | Contouring | min^{-1} E.16





EDP	Designation	D1	r	ZΔ	l	l1	D	Helix Angle	Grades	Stock	Price
7830201	PXRE120C12-04R020	12	2	4	5	14,4	11,7	-	XP6305	●	
7830202	PXRE160C16-06R030	16	3	6	7	18,7	15,7	-	XP6305	●	
7830203	PXRE200C20-06R030	20	3	6	10	21,5	19,6	-	XP6305	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PXBE

PHOENIX
- High performance
- Three flutes
- Ball type

PHOENIX
- High performance
- 3 Schneiden
- Kopierfräser

PHOENIX
- Alta prestazione
- 3 Denti
- Frese sferiche

PHOENIX
- Haute performance
- 3 Lèvres
- Boule

PHOENIX
- Yüksek performans
- 3 ağızlı
- Küre tip

PHOENIX
- High performance
- 3 Skær
- Radiusfræser

PHOENIX
- High performance
- 3 Skär
- Fullradie

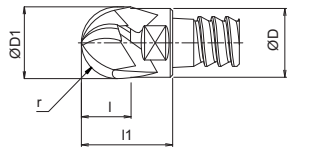
PHOENIX
- Altas prestaciones
- 3 Labio
- Esferica

PHOENIX
- Высокая производительность
- 3 режущих кромки
- Сферическая фреза

PHOENIX
- Wysoka wydajność
- 3-ostrzowy
- Typ kulowy

GO TO LIVE STOCK CHECK

Contouring | Profile Milling | Slotting | min^{-1} E.16





EDP	Designation	D1	r	ZΔ	l	l1	D	Helix Angle	Grades	Stock	Price
7830251	PXBE120C12-03R060	12	6	3	8,4	14,4	11,7	45	XP3320	●	
7830252	PXBE160C16-03R080	16	8	3	11,2	18,7	15,7	45	XP3320	●	
7830253	PXBE200C20-03R100	20	10	3	14	21,5	19,6	45	XP3320	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PXBM

PHOENIX
- High performance
- Multiple flutes
- Ball type

PHOENIX
- High performance
- Mehrschneidig
- Kopierfräser

PHOENIX
- Alta prestazione
- Multitaglio
- Frese sferiche

PHOENIX
- Haute performance
- Multidents
- Boule

PHOENIX
- Yüksek performans
- Çok ağızlı
- Küre tip

PHOENIX
- High performance
- Flerskærs
- Radiusfræser

PHOENIX
- High performance
- Flerskärig
- Fullradie

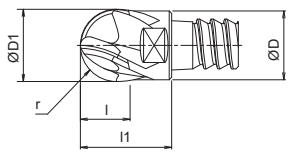
PHOENIX
- Altas prestaciones
- Ranúras múltiples
- Esferica

PHOENIX
- Высокая производительность
- Многозубые
- Сферическая фреза

PHOENIX
- Wysoka wydajność
- Wieloostrzowy
- Typ kulowy

GO TO LIVE STOCK CHECK

Profile Milling | min^{-1} E.16





EDP	Designation	D1	r	ZΔ	l	l1	D	Helix Angle	Grades	Stock	Price
7830301	PXBM120C12-04R060	12	6	4	8,4	14,4	11,7	45	XP3320	●	
7830302	PXBM160C16-06R080	16	8	6	11,2	18,7	15,7	45	XP3320	●	
7830303	PXBM200C20-06R100	20	10	6	14	21,5	19,6	45	XP3320	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

● on stock
○ available on short notice

PHOENIX
- High performance
- Arbor for Replaceable head end mills
- Steel Shank

PHOENIX
- High performance
- Für Aufschraubfräser

PHOENIX
- Alta prestazione
- Stelo intercambiabile per Frese
- Gambo in acciaio

PHOENIX
- Haute performance
- Barre de remplacement pour fraise
- Tige en acier

PHOENIX
- Yüksek performans
- Değiştirilebilir başlıklı/uçlu parmak freze için takım tutucu
- Çelik şaft

PHOENIX
- High performance
- Skaft til udskiftelige
- Fræsetyper Stål skaft

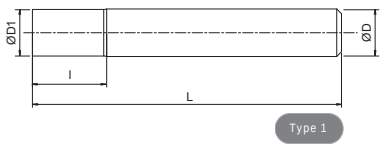
PHOENIX
- High performance
- Skaft till utbytbara
- Frästyper Stål skaft

PHOENIX
- Altas prestaciones
- Fijación para cabeza
- Intercambiable Mango de acero

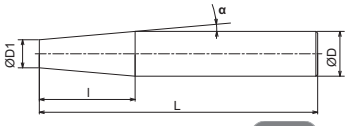
PHOENIX
- Высокая производительность
- Оправка для сменных головок концевой фрезы
- Стальной хвостовик

PHOENIX
- Wysoka wydajność
- Uchwyt do wymiany głowic i frezów
- Trzpień stalowy

GO TO LIVE STOCK CHECK



Type 1



Type 2



Type 1
Type 2

Arbor with *Steel Shank*

EDP	Designation	Proper Head ø	D1	D	α°	L	l	Type	Stock	Price
7801801	PXMZ-C12SS12-S100	12	11,7	12	0°	100	19	1	●	
7801821	PXMZ-C12TP20-S145	12	11,7	20	5°	145	47,4	2	●	
7801802	PXMZ-C16SS16-S100	16	15,7	16	0°	100	23,4	1	●	
7801822	PXMZ-C16TP25-S155	16	15,7	25	5°	155	53,1	2	●	
7801803	PXMZ-C20SS20-S120	20	19,6	20	0°	120	28,8	1	●	
7801823	PXMZ-C20TP32-S170	20	19,6	32	5°	170	70,8	2	●	
7801804	PXMZ-C25SS25-S140	25	24	25	0°	140	36	1	●	

PHOENIX
- High performance
- Arbor for Replaceable head end mills
- Carbide Shank

PHOENIX
- High performance
- Für Aufschraubfräser
- Vollhartmetall Schaft

PHOENIX
- Alta prestazione
- Stelo intercambiabile per Frese
- Gambo in Metallo Duro

PHOENIX
- Haute performance
- Barre de remplacement pour fraise
- Queue en carbure

PHOENIX
- Yüksek performans
- Değiştirilebilir başlıklı/uçlu parmak freze için takım tutucu
- Karbür şaft

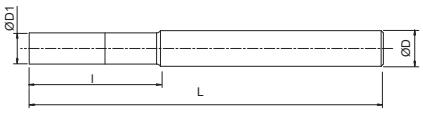
PHOENIX
- High performance
- Skaft til udskiftelige
- Hårdmetal skaft

PHOENIX
- High performance
- Skaft till utbytbara
- Hårdmetall skaft

PHOENIX
- Altas prestaciones
- Fijación para cabeza
- Mango de metal duro

PHOENIX
- Высокая производительность
- Оправка для сменных головок концевой фрезы
- хвостовик из твердого сплава

PHOENIX
- Wysoka wydajność
- Uchwyt do wymiany głowic i frezów
- Chwyt węglik



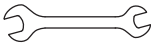
Type 1


Type 1

Arbor with *Carbide shank*

EDP	Designation	Proper Head ø	D1	D	α°	L	l	Type	Stock	Price
7801831	PXMZ-C12SS12-S075CS	12	11,7	12	0°	75	25	1	●	
7801811	PXMZ-C12SS12-L100CS	12	11,7	12	0°	100	46,3	1	●	
7801832	PXMZ-C12SS12-L115CS	12	11,7	12	0°	115	65	1	●	
7801841	PXMZ-C12TP16-LL135CS	12	11,7	16	1,5°	135	85	2	●	
7801833	PXMZ-C16SS16-S090CS	16	15,7	16	0°	90	40	1	●	
7801812	PXMZ-C16SS16-L130CS	16	15,7	16	0°	130	62	1	●	
7801834	PXMZ-C16SS16-L135CS	16	15,7	16	0°	135	85	1	●	
7801842	PXMZ-C16TP20-LL165CS	16	15,7	20	1,5°	165	115	2	●	
7801835	PXMZ-C20SS20-S090CS	20	19,6	20	0°	90	40	1	●	
7801813	PXMZ-C20SS20-L150CS	20	19,6	20	0°	150	79,3	1	●	
7801836	PXMZ-C20SS20-L180CS	20	19,6	20	0°	180	110	1	●	
7801843	PXMZ-C20SS20-L200CS	20	19,6	25	1,5°	200	140	2	●	
7801814	PXMZ-C20SS25-L200CS	25	24	25	0°	200	98	1	●	

Accessories


Spanner

EDP	Designation	Proper head diameter	Recommended tightening torque	Stock	Price
7801890	PXMP8-10	ø 12	12 Nm	●	
7801891	PXMP13-16	ø 16	30 Nm	●	
		ø 20	50 Nm		
A spanner dedicated for PXM. Please purchase the spanner separately from the cutter.					

1.Please refer to Page11 for cautions during use.
2.Refer to the table above for tightening torque.

PHOENIX
■ Joint

PHOENIX
■ Take Adapter

PHOENIX
■ Adattatore

PHOENIX
■ Joint

PHOENIX
■ Ortaklik

PHOENIX
■ Adapter

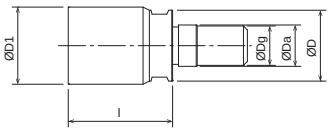
PHOENIX
■ Adapter

PHOENIX
■ Junta

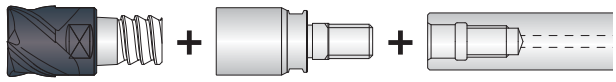
PHOENIX
■ Адаптер

PHOENIX
■ Adapter

GO TO LIVE STOCK CHECK







PXM SERIE PXMJ OP-SFA

By combining a joint holder (PXMJ) with the shank holder (OP-SFA) you have,it is possible to use the PXM serie

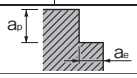
EDP	Designation	Proper head dia.	Dg	D	l	D1	Da	Grades	Stock	Price
7801893	PXMJ-C12SF06	12	6	11	18	11,7	6,5	PXMP8-10	●	
7801894	PXMJ-C16SF08	16	8	14,5	21,8	15,7	8,5	PXMP13-16	●	
7801895	PXMJ-C20SF10	20	10	18	26,5	19,6	10,5	PXMP13-16	●	
7801896	PXMJ-C25SF12	25	12	23	34	24	12,5	PXMP21	●	

Side milling - Konturfräsen - Conturnatura - Coutournage / Semi-fi nishing - Semi-finitura - Semi-finition - Semi-finition - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование / Sletfræsning - Finfräsning - Acabado - Получистовая - Frezowanie boczne

PXNL/PXNH



MILL DIA. (mm)	CAST IRON FC250 SPEED (min⁻¹)	CAST IRON FC250 FEED (mm/min)	CARBON STEEL SPEED (min⁻¹)	CARBON STEEL FEED (mm/min)	ALLOY STEEL SPEED (min⁻¹)	ALLOY STEEL FEED (mm/min)	HARDENED STEEL PREHARDENED STEEL SPEED (min⁻¹)	HARDENED STEEL PREHARDENED STEEL FEED (mm/min)	STAINLESS STEEL SUS304 SPEED (min⁻¹)	STAINLESS STEEL SUS304 FEED (mm/min)
12	2.390	600	3.180	700	2.650	440	2.390	290	2.120	230
16	1.790	620	2.390	720	1.990	450	1.790	300	1.590	240
20	1.430	660	1.910	760	1.590	480	1.430	310	1.270	250
25	1.150	580	1.530	670	1.270	420	1.150	280	1.020	220
DEPTH OF CUT		ap 0,5D	ae 0,3D				ap 0,5D	ae 0,2D		

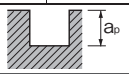


Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesme Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków

PXNL/PXNH



MILL DIA. (mm)	CAST IRON FC250 SPEED (min⁻¹)	CAST IRON FC250 FEED (mm/min)	CARBON STEEL SPEED (min⁻¹)	CARBON STEEL FEED (mm/min)	ALLOY STEEL SPEED (min⁻¹)	ALLOY STEEL FEED (mm/min)	HARDENED STEEL PREHARDENED STEEL SPEED (min⁻¹)	HARDENED STEEL PREHARDENED STEEL FEED (mm/min)	STAINLESS STEEL SUS304 SPEED (min⁻¹)	STAINLESS STEEL SUS304 FEED (mm/min)
12	1.860	300	2.650	370	2.120	220	1.860	140	1.590	110
16	1.390	320	1.990	400	1.590	240	1.390	150	1.190	120
20	1.110	360	1.590	450	1.270	270	1.110	170	950	130
25	890	330	1.270	410	1.020	240	890	160	760	120
DEPTH OF CUT	ap=0,5D									



Side milling - Konturfräsen - Conturnatura - Coutournage / Semi-fi nishing - Semi-finitura - Semi-finition - Semi-finition - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование / Sletfræsning - Finfräsning - Acabado - Получистовая - Frezowanie boczne

PXSE



MILL DIA. (mm)	MILD STEEL - CARBON STEEL CAST IRON SS400 - S55C - FC250 (~750N/mm²) SPEED (min⁻¹)	MILD STEEL - CARBON STEEL CAST IRON SS400 - S55C - FC250 (~750N/mm²) FEED (mm/min)	ALLOY STEEL TOOL STEEL SCM-SKT-SKS-SKD (~30HRC) SPEED (min⁻¹)	ALLOY STEEL TOOL STEEL SCM-SKT-SKS-SKD (~30HRC) FEED (mm/min)	STAINLESS STEEL HARDENED STEEL SUS304-SKD (~45HRC) SPEED (min⁻¹)	STAINLESS STEEL HARDENED STEEL SUS304-SKD (~45HRC) FEED (mm/min)	HARDENED STEEL TITANIUM ALLOY STEELS (45~55HRC) SPEED (min⁻¹)	HARDENED STEEL TITANIUM ALLOY STEELS (45~55HRC) FEED (mm/min)	HEAT STEEL INCONEL® SPEED (min⁻¹)	HEAT STEEL INCONEL® FEED (mm/min)
12	3.180	760	2.650	640	1.700	400	1.700	350	650	100
16	2.390	570	1.950	470	1.250	300	1.250	250	500	80
20	1.910	460	1.550	370	1.000	250	1.000	200	400	65
DEPTH OF CUT		ap 0,50Dc	ae 0,15Dc		ap 0,5Dc	ae 0,10Dc	ap 0,50Dc	ae 0,05Dc	ap 0,50Dc	ae 0,05Dc

Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesme Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków

PXSE

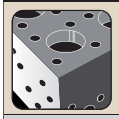


MILL DIA. (mm)	MILD STEEL - CARBON STEEL CAST IRON SS400 - S55C - FC250 (~750N/mm²) SPEED (min⁻¹)	MILD STEEL - CARBON STEEL CAST IRON SS400 - S55C - FC250 (~750N/mm²) FEED (mm/min)	ALLOY STEEL TOOL STEEL SCM-SKT-SKS-SKD (~30HRC) SPEED (min⁻¹)	ALLOY STEEL TOOL STEEL SCM-SKT-SKS-SKD (~30HRC) FEED (mm/min)	STAINLESS STEEL HARDENED STEEL SUS304-SKD (~45HRC) SPEED (min⁻¹)	STAINLESS STEEL HARDENED STEEL SUS304-SKD (~45HRC) FEED (mm/min)	HARDENED STEEL TITANIUM ALLOY STEEL (45~55HRC) SPEED (min⁻¹)	HARDENED STEEL TITANIUM ALLOY STEEL (45~55HRC) FEED (mm/min)	HEAT STEEL INCONEL® SPEED (min⁻¹)	HEAT STEEL INCONEL® FEED (mm/min)
12	2.500	500	1.550	300	1.300	250	1.300	250	650	100
16	1.850	350	1.150	250	1.000	200	1.000	200	500	80
20	1.500	300	950	200	750	160	750	160	400	65
DEPTH OF CUT	ap ≤ 0,35 Dc				ap ≤ 0,30 Dc		ap ≤ 0,20 Dc		ap ≤ 0,10 Dc	

BACK BACK BACK BACK

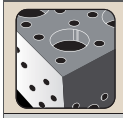
Side milling - Konturfräsen - Conturnatura - Coutournage / Semi-fi nishing - Semi-finitura - Semi-finition - Semi-finition - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование / Sletfræsning - Finfräsning - Acabado - Получистовая - Frezowanie boczne

PXSM



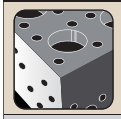
MILL DIA. (mm)	MILD STEEL - CARBON STEEL CAST IRON SS400 - S55C - FC250 (~750N/mm²) SPEED (min⁻¹)	FEED (mm/min)	ALLOY STEEL TOOL STEEL SCM-SKT-SKS-SKD (~30HRC) SPEED (min⁻¹)	FEED (mm/min)	STAINLESS STEEL HARDENED STEEL SUS304-SKD (~45HRC) SPEED (min⁻¹)	FEED (mm/min)	HARDENED STEEL TITANIUM ALLOY STEELS (45~55HRC) SPEED (min⁻¹)	FEED (mm/min)	HEAT STEEL INCONEL® SPEED (min⁻¹)	FEED (mm/min)
12	4.750	1.750	3.950	1.150	3.150	950	2.650	800	1.550	350
16-6F	3.550	1.310	2.950	860	2.350	710	1.950	600	1.150	260
16-8F	3.550	1.750	2.950	1.150	2.350	950	1.950	800	1.150	350
20	2.850	1.750	2.350	1.150	1.900	950	1.550	800	950	350
DEPTH OF CUT		ap ≤ 0,50Dc	ae ≤ 0,05Dc		ap ≤ 0,50Dc	ae ≤ 0,02Dc		ap ≤ 0,30Dc	ae ≤ 0,02Dc	

PXRE



MILL DIA. (mm)	MILD STEEL - CARBON STEEL CAST IRON SS400 - S55C - FC250 (~750N/mm²) SPEED (min⁻¹)	FEED (mm/min)	ALLOY STEEL TOOL STEEL SCM-SKT-SKS-SKD (~30HRC) SPEED (min⁻¹)	FEED (mm/min)	HARDENED STEEL PREHARDENED STEEL SKD-NAK80-HPM50 SPEED (min⁻¹)	FEED (mm/min)	HARDENED STEEL (45~55HRC) SPEED (min⁻¹)	FEED (mm/min)	HARDENED STEEL (55~60HRC) SPEED (min⁻¹)	FEED (mm/min)
12	5.800	10.600	4.000	6.500	3.200	4.900	2.700	3.300	2.300	2.200
16	4.000	11.900	3.000	7.700	2.400	5.900	2.000	3.900	1.700	2.700
20	3.200	9.550	2.400	6.500	1.900	4.900	1.600	3.300	1.400	2.200
DEPTH OF CUT				ap 0,10 x R (Corner R size)	ae 0,30Dc				ap 0,1 x R (Corner R size)	ae 0,30Dc

PXBE



MILL DIA. (mm)	MILD STEEL - CARBON STEEL CAST IRON SS400 - S55C - FC250 (~750N/mm²) SPEED (min⁻¹)	FEED (mm/min)	ALLOY STEEL TOOL STEEL SCM-SKT-SKS-SKD (~30HRC) SPEED (min⁻¹)	FEED (mm/min)	STAINLESS STEEL HARDENED STEEL SUS304-SKD (~45HRC) SPEED (min⁻¹)	FEED (mm/min)	HARDENED STEEL TITANIUM ALLOY STEEL (45~55HRC) SPEED (min⁻¹)	FEED (mm/min)	HARDENED STEEL (55~60HRC) SPEED (min⁻¹)	FEED (mm/min)
12	6.600	2.950	6.600	2.950	5.300	1.900	3.950	1.150	2.600	400
16	4.950	2.250	4.950	2.250	3.950	1.450	2.950	900	1.900	300
20	3.950	1.750	3.950	1.750	3.150	1.150	2.350	750	1.600	250
DEPTH OF CUT		Dc Ø 12: ap 0,07 Dc; Ø 16, Ø 20: ap 0,05 Dc — Pf 0,15 Dc — apMax=1 mm					Dc Ø 12: ap 0,05 Dc; Ø16,Ø20: ap 0,03 Dc — Pf 0,10 Dc — apMax=0,8 mm		ap 0,03 Dc — Pf 0,05 Dc — apMax=0,5 mm	

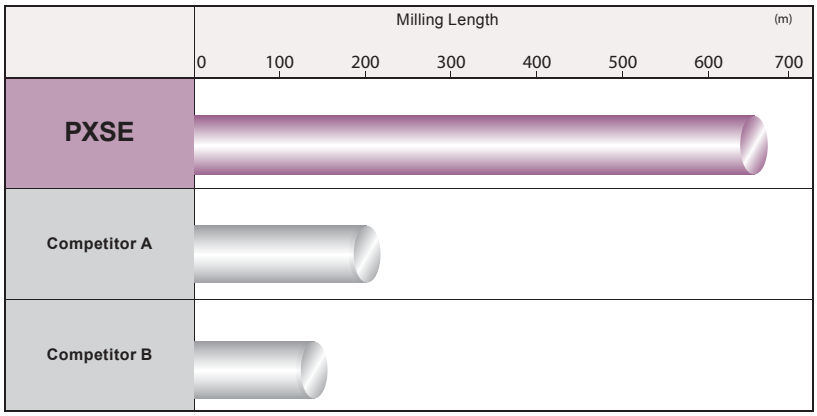
PXBM



MILL DIA. (mm)	MILD STEEL - CARBON STEEL CAST IRON SS400 - S55C - FC250 (~750N/mm²) SPEED (min⁻¹)	FEED (mm/min)	ALLOY STEEL TOOL STEEL SCM-SKT-SKS-SKD (~30HRC) SPEED (min⁻¹)	FEED (mm/min)	STAINLESS STEEL HARDENED STEEL SUS304-SKD (~45HRC) SPEED (min⁻¹)	FEED (mm/min)	HARDENED STEEL TITANIUM ALLOY STEEL (45~55HRC) SPEED (min⁻¹)	FEED (mm/min)	HARDENED STEEL (55~60HRC) SPEED (min⁻¹)	FEED (mm/min)
12	6.600	3.900	6.600	3.900	5.300	2.500	3.950	1.500	2.600	550
16	4.950	4.500	4.950	4.500	3.950	2.900	2.950	1.800	1.900	600
20	3.950	3.500	3.950	3.500	3.150	2.300	2.350	1.500	1.600	500
DEPTH OF CUT				ap 0,02 Dc — Pf 0,05 Dc						

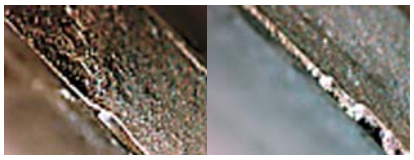
■ SCM440 - *Side milling in SCM440*

Tool	Head : PXSE120C12-04R000 Holder : PXMZ-C12SS12-S100
Size	Ø12
Work Material	SCM440 (180HB)
Cutting Speed	100m/min(2.650min^{-1})
Feed	1.060mm/min(0,1mm/t)
Milling Method	Side Milling
Depth of Cut	ap=5mm ae=3mm
Coolant	Air Blow
Machine	BT40 Vertical Machining Center

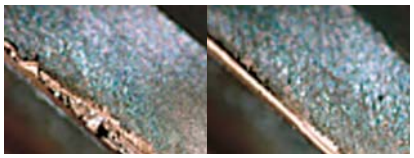


Durability that overwhelms the competitor's product. Heavy machining is possible.

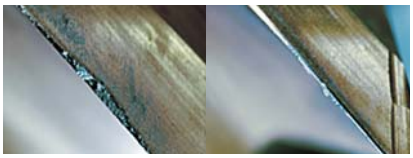
PXSE (619m)



Competitor A (178m)

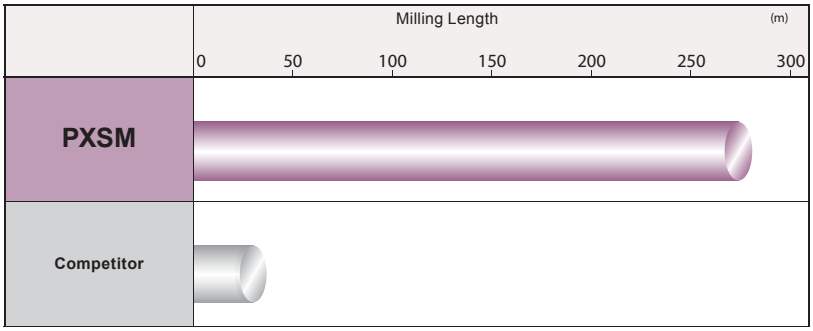


Competitor B (117m)



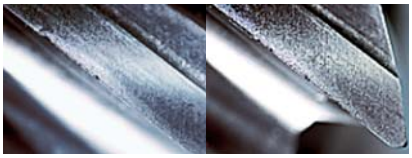
■ S50C - *Side milling in S50C*

Tool	Head : PXSM160C16-06R000 Holder : PXMZ-C16SS-S100
Size	Ø16
Work Material	S50C
Cutting Speed	100m/min(1,990min^{-1})
Feed	1,195mm/min(0.1mm/t)
Milling Method	Side Milling
Depth of Cut	ap=8mm ae=1.6mm
Coolant	Air Blow
Machine	BT40 Horizontal Machining Center

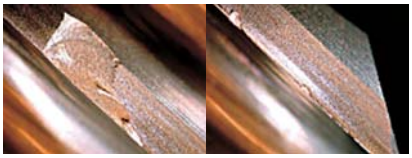


Unique design of PXSM gives stable machining.

PXSM (294m)



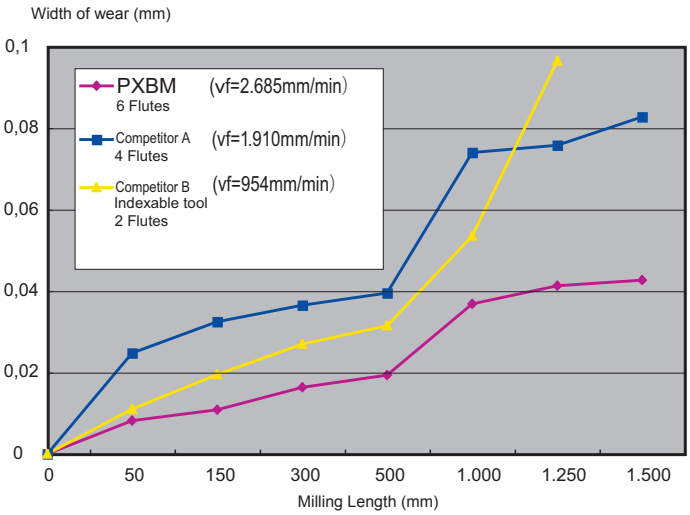
Competitor (42m)



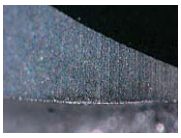
■ NAK80 - *NAK80 machining at slop face (comparison with the same feed rate)*

Tool	Head : PXBM160C16-06R080 Holder : PXMZ-C16SS16-S100
Size	Ø16
Work Material	NAK80(40HRC)
Cutting Speed	200m/min(3.980min^{-1})
Feed Per Tooth	0,12mm/t
Milling Method	Pick Milling
Depth of Cut	ap=0,32mm Pf=0,8mm
Coolant	Air Blow
Machine	BT50 Horizontal Machining Center

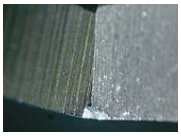
Materialized by more cutting edges for better productivity, longer tool life with superb durability.



PXBM (1,500m)



Competitor A (1,500m)



Competitor B Indexable tool (1,250m)

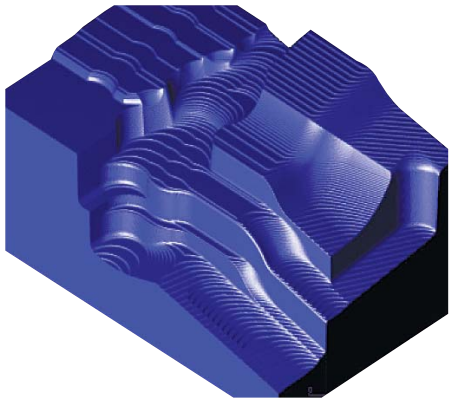


■ 1,8~ - *The multiple edge design helps increase efficiency by 1,8 times in die mold roughing processes*

Tool	Head : PXRE200C20-06R030 Holder : PXMZ-C20SS20-S120	Competitor High Feed Radius Cutter
Size	Ø20×R3 6 Flutes	Ø20×R3 2 Flutes
Grades	XP6305	Coated Carbide Chip
Work Material	SKD61 (43HRC)	
Cutting Speed	230m/min(3.700min^{-1})	120m/min(1.900min^{-1})
Feed	6.700mm/min(0,3mm/t)	3.100mm/min(0,8mm/t)
Depth of Cut	0,4mm	0,5mm
Width of Cut	10mm	
Coolant	Air Blow	
Machine	Horizontal Machining Center	

With high feed radius cutters, a simulated R value is inputted in the program during rough milling, resulting in large amounts of uncut areas. In contrast, with the high precision Corner R form PXRE, there are fewer uncut areas, which reduce the load of the next process, thereby increasing tool life and the precision of cut.

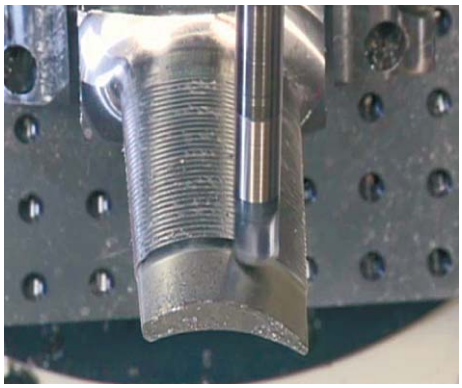
By replacing the high feed radius cutter with the PXRE, milling efficiency can be increased by 1,8 times



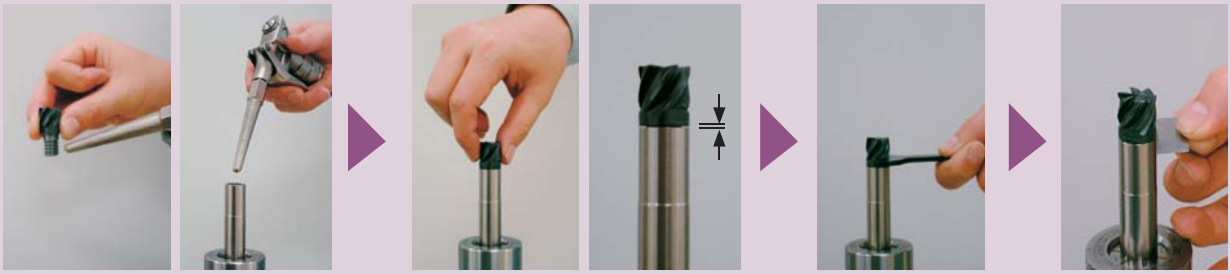
■ 2~ - *The multiple edge design helps double efficiency in the milling of blades*

Tool	Head : PXSM160C16-06R005 Holder : PXMZ-C16SS16-L130CS	Competitor Radius Cutter
Size	Ø16×R0,5 6 Flutes	Ø16×R2,5 2 Flutes
Grades	XP3225	Coated Carbide Chip
Work Material	13Cr Equivalent	
Cutting Speed	125m/min(2.500min^{-1})	
Feed	690mm/min(0,046mm/t)	350mm/min(0,07mm/t)
Depth of Cut	ap=1mm ae=0,25mm	
Coolant	Air Blow	
Machine	5-Axis Vertical Machining Center	

In finishing operations with settings that are difficult to modify, switching to the Phoenix Radius Cutter can double milling efficiency



■ Tightening procedure



1. Cleaning
Remove dirt and chips from the connecting thread and shank.

2. Initial Tightening
Tighten by hand

3. Final Tightening
Tighten with a spanner wrench

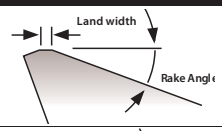
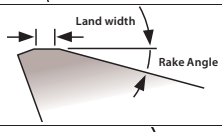
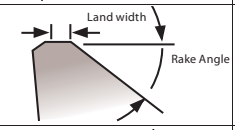
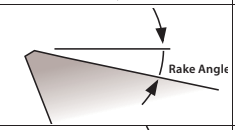
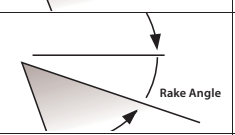
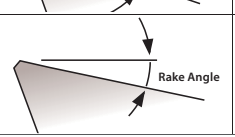
4. Confirmation
Confirm that there is no gap

Cautions during use

· Only use the spanner wrenches that are designed specifically for the PXM (P. 59). Please do not use alternative spanner wrenches sold on the market as a replacement.
· Please tighten until the head and the shank holder faces meet. Confirm that there is no gap.
· Degreasing the connecting thread may result in over tightening or a possible separation of the faces. Please do not degrease.
· Please make sure that the spanner wrench is inserted properly and turn it slowly during use.

GRADE & CHIPBREAKER

Application	Grades	Coolant / Dry	Coating Method	Hardness (HRA)	Surface Treatment		Features
					Main	Coating Thickness	
P Steel	XP3025	DRY	CVD	90,8	TiCN + TiN + Al_2O_3	4 µm	*For machining steel, stainless steel and cast irons* A strong carbide base material and excellent wear-resistant coating
	XP3035	DRY	PVD	90,7	TiAlN-TiN	4 µm	*For machining steel, stainless steel and cast irons* A grade for general-purpose milling. Made of a tough, high-strength carbide. Treated with chipping-resistant and wear-resistant coating
	XP3225	DRY	PVD	91,5	Cr	3 µm	*For machining steel, stainless steel and cast iron* High-strength and tough material, wear-resistant coating
	XP3310	DRY	PVD	92,5	SiC Silicon-based heat-resistant coating	3 µm	*For steel and cast iron* A tough carbide base grade and excellent general purpose coating
	XP3320	DRY	PVD	91,5	SiC Silicon-based heat-resistant coating	3 µm	*For machining steel, stainless steel and cast irons* A tough carbide grade with a heat-resistant and wear-resistant coating
	XP3930	DRY	PVD	90,8	TiAlN	3 µm	*For machining steel, cast irons and stainless steel* Excellent balance, can accommodate a range of workpiece materials
	XP9040	DRY	PVD	91,9	TiAlN	3 µm	*For machining steel and stainless steel* A grade for hole drilling. A tough carbide grade with an anti-chipping and wear-resistant coating
M Stainless steel	XP2040	COOLANT	PVD	89,6	TiAlN	4 µm	*For machining stainless steel and steel* Grade for general-purpose milling. A tough, high-strength carbide grade with an anti-chipping and wear-resistant coating
	XC5035	DRY	CVD	89.3	TiN-Ti(CN)-Al_2O_3-Ti(BN)	6µm	*For machining heat-resistant alloy and stainless steel* Grade for machining heat-resistant steel. Tough, carbide grade with an oxidation-resistant and high-lubricity coating
	XC5040	COOLANT	CVD	89.3	TiN-TiB_2	4µm	*For machining heat-resistant alloy and stainless steel* Grade for machining heat-resistant steel. For wet machining. Tough, carbide grade with an oxidation-resistant and high-lubricity coating
K Cast iron	XC1015	DRY	CVD	92,0	TiCN-Al_2O_3	5 µm	*For machining cast irons* Grade for milling cast-iron. Tough, high-strength carbide grade with an anti-chipping and wear-resistant coating
	XP1020	DRY	PVD	91,5	Tin + TiAlSiN	2 µm	*For machining cast irons* A material for milling cast iron, it is made of a tough, high strength carbide material with an anti-chipping and wear-resistant coating
	XC9025	DRY	CVD	90,8	TiCN-Al_2O_3	6 µm	*For machining cast irons* A grade for hole drilling in cast-iron. Tough, high-strength carbide grade with an anti-chipping and wear-resistant coating
N Non-ferrous	CK010	COOLANT	-	92,0	-	-	*For machining non-ferrous materials* A non-coated carbide grade with both anti-chipping and wear resistant features
	XC4505	DRY	CVD	92.0	DIA	12µm	*For machining non-ferrous materials* The minute diamond crystals provide for a coating layer with excellent strength
H Hard materials	XP6305	DRY	PVD	93.0	SiC Silicon-based heat-resistant coating	3µm	*For machining high hardness materials* High temperature hardness levels and excellent thermal conductivity for machining high hardness materials
S Superalloys	XC5035	COOLANT	CVD	89.3	TiN-Ti(CN)-Al_2O_3-Ti(BN)	6µm	*For machining heat-resistant alloy and stainless steel* Grade for machining heat-resistant steel. Tough, carbide grade with an oxidation-resistant and high-lubricity coating
	XC5040	COOLANT	CVD	89.3	TiN-TiB_2	4µm	*For machining heat-resistant alloy and stainless steel* Grade for machining heat-resistant steel. For wet machining. Tough, carbide grade with an oxidation-resistant and high-lubricity coating

Chipbreaker		Application	Cutting edge cross section	Rake angle	Features
GL	MILLING	P N M H K S		25°	*For milling stainless-steel* Chipbreaker with a large rake angle and a small flat land to reduce cutting force.
GM	MILLING	P N M H K S		15° 35°	*For machining various materials (steel, stainless steel, cast iron)* Chipbreaker with a superior balance of rake angle and flat land.
GR	MILLING	P N M H K S		35°	*For machining various materials from steel to cast iron:* a highly rigid breaker with large rake angle and flat land to provide a sharp cutting edge and enable efficient milling.
SM	MILLING	P N M H K S		15°	*For machining difficult materials* Chipbreaker with a sharp cutting edge to reduce cutting force and provide smooth chip evacuation.
NM	MILLING	P N M H K S		30°	*For machining nonferrous materials* Chipbreaker with a sharp cutting edge and a large rake angle to suppress welding, improve the milling surface and prevent burrs.
DM	DRILLING	P N M H K S		10°	*For drilling various materials (steel, stainless steel, cast iron).* A general-purpose breaker with an ideal rake angle.

DESIGNATION SYSTEM FOR MILLS

PHC	12	R	050	SS	42	-	4	S
①	②	③	④	⑤	⑥		⑦	⑧

① Abbreviation

PHC = High Feed Cutter

② Insert Size

Cutting edge length

12 = 12mm

③ Direction of cut

R = Right hand

L = Left hand

④ Cutting Diameter

Effective cutter diameter

050 = 50mm

⑤ Mounting type

A	Bore Type (Inch)
M	Bore Type (Metric)
SS	Straight Shank (Metric)
WS	Weldon Shank (Metric)
SA	Straight Shank (Inch)
MT	Morse Taper Shank
SF	Screw Fit Type
FS	Flat Shank

⑥ Mounting Diameter

Unit in mm

Hole diameter

42 = 42mm

⑦ Number of inserts

4 = 4 inserts

⑧ Shank type

S	Short
L	Long
LL	Extra Long

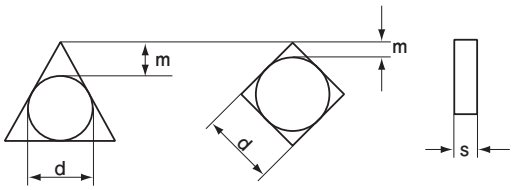
DESIGNATION SYSTEM FOR INSERTS

Z	D	K	T
①	②	③	④

Shape

C	80° diamond apex	
D	55° diamond apex	
O	octagon	
R	round	
S	square	
T	triangle	
V	35° diamond apex	
W	axonometric hexagon	
Z	other shapes	-

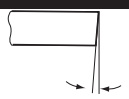
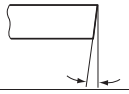
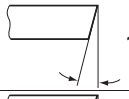
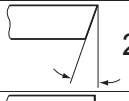
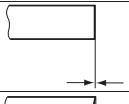
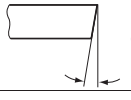
Accuracy



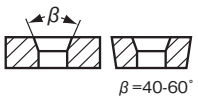
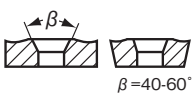
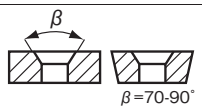
Symbol	dia d (mm) Inscribed circle tolerance	m (mm) Corner height tolerance	s (mm) Thickness tolerance
A	±0.025	±0.005	±0.025
C	±0.025	±0.013	±0.025
E	±0.025	±0.025	±0.025
H	±0.013	±0.013	±0.025
K*	±0.05 ~ ±0.15	±0.013	±0.025
M*	±0.05 ~ ±0.15	±0.08 ~ ±0.18	±0.13
N*	±0.05 ~ ±0.15	±0.08 ~ ±0.18	±0.025

* = sintered surface shown on the side

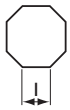
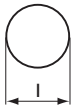
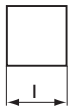
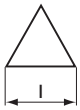
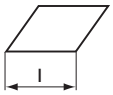
Relief angle

A		3°
C		7°
D		15°
E		20°
N		0°
P		11°
X		Special dimension

Groove and hole

Symbol	Shape of Hole	Chipbreaker	Shape
W	40° - 60° Partial cylindrical hole	No breaker	 β=40-60°
T		One side	 β=40-60°
B	70° - 90° Partial cylindrical hole	No breaker	 β=70-90°
N	-	No breaker	
R	-	One side	

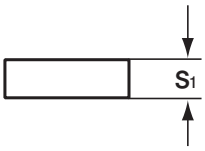
15	05	08	S	R	-	GM
⑤	⑥	⑦	⑧	⑨	-	⑩

Length of the cutting edge	
O	
R	
S	
T	
Z	

Corner radius	
Symbol	Corner radius
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
24	2.4

Hand of insert	
Symbol	Cutting Direction
R	Right hand
L	Left hand
N	Neutral

Thickness of insert



Symbol	S_1 (mm) Thickness
02	2.38
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35

Type of cutting edge	
Symbol	Appearance
F	 Sharpe edge
E	 Round honing
T	 Chamfer honing
S	 Combination honing

Type of chipbreaker	
Symbol	Material
GL	Stainless steel
GM	Steel, stainless steel, cast iron
GR	Steel - Cast Iron
NM	Non ferrous materials, sharp cutting edge
SM	Difficult materials, sharp cutting edge
DM	Steel, stainless steel, cast iron genaral purpose chipbreaker

PAS BORE

PHOENIX
- High performance
- 45° Face milling
- Square Insert type

PHOENIX
- High performance
- 45° Planfräser
- Vierkant Wendeplatte

PHOENIX
- Alta prestazione
- 45° spianare
- Manicotto inserto quadro

PHOENIX
- Haute performance
- Surfaçage 45°
- Plaquettes carrées

PHOENIX
- Yüksek performans
- Phoenix 45°, yüzey frezeleme
- Kare uç

PHOENIX
- High performance
- 45° planfræser
- Kvadratiske skær

PHOENIX
- High performance
- 45° planfräsar
- Kvadratiska skär

PHOENIX
- Altas prestaciones
- Planeado Phoenix a 45º
- Fresa hueca y placa cuadrada

PHOENIX
- Высокая производительность
- 45° торцовое
- фрезерование
  Квадратной пластиной

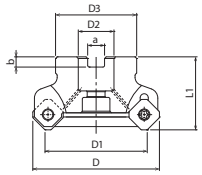
PHOENIX
- Wysoka wydajność
- Phoenix 45°, frezowanie czołowe
- Płytka kwadratowa

GO TO LIVE STOCK CHECK

Face Milling

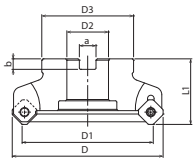
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Type 1

With coolant hole



Type 2

Without coolant hole



EDP	Type	Designation	D1	D	ZΔ	L1	D3	D2	a	b	Type	Stock	Price
7802000	For Metric holes	PAS15R050M22-4	50	65	4	45	45	22	10,4	6,3	1	●	
7802001	For Metric holes	PAS15R063M22-5	63	78	5	45	50	22	10,4	6,3	1	●	
47802002	For Metric holes	PAS15R080M27-6	80	95	6	50	60	27	12,4	7	1	●	
7802002	For inch	PAS15R080M25.4-6	80	95	6	50	60	25,4	9,5	6	1	○	
47802003	For Metric holes	PAS15R100M32-7	100	115	7	50	70	32	14,4	8	2	●	
7802003	For inch	PAS15R100M31.7-7	100	115	7	50	70	31,75	12,7	8	2	○	
47802004	For Metric holes	PAS15R125M40-8	125	140	8	63	90	40	16,4	9	2	●	
7802004	For inch	PAS15R125M38.1-8	125	140	8	63	90	38,1	15,9	10	2	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PHOENIX
- Applicable insert
  for Deep Feed Radius Cutter

PHOENIX
- Wendeplatten, für Torusfräser
  für maximale Zustellungen

PHOENIX
- Inserti applicabili per
  fresa ad alta asportazione

PHOENIX
- Choix de plaquettes
  pour fraise grande avance torique

PHOENIX
- Derin ilerlemeli freze
  için uygun uç

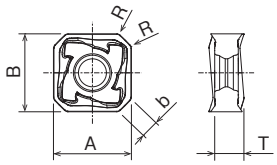
PHOENIX
- Anvendelige vendeskær
  til deep feed feed
  radiusfræser

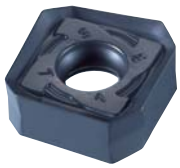
PHOENIX
- Utbytbara vändskär för
  Avverknings och hörnradie
  vändskärsfräs

PHOENIX
- Plaquitas para fresa
  de gran avance con radio

PHOENIX
- Фреза с высокой
  подачей и увеличенной
  глубиной резания

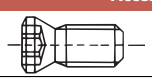
PHOENIX
- Płytka do freza do
  głębokich wybrań





Designation	No. of cutting edges	Insert Size				Coated grade				Stock	Price
		A X B	T	R	b	XP3035	XP3025	XP2040	XC1015		
SNKU1505AZER-GM	8	15,88x15,88	7,18	1	3,65	7814061	7819061	7813061		●	
SNKU1505AZER-GR	8	15,88x15,88	7,18	1	3,65				7812060	●	

Order quantity - 10 pcs. in package

Accessories		EDP	Designation	Applicable Cutter	Stock	Price
	*Clamping Screw*	7808131	FS645513P (Torx 20IP)	PAS BORE ø50~125	●	
	*T-Handle Wrench*	7808000	20IP-T (Torx 20IP)	PAS BORE ø50~125	●	

● on stock
○ available on short notice

PHOENIX
- High performance
- 45° Face milling
- Octagon Insert type

PHOENIX
- High performance
- 45° Planfräser
- Achteck (Octagon) Wendeplatte

PHOENIX
- Alta prestazione
- 45° spianare
- Manicotto inserto ottagonale

PHOENIX
- Haute performance
- Surfaçage 45°
- Plaquettes octogonales

PHOENIX
- Yüksek performans
- Phoenix 45°, yüzey frezeleme
- Sekizgen uç

PHOENIX
- High performance
- 45° planfræser
- Octagon skær

PHOENIX
- High performance
- 45° planfräsar
- Oktagon skär

PHOENIX
- Altas prestaciones
- Planeado Phoenix a 45º
- Fresa hueca y placa octagonal

PHOENIX
- Высокая производительность
- 45° торцовое
- восьмигранной пластиной

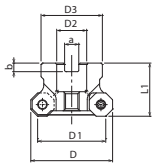
PHOENIX
- Wysoka wydajność
- Phoenix 45°, frezowanie czołowe
- Płytka oktagonalna

GO TO LIVE STOCK CHECK

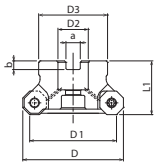
Face Milling

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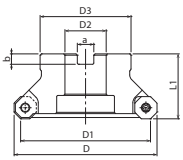
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Type 1 — *With* coolant hole



Type 2 — *With* coolant hole



Type 3 — *Without* coolant hole



EDP	Type	Designation	D1	D	ZΔ	L1	D3	D2	a	b	Type	Stock	Price
7802020	For Metric holes	PAO06R050M22-5	50	60,2	5	40	45	22	10,4	6,3	1	●	
7802021	For Metric holes	PAO06R063M22-7	63	73,2	7	50	50	22	10,4	6,3	2	●	
7802085	For Metric holes	PAO06R080M27-8	80	90,2	8	50	60	27	12,4	7	2	●	
7802022	For inch	PAO06R080M25.4-8	80	90,2	8	50	60	25,4	9,5	6	2	○	
7802086	For Metric holes	PAO06R100M32-10	100	110,2	10	50	70	32	14,4	8	3	●	
7802023	For inch	PAO06R100M31.7-10	100	110,2	10	50	70	31,75	12,7	8	3	○	
7802087	For Metric holes	PAO06R125M40-12	125	135,2	12	63	90	40	16,4	9	3	●	
7802024	For inch	PAO06R125M38.1-12	125	135,2	12	63	90	38,1	15,9	10	3	○	
7802088	For Metric holes	PAO06R100M32W-14	100	110,2	14	50	70	32	14,4	8	3	●	
7802089	For inch	PAO06R100M31.7W-14	100	110,2	10	50	70	31,75	12,7	8	3	○	
7802090	For Metric holes	PAO06R125M40W-17	125	135,2	17	63	90	40	16,4	9	3	●	
7802091	For inch	PAO06R125M38.1W-17	125	135,2	12	63	90	38,1	15,9	10	3	○	
7802092	For Metric holes	PAO06R160M40W-20	160	170,2	20	63	100	40	16,4	9	3	●	
7802093	For inch	PAO06R160M50.8W-20	160	170,2	14	63	100	50,8	19	11	3	○	
7802094	For Metric holes	PAO06R200M60W-25	200	210,2	25	63	130	60	25,7	14	3	●	
7802095	For inch	PAO06R200M47.6W-25	200	210,2	25	63	130	47,625	25,4	14	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PHOENIX
- Applicable insert for Deep Feed Radius Cutter

PHOENIX
- Wendeplatten, für Torusfräser für maximale Zustellungen

PHOENIX
- Inserti applicabili per fresa ad alta asportazione

PHOENIX
- Choix de plaquettes pour fraise grande avance torique

PHOENIX
- Derin ilerlemeli freze için uygun uç

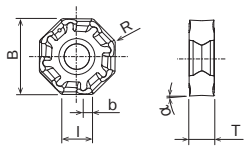
PHOENIX
- Anvendelige vendeskær til deep feed feed radiusfræser

PHOENIX
- Utbytbara vändskär för Avverknings och hörnradie vändskärsfräs

PHOENIX
- Plaquitas para fresa de gran avance con radio

PHOENIX
- Фреза с высокой подачей и увеличенной глубиной резания

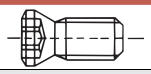
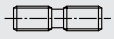
PHOENIX
- Płytka do freza do głębokich wybrań





Designation	No. of cutting edges	Insert Size						Coated grade				Stock	Price
		B	T	l	∂	R	b	XP3035	XP2040	XC1015	XP1020		
OZKU060508SR-GM	16	17,1	5,66	6	3°	0,8	2	7814062	7813062	7812062	7821062	●	

Order quantity - 10 pcs. in package

Accessories		EDP	Designation	Applicable Cutter	Stock	Price
	*Clamping Screw*	7808130	FS50614 (Torx 20)	PAO BORE ø50~125	●	
	*Power Screw*	7808151	PS1031 (M10x31)	PAO BORE ø50	●	

Accessories		EDP	Designation	Applicable Cutter	Stock	Price
	*Wrench*	7808209	T20-D (Torx 20)	PAO BORE ø50~125	●	

PHOENIX
- High performance
- Finish ball nose cutter
- 2 flutes

PHOENIX
- High performance
- Kugelfräser für Schlichtbearbeitungen
- 2 Schneider

PHOENIX
- Alta prestazione
- Fresa sferica di finitura
- 2 eliche

PHOENIX
- Haute performance
- Finition hémisphérique
- 2 dents

PHOENIX
- Yüksek performans
- Finiş küre freze
- 2 ağızlı

PHOENIX
- High performance
- Radiusfræser til sletbearbejdning
- 2 skær

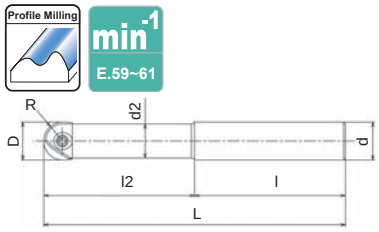
PHOENIX
- High performance
- Fullradiefräs för finishing
- 2 skär

PHOENIX
- Altas prestaciones
- Fresa de punta esférica
- 2 labios para acabado.

PHOENIX
- Высокая производительность
- Чистовая сферическая фреза
- 2-зубая

PHOENIX
- Wysoka wydajność
- Frez kulowy, obróbka wykańczająca
- 2-ostrzowy

GO TO LIVE STOCK CHECK





Steel Shank

EDP	Tool Specification	D	R	l2	l2/D	l	L	d2	d	ZΔ	Stock	Price
7801400	PFB-R080SS08-S120	8	4	36	4,5	84	120	7	8	2	●	
7801401	PFB-R100SS10-S130	10	5	45	4,5	85	130	9	10	2	●	
7801402	PFB-R120SS12-S130	12	6	54	4,5	76	130	11	12	2	●	
7801403	PFB-R160SS16-S140	16	8	64	4	76	140	14	16	2	●	
7801404	PFB-R200SS20-S160	20	10	80	4	80	160	18	20	2	●	
7801405	PFB-R250SS25-S160	25	12,5	75	3	85	160	22	25	2	●	
7801406	PFB-R300SS32-S170	30	15	90	3	80	170	27	32	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Carbide Shank - *short*

EDP	Tool Specification	D	R	l2	l2/D	l	L	d2	d	ZΔ	Stock	Price
7801430	PFB-R080SS08-S100CS	8	4	20	2,5	80	100	7	8	2	●	
7801431	PFB-R100SS10-S100CS	10	5	25	2,5	75	100	9	10	2	●	
7801432	PFB-R120SS12-S110CS	12	6	30	2,5	80	110	11	12	2	●	
7801433	PFB-R160SS16-S140CS	16	8	40	2,5	100	140	14	16	2	●	
7801434	PFB-R200SS20-S160CS	20	10	50	2,5	100	160	18	20	2	●	
7801435	PFB-R250SS25-S160CS	25	12,5	62,5	2,5	97,5	160	22	25	2	●	
7801436	PFB-R300SS32-S170CS	30	15	75	2,5	95	170	27	32	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Carbide Shank - *long*

EDP	Tool Specification	D	R	l2	l2/D	l	L	d2	d	ZΔ	Stock	Price
7801420	PFB-R080SS08-LL140CS	8	4	56	7	84	140	7	8	2	●	
7801421	PFB-R100SS10-LL150CS	10	5	70	7	80	150	9	10	2	●	
7801422	PFB-R120SS12-LL160CS	12	6	84	7	76	160	11	12	2	●	
7801423	PFB-R160SS16-LL200CS	16	8	96	6	104	200	14	16	2	●	
7801424	PFB-R200SS20-LL240CS	20	10	120	6	120	240	18	20	2	●	
7801425	PFB-R250SS25-LL260CS	25	12,5	137,5	5,5	122,5	260	22	25	2	●	
7801426	PFB-R300SS32-LL290CS	30	15	165	5,5	125	290	27	32	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PFB SCREW FIT

PHOENIX
- High performance
- Finish ball nose cutter
- Screw fit type

PHOENIX
- High performance
- Kugelfräser für Schlichtbearbeitungen
- Aufschraubkopf

PHOENIX
- Alta prestazione
- Fresa sferica di finitura
- Sistema modulare

PHOENIX
- Haute performance
- Finition hémisphérique
- Tête vissée

PHOENIX
- Yüksek performans
- Finiş küre freze
- Vidalı tip

PHOENIX
- High performance
- Radiusfræser til sletbearbejdning
- Indskrunings type

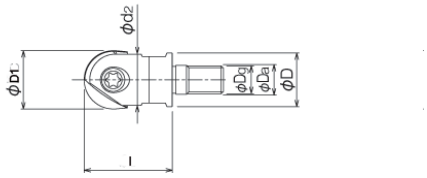
PHOENIX
- High performance
- Fullradiefräs för finishing
- Med gänginfästning

PHOENIX
- Altas prestaciones
- Fresa de punta esférica
- Cabeza roscada

PHOENIX
- Высокая производительность
- Чистовая сферическая фреза
- Резьбовая головка

PHOENIX
- Wysoka wydajność
- Frez kulowy, obróbka wykańczająca
- Chwyt wkręcany

GO TO LIVE STOCK CHECK





EDP	Designation	D1	ZΔ	Da	Dg	Wrench	l	d2	D	Applicable Inserts	Stock	Price
7801490	PFB-R100SF6	10	2	6,5	6	7	26	9	9	PFB	●	
7801491	PFB-R120SF6	12	2	6,5	6	7	26	11	11	PFB	●	
7801492	PFB-R160SF8	16	2	8,5	8	10	32	14	14,5	PFB	●	
7801493	PFB-R200SF10	20	2	10,5	10	14	38	18	18	PFB	●	
7801494	PFB-R250SF12	25	2	12,5	12	17	38	22	23	PFB	●	
7801495	PFB-R300SF16	30	2	17	16	22	43	27	28	PFB	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PFB INSERTS

PHOENIX
- Applicable insert for Finish Ball Nose Cutter

PHOENIX
- Wendeplatten, Kugelfräser PFB

PHOENIX
- Inserti applicabili per fresa sferica di finitura

PHOENIX
- Choix de plaquettes de finition hémisphérique

PHOENIX
- Finiş küre frezeye uygun uç

PHOENIX
- Anvendelige skær til radiusfræser

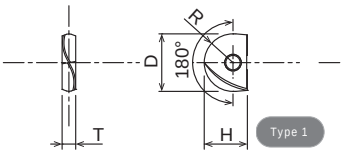
PHOENIX
- Utbytbara skärinsatser för fullradiefräs

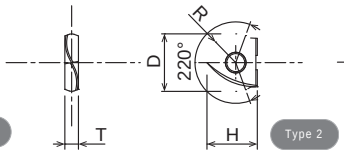
PHOENIX
- Plaquitas para fresa esférica de acabado

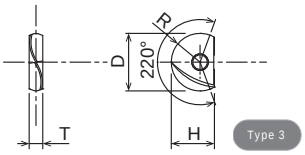
PHOENIX
- Сменные пластинки для чистовой сферической фрезы

PHOENIX
- Płytka do frezów FTB,obróbka wykańczająca

GO TO LIVE STOCK CHECK





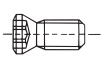




	Appearance	Designation	No. of cutting edges	Spec.	R	Insert Size D	R	T	H	Grade of Coated material XP3225	XP3310	XP3320	XC4505	Stock	Price
		PFB080-SP	2	Spiral Type		8	4	2,4	7	7820030		7820010		●	
		PFB100-SP	2			10	5	2,6	8,5	7820031		7820011		●	
		PFB120-SP	2			12	6	3	10	7820032		7820012		●	
		PFB160-SP	2			16	8	4	12	7820033		7820013		●	
		PFB200-SP	2			20	10	5	15	7820034		7820014		●	
		PFB250-SP	2			25	12,5	6	18,5	7820035		7820015		●	
New Sizes		PFB300-SP	2			30	15	7	22,5	7820036		7820016		●	
①		PFB080-SH	2	Spiral Type (Strengthened edge Type)	180°	8	4	2,4	7		7820040			●	
		PFB100-SH	2			10	5	2,6	8,5		7820041			●	
		PFB120-SH	2			12	6	3	10		7820042			●	
		PFB160-SH	2			16	8	4	12		7820043			●	
		PFB200-SH	2			20	10	5	15		7820044			●	
NEW		PFB250-SH	2			25	12,5	6	18,5		7820045			●	
		PFB300-SH	2			30	15	7	22,5		7820046			●	
		PFB080-D	2	Spiral Type (Diamond coated)		8	4	2,4	7				7820020	●	
		PFB100-D	2			10	5	2,6	8,5				7820021	●	
		PFB120-D	2			12	6	3	10				7820022	●	
		PFB160-D	2			16	8	4	12				7820023	●	
		PFB200-D	2			20	10	5	15				7820024	●	
		PFB250-D	2			25	12,5	6	18,5				7820025	●	
		PFB300-D	2			30	15	7	22,5				7820026	●	
NEW ②		PFB080-Q	2	Spiral Type (Full Radius Type)	220°	8	4	2,4	7	7820050				●	
		PFB100-Q	2			10	5	2,6	8,5	7820051				●	
		PFB120-Q	2			12	6	3	10	7820052				●	
③		PFB160-Q	2			16	8	4	12	7820053				●	
		PFB200-Q	2			20	10	5	15	7820054				●	
		PFB250-Q	2			25	12,5	6	18,5	7820055				●	
		PFB300-Q	2			30	15	7	22,5	7820056				●	

minimum order quantity = 1 pc.

Accessories - *Clamping Screw & Wrench*



Clamping Screw



Wrench

EDP	Designation	Size Ø	Rec. Torque	Stock	Price
7808123	FS25669RB	8	1 Nm	●	
7808117	FS30686RB	10	1,2 Nm	●	
7808118	FS35610RB	12	2 Nm	●	
7808119	FS40613RB	16	3 Nm	●	
7808120	FS50615RB	20	5 Nm	●	
7808121	FS60620RB	25	5 Nm	●	
7808122	FS80624RB	30	6 Nm	●	

EDP	Designation	Size Ø	Stock	Price
7808204	T7-D	8	●	
7808205	T8-D	10	●	
7808207	T10-D	12	●	
7808208	T15-D	16	●	
7808209	T20-D	20/ 25	●	
7808212	T30-D	30	●	

PSF SS

PHOENIX
- High performance
- 90° Shoulder cutter
- Straight Shank

PHOENIX
- High performance
- 90 ° Schulterfräser
- Zylinderschaft

PHOENIX
- Alta prestazione
- 90° Spallamento retto
- Gambo cilindrico

PHOENIX
- Haute performance
- Surfacer dresser à 90°
- Queue cylindrique

PHOENIX
- Yüksek performans
- 90 ° sırt frezesi
- Düz şaft

PHOENIX
- High performance
- 90° vendeskærsfræser
- Cylindrisk skaft

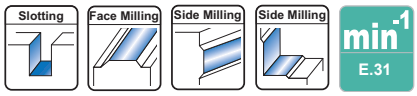
PHOENIX
- High performance
- 90° vändskärsfräs
- Rakt skaft

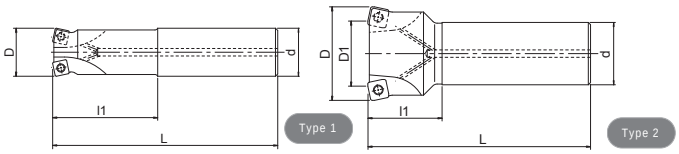
PHOENIX
- Altas prestaciones
- Fresa de 90° para escuadrar
- Mango cilíndrico

PHOENIX
- Высокая производительность
- Торцевая фреза 90°
- Цилиндрический хвостовик

PHOENIX
- Wysoka wydajność
- 90° Frez walcowo-czołowy
- Chwyt walcowy

GO TO LIVE STOCK CHECK







EDP	Designation	D	ZΔ	l1	d	L	Type	Stock	Price
7803001	PSF09R025SS25-3S	25	3	35	25	120	1	●	
7803002	PSF09R032SS32-4S	32	4	45	32	130	1	●	
7803003	PSF09R040SS32-5S	40	5	50	32	140	2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PSF BORE

PHOENIX
- High performance
- 90° Shoulder cutter
- Bore Type

PHOENIX
- High performance
- 90 ° Schulterfräser
- Aufnahmebohrung

PHOENIX
- Alta prestazione
- 90° Spallamento retto
- A manicotto

PHOENIX
- Haute performance
- Surfacer dresser à 90°
- Trou lisse

PHOENIX
- Yüksek performans
- 90 ° sırt frezesi
- Delikli tip

PHOENIX
- High performance
- 90° vendeskærsfræser
- Til dorn

PHOENIX
- High performance
- 90° vändskärsfräs
- Med skruvfäste

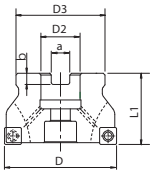
PHOENIX
- Altas prestaciones
- Fresa de 90° para escuadrar
- Hueca

PHOENIX
- Высокая производительность
- Торцевая фреза 90°
- Насадная

PHOENIX
- Wysoka wydajność
- 90° Frez walcowo-czołowy
- Nasadzany

GO TO LIVE STOCK CHECK







EDP	Designation	D	ZΔ	L1	D3	D2	a	b	Stock	Price
7803011	PSF09R050M22-6	50	6	40	45	22	10,4	6,3	●	
7803012	PSF09R063M22-7	63	7	40	50	22	10,4	6,3	●	
47803003	PSF09R080M27-9	80	9	50	60	27	12,4	7	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PSF INSERTS

PHOENIX
- Applicable insert for 90° Shoulder cutter
- 4 Corner

PHOENIX
- Wendeplatten 90° Schulterfräser PSE
- 4 Ecken

PHOENIX
- Inserti applicabili per fresa 90° spallamento retto
- 4 Angoli

PHOENIX
- Surfacer dresser à 90°
- 4 Angles

PHOENIX
- 90 ° sırt frezesi için uygun uç
- 4 köşe

PHOENIX
- Anvendelige skær til 90° vendeskærsfræser
- 4 hjørne

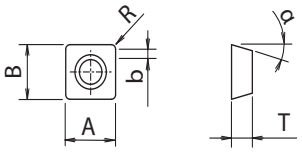
PHOENIX
- Utbytbara vändskär för 90° vändskärsfräs
- 4 hörn

PHOENIX
- Plaquitas para fresa a 90º de escuadrar
- 4 esquina

PHOENIX
- Сменные пластинки для торцевой фрезы 90°
- 4 угловых

PHOENIX
- Płytka do frezów walcowo -czołowych 90°
- 4 corner

GO TO LIVE STOCK CHECK





Designation	No. of cutting edges	Insert Size					Uncoated	Coated Grade				Price
		A X B	T	α	R	b	CK010	XP3035	XP2040	XC1015	XC5040	
SKDT09T308SR-GL	4	9,07x9,07	3,97	15°	0,8	2,5		7814073	7813073		7816073	
SKDT09T308SR-GM	4	9,07x9,07	3,97	15°	0,8	2,5		7814074	7813074			
SKDT09T308SR-GR	4	9,07x9,07	3,97	15°	0,8	2,5				7812075		
SKHT09T308FR-NL	4	9,07x9,07	3,97	15°	0,8	2,5	7811076					

Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S	H
CK010	NM	Coolant				◉		
XP3035	GL/GM	Dry	◉	○	○			
XP2040	GL/GM	Dry	○					◉
		Coolant		◉			○	
XC1015	GR	Dry			◉			
XC5040	GL	Coolant		○			◉	

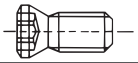
GL Light Cutting
GM Medium Cutting
GR Heavy Cutting
NM Alluminium

◉ First choice
○ Second choice

A wide variety of Inserts

Chip Breaker	NM	GL	GM	GR
Rake Angle	30°	25°	15°	7°
Application	Alluminium alloy & Non-ferrous metal machining	Low-resistance machining - Heat-resistance alloy & Difficult-to-cut material machining	Multi-purpose machining & General steel milling	Interrupted machining & Cast Iron machining
				

Accessories - *Clamping Screw & Wrench*



Clamping Screw

EDP	Designation	Applicable Cutters	Stock	Price
7808110	FS30573 (Torx 8)	PSF SS Ø 25~40	●	
		PSF BORE Ø 50~80		



Wrench

EDP	Designation	Applicable Cutters	Stock	Price
7808205	T8-D (Torx 8)	PSF SS Ø 25~40	●	
		PSF BORE Ø 50~80		

● on stock
○ available on short notice

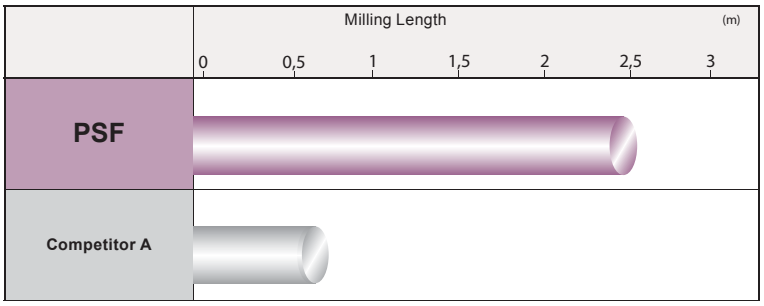
PSF

90° Shoulder cutter - 90 ° Schulterfräser - 90° Spallamento retto - Surfacer dresser à 90° - 90° omuz frezesi
90° vendeskærsfræser - 90° vändskärsfräs - Fresa de 90° para escuadrar - Торцевая фреза 90° - 90° Frez walcowo-czołowy

	Work Material	Tensile Strength / Hardness	Grade	Vc (m/min) Milling Speed	fz (mm/t) Feed Per Tooth	ap (m/min) Depth of Cut
P	Mild Steel-Carbon Steel (SS400-S10C)	~180HB	XP3035 XP2040	180 (100~ 250)	0,12 (0,05 ~ 0,2)	3
P	Carbon Steel-Alloy Steel (S50C-SCM440)	~280HB	XP3035 XP2040	180 (100 ~ 250)	0,12 (0,05 ~ 0,2)	3
P	Die Steel (SKD11-SKD61)	~280HB	XP3035 XP2040	150 (80 ~ 200)	0,1 (0,05 ~ 0,18)	3
M	Stainless Steel (Dry) (SUS304-SUS420)	~250HB	XP2040	80 (60~ 120)	0,1 (0,05 ~ 0,18)	2
M	Stainless Steel (Coolant) (SUS304-SUS420)	~250HB	XC5035	150 (80~ 200)	0,1 (0,05 ~ 0,18)	2
K	Cast Iron (FC250)	~350N/mm²	XC1015	180 (100~ 350)	0,12 (0,05 ~ 0,2)	3
K	Ductile Cast Iron (FCD400)	~800N/mm²	XC1015	180 (100~270)	0,12 (0,05 ~ 0,2)	3
N	Alluminium Alloy	~13%Si	CK010	300 (200~ 1.500)	0,15 (0,1 ~ 0,25)	3
S	Heat Resistant Alloy (Inconel 718)	-	XC5040	35 (25~60)	0,1 (0,05 ~ 0,15)	1,5
S	Titanium Alloy (Inconel 718)	-	XC5040	40 (30~120)	0,1 (0,05 ~ 0,18)	1,5
H	Pre-hardened Steel (NAK80)	40~43HRC	XP2040	90 (40~ 150)	0,1 (0,08 ~ 0,2)	1,5
H	Steel for Die Casting (DAC55-DH31)	43~48HRC	XP2040	70 (40 ~ 120)	0,08 (0,06 ~ 0,15)	0,5
H	Hardened Steel (SKD11)	50~55HRC	XP2040	50 (40 ~ 90)	0,06 (0,05 ~ 0,1)	0,5

■ Anticorrosion equipment (duplex stainless steel) milling

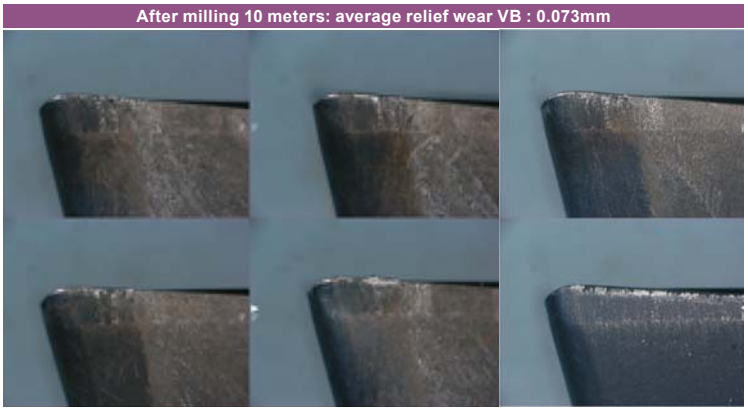
Tool	PSF09R025SS25-3S (Ø 25x3F)	Competitor
Insert (grade)	SDKT09T308SR-GL (XC5040)	Coated Carbide chip
Work Material	Duplex Stainless Steel	
Cutting Speed	80m/min(800min^{-1})	
Feed	300mm/min(0,1mm/t)	
Depth of Cut	ap=2mm ae=15mm	
Coolant	Water Soluble	
Machine	Vertical Machining Center (BT50)	



The competitor's product became chipped early on, making it difficult to mill.
However, the PSF (XC5040) could mill in a stable manner, resulting in a long tool life.

■ SUS304 - *Semi-conductor equipment parts milling*

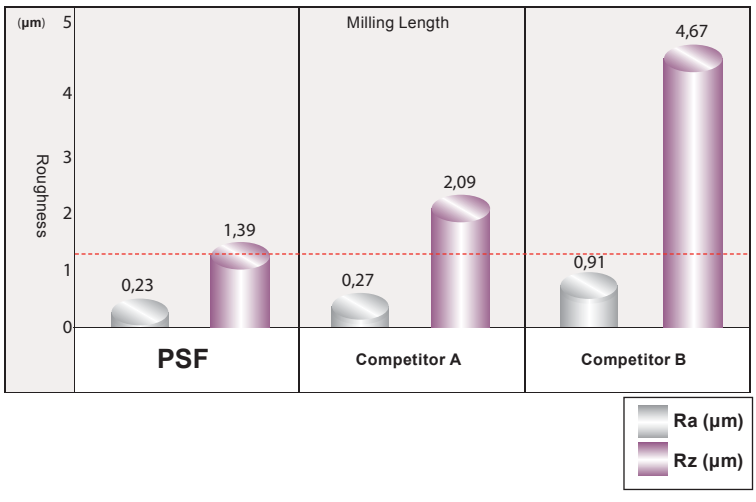
Tool	PSF09R050M22-6 (Ø 50x6F)	Competitor
Insert (grade)	SDKT09T308SR-GL (XP2040)	Coated Carbide chip
Work Material	SUS304	
Cutting Speed	160m/min(800min^{-1})	
Feed	1.200mm/min(0,2mm/t)	
Depth of Cut	ap=2mm ae=30mm	
Coolant	Air Blow	
Machine	Vertical Machining Center (BT50)	



After milling 10 meters, the competitor's product became chipped, without being able to continue milling. The PSF exhibited normal (low) wear, was able to continue milling, with durability increased by 50%.

■ Superior milling surface roughness

Tool	PSF09R050M22-6 (Ø 50x6F)
Insert (grade)	SDKT09T308SR-GL(XP2040)
Work Material	SUS304
Cutting Speed	150m/min(955min^{-1})
Feed	570mm/min(0,1mm/t)
Depth of Cut	ap=2mm ae=32mm
Coolant	Water Soluble
Machine	Horizontal Machining Center (BT50)



PSEL SS

PHOENIX
- High performance
- 90° Shoulder cutter
- Porcupine type

PHOENIX
- High performance
- 90 ° Schulterfräser
- Igelfräser

PHOENIX
- Alta prestazione
- 90° Spallamento retto
- A riccio

PHOENIX
- Haute performance
- Surfacer dresser à 90°
- Fraise hérisson

PHOENIX
- Yüksek performans
- 90 ° sırt frezesi
- Kirpi

PHOENIX
- High performance
- 90° vendeskærsfræser
- Pindsvin type

PHOENIX
- High performance
- 90° vändskärsfräs
- Igelkott typ

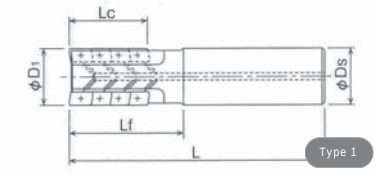
PHOENIX
- Altas prestaciones
- Fresa de 90° para escuadrar
- Tipo cocodrilo

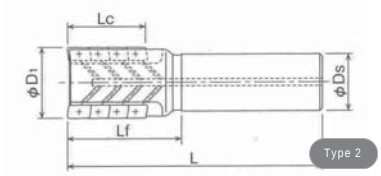
PHOENIX
- Высокая производительность
- Торцевая фреза 90°
- дикобраз

PHOENIX
- Wysoka wydajność
- 90° Frez walcowo-czołowy
- Jeżozwierz

GO TO LIVE STOCK CHECK

Slotting | Face Milling | Side Milling | Side Milling | min^{-1} E.62







EDP	Designation	D1	ZΔ	Nb. Insert	Total amount Insert	Lc	Ds	L	Lf	Applicable Inserts	Type	Stock	Price
7802900	PSEL11R025SS25-2-27	25	2	3	6	27	25	125	50		1	●	
7802901	PSEL11R032SS32-2-37	32	2	4	8	37	32	140	60		1	●	
7802902	PSEL11R032SS32-3-45	32	3	5	15	45,5	32	140	60	①	1	●	
7802903	PSEL11R040SS42-3-37	40	3	4	12	37	42	140	60		1	●	
7802904	PSEL11R040SS42-4-45	40	4	5	20	45,5	42	140	60		1	●	
7802905	PSEL15R040SS42-2-38	40	2	3	6	38	42	140	60	②	1	●	
7802906	PSEL15R050SS42-3-50	50	3	4	12	50,5	42	144	64		2	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PSEL BORE

PHOENIX
- High performance
- 90° Shoulder cutter
- Porcupine type

PHOENIX
- High performance
- 90 ° Schulterfräser
- Igelfräser

PHOENIX
- Alta prestazione
- 90° Spallamento retto
- A riccio

PHOENIX
- Haute performance
- Surfacer dresser à 90°
- Fraise hérisson

PHOENIX
- Yüksek performans
- 90 ° sırt frezesi
- Kirpi

PHOENIX
- High performance
- 90° vendeskærsfræser
- Pindsvin type

PHOENIX
- High performance
- 90° vändskärsfräs
- Igelkott typ

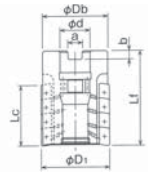
PHOENIX
- Altas prestaciones
- Fresa de 90° para escuadrar
- Tipo cocodrilo

PHOENIX
- Высокая производительность
- Торцевая фреза 90°
- дикобраз

PHOENIX
- Wysoka wydajność
- 90° Frez walcowo-czołowy
- Jeżowy

GO TO LIVE STOCK CHECK

Side Milling | Side Milling | Face Milling | Slotting | min^{-1} E.62





EDP	Designation	D1	ZΔ	n° Inserts	Total amount	Lc	Lf	Db	d	a	b	Applicable Inserts	Stock	Price
7802850	PSEL15R050M22-3-50	50	3	4	12	50,5	74	45	22	10,4	6,3		●	
7802851	PSEL15R063M27-3-50	63	3	4	12	50,5	74	60	27	12,4	7	②	●	
7802852	PSEL15R080M32-4-63	80	6	5	20	63	88	76	32	14,4	8		●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PHOENIX
- Applicable insert for 90° Shoulder cutter

PHOENIX
- Wendeplatten 90° Schulterfräser PSE

PHOENIX
- Inserti applicabili per fresa 90° spallamento retto

PHOENIX
- Surfacer dresser à 90°

PHOENIX
- 90 ° sırt frezesi için uygun uç

PHOENIX
- Anvendelige skær til 90° vendeskærsfræser

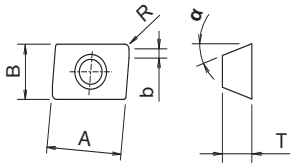
PHOENIX
- Utbytbara vändskär för 90° vändskärsfräs

PHOENIX
- Plaquitas para fresa a 90º de escuadrar

PHOENIX
- Сменные пластинки для торцевой фрезы 90°

PHOENIX
- Płytka do frezów walcowo -czołowych 90°

GO TO LIVE STOCK CHECK





Designation	No. of cutting edges	Insert Size					Uncoated	Coated Grade					Price
		A X B	T	α	R	b	CK010	XP3035	XP2040	XC1015	XC5035	XC5040	
ZDKT11T308SR-GL	2	10x6,8	3,8	15°	0,8	1,4		7814026	7813026				
ZDKT11T304SR-GM	2	10x6,8	3,8	15°	0,4	1,8		7814025	7813025	7812025			
ZDKT11T308SR-GM	2	10x6,8	3,8	15°	0,8	1,4		7814032	7813032				
ZDKT11T312SR-GM	2	10x6,8	3,8	15°	1,2	1		7814053					
ZDKT11T320SR-GM	2	10x6,8	3,8	15°	2	2,1		7814038					
① ZDKT11T330SR-GM	2	10x6,8	3,8	15°	3	1,5		7814054					
ZDKT11T340SR-GM	2	10x6,8	3,8	15°	4	-		7814055					
ZDKT11T308SR-GR	2	10x6,8	3,8	15°	0,8	1,4		7814033	7813033	7812033			
ZDKT11T304ER-SM	2	10x6,8	3,8	15°	0,4	1,8						7813034	
ZDKT11T308ER-SM	2	10x6,8	3,8	15°	0,8	1,4					7815031	7816031	
ZDKT11T316ER-SM	2	10x6,8	3,8	15°	1,6	0,8					7815027	7816027	
ZDKT11T302FR-NM	2	10x6,8	3,8	15°	0,2	2	7811048						
ZDKT11T304FR-NM	2	10x6,8	3,8	15°	0,4	1,8	7811049						
ZDHT11T304FR-NM	2	10x6,8	3,5	15°	0,4	1,8	7811024						
ZDKT150508SR-GL	2	14x9,3	5,56	15°	0,8	1,6		7814057	7813057				
② ZDKT150508SR-GM	2	14x9,3	5,56	15°	0,8	1,6		7814029	7813028	7812029			
ZDKT150508SR-GR	2	14x9,3	5,56	15°	0,8	1,6		7814058	7813058	7812058			
ZDKT150508ER-SM	2	14x9,3	5,56	15°	0,8	1,6					7815056	7816056	
ZDKT150508FR-NM	2	14x9,3	5,56	15°	0,8	1,6	7811046						

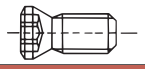
Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S	H
CK010	NM	Coolant / Dry				◉		
XP2040	GL/GM/GR	Dry	○					◉
		Coolant		◉			○	
XP3035	GL/GM/GR	Dry	◉	○	○			
XC1015	GM/GR	Dry			◉			
XC5035	SM	Dry		◉				○
		Coolant		○			○	
XC5040	SM	Coolant		○			◉	○

GL Light Cutting
GM Medium Cutting
NM Aluminum
SM Heat Resistance Alloy

◉ First choice
○ Second choice

Accessories - *Clamping Screw, Coolant cap bolt & Wrench*



Clamping Screw

EDP	Designation		Applicable Inserts	Applicable Cutters	Stock	Price
7808107	FS25656P (Torx 8IP)	①	ZD-T11...	PSEL SS Ø 25	●	
7808109	FS25673P (Torx 8IP)	①	ZD-T11...	PSEL Ø 32~40	●	
7808115	FS35686P (Torx 15IP)	②	ZDKT15...	PSEL SS Ø 40~50	●	
				PSEL BORE Ø 50~80		



Coolant Cap Bolt

EDP	Designation	Applicable Inserts	Applicable Cutters	Stock	Price
7808132	OCB-M20-08	-	PSEL BORE Ø 50	●	
7808133	OCB-M24-10	-	PSEL BORE Ø 63	●	
7808134	OCB-M30-14	-	PSEL BORE Ø 80	●	



Wrench

EDP	Designation		Applicable Inserts	Applicable Cutters	Stock	Price
7808225	81P-D (Torx 8IP)	①	ZD-T11...	PSEL SS Ø 25~40	●	
7808228	15IP-D (Torx 15IP)	②	ZDK-T15...	PSEL SS Ø 40~50	●	
				PSEL BORE Ø 50~80		

● on stock
○ available on short notice

PSE-WS/SS

PHOENIX
- High performance
- 90° Shoulder cutter
- Weldon and Straight shank type

PHOENIX
- High performance
- 90 ° Schulterfräser
- Weldon und Zylinderschaft

PHOENIX
- Alta prestazione
- 90° Spallamento retto
- Gambo Weldon e cilindrico

PHOENIX
- Haute performance
- Surfacer dresser à 90°
- Queue weldon et cylindrique

PHOENIX
- Yüksek performans
- 90 ° sırt frezesi
- Veldon ve düz şaft tipi

PHOENIX
- High performance
- 90° vendeskærsfræser
- Med og uden Weldon flade

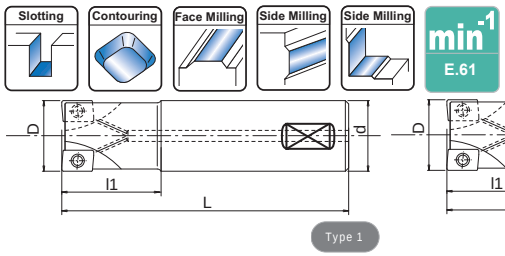
PHOENIX
- High performance
- 90° vändskärsfräs
- Weldon och rakt skaft

PHOENIX
- Altas prestaciones
- Fresa de 90° para escuadrar
- Mango cilíndrico Weldon

PHOENIX
- Высокая производительность
- Торцевая фреза 90°
- Weldon и цилиндрический хвостовик

PHOENIX
- Wysoka wydajność
- 90° Frez walcowo-czołowy
- Chwyt cylindryczny i Weldon

GO TO LIVE STOCK CHECK





Weldon Shank

EDP	Type	Designation	D	ZΔ	d	L	l1	Applicable Inserts	Type	Stock	Price
47801100	Coarse Pitch	PSE11R016WS16-2S	16	2	16	75	25		1	●	
47801115	Close Pitch	PSE11R020WS20-3S	20	3	20	80	25	ZD-T11- ①	1	●	
47801104	Close Pitch	PSE11R025WS25-4S	25	4	25	90	35		1	●	
47801105	Close Pitch	PSE11R032WS32-5S	32	5	32	105	40		1	●	
47801106	Coarse Pitch	PSE15R025WS25-2S	25	2	25	100	32	ZD-T15- ②	1	●	
47801111	Close Pitch	PSE15R032WS32-3S	32	3	32	125	40		1	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Straight Shank

EDP	Type	Designation	D	ZΔ	d	L	l1	Applicable Inserts	Type	Stock	Price
7801101	Coarse Pitch short	PSE11R020SS20-2S	20	2	20	100	30	ZD-T11- ①	2	●	
7801102	Coarse Pitch short	PSE11R025SS25-3S	25	3	25	120	35		2	●	
7801103	Coarse Pitch short	PSE11R032SS32-3S	32	3	32	130	45		2	●	
7801100	Close Pitch short	PSE11R016SS16-2S	16	2	16	90	25		2	●	
7801116	Close Pitch short	PSE11R018SS16-2S	18	2	16	90	25		2	O	
7801115	Close Pitch short	PSE11R020SS20-3S	20	3	20	100	30		2	●	
7801117	Close Pitch short	PSE11R022SS20-3S	22	3	20	110	30		2	●	
7801104	Close Pitch short	PSE11R025SS25-4S	25	4	25	120	35		2	●	
7801118	Close Pitch short	PSE11R028SS25-4S	28	4	25	120	35	ZD-T11- ①	2	O	
7801119	Close Pitch short	PSE11R030SS32-4S	30	4	32	130	45		2	O	
7801105	Close Pitch short	PSE11R032SS32-5S	32	5	32	125	40		2	●	
7801120	Close Pitch short	PSE11R035SS32-5S	35	5	32	130	35		2	O	
7801121	Long	PSE11R016SS16-2L	16	2	16	150	50		2	●	
7801122	Long	PSE11R018SS16-2L	18	2	16	150	25	ZD-T11- ①	2	O	
7801123	Long	PSE11R020SS20-3L	20	3	20	160	60		2	●	
7801124	Long	PSE11R022SS20-3L	22	3	20	160	30		2	●	
7801125	Long	PSE11R025SS25-3L	25	3	25	170	70		2	●	
7801126	Long	PSE11R028SS25-3L	28	3	25	170	35		2	O	
7801127	Long	PSE11R030SS32-3L	30	3	32	190	90		2	O	
7801128	Long	PSE11R032SS32-3L	32	3	32	190	90		2	●	
7801129	Long	PSE11R035SS32-3L	35	3	32	190	35		2	O	
7801107	Coarse Pitch short	PSE15R032SS32-2S	32	2	32	130	45		2	●	
7801108	Coarse Pitch short	PSE15R040SS32-3S	40	3	32	140	50	ZD-T15- ②	2	O	
7801109	Coarse Pitch short	PSE15R050SS32-3S	50	3	32	130	45		2	O	
7801110	Coarse Pitch short	PSE15R063SS32-4S	63	4	32	130	45		2	O	
7801106	Close Pitch short	PSE15R025SS25-2S	25	2	25	120	35		2	●	
7801130	Close Pitch short	PSE15R028SS25-2S	28	2	25	120	35		2	O	
7801131	Close Pitch short	PSE15R030SS32-3S	30	3	32	130	45		2	O	
7801111	Close Pitch short	PSE15R032SS32-3S	32	3	32	130	45	ZD-T15- ②	2	●	
7801132	Close Pitch short	PSE15R035SS32-3S	35	3	32	130	35		2	O	
7801112	Close Pitch short	PSE15R040SS32-4S	40	4	32	140	50		2	O	
7801113	Close Pitch short	PSE15R050SS32-5S	50	5	32	130	45		2	O	
7801114	Close Pitch short	PSE15R063SS32-6S	63	6	32	130	45		2	O	
7801133	Long	PSE15R025SS25-2L	25	2	25	170	70		2	●	
7801134	Long	PSE15R028SS25-2L	28	2	25	170	35	ZD-T15- ②	2	O	
7801135	Long	PSE15R030SS32-3L	30	3	32	190	90		2	O	
7801136	Long	PSE15R032SS32-3L	32	3	32	190	90		2	●	
7801137	Long	PSE15R035SS32-3L	35	3	32	190	45		2	O	
7801138	Long	PSE15R040SS32-3L	40	3	32	190	45		2	O	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PSE SCREW FIT

PHOENIX
- High performance
- 90° Shoulder cutter
- Screw fit type

PHOENIX
- High performance
- 90 ° Schulterfräser
- Aufschraubkopf

PHOENIX
- Alta prestazione
- 90° Spallamento retto
- Sistema modulare

PHOENIX
- Haute performance
- Surfacer dresser à 90°
- Tête vissée

PHOENIX
- Yüksek performans
- 90 ° sırt frezesi
- Vidalı tip

PHOENIX
- High performance
- 90° vendeskærsfræser
- Indskrunings type

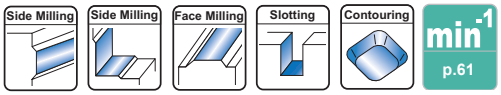
PHOENIX
- High performance
- 90° vändskärsfräs
- Med gänginfästning

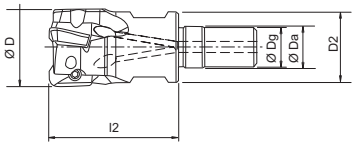
PHOENIX
- Altas prestaciones
- Fresa de 90° para escuadrar
- Cabeza roscada

PHOENIX
- Высокая производительность
- Торцевая фреза 90°
- Резьбовая головка

PHOENIX
- Wysoka wydajność
- 90° Frez walcowo-czołowy
- Chwyt wkręcany

GO TO LIVE STOCK CHECK

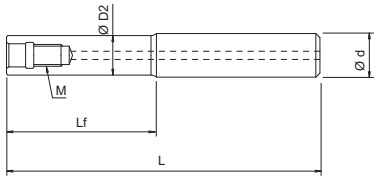






EDP	Designation	D	ZΔ	Da	Dg	l2	D2	Applicable Inserts	Stock	Price
7801600	PSE11R016SF8-2	16	2	8,5	8	27	14,5		●	
7801601	PSE11R020SF10-3	20	3	10,5	10	33	18		●	
7801602	PSE11R025SF12-4	25	4	12,5	12	35	23	ZD-T11-	●	
7801603	PSE11R028SF12-4	28	4	12,5	12	35	23	①	●	
7801604	PSE11R032SF16-5	32	5	17	16	40	28		●	
7801605	PSE11R035SF16-5	35	5	17	16	40	28		●	
7801606	PSE11R040SF16-6	40	6	17	16	40	28		●	
7801607	PSE15R025SF12-2	25	2	12,5	12	35	23		●	
7801608	PSE15R028SF12-2	28	2	12,5	12	35	23	ZD-T15-	●	
7801609	PSE15R032SF16-3	32	3	17	16	40	28	②	●	
7801610	PSE15R035SF16-3	35	3	17	16	40	28		●	
7801611	PSE15R040SF16-4	40	4	17	16	40	28		●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı





Straight arbor for screw fit tools - *Steel Shank*

EDP	Designation	d	D2	M	L	Lf	Stock	Price
7801900	SF-M08SS16-15	16	14,5	8	95	15	O	
7801901	SF-M10SS20-20	20	18	10	120	20	O	
7801902	SF-M12SS25-35	25	23	12	135	35	O	
7801903	SF-M16SS32-35	32	28	16	155	35	O	

Straight arbor for screw fit tools - *Carbide shank*

EDP	Designation	d	D2	M	L	Lf	Stock	Price
7801910	SF-M08SS16-55CS	16	14,5	8	115	55	O	
7801911	SF-M08SS16-85CS	16	14,5	8	145	85	O	
7801912	SF-M10SS20-70CS	20	18	10	140	70	O	
7801913	SF-M10SS20-110CS	20	18	10	180	110	O	
7801914	SF-M12SS25-90CS	25	23	12	170	90	O	
7801915	SF-M12SS25-140CS	25	23	12	220	140	O	
7801916	SF-M16SS32-120CS	32	28	16	220	120	O	
7801917	SF-M16SS32-190CS	32	28	16	290	190	O	

● on stock
○ available on short notice

PSE BORE

PHOENIX
- High performance
- 90° Shoulder cutter
- Bore Type

PHOENIX
- High performance
- 90 ° Schulterfräser
- Aufnahmebohrung

PHOENIX
- Alta prestazione
- 90° Spallamento retto
- A manicotto

PHOENIX
- Haute performance
- Surfacer dresser à 90°
- Trou lisse

PHOENIX
- Yüksek performans
- 90 ° sırt frezesi
- Delikli tip

PHOENIX
- High performance
- 90° vendeskærsfræser
- Til dorn

PHOENIX
- High performance
- 90° vändskärsfräs
- Med skruvfäste

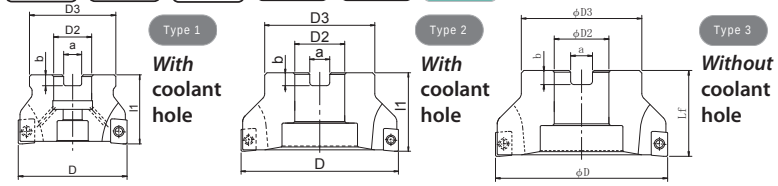
PHOENIX
- Altas prestaciones
- Fresa de 90° para escuadrar
- Hueca

PHOENIX
- Высокая производительность
- Торцевая фреза 90°
- Насадная

PHOENIX
- Wysoka wydajność
- 90° Frez walcowo-czołowy
- Nasadzany

GO TO LIVE STOCK CHECK

Side Milling | Side Milling | Face Milling | Slotting | Contouring | min⁻¹ E.61





EDP	Type	Designation	D	ZΔ	l1	D3	D2	a	b	Applicable Inserts	Type	Stock	Price
7801000	Coarse Pitch	PSE11R040M16-4	40	4	40	38	16	8,4	5,6		1	●	
7801001	Coarse Pitch	PSE11R050M22-5	50	5	40	45	22	10,4	6,3	ZD-T11-	1	●	
7801002	Coarse Pitch	PSE11R063M22-6	63	6	40	50	22	10,4	6,3	①	2	●	
7801003	Coarse Pitch	PSE11R080M27-7	80	7	50	60	27	12,4	7		2	●	
7801020	Coarse Pitch	PSE11R080M25.4-7	80	7	50	60	25,4	9,5	6		2	O	
7801004	Close Pitch	PSE11R040M16-6	40	6	40	38	16	8,4	5,6		1	●	
7801005	Close Pitch	PSE11R050M22-7	50	7	40	45	22	10,4	6,3	ZD-T11-	1	●	
7801006	Close Pitch	PSE11R063M22-8	63	8	40	50	22	10,4	6,3	①	2	●	
7801007	Close Pitch	PSE11R080M27-10	80	10	50	60	27	12,4	7		2	●	
7801021	Close Pitch	PSE11R080M25.4-10	80	10	50	60	25,4	9,5	6		2	O	
7801008	Coarse Pitch	PSE15R040M16-3	40	3	40	38	16	8,4	5,6		1	●	
7801009	Coarse Pitch	PSE15R050M22-3	50	3	40	45	22	10,4	6,3		1	●	
7801010	Coarse Pitch	PSE15R063M22-4	63	4	40	50	22	10,4	6,3	ZD-T15-	2	●	
7801011	Coarse Pitch	PSE15R080M27-5	80	5	50	60	27	12,4	7	②	2	●	
7801022	Coarse Pitch	PSE15R080M25.4-5	80	5	50	60	25,4	9,5	6		2	O	
7801012	Coarse Pitch	PSE15R100M32-7	100	7	50	70	32	14,4	8		3	●	
7801023	Coarse Pitch	PSE15R100M31.7-7	100	7	50	70	31,75	12,7	8		3	O	
7801024	Coarse Pitch	PSE15R125M38.1-8	125	8	63	90	38,1	15,9	10		3	O	
7801014	Close Pitch	PSE15R040M16-4	40	4	40	38	16	8,4	5,6		1	●	
7801015	Close Pitch	PSE15R050M22-5	50	5	40	45	22	10,4	6,3		1	●	
7801016	Close Pitch	PSE15R063M22-6	63	6	40	50	22	10,4	6,3		2	●	
7801017	Close Pitch	PSE15R080M27-8	80	8	50	60	27	12,4	7	ZD-T15-	2	●	
7801025	Close Pitch	PSE15R080M25.4-8	80	8	50	60	25,4	9,5	6	②	2	O	
7801018	Close Pitch	PSE15R100M32-10	100	10	50	70	32	14,4	8		3	●	
7801026	Close Pitch	PSE15R100M31.7-10	100	10	50	70	31,75	12,7	8		3	O	
7801027	Close Pitch	PSE15R125M38.1-11	125	11	63	90	38,1	15,9	10		3	O	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Bottom notch

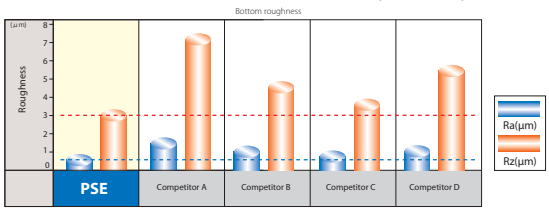


- The bottom notch breaks chips into small pieces
- Small chips prevents jamming or wrapping, enabling the tool to perform ramping and helical milling in a smooth manner

High precision insert

Bottom roughness

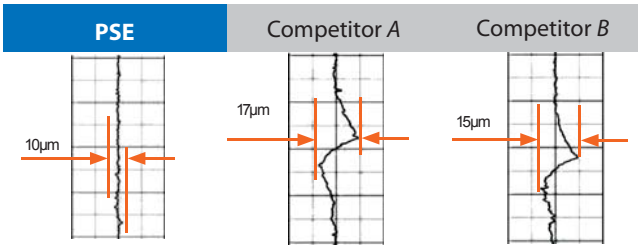
toolholder	PSE 11R032 SS 32-5S
insert	ZDKT 11T304 SR-GM XP3035
material	S50C
parameters	Vc = 180 m/min
	fz = 0,1 mm/t
	ap = 0,1 mm
	ae=25,6 mm Ra-0,5 µm-Rz-4 µm-PSE



results — PSE showed an improvement at the bottom flat surface finish. Rz 4µm and under

Side Milling Offset

toolholder	PSE 15R032 SS 32-3S
insert	ZDKT 150508 SR-GM XP3035
material	S50C
parameters	Vc = 180m/min
	fz = 0,1 mm/t
	ap = 0,1 mm
	ae=25,6 mm



results — PSE showed an improvement at side step machining as (measured) step as 10 µm

PHOENIX
- Applicable insert for 90° Shoulder cutter

PHOENIX
- Wendeplatten 90° Schulterfräser PSE

PHOENIX
- Inserti applicabili per fresa 90° spallamento retto

PHOENIX
- Surfacer dresser à 90° Trou lisse

PHOENIX
- 90 ° sırt frezesi için uygun uç

PHOENIX
- Anvendelige skær til 90° vendeskærsfræser

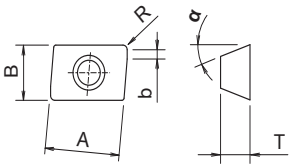
PHOENIX
- Utbytbara vändskär för 90° vändskärsfräs

PHOENIX
- Plaquitas para fresa a 90º de escuadrar

PHOENIX
- Сменные пластинки для торцевой фрезы 90°

PHOENIX
- Płytka do frezów walcowo -czołowych 90°

GO TO LIVE STOCK CHECK





Designation	No. of cutting edges	Insert Size					Uncoated	Coated Grade					Price
		A X B	T	α	R	b	CK010	XP3035	XP2040	XC1015	XC5035	XC5040	
ZDKT11T308SR-GL	2	10x6,8	3,8	15°	0,8	1,4		7814026	7813026				
ZDKT11T304SR-GM	2	10x6,8	3,8	15°	0,4	1,8		7814025	7813025	7812025			
ZDKT11T308SR-GM	2	10x6,8	3,8	15°	0,8	1,4		7814032	7813032				
ZDKT11T312SR-GM	2	10x6,8	3,8	15°	1,2	1		7814053					
ZDKT11T320SR-GM	2	10x6,8	3,8	15°	2	2,1		7814038					
① ZDKT11T330SR-GM	2	10x6,8	3,8	15°	3	1,5		7814054					
ZDKT11T340SR-GM	2	10x6,8	3,8	15°	4	-		7814055					
New Sizes ZDKT11T308SR-GR	2	10x6,8	3,8	15°	0,8	1,4		7814033	7813033	7812033			
New Sizes ZDKT11T304ER-SM	2	10x6,8	3,8	15°	0,4	1,8						7816034	
ZDKT11T308ER-SM	2	10x6,8	3,8	15°	0,8	1,4					7815031	7816031	
ZDKT11T316ER-SM	2	10x6,8	3,8	15°	1,6	0,8					7815027	7816027	
ZDKT11T302FR-NM	2	10x6,8	3,8	15°	0,2	2	7811048						
ZDKT11T304FR-NM	2	10x6,8	3,8	15°	0,4	1,8	7811049						
ZDHT11T304FR-NM	2	10x6,8	3,5	15°	0,4	1,8	7811024						
ZDKT150508SR-GL	2	14x9,3	5,56	15°	0,8	1,6		7814057	7813057				
② ZDKT150508SR-GM	2	14x9,3	5,56	15°	0,8	1,6		7814029	7813028	7812029			
New Sizes ZDKT150508SR-GR	2	14x9,3	5,56	15°	0,8	1,6		7814058	7813058	7812058			
ZDKT150508ER-SM	2	14x9,3	5,56	15°	0,8	1,6					7815056	7816056	
ZDKT150508FR-NM	2	14x9,3	5,56	15°	0,8	1,6	7811046						

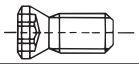
Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S	H
CK010	NM	Coolant / Dry			○	◉		
XP2040	GL/GM	Dry	○					◉
		Coolant		◉			○	
XP3035	GL/GM	Dry	◉	○	○			
XC1015	–	Dry			◉			
XC5035	SM	Dry		◉				○
		Coolant		○			○	
XC5040	SM	Coolant		○			◉	○

GL Light Cutting
GM Medium Cutting
NM Aluminum
SM Heat Resistance Alloy

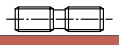
◉ First choice
○ Second choice

Accessories - *Clamping Screw, Power Screw & Wrench*



Clamping Screw

EDP	Designation		Applicable Inserts	Applicable Cutters	Stock	Price
7808107	FS25656P (Torx 8IP)	①	ZD-T11...	PSE SS/SF Ø 16~35	●	
7808109	FS25673P (Torx 8IP)	①	ZD-T11...	PSE BORE Ø 40~80	●	
7808115	FS35686P (Torx 15IP)	②	ZDKT15...	PSE SS/SF Ø 25~63	●	
				PSE BORE Ø 40~125		



Power Screw

EDP	Designation		Applicable Inserts	Applicable Cutters	Stock	Price
7808150	PS0830 (Mx30)	①	ZD-T11...	PSE BORE Ø 40	●	
		②	ZDKT15...			
7808151	PS1031 (M10x31)	①	ZD-T11...	PSE BORE Ø 50	●	
		②	ZDKT15...			



Wrench

EDP	Designation		Applicable Inserts	Applicable Cutters	Stock	Price
7808225	81P-D (Torx 8IP)	①	ZD-T11...	PSE SS/SF Ø 16~35	●	
		②	ZDKT15...	PSE BORE Ø 40~80		
7808228	15IP-D (Torx 15IP)	①	ZD-T11...	PSE SS/SF Ø 25~63	●	
		②	ZDKT15...	PSE BORE Ø 40~125		

● on stock
○ available on short notice

PHOENIX
- High performance
- Radius Cutter
- Straight Shank

PHOENIX
- High performance
- Rundplattenfräser
- Zylinderschaft

PHOENIX
- Alta prestazione
- Fresa con inserto tondo
- Gambo cilindrico

PHOENIX
- Haute performance
- Fraise plaquettes rondes
- Queue cylindrique

PHOENIX
- Yüksek performans
- Radyus freze
- Düz şaft

PHOENIX
- High performance
- Radius fræser
- Cylindrisk skaft

PHOENIX
- High performance
- Vändskärsfräs med runda skär
- Rakt skaft

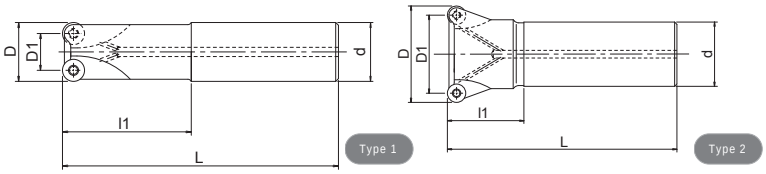
PHOENIX
- Altas prestaciones
- Fresa tórica
- Mango cilíndrico

PHOENIX
- Высокая производительность
- Торовая фреза
- Цилиндрический хвостовик

PHOENIX
- Wysoka wydajność
- Frez na płytki okrągłe
- Chwyt walcowy

GO TO LIVE STOCK CHECK

Side Milling | Slotting | Face Milling | Contouring | Profile Milling | min^{-1} E.63





EDP	Type	Designation	D1	D	ZΔ	d	L	l1	Applicable Inserts	Type	Stock	Price
7800300	Short	PRC10R020SS20-2S	10	20	2	20	130	50		1	●	
7800301	Short	PRC10R020SS25-3S	15	25	3	25	140	60	RP-10-	1	●	
7800302	Short	PRC10R032SS32-4S	22	32	4	32	150	70	①	1	●	
7800303	Long	PRC10R020SS20-2L	10	20	2	20	180	80	RP-10-	1	O	
7800304	Long	PRC10R025SS25-3L	15	25	3	25	200	120	①	1	O	
7800305	Long	PRC10R032SS32-4L	22	32	4	32	200	120		1	O	
7800318	Short	PRC12R030SS32-2S	18	30	2	32	150	70		1	O	
7800306	Short	PRC12R032SS32-2S	20	32	2	32	150	70	RP-12-	1	●	
7800320	Short	PRC12R032SS32-3S	20	32	3	32	150	70	②	1	O	
7800307	Short	PRC12R040SS32-3S	28	40	3	32	150	50		2	●	
7800308	Short	PRC12R050SS42-4S	38	50	4	42	150	50		2	O	
7800319	Long	PRC12R030SS32-2L	18	30	2	32	200	120		1	O	
7800309	Long	PRC12R032SS32-2L	20	32	2	32	200	120	RP-12-	1	O	
7800321	Long	PRC12R032SS32-3L	20	32	3	32	200	120	②	1	O	
7800310	Long	PRC12R040SS32-3L	28	40	3	32	250	50		2	O	
7800311	Long	PRC12R050SS42-4L	38	50	4	42	250	50		2	O	
7800312	Short	PRC16R040SS32-2S	24	40	2	32	150	50		2	●	
7800313	Short	PRC16R050SS42-3S	34	50	3	42	150	50	RP-16-	2	O	
7800314	Short	PRC16R063SS42-4S	47	63	4	42	150	50	③	2	O	
7800315	Long	PRC16R040SS32-2L	24	40	2	32	250	50		2	O	
7800316	Long	PRC16R050SS42-3L	34	50	3	42	250	50	RP-16-	2	O	
7800317	Long	PRC16R063SS42-4L	47	63	4	42	250	50	③	2	O	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PRC SCREW FIT

PHOENIX
- High performance
- Radius Cutter
- Screw fit type

PHOENIX
- High performance
- Rundplattenfräser
- Aufschraubkopf

PHOENIX
- Alta prestazione
- Fresa con inserto tondo
- sistema modulare

PHOENIX
- Haute performance
- Fraise plaquettes rondes
- tête vissée

PHOENIX
- Yüksek performans
- Radyus freze
- Vidalı tip

PHOENIX
- High performance
- Radius fræser
- Indskrunings type

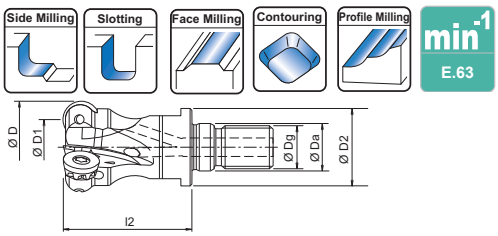
PHOENIX
- High performance
- Vändskärsfräs med runda skär
- Rakt skaft

PHOENIX
- Altas prestaciones
- Fresa tórica
- Cabeza roscada

PHOENIX
- Высокая производительность
- Торовая фреза
- Крепление винтом

PHOENIX
- Wysoka wydajność
- Frez na płytki okrągłe
- Chwyt wkręcany

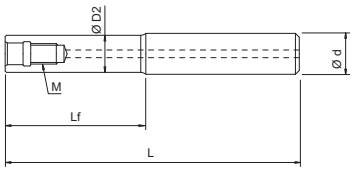
GO TO LIVE STOCK CHECK





EDP	Designation	D1	D	ZΔ	Da	Dg	l2	D2	Applicable Inserts	Stock	Price
7801700	PRC10R020SF10-2	10	20	2	10,5	10	33	18		●	
7801701	PRC10R025SF12-3	15	25	3	12,5	12	35	23	RP-10-	●	
7801702	PRC10R030SF16-3	20	30	3	17	16	40	28	①	●	
7801703	PRC10R032SF16-4	22	32	4	17	16	40	28		●	
7801704	PRC10R040SF16-4	30	40	4	17	16	40	28		●	
7801705	PRC12R030SF16-2	18	30	2	17	16	40	28		●	
7801706	PRC12R032SF16-3	20	32	3	17	16	40	28	RP-12-	●	
7801707	PRC12R040SF16-3	28	40	3	17	16	40	28	②	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı





Straight arbor for screw fit tools - *Steel Shank*

EDP	Designation	d	D2	M	L	Lf	Stock	Price
7801900	SF-M08SS16-15	16	14,5	8	95	15	O	
7801901	SF-M10SS20-20	20	18	10	120	20	O	
7801902	SF-M12SS25-35	25	23	12	135	35	O	
7801903	SF-M16SS32-35	32	28	16	155	35	O	

Straight arbor for screw fit tools - *Carbide shank*

EDP	Designation	d	D2	M	L	Lf	Stock	Price
7801910	SF-M08SS16-55CS	16	14,5	8	115	55	O	
7801911	SF-M08SS16-85CS	16	14,5	8	145	85	O	
7801912	SF-M10SS20-70CS	20	18	10	140	70	O	
7801913	SF-M10SS20-110CS	20	18	10	180	110	O	
7801914	SF-M12SS25-90CS	25	23	12	170	90	O	
7801915	SF-M12SS25-140CS	25	23	12	220	140	O	
7801916	SF-M16SS32-120CS	32	28	16	220	120	O	
7801917	SF-M16SS32-190CS	32	28	16	290	190	O	

PRC BORE

PHOENIX
- High performance
- Radius Cutter
- Bore type

PHOENIX
- High performance
- Rundplattenfräser
- Aufnahmebohrung

PHOENIX
- Alta prestazione
- Fresa con inserto tondo
- A manicotto

PHOENIX
- Haute performance
- Fraise plaquettes rondes
- Trou lisse

PHOENIX
- Yüksek performans
- Radyus freze
- Delikli tip

PHOENIX
- High performance
- Radius fræser
- Til dorn

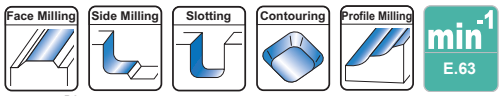
PHOENIX
- High performance
- Vändskärsfräs med runda skär
- Med skruvfäste

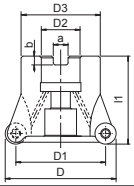
PHOENIX
- Altas prestaciones
- Fresa tórica
- Hueca

PHOENIX
- Высокая производительность
- Торовая фреза
- Насадная

PHOENIX
- Wysoka wydajność
- Frez na płytki okrągłe
- Nasadzany

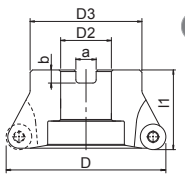
GO TO LIVE STOCK CHECK





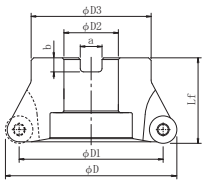
Type 1

With **coolant hole**



Type 2

With **coolant hole**



Type 3

Without **coolant hole**



EDP	Type	Designation	D1	D	ZΔ	l1	D3	D2	a	b	Applicable Inserts	Type	Stock	Price
7800200	Coarse Pitch	PRC12R050M22-4	38	50	4	40	45	22	10,4	6,3		2	O	
7800201	Coarse Pitch	PRC12R063M22-4	51	63	4	40	50	22	10,4	6,3		2	O	
7800202	Coarse Pitch	PRC12R080M27-5	68	80	5	50	60	27	12,4	7	RP-12-	2	●	
7800209	Coarse Pitch	PRC12R080M25.4-5	68	80	5	50	60	25,4	9,5	6	②	2	O	
7800203	Coarse Pitch	PRC12R100M32-6	88	100	6	50	70	32	14,4	8		2	●	
7800210	Coarse Pitch	PRC12R100M31.7-6	88	100	6	50	70	31,75	12,7	8		3	O	
7800204	Close Pitch	PRC12R050M22-5	38	50	5	40	45	22	10,4	6,3		2	●	
7800206	Close Pitch	PRC12R063M22-6	51	63	6	40	50	22	10,4	6,3	RP-12-	2	●	
7800207	Close Pitch	PRC12R080M27-8	68	80	8	50	60	27	12,4	7	②	2	●	
7800211	Close Pitch	PRC12R080M25.4-8	68	80	8	50	60	25,4	9,5	6		2	O	
7800208	Close Pitch	PRC12R100M32-10	88	100	10	50	70	32	14,4	8		2	●	
7800212	Close Pitch	PRC12R100M31.7-10	88	100	10	50	70	31,75	12,7	8		3	O	
7800213	Close Pitch	PRC16R050M22-3	34	50	3	40	45	22	10,4	6,3		1	●	
7800214	Close Pitch	PRC16R063M33-5	47	63	5	40	50	22	10,4	6,3		2	●	
7800216	Close Pitch	PRC16R080M27-6	64	80	6	50	60	27	12,4	7	RP-16-	2	●	
7800218	Close Pitch	PRC16R080M25.4-6	64	80	6	50	60	25,4	9,5	6	③	2	O	
7800217	Close Pitch	PRC16R100M32-7	84	100	7	50	70	32	14,4	8		2	●	
7800219	Close Pitch	PRC16R100M31.7-7	84	100	7	50	70	31,75	12,7	8		3	O	

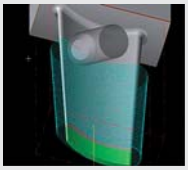
ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Features - *PRC*

Improved chip ejection with wide chip pocket

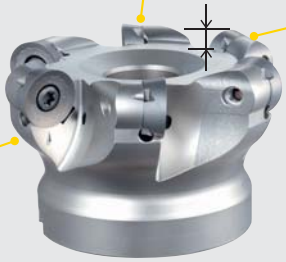
Due to no extra insert clamping it allows smooth chip evacuation

Body relief shape support 3 dimensional machining



Insert rotation stop



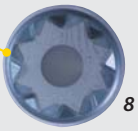


Inserts back side



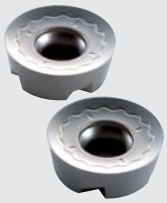
4 Corner type
SM chipbreaker

Setting to accommodate cutout



8 Corner type

Depended on the cutting depth setting it's possible to choose number of corners. *(4 or 8 corners)*



PRC INSERTS

PHOENIX
- Applicable insert for Radius Cutter

PHOENIX
- Wendeplatten, Rundplattenfräser PRC

PHOENIX
- Inserti applicabili per fresa con inserto tondo

PHOENIX
- Choix de plaquettes rondes

PHOENIX
- Radyus freze için uygun uç

PHOENIX
- Anvendelige vendeskær til radiusfræser

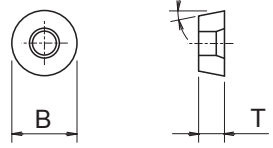
PHOENIX
- Utbytbara vändskär för vändskärsfräs med runda skär

PHOENIX
- Plaquitas para fresa tórica

PHOENIX
- Сменные пластинки для торовой фрезы

PHOENIX
- Płytka okrągła do frezów PRC

GO TO LIVE STOCK CHECK





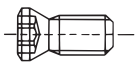
Designation	No. of corners	Insert size			Uncoated	Coated grade					Price
		B	T	α	CK010	XP3035	XP2040	XC1015	XC5035	XC5040	
RPHW10T3MOSN	8	10	3,97	11°		7814030					
RPHW10T3MOEN	8	10	3,97	11°				7812017			
① RPHT10T3MOEN-GL	8	10	3,97	11°			7813008				
RPHT10T3MOEN-SM	4	10	3,97	11°					7815010		
RPHT10T3M8EN-SM	8	10	3,97	11°					7815050	7816050	
RPHT10T3MOFN-NM	8	10	3,97	11°	7811009						
RPHW1204MOSN	8	12	4,76	11°				7812018			
RPHW1204MOSN	8	12	4,76	11°		7814018					
② RPHT1204MOEN-GL	8	12	4,76	11°			7813011				
RPHT1204MOEN-SM	4	12	4,76	11°					7815012		
RPHT1204M8EN-SM	8	12	4,76	11°					7815051	7816051	
RPHT1204MOFN-NM	8	12	4,76	11°	7811013						
RPHW1605MOSN	8	16	5,56	11°				7812019			
RPHW1605MOSN	8	16	5,56	11°		7814019					
③ RPHT1605MOEN-GL	8	16	5,56	11°			7813014				
RPHT1605MOEN-SM	4	16	5,56	11°					7815015		
RPHT1605M8EN-SM	8	16	5,56	11°					7815052	7816052	
RPHT1605MOFN-NM	8	16	5,56	11°	7811016						

Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S	H
CK010	NM	Coolant				◉		
XP2040	GL	Dry	○					◉
		Coolant		◉			○	
XP3035	–	Dry	◉	○	○			
XC1015	–	Dry			◉			
XC5035	SM	Dry		◉				○
		Coolant		○			○	
XC5040	SM	Coolant		○			◉	○

GL Light Cutting
GM Medium Cutting
NM Aluminum
SM Heat Resistance Alloy

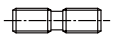
◉ First choice
○ Second choice



Clamping Screw

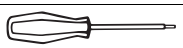
Accessories - *Clamping Screw, Power Screw & Wrench*

EDP	Designation		Applicable Inserts	Applicable Cutters	Stock	Price
7808116	FS30573A (Torx 10)	①	RPH-10...	PRC SS/SF Ø 20~32	●	
7808112	FS35586 (Torx 15)	②	RPH-12...	PRC SS/SF Ø 32~50 PRC BORE Ø 32~63	●	
7808113	FS45510 (Torx 20)	③	RPH-16...	PRC SS/SF Ø 40~63 PRC BORE Ø 50~100	●	



Power Screw

EDP	Designation		Applicable Inserts	Applicable Cutters	Stock	Price
7808151	PS1031 (M10x31)	③	RPH-16...	PRC BORE Ø 50	●	



Wrench

EDP	Designation		Applicable Inserts	Applicable Cutters	Stock	Price
7808207	T10-D (Torx 10)	①	RPH-10...	PRC SS/SF Ø 20~32	●	
7808208	T15-D (Torx 15)	②	RPH-12...	PRC SS/SF Ø 32~50 PRC BORE Ø 32~63	●	
7808209	T20-D (Torx 20)	③	RPH-16...	PRC SS/SF Ø 40~63 PRC BORE Ø 50~100	●	

● on stock
○ available on short notice

PHC SS

PHOENIX
- High performance
- High Feed Radius Cutter
- Straight Shank

PHOENIX
- High performance
- Hochvorschubsfräser
- Zylinderschaft

PHOENIX
- Alta prestazione
- Fresa alto avanzamento
- Gambo cilindrico

PHOENIX
- Haute performance
- Fraise grandes avances
- Queue cylindrique

PHOENIX
- Yüksek performans
- Yüksek ilerlemeli freze
- Düz şaft

PHOENIX
- High performance
- High feed radiusfræser
- Cylindrisk skaft

PHOENIX
- High performance
- Högmatnings fräs med vändskär
- Rakt skaft

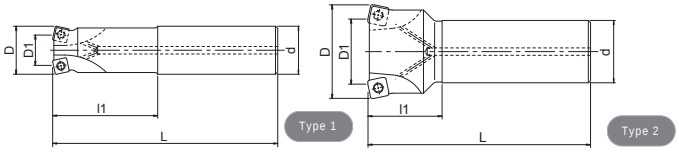
PHOENIX
- Altas prestaciones
- Fresa de gran avance
- Mango cilíndrico

PHOENIX
- Высокая производительность
- Фреза с высокой подачей
- Цилиндрический хвостовик

PHOENIX
- Wysoka wydajność
- Frez do wysokich posuwów
- Chwyt walcowy

GO TO LIVE STOCK CHECK

Face Milling | Side Milling | Slotting | Plunging | Contouring | Profile Milling | min^{-1} E.64





EDP	Type	Designation	D1	D	ZΔ	d	L	l1	Applicable Inserts	Type	Stock	Price
7800700	Short	PHC09R025SS25-2S	13,2	25	2	25	140	60		1	O	
7800701	Short	PHC09R025SS25-3S	13,2	25	3	25	140	60		1	●	
7800716	Short	PHC09R028SS25-3S	16,2	28	3	25	140	40	SDMT09-	2	O	
7800717	Short	PHC09R030SS32-3S	18,2	30	3	32	150	70	①	1	O	
7800702	Short	PHC09R032SS32-3S	20,2	32	3	32	150	70		1	●	
7800718	Short	PHC09R035SS32-3S	23,2	35	3	32	150	50		2	O	
7800703	Short	PHC09R040SS32-4S	28,2	40	4	32	150	50		2	●	
7800719	Short	PHC09R040SS42-4S	28,2	40	4	42	150	50		1	O	
7800704	Long	PHC09R025SS25-2L	13,2	25	2	25	200	120		1	O	
7800705	Long	PHC09R025SS25-3L	13,2	25	3	25	200	120		1	●	
7800720	Long	PHC09R028SS25-3L	16,2	28	3	25	200	40	SDMT09-	2	●	
7800721	Long	PHC09R030SS32-3L	18,2	30	3	32	200	120	①	1	O	
7800706	Long	PHC09R032SS32-3L	20,2	32	3	32	200	120		1	●	
7800722	Long	PHC09R035SS32-3L	23,2	35	3	32	200	50		2	O	
7800707	Long	PHC09R040SS32-4L	28,2	40	4	32	250	50		2	O	
7800723	Long	PHC09R040SS42-3L	28,2	40	3	42	250	70		1	O	
7800724	Extra long	PHC09R025SS25-2LL	13,2	25	2	25	300	180		1	O	
7800725	Extra long	PHC09R028SS25-2LL	16,2	28	2	25	300	40	SDMT09-	2	O	
7800726	Extra long	PHC09R030SS32-2LL	18,2	30	2	32	300	180	①	1	O	
7800727	Extra long	PHC09R032SS32-2LL	20,2	32	2	32	300	180		1	O	
7800728	Extra long	PHC09R035SS32-2LL	23,2	35	2	32	300	50		2	O	
7800729	Extra long	PHC09R040SS42-2LL	28,2	40	2	42	300	70		1	O	
7800730	Short	PHC12R030SS32-2S	13,4	30	2	32	150	70		1	O	
7800708	Short	PHC12R032SS32-2S	15,4	32	2	32	150	70	SXMT12-	1	●	
7800731	Short	PHC12R035SS32-3S	18,4	35	3	32	150	50	②	2	●	
7800709	Short	PHC12R040SS32-3S	23,4	40	3	32	150	50		2	●	
7800732	Short	PHC12R040SS42-3S	23,4	40	3	42	150	50		1	O	
7800710	Short	PHC12R050SS42-4S	33,4	50	4	42	150	50		2	O	
7800711	Short	PHC12R063SS42-5S	46,4	63	5	42	150	50		2	O	
7800733	Long	PHC12R030SS32-2L	13,4	30	2	32	200	120		1	O	
7800712	Long	PHC12R032SS32-2L	15,4	32	2	32	200	120	SXMT12-	1	O	
7800734	Long	PHC12R035SS32-3L	18,4	35	3	32	200	50	②	2	O	
7800713	Long	PHC12R040SS32-3L	23,4	40	3	32	250	50		2	O	
7800735	Long	PHC12R040SS42-3L	23,4	40	3	42	250	70		1	O	
7800714	Long	PHC12R050SS42-4L	33,4	50	4	42	250	50		2	O	
7800715	Long	PHC12R063SS42-5L	46,4	63	5	42	250	50		2	O	
7800736	Extra long	PHC12R030SS32-2LL	13,4	30	2	32	300	180		1	O	
7800737	Extra long	PHC12R032SS32-2LL	15,4	32	2	32	300	180	SXMT12-	1	O	
7800738	Extra long	PHC12R035SS32-2LL	18,4	35	2	32	300	50	②	2	O	
7800739	Extra long	PRC12R040SS42-2LL	23,4	40	2	42	300	70		1	O	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PHC SCREW FIT

PHOENIX
- High performance
- High Feed Radius Cutter
- Screw fit type

PHOENIX
- High performance
- Hochvorschubsfräser
- Aufschraubkopf

PHOENIX
- Alta prestazione
- Fresa alto avanzamento
- Sistema modulare

PHOENIX
- Haute performance
- Fraise grandes avances
- tête vissée

PHOENIX
- Yüksek performans
- Yüksek ilerlemeli freze
- Vidalı tip

PHOENIX
- High performance
- High feed radiusfræser
- Indskruningstype

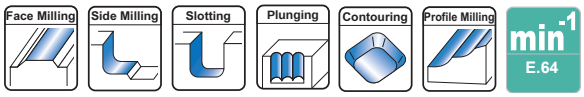
PHOENIX
- High performance
- Högmatnings fräs med vändskär
- Med gänginfästning

PHOENIX
- Altas prestaciones
- Fresa de gran avance
- Cabeza roscada

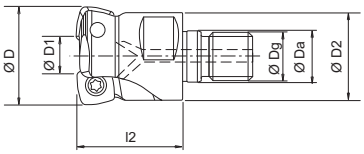
PHOENIX
- Высокая производительность
- Фреза с высокой подачей
- Резьбовая головка

PHOENIX
- Wysoka wydajność
- Frez do wysokich posuwów
- Chwyt wkręcany

GO TO LIVE STOCK CHECK



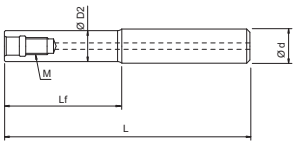
min^{-1} E.64





EDP	Designation	D1	D	ZΔ	Da	Dg	l2	D2	Applicable Inserts	Stock	Price
7801500	PHC09R025SF12-3	13,2	25	3	12,5	12	35	23		●	
7801501	PHC09R028SF12-3	16,2	28	3	12,5	12	35	23		●	
7801502	PHC09R030SF16-3	18,2	30	3	17	16	40	28	SDMT09-	●	
7801503	PHC09R032SF16-3	20,2	32	3	17	16	40	28	①	●	
7801504	PHC09R035SF16-3	23,2	35	3	17	16	40	28		●	
7801505	PHC09R040SF16-4	28,2	40	4	17	16	40	28		●	
7801506	PHC12R030SF16-2	13,4	30	2	17	16	40	28		●	
7801507	PHC12R032SF16-2	15,4	32	2	17	16	40	28	SXMT12-	●	
7801508	PHC12R035SF16-3	18,4	35	3	17	16	40	28	②	●	
7801509	PHC12R040SF16-3	23,4	40	3	17	16	40	28		●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı





Straight arbor for screw fit tools - *Steel Shank*

EDP	Designation	d	D2	M	L	Lf	Stock	Price
7801900	SF-M08SS16-15	16	14,5	8	95	15	○	
7801901	SF-M10SS20-20	20	18	10	120	20	○	
7801902	SF-M12SS25-35	25	23	12	135	35	○	
7801903	SF-M16SS32-35	32	28	16	155	35	○	

Straight arbor for screw fit tools - *Carbide shank*

EDP	Designation	d	D2	M	L	Lf	Stock	Price
7801910	SF-M08SS16-55CS	16	14,5	8	115	55	○	
7801911	SF-M08SS16-85CS	16	14,5	8	145	85	○	
7801912	SF-M10SS20-70CS	20	18	10	140	70	○	
7801913	SF-M10SS20-110CS	20	18	10	180	110	○	
7801914	SF-M12SS25-90CS	25	23	12	170	90	○	
7801915	SF-M12SS25-140CS	25	23	12	220	140	○	
7801916	SF-M16SS32-120CS	32	28	16	220	120	○	
7801917	SF-M16SS32-190CS	32	28	16	290	190	○	

● on stock
○ available on short notice

PHC BORE

PHOENIX
- High performance
- High Feed Radius Cutter
- Bore Type

PHOENIX
- High performance
- Hochvorschubsfräser
- Aufnahmebohrung

PHOENIX
- Alta prestazione
- Fresa alto avanzamento
- A manicotto

PHOENIX
- Haute performance
- Fraise grandes avances
- Trou lisse

PHOENIX
- Yüksek performans
- Yüksek ilerlemeli freze
- Delikli tip

PHOENIX
- High performance
- High feed radiusfræser
- Til dorn

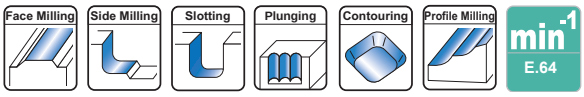
PHOENIX
- High performance
- Högmatnings fräs med vändskär
- Med skruvfäste

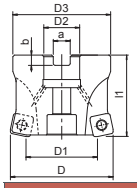
PHOENIX
- Altas prestaciones
- Fresa de gran avance
- Hueca

PHOENIX
- Высокая производительность
- Фреза с высокой подачей
- Насадная

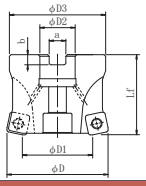
PHOENIX
- Wysoka wydajność
- Frez do wysokich posuwów
- Nasadzany

GO TO LIVE STOCK CHECK





Type 1 — *With* coolant hole



Type 2 — *With* coolant hole



EDP	Designation	D1	D	ZΔ	l1	D3	D2	a	b	Inserts	Type	Stock	Price
7800600	PHC09R040M16-4	28,2	40	4	40	38	16	8,4	5,6		1	●	
7800601	PHC09R050M22-5	38,2	50	5	50	47	22	10,4	6,3	SDMT09-	2	●	
7800605	PHC09R050M22.2-5	38,2	50	5	50	47	22,225	8	5	①	2	O	
7800602	PHC09R052M22-5	40,2	52	5	50	47	22	10,4	6,3		2	●	
7800603	PHC09R063M22-6	51,2	63	6	50	60	22	10,4	6,3		2	●	
7800606	PHC09R063M22.2-6	51,2	63	6	50	60	22,225	8	5		2	O	
7800604	PHC09R066M22-7	54,2	66	7	50	60	22	10,4	6,3		2	●	
7800607	PHC12R040M16-3	23,4	40	3	40	38	16	8,4	5,6		2	●	
7800608	PHC12R050M22-4	33,4	50	4	50	47	22	10,4	6,3		2	●	
7800614	PHC12R050M22.2-4	33,4	50	4	50	47	22,225	8	5		2	O	
7800609	PHC12R052M22-4	35,4	52	4	50	47	22	10,4	6,3	SXMT12-	2	●	
7800610	PHC12R063M22-5	46,4	63	5	50	60	22	10,4	6,3	②	2	●	
7800615	PHC12R0063M22.2-5	46,4	63	5	50	60	22,225	8	5		2	O	
7800611	PHC12R066M22-6	49,4	66	6	50	60	22	10,4	6,3		2	●	
7800612	PHC12R080M27-7	63,4	80	7	50	76	27	12,4	7		2	●	
7800616	PHC12R080M31.7-7	63,4	80	7	63	76	31,75	12,7	8		2	O	
7800613	PHC12R100M32-8	83,4	100	8	63	96	32	14,4	8		2	●	
7800617	PHC12R100M31.7-8	83,4	100	8	63	96	31,75	12,7	8		2	O	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

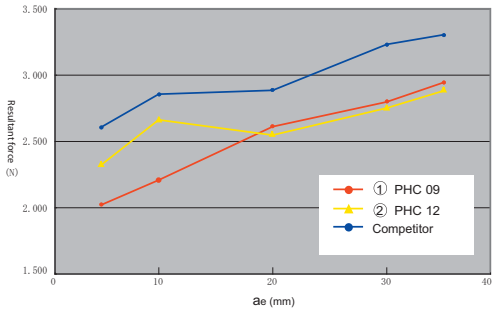
Ideal configuration for rough milling

- Economical four-corner type
- A breaker shape that enhances cutting performance while ensuring the rigidity of the cutter



PHC - *Processing data*

Tool	PHC 09R050 M22-5	PHC 12R050 M22-4
Insert (grade)	SDMT09T308SR-GM XP3035	SXMT120410SR-GM XP3035
Work Material	S50C	
Cutting Speed	180 m/min (1.150 min^{-1})	
Feed	5.000 mm/min	
Depth of cut	ap=1 mm ae=5,10,20,30,35 mm	
Width of cut	200 mm	
Coolant	Dry	
Machine	BT50 Vertical Machining Center	



Number of flutes making simultaneous contact through changes in the depth of cut (ae)

	5 mm	10 mm	20 mm	30 mm	35 mm
PHC 09	1 (flute)	2 (flutes)	3 (flutes)	3 (flutes)	4 (flutes)
PHC 12	1 (flute)	2 (flutes)	2 (flutes)	3 (flutes)	3 (flutes)

Even if the depth of cut (ae) is increased for the PHC 09 with cross pitch, the design of the cutting edge suppresses the cutting force. This suppresses the load and vibrations imparted on the machine, enabling high efficiency machining.

PHC has a lower cutting force compared to the competitor's product
PHC 09 Multiple cutters for highly efficient milling
PHC 12 Milling intermittently or with a long tool projection

PHC INSERTS

PHOENIX
- Applicable insert for High Feed Radius Cutter

PHOENIX
- Wendeplatten, Hochvorschubsfräser PHC

PHOENIX
- Inserti applicabili per fresa ad alto avanzamento

PHOENIX
- Choix de plaquettes pour la grande avance

PHOENIX
- Yüksek ilerlemeli frezeye uygun uç

PHOENIX
- Anvendelige vendeskær til high feed radiusfræser

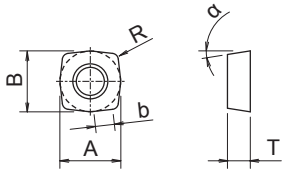
PHOENIX
- Utbytbara vändskär för högmatningsfräs

PHOENIX
- Plaquitas para fresa de gran avance

PHOENIX
- Сменные пластинки для фрезы с высокой подачей

PHOENIX
- Płytka, frezy do wyskich posuwów PHC

GO TO LIVE STOCK CHECK





	Designation	No. of cutting edges	Insert Size					Coated grade					Price
			A X B	T	α	R	b	XP2040	XP3035	XC1015	XC5035	XC5040	
①	SDMT09T308SR-GM	4	9,52x9,52	3,97	15°	0,8	1,9	7813020	7814020	7812020			
	SDMT09T308ER-SM	4	9,52x9,52	3,97	15°	0,8	1,9				7815021	7816021	
②	SXMT120410SR-GM	4	12,7x12,7	4,76	9°	1	1,3	7813022	7814022	7812022			
	SXMT120410ER-SM	4	12,7x12,7	4,76	9°	1	1,3				7815023	7816023	

Order quantity - 10 pcs. in package

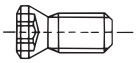
Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S	H
XP2040	GM	Dry	○					◉
		Coolant		◉			○	
XP3035	GM	Dry	◉	○	○			
XC1015	GM	Dry			◉			
XC5035	SM	Dry		◉				○
		Coolant		○			○	
XC5040	SM	Coolant		○			◉	○

GM Medium Cutting
SM Heat Resistance Alloy

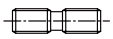
◉ First choice
○ Second choice

Accessories - *Clamping Screw, Power Screw & Wrench*



Clamping Screw

EDP	Designation	Appl. Inserts		Appl. Cutters	Stock	Price
7808111	FS35572 (Torx 15)	①	SDMT09...	PHC SS/SF Ø 25	●	
7808112	FS35586 (Torx 15)	①	SDMT09...	PHC SS/SF Ø 28~40 PHC BORE Ø 40~66	●	
7808113	FS45510 (Torx 20)	②	SXMT12...	PHC SS/SF Ø 32~63 PRC BORE Ø 40~100	●	



Power Screw

EDP	Designation	Appl. Inserts		Appl. Cutters	Stock	Price
7808150	PS0830 (M8x30)	①	SDMT09...	PHC BORE Ø 40	●	
		②	SXMT12...			



Wrench

EDP	Designation	Appl. Inserts		Appl. Cutters	Stock	Price
7808208	T15-D (Torx 15)	①	SDMT09...	PHC SS/SF Ø 25~40 PHC BORE Ø 40~66	●	
7808209	T20-D (Torx 20)	②	SXMT12...	PHC SS/SF Ø 32~63 PHC BORE Ø 40~100	●	

● on stock
○ available on short notice

PDR SS/MT/NC

PHOENIX
- High performance
- Deep Feed Radius Cutter
- Shank Type

PHOENIX
- High performance
- Torusfräser für maximale Zustellungen
- Zylinderschaft

PHOENIX
- Alta prestazione
- Fresa ad alta asportazione
- Stelo

PHOENIX
- Haute performance
- Fraise grande avance torique
- Queue cylindrique

PHOENIX
- Yüksek performans
- Derin ilerlemeli freze
- Delikli tip

PHOENIX
- High performance
- Deep feed radiusfræser
- Cylindrisk skaft

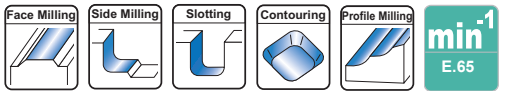
PHOENIX
- High performance
- Avverknings och hörnradie vändskärsfräs
- Rakt skaft

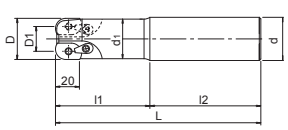
PHOENIX
- Altas prestaciones
- Fresa de gran avance con radio
- Con mango

PHOENIX
- Высокая производительность
- Фреза с высокой подачей и увеличенной глубиной резания
- Цилиндрический хвостовик

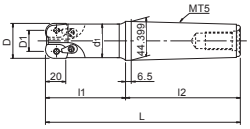
PHOENIX
- Wysoka wydajność
- Frez do głębokich wybrań
- Różne chwyty

GO TO LIVE STOCK CHECK

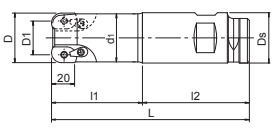




Straight Shank Type 1



Morse Taper Shank Type 2



Combination Shank Type 3



EDP	Type	Designation	D1	D	ZΔ	d	L	l1	d1	l2	Type	Stock	Price
7800000	Regular	PDR20R040SS42-2S	20	40	2	42	150	50	38,9	100	1	○	
7800001	Regular	PDR20R040MT5M16-2S	20	40	2	MT5-M16	256	120	38,9	136	2	○	
7800003	Regular	PDR20R040MT5M24-2S	20	40	2	MT5-M24	256	120	38,9	136	2	○	
7800004	Regular	PDR20R050SS42-3S	30	50	3	42	150	50	48,5	100	1	○	
7800005	Regular	PDR20R050MT5M16-3S	30	50	3	MT5-M16	256	120	48,5	136	2	○	
7800007	Regular	PDR20R050MT5M24-3S	30	50	3	MT5-M24	256	120	48,5	136	2	○	
7800008	Regular	PDR20R050CN50.8-3S	30	50	3	CN50.8	150	65	48,5	85	3	○	
7800009	Long	PDR20R040SS42-2L	20	40	2	42	250	150	38,9	100	1	○	
7800010	Long	PDR20R040MT5M16-2L	20	40	2	MT5-M16	306	170	38,9	136	2	○	
7800012	Long	PDR20R040MT5M24-2L	20	40	2	MT5-M24	306	170	38,9	136	2	○	
7800013	Long	PDR20R050SS42-3L	30	50	3	42	250	150	48,5	100	1	○	
7800014	Long	PDR20R050MT5M16-3L	30	50	3	MT5-M16	306	170	48,5	136	2	○	
7800016	Long	PDR20R050MT5M24-3L	30	50	3	MT5-M24	306	170	48,5	136	2	○	
7800017	Long	PDR20R050CN50.8-3L	30	50	3	CN50.8	250	165	48,5	85	3	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Solves traditional machining problems

Issues with traditional high-efficiency cutting tools

There is no radius tool that can perform large depths of cut.
Large variances in removal damage the tool.
The depth of cut is so small for black surface areas that air cutting becomes common.



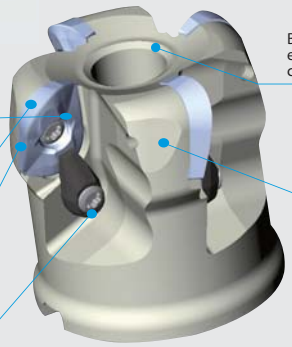
Depth of cut is needed… but we don't want to reduce efficiency.

Leading low depth of cut, high feed radius roughing tools

Variable negative form for edge rigidity
PREVENTION OF BREAKAGE

Spiral tool form
REDUCTION OF CUTTING FORCE





Cutting tool capable of finish milling thanks to the wiping edge

Ideal chip formation when depth of cut is between 2-5mm (corner radius 10)

A cutting tool capable of side machining

Uses double clamping

Bottom relief (3,5mm) enable to approach casting rough surface

Body rigidity has been increased because of the enlarged back metal

The work of a ball, cut by a radius

The PDR can cut what was until now considered the work of ball end mills.



In heavy roughing (contoured machining), machining steps become larger based on the depth of cut. Usually, the effect on the next cutting tool is great, and as machining processes are added, the overall production time increases. However, the tool form of the PDR is designed to increase the removal and leave stepovers similar to ball end mills while still maintaining the rigidity of a radius end mill. Roughing of contoured lines is restricted to ap3mm. Also, a diameter of φ50mm or less is recommended.

PDR BORE

PHOENIX
- High performance
- Deep Feed Radius Cutter
- Bore Type

PHOENIX
- High performance
- Torusfräser für maximale Zustellungen
- Aufnahmebohrung

PHOENIX
- Alta prestazione
- Fresa ad alta asportazione
- A manicotto

PHOENIX
- Haute performance
- Fraise grande avance torique
- Trou lisse

PHOENIX
- Yüksek performans
- Derin ilerlemeli freze
- Delikli tip

PHOENIX
- High performance
- Deep feed radiusfræser
- Til dorn

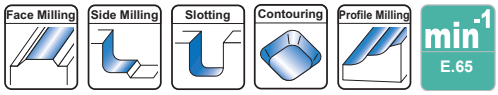
PHOENIX
- High performance
- Avverknings och hörnradie vändskärsfräs
- Med skruvfäste

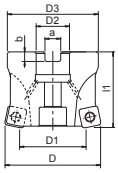
PHOENIX
- Altas prestaciones
- Fresa de gran avance con radio
- Hueca

PHOENIX
- Высокая производительность
- Фреза с высокой подачей и увеличенной глубиной резания
- Насадная

PHOENIX
- Wysoka wydajność
- Frez do głębokich wybrań
- Nasadzany

GO TO LIVE STOCK CHECK







EDP	Type	Designation	D1	D	ZΔ	l1	D3	D2	a	b	Stock	Price
7800057	For Metric holes	PDR20R063M22-3	43	63	3	63	60	22	10,4	6,3	○	
7800058	For Metric holes	PDR20R063M22-4	43	63	4	63	60	22	10,4	6,3	○	
7800059	For Metric holes	PDR20R080M27-4	60	80	4	63	76	27	12,4	7	○	
7800060	For Metric holes	PDR20R080M27-5	60	80	5	63	76	27	12,4	7	○	
7800061	For Metric holes	PDR20R100M32-5	80	100	5	63	96	32	14,4	8	○	
7800062	For Metric holes	PDR20R100M32-6	80	100	6	63	96	32	14,4	8	○	
7800063	For Metric holes	PDR20R125M40-6	105	125	6	63	100	40	16,4	9	○	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

PHOENIX
- Applicable insert for Deep Feed Radius Cutter

PHOENIX
- Wendeplatten, für Torusfräser für maximale Zustellungen

PHOENIX
- Inserti applicabili per fresa ad alta asportazione

PHOENIX
- Choix de plaquettes pour fraise grande avance torique

PHOENIX
- Derin ilerlemeli freze için uygun uç

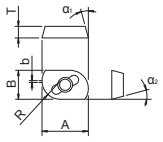
PHOENIX
- Anvendelige vendeskær til deep feed feed radiusfræser

PHOENIX
- Utbytbara vändskär för Avverknings och hörnradie vändskärsfräs

PHOENIX
- Plaquitas para fresa de gran avance con radio

PHOENIX
- Фреза с высокой подачей и увеличенной глубиной резания

PHOENIX
- Płytka do freza do głębokich wybrań





Designation	No. of cutting edges	Insert Size						Coated grade	Price
		A X B	T	α1	α2	R	b	XP3930	
ADMT2006100PDR-GM	2	24,18x16	6,35	15°	15°	10	1	7810000	

Order quantity - 10 pcs. in package

Accessories	EDP	Designation	Stock	Price
Clamping Screw	7808001	CSPB-5 (Torx 20)	○	
T-Handle Wrench	7808000	20IP-T	○	
Metal weight set (washer)	7808002	CSY-20	○	

● on stock
○ available on short notice

PHOENIX
- High performance
- Drill
- 2 flutes

PHOENIX
- High performance
- Bohrer
- 2 Schneiden

PHOENIX
- Alta prestazione
- Foratura
- 2 denti

PHOENIX
- Haute performance
- Foret
- 2 lèvres

PHOENIX
- Yüksek performans
- Matkap
- 2 ağızlı

PHOENIX
- High performance
- Boring
- 2 skær

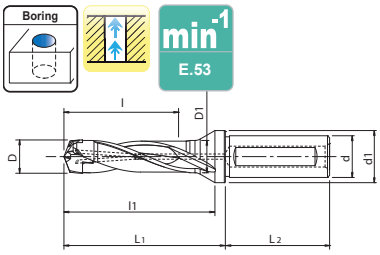
PHOENIX
- High performance
- Borr
- 2 skär

PHOENIX
- Altas prestaciones
- Taladrado
- 2 labios

PHOENIX
- Высокая производительность
- Сверло
- 2-зуба

PHOENIX
- Wysoka wydajność
- Wiertło
- 2-ostrzowe

GO TO LIVE STOCK CHECK





3D Type

EDP	Designation	Drilling Dia Min	Drilling Dia Max	Applicable Head	D	l	l1	L1	L2	d	d1	Applicable Driver	Stock	Price
7831015	PXDZ140-3D-113,5-16	14	14,49	①	13,5	43	63,4	69,9	48	16	20	D-1	●	
7831016	PXDZ145-3D-115,5-16	14,5	14,99	②	14	44,5	65,5	72	48	16	20	D-1	●	
7831017	PXDZ150-3D-119,5-20	15	15,99	③	14,5	46,5	67,1	73,6	50	20	25	D-1	●	
7831018	PXDZ160-3D-123,5-20	16	16,99	④	15,5	49,5	71,7	78,2	50	20	25	D-1	●	
7831019	PXDZ170-3D-128,5-20	17	17,99	⑤	16,5	52,5	76,8	83,3	50	20	25	D-1	●	
7831020	PXDZ180-3D-138,5-25	18	18,99	⑥	17,5	55,5	81,4	87,9	56	25	32	D-1	●	
7831021	PXDZ190-3D-142,5-25	19	19,99	⑦	18,5	58,5	85,4	91,9	56	25	32	D-2	●	
7831022	PXDZ200-3D-146,5-25	20	20,99	⑧	19,5	61,5	90,1	96,6	56	25	32	D-2	●	
7831023	PXDZ210-3D-154,5-32	21	21,99	⑨	20,5	64,5	94,7	101,2	60	32	42	D-2	●	
7831024	PXDZ220-3D-158,5-32	22	22,99	⑩	21,5	67,5	98,8	105,3	60	32	42	D-2	●	
7831025	PXDZ230-3D-162,5-32	23	23,99	⑪	22,5	70,5	103,4	109,9	60	32	42	D-3	●	
7831026	PXDZ240-3D-167,5-32	24	24,99	⑫	23,5	73,5	108,4	114,9	60	32	42	D-3	●	
7831027	PXDZ250-3D-170,5-32	25	25,99	⑬	24,5	76,5	112	118,5	60	32	42	D-3	●	

5D Type

EDP	Designation	Drilling Dia Min	Drilling Dia Max	Applicable Head	D	l	l1	L1	L2	d	d1	Applicable Driver	Stock	Price
7831065	PXDZ140-5D-141,5-16	14	14,49	①	13,5	71,25	91,4	97,9	48	16	20	D-1	●	
7831066	PXDZ145-5D-144,5-16	14,5	14,99	②	14	73,75	94,5	101	48	16	20	D-1	●	
7831067	PXDZ150-5D-149,5-20	15	15,99	③	14,5	77,5	97,1	103,6	50	20	25	D-1	●	
7831068	PXDZ160-5D-155,5-20	16	16,99	④	15,5	82,5	103,7	110,2	50	20	25	D-1	●	
7831069	PXDZ170-5D-162,5-20	17	17,99	⑤	16,5	87,5	110,8	117,3	50	20	25	D-1	●	
7831070	PXDZ180-5D-174,5-25	18	18,99	⑥	17,5	92,5	117,4	123,9	56	25	32	D-1	●	
7831071	PXDZ190-5D-180,5-25	19	19,99	⑦	18,5	97,5	123,4	129,9	56	25	32	D-2	●	
7831072	PXDZ200-5D-186,5-25	20	20,99	⑧	19,5	102,5	130,1	136,6	56	25	32	D-2	●	
7831073	PXDZ210-5D-196,5-32	21	21,99	⑨	20,5	107,5	136,7	143,2	60	32	42	D-2	●	
7831074	PXDZ220-5D-202,5-32	22	22,99	⑩	21,5	112,5	142,8	149,3	60	32	42	D-2	●	
7831075	PXDZ230-5D-208,5-32	23	23,99	⑪	22,5	117,5	149,4	155,9	60	32	42	D-3	●	
7831076	PXDZ240-5D-215,5-32	24	24,99	⑫	23,5	122,5	156,4	162,9	60	32	42	D-3	●	
7831077	PXDZ250-5D-220,5-32	25	25,99	⑬	24,5	127,5	162	168,5	60	32	42	D-3	●	

Accessories -*Driver*



Driver



EDP	Designation	Sheet Thickness	Applicable Head	Stock	Price
D-1 7808282	PXDP1400-1899	1,5	①~⑥	●	
D-2 7808283	PXDP1900-2299	1,8	⑦~⑩	●	
D-3 7808284	PXDP2300-2699	2	⑪~⑬	●	

PXD APPLICABLE HEAD

PHOENIX
- Applicable head for steel

PHOENIX
- Kronenbohrer für Stahl

PHOENIX
- Testa applicabile per Acciaio

PHOENIX
- Têtes interchangeables pour aciers

PHOENIX
- Çelik için uygulanabilir kafa

PHOENIX
- Anvendelig i stål

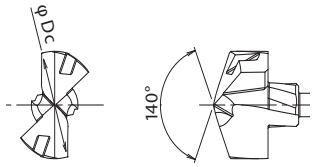
PHOENIX
- För stål

PHOENIX
- Aplicable cabeza para acero

PHOENIX
- Сменная режущая головка для стали

PHOENIX
- Grot wiertła PXD do stali

GO TO LIVE STOCK CHECK





(PC) For Steel

EDP		Designation	Dc	Grades	Stock	Price
7831140	①	PXDH1400-PC	14	XP3425	●	
		PXDH1410-PC	14,1	XP3425	✳	
		PXDH1420-PC	14,2	XP3425	✳	
		PXDH1430-PC	14,3	XP3425	✳	
		PXDH1440-PC	14,4	XP3425	✳	
7831145	②	PXDH1450-PC	14,5	XP3425	●	
		PXDH1460-PC	14,6	XP3425	✳	
		PXDH1470-PC	14,7	XP3425	✳	
		PXDH1480-PC	14,8	XP3425	✳	
		PXDH1490-PC	14,9	XP3425	✳	
7831351	②	PXDH1495-PC	14,95	XP3425	●	
7831150	③	PXDH1500-PC	15	XP3425	●	
		PXDH1510-PC	15,1	XP3425	✳	
		PXDH1520-PC	15,2	XP3425	✳	
7831352	③	PXDH1525-PC	15,25	XP3425	●	
		PXDH1530-PC	15,3	XP3425	✳	
		PXDH1540-PC	15,4	XP3425	✳	
7831155	③	PXDH1550-PC	15,5	XP3425	●	
		PXDH1560-PC	15,6	XP3425	✳	
		PXDH1570-PC	15,7	XP3425	✳	
		PXDH1580-PC	15,8	XP3425	✳	
		PXDH1590-PC	15,9	XP3425	✳	
7831160	④	PXDH1600-PC	16	XP3425	●	
		PXDH1610-PC	16,1	XP3425	✳	
		PXDH1620-PC	16,2	XP3425	✳	
		PXDH1630-PC	16,3	XP3425	✳	
		PXDH1640-PC	16,4	XP3425	✳	
7831165	④	PXDH1650-PC	16,5	XP3425	●	
		PXDH1660-PC	16,6	XP3425	✳	
		PXDH1670-PC	16,7	XP3425	✳	
		PXDH1680-PC	16,8	XP3425	✳	
		PXDH1690-PC	16,9	XP3425	✳	
7831170	⑤	PXDH1700-PC	17	XP3425	●	
		PXDH1710-PC	17,1	XP3425	✳	
		PXDH1720-PC	17,2	XP3425	✳	
7831353	⑤	PXDH1725-PC	17,25	XP3425	●	
		PXDH1730-PC	17,3	XP3425	✳	
		PXDH1740-PC	17,4	XP3425	✳	
7831175	⑤	PXDH1750-PC	17,5	XP3425	●	
		PXDH1760-PC	17,6	XP3425	✳	
		PXDH1770-PC	17,7	XP3425	✳	
		PXDH1780-PC	17,8	XP3425	✳	
		PXDH1790-PC	17,9	XP3425	✳	
7831180	⑥	PXDH1800-PC	18	XP3425	●	
		PXDH1810-PC	18,1	XP3425	✳	
		PXDH1820-PC	18,2	XP3425	✳	
		PXDH1830-PC	18,3	XP3425	✳	
		PXDH1840-PC	18,4	XP3425	✳	
7831185	⑥	PXDH1850-PC	18,5	XP3425	●	
		PXDH1860-PC	18,6	XP3425	✳	
		PXDH1870-PC	18,7	XP3425	✳	
		PXDH1880-PC	18,8	XP3425	✳	
		PXDH1890-PC	18,9	XP3425	✳	
7831190	⑦	PXDH1900-PC	19	XP3425	●	
		PXDH1910-PC	19,1	XP3425	✳	
		PXDH1920-PC	19,2	XP3425	✳	
7831354	⑦	PXDH1925-PC	19,25	XP3425	●	
		PXDH1930-PC	19,3	XP3425	✳	
		PXDH1940-PC	19,4	XP3425	✳	
7831195	⑦	PXDH1950-PC	19,5	XP3425	●	
		PXDH1960-PC	19,6	XP3425	✳	
		PXDH1970-PC	19,7	XP3425	✳	
		PXDH1980-PC	19,8	XP3425	✳	
		PXDH1990-PC	19,9	XP3425	✳	

EDP		Designation	Dc	Grades	Stock	Price
7831200	⑧	PXDH2000-PC	20	XP3425	●	
		PXDH2010-PC	20,1	XP3425	✳	
		PXDH2020-PC	20,2	XP3425	✳	
		PXDH2030-PC	20,3	XP3425	✳	
		PXDH2040-PC	20,4	XP3425	✳	
7831205	⑧	PXDH2050-PC	20,5	XP3425	●	
		PXDH2060-PC	20,6	XP3425	✳	
		PXDH2070-PC	20,7	XP3425	✳	
		PXDH2080-PC	20,8	XP3425	✳	
		PXDH2090-PC	20,9	XP3425	✳	
7831210	⑨	PXDH2100-PC	21	XP3425	●	
		PXDH2110-PC	21,1	XP3425	✳	
		PXDH2120-PC	21,2	XP3425	✳	
7831355	⑨	PXDH2125-PC	21,25	XP3425	●	
		PXDH2130-PC	21,3	XP3425	✳	
		PXDH2140-PC	21,4	XP3425	✳	
7831215	⑨	PXDH2150-PC	21,5	XP3425	●	
		PXDH2160-PC	21,6	XP3425	✳	
		PXDH2170-PC	21,7	XP3425	✳	
		PXDH2180-PC	21,8	XP3425	✳	
		PXDH2190-PC	21,9	XP3425	✳	
7831220	⑩	PXDH2200-PC	22	XP3425	●	
		PXDH2210-PC	22,1	XP3425	✳	
		PXDH2220-PC	22,2	XP3425	✳	
		PXDH2230-PC	22,3	XP3425	✳	
		PXDH2240-PC	22,4	XP3425	✳	
7831225	⑩	PXDH2250-PC	22,5	XP3425	●	
		PXDH2260-PC	22,6	XP3425	✳	
		PXDH2270-PC	22,7	XP3425	✳	
		PXDH2280-PC	22,8	XP3425	✳	
		PXDH2290-PC	22,9	XP3425	✳	
7831230	⑪	PXDH2300-PC	23	XP3425	●	
		PXDH2310-PC	23,1	XP3425	✳	
		PXDH2320-PC	23,2	XP3425	✳	
7831356	⑪	PXDH2325-PC	23,25	XP3425	●	
		PXDH2330-PC	23,3	XP3425	✳	
		PXDH2340-PC	23,4	XP3425	✳	
7831235	⑪	PXDH2350-PC	23,5	XP3425	●	
		PXDH2360-PC	23,6	XP3425	✳	
		PXDH2370-PC	23,7	XP3425	✳	
		PXDH2380-PC	23,8	XP3425	✳	
		PXDH2390-PC	23,9	XP3425	✳	
7831240	⑫	PXDH2400-PC	24	XP3425	●	
		PXDH2410-PC	24,1	XP3425	✳	
		PXDH2420-PC	24,2	XP3425	✳	
		PXDH2430-PC	24,3	XP3425	✳	
		PXDH2440-PC	24,4	XP3425	✳	
7831245	⑫	PXDH2450-PC	24,5	XP3425	●	
		PXDH2460-PC	24,6	XP3425	✳	
		PXDH2470-PC	24,7	XP3425	✳	
		PXDH2480-PC	24,8	XP3425	✳	
		PXDH2490-PC	24,9	XP3425	✳	
7831250	⑬	PXDH2500-PC	25	XP3425	●	
		PXDH2510-PC	25,1	XP3425	✳	
		PXDH2520-PC	25,2	XP3425	✳	
		PXDH2530-PC	25,3	XP3425	✳	
		PXDH2540-PC	25,4	XP3425	✳	

● on stock
✳ Items scheduled to be standardized

PXD APPLICABLE HEAD

PHOENIX
- Applicable head for iron

PHOENIX
- Kronenbohrer für Stahlguss

PHOENIX
- Testa applicabile per Ghisa

PHOENIX
- Têtes interchangeables pour fers

PHOENIX
- Demir için uygulanabilir kafa

PHOENIX
- Anvendelig i støbegods

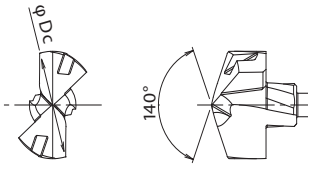
PHOENIX
- För gjutgods

PHOENIX
- Aplicable cabeza para fundición

PHOENIX
- Сменная режущая головка для чугуна

PHOENIX
- Grot wiertła PXD do zeliw

GO TO LIVE STOCK CHECK





(KC) For Cast Iron

EDP		Designation	Dc	Grades	Stock	Price
7831440	①	PXDH1400-KC	14	XP1425	●	
		PXDH1410-KC	14,1	XP1425	✳	
		PXDH1420-KC	14,2	XP1425	✳	
		PXDH1430-KC	14,3	XP1425	✳	
		PXDH1440-KC	14,4	XP1425	✳	
7831445	②	PXDH1450-KC	14,5	XP1425	●	
		PXDH1460-KC	14,6	XP1425	✳	
		PXDH1470-KC	14,7	XP1425	✳	
		PXDH1480-KC	14,8	XP1425	✳	
		PXDH1490-KC	14,9	XP1425	✳	
7831450	③	PXDH1500-KC	15	XP1425	●	
		PXDH1510-KC	15,1	XP1425	✳	
		PXDH1520-KC	15,2	XP1425	✳	
		PXDH1530-KC	15,3	XP1425	✳	
		PXDH1540-KC	15,4	XP1425	✳	
7831455	③	PXDH1550-KC	15,5	XP1425	●	
		PXDH1560-KC	15,6	XP1425	✳	
		PXDH1570-KC	15,7	XP1425	✳	
		PXDH1580-KC	15,8	XP1425	✳	
		PXDH1590-KC	15,9	XP1425	✳	
7831460	④	PXDH1600-KC	16	XP1425	●	
		PXDH1610-KC	16,1	XP1425	✳	
		PXDH1620-KC	16,2	XP1425	✳	
		PXDH1630-KC	16,3	XP1425	✳	
		PXDH1640-KC	16,4	XP1425	✳	
7831465	④	PXDH1650-KC	16,5	XP1425	●	
		PXDH1660-KC	16,6	XP1425	✳	
		PXDH1670-KC	16,7	XP1425	✳	
		PXDH1680-KC	16,8	XP1425	✳	
		PXDH1690-KC	16,9	XP1425	✳	
7831470	⑤	PXDH1700-KC	17	XP1425	●	
		PXDH1710-KC	17,1	XP1425	✳	
		PXDH1720-KC	17,2	XP1425	✳	
		PXDH1730-KC	17,3	XP1425	✳	
		PXDH1740-KC	17,4	XP1425	✳	
7831475	⑤	PXDH1750-KC	17,5	XP1425	●	
		PXDH1760-KC	17,6	XP1425	✳	
		PXDH1770-KC	17,7	XP1425	✳	
		PXDH1780-KC	17,8	XP1425	✳	
		PXDH1790-KC	17,9	XP1425	✳	
7831480	⑥	PXDH1800-KC	18	XP1425	●	
		PXDH1810-KC	18,1	XP1425	✳	
		PXDH1820-KC	18,2	XP1425	✳	
		PXDH1830-KC	18,3	XP1425	✳	
		PXDH1840-KC	18,4	XP1425	✳	
7831485	⑥	PXDH1850-KC	18,5	XP1425	●	
		PXDH1860-KC	18,6	XP1425	✳	
		PXDH1870-KC	18,7	XP1425	✳	
		PXDH1880-KC	18,8	XP1425	✳	
		PXDH1890-KC	18,9	XP1425	✳	
7831490	⑦	PXDH1900-KC	19	XP1425	●	
		PXDH1910-KC	19,1	XP1425	✳	
		PXDH1920-KC	19,2	XP1425	✳	
		PXDH1930-KC	19,3	XP1425	✳	
		PXDH1940-KC	19,4	XP1425	✳	
7831495	⑦	PXDH1950-KC	19,5	XP1425	●	
		PXDH1960-KC	19,6	XP1425	✳	
		PXDH1970-KC	19,7	XP1425	✳	
		PXDH1980-KC	19,8	XP1425	✳	
		PXDH1990-KC	19,9	XP1425	✳	

EDP		Designation	Dc	Grades	Stock	Price
7831500	⑧	PXDH2000-KC	20	XP1425	●	
		PXDH2010-KC	20,1	XP1425	✳	
		PXDH2020-KC	20,2	XP1425	✳	
		PXDH2030-KC	20,3	XP1425	✳	
		PXDH2040-KC	20,4	XP1425	✳	
7831505	⑧	PXDH2050-KC	20,5	XP1425	●	
		PXDH2060-KC	20,6	XP1425	✳	
		PXDH2070-KC	20,7	XP1425	✳	
		PXDH2080-KC	20,8	XP1425	✳	
		PXDH2090-KC	20,9	XP1425	✳	
7831510	⑨	PXDH2100-KC	21	XP1425	●	
		PXDH2110-KC	21,1	XP1425	✳	
		PXDH2120-KC	21,2	XP1425	✳	
		PXDH2130-KC	21,3	XP1425	✳	
		PXDH2140-KC	21,4	XP1425	✳	
7831515	⑨	PXDH2150-KC	21,5	XP1425	●	
		PXDH2160-KC	21,6	XP1425	✳	
		PXDH2170-KC	21,7	XP1425	✳	
		PXDH2180-KC	21,8	XP1425	✳	
		PXDH2190-KC	21,9	XP1425	✳	
7831520	⑩	PXDH2200-KC	22	XP1425	●	
		PXDH2210-KC	22,1	XP1425	✳	
		PXDH2220-KC	22,2	XP1425	✳	
		PXDH2230-KC	22,3	XP1425	✳	
		PXDH2240-KC	22,4	XP1425	✳	
7831525	⑩	PXDH2250-KC	22,5	XP1425	●	
		PXDH2260-KC	22,6	XP1425	✳	
		PXDH2270-KC	22,7	XP1425	✳	
		PXDH2280-KC	22,8	XP1425	✳	
		PXDH2290-KC	22,9	XP1425	✳	
7831530	⑪	PXDH2300-KC	23	XP1425	●	
		PXDH2310-KC	23,1	XP1425	✳	
		PXDH2320-KC	23,2	XP1425	✳	
		PXDH2330-KC	23,3	XP1425	✳	
		PXDH2340-KC	23,4	XP1425	✳	
7831535	⑪	PXDH2350-KC	23,5	XP1425	●	
		PXDH2360-KC	23,6	XP1425	✳	
		PXDH2370-KC	23,7	XP1425	✳	
		PXDH2380-KC	23,8	XP1425	✳	
		PXDH2390-KC	23,9	XP1425	✳	
7831540	⑫	PXDH2400-KC	24	XP1425	●	
		PXDH2410-KC	24,1	XP1425	✳	
		PXDH2420-KC	24,2	XP1425	✳	
		PXDH2430-KC	24,3	XP1425	✳	
		PXDH2440-KC	24,4	XP1425	✳	
7831545	⑫	PXDH2450-KC	24,5	XP1425	●	
		PXDH2460-KC	24,6	XP1425	✳	
		PXDH2470-KC	24,7	XP1425	✳	
		PXDH2480-KC	24,8	XP1425	✳	
		PXDH2490-KC	24,9	XP1425	✳	
7831550	⑬	PXDH2500-KC	25	XP1425	●	
		PXDH2510-KC	25,1	XP1425	✳	
		PXDH2520-KC	25,2	XP1425	✳	
		PXDH2530-KC	25,3	XP1425	✳	
		PXDH2540-KC	25,4	XP1425	✳	

PXD APPLICABLE HEAD

PHOENIX
- Applicable head for non ferrous metals

PHOENIX
- Kronenbohrer für nichteisen Metalle

PHOENIX
- Testa applicabile per Metalli non ferrosi

PHOENIX
- Têtes interchangeables pour métaux non ferreux

PHOENIX
- Metal dışı alaşımlar için uygulanabilir kafa

PHOENIX
- Anvendelig i ikke jernholdige materialer

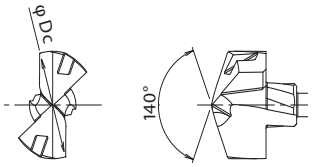
PHOENIX
- För icke järnhaltiga material

PHOENIX
- Aplicable cabeza para metales no ferricos

PHOENIX
- Сменная режущая головка для цветных металлов

PHOENIX
- Grot wiertła PXD do metali nieżelaznych

GO TO LIVE STOCK CHECK





(NC) For Non Ferrous metals

EDP		Designation	Dc	Grades	Stock	Price
7831740	①	PXDH1400-NC	14	CF225	●	
		PXDH1410-NC	14,1	CF225	✳	
		PXDH1420-NC	14,2	CF225	✳	
		PXDH1430-NC	14,3	CF225	✳	
		PXDH1440-NC	14,4	CF225	✳	
7831745	②	PXDH1450-NC	14,5	CF225	●	
		PXDH1460-NC	14,6	CF225	✳	
		PXDH1470-NC	14,7	CF225	✳	
		PXDH1480-NC	14,8	CF225	✳	
		PXDH1490-NC	14,9	CF225	✳	
7831750	③	PXDH1500-NC	15	CF225	●	
		PXDH1510-NC	15,1	CF225	✳	
		PXDH1520-NC	15,2	CF225	✳	
		PXDH1530-NC	15,3	CF225	✳	
		PXDH1540-NC	15,4	CF225	✳	
7831755	③	PXDH1550-NC	15,5	CF225	●	
		PXDH1560-NC	15,6	CF225	✳	
		PXDH1570-NC	15,7	CF225	✳	
		PXDH1580-NC	15,8	CF225	✳	
		PXDH1590-NC	15,9	CF225	✳	
7831760	④	PXDH1600-NC	16	CF225	●	
		PXDH1610-NC	16,1	CF225	✳	
		PXDH1620-NC	16,2	CF225	✳	
		PXDH1630-NC	16,3	CF225	✳	
		PXDH1640-NC	16,4	CF225	✳	
7831765	④	PXDH1650-NC	16,5	CF225	●	
		PXDH1660-NC	16,6	CF225	✳	
7831767	④	PXDH1670-NC	16,7	CF225	○	
		PXDH1680-NC	16,8	CF225	✳	
		PXDH1690-NC	16,9	CF225	✳	
7831770	⑤	PXDH1700-NC	17	CF225	●	
		PXDH1710-NC	17,1	CF225	✳	
		PXDH1720-NC	17,2	CF225	✳	
		PXDH1730-NC	17,3	CF225	✳	
		PXDH1740-NC	17,4	CF225	✳	
7831775	⑤	PXDH1750-NC	17,5	CF225	●	
		PXDH1760-NC	17,6	CF225	✳	
		PXDH1770-NC	17,7	CF225	✳	
		PXDH1780-NC	17,8	CF225	✳	
		PXDH1790-NC	17,9	CF225	✳	
7831780	⑥	PXDH1800-NC	18	CF225	●	
		PXDH1810-NC	18,1	CF225	✳	
		PXDH1820-NC	18,2	CF225	✳	
		PXDH1830-NC	18,3	CF225	✳	
		PXDH1840-NC	18,4	CF225	✳	
7831785	⑥	PXDH1850-NC	18,5	CF225	●	
		PXDH1860-NC	18,6	CF225	✳	
7831787	⑥	PXDH1870-NC	18,7	CF225	○	
		PXDH1880-NC	18,8	CF225	✳	
		PXDH1890-NC	18,9	CF225	✳	
7831790	⑦	PXDH1900-NC	19	CF225	●	
		PXDH1910-NC	19,1	CF225	✳	
		PXDH1920-NC	19,2	CF225	✳	
		PXDH1930-NC	19,3	CF225	✳	
		PXDH1940-NC	19,4	CF225	✳	
7831795	⑦	PXDH1950-NC	19,5	CF225	●	
		PXDH1960-NC	19,6	CF225	✳	
		PXDH1970-NC	19,7	CF225	✳	
		PXDH1980-NC	19,8	CF225	✳	
		PXDH1990-NC	19,9	CF225	✳	

EDP		Designation	Dc	Grades	Stock	Price
7831800	⑧	PXDH2000-NC	20	CF225	●	
		PXDH2010-NC	20,1	CF225	✳	
		PXDH2020-NC	20,2	CF225	✳	
		PXDH2030-NC	20,3	CF225	✳	
		PXDH2040-NC	20,4	CF225	✳	
7831805	⑧	PXDH2050-NC	20,5	CF225	●	
		PXDH2060-NC	20,6	CF225	✳	
7831807	⑧	PXDH2070-NC	20,7	CF225	○	
		PXDH2080-NC	20,8	CF225	✳	
		PXDH2090-NC	20,9	CF225	✳	
7831810	⑨	PXDH2100-NC	21	CF225	●	
		PXDH2110-NC	21,1	CF225	✳	
		PXDH2120-NC	21,2	CF225	✳	
		PXDH2130-NC	21,3	CF225	✳	
		PXDH2140-NC	21,4	CF225	✳	
7831815	⑨	PXDH2150-NC	21,5	CF225	●	
		PXDH2160-NC	21,6	CF225	✳	
		PXDH2170-NC	21,7	CF225	✳	
		PXDH2180-NC	21,8	CF225	✳	
		PXDH2190-NC	21,9	CF225	✳	
7831820	⑩	PXDH2200-NC	22	CF225	●	
		PXDH2210-NC	22,1	CF225	✳	
		PXDH2220-NC	22,2	CF225	✳	
		PXDH2230-NC	22,3	CF225	✳	
7831824	⑩	PXDH2240-NC	22,4	CF225	○	
7831825	⑩	PXDH2250-NC	22,5	CF225	●	
		PXDH2260-NC	22,6	CF225	✳	
		PXDH2270-NC	22,7	CF225	✳	
		PXDH2280-NC	22,8	CF225	✳	
		PXDH2290-NC	22,9	CF225	✳	
7831830	⑪	PXDH2300-NC	23	CF225	●	
		PXDH2310-NC	23,1	CF225	✳	
		PXDH2320-NC	23,2	CF225	✳	
		PXDH2330-NC	23,3	CF225	✳	
		PXDH2340-NC	23,4	CF225	✳	
7831835	⑪	PXDH2350-NC	23,5	CF225	●	
		PXDH2360-NC	23,6	CF225	✳	
		PXDH2370-NC	23,7	CF225	✳	
		PXDH2380-NC	23,8	CF225	✳	
		PXDH2390-NC	23,9	CF225	✳	
7831840	⑫	PXDH2400-NC	24	CF225	●	
		PXDH2410-NC	24,1	CF225	✳	
		PXDH2420-NC	24,2	CF225	✳	
		PXDH2430-NC	24,3	CF225	✳	
		PXDH2440-NC	24,4	CF225	✳	
7831845	⑫	PXDH2450-NC	24,5	CF225	●	
		PXDH2460-NC	24,6	CF225	✳	
		PXDH2470-NC	24,7	CF225	✳	
		PXDH2480-NC	24,8	CF225	✳	
		PXDH2490-NC	24,9	CF225	✳	
7831850	⑬	PXDH2500-NC	25	CF225	●	
		PXDH2510-NC	25,1	CF225	✳	
		PXDH2520-NC	25,2	CF225	✳	
		PXDH2530-NC	25,3	CF225	✳	
7831854	⑬	PXDH2540-NC	25,4	CF225	○	

BACK

PXD

	For Steels (PC)						For Cast Iron (KC)						Non Ferrous Metals (KC)		
	MILD STEELS LOW CARBON STEELS SS400 - S10C ~ 150HB (~500N/mm^2)			CARBON STEELS S35C - S50C ~ 210HB (~710N/mm^2)			ALLOY STEELS SCM - SCr - SNCM 16 ~ 30HRC (710 ~ 950N/mm^2)			CAST IRON FC250 (~350N/mm^2)			DUCTILE CAST IRON FCD450 - FCD600 (400 ~ 600N/mm^2)			ALUMINIUM ALLOYS CASTING AC4A - ADC		
Drlling Speed	80 ~ 120 m/min			80 ~ 120 m/min			60 ~ 120 m/min			80 ~ 120 m/min			60 ~ 100 m/min			80 ~ 180 m/min		
MILL DIA. (mm)	**SPEED (min^{-1})**	**FEED (mm/min)**		**SPEED (min^{-1})**	**FEED (mm/**		**SPEED (min^{-1})**	**FEED (mm/min)**		**SPEED (min^{-1})**	**FEED (mm/**		**SPEED (min^{-1})**	**FEED (mm/min)**		**SPEED (min^{-1})**	**FEED (mm/min)**	
14	2.300	0,21	0,35	2.300	0,21	0,35	2.000	0,21	0,35	2.300	0,21	0,35	1.800	0,21	0,35	3.000	0,28	0,42
15	2.100	0,23	0,38	2.100	0,23	0,38	1.900	0,23	0,38	2.100	0,23	0,38	1.700	0,23	0,38	2.800	0,3	0,45
16	2.000	0,24	0,4	2.000	0,24	0,4	1.800	0,24	0,4	2.000	0,24	0,4	1.600	0,24	0,4	2.600	0,32	0,48
17	1.900	0,26	0,43	1.900	0,26	0,43	1.700	0,26	0,43	1.900	0,26	0,43	1.500	0,26	0,43	2.400	0,34	0,51
18	1.800	0,27	0,45	1.800	0,27	0,45	1.600	0,27	0,45	1.800	0,27	0,45	1.400	0,27	0,45	2.300	0,36	0,54
19	1.700	0,29	0,48	1.700	0,29	0,48	1.500	0,29	0,48	1.700	0,29	0,48	1.300	0,29	0,48	2.200	0,38	0,57
20	1.600	0,3	0,5	1.600	0,3	0,5	1.400	0,3	0,5	1.600	0,3	0,5	1.300	0,3	0,5	2.100	0,4	0,6
21	1.500	0,32	0,53	1.500	0,32	0,53	1.400	0,32	0,53	1.500	0,32	0,53	1.200	0,32	0,53	2.000	0,42	0,63
22	1.400	0,33	0,55	1.400	0,33	0,55	1.300	0,33	0,55	1.400	0,33	0,55	1.200	0,33	0,55	1.900	0,44	0,66
23	1.400	0,35	0,58	1.400	0,35	0,58	1.200	0,35	0,58	1.400	0,35	0,58	1.100	0,35	0,58	1.800	0,46	0,69
24	1.300	0,36	0,6	1.300	0,36	0,6	1.200	0,36	0,6	1.300	0,36	0,6	1.100	0,36	0,6	1.700	0,48	0,72
25	1.300	0,38	0,63	1.300	0,38	0,63	1.100	0,38	0,63	1.300	0,38	0,63	1.000	0,38	0,63	1.700	0,5	0,75

1. The indicated speeds and feeds are for water soluble oil. 2. Suitable cutting fluid is water soluble high density oil (less than 20 times dilution). 3. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration. 4. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.	1. La velocità e avanzamento indicati si riferiscono a lavorazioni con emulsione solubile in acqua 2. Opportuno fluido di taglio è emulsione solubile in acqua ad alta densità (inferiore a 20volte di diluizione) 3. Fissare il materiale di lavoro per ridurre la possibilità di deformazione, deviazione o vibrazione di superficie lavorata 4. Un foro di lubrificazione ostruito può portare alla rottura. Assicurarsi che sia applicato un filtro al sistema di refrigerazione.
1. Die angegebenen Schnittdaten sind für die Verwendung von Emulsion. 2. Die geeignete Emulsion sollte weniger als 20% Fettgehalt haben. 3. Um Vibrationen und Rattermarken an der Werkstückoberfläche zu vermeiden empfehlen wir eine sehr starre Werkstückspannung. 4. Ein verschmutzte innere Kühlmittelzufuhr kann zum Werkzeugbruch führen. Bitte Kühlmittelfilter verwenden.	1. Les vitesses indiquées sont avec l'utilisation d'huile soluble. 2. Un fluide de coupe à forte densité d'huile est recommandé 3. Bien monter et bien serrer la pièce à usiner reduit les riques de déformation matière ,améliore la qualité de l'usinage, réduit les vibrations et les casses d'outils 4. L'obstruction d'un trou d'huile peut entrainer la rupture de l'outil, assurez vous de la qualité de filtration de votre dispositif de lubrification
1. De indikerede skæredata er ved brug af vandbaseret emulsion 2. Passende kølemiddel er vandbaseret med høj densitet (fortyndet mindre end 20 gange) 3. Fastgør emnematerialet sikkert for at undgå deformation, vibrationer og lign. 4. Et tilstoppet kølehul kan forårsage brud. Sørg for at kølemidlet er filtreret	1. Den angivna varvtal och matningar är för vattenlbaserad emulsion 2. Lämplig skärvätska är vattenlösligt hög densitet olja (mindre än 20 gånger utspädning) 3. Fäst arbetsstycket ordentligt för att undvika deformation, vibrationer och liknande. 4. Ett igensatt kylkanal kan orsaka brott. Filtrera helst kylvätskan
1. Las velocidades y avances recomendados son para taladrina 2. El refrigerante adecuado es taladrina concentrada al menos el 5% 3. Fijar la pieza de forma que no permita la deformación, flexión de la cara mecanizada o vibración 4. El agujero de refrigeración obstruido puede producir rotura. Asegúrese la aportación de refrigerante filtrado	1. Указанные скорость и подача для охлаждения эмульсией 2. Наиболее подходящая СОЖ — водная эмульсия высокой плотности (разбавление менее, чем 1/20) 3. Закрепите обрабатываемый материал, чтобы уменьшить возможность смещения, деформации или вибрации 4. Засорение отверстий для охлаждения может привести к поломке. Убедитесь, что фильтр СОЖ установлен и исправен
1. Belirtilen kesme hızı ve ilerleme kesme sıvısı kullanımına ögre verilmiştir 2. Uygun kesme sıvısı, suda çözünen yüksek yoğunluklu yağ (20 kat seyretmenden az olacak) 3. İşlemin bozulması, işlenen yüzeyin sapması veya titreşim ihtimallerini azaltmak için iş parçasını sabitleyin. 4. Tıkanan bir yağ deliği kırılmaya neden olabilir. Yağ besleyicide filtre bulunduğundan emin olun.	1. Prędkości i posuwy podane są do pracy w emulsji 2. Odpowiednia emulsja w stosunku 1/20 3. Właściwie zamocuj materiał aby zmniejszyć możliwość powstania deformacji , złej jakości powierzchni lub wibracji 4. Zatkany otwór chłodzący może doprowadzić do uszkodzenia. Proszę upewnić się, że filtr jest dołączony do podajnika emulsji

PHOENIX
- High performance
- Drill
- 2 flutes

PHOENIX
- High performance
- Bohrer
- 2 Schneiden

PHOENIX
- Alta prestazione
- Foratura
- 2 denti

PHOENIX
- Haute performance
- Foret
- 2 lèvres

PHOENIX
- Yüksek performans
- Matkap
- 2 ağızlı

PHOENIX
- High performance
- Boring
- 2 skær

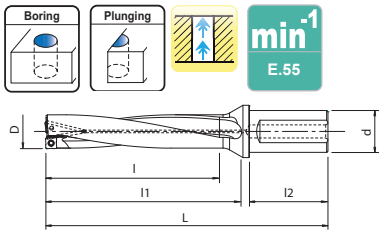
PHOENIX
- High performance
- Borr
- 2 skär

PHOENIX
- Altas prestaciones
- Taladrado
- 2 labios

PHOENIX
- Высокая производительность
- Сверло
- 2-зуба

PHOENIX
- Wysoka wydajność
- Wiertło
- 2-ostrzowe

GO TO LIVE STOCK CHECK





EDP	Designation	D	Applicable Inserts	L	l	l1	l2	d	Stock	Price
7802729	P5D2100FS25M07	21	①	184	105	120	56	25	●	
7802730	P5D2150FS25M07	21,5	①	187	108	123	56	25	●	
7802731	P5D2200FS25M07	22	①	189	110	125	56	25	●	
7802732	P5D2250FS25M07	22,5	①	192	113	128	56	25	●	
7802733	P5D2300FS25M07	23	①	194	115	130	56	25	●	
7802734	P5D2350FS32M07	23,5	①	201	118	133	60	32	●	
7802735	P5D2400FS32M07	24	①	203	120	135	60	32	●	
7802736	P5D2450FS32M07	24,5	①	206	123	138	60	32	●	
7802737	P5D2500FS32M08	25	②	208	125	140	60	32	●	
7802738	P5D2550FS32M08	25,5	②	211	128	143	60	32	●	
7802739	P5D2600FS32M08	26	②	213	130	145	60	32	●	
7802740	P5D2650FS32M08	26,5	②	216	133	148	60	32	●	
7802741	P5D2700FS32M08	27	②	218	135	150	60	32	●	
7802742	P5D2800FS32M08	28	②	223	140	155	60	32	●	
7802743	P5D2850FS32M08	28,5	②	226	143	158	60	32	●	
7802744	P5D2900FS32M09	29	③	228	145	160	60	32	●	
7802745	P5D3000FS32M09	30	③	233	150	165	60	32	●	
7802746	P5D3100FS32M09	31	③	238	155	170	60	32	●	
7802747	P5D3200FS32M09	32	③	243	160	175	60	32	●	
7802748	P5D3300FS40M09	33	③	258	165	180	70	40	●	
7802749	P5D3350FS40M09	33,5	③	261	168	183	70	40	●	

● on stock
○ available on short notice

P5D INSERTS

PHOENIX
- High performance
- Drill
- 2 flutes

PHOENIX
- High performance
- Bohrer
- 2 Schneiden

PHOENIX
- Alta prestazione
- Foratura
- 2 denti

PHOENIX
- Haute performance
- Foret
- 2 lèvres

PHOENIX
- Yüksek performans
- Matkap
- 2 ağızlı

PHOENIX
- High performance
- Boring
- 2 skær

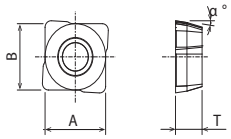
PHOENIX
- High performance
- Borr
- 2 skär

PHOENIX
- Altas prestaciones
- Taladrado
- 2 labios

PHOENIX
- Высокая производительность
- Сверло
- 2-зуба

PHOENIX
- Wysoka wydajność
- Wiertło
- 2-ostrzowe

GO TO LIVE STOCK CHECK





Designation	No. of cutting edges	Applicable Body	Insert Size				Coated Grades	Price
			A X B	T	α	R	XP9020	
① WCMT073106ER-DM	4	ø 21~24,5	7,42	3,1	8°	0,6	7823067	
② WCMT083508ER-DM	4	ø 25~28,5	8,71	3,5	8°	0,8	7823068	
③ WCMT094008ER-DM	4	ø 29~33,5	10,04	4	8°	0,8	7823069	

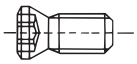
Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N
XP9020	DM	Coolant	◉	◉	○	○

DM Center Cutting Type Drill

◉ First choice
○ Second choice

Accessories - *Clamping Screw & Wrench*



Clamping Screw

EDP	Designation		Applicable Inserts			Stock	Price
7808136	FS25560P	①	XCMT0731...		-	●	
7808135	FS30570P	②	XCMT0835...	③	XCMT0940...	●	



Wrench

EDP	Designation		Applicable Inserts			Stock	Price
7808225	81P-D (Torx 8IP)	①	XCMT0731...		-	●	
7808226	91P-D (Torx 91P)	②	XCMT0835 ...	③	XCMT0940...	●	

CONDITIONS

P5D

	Work Material	Tensile strength/ Hardness	Drilling Speed Vc (m/min)	Feed Rate (mm/rev)		
				ø21~ø24,5	ø25~ø28,5	ø29~ø33,5
P	Mild Steel·Carbon Steel SS400 - S10C	~180HB	200 (150 ~ 250)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,2)	0,18 (0,13 ~ 0,2)
P	Carbon Steel·Alloy Steel S50C - SCM440	~280HB	150 (100 ~ 220)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,2)	0,18 (0,13 ~ 0,2)
P	Die Steel SKD11 - SKD61	~280HB	120 (80 ~ 180)	0,1 (0,06 ~ 0,13)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,18)
M	Stainless Steel (SUS304 - SUS420)	~250HB	100 (80 ~ 150)	0,08 (0,04 ~ 0,1)	0,1 (0,06 ~ 0,15)	0,12 (0,08 ~ 0,18)
K	Cast Iron FC250	~350N/mm²	150 (100 ~ 180)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,2)	0,18 (0,13 ~ 0,2)
K	Ductile Cast Iron FCD400	~800N/mm²	120 (80 ~ 150)	0,1 (0,06 ~ 0,13)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,18)
N	Aluminum Alloys	~13%Si	200 (100 ~ 800)	0,12 (0,08 ~ 0,15)	0,15 (0,1 ~ 0,25)	0,18 (0,13 ~ 0,3)

PHOENIX
- High performance
- Drill
- 2 flutes

PHOENIX
- High performance
- Bohrer
- 2 Schneiden

PHOENIX
- Alta prestazione
- Foratura
- 2 denti

PHOENIX
- Haute performance
- Foret
- 2 lèvres

PHOENIX
- Yüksek performans
- Matkap
- 2 ağızlı

PHOENIX
- High performance
- Boring
- 2 skær

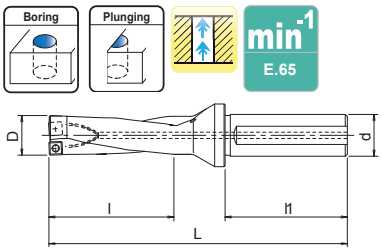
PHOENIX
- High performance
- Borr
- 2 skär

PHOENIX
- Altas prestaciones
- Taladrado
- 2 labios

PHOENIX
- Высокая производительность
- Сверло
- 2-зуба

PHOENIX
- Wysoka wydajność
- Wiertło
- 2-ostrzowe

GO TO LIVE STOCK CHECK

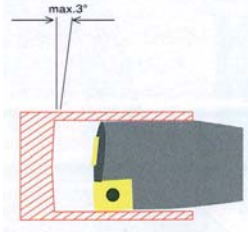


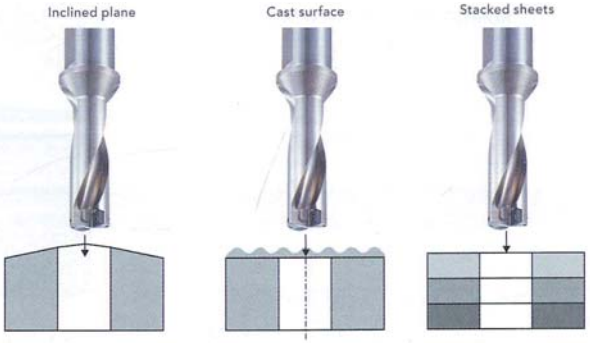


EDP	Designation	D	Applicable Inserts	L	l	l1	d	Stock	Price
7800100	PHP140FS20M04-3D	14	①	116	42	50	20	●	
7800101	PHP145FS20M04-3D	14,5	①	119	45	50	20	●	
7800102	PHP150FS20M04-3D	15	①	119	45	50	20	●	
7800103	PHP155FS20M04-3D	15,5	①	122	48	50	20	●	
7800104	PHP160FS20M04-3D	16	①	122	48	50	20	●	
7800105	PHP165FS20M05-3D	16,5	②	125	51	50	20	●	
7800106	PHP170FS20M05-3D	17	②	125	51	50	20	●	
7800107	PHP175FS25M05-3D	17,5	②	134	54	56	25	●	
7800108	PHP180FS25M05-3D	18	②	134	54	56	25	●	
7800109	PHP185FS25M06-3D	18,5	③	137	57	56	25	●	
7800110	PHP190FS25M06-3D	19	③	137	57	56	25	●	
7800111	PHP195FS25M06-3D	19,5	③	140	60	56	25	●	
7800112	PHP200FS25M06-3D	20	③	140	60	56	25	●	
7800113	PHP205FS25M06-3D	20,5	③	143	63	56	25	●	
7800114	PHP210FS25M07-3D	21	④	143	63	56	25	●	
7800115	PHP215FS25M07-3D	21,5	④	146	66	56	25	●	
7800116	PHP220FS25M07-3D	22	④	146	66	56	25	●	
7800117	PHP225FS25M07-3D	22,5	④	149	69	56	25	●	
7800118	PHP230FS25M07-3D	23	④	149	69	56	25	●	
7800119	PHP235FS32M07-3D	23,5	④	156	72	60	32	●	
7800120	PHP240FS32M07-3D	24	④	156	72	60	32	●	
7800121	PHP245FS32M08-3D	24,5	⑤	159	75	60	32	●	
7800122	PHP250FS32M08-3D	25	⑤	159	75	60	32	●	
7800123	PHP255FS32M08-3D	25,5	⑤	162	78	60	32	●	
7800124	PHP260FS32M08-3D	26	⑤	162	78	60	32	●	
7800125	PHP265FS32M08-3D	26,5	⑤	165	81	60	32	●	
7800126	PHP270FS32M08-3D	27	⑤	165	81	60	32	●	
7800127	PHP280FS32M08-3D	28	⑤	168	84	60	32	●	
7800128	PHP290FS32M10-3D	29	⑥	171	87	60	32	●	
7800130	PHP300FS32M10-3D	30	⑥	179	90	60	32	●	
7800131	PHP310FS32M10-3D	31	⑥	182	93	60	32	●	
7800132	PHP320FS32M10-3D	32	⑥	185	96	60	32	●	
7800133	PHP330FS40M10-3D	33	⑥	196	99	68	40	●	
7800134	PHP340FS40M10-3D	34	⑥	199	102	68	40	●	
7800135	PHP350FS40M12-3D	35	⑦	202	105	68	40	●	
7800136	PHP360FS40M12-3D	36	⑦	205	108	68	40	●	
7800137	PHP370FS40M12-3D	37	⑦	218	111	68	40	●	
7800138	PHP380FS40M12-3D	38	⑦	221	114	68	40	●	
7800139	PHP390FS40M12-3D	39	⑦	224	117	68	40	●	
7800140	PHP400FS40M12-3D	40	⑦	227	120	68	40	●	

Point angle shape

Point angle shape increases the machining range





● on stock
○ available on short notice

PHP INSERTS

PHOENIX
- Applicable insert for PHP drill

PHOENIX
- Wendeplatten, Bohrer PHP

PHOENIX
- Inserti applicabili per punta PHP

PHOENIX
- Choix de plaquettes pour le perçage

PHOENIX
- PHP matkap için uygun uç

PHOENIX
- Anvendelige skær til PHP bor

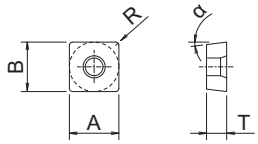
PHOENIX
- Utbytbara vändskär för korthålsborr

PHOENIX
- Plaquitas para broca PHP

PHOENIX
- Сменные пластинки для PHP сверла

PHOENIX
- Płytka do wierteł PHP wiertło

GO TO LIVE STOCK CHECK





	Designation	No. of cutting edges	Application Diameter	Insert Size A X B	T	α	R	Coated grade XP9040	Coated grade XP9025	Price
①	SCMT042204-DM	4	14,0 ~ 16,0	4,8 x 4,8	2,2	7°	0,4	7818001	7817001	
②	SCMT052404-DM	4	16,5 ~ 18,0	5,4 x 5,4	2,4	7°	0,4	7818002	7817002	
③	SCMT062806-DM	4	18,5 ~ 20,5	6,2 x 6,2	2,8	7°	0,6	7818003	7817003	
④	SCMT073206-DM	4	21,0 ~ 24,0	7,2 x 7,2	3,2	7°	0,6	7818004	7817004	
⑤	SCMT083608-DM	4	24,5 ~ 28,0	8,6 x 8,6	3,6	7°	0,8	7818005	7817005	
⑥	SCMT104208-DM	4	29,0 ~ 34,0	10 x 10	4,2	7°	0,8	7818006	7817006	
⑦	SCMT125008-DM	4	35,0 ~ 40,0	12,3 x 12,3	5	7°	0,8	7818007	7817007	

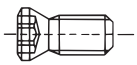
Order quantity - 10 pcs. in package

Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S
XP9040	DM	Coolant	◉	◉		◉	○
XC9025	DM	Coolant	○	○	◉	○	

◉ First choice
○ Second choice

Accessories - *Clamping Screw & Wrench*



Clamping Screw

EDP	Designation	Applicable Inserts	Stock	Price
7808100	FS18538 (Torx 6)	① SCMT042204-DM	●	
7808102	FS20540 (Torx 6)	② SCMT052404-DM	●	
7808104	FS22550 (Torx 7)	③ SCMT062806-DM	●	
7808108	FS25560 (Torx 8)	④ SCMT073206-DM	●	
7808110	FS30573 (Torx 8)	⑤ SCMT083608-DM	●	
7808111	FS35572 (Torx 15)	⑥ SCMT104208-DM	●	
7808113	FS45510 (Torx 20)	⑦ SCMT125008-DM	●	



Wrench

EDP	Designation	Applicable Inserts		Stock	Price
7808203	T6-D (Torx 6)	① SCMT042204-DM	② SCMT052404-DM	●	
7808204	T7-D (Torx 7)	③ SCMT062806-DM	-	●	
7808205	T8-D (Torx 8)	④ SCMT073206-DM	⑤ SCMT083608-DM	●	
7808208	T15-D (Torx 15)	⑥ SCMT104208-DM		●	
7808209	T20-D (Torx 20)	⑦ SCMT125008-DM		●	

Phoenix 45° Face Milling - Phönix 45° Planfräser - Phoenix 45° spianare - Phoenix 45°, surfaçage - Phoenix 45°, Yüzey frezeleme - Phoenix 45° planfræser- Phoenix 45° planfrāsar- Planeado Phoenix a 45° - Phoenix 45° орцовое фрезерование - Phoenix 45° Frezowanie czołowe

PAS BORE

	Work Material	Tensile Strength / Hardness	Grade	Vc (m/min) Milling Speed	fz (mm/t) Feed Per Tooth	ap (m/min) Depth of Cut
P	Mild Steel-Carbon Steel (SS400-S10C)	~180HB	XP3035 XC3025	180 (100~ 250)	0,18 (0,15 ~ 0,35)	3
P	Carbon Steel-Alloy Steel (S50C-SCM440)	~280HB	XP3035 XC3025	180 (100 ~ 250)	0,18 (0,15 ~ 0,35)	3
P	Die Steel (SKD11-SKD61)	~280HB	XP3035 XC3025	150 (80 ~ 200)	0,15 (0,10 ~ 0,30)	3
M	Stainless Steel (Dry) (SUS304-SUS420)	~250HB	XP2040	120 (80~ 180)	0,12 (0,08 ~ 0,25)	3
K	Cast Iron (FC250)	~300N/mm²	XC1015	180 (100~ 350)	0,20 (0,15 ~ 0,35)	4
K	Ductile Cast Iron (FCD400)	~600N/mm²	XC1015	180 (100~270)	0,20 (0,10 ~ 0,30)	3
H	Pre-hardened Steel (NAK80)	40~43HRC	XP2040	100 (60~ 150)	0,12 (0,08 ~ 0,20)	1,5
H	Steel for Die Casting (DAC55-DH31)	43~48HRC	XP2040	80 (40 ~ 120)	0,10 (0,05 ~ 0,15)	0,5
H	Hardened Steel (SKD11)	50~55HRC	XP2040	60 (40 ~ 90)	0,08 (0,05 ~ 0,15)	0,5

Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S	H
XP3035	GM	Dry	◉	○	○			
XC3025	GM	Dry	◉		○			
XP2040	GM	Dry	○					○
		Coolant		◉				
XC5040	GR	Dry			◉			

GR Heavy Cutting GM Medium Cutting

◉ First choice
○ Second choice

Phoenix 45° Face Milling - Phönix 45° Planfräser - Phoenix 45° spianare - Phoenix 45°, surfaçage - Phoenix 45°, Yüzey frezeleme - Phoenix 45° planfræser- Phoenix 45° planfrāsar- Planeado Phoenix a 45° - Phoenix 45° орцовое фрезерование - Phoenix 45° Frezowanie czołowe

PAO BORE

	Work Material	Tensile Strength / Hardness	Grade	Vc (m/min) Milling Speed	fz (mm/t) Feed Per Tooth	ap (m/min) Depth of Cut
P	Mild Steel-Carbon Steel (SS400-S10C)	~180HB	XP3035	180 (100~ 250)	0,25 (0,20 ~ 0,50)	2
P	Carbon Steel-Alloy Steel (S50C-SCM440)	~280HB	XP3035	180 (100 ~ 250)	0,25 (0,20 ~ 0,50)	2
P	Die Steel (SKD11-SKD61)	~280HB	XP3035	150 (80 ~ 200)	0,25 (0,15 ~ 0,40)	2
M	Stainless Steel (Dry) (SUS304-SUS420)	~250HB	XP2040	120 (80~ 180)	0,20 (0,15 ~ 0,40)	2
K	Cast Iron (FC250)	~300N/mm²	XC1015 XP1020	200 (100~ 350)	0,30 (0,20 ~ 0,50)	2
K	Ductile Cast Iron (FCD400)	~600N/mm²	XC1015 XP1020	180 (100~270)	0,28 (0,15 ~ 0,40)	2
H	Pre-hardened Steel (NAK80)	40~43HRC	XP2040	100 (60~ 150)	0,15 (0,10 ~ 0,25)	1,5
H	Steel for Die Casting (DAC55-DH31)	43~48HRC	XP2040	80 (40 ~ 120)	0,12 (0,05 ~ 0,20)	0,5
H	Hardened Steel (SKD11)	50~55HRC	XP2040	60 (40 ~ 90)	0,10 (0,05 ~ 0,20)	0,5

Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S	H
XP3035	GM	Dry	◉	○	○			
XP2040	GM	Dry	○					○
		Coolant		◉				
XC1015	GM	Dry			◉			
XP1020	GM	Dry			◉			

GM Medium Cutting

◉ First choice
○ Second choice

Finish Ball nose cutter - Kugelfräser für Schlichtbearbeitungen - Fresa sferica di finitura - Finition hémisphérique - Finiş küre uçlu kesici - Radiusfræser til sletbearbejdning - Fullradiefräs för finishing, 2-skär - Fresa de punta esférica para acabado - Чистовая сферическая фреза - Frez kulowy, obróbka wykańczająca

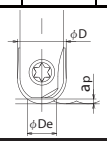
PFB

Depth of cut & Actual Cutting Diameter

(Unit : mm)

ap		(φDe)														
D	R	0,1	0,2	0,3	0,4	0,5	0,8	1	1,5	2	2,5	3	3,5	4	4,5	5
8	4	1,8	2,5	3	3,5	3,9	4,8									
10	5	2	2,8	3,4	3,9	4,4	5,4	6	7,1							
12	6	2,2	3,1	3,7	4,3	4,8	6	6,6	7,9	8,9						
16	8	2,5	3,6	4,3	5	5,6	7	7,7	9,3	10,6	11,6					
20	10	2,8	4	4,9	5,6	6,2	7,8	8,7	10,5	12	13,2	14,3	15,2			
25	12,5	3,2	4,5	5,4	6,3	7	8,8	9,8	11,9	13,6	15	16,2	17,3	18,3		
30	15	3,5	4,9	6	6,9	7,7	9,7	10,8	13,1	15	16,6	18	19,3	20,4	21,4	22,4

Determine actual cutting diameter



$De=2\sqrt{ap\times(D-ap)}$

Recommended Conditions PFB-SP, PFB-SH, PFB-Q

	MATERIAL		HARDNESS	Vc (m/min)	ap (mm)	fz (mm/t) D			
P	Mild Steel-Carbon Steel	(SS400,S10C)	~180HB	300 (200~400)	0,02D	0,1	0,12	0,14	0,18
P	Carbon Steel-Alloy Steel	(S50C,SCM440)	~280HB	300 (200~400)	0,02D	0,07	0,1	0,12	0,14
P	Die Steel	(SKD11,SKD61)	~280HB	250 (150~350)	0,02D	0,07	0,1	0,12	0,14
M	Stainless Steel	(SUS304、SUS420)	~250HB	250 (150~350)	0,02D	0,07	0,12	0,14	0,17
K	Cast Iron	(FC250)	~300N/mm^2	400 (300~500)	0,02D	0,12	0,14	0,18	0,22
K	Ductile Cast Iron	(FCD400)	~600N/mm^2	300 (200~400)	0,02D	0,1	0,12	0,14	0,18
N	Aluminium Alloy	(A7075)	~13%Si	500 (400~600)	0,03D	0,12	0,14	0,18	0,22
S	Heat Resistant Alloys	(Inconel 718)	–	50 (20~80)	0,015D	0,04	0,05	0,06	0,06
S	Titanium Alloy	(Ti-6Al-4V)	–	90 (40~120)	0,02D	0,06	0,08	0,11	0,13
H	Pre-hardened Steel	(NAK80・STAVAX)	40~43HRC	200 (100~300)	0,015D	0,06	0,07	0,08	0,1
H	Steel for Die Casting	(DAC55・DH31)	43~48HRC	180 (90~200)	0,015D	0,05	0,06	0,07	0,07
H	Hardened Steel	(SKD11)	50~60HRC	150 (100~250)	0,01D	0,05	0,06	0,07	0,07

These numbers are typical values shown in the actual cutting speed. Please adjust accordingly to suit process environments.

Recommended Conditions PFB-D

	MATERIAL		HARDNESS	Vc (m/min)	ap (mm)	fz (mm/t) D			
N	Aluminium Alloy	(A7075)	~13% Si	500 (400~600)	0,03D	0,15	0,18	0,23	0,27
N	Copper Alloy	(C1100)	–	300 (200~400)	0,03D	0,11	0,13	0,17	0,2
N	Graphite		–	500 (400~600)	0,03D	0,14	0,17	0,21	0,25
N	CFRP		–	400 (300~500)	0,03D	0,11	0,13	0,17	0,2

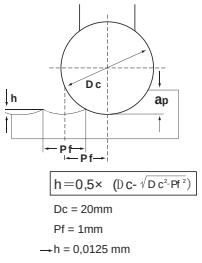
These numbers are typical values shown in the actual cutting speed. Please adjust accordingly to suit process environments.

Recommended Pick feed / Surface Finish

(unit:mm)

Diameter Dc	Pick Feed Pf	Surface Finish h
8	0,5	0,008
10	0,6	0,009
12	0,7	0,01
16	0,8	0,01
20	1	0,012
25	1,2	0,014
30	1,3	0,014

Theoretical Surface Finish

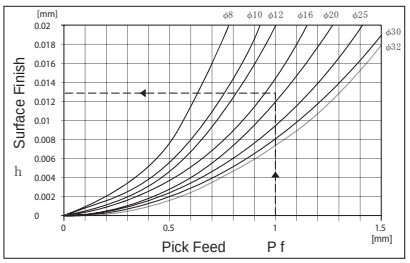


$h=0,5\times(Dc-\sqrt{Dc^2-Pf^2})$

Dc = 20mm

Pf = 1mm

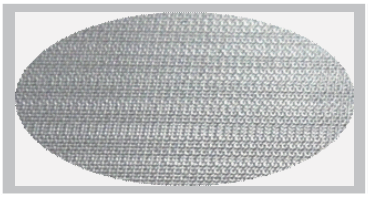
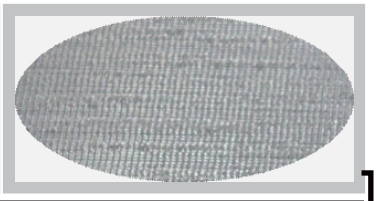
→h = 0,0125 mm



Finish Ball nose cutter - Kugelfräser für Schlichtbearbeitungen - Fresa sferica di finitura - Finition hémisphérique - Finiş küre uçlu kesici - Radiusfræser til sletbearbejdning - Fullradiefräs för finishing, 2-skär - Fresa de punta esférica para acabado - Чистовая сферическая фреза - Frez kulowy, obróbka wykańczająca

PFB

Surface finish - *PFB*

PFB	Competitor
	

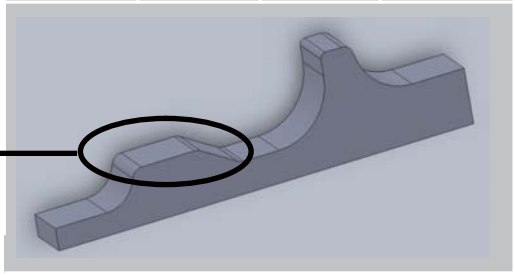
Machining Method	Product	2 4 6 8 10 (μm)	RZ (μm)
Copy Milling Flat Surface	**PFB**		6,171
	A		10,93
	B		6,021
	C		7,798
	D		6,963

Machining Method	Product	0.5 1 1.5 2 2.5 (μm)	RZ (μm)
Copy Milling Slanted Surface	**PFB**		1,967
	A		2,098
	B		2,083
	C		2,541
	D		1,827

Machining Method	Product	0.5 1 1.5 2 2.5 (μm)	RZ (μm)
Copy Milling Radial Surface	**PFB**		1,98
	A		1,9
	B		2,183
	C		2
	D		2,508

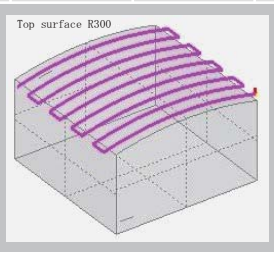
■ Machining Environment

Machining Detail		Machining Parameters	
Size	R10	Name of Part	Sample model
Overhang	80mm	Material	S50C
Speed	8,000min^{-1}	Machining Method	Copy Milling
Feed	3,200mm/min	Machining Type	Horizontal Machine
a_p	0.3mm	Holder Size	BT50
Pf	0.3mm	Coolant Size	Water Soluble



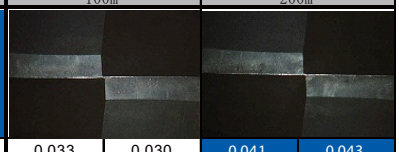
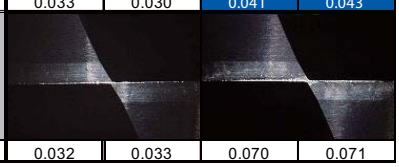
Comparison of tool wear - *PFB*

Machining Detail		Machining Parameters	
Size	R10	Name of Part	Blade
Overhang	110mm	Material	SUH600
Speed	1,500min	Machining Method	Copy Milling
Feed	2,000mm/min	Machining Type	Vertical Machining Center
ap	0.2mm	Holder Size	BT40
Pf	1mm	Coolant Size	Water Soluble



Comparison of tool wear after 200M of machining

■ Amount of wear

Machined Time	70 minutes		140 minutes	
Machined Length	100m		200m	
PFB				
Wear (mm)	0.033	0.030	0.041	0.043
Competitor				
Wear (mm)	0.032	0.033	0.070	0.071

PSE

90° Shoulder cutter - 90 ° Schulterfräser - 90° Spallamento retto - Surfacer dresser à 90° - 90° omuz frezesi
90° vendeskærsfræser - 90° vändskärsfräs - Fresa de 90° para escuadrar - Торцевая фреза 90° - 90° Frez walcowo-czołowy

	Work Material	Tensile Strength / Hardness	Grade	Insert Size							
				ZD·T11···				ZDKT15···			
				ap:10mm ae:0,2D		ap:3mm ae:1,0D		ap:14mm ae:0,2D		ap:5mm ae:1,0D	
				Vc (m/min) Milling Speed	fz(mm/t) Feed / Tooth	Vc (m/min) Milling Speed	fz(mm/t) Feed / Tooth	Vc (m/min) Milling Speed	fz(mm/t) Feed / Tooth	Vc (m/min) Milling Speed	fz(mm/t) Feed / Tooth
P	Mild Steel-Carbon Steel (SS400-S10C)	~180HB	XP3035	180 (100~ 250)	0,25 (0,2 ~ 0,5)	180 (100~ 250)	0,12 (0,05 ~ 0,2)	180 (100~ 250)	0,3 (0,2 ~ 0,6)	180 (100~ 250)	0,15 (0,05 ~ 0,25)
P	Carbon Steel-Alloy Steel (S50C-SCM440)	~280HB	XP3035	180 (100 ~ 250)	0,2 (0,15 ~ 0,4)	180 (100~ 250)	0,11 (0,05 ~ 0,2)	180 (100~ 250)	0,25 (0,15 ~ 0,5)	180 (100~ 250)	0,12 (0,05 ~ 0,2)
P	Die Steel (SKD11-SKD61)	~280HB	XP3035	150 (80 ~ 200)	0,2 (0,15 ~ 0,4)	150 (80 ~ 200)	0,1 (0,05 ~ 0,18)	150 (80 ~ 200)	0,25 (0,15 ~ 0,5)	150 (80 ~ 200)	0,12 (0,05 ~ 0,2)
M	Stainless Steel (Dry) (SUS304-SUS420)	~250HB	XP2040	150 (80 ~ 200)	0,18 (0,15 ~ 0,4)	150 (80 ~ 200)	0,1 (0,05 ~ 0,18)	150 (80 ~ 200)	0,2 (0,15 ~ 0,45)	150 (80 ~ 200)	0,12 (0,05 ~ 0,2)
M	Stainless Steel (Coolant) (SUS304-SUS420)	~250HB	XC5035	80 (60 ~ 120)	0,18 (0,15 ~ 0,4)	80 (60 ~ 120)	0,1 (0,05 ~ 0,18)	80 (60 ~ 120)	0,2 (0,15 ~ 0,45)	80 (60 ~ 120)	0,12 (0,05 ~ 0,2)
K	Cast Iron (FC250)	~350N/mm²	XC1015	180 (100 ~ 300)	0,25 (0,15 ~ 0,5)	180 (100 ~ 300)	0,12 (0,05 ~ 0,2)	180 (100 ~ 300)	0,3 (0,2 ~ 0,6)	180 (100 ~ 300)	0,15 (0,05 ~ 0,25)
K	Ductile Cast Iron (FCD400)	~800N/mm²	XC1015	180 (100~250)	0,15 (0,1 ~ 0,4)	180 (100~250)	0,12 (0,05 ~ 0,2)	180 (100~250)	0,2 (0,15 ~ 0,5)	180 (100~250)	0,15 (0,05 ~ 0,25)
N	Aluminum Alloys	~13%Si	CK010	300 (200 ~ 1.500)	0,3 (0,2 ~ 0,5)	300 (200 ~ 1.500)	0,15 (0,1 ~ 0,25)	300 (200 ~ 1.500)	0,35 (0,2 ~ 0,6)	300 (200 ~ 1.500)	0,18 (0,1 ~ 0,3)
S	Heat Resistant Alloys (Inconel 718)	–	XC5040	35 (25 ~ 60)	0,15 (0,1 ~ 0,3)	35 (25 ~ 60)	0,1 (0,05 ~ 0,15)	35 (25 ~ 60)	0,2 (0,1 ~ 0,3)	35 (25 ~ 60)	0,12 (0,05 ~ 0,15)
S	Titanium Alloy (Ti-6Al-4V)	–	XC5040	40 (30 ~ 120)	0,18 (0,1 ~ 0,35)	40 (30 ~ 120)	0,1 (0,08 ~ 0,25)	40 (30 ~ 120)	0,22 (0,1 ~ 0,35)	40 (30 ~ 120)	0,12 (0,08 ~0,25)
H	Pre-hardened Steel (NAK80)	40~43HRC	XP2040	100 (40 ~ 150)	0,18 (0,1 ~ 0,3)	100 (40 ~ 150)	0,1 (0,08~0,2)	100 (40 ~ 150)	0,22 (0,1~0,35)	90 (40 ~ 150)	0,12 (0,08~0,25)
H	Steel for Die Casting (DAC55-DH31)	43~48HRC	XP2040	80 (40 ~ 120)	0,12 (0,08~0,2)	70 (40 ~ 120)	0,08 (0,06~0,15)	80 (40 ~ 120)	0,15 (0,08~0,25)	70 (40 ~ 120)	0,1 (0,06~0,2)
H	Hardened Steel (SKD11)	50~55HRC	XP2040	60 (40 ~90)	0,1 (0,05~0,2)	50 (40 ~90)	0,06 (0,05~0,1)	60 (40 ~90)	0,12 (0,05~0,2)	50 (40 ~90)	0,08 (0,05~0,12)

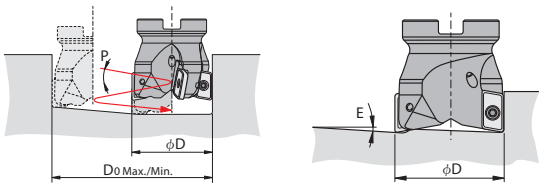
Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S	H
CK010	NM	Coolant / Dry			○	◉		
XP3035	GL GM	Dry	◉	○	○			
XP2040	GL GM	Dry	○					◉
		Coolant		◉			○	
XC1015	GM	Dry			◉			
XC5035	SM	Dry		◉				○
		Coolant		○			○	
XC5040	SM	Coolant		○			◉	○

GL Light Cutting
NM Aluminum
GM Medium Cutting
SM Heat Resistance Alloy

◉ First choice
○ Second choice

Maximum ramping angle (E)



Insert Size	ZD·T11···				ZDKT15···			
(mm) D	Ramping Angle E	Helical Milling(mm)		Helical Angle P	Ramping Angle E	Helical Milling(mm)		Helical Angle P
		Do Min.	Do Max.			Do Min.	Do Max.	
16	10,8°	18	29	9,5°	-	-	-	-
18	9,1°	-	33	7°	-	-	-	-
20	9,8°	30	37	7°	-	-	-	-
22	6,3°	34	41	4,3°	-	-	-	-
25	7,5°	40	47	4,5°	9,5°	37	48	7,5°
28	6,3°	46	53	3,9°	8,3°	39	54	5,6°
30	5,5°	50	57	3,4°	7,4°	43	58	5,3°
32	4,8°	53	61	3,2°	6,8°	47	62	5°
35	3,2°	60	67	2,5°	5,9°	53	68	3,8°
40	2,9°	72	77	2,2°	5,1°	63	78	3,2°
50	2,2°	93	98	1,7°	2,5°	86	98	2,5°
63	1,8°	118	123	1,5°	2,5°	111	124	1,5°
80	1,4°	152	157	1°	2°	147	158	1,3°
100	-	-	-	-	1,5°	190	198	1,1°
125	-	-	-	-	0,9°	240	248	0,9°

90° Shoulder cutter - 90 ° Schulterfräser - 90° Spallamento retto - Surfacer dresser à 90° - 90° omuz frezesi
90° vendeskærsfræser - 90° vändskärsfräs - Fresa de 90° para escuadrar - Торцевая фреза 90° - 90° Frez walcowo-czołowy

PSEL

	Work Material	Tensile Strength / Hardness	Grade	Insert Size			
				ZD·T11···		ZDKT15···	
				Vc (m/min) Milling Speed	fz (mm/t) Feed / Tooth	Vc (m/min) Milling Speed	fz (mm/t) Feed / Tooth
P	Mild Steel-Carbon Steel (SS400-S10C)	~180HB	XP3035	160 (100~ 200)	0,25 (0,2 ~ 0,4)	160 (100~ 200)	0,3 (0,2 ~ 0,4)
P	Carbon Steel-Alloy Steel (S50C-SCM440)	~280HB		150 (100 ~ 200)	0,2 (0,15 ~ 0,3)	150 (100~ 200)	0,25 (0,15 ~ 0,3)
P	Die Steel (SKD11-SKD61)	~280HB		130 (80 ~ 180)	0,2 (0,15 ~ 0,3)	130 (80 ~ 180)	0,25 (0,15 ~ 0,3)
M	Stainless Steel (Dry) (SUS304-SUS420)	~250HB	XP2040	150 (100 ~ 200)	0,12 (0,1 ~ 0,3)	150 (100 ~ 200)	0,15 (0,1 ~ 0,3)
M	Stainless Steel (Coolant) (SUS304-SUS420)	~250HB	XC5035	80 (60 ~ 120)	0,12 (0,1 ~ 0,3)	80 (60 ~ 120)	0,15 (0,1 ~ 0,3)
K	Cast Iron (FC250)	~350N/mm²	XC1015	160 (100 ~ 300)	0,2 (0,2 ~ 0,35)	160 (100 ~ 300)	0,25 (0,2 ~ 0,35)
K	Ductile Cast Iron (FCD400)	~800N/mm²		160 (100 ~ 250)	0,15 (0,2 ~ 0,3)	160 (100 ~ 250)	0,2 (0,2 ~ 0,3)
N	Aluminum Alloys	~13%Si	CK010	300 (200 ~ 1.000)	0,25 (0,1 ~ 0,4)	300 (200 ~ 1.000)	0,3 (0,1 ~ 0,4)
S	Heat Resistant Alloys (Inconel 718)	–	XC5040	35 (25 ~ 60)	0,15 (0,1 ~ 0,3)	35 (25 ~ 60)	0,18 (0,1 ~ 0,3)
S	Titanium Alloy (Ti-6Al-4V)	–		40 (30 ~ 120)	0,18 (0,1 ~ 0,35)	40 (30 ~ 120)	0,18 (0,1 ~ 0,3)
H	Pre-hardened Steel (NAK80)	40~43HRC	XP2040	100 (40 ~ 150)	0,15 (0,1 ~ 0,3)	100 (40 ~ 150)	0,18 (0,1 ~ 0,3)
H	Steel for Die Casting (DAC55-DH31)	43~48HRC		60 (40 ~ 120)	0,12 (0,05 ~ 0,2)	60 (40 ~ 120)	0,15 (0,05 ~ 0,2)

Maximum ramping angle (E)

Depth of cut	Maximum width of Cut ae (mm)	Ratio to adjust cutting speed Vp	Ratio to adjust feed rate fP
~ 0,2 D	1D	0,8	0,5
0,25 ~ 0,3 D	0,7D	0,8	0,6
0,4 ~ 0,5 D	0,5 D	0,9	0,7
0,6 ~ 0,7 D	0,3 D	0,9	0,8
0,8 ~ 1 D	0,2 D	1	0,9
1,1 ~ 1,5 D	0,1 D	1	1

Example :
Ø ap=30mm, S50C
Insert size ZD-T11..., for cutting Ø32, ap=30, side milling, for carbon steel (S50C) machining.

- 150m/min (Vc) x 1.0 (Vp) = 150m/min
- 0,2mm/t (fz) x 0,9 (fp) = 0,18mm/t
- ae: 0,2xØ32 = 6,4mm or lower

BACK

PRC

Radius cutter - Rundplattenfräser - Fresa con inserto tondo - Fraise plaquettes rondes - Radyus freze
Radius fræser - Vändskärsfräs med runda skär - Fresa tórica - Торовая фреза - Frez na płytki okrągłe

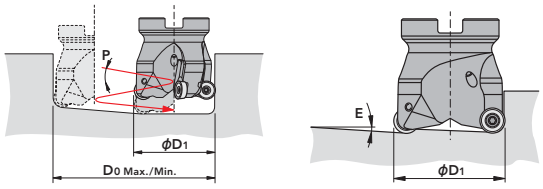
	Work Material	Tensile strength/ Hardness	Grade	Vc (m/min) Milling Speed	Insert Size					
					RPH.10..		RPH.12..		RPH.16..	
					fz (mm/t) Feed /Tooth	ap (mm) Depth of Cut	fz (mm/t) Feed /Tooth	ap (mm) Depth of Cut	fz (mm/t) Feed / Tooth	ap (mm) Depth of Cut
P	Mild Steel-Carbon Steel (SS400-S10C)	~180HB	XP3035	200 (100 ~ 300)	0,25 (0,1 ~ 0,35)	2	0,3 (0,1 ~ 0,4)	2,4	0,35 (0,1 ~ 0,5)	3,2
P	Carbon Steel-Alloy Steel (S50C-SCM440)	~280HB	XP3035	180 (100 ~ 250)	0,2 (0,1 ~ 0,3)	2	0,25 (0,1 ~ 0,35)	2,4	0,3 (0,1 ~0,45)	3,2
P	Die Steel (SKD11-SKD61)	~280HB	XP3035	150 (80 ~ 200)	0,2 (0,1 ~ 0,3)	2	0,25 (0,1 ~ 0,35)	2,4	0,3 (0,1 ~0,45)	3,2
M	Stainless Steel (SUS304-SUS420)	~250HB	XP2040 XC5035	200 (100 ~ 280)	0,25 (0,1 ~ 0,35)	2	0,3 (0,1 ~ 0,4)	2,4	0,35 (0,1 ~ 0,5)	3,2
K	Cast Iron (FC250)	~350N/mm²	XC1015	220 (100 ~ 350)	0,25 (0,05 ~ 0,4)	2	0,3 (0,1 ~ 0,5)	2,4	0,35 (0,1 ~ 0,6)	3,2
K	Ductile Cast Iron (FCD400)	~800N/mm²	XC1015	150 (100 ~ 220)	0,2 (0,1 ~ 0,3)	2	0,25 (0,1 ~ 0,35)	2,4	0,3 (0,1 ~0,45)	3,2
N	Aluminum Alloys	~13%Si	CK010	600 (300 ~ 1.500)	0,4 (0,2 ~ 0,8)	2	0,6 (0,2 ~ 1)	2,4	0,8 (0,3 ~ 1,5)	3,2
S	Heat Resistant Alloys (Inconel 718)	–	XC5040	40 (25 ~ 60)	0,15 (0,05 ~0,25)	2	0,2 (0,05 ~ 0,3)	2,4	0,25 (0,05 ~0,4)	3,2
S	Titanium Alloy (Ti-6Al-4V)	–	XC5040	80 (50 ~ 120)	0,2 (0,1 ~ 0,3)	2	0,25 (0,1 ~ 0,35)	2,4	0,3 (0,1 ~0,45)	3,2
H	Pre-hardened Steel (NAK80)	40~43HRC	XP2040	120 (40 ~ 150)	0,15 (0,05 ~ 0,25)	1,5	0,2 (0,05 ~ 0,3)	1,5	0,25 (0,05 ~0,4)	1,5
H	Steel for Die Casting (DAC55-DH31)	43~48HRC	XP2040	80 (40 ~ 120)	0,15 (0,05 ~ 0,25)	1	0,2 (0,05 ~ 0,3)	1	0,25 (0,05 ~ 0,4)	1
H	Hardened Steel (SKD11)	50~55HRC	XP2040	60 (30~ 90)	0,15 (0,05 ~ 0,25)	0,5	0,2 (0,05 ~0,3)	0,5	0,25 (0,05 ~ 0,4)	0,5

Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S	H
CK010	NM	Coolant / Dry			○	◉		
XP3035	–	Dry	◉	○	○			
XP2040	GL	Dry	○					◉
		Coolant		◉			○	
XC1015	–	Dry			◉			
XC5035	SM	Dry		◉				○
		Coolant		○			○	
XC5040	SM	Coolant		○			◉	○

◉ First choice
○ Second choice

Maximum ramping angle (E)



Insert Size	RPH·10···			RPH·12···			RPH·16···		
(mm) D	Ramping Angle E	Helical Milling(mm)		Ramping Angle E	Helical Milling(mm)		Ramping Angle E	Helical Milling(mm)	
		Do min.	Do max.		Do min.	Do max.		Do min.	Do max.
20	36,5°	24	40	–	–	–	–	–	–
25	17°	32	50	–	–	–	–	–	–
30	10°	42	60	10,3°	38	60	–	–	–
32	9,8°	46	64	10,1°	42	64	–	–	–
40	–	–	–	7,5°	58	80	12,5°	50	80
50	–	–	–	5,2°	78	100	8,4°	70	100
52	–	–	–	4,9°	82	104	–	–	–
63	–	–	–	3,8°	104	126	5,7°	96	126
66	–	–	–	–	–	–	5,3°	102	132
80	–	–	–	2,7°	138	160	4°	130	160
100	–	–	–	2°	178	200	3°	170	200

CONDITIONS

PHC

High feed radius cutter - Hochvorschubsfräser - Fresa alto avanzamento - Fraise grandes avances - Yüksek ilerlemeli freze
High feed radiusfræser - Högmatnings fräs med vändskär - Fresa de gran avance - Фреза с высокой подачей - Frez do wysokich posuwów

	Work Material	Tensile strength/ Hardness	Grade	Vc (m/min) Milling Speed	Insert Size							
					SDMT09···				SXMT12···			
					fz (mm/t) Feed /Tooth	ap (mm) Depth of Cut			fz (mm/t) Feed /Tooth	ap (mm) Depth of Cut		
						L/D=2	L/D=3	L/D=4		L/D=2	L/D=3	L/D=4
P	Mild Steel-Low Carbon Steel (SS400-S10C)	~180HB	XP3035	180 (60~250)	0,8 (0,3~ 1,8)	1	0,8	0,5	1,25 (0,5~3,2)	1,2	1,2	1
P	Carbon Steel-Alloy Steel (S50C-SCM440)	~280HB		180 (60~250)	0,8 (0,3~1,5)	1	0,8	0,5	1,25 (0,5~3)	1,2	1,2	1
P	Die Steel (SKD11-SKD61)	~280HB		180 (60~250)	0,8 (0,3~1,5)	0,8	0,6	0,4	1,25 (0,5~3)	1,2	1,2	1
M	Stainless Steel (SUS304-SUS420)	~250HB	XP2040 XC5035	120 (90~180)	0,5 (0,3~1,5)	0,8	0,6	0,4	1 (0,5~2,5)	1,2	1	1
K	Cast Iron (FC250)	~350N/mm²	XC1015	200 (100~300)	1 (0,5~1,8)	1	0,8	0,5	1,5 (0,5~3,5)	1,5	1,5	1
K	Ductile Cast Iron (FCD400)	~800N/mm²	XC1015	180 (100~250)	0,9 (0,5~1,5)	1	0,8	0,5	1,35 (0,5~3)	1,2	1,2	0,9
S	Heat Resistant Alloys (Inconel 718)	–	XC5040	30 (25~60)	0,4 (0,2~0,8)	0,5	0,5	0,4	0,5 (0,2~1)	1	1	0,8
S	Titanium Alloy (Ti-6Al-4V)	–	XC5040	80 (50~120)	0,5 (0,3~1)	0,5	0,5	0,3	0,7 (0,3~1,2)	0,8	0,8	0,4
H	Pre-hardened Steel (NAK80)	40~43HRC	XP2040	120 (40~150)	0,5 (0,2~1)	0,5	0,5	0,3	0,8 (0,3~1,5)	1	1	0,5
H	Steel for Die Casting (DAC55-DH31)	43~48HRC		90 (40~120)	0,4 (0,2~0,8)	0,5	0,5	0,3	0,7 (0,3~1,2)	0,7	0,7	0,5
H	Hardened Steel (SKD11)	50~55HRC		60 (40~90)	0,3 (0,2~0,7)	0,3	0,3	0,2	0,5 (0,3~0,8)	0,5	0,5	0,4

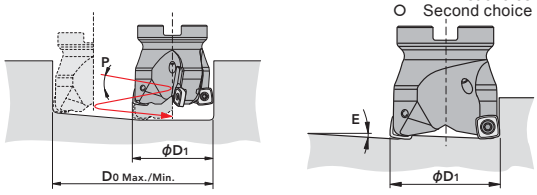
Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	S	H
XP3035	GM	Dry	◉	○	○		
XP2040	GM	Dry	○				◉
		Coolant		◉		○	
XC1015	GM	Dry			◉		
XC5035	SM	Dry		◉			○
		Coolant		○		○	
XC5040	SM	Coolant		○		◉	○

GL:Light Cutting GM:Middle Cutting NM:Aluminum SM:Heat Resistance Alloy

◉ First choice
○ Second choice

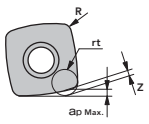
Maximum ramping angle (E)



Insert Size	SDMT09···				SXMT12···			
(mm) D	Ramping Angle E	Helical Milling(mm)		Helical Angle P	Ramping Angle E	Helical Milling(mm)		Helical Angle P
		Do min.	Do max.			Do min.	Do max.	
25	3,6°	35	48	3,1°	–	–	–	–
28	2,6°	41	54	2,1°	–	–	–	–
30	2,2°	45	58	1,9°	7,9°	40	58	6,5°
32	2°	49	62	1,7°	7,2°	44	62	6,1°
35	1,6°	55	68	1,1°	4,6°	50	68	3,9°
40	1,2°	65	78	1°	2,9°	69	78	2,5°
50	0,9°	85	98	0,8°	1,5°	80	98	1,3°
52	0,8°	89	102	0,7°	1,5°	84	102	1,3°
63	0,8°	111	124	0,7°	1,1°	106	124	0,9°
66	0,7°	117	130	0,6°	1,1°	112	130	0,9°
80	–	–	–	–	1,3°	140	158	1,1°
100	–	–	–	–	0,7°	180	198	0,6°

Flute shape dimmensions (for programming)

Insert Size	R	ap Max.	R rt	Z
SDMT09···	0,8	1	2	0,7
SXMT12···	1	2	3	1,15



For machining purposes: create machining programs for the respective simulated R radius cutters.

PDR

High feed radius cutter - Hochvorschubsfräser - Fresa alto avanzamento - Fraise grandes avances - Yüksek ilerlemeli freze
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	Work Material	Tensile strength/ Hardness	Vc (m/min) Milling Speed	PDR SS/MT/CN			PDR BORE				
				fz (mm/t) Feed per Tooth	ap (mm) Depth of Cut		fz (mm/t) Feed Per Tooth	ap (mm) Depth of Cut			
					120	170		100	200	300	400
P	Mild Steel·Low Carbon Steel (SS400-S10C)	~180HB	180 (90~220)	0,7(0,3~1)	3	2	0,6(0,3~1)	3	3	2	2
P	Carbon Steel·Alloy Steel (S50C-SCM440)	~280HB	180 (90~220)	0,7(0,3~1)	3	2	0,6(0,3~1)	3	3	2	2
P	Die Steel (SKD11-SKD61)	~280HB	150 (90~180)	0,6(0,3~1)	3	2	0,5(0,3~1)	3	2	2	2
K	Cast Iron (FC250)	~350N/mm²	180 (100~250)	0,8(0,3~1,5)	3	3	0,7(0,3~1,5)	3	3	2	2
K	Ductile Cast Iron (FCD400)	~800N/mm²	150 (100~250)	0,7(0,3~1,2)	3	3	0,6(0,3~1,2)	3	3	2	2

Recommended Grade / Material

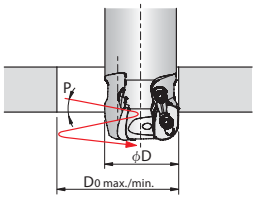
Grade	Chipbreaker	Coolant / Dry	P	K
XP3930	GM	Dry	◉	◉

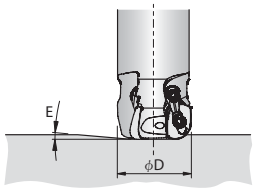
GM = General use

◉ First choice
○ Second choice

Maximum ramping angle (E)

(mm) D	Ramping Angle E	Helical Milling(mm)		Z Plunging(mm)
		Do min.	Do max.	
40	5°	50	78	3
50	3°	70	98	3
63	2°	96	124	3
80	1°	130	158	3
100	0,5°	170	198	3
125	0,5°	220	248	3





1. Long chips may occur in the beginning of the milling process.
2. The amount of feed should be within 40-70% of the recommended milling conditions.
3. To advance without dropping the feed rate, set an angle of less than 1°
4. We recommend using air blow.

1. Truciolo lungo può avvenire all'inizio del processo di fresatura
2. L'avanzamento deve essere mantenuto tra 40-70% delle condizioni raccomandate
3. Per lavorare senza diminuire l'avanzamento d'entrata, impostare un angolo di meno di 1°
4. Si consiglia di utilizzare raffreddamento ad aria

1. Lange Späne können am Anfang der Fräsbearbeitung auftreten.
2. Die Schnittgeschwindigkeit sollte 40-70% der empfohlenen Schnittdaten betragen.
3. Wenn Sie beim Anfahren den Rampenwinkel kleine 1° wählen müssen Sie die Schnittdaten nicht reduzieren.
4. Wir empfehlen Druckluft zu benutzen.

1. Les copeaux longs peuvent se produire dans le début du processus de fraisage
2. La vitesse de coupe doit être au moins de 40 à70% des conditions recommandées
3. Augmenter sans baisser l'avance et utiliser un angle de moins de 1°
4. Nous vous recommandons l'air soufflé

1. Lange spåner kan opstå i begyndelsen af bearbejdningen
2. Tilspændingen skal være indenfor 40-70% af de anbefalede skæredata
3. Er rampevinklen lig eller mindre end 1° nedsættes tilspændingen ikke
4. Vi anbefaler luftkøling

1. Långa spånor kan förekomma i början av fräsprocessen
2. Matningen bör ligga inom 40-70% av de rekommenderade villkoren
3. För att inte minska matningen, sätt rampvinkeln till 1 ° eller mindre
4. Vi rekommenderar luftkylning

1. Al inicio del proceso de fresado pueden producirse virutas largas
2. El avance debería ser entre 40 ý 70% del recomendado
3. Para no reducir el avance el ángulo de rampa debería ser menor a 1º
4. Recomendable aire soplado.

1. Длинная стружка может образовываться в начале фрезерования
2. Величина подачи должна быть в пределах 40-70% от рекомендованной
3. Для врезания без снижения подачи, установите угол врезания меньше 1°
4. Мы рекомендуем обдув воздухом

1. Freze operasyonunun başında uzun talaşlar görülebilir
2. İlerleme tavsiye edilen kesme şartlarının 40-70% olmalıdır
3. Tavsiye edilen ilerlemeyi düşürmedem, 1° den düşük açı ayarı yapılmasıdır
4. Hava üflemesi kullanmanızı tavsiye ediyoruz

1. Długie wióry mogą występować na początku procesu frezowania
2. Posuw powinien mieścić się w 40-70% z zalecanych warunków frezowania.
3. Aby przejść bez obniżania posuwu należy ustawić kąt mniejszy niż 1 °.
4. Zalecamy korzystanie z nadmuchu powietrzem

PHP

Drill - Wendeplattenbohrer - Punta - Forets plaquettes - Matkap
Bor - Korthålsborr - Broca - Сверление - Wiertło

	Work Material	Tensile strength/ Hardness	Drilling Speed Vc (m/min)	Feed Rate (mm/rev)			
				ø14~ø20.5	ø21~ø28	ø29~ø34	ø35~ø40
P	Mild Steel·Carbon Steel CK 15 St. 52-3	~180HB	200 (150 ~ 250)	0,09 (0,06 ~ 0,13)	0,13 (0,10 ~ 0,18)	0,18 (0,13 ~ 0,21)	0,25 (0,20 ~ 0,27)
P	Carbon Steel·Alloy Steel Cf 53 42CrMo4	~280HB	160 (100 ~ 220)	0,09 (0,06 ~ 0,13)	0,13 (0,10 ~ 0,18)	0,18 (0,13 ~ 0,21)	0,25 (0,20 ~ 0,27)
P	Die Steel X40CrMoV5 1	~280HB	140 (80 ~ 180)	0,08 (0,05 ~ 0,12)	0,12 (0,06 ~ 0,15)	0,14 (0,09 ~ 0,18)	0,15 (0,10 ~ 0,20)
M	Stainless Steel (SUS304 - SUS420)	~250HB	150 (100 ~ 180)	0,08 (0,05 ~ 0,12)	0,10 (0,06 ~ 0,12)	0,15 (0,10 ~ 0,17)	0,18 (0,15 ~ 0,20)
K	Cast Iron GG 25	~350N/mm²	150 (100 ~ 180)	0,09 (0,06 ~ 0,13)	0,13 (0,10 ~ 0,18)	0,18 (0,13 ~ 0,21)	0,25 (0,20 ~ 0,27)
K	Ductile Cast Iron GGG 40	~800N/mm²	130 (80 ~ 150)	0,09 (0,06 ~ 0,13)	0,12 (0,08 ~ 0,16)	0,16 (0,1 ~ 0,20)	0,20 (0,15 ~ 0,25)
N	Aluminum Alloys	~13%Si	220 (100 ~ 800)	0,09 (0,06 ~ 0,20)	0,13 (0,10 ~ 0,25)	0,18 (0,13 ~ 0,30)	0,25 (0,20 ~ 0,35)
S	Heat Resistant Alloys(Wet) (Inconel 718)	–	30 (15 ~ 50)	0,04 (0,02 ~ 0,06)	0,06 (0,03 ~ 0,10)	0,08 (0,04 ~ 0,12)	0,10 (0,06 ~ 0,14)
S	Titanium Alloy(Wet) (Ti-6Al-4V)	–	60 (30 ~ 100)	0,06 (0,04 ~ 0,08)	0,08 (0,06 ~ 0,12)	0,10 (0,08 ~ 0,15)	0,12 (0,10 ~ 0,15)

Recommended Grade / Material

Grade	Chipbreaker	Coolant / Dry	P	M	K	N	S
XP9040	DM	Coolant	◉	◉		◉	○
XC9025	DM	Coolant	○	○	◉	○	

◉ First choice
○ Second choice

1. The indicated speeds and feeds are for water soluble oil.
2. Suitable cutting fluid is water soluble high density oil (less than 20 times dilution).
3. Using non-water soluble oil is not recommended.
4. These conditions are for drilling depth less than 3 times the drill diameter.
5. Inserts should be attached to the holder tightly in a very neat condition.
6. Fasten the work material to reduce the possibility of work deformation, deflection of machined surface, or vibration.
7. A clogged oil hole can lead to a breakage. Make sure that a filter is attached to the oil feeder.

1. La velocità e avanzamento indicati si riferiscono a lavorazioni con emulsione solubile in acqua
2. Opportuno fluido di taglio è emulsione solubile in acqua ad alta densità (inferiore a 20volte di diluizione)
3. Utilizzo di olio non solubile in acqua non è raccomandato
4. Queste condizioni sono per profondità di foratura inferiore a 3 volte il diametro
5. Gli Inserti dovrebbero essere applicati al corpo ermeticamente in una condizione molto pulita
6. Fissare il materiale di lavoro per ridurre la possibilità di deformazione, deviazione o vibrazione di superficie lavorata
7. Un foro di lubrificazione ostruito può portare alla rottura. Assicurarsi che sia applicato un filtro al sistema di refrigerazione.

1. Die angegebenen Schnittdaten sind für die Verwendung von Emulsion.
2. Die geeignete Emulsion sollte weniger als 20% Fettgehalt haben.
3. Die Benützung von Schneidöl wird nicht empfohlen.
4. Die angegebenen Schnittdaten sind für Bearbeitungen kleiner 3xD
5. Die Wendeschneidplatten sollten präzise im Halter fixiert werden.
6. Um Vibrationen und Rattermarken an der Werkstückoberfläche zu vermeiden empfehlen wir eine sehr starre Werkstückspannung.
7. Ein verschmutzte innere Kühlmittelzufuhr kann zum Werkzeugbruch führen. Bitte Kühlmittelfilter verwenden.

1. Les vitesses indiquées sont avec l'utilisation d'huile soluble.
2. Un fluide de coupe à forte densité d'huile est recommandé
3. L'usinage à sec n'est pas recommandé
4. Ces conditions sont pour le perçage inférieur ou égal à 3xD
5. Les plaquettes doivent etre montées sur un support propre et en bonne état
6. Bien monter et bien serrer la pièce à usiner reduit les riques de déformation matière ,améliore la qualité de l'usinage, réduit les vibrations et les casses d'outils
7. L'obstruction d'un trou d'huile peut entrainer la rupture de l'outil, assurez vous de la qualité de filtration de votre dispositif de lubrification

1. De indikerede skæredata er ved brug af vandbaseret emulsion
2. Passende kølemiddel er vandbaseret med høj densitet (fortyndet mindre end 20 gange)
3. Ikke vandbaseret kølemiddel anbefales ikke
4. Disse skæredata er for boredybde mindre end 3 gange diameter
5. Fastspænd kun vendeskær i god kondition
6. Fastgør emnematerialet sikkert for at undgå deformation, vibrationer og lign.
7. Et tilstoppet kølehul kan forårsage brud. Sørg for at kølemidlet er filtreret

1. Den angivna varvtal och matningar är för vattenlbaserad emulsion
2. Lämplig skärvätska är vattenlösligt hög densitet olja (mindre än 20 gånger utspädning)
3. Ej vattenbaserad klmedel rekommenderas
4. Denna skärdata är för borrdjup mindre än 3xD
5. Använd endast vändskär som är i god kondition
6. Fäst arbetsstycket ordentligt för att undvika deformation, vibrationer och liknande.
7. Ett igensatt kylkanal kan orsaka brott. Filtrera helst kylvätskan

1. Las velocidades y avances recomendados son para taladrina
2. El refrigerante adecuado es taladrina concentrada al menos el 5%
3. No se recomienda utilizar aceite de corte
4. Condiciones de corte para taladrar menos de 3 veces el diámetro de corte
5. Las plaquitas deben estar fuertemente fijadas en alojamiento limpio
6. Fijar la pieza de forma que no permita la deformación, flexión de la cara mecanizada o vibración
7. El agujero de refrigeración obstruido puede producir rotura. Asegúrese la aportación de refrigerante filtrado

1. Указанные скорость и подача для охлаждения эмульсией
2. Наиболее подходящая СОЖ — водная эмульсия высокой плотности (разбавление менее, чем 1/20)
3. Использование не водной эмульсии не рекомендуется
4. Указанные скорость и подача для сверления глубиной меньше чем 3 диаметра
5. Сменные пластинки должны быть прикреплены к оправке плотно и очень аккуратно
6. Закрепите обрабатываемый материал, чтобы уменьшить возможность смещения, деформации или вибрации
7. Засорение отверстий для охлаждения может привести к поломке. Убедитесь, что фильтр СОЖ установлен и исправен

1. Belirtilen kesme hızı ve ilerleme kesme sıvısı kullanımına ögre verilmiştir
2. Uygun kesme sıvısı, suda çözünen yüksek yoğunluklu yağ (20 kat seyretmenden az olacak)
3. Suda çözülmeyen yağ kullanılması tavsiye edilmez
4. Belirtilen kesme değerler delme derinliğinin matkap çapının 3 katından küçük olduğunda geçerlidir
5. Ucu her bağlamada takıma sıkıcı tutturulması gerekir
6. İşlemin bozulması, işlenen yüzeyin sapması veya titreşim ihtimallerini azaltmak için iş parçasını sabitleyin.
7. Tıkanan bir yağ deliği kırılmaya neden olabilir. Yağ besleyicide filtre bulunduğundan emin olun.

1. Prędkości i posuwy podane są do pracy w emulsji
2. Odpowiednia emulsja w stosunku 1/20
3. Nie jest zalecane korzystanie z nierozpuszczalnego w wodzie oleju
4. Warunki te są podane dla wiercenia mniej niż 3 razy średnica wiertła.
5. Proszę przykręcać płytki ściśle, stosując niezużyte uchwyty
6. Właściwie zamocuj materiał aby zmniejszyć możliwość powstania deformacji , złej jakości powierzchni lub wibracji
7. Zatkany otwór chłodzący może doprowadzić do uszkodzenia. Proszę upewnić się, że filtr jest dołączony do podajnika emulsji

END MILLS
HSS

XPM HSS-Co



TOOL COMMUNICATION
OSG

TOKO-TON SPIRIT
Total Commitment

www.osgeurope.com

TYPE	DESCRIPTIONS	
XPM	Material developed by OSG to be used for allied steel, upto 52 HRC, stainless steel, Titanium and cast iron.	Von OSG entwickeltes Material zur Anwendung in leg. Stählen bis 52HRC, rostfreie Stähle, Titan-Legierungen und Grauguss.
	Materiale sviluppato dalla OSG per l'utilizzo su acciai legati, fino a 52 HRC, acciai inossidabili, titanio e ghisa.	Matière développée par OSG pour tous les aciers alliés, jusquà 52 HRC, inox, titane et les fontes.
	Materiale udviklet af OSG for stål op til 52 HRC, rustfrit stål, Titanium og støbejern	Matrial utvecklat av OSG för att kunna användas i legerat stål upp mtill 52 HRC, rostfritt, Titan och gjutjärn
	Matrerial desarrollado por OSG para aceros aleados hasta 52 HrC, aceros inoxidables, Titanio y fundición.	Материал разработан OSG для всех нержавеющих сталей, титана, легированных сталей, экзотических сплавов стали и чугуна до 52 HRC
	OSG tarafından bu malzeme alaşımlı çelikler, 52 HRC sertliğindeki çelikler, paslanmaz çelikler, Titanyum ve döküm malzemede kullanılması için geliştirilmiştir.	Materiał opracowany prez OSG dla stali do 52 HRC, stali nierdzewnych, tytanu oraz żeliw.
CPM	High performance material selected for use with high cutting speeds Also for dry applications	High performance Pulvermetall für sehr hohe Schnittgeschwindigkeiten Auch für Trockenbearbeitung geeignet
	Materiali alta performance per lavorazioni ad alta velocità Anche per lavorazioni a secco	Matière de haute performancesélectionnée pour de hautes vitesses de coupe Prévu également pour usinage à sec
	High performance materiale gør høje skærehastigheder opnåelig Også velegnet til tørbearbejdning	High Performance material möjliggör hög skärhastighet Även bra utan kylvätska
	Material de altas prestaciones seleccionado para emplear a altas velocidades de corte También para operaciones en seco	Высокопроизводительный материал для работы с высокой скоростью резания Также для работы без СОЖ
	Yüksek performanslı malzeme yüksek kesme hizlarında kullanılmak için seçilmiştir.	Wysoka jakość zastosowanego materiału do pracy z dużymi prędkościami skrawania
HSS-Co	High speed steel with 8% cobalt for better wear resistance.	HSSE mit 8% Cobalt für eine bessere Verschleißfestigkeit.
	Acciaio ad alta velocità con l'8% di cobalto per una migliore resistenza all'usura.	Acier rapide avec 8% de cobalt, donne une meilleure résistance à l'usure.
	HSS med 8% kobolt for bedre slidstyrke	HSS 8% Kobolt för bättre slitstyrka
	HSS con 8% de Cobalto para mejro resistencia al desgaste	Быстрорежущая сталь с 8% кобальта для большей износостойкости
	Daha iyi aşınma direnci için 8% Kobaltlı Yüksek Hiz Çeliği	Stal szybkotnąca z 8% kobaltu dla lepszej odporności na ścieranie.

WORK MATERIAL

~ 40 HRC	Hardened steel Pre-hardened steel	Legierter Stahl Gehärteter Stahl	Acciaio temprato Acciaio pre-temprato	Aciers trempés Aciers pré-trempés	Hærdet stål	Härdat stål	Aceros endurecidos	3 акаленные стали	Sertleştirilmiş çelikler Ön-sertleştirilmiş çelikler	Stale hartowane Stale hartowane
~ 45 HRC	Hardened steel Pre-hardened steel	Legierter Stahl Gehärteter Stahl	Acciaio temprato Acciaio pre-temprato	Aciers trempés Aciers pré-trempés	Hærdet stål	Härdat stål	Aceros endurecidos	3 акаленные стали	Sertleştirilmiş çelikler Ön-sertleştirilmiş çelikler	Stale hartowane Stale hartowane
~ 55 HRC	Hardened steel Pre-hardened steel	Legierter Stahl Gehärteter Stahl	Acciaio temprato Acciaio pre-temprato	Aciers trempés Aciers pré-trempés	Hærdet stål	Härdat stål	Aceros endurecidos	3 акаленные стали	Sertleştirilmiş çelikler Ön-sertleştirilmiş çelikler	Stale hartowane Stale hartowane
~ 60 HRC	Hardened steel Pre-hardened steel	Legierter Stahl Gehärteter Stahl	Acciaio temprato Acciaio pre-temprato	Aciers trempés Aciers pré-trempés	Hærdet stål	Härdat stål	Aceros endurecidos	3 акаленные стали	Sertleştirilmiş çelikler Ön-sertleştirilmiş çelikler	Stale hartowane Stale hartowane
~ 65 HRC	Hardened steel Pre-hardened steel	Legierter Stahl Gehärteter Stahl	Acciaio temprato Acciaio pre-temprato	Aciers trempés Aciers pré-trempés	Hærdet stål	Härdat stål	Aceros endurecidos	3 акаленные стали	Sertleştirilmiş çelikler Ön-sertleştirilmiş çelikler	Stale hartowane Stale hartowane
SUS	Stainless steel ~ 35 HRC	VA Stahl ~ 35 HRC	Acciaio inossidabili ~ 35 HRC	Inoxydable ~ 35 HRC	Rustfrit stål	Rostfritt stål	Aceros inoxidables	Нержавеющие стали ~35HRC	Paslanmaz çelikler ~ 35 HRC	Stale nierdzewne ~ 35 HRC
GG	Cast iron ~ 350 HB	Grauguss ~ 350 HB	Ghisa grigia ~ 350 HB	Fonte ~ 350 HB	Støbejern	Gjutgods ~ 350 HB	Aceros fundidos ~ 350 HB	Чугун ~ 350 HB	Döküm ~ 350 HB	Żeliwa ~ 350 HB
Cu	Copper alloys	Kupferlegierungen	Rame	Alliages de cuivre	Kobber legeringer	Koppar legeringer	Aleaciones de cobre	Медные сплавы	Bakır alaşımları	Stopy miedzi
Ac	Aluminium alloys	Aluminium - legierungen	Leghe di Alluminio	Alliages d'aluminium	Aluminium leg.	Aluminium legeringar	Aluminio aleado	Литейные алюминиевые сплавы	Alüminyum alaşımları	Stopy aluminium
Gr	Graphite	Graphit	Rame e grafite	Graphite	Grafit	Grafit	Grafito	Графит	Grafit	Grafit
Ti	Titanium alloys	Titaniumlegierungen	Leghe di Titanio	Alliages de Titane	Titanium	Titanlegeringar	Titanio aleado	Титановые сплавы	Titanyum alaşımları	Stopy tytanu
HRS	Heat resisting steel	Hitzebeständige legierungen	Acciai resistenti al calore	Alliages à haute résistance temp.	Varmefast stål	Värmebehandlat stål	Aceros tratados	Жаростойкие стали	Isıya dayanıklı çelikler	Stale żaroodporne
Plast.	Plastics	Kunststoff	Plastiche	Plastiques	Plastik	Plast	Plasticos	Пластики	Plastikler	Tworzywa sztuczne
○	Good	Gut	Buono	Bon	God	Bra	Utilizable	Хороший	İyi	Dobry
◎	Excellent	Sehr gut	Ottimo	Excellent	Meget god	Mycket bra	Excelente	Превосходный	Mükemmel	Bardzo dobry

HSS

HSS

SELECTION

Type	Appearance		material	coating	range
AL-WEDS Limited Supply		F.14	HSS-Co		3 ~ 20
AL-WREES Limited Supply		F.37	HSS-Co	OX	6 ~ 25
SI-WH-WRESF NEW		F.38	CPM	WXL	6 ~ 25
VP-RELF		F.33	XPM	V	10 ~ 25
VP-RESF-SP		F.32	XPM	V	6 ~ 25
VPS-EMS		F.20	XPM	V	10 ~ 30
V-WEDL Limited Supply		F.15	HSS-Co	V	1,5 ~ 30
V-WEDS		F.12	HSS-Co	V	1 ~ 40
V-WEML Limited Supply		F.29	HSS-Co	V	2 ~ 40
V-WEMS		F.27	HSS-Co	V	1,5 ~ 40
V-WETL Limited Supply		F.25	HSS-Co	V	3 ~ 30
V-WETS		F.23	HSS-Co	V	1,5 ~ 30
V-WREEL		F.36	HSS-Co	V	8 ~ 40
V-WREES		F.34	HSS-Co	V	6 ~ 40
V-WRELF		F.41	HSS-Co	V	8 ~ 20
V-WRESF		F.39	HSS-Co	V	6 ~ 40
V-XPM-WEDL		F.11	XPM	V	3 ~ 30
V-XPM-WEDS		F.10	XPM	V	2 ~ 30
V-XPM-WEHS		F.19	XPM	V	2 ~ 30
V-XPM-WEML		F.22	XPM	V	3 ~ 30
V-XPM-WEMS		F.21	XPM	V	3 ~ 30
V-XPM-WETL		F.18	XPM	V	3 ~ 30
V-XPM-WETS		F.17	XPM	V	3 ~ 30
V-XPM-WRESF		F.31	XPM	V	6 ~ 32
WEDL Limited Supply		F.16	HSS-Co		1,5 ~ 30
WEDS		F.13	HSS-Co		1 ~ 40
WEML Limited Supply		F.30	HSS-Co		2 ~ 40
WEMS		F.28	HSS-Co		1,5 ~ 40
WETL Limited Supply		F.26	HSS-Co		3 ~ 30
WETS Limited Supply		F.24	HSS-Co		1,5 ~ 30
WREES		F.35	HSS-Co		6 ~ 40
WRESF Limited Supply		F.40	HSS-Co		6 ~ 40

HSS

HSS

ICONS

ICONS										
Material - Werkstoff - Materiale - Matière - Materiale - Material - Material - Обрабатываемый материал - Malzemesi - Materiał										
XPM	High grade Powder Metallurgy HSS (XPM) (Co10 + V5)	Spezial Pulvermetall HSS (XPM) (Co10 + V5)	Alto livello di metallurgia delle polveri sinterizzate HSS (XPM) (Co10+V5)	Haut niveau de métallurgie des poudres HSS (XPM) (Co10+V5)	Special pulvermetal HSS (XPM) (Co10 + V5)	Special PM (Co10+V5)	HSS sinterizado de alto grado	Высококачественный порошковый HSS (Co10+V5)	Yüksek kaliteli Toz Metalurjisi HSS (XPM) (Co10+V5)	Wysokiej klasy metalurgia proszków HSS (XPM) (Co10 + V5)
CPM	Powder Metallurgy HSS (PM-T15) (Co5 + V5)	Pulvermetall HSS (PM-T15) (Co5 + V5)	Metallurgia delle polveri sinterizzate HSS (PM-T15) (Co5 + V5)	Métallurgie des poudres HSS (PM-T15) (Co5 + V5)	Pulvermetal HSS (PM-T15) (Co5 + V5)	Pullver metall HSS (PM-T15) (Co5 + V5)	HSS sinterizado HSS (PM-T15) (Co5 + V5)	порошковая металлургия HSS (PM-T15) (Co5 + V5)	Toz Metalurjisi Metalurjisi HSS (XPM) (Co10+V5)	Metalurgia proszków HSS (PM-T15) (Co5 + V5)
HSS-Co	HSS Cobalt (Co8)	HSS (Co8)	Cobalto HSS (Co8)	HSS Cobalt (Co8)	HSS (Co8)	HSS (Co8)	HSS al cobalto (Co8)	быстрорежущая сталь с 8% кобальта	HSS Kobalt (Co8)	HSS kobaltowe (Co8)
Coating - Beschichtung - Rivestimento - Revêtement - Belægning - Beläggning - Recubrimiento - Покрытие - Kaplama -Powłoka										
V	Multi layered composite TiCN	Mehrlagen-beschichtung TiCN	Multistrato composito TiCN	Revêtement multicouche TiCN	Multilags komposit TiCN	Multi layered composite TiCN	Recubrimiento de Carbo-Nitruro de Titanio	многослойное покрытие TiAlN	Çok katmanlı TiCN kompozit	Wielowarstwowa powłoka TiCN
N	Nitride	Nitride	Nitrurazione	Nitruration	Nitrid	Nitrid	Nitrurado y Vaporizado	Нитрид	Nitrür	Azotowane
TiCN	Coating TiCN	TiCN Beschichtet	Rivestimento TiCN	Revêtement TiCN	TiCN belægning	Belägning , TiCN	Recubrimiento de Carbo-Nitruro de Titanio	Покрытие TiCN	TiCN Kaplama	Powłoka TiCN
OX	Steam Oxide	Dampfbehandelt	Trattamento al vapore	Traitement vapeur	Damp oxideret	Ångoxiderad	Vaporizado	Паровой оксид	Buhar Oksit	Oksydowane
TiAlN	Multi layered coating TiAlN	TiAlN Beschichtet	Rivestimento TiAlN	Revêtement multicouches TiAlN	TiAlN belægning	Multi layered coating TiAlN	Recubrimiento de TiAlN	Многослойный составной TiAlN	Çok katmanlı TiAlN kaplama	Wielowarstwowa powłoka TiAlN
Helix Angle - Helix-Drall Winkel - Angolo d'elica - Angle d'hélice - Spiralvinkel - Spiral Vinkel - Angulo de helice - Угол спирали - Helis açısı - Kąt spirali										
30°	Helix Angle	Helix-Drall Winkel	Angolo d'elica	Angle d'hélice	Spiralvinkel	Spiral Vinkel	Angulo de helice	Угол спирали	Helis açısı	Kąt spirali
Center - Zentrum - Centro - Centre - Borrende - Borrande - Corte central - Режущий центр - Merkezden kesme - Centralne ostrze										
CC	Center cutting	Zentrumschneidend	Taglio al centro	Coupe au centre	Borende	Borrande	Corte central	Режущий центр	Merkezden kesme	Centralne ostrze
Shank - Shaft - Gambo - Queue - Skaft - Skaft - Mango - Хвостовик - Şaft - Chwyt										
h6	Shank diameter tolerance	Schafttoleranz	Tolleranza del diametro del gambo	Tolérance du diamètre de queue	Skaft tolerance	Skaft tolerans	Tolerancia en diametro de mango	Точность диаметра хвостовика	Şaft çapı toleransı	Tolerancja średnicy chwytu
SHRINK FIT	All shanks of OSG mills are suitable for Hypro-Shrink Fit systeme	Speziell entwickelt zum Schrumpfen	Sviluppate specialmente per il calettamento	Toutes les queues sont adaptées pour le système de frettage	Velegnet for krymp	Krymp tolerans	Todos los mangos de metal duro OSG son aptos para fijación térmica	всехвостовики инструмента OSG пригодны для Hypro термозажимной системы	OSG parmak freze şaftları Hypro-Shrink Fit sistemi için uygundur	Wszystkie chwyty są odpowiednie dla systemu termokurczliwego Hypro-Shrink
	Cylindrical straight shank	Zylindrischer schaft	Gambo cilindrico	Queue cylindrique	Cylindriskt skaft	Cylindriskt skaft	Mango sencillo	Прямой хвостовик		Chwyt cylindryczny
Serie - Serie - Serie - Série - Serie - Serie - Serie - Серия - Seri - Seria										
	Short serie	Kurze serie	Serie corta	Série courte	Kort serie	Kort Serie	Serie corte	Короткий серия	Saplama uzunluğu	Seria krótka
	Long serie	Lange serie	Serie lunga	Série longue	Lang serie	Lång Serie	Serie larga	Длинная серия	Kısa seri	Seria długa
Cutting conditions - Schnittwerte - Condizioni di taglio - Conditions de coupe - Skæredata - Skärdata - Condiciones de corte - Условия резания - kenara konik - Kąt stożka										
min	Cutting conditions	Schnittwerte	Velocita di taglio	Conditions de coupe	Skæredata	Skärdata	Condiciones de corte	Условия резания	Kesme koşulları	Parametry obróbki

Roughing shape End Mill with “variable lead”



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HSS

HSS

INDEX

NAME		SPECIFICATION	
SLOTTING END MILLS			
 V-XPM-WEDS	XPM	DIN 327, 2 flutes, short series, flatted shank	DIN 327, 2 Schneiden, Kurzer Hals, Weldon Schaft
	V	DIN 327, 2 denti, serie corta, gambo cilindrico Weldon	DIN 327, 2 lèvres, série courte, Weldon
 V-XPM-WEDL	XPM	DIN 844, 2 flutes, long series, flatted shank	DIN 844, 2 Schneiden, Langer Hals, Weldon Schaft
	V	DIN 844, 2 denti, serie lunga, gambo cilindrico Weldon	DIN 844, 2 lèvres, série longue, Weldon
 V-WEDS	HSS-Co	DIN 327, 2 flutes, short series, flatted shank	DIN 327, 2 Schneiden, Kurzer Hals, Weldon Schaft
	V	DIN 327, 2 denti, serie corta, gambo cilindrico Weldon	DIN 327, 2 lèvres, série courte, Weldon
 WEDS	HSS-Co	DIN 327, 2 flutes, short series, flatted shank	DIN 327, 2 Schneiden, Kurzer Hals, Weldon Schaft
		DIN 327, 2 denti, serie corta, gambo cilindrico Weldon	DIN 327, 2 lèvres, série courte, Weldon
 AL-WEDS Limited Supply	HSS-Co	2 flutes, short series, flatted shank, for aluminium	2 Schneiden, Kurzer Hals, Weldon Schaft, für aluminium
		2 denti, serie corta, gambo cilindrico Weldon, per aluminio	2 lèvres, série courte, Weldon, pour aluminiu
 V-WEDL Limited Supply	HSS-Co	DIN 844, 2 flutes, long series, flatted shank	DIN 844, 2 Schneiden, Langer Hals, Weldon Schaft
	V	DIN 844, 2 denti, serie lunga, gambo cilindrico Weldon	DIN 844, 2 lèvres, série longue, Weldon
 WEDL Limited Supply	HSS-Co	DIN 844, 2 flutes, long series, flatted shank	DIN 844, 2 Schneiden, Langer Hals, Weldon Schaft
		DIN 844, 2 denti, serie lunga, gambo cilindrico Weldon	DIN 844, 2 lèvres, série longue, Weldon
MULTIFLUTE END MILLS			
 V-XPM-WETS	XPM	DIN 327, 3 flutes, short series, flatted shank	DIN 327, 3 Schneiden, Kurzer Hals, Weldon Schaft
	V	DIN 327, 3 denti, serie corta, gambo cilindrico Weldon	DIN 327, 3 lèvres, série courte, Weldon
 V-XPM-WETL	XPM	DIN 844, 3 flutes, long series, flatted shank	DIN 844, 3 Schneiden, Langer Hals, Weldon Schaft
	V	DIN 844, 3 denti, serie lunga, gambo cilindrico Weldon	DIN 844, 3 lèvres, série longue, Weldon
 V-XPM-WEHS	XPM	DIN 844, muliflutes, short series, flatted shank	DIN 844, Mehrschneiden, Kurzer Hals, Weldon Schaft
	V	DIN 844, multidenti, serie corta, gambo cilindrico Weldon	DIN 844, multilèvres, série courte, Weldon
 VPS-EMS	XPM	6 or 10 flutes, short series	6 oder 10 Schneiden, Kurzer Hals
	V	6 o 10 denti, serie corta	6 ou 10 lèvres, série courte
 V-XPM-WEMS	XPM	DIN 844, 4 or 6 flutes, short series, flatted shank	DIN 844, 4 oder 6 Schneiden, Kurzer Hals, Weldon Schaft
	V	DIN 844, 4 o 6 denti, serie corta, gambo cilindrico Weldon	DIN 844, 4 ou 6 lèvres, série courte, Weldon
 V-XPM-WEML	XPM	DIN 844, 4 or 6 flutes, short series, flatted shank	DIN 844, 4 oder 6 Schneiden, Kurzer Hals, Weldon Schaft
	V	DIN 844, 4 o 6 denti, serie corta, gambo cilindrico Weldon	DIN 844, 4 ou 6 lèvres, série courte, Weldon
 V-WETS	HSS-Co	DIN 327, 3 flutes, short series, flatted shank	DIN 327, 3 Schneiden, Kurzer Hals, Weldon Schaft
	V	DIN 327, 3 denti, serie corta, gambo cilindrico Weldon	DIN 327, 3 lèvres, série courte, Weldon
 WETS Limited Supply	HSS-Co	DIN 327, 3 flutes, short series, flatted shank	DIN 327, 3 Schneiden, Kurzer Hals, Weldon Schaft
		DIN 327, 3 denti, serie corta, gambo cilindrico Weldon	DIN 327, 3 lèvres, série courte, Weldon
 V-WETL Limited Supply	HSS-Co	DIN 844, 3 flutes, long series, flatted shank	DIN 844, 3 Schneiden, Langer Hals, Weldon Schaft
	V	DIN 327, 3 denti, serie lunga, gambo cilindrico Weldon	DIN 844, 3 lèvres, série longue, Weldon

SPECIFICATION			RANGE	PAGE
SLOTTING END MILLS				
DIN 327, 2 skær, kort serie, flade på skaft	DIN 327, 2 skär, kort utförande, Weldon	DIN 327, 2 ağızlı, kısa seri, düzleştirilmiş şaft	2 ~ 30	F.10
DIN 327, 2 labios, serie corta, mango con plano	DIN 327, 2 режущих кромки, короткая серия с лыской на хвостовике	DIN 327, 2 ostrzowy, krótki, chwyt Weldon		
DIN 844, 2 skær, lang serie, flade på skaft	DIN 844, 2 skär, långt utförande, Weldon	DIN 844, 2 ağızlı, uzun seri, düzleştirilmiş şaft	3 ~ 30	F.11
DIN 844, 2 labios, serie larga, mango con plano	DIN 844, 2 режущих кромки, длинная серия с резьбой на хвостовике	DIN 844, 2 ostrzowy, długi, chwyt Weldon		
DIN 327, 2 skær, kort serie, flade på skaft	DIN 327, 2 skär, kort utförande, Weldon	DIN 327, 2 ağızlı, kısa seri, düzleştirilmiş şaft	1 ~ 40	F.12
DIN 327, 2 labios, serie corta, mango con plano	DIN 327, 2 режущих кромки, короткая серия с лыской на хвостовике	DIN 327, 2 ostrzowy, krótki, chwyt Weldon		
DIN 327, 2 skær, kort serie, flade på skaft	DIN 327, 2 skär, kort utförande, Weldon	DIN 327, 2 ağızlı, kısa seri, düzleştirilmiş şaft	1 ~ 40	F.13
DIN 327, 2 labios, serie corta, mango con plano	DIN 327, 2 режущих кромки, короткая серия с лыской на хвостовике	DIN 327, 2 ostrzowy, Seria krótka, chwyt Weldon		
2 skær, kort serie, flade på skaft, til aluminium	2 skär, kort utförande, Weldon, för Aluminium	2 ağızlı, kısa seri, düzleştirilmiş şaft, Alüminyum	3 ~ 20	F.14
2 labios, corte central, serie corta mango con plano para aluminio	2 режущих кромки, короткая серия с лыской на хвостовике для алюминия	2 ostrzowy, krótki, chwyt Weldon, do aluminium		
DIN 844, 2 skær, lang serie, flade på skaft	DIN 844, 2 skär, långt utförande, Weldon	DIN 844, 2 ağızlı, uzun seri, düzleştirilmiş şaft	1,5 ~ 30	F.15
DIN 844, 2 labios, serie larga, mango con plano	DIN 844, 2 режущих кромки, длинная серия с лыской на хвостовике	DIN 844, 2 ostrzowy, długi, chwyt Weldon		
DIN 844, 2 skær, lang serie, flade på skaft	DIN 844, 2 skär, långt utförande, Weldon	DIN 844, 2 ağızlı, uzun seri, düzleştirilmiş şaft	1,5 ~ 30	F.16
DIN 844, 2 labios, serie larga, mango con plano	DIN 844, 2 режущих кромки, длинная серия с лыской на хвостовике	DIN 844, 2 ostrzowy, długi, chwyt Weldon		

MULTIFLUTE END MILLS				
DIN 327, 3 skær, kort serie, flade på skaft	DIN 327, 3 skär, kort utförande, Weldon	DIN 327, 3 ağızlı, kısa seri, düzleştirilmiş şaft	3 ~ 30	F.17
DIN 327, 3 labios, serie corta, mango con plano	DIN 327, 3 режущих кромки, короткая серия с лыской на хвостовике	DIN 327, 3 ostrzowy, krótki, chwyt Weldon		
DIN 844, 3 skær, lang serie, flade på skaft	DIN 844, 3 skär, långt utförande, Weldon	DIN 844, 3 ağızlı, uzun seri, düzleştirilmiş şaft	3 ~ 30	F.18
DIN 844, 3 labios, serie larga, mango con plano	DIN 844, 3 режущих кромки, длинная серия с лыской на хвостовике	DIN 844, 3 ostrzowy, długi, chwyt Weldon		
DIN 844, flerskærs, kort serie, flade på skaft	DIN 844, flerskärig, kort utförande, Weldon	DIN 844, Çok ağızlı, kısa seri, düzleştirilmiş şaft	2 ~ 30	F.19
DIN 844, multi-labios, serie corta, mango con plano	DIN 327, многозубая, короткая серия с лыской на хвостовике	DIN 844, wieloostrzowy, krótki, chwyt Weldon		
6 eller 10 skær, kort serie	6 eller 10 skär, kort utförande	6,10 ağızlı, kısa seri	10 ~ 30	F.20
6 ó 10 labios, serie corta	6 или 10 режущих кромок, короткая серия	6 lub 10 ostrzowy, krótki		
DIN 844, 4 eller 6 skær, kort serie, flade på skaft	DIN 844, 4 eller 6 skär, kort utförande, Weldon	DIN 844, 4,6 ağızlı, kısa seri, düzleştirilmiş şaft	3 ~ 30	F.21
DIN 844, 4 ó 6 labios, serie corta, mango con plano	DIN 844, 4 или 6 режущих кромок, короткая серия с лыской на хвостовике	DIN 844, 4 lub 6 ostrzowy, krótki, chwyt Weldon		
DIN 844, 4 eller 6 skær, kort serie, flade på skaft	DIN 844, 4 eller 6 skär, kort utförande, Weldon	DIN 844, 4,6 ağızlı, kısa seri, Düzleştirilmiş şaft	3 ~ 30	F.22
DIN 844, 4 ó 6 labios, serie corta, mango con plano	DIN 844, 4 или 6 режущих кромок, длинная серия с лыской на хвостовике	DIN 844, 4 lub 6 ostrzowy, krótki, chwyt Weldon		
DIN 327, 3 skær, kort serie, flade på skaft	DIN 327, 3 skär, kort utförande, Weldon	DIN 327, 3 ağızlı, kısa seri, düzleştirilmiş şaft	1,5 ~ 30	F.23
DIN 327, 3 labios, serie corta, mango con plano	DIN 327, 3 режущих кромки, короткая серия с лыской на хвостовике	DIN 327, 3 ostrzowy, krótki, chwyt Weldon		
DIN 327, 3 skær, kort serie, flade på skaft	DIN 327, 3 skär, kort utförande, Weldon	DIN 327, 3 ağızlı, kısa seri, düzleştirilmiş şaft	1,5 ~ 30	F.24
DIN 327, 3 labios, serie corta, mango con plano	DIN 327, 3 режущих кромки, короткая серия с лыской на хвостовике	DIN 327, 3 ostrzowy, krótki, chwyt Weldon		
DIN 844, 3 skær, lang serie, flade på skaft	DIN 844, 3 skär, långt utförande, Weldon	DIN 844, 3 ağızlı, uzun seri, düzleştirilmiş şaft	3 ~ 30	F.25
DIN844 , 3 labios, serie larga, mango con plano	DIN 844, 3 режущих кромки, длинная серия с лыской на хвостовике	DIN 844, 3 ostrzowy, długi, chwyt Weldon		

HSS

INDEX

NAME		SPECIFICATION	
MULTIFLUTE END MILLS			
 WETL Limited Supply	HSS-Co	DIN 844, 3 flutes, long series, flatted shank DIN 327, 3 denti, serie lunga, gambo cilindrico Weldon	DIN 844, 3 Schneiden, Langer Hals, Weldon Schaft DIN 844, 3 lèvres, série longue, Weldon
 V-WEMS	HSS-Co V	DIN 844, 4 or 6 flutes, short series, flatted shank DIN 844, 4 o 6 denti, serie corta, gambo cilindrico Weldon	DIN 844, 4 oder 6 Schneiden, Kurzer Hals, Weldon Schaft DIN 844, 4 ou 6 lèvres, série courte, Weldon
 WEMS	HSS-Co	DIN 844, 4 or 6 flutes, short series, flatted shank DIN 844, 4 o 6 denti, serie corta, gambo cilindrico Weldon	DIN 844, 4 oder 6 Schneiden, Kurzer Hals, Weldon Schaft DIN 844, 4 ou 6 lèvres, série courte, Weldon
 V-WEML Limited Supply	HSS-Co V	DIN 844, 4 or 6 flutes, long serie, flatted shank DIN 844, 4 o 6 denti, serie lunga, gambo cilindrico Weldon	DIN 844, 4 oder 6 Schneiden, Langer Hals, Weldon Schaft DIN 844, 4 ou 6 lèvres, série longue, Weldon
 WEML Limited Supply	HSS-Co	DIN 844, 4 or 6 flutes, long series, flatted shank DIN 844, 4 o 6 denti, serie lunga, gambo cilindrico Weldon	DIN 844, 4 oder 6 Schneiden, Langer Hals, Weldon Schaft DIN 844, 4 ou 6 lèvres, série longue, Weldon
ROUGHING END MILLS			
 V-XPM-WRESF	XPM V	DIN 844, fine pitch, multiflute, short series, flatted shank DIN 844, passo fine, multidenti, serie corta, gambo cilindrico Weldon	DIN 844, Feinverzahnung, Mehrschneiden, Kurzer Hals, Anzugsgewinde DIN 844, pas fin, multilèvres, série courte, Weldon
 VP-RESF-SP	XPM V	3 and 4 flutes, short series, flatted shank 3 o 4 denti, serie corta, gambo cilindrico Weldon	3 und 4 Schneiden, Kurzer Hals, Weldon Schaft 3 ou 4 lèvres, série courte, Weldon
 VP-RELF	XPM V	3 and 4 flutes, long series, flatted shank 3 o 4 denti, serie lunga, gambo cilindrico Weldon	3 und 4 Schneiden, Langer Kurz, Weldon Schaft 3 ou 4 lèvres, série courte, Weldon
 V-WREES	HSS-Co V	DIN 844, coarse pitch, multiflute, short series, flatted shank DIN 844, passo normale, multidenti, serie corta, gambo cilindrico Weldon	DIN 844, Normalverzahnung, Mehrschneiden, Kurzer Hals, Weldon Schaft DIN 844, pas normal, multilèvres, série courte, Weldon
 WREES	HSS-Co	DIN 844, coarse pitch, multiflute, short series, flatted shank DIN 844, passo normale, multidenti, serie corta, gambo cilindrico Weldon	DIN 844, Normalverzahnung, Mehrschneiden, Langer Kurz, Weldon Schaft DIN 844, pas normal, multilèvres, série courte, Weldon
 V-WREEL	HSS-Co V	DIN 844, coarse pitch, multiflute, long series, flatted shank DIN 844, passo normale, multidenti, serie lunga, gambo cilindrico Weldon	DIN 844, Normaverzahnung, Mehrschneiden, Langer Hals, Weldon Schaft DIN 844, pas normal, multilèvres, série longue, Weldon
 AL-WREES Limited Supply	HSS-Co OX	DIN 844B, 3 flutes, short series, flatted shank, for aluminium DIN 844B, 3 denti, serie corta, gambo cilindrico Weldon, per aluminio	DIN 844B, 3 Schneiden, Kurzer Hals, Weldon Schaft, für aluminium DIN 844B, 3 lèvres, série courte, Weldon, pour aluminium
 SI-WH-WRESF NEW	CPM WXL	4 and 5 flutes, short series, flatted shank 4 o 5 denti, serie corta, gambo cilindrico Weldon	4 und 5 Schneiden, Kurzer Hals, Weldon Schaft 4 ou 5 lèvres, série courte, Weldon
 V-WRESF	HSS-Co V	DIN 844, fine pitch, multiflute, short series, flatted shank DIN 844, passo fine, multidenti, serie corta, gambo cilindrico Weldon	DIN 844, Feinverzahnung, Mehrschneiden, Kurzer Hals, Weldon Schaft DIN 844, pas fin, multilèvres, série courte, Weldon
 WRESF Limited Supply	HSS-Co	DIN 844, fine pitch, multiflute, short series, flatted shank DIN 844, passo fine, multidenti, serie corta, gambo cilindrico Weldon	DIN 844, Feinverzahnung, Mehrschneiden, Kurzer Hals, Weldon Schaft DIN 844, pas fin, multilèvres, série courte, Weldon
 V-WRELF	HSS-Co V	DIN 844, fine pitch, multiflute, long series, flatted shank DIN 844, passo fine, multidenti, serie lunga, gambo cilindrico Weldon	DIN 844, Feinverzahnung, Mehrschneiden, Langer Hals, Weldon Schaft DIN 844, pas fin, multilèvres, série longue, Weldon

SPECIFICATION				RANGE	PAGE
MULTIFLUTE END MILLS					
DIN 844, 3 skær, lang serie, flade på skaft	DIN 844, 3 skär, långt utförande, Weldon	DIN 844, 3 ağızlı, uzun seri, düzleştirilmiş şaft		3 ~ 30	F.26
DIN844 , 3 labios, serie larga, mango con plano	DIN 844, 3 режущих кромки, длинная серия с лыской на хвостовике	DIN 844, 3 ostrzowy, długi, chwyt Weldon			
DIN 844, 4- eller 6 skær, kort serie, flade på skaft	DIN 844, 4 eller 6 skär, kort utförande, Weldon	DIN 844, 4,6 ağızlı, kısa seri, düzleştirilmiş şaft		1,5 ~ 40	F.27
DIN 844, 4 ó 6 labios, serie corta, mango con plano	DIN 844, 4 или 6 режущих кромок, короткая серия с лыской на хвостовике	DIN 844, 4 Lub 6 ostrzowy, krótki, chwyt Weldon			
DIN 844, 4- eller 6 skær, lang serie, flade på skaft	DIN 844, 4 eller 6 skär, kort utförande, Weldon	DIN 844, 4,6 ağızlı, kısa seri, düzleştirilmiş şaft		1,5 ~ 40	F.28
DIN 844, 4 ó 6 labios, serie corta, mango con plano	DIN 844, 4 или 6 режущих кромок, короткая серия с лыской на хвостовике	DIN 844, 4 Lub 6 ostrzowy, krótki, chwyt Weldon			
DIN 844, 4- eller 6 skær, kort serie, flade på skaft	DIN 844, 4 eller 6 skär, långt utförande, Weldon	DIN 844, 4,6 ağızlı, uzun seri, düzleştirilmiş şaft		2 ~ 40	F.29
DIN 844, 4 ó 6 labios, serie larga, mango con plano	DIN 844, 4 или 6 режущих кромок, длинная серия с лыской на хвостовике	DIN 844, 4 Lub 6 ostrzowy, długi, chwyt Weldon			
DIN 844, 4- eller 6 skær, kort serie, flade på skaft	DIN 844, 4 eller 6 skär, långt utförande, Weldon	DIN 844, 4,6 ağızlı, uzun seri, düzleştirilmiş şaft		2 ~ 40	F.30
DIN 844, 4 ó 6 labios, serie larga, mango con plano	DIN 844, 4 или 6 режущих кромок, длинная серия с лыской на хвостовике	DIN 844, 4 Lub 6 ostrzowy, długi, chwyt Weldon			
ROUGHING END MILLS					
DIN 844, Finfortandet, flérskærs, kort serie, flade på skaft	DIN 844, Finskrubb, flerskärig, kort utförande, Weldon	DIN 844, ince hatve , Çok ağızlı, kısa seri, düzleştirilmiş şaft		6 ~ 32	F.31
DIN 844, Paso fino, multi-labios, serie corta, mango con plano	DIN 844, Мелкая насечка, многозубая, короткая серия с лыской на хвостовике	DIN 844, drobny łamacz, krótki, chwyt Weldon			
3 & 4 skær, kort serie, flade på skaft	3 & 4 skär, kort utförande, Weldon	3,4 ağızlı, ince hatve , kısa seri, düzleştirilmiş şaft		6 ~ 25	F.32
3 & 4 labios, serie corta, mango con plano	3 или 4 режущих кромки, короткая серия с лыской на хвостовике	3 i 4 ostrzowy, krótki, chwyt Weldon			
3 & 4 skær, lang serie, flade på skaft	3 & 4 skär, långt utförande, Weldon	3,4 ağızlı, ince hatve , uzun seri, düzleştirilmiş şaft		10 ~ 25	F.33
3 & 4 labios, serie larga, mango con plano	3 или 4 режущих кромки, длинная серия с лыской на хвостовике	3 i 4 ostrzowy, długi, chwyt Weldon			
DIN 844, Grovfortandet, flérskærs, kort serie, gevind på skaft	DIN 844, Grovskrubb, flerskärig, kort utförande	DIN 844, kaba hatve , Çok ağızlı, kısa seri, düzleştirilmiş şaft		6 ~ 40	F.34
DIN 844, Paso normal, multi-labios, serie corta, mango con plano	DIN 844, Крупная насечка, многозубая, короткая серия с лыской на хвостовике	DIN 844, łamacz normalny, wieloostrzowy, krótki, chwyt Weldon			
DIN 844, Grovfortandet, flérskærs, kort serie, gevind på skaft	DIN 844, Grovskrubb, flerskärig, långt utförande	DIN 844, kaba hatve , Çok ağızlı, kısa seri, düzleştirilmiş şaft		6 ~ 40	F.35
DIN 844, Paso normal, multi-labios, serie corta, mango con plano	DIN 844, Крупная насечка, многозубая, длинная серия с лыской на хвостовике	DIN 844, łamacz normalny, wieloostrzowy, krótki, chwyt Weldon			
DIN 844, Grovfortandet, flérskærs, lang serie, gevind på skaft	DIN 844, Grovskrubb, flerskärig, långt utförande	DIN 844, kaba hatve , Çok ağızlı, uzun seri, düzleştirilmiş şaft		8 ~ 40	F.36
DIN 844, Paso normal, multi-labios, serie larga, mango con plano	DIN 844, Крупная насечка, многозубая, длинная серия с лыской на хвостовике	DIN 844, łamacz normalny, wieloostrzowy, długi, chwyt Weldon			
DIN 844B 3 skær, kort serie, flade på skaft, til aluminium	DIN 844B 3, kort utförande, Weldon, för Aluminium	DIN 844B, 3 ağızlı , kısa seri, düzleştirilmiş şaft, Alüminyum		6 ~ 25	F.37
DIN 844B 3 labios, corte central, serie corta mango con plano para aluminio	DIN 844B 3 режущих кромки, короткая серия с лыской на хвостовике для алюминия	DIN 844B, 3 ostrzowy, krótki, chwyt Weldon, do aluminium			
4 & 5 skær, kort serie, flade på skaft	4 & 5 skär, kort utförande, Weldon	4,5 ağızlı, ince hatve , kısa seri, düzleştirilmiş şaft		6 ~ 25	F.38
4 & 5 labios, serie corta, mango con plano	4 или 5 режущих кромки, короткая серия с лыской на хвостовике	4 i 5 ostrzowy, krótki, chwyt Weldon			
DIN 844, Finfortandet, flérskærs, kort serie, flade på skaft	DIN 844, Finskrubb, flerskärig, kort utförande, Weldon	DIN 844, ince hatve, Çok ağızlı, kısa seri, düzleştirilmiş şaft		6 ~ 40	F.39
DIN 844, Paso fino, multi-labios, serie corta, mango con plano	DIN 844, Мелкая насечка, многозубая, короткая серия с лыской на хвостовике	DIN 844, drobny łamacz, krótki, chwyt Weldon			
DIN 844, Finfortandet, flérskærs, kort serie, flade på skaft	DIN 844, Finskrubb, flerskärig, kort utförande, Weldon	DIN 844, ince hatve, Çok ağızlı, kısa seri, düzleştirilmiş şaft		6 ~ 40	F.40
DIN 844, Paso fino, multi-labios, serie corta, mango con plano	DIN 844, Мелкая насечка, многозубая, короткая серия с лыской на хвостовике	DIN 844, drobny łamacz, wieloostrzowy, krótki, chwyt Weldon			
DIN 844, Finfortandet, flérskærs, lang serie, flade på skaft	DIN 844, Finskrubb, flerskärig, långt utförande, Weldon	DIN 844, ince hatve, Çok ağızlı, uzun seri, düzleştirilmiş şaft		8 ~ 20	F.41
DIN 844, Paso fino, multi-labios, erie larga, mango con plano	DIN 844, Мелкая насечка, многозубая, длинная серия с лыской на хвостовике	DIN 844, drobny łamacz, wieloost-rzowy, długi, chwyt Weldon			

HSS

V-XPM-WEDS

Slotting end mills
- High performance
- 2 flutes
- Flatted shank

Schaftfräser
- High performance
- 2 Schneiden
- Weldon Schaft

Fresa per nervature
- Alta prestazione
- 2 denti
- Codolo cilindrico Weldon

Fraise à rainurer
- Haute performance
- 2 lèvres
- Queue Weldon

Slot kesim için parmak freze
- Yüksek performans
- 2 ağızlı
- Düzleştirilmiş şaft

Endeskærs fræsere
- High performance
- 2 skær
- Weldon skaft

Raka fräsar
- High performance
- 2 skär
- Weldon

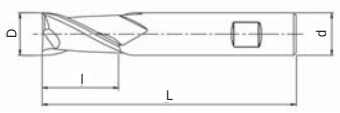
Fresas de ranurar
- Altas prestaciones
- 2 labios
- Mango weldon

Пазовые концевые фрезы
- Высокая производительность
- 2 режущих кромки
- Хвостовик с лыской

Frez do rowków
- Wysoka wydajność
- 2-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK







EDP	D	L	l	d	Stock	Price
99025901	2	48	4	6	●	
99025902	2,5	49	5	6	●	
99025903	3	49	5	6	●	
99025904	3,5	50	6	6	●	
99025906	4	51	7	6	●	
99025907	4,5	51	7	6	●	
99025909	5	52	8	6	●	
99025910	5,5	52	8	6	●	
99025912	6	52	8	6	●	
99025913	6,5	60	10	10	●	
99025915	7	60	10	10	●	
99025916	7,5	60	10	10	●	
99025918	8	61	11	10	●	
99025919	8,5	61	11	10	●	
99025921	9	61	11	10	●	
99025922	9,5	61	11	10	●	
99025924	10	63	13	10	●	
99025925	10,5	70	13	12	●	
99025926	11	70	13	12	●	
99025927	11,5	70	13	12	●	
99025929	12	73	16	12	●	
99025930	12,5	73	16	12	●	
99025932	13	73	16	12	●	
99025935	14	73	16	12	●	
99025937	15	73	16	12	●	
99025940	16	79	19	16	●	
99025942	17	79	19	16	●	
99025945	18	79	19	16	●	
99025947	19	79	19	16	●	
99025950	20	88	22	20	●	
99025952	22	88	22	20	●	
99025954	24	102	26	25	●	
99025955	25	102	26	25	●	
99025960	30	102	26	25	●	

V-XPM-WEDL

Slotting end mills
- High performance
- 2 flutes
- Flatted shank

Schaftfräser
- High performance
- 2 Schneiden
- Weldon Schaft

Fresa per nervature
- Alta prestazione
- 2 denti
- Codolo cilindrico Weldon

Fraise à rainurer
- Haute performance
- 2 lèvres
- Queue Weldon

Slot kesim için parmak freze
- Yüksek performans
- 2 ağızlı
- Düzleştirilmiş şaft

Endeskærs fræsere
- High performance
- 2 skær
- Weldon skaft

Raka fräsar
- High performance
- 2 skär
- Weldon

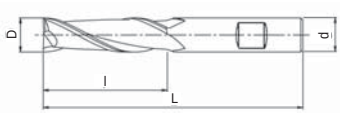
Fresas de ranurar
- Altas prestaciones
- 2 labios
- Mango weldon

Пазовые концевые фрезы
- Высокая производительность
- 2 режущих кромки
- Хвостовик с лыской

Frez do rowków
- Wysoka wydajność
- 2-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

XPM | V | 32° | CC | DIN 844





EDP	D	L	l	d	Stock	Price
99125903	3	56	8	6	●	
99125906	4	63	11	6	●	
99125909	5	68	13	6	●	
99125912	6	68	13	6	●	
99125918	8	88	19	10	●	
99125924	10	95	22	10	●	
99125929	12	110	26	12	●	
99125935	14	110	26	12	●	
99125940	16	123	32	16	●	
99125945	18	123	32	16	●	
99125950	20	141	38	20	●	
99125952	22	141	38	20	●	
99125955	25	166	45	25	●	
99125958	28	166	45	25	●	
99125960	30	186	45	25	●	

HSS

Slotting end mills
- High performance
- 2 flutes
- Flatted shank

Schaftfräser
- High performance
- 2 Schneiden
- Weldon Schaft

Fresa per nervature
- Alta prestazione
- 2 denti
- Codolo cilindrico Weldon

Fraise à rainurer
- Haute performance
- 2 lèvres
- Queue Weldon

Slot kesim için parmak freze
- Yüksek performans
- 2 ağızlı
- Düzleştirilmiş şaft

Endeskærs fræsere
- High performance
- 2 skær
- Weldon skaft

Raka fräsar
- High performance
- 2 skär
- Weldon

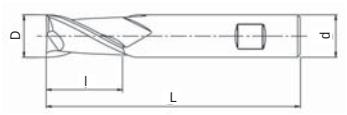
Fresas de ranurar
- Altas prestaciones
- 2 labios
- Mango weldon

Пазовые концевые фрезы
- Высокая производительность
- 2 режущих кромки
- Хвостовик с лыской

Frez do rowków
- Wysoka wydajność
- 2-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | V | 30° | CC | DIN 327 | min⁻¹ F.44





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
2002801660	1	46	3	6	●		2003800100	11,5	70	13	12	●	
2002800010	1,5	47	3	6	●		2003800110	11,7	73	16	12	●	
2002801670	1,8	48	4	6	●		2001801260	12	73	16	12	●	
2001801180	2	48	4	6	●		2002800120	12,5	73	16	12	●	
2002800020	2,5	49	5	6	●		2003800120	12,7	73	16	12	●	
2003800030	2,8	49	5	6	●		2002800130	13	73	16	12	●	
2001801190	3	49	5	6	●		2003800130	13,7	73	16	12	●	
2002800030	3,5	50	6	6	●		2001801270	14	73	16	12	●	
2003800040	3,8	51	7	6	●		2002800140	15	73	16	12	●	
2001801200	4	51	7	6	●		2003800140	15,7	79	19	16	●	
2002800040	4,5	51	7	6	●		2001801280	16	79	19	16	●	
2002801240	4,8	52	8	6	●		2002800150	17	79	19	16	●	
2001801210	5	52	8	6	●		2003800150	17,7	79	19	16	●	
2002800050	5,5	52	8	6	●		2001801290	18	79	19	16	●	
2003800050	5,75	52	8	6	●		2002800160	19	79	19	16	●	
2001801220	6	52	8	6	●		2003800160	19,7	88	22	20	●	
2002800060	6,5	60	10	10	●		2001801300	20	88	22	20	●	
2003800060	6,75	60	10	10	●		2002801250	21	88	22	20	●	
2002800070	7	60	10	10	●		2002800170	22	88	22	20	●	
2002800080	7,5	60	10	10	●		2003800170	23	88	22	20	●	
2002802010	7,75	61	11	10	●		2002800180	24	102	26	25	●	
2001801230	8	61	11	10	●		2002800190	25	102	26	25	●	
2002800090	8,5	61	11	10	●		2003800180	26	102	26	25	●	
2003800070	8,7	61	11	10	●		2002801850	27	102	26	25	●	
2001801240	9	61	11	10	●		2002800200	28	102	26	25	●	
2003800080	9,5	61	11	10	●		2002800210	30	102	26	25	●	
2003800090	9,7	63	13	10	●		2002802230	32	112	32	32	●	
2001801250	10	63	13	10	●		2002802170	35	112	32	32	●	
2002800100	10,5	70	13	12	●		2002802090	40	118	38	32	●	
2002800110	11	70	13	12	●								

● Delivery from stock
○ Available on short notice

Slotting end mills
- High performance
- 2 flutes
- Flatted shank

Schaftfräser
- High performance
- 2 Schneiden
- Weldon Schaft

Fresa per nervature
- Alta prestazione
- 2 denti
- Codolo cilindrico Weldon

Fraise à rainurer
- Haute performance
- 2 lèvres
- Queue Weldon

Slot kesim için parmak freze
- Yüksek performans
- 2 ağızlı
- Düzleştirilmiş şaft

Endeskærs fræsere
- High performance
- 2 skær
- Weldon skaft

Raka fräsar
- High performance
- 2 skär
- Weldon

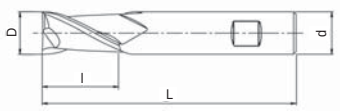
Fresas de ranurar
- Altas prestaciones
- 2 labios
- Mango weldon

Пазовые концевые фрезы
- Высокая производительность
- 2 режущих кромки
- Хвостовик с лыской

Frez do rowków
- Wysoka wydajność
- 2-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | 30° | CC | DIN 327 | min⁻¹ F.44





EDP	D	L	l	d	Stock	Price	EDP	D	L	l	d	Stock	Price
29020895	1	46	3	6	●		29020929	12	73	16	12	●	
29020900	1,5	47	3	6	●		29020930	12,5	73	16	12	●	
29020897	1,8	48	4	6	●		29020931	12,7	73	16	12	●	
29020901	2	48	4	6	●		29020932	13	73	16	12	●	
29020902	2,5	49	5	6	●		29020934	13,7	73	16	12	●	
29020898	2,8	49	5	6	●		29020935	14	73	16	12	●	
29020903	3	49	5	6	●		29020937	15	73	16	12	●	
29020904	3,5	50	6	6	●		29020939	15,7	79	19	16	●	
29020905	3,8	51	7	6	●		29020940	16	79	19	16	●	
29020906	4	51	7	6	●		29020942	17	79	19	16	●	
29020907	4,5	51	7	6	●		29020944	17,7	79	19	16	●	
29020908	4,8	52	8	6	●		29020945	18	79	19	16	●	
29020909	5	52	8	6	●		29020947	19	79	19	16	●	
29020910	5,5	52	8	6	●		29020949	19,7	88	22	20	●	
29020911	5,75	52	8	6	●		29020950	20	88	22	20	●	
29020912	6	52	8	6	●		29020951	21	88	22	20	●	
29020913	6,5	60	10	10	●		29020952	22	88	22	20	●	
29020914	6,75	60	10	10	●		29020953	23	88	22	20	●	
29020915	7	60	10	10	●		29020954	24	102	26	25	●	
29020916	7,5	60	10	10	●		29020955	25	102	26	25	●	
29020917	7,75	61	11	10	●		29020956	26	102	26	25	●	
29020918	8	61	11	10	●		29020957	27	102	26	25	●	
29020919	8,5	61	11	10	●		29020958	28	102	26	25	●	
29020920	8,7	61	11	10	●		29020959	29	102	26	25	●	
29020921	9	61	11	10	●		29020960	30	102	26	25	●	
29020922	9,5	61	11	10	●		29020961	32	112	32	32	●	
29020923	9,7	63	13	10	●		29020962	34	112	32	32	●	
29020924	10	63	13	10	●		29020963	35	112	32	32	●	
29020925	10,5	70	13	12	●		29020964	36	112	32	32	●	
29020926	11	70	13	12	●		29021965	38	118	38	32	●	
29020927	11,5	70	13	12	●		29021966	40	118	38	32	●	
29020928	11,7	73	16	12	●								

Slotting end mills
- High performance
- 2 flutes
- Flatted shank

Schaftfräser
- High performance
- 2 Schneiden
- Weldon Schaft

Fresa per nervature
- Alta prestazione
- 2 denti
- Codolo cilindrico Weldon

Fraise à rainurer
- Haute performance
- 2 lèvres
- Queue Weldon

Slot kesim için parmak freze
- Yüksek performans
- 2 ağızlı
- Düzleştirilmiş şaft

Endeskærs fræsere
- High performance
- 2 skær
- Weldon skaft

Raka fräsar
- High performance
- 2 skär
- Weldon

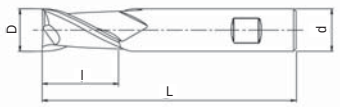
Fresas de ranurar
- Altas prestaciones
- 2 labios
- Mango weldon

Пазовые концевые фрезы
- Высокая производительность
- 2 режущих кромки
- Хвостовик с лыской

Frez do rowków
- Wysoka wydajność
- 2-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | 40° | CC | DIN 327 | min⁻¹ F.42





EDP	D	L	l	d	Stock	Price
2089652300	3	49	5	6	●	
2089652320	4	51	7	6	●	
2089652340	5	52	8	6	●	
2089652400	8	61	11	10	●	
2089652440	10	63	13	10	●	
2089652460	12	73	16	12	●	
2089652480	14	73	16	12	●	
2089652500	16	79	19	16	●	
2089652520	18	79	19	16	●	
2089652540	20	88	22	20	●	

● Delivery from stock
○ Available on short notice

Slotting end mills
- High performance
- 2 flutes
- Flatted shank

Schaftfräser
- High performance
- 2 Schneiden
- Weldon Schaft

Fresa per nervature
- Alta prestazione
- 2 denti
- Codolo cilindrico Weldon

Fraise à rainurer
- Haute performance
- 2 lèvres
- Queue Weldon

Slot kesim için parmak freze
- Yüksek performans
- 2 ağızlı
- Düzleştirilmiş şaft

Endeskærs fræsere
- High performance
- 2 skær
- Weldon skaft

Raka fräsar
- High performance
- 2 skär
- Weldon

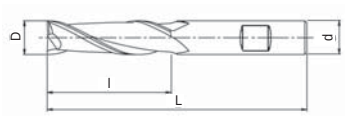
Fresas de ranurar
- Altas prestaciones
- 2 labios
- Mango weldon

Пазовые концевые фрезы
- Высокая производительность
- 2 режущих кромки
- Хвостовик с лыской

Frez do rowków
- Wysoka wydajność
- 2-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | V | 30° | CC | DIN 844





EDP	D	L	l	d	Stock	Price
2003804860	1,5	54	7	6	●	
2002801680	2	54	7	6	●	
2003800240	2,5	56	8	6	●	
2003800250	3	56	8	6	●	
2003800260	3,5	59	10	6	●	
2002801360	4	63	11	6	●	
2003800270	4,5	63	11	6	●	
2002800590	5	68	13	6	●	
2002801690	5,5	68	13	6	●	
2002800600	6	68	13	6	●	
2002801700	6,5	80	16	10	●	
2002801710	7	80	16	10	●	
2003800280	7,5	80	16	10	●	
2002800610	8	88	19	10	●	
2003800290	8,5	88	19	10	●	
2002801720	9	88	19	10	●	
2003800300	9,5	88	19	10	●	
2002801730	10	95	22	10	●	
2002801740	11	102	22	12	●	
2002800620	12	110	26	12	●	
2003800310	13	110	26	12	●	
2002800630	14	110	26	12	●	
2003800320	15	110	26	12	●	
2002801970	16	123	32	16	●	
2003800330	17	123	32	16	●	
2003800340	18	123	32	16	●	
2003800350	19	123	32	16	●	
2002800640	20	141	38	20	●	
2003800380	25	166	45	25	●	
2003800400	28	166	45	25	●	
2003800410	30	186	45	25	●	

Slotting end mills
- High performance
- 2 flutes
- Flatted shank

Schaftfräser
- High performance
- 2 Schneiden
- Weldon Schaft

Fresa per nervature
- Alta prestazione
- 2 denti
- Codolo cilindrico Weldon

Fraise à rainurer
- Haute performance
- 2 lèvres
- Queue Weldon

Slot kesim için parmak freze
- Yüksek performans
- 2 ağızlı
- Düzleştirilmiş şaft

Endeskærs fræsere
- High performance
- 2 skær
- Weldon skaft

Raka fräsar
- High performance
- 2 skär
- Weldon

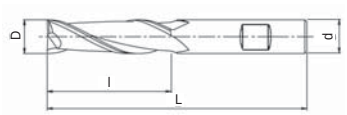
Fresas de ranurar
- Altas prestaciones
- 2 labios
- Mango weldon

Пазовые концевые фрезы
- Высокая производительность
- 2 режущих кромки
- Хвостовик с лыской

Frez do rowków
- Wysoka wydajność
- 2-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | 30° | CC | DIN 844





EDP	D	L	l	d	Stock	Price
2089686040	1,5	54	7	6	●	
29120901	2	54	7	6	●	
29120902	2,5	56	8	6	●	
29120903	3	56	8	6	●	
29120904	3,5	59	10	6	●	
29120906	4	63	11	6	●	
29120907	4,5	63	11	6	●	
29120909	5	68	13	6	●	
29120910	5,5	68	13	6	●	
29120912	6	68	13	6	●	
29120913	6,5	80	16	10	●	
29120915	7	80	16	10	●	
29120916	7,5	80	16	10	●	
29120918	8	88	19	10	●	
29120919	8,5	88	19	10	●	
29120921	9	88	19	10	●	
29120922	9,5	88	19	10	●	
29120924	10	95	22	10	●	
29120926	11	102	22	12	●	
29120929	12	110	26	12	●	
29120932	13	110	26	12	●	
29120935	14	110	26	12	●	
29120937	15	110	26	12	●	
29120940	16	123	32	16	●	
29120942	17	123	32	16	●	
29120945	18	123	32	16	●	
29120947	19	123	32	16	●	
29120950	20	141	38	20	●	
29120952	22	141	38	20	●	
29120954	24	166	45	25	●	
29120955	25	166	45	25	●	
29120956	26	166	45	25	●	
29120960	30	186	45	25	●	

● Delivery from stock
○ Available on short notice

V-XPM-WETS

Multiflute end mills
- High performance
- 3 flutes
- Flatted shank

Mehrschneider
- High performance
- 3 Schneiden
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 3 denti
- Codolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 3 lèvres
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 3 ağızlı
- Düzleştirilmiş şaft

Flerskærs endefræsere
- High performance
- 3 skær
- Weldon skaft

Flerskärsfräs
- High performance
- 3 skär
- Weldon

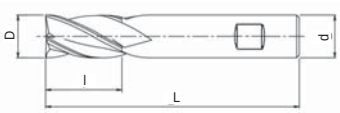
Fresas multi labio
- Altas prestaciones
- 3 labios
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 3 режущих кромки
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 3-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

XPM | V | 30° | CC | DIN 327 | min⁻¹ F.48





EDP	D	L	l	d	Stock	Price
99425903	3	49	5	6	●	
99425906	4	51	7	6	●	
99425909	5	52	8	6	●	
99425912	6	52	8	6	●	
99425915	7	60	10	10	●	
99425918	8	61	11	10	●	
99425924	10	63	13	10	●	
99425929	12	73	16	12	●	
99425935	14	73	16	12	●	
99425937	15	73	16	12	●	
99425940	16	79	19	16	●	
99425945	18	79	19	16	●	
99425950	20	88	22	20	●	
99425952	22	88	22	20	●	
99425954	24	102	26	25	●	
99425955	25	102	26	25	●	
99425960	30	102	26	25	●	

HSS

V-XPM-WETL

Multiflute end mills
- High performance
- 3 flutes
- Flatted shank

Mehrschneider
- High performance
- 3 Schneiden
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 3 denti
- Codolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 3 lèvres
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 3 ağızlı
- Düzleştirilmiş şaft

Flerskærs endefræsere
- High performance
- 3 skær
- Weldon skaft

Flerskärsfräs
- High performance
- 3 skär
- Weldon

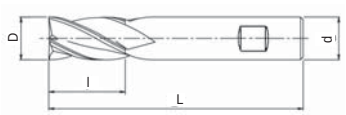
Fresas multi labio
- Altas prestaciones
- 3 labios
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 3 режущих кромки
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 3-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

XPM | V | 30° | CC | DIN 844





EDP	D	L	l	d	Stock	Price
99625903	3	56	12	6	●	
99625906	4	63	19	6	●	
99625909	5	68	24	6	●	
99625912	6	68	24	6	●	
99625918	8	88	38	10	●	
99625924	10	95	45	10	●	
99625929	12	110	53	12	●	
99625935	14	110	53	12	●	
99625940	16	123	63	16	●	
99625945	18	123	63	16	●	
99625950	20	141	75	20	●	
99625952	22	141	75	20	●	
99625955	25	166	90	25	●	
99625958	28	166	90	25	●	
99625960	30	166	90	25	●	

V-XPM-WEHS

Multiflute end mills
- High performance
- 2 flutes D ≤ 5
- 3 flutes 5 < D ≤ 22
- 4 flutes D > 22
- Flatted shank

Mehrschneider
- High performance
- 2 Schneiden D ≤ 5
- 3 Schneiden 5 < D ≤ 22
- 4 Schneiden D > 22
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 2 denti D ≤ 5
- 3 denti 5 < D ≤ 22
- 4 denti D > 22
- Codolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 2 lèvres D ≤ 5
- 3 lèvres 5 < D ≤ 22
- 4 lèvres D > 22
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 2 ağızlı D ≤ 5
- 3 ağızlı 5 < D ≤ 22
- 4 ağızlı D > 22
- Düzleştirilmiş şaft

Flérskærs endefræsere
- High performance
- 2 skær D ≤ 5
- 3 skær 5 < D ≤ 22
- 4 skær D > 22
- Weldon skaft

Flerskärsfräs
- High performance
- 2 skär D ≤ 5
- 3 skär 5 < D ≤ 22
- 4 skär D > 22
- Weldon

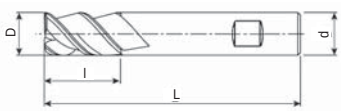
Fresas multi labio
- Altas prestaciones
- 2 labios D ≤ 5
- 3 labios 5 < D ≤ 22
- 4 labios D > 22
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 2 кромки D ≤5
- 3 кромки 5 < D ≤22
- 4 кромки D > 22
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 2-ostrzowy D ≤ 5
- 3-ostrzowy 5 < D ≤ 22
- 4-ostrzowy D > 22
- Chwyt Weldon

GO TO LIVE STOCK CHECK

XPM | V | 50° | CC | DIN 844 | min⁻¹ F.45-46





EDP	D	L	l	d	Stock	Price
97125901	2	51	7	6	●	
97125903	3	52	8	6	●	
97125906	4	55	11	6	●	
97125909	5	57	13	6	●	
97125912	6	57	13	6	●	
97125915	7	66	16	10	●	
97125918	8	69	19	10	●	
97125921	9	69	19	10	●	
97125924	10	72	22	10	●	
97125926	11	79	22	12	●	
97125929	12	83	26	12	●	
97125932	13	83	26	12	●	
97125935	14	83	26	12	●	
97125937	15	83	26	12	●	
97125940	16	92	32	16	●	
97125945	18	92	32	16	●	
97125950	20	104	38	20	●	
97125952	22	104	38	20	●	
97125954	24	121	45	25	●	
97125955	25	121	45	25	●	
97125958	28	121	45	25	●	
97125960	30	121	45	25	●	

Multiflute end mills

- High performance
- 6 flutes for internal contouring
- 10 flutes for external contouring

Mehrschneider

- High performance
- 6 Schneiden für Innenkonturen
- 10 Schneiden für Aussenkonturen

Fresa multidenti

- Alta prestazione
- 6 denti per la contornatura interna
- 10 denti per la contornatura esterna

Fraise multilèvres

- Haute performance
- 6 lèvres pour le contournage intérieur
- 10 lèvres pour le contournage extérieur

Çok ağızlı parmak freze

- Yüksek performans
- İç kontur için 6 ağızlı
- Dış kontur için 10 ağızlı

Flérskærs endefræsere

- High performance
- 6 skær til fræsning af indvendig kontur
- 10 skær til fræsning af udvendig kontur

Flerskärsfräs

- High performance
- 6 skär för invändig konturfräsning
- 10 skär för utvändig konturfräsning

Fresas multi labio

- Altas prestaciones
- 6 labios para contopreado interior
- 10 labios para contorneado exterior

Многозубые концевые фрезы

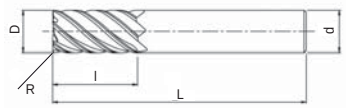
- Высокая производительность
- Шестизубая для внутренних контуров
- Десятизубая для наружных контуров

Frez wieloostrzowy

- Wysoka wydajność
- 6 ostrzowy do konturowania wewnętrznego
- 10 ostrzowy do konturowania zewnętrznego

GO TO LIVE STOCK CHECK

XPM | V | 45° | CC | DIN 844 | min⁻¹ F.43





EDP	D	R	L	l	ZΔ	d	Stock	Price
8457100	10	-	75	25	6	10	●	
8457120	12	-	90	30	6	12	●	
8458120	12	-	90	30	10	12	●	
8457160	16	-	100	40	6	16	●	
8457162	16	1	100	40	6	16	●	
8458160	16	-	100	40	10	16	●	
8458162	16	1	100	40	10	16	●	
8457200	20	-	115	45	6	20	●	
8457202	20	1	115	45	6	20	●	
8458200	20	-	115	45	10	20	●	
8458202	20	1	115	45	10	20	●	
8457250	25	-	125	50	6	25	●	
8457252	25	1	125	50	6	25	●	
8458250	25	-	125	50	10	25	●	
8458252	25	1	125	50	10	25	●	
8457300	30	-	130	55	6	25	●	
8457302	30	1	130	55	6	25	●	
8458300	30	-	130	55	10	25	●	
8458302	30	1	130	55	10	25	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

● Delivery from stock
○ Available on short notice

V-XPM-WEMS

Multiflute end mills
- High performance
- 4 flutes D ≤ 22
- 6 flutes D > 22
- Flatted shank

Mehrschneider
- High performance
- 4 Schneiden D ≤ 22
- 6 Schneiden D > 22
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 4 denti D ≤ 22
- 6 denti D > 22
- Condolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 4 lèvres D ≤ 22
- 6 lèvres D > 22
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 4 ağızlı D ≤ 22
- 6 ağızlı D > 22
- Düzleştirilmiş şaft

Flérskærs endefræsere
- High performance
- 4 skær D ≤ 22
- 6 skær D > 22
- Weldon skaft

Flerskärsfräs
- High performance
- 4 skär D ≤ 22
- 6 skär D > 22
- Weldon

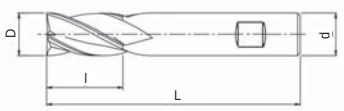
Fresas multi labio
- Altas prestaciones
- 4 labios D ≤ 22
- 6 labios D > 22
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 4 кромки D ≤22
- 6 кромок D > 22
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 4-ostrzowy D ≤ 22
- 6-ostrzowy D > 22
- Chwyt Weldon

GO TO LIVE STOCK CHECK

XPM | V | 32° | CC | DIN 844 | min⁻¹ F.47





EDP	D	L	l	d	Stock	Price
98025903	3	52	8	6	●	
98025906	4	55	11	6	●	
98025909	5	57	13	6	●	
98025912	6	57	13	6	●	
98025915	7	66	16	10	●	
98025918	8	69	19	10	●	
98025924	10	72	22	10	●	
98025929	12	83	26	12	●	
98025935	14	83	26	12	●	
98025937	15	83	26	12	●	
98025940	16	92	32	16	●	
98025945	18	92	32	16	●	
98025950	20	104	38	20	●	
98025952	22	104	38	20	●	
98025954	24	121	45	25	●	
98025955	25	121	45	25	●	
98025960	30	121	45	25	●	

V-XPM-WEML

Multiflute end mills
- High performance
- 4 flutes D ≤ 22
- 6 flutes D > 22
- Flatted shank

Mehrschneider
- High performance
- 4 Schneiden D ≤ 22
- 6 Schneiden D > 22
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 4 denti D ≤ 22
- 6 denti D > 22
- Condolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 4 lèvres D ≤ 22
- 6 lèvres D > 22
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 4 ağızlı D ≤ 22
- 6 ağızlı D > 22
- Düzleştirilmiş şaft

Flérskærs endefræsere
- High performance
- 4 skær D ≤ 22
- 6 skær D > 22
- Weldon skaft

Flerskärsfräs
- High performance
- 4 skär D ≤ 22
- 6 skär D > 22
- Weldon

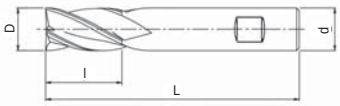
Fresas multi labio
- Altas prestaciones
- 4 labios D ≤ 22
- 6 labios D > 22
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 4 кромки D ≤22
- 6 кромок D > 22
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 4-ostrzowy D ≤ 22
- 6-ostrzowy D > 22
- Chwyt Weldon

GO TO LIVE STOCK CHECK

XPM | V | 32° | CC | DIN 844





EDP	D	L	l	d	Stock	Price
98125903	3	56	12	6	●	
98125906	4	63	19	6	●	
98125909	5	68	24	6	●	
98125912	6	68	24	6	●	
98125918	8	88	38	10	●	
98125924	10	95	45	10	●	
98125929	12	110	53	12	●	
98125935	14	110	53	12	●	
98125940	16	123	63	16	●	
98125945	18	123	63	16	●	
98125950	20	141	75	20	●	
98125952	22	141	75	20	●	
98125955	25	166	90	25	●	
98125958	28	166	90	25	●	
98125960	30	166	90	25	●	

HSS

● Delivery from stock
○ Available on short notice

Multiflute end mills
- High performance
- 3 flutes
- Flatted shank

Mehrschneider
- High performance
- 3 Schneiden
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 3 denti
- Codolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 3 lèvres
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 3 ağızlı
- Düzleştirilmiş şaft

Flérskærs endefræsere
- High performance
- 3 skær
- Weldon skaft

Flerskärsfräs
- High performance
- 3 skär
- Weldon

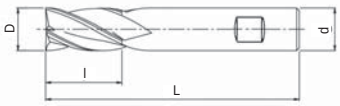
Fresas multi labio
- Altas prestaciones
- 3 labios
- Mango weldon

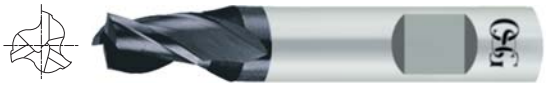
Многозубые концевые фрезы
- Высокая производительность
- 3 режущих кромки
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 3-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | V | 30° | CC | DIN 327 | min⁻¹ F.48





EDP	D	L	l	d	Stock	Price
2002800220	1,5	47	3	6	●	
2002800230	2	48	4	6	●	
2002800240	2,5	49	5	6	●	
2001801480	3	49	5	6	●	
2002801260	3,5	50	6	6	●	
2001801490	4	51	7	6	●	
2002801270	4,5	51	7	6	●	
2001801500	5	52	8	6	●	
2002800250	5,5	52	8	6	●	
2001801510	6	52	8	6	●	
2002800260	6,5	60	10	10	●	
2001801520	7	60	10	10	●	
2002800270	7,5	60	10	10	●	
2001801530	8	61	11	10	●	
2002801280	8,5	61	11	10	●	
2002800280	9	61	11	10	●	
2003800470	9,5	61	11	10	●	
2001801540	10	63	13	10	●	
2002800290	10,5	70	13	12	●	
2002800300	11	70	13	12	●	
2003800480	11,5	70	13	12	●	
2001801550	12	73	16	12	●	
2003800490	12,5	73	16	12	●	
2002800310	13	73	16	12	●	
2001801560	14	73	16	12	●	
2002800320	15	73	16	12	●	
2001801570	16	79	19	16	●	
2002800330	17	79	19	16	●	
2001801580	18	79	19	16	●	
2003804870	19	79	19	16	●	
2001801590	20	88	22	20	●	
2003800510	21	88	22	20	●	
2002801290	22	88	22	20	●	
2003804850	23	88	22	20	●	
2002801300	25	102	26	25	●	
2003800540	26	102	26	25	●	
2003800560	28	102	26	25	●	
2002800340	30	102	26	25	●	

Multiflute end mills
- High performance
- 3 flutes
- Flatted shank

Mehrschneider
- High performance
- 3 Schneiden
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 3 denti
- Codolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 3 lèvres
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 3 ağızlı
- Düzleştirilmiş şaft

Flérskærs endefræsere
- High performance
- 3 skær
- Weldon skaft

Flerskärsfräs
- High performance
- 3 skär
- Weldon

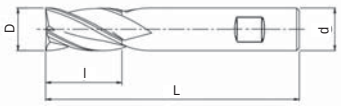
Fresas multi labio
- Altas prestaciones
- 3 labios
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 3 режущих кромки
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 3-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | 30° | CC | DIN 327 | min⁻¹ F.48





EDP	D	L	l	d	Stock	Price
29060900	1,5	47	3	6	●	
29060901	2	48	4	6	●	
29060902	2,5	49	5	6	●	
29060903	3	49	5	6	●	
29060904	3,5	50	6	6	●	
29060906	4	51	7	6	●	
29060907	4,5	51	7	6	●	
29060909	5	52	8	6	●	
29060910	5,5	52	8	6	●	
29060912	6	52	8	6	●	
29060913	6,5	60	10	10	●	
29060915	7	60	10	10	●	
29060916	7,5	60	10	10	●	
29060918	8	61	11	10	●	
29060919	8,5	61	11	10	●	
29060921	9	61	11	10	●	
29060922	9,5	61	11	10	●	
29060924	10	63	13	10	●	
29060925	10,5	70	13	12	●	
29060926	11	70	13	12	●	
29060927	11,5	70	13	12	●	
29060929	12	73	16	12	●	
29060930	12,5	73	16	12	●	
29060932	13	73	16	12	●	
29060935	14	73	16	12	●	
29060937	15	73	16	12	●	
29060940	16	79	19	16	●	
29060942	17	79	19	16	●	
29060945	18	79	19	16	●	
29060947	19	79	19	16	●	
29060950	20	88	22	20	●	
29060951	21	88	22	20	●	
29060952	22	88	22	20	●	
29060953	23	88	22	20	●	
29060954	24	102	26	25	●	
29060955	25	102	26	25	●	
29060956	26	102	26	25	●	
29060957	27	102	26	25	●	
29060958	28	102	26	25	●	
29060959	29	102	26	25	●	
29060960	30	102	26	25	●	

● Delivery from stock
○ Available on short notice

Multiflute end mills
- High performance
- 3 flutes
- Flatted shank

Mehrschneider
- High performance
- 3 Schneiden
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 3 denti
- Codolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 3 lèvres
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 3 ağızlı
- Düzleştirilmiş şaft

Flérskærs endefræsere
- High performance
- 3 skær
- Weldon skaft

Flerskärsfräs
- High performance
- 3 skär
- Weldon

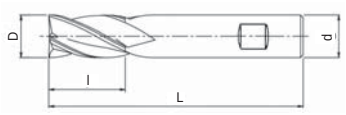
Fresas multi labio
- Altas prestaciones
- 3 labios
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 3 режущих кромки
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 3-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | V | 30° | CC | DIN 844





EDP	D	L	l	d	Stock	Price
2003800640	3	56	12	6	●	
2003800650	3,5	59	15	6	●	
2003800660	4	63	19	6	●	
2003800670	4,5	63	19	6	●	
2002802100	5	68	24	6	●	
2003800680	5,5	68	24	6	●	
2002801750	6	68	24	6	●	
2003800690	6,5	80	30	10	●	
2003800700	7	80	30	10	●	
2003800710	7,5	80	38	10	●	
2002801760	8	88	38	10	●	
2002801770	9	88	38	10	●	
2002800720	10	95	45	10	●	
2002802110	11	102	45	12	●	
2003800720	12	110	53	12	●	
2002801550	13	110	53	12	●	
2002801330	14	110	53	12	●	
2003800730	15	110	53	12	●	
2002801340	16	123	63	16	●	
2003800740	17	123	63	16	●	
2003800750	18	123	63	16	●	
2003800760	19	123	63	16	●	
2002801350	20	141	75	20	●	
2002802050	30	166	90	25	●	

Multiflute end mills
- High performance
- 3 flutes
- Flatted shank

Mehrschneider
- High performance
- 3 Schneiden
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 3 denti
- Codolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 3 lèvres
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 3 ağızlı
- Düzleştirilmiş şaft

Flérskærs endefræsere
- High performance
- 3 skær
- Weldon skaft

Flerskärsfräs
- High performance
- 3 skär
- Weldon

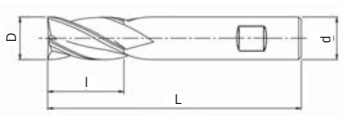
Fresas multi labio
- Altas prestaciones
- 3 labios
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 3 режущих кромки
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 3-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | 30° | CC | DIN 844





EDP	D	L	l	d	Stock	Price
2089622480	3	56	12	6	●	
2089622490	3,5	59	15	6	●	
2089622500	4	63	19	6	●	
2089622510	4,5	63	19	6	●	
2089622520	5	68	24	6	●	
2089622530	5,5	68	24	6	●	
2089622540	6	68	24	6	●	
2089622570	6,5	80	30	10	●	
2089622550	7	80	30	10	●	
2092800050	7,5	80	38	10	●	
2092800030	8	88	38	10	●	
2089622580	9	88	38	10	●	
2089623540	10	95	45	10	●	
2089622600	11	102	45	12	●	
2089622610	12	110	53	12	●	
2089622620	13	110	53	12	●	
2089622630	14	110	53	12	●	
2089622640	15	110	53	12	●	
2089622650	16	123	63	16	●	
2095800130	17	123	63	16	●	
2089622660	18	123	63	16	●	
2003800460	19	123	63	16	●	
2095800150	20	141	75	20	●	
2089622680	22	141	75	20	●	
2089622700	28	166	90	25	●	
2089622710	30	166	90	25	●	

Multiflute end mills
- High performance
- 4 flutes D ≤ 21
- 6 flutes D > 21
- Flatted shank

Mehrschneider
- High performance
- 4 Schneiden D ≤ 21
- 6 Schneiden D > 21
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 4 denti D ≤ 21
- 6 denti D > 21
- Condolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 4 lèvres D ≤ 21
- 6 lèvres D > 21
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 4 ağızlı D ≤ 21
- 6 ağızlı D > 21
- Düzleştirilmiş şaft

Flerskærs endefræsere
- High performance
- 4 skær D ≤ 21
- 6 skær D > 21
- Weldon skaft

Flerskärsfräs
- High performance
- 4 skär D ≤ 21
- 6 skär D > 21
- Weldon

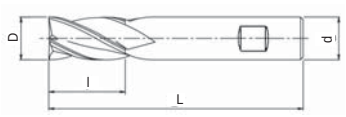
Fresas multi labio
- Altas prestaciones
- 4 labios D ≤ 21
- 6 labios D > 21
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 4 кромки D ≤ 21
- 6 кромок D > 21
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 4-ostrzowy D ≤ 21
- 6-ostrzowy D > 21
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | V | 30° | CC | DIN 844 | min⁻¹ F.47





EDP	D	L	l	d	Stock	Price
2003800010	1,5	51	7	6	●	
2001801310	2	51	7	6	●	
2002800350	2,5	52	8	6	●	
2002800360	3	52	8	6	●	
2002800370	3,5	54	10	6	●	
2001801320	4	55	11	6	●	
2002800380	4,5	55	11	6	●	
2001801330	5	57	13	6	●	
2002800390	5,5	57	13	6	●	
2001801340	6	57	13	6	●	
2003800790	6,5	66	16	10	●	
2002800400	7	66	16	10	●	
2003800800	7,5	66	16	10	●	
2001801350	8	69	19	10	●	
2003800810	8,5	69	19	10	●	
2001801360	9	69	19	10	●	
2003800820	9,5	69	19	10	●	
2001801370	10	72	22	10	●	
2003800830	10,5	79	22	12	●	
2002800410	11	79	22	12	●	
2003800840	11,5	83	26	12	●	
2001801380	12	83	26	12	●	
2002800420	13	83	26	12	●	
2001801390	14	83	26	12	●	
2002800430	15	83	26	12	●	
2001801400	16	92	32	16	●	
2002800440	17	92	32	16	●	
2001801410	18	92	32	16	●	
2002800450	19	92	32	16	●	
2001801420	20	104	38	20	●	
2003800850	21	104	38	20	●	
2001801430	22	104	38	20	●	
2003800860	23	104	38	20	●	
2002802240	24	121	45	25	●	
2001801440	25	121	45	25	●	
2002800460	26	121	45	25	●	
2002800470	28	121	45	25	●	
2001801450	30	121	45	25	●	
2001801460	32	133	53	32	●	
2003800890	36	133	53	32	●	
2001801470	40	143	63	32	●	

Multiflute end mills
- High performance
- 6 flutes D > 21
- Flatted shank

Mehrschneider
- High performance
- 6 Schneiden D > 21
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 6 denti D > 21
- Condolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 6 lèvres D > 21
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 6 ağızlı D > 21
- Düzleştirilmiş şaft

Flérskærs endefræsere
- High performance
- 6 skær D > 21
- Weldon skaft

Flerskärsfräs
- High performance
- 6 skär D > 21
- Weldon

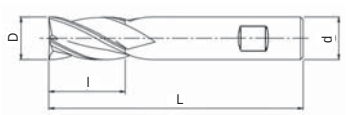
Fresas multi labio
- Altas prestaciones
- 6 labios D > 21
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 6 кромок D > 21
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 6-ostrzowy D > 21
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | 30° | CC | DIN 844 | min⁻¹ F.47





EDP	D	L	l	d	Stock	Price
28020900	1,5	51	7	6	●	
28020901	2	51	7	6	●	
28020902	2,5	52	8	6	●	
28020903	3	52	8	6	●	
28020904	3,5	54	10	6	●	
28020906	4	55	11	6	●	
28020907	4,5	55	11	6	●	
28020909	5	57	13	6	●	
28020910	5,5	57	13	6	●	
28020912	6	57	13	6	●	
28020913	6,5	66	16	10	●	
28020915	7	66	16	10	●	
28020916	7,5	66	16	10	●	
28020918	8	69	19	10	●	
28020919	8,5	69	19	10	●	
28020921	9	69	19	10	●	
28020922	9,5	69	19	10	●	
28020924	10	72	22	10	●	
28020925	10,5	79	22	12	●	
28020926	11	79	22	12	●	
28020927	11,5	83	26	12	●	
28020929	12	83	26	12	●	
28020932	13	83	26	12	●	
28020935	14	83	26	12	●	
28020937	15	83	26	12	●	
28020940	16	92	32	16	●	
28020942	17	92	32	16	●	
28020945	18	92	32	16	●	
28020947	19	92	32	16	●	
28020950	20	104	38	20	●	
28020951	21	104	38	20	●	
28020952	22	104	38	20	●	
28020953	23	104	38	20	●	
28020954	24	121	45	25	●	
28020955	25	121	45	25	●	
28020956	26	121	45	25	●	
28020958	28	121	45	25	●	
28020960	30	121	45	25	●	
28020961	32	133	53	32	●	
28020962	34	133	53	32	●	
28020963	35	133	53	32	●	
28020964	36	133	53	32	●	
28021965	38	143	63	32	●	
28021966	40	143	63	32	●	

● Delivery from stock
○ Available on short notice

Multiflute end mills
- High performance
- 4 flutes D ≤ 22
- 6 flutes D > 22
- Flatted shank

Mehrschneider
- High performance
- 4 Schneiden D ≤ 22
- 6 Schneiden D > 22
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 4 denti D ≤ 22
- 6 denti D > 22
- Condolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 4 lèvres D ≤ 22
- 6 lèvres D > 22
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 4 ağızlı D ≤ 22
- 6 ağızlı D > 22
- Düzleştirilmiş şaft

Flerskærs endefræsere
- High performance
- 4 skær D ≤ 22
- 6 skær D > 22
- Weldon skaft

Flerskärsfräs
- High performance
- 4 skär D ≤ 22
- 6 skär D > 22
- Weldon

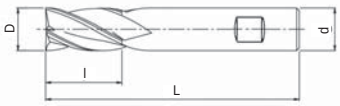
Fresas multi labio
- Altas prestaciones
- 4 labios D ≤ 22
- 6 labios D > 22
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 4 кромки D ≤22
- 6 кромок D > 22
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 4-ostrzowy D ≤ 22
- 6-ostrzowy D > 22
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | V | 30° | CC | DIN 844





EDP	D	L	l	d	Stock	Price
2002801640	2	54	10	6	●	
2002801650	2,5	56	12	6	●	
2003804880	3	56	12	6	●	
2003804890	3,5	63	15	6	●	
2003804900	4	63	19	6	●	
2003804910	4,5	63	19	6	●	
2002800650	5	68	24	6	●	
2003804920	5,5	68	24	6	●	
2003804930	6	68	24	6	●	
2003804940	6,5	80	30	10	●	
2003804950	7	80	30	10	●	
2003804960	7,5	80	30	10	●	
2002800660	8	88	38	10	●	
2003804970	8,5	88	38	10	●	
2003804980	9	88	38	10	●	
2003804990	9,5	88	38	10	●	
2002800670	10	95	45	10	●	
2003805000	11	102	45	12	●	
2002801600	12	110	53	12	●	
2003805010	13	110	53	12	●	
2003805020	14	110	53	12	●	
2003805030	15	110	53	12	●	
2002802210	16	123	63	16	●	
2003805040	17	123	63	16	●	
2003805050	18	123	63	16	●	
2003805060	19	123	63	16	●	
2002800680	20	141	75	20	●	
2003805070	22	141	75	20	●	
2003805080	24	166	90	25	●	
2002800690	25	166	90	25	●	
2003805100	28	166	90	25	●	
2002800700	30	166	90	25	●	
2002800710	32	186	106	32	●	
2003805110	35	186	106	32	●	
2003805120	36	186	106	32	●	
2002801580	40	205	125	32	●	

Multiflute end mills
- High performance
- 4 flutes D ≤ 20
- 6 flutes D > 20
- Flatted shank

Mehrschneider
- High performance
- 4 Schneiden D ≤ 20
- 6 Schneiden D > 20
- Weldon Schaft

Fresa multidenti
- Alta prestazione
- 4 denti D ≤ 20
- 6 denti D > 20
- Condolo cilindrico Weldon

Fraise multilèvres
- Haute performance
- 4 lèvres D ≤ 20
- 6 lèvres D > 20
- Queue Weldon

Çok ağızlı parmak freze
- Yüksek performans
- 4 ağızlı D ≤ 20
- 6 ağızlı D > 20
- Düzleştirilmiş şaft

Flérskærs endefræsere
- High performance
- 4 skær D ≤ 20
- 6 skær D > 20
- Weldon skaft

Flerskärsfräs
- High performance
- 4 skär D ≤ 20
- 6 skär D > 20
- Weldon

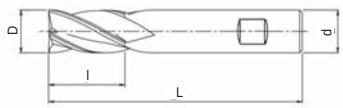
Fresas multi labio
- Altas prestaciones
- 4 labios D ≤ 20
- 6 labios D > 20
- Mango weldon

Многозубые концевые фрезы
- Высокая производительность
- 4 кромки D ≤20
- 6 кромок D > 20
- Хвостовик с лыской

Frez wieloostrzowy
- Wysoka wydajność
- 4-ostrzowy D ≤ 20
- 6-ostrzowy D > 20
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | 30° | CC | DIN 844





EDP	D	L	l	d	Stock	Price
28120901	2	54	10	6	●	
28120902	2,5	56	12	6	●	
28120903	3	56	12	6	●	
28120904	3,5	63	15	6	●	
28120906	4	63	19	6	●	
28120907	4,5	63	19	6	●	
28120909	5	68	24	6	●	
28120912	6	68	24	6	●	
28120913	6,5	80	30	10	●	
28120915	7	80	30	10	●	
28120916	7,5	80	30	10	●	
28120918	8	88	38	10	●	
28120919	8,5	88	38	10	●	
28120921	9	88	38	10	●	
28120922	9,5	88	38	10	●	
28120924	10	95	45	10	●	
28120926	11	102	45	12	●	
28120929	12	110	53	12	●	
28120932	13	110	53	12	●	
28120935	14	110	53	12	●	
28120937	15	110	53	12	●	
28120940	16	123	63	16	●	
28120942	17	123	63	16	●	
28120945	18	123	63	16	●	
28120947	19	123	63	16	●	
28120950	20	141	75	20	●	
28120952	22	141	75	20	●	
28120954	24	166	90	25	●	
28120955	25	166	90	25	●	
28120956	26	166	90	25	●	
28120958	28	166	90	25	●	
28120960	30	166	90	25	●	
28120961	32	186	106	32	●	
28121966	40	205	125	32	●	

● Delivery from stock
○ Available on short notice

V-XPM-WRESF

Roughing end mills
- High performance
- 4 flutes fine pitch D ≤ 22
- 5 flutes 22 ≤ D < 28
- 6 flutes 30 ≤ D ≤ 45
- Flatted shank

Schruppfräser
- High performance
- 4 Schneiden Feinverzahnung D ≤ 22
- 5 Schneiden 22 ≤ D < 28
- 6 Schneiden 30 ≤ D ≤ 45
- Weldon Schaft

Fresa a sgrossare
- Alta prestazione
- 4 denti a passo fine D ≤ 22
- 5 denti 22 ≤ D < 28
- 6 denti 30 ≤ D ≤ 45
- Codolo cilindrico Weldon

Fraise ébauche
- Haute performance
- 4 lèvres pas fin D ≤ 22
- 5 lèvres 22 ≤ D < 28
- 6 lèvres 30 ≤ D ≤ 45
- Queue Weldon

Kaba parmak freze
- Yüksek performans
- 4 ağızlı ince hatve D ≤ 22
- 5 ağızlı 22 ≤ D < 28
- 6 ağızlı 30 ≤ D ≤ 45
- Düzleştirilmiş şaft

Skrub fræsere
- High performance
- 4 skær, fint fortandet D ≤ 22
- 5 skær 22 ≤ D < 28
- 6 skær 30 ≤ D ≤ 45
- Weldon skaft

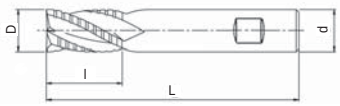
Skrubbfräs
- High performance
- 4 skär finskrubb D ≤ 22
- 5 skär 22 ≤ D < 28
- 6 skär 30 ≤ D ≤ 45
- Weldon

Fresas de desbastar
- Altas prestaciones
- 4 labios paso fino D ≤ 22
- 5 labios 22 ≤ D < 28
- 6 labios 30 ≤ D ≤ 45
- Mango weldon

Черновые концевые фрезы
- Высокая производительность
- 4 кромки с мелкой насечкой D ≤22
- 5 кромок 22 ≤D ≤28
- 6 кромок 30 ≤D ≤45
- Хвостовик с лыской

Frez do obróbki zgrubnej
- Wysoka wydajność
- 4-ostrzowy drobny łamacz D ≤22
- 5-ostrzowy 22 ≤D ≤28
- 6-ostrzowy 30 ≤D ≤45
- Chwyt Weldon

XPM | V | CC | DIN 844 | min⁻¹ F.50





EDP	D	L	l	d	Stock	Price
97825912	6	57	13	6	●	
97825915	7	66	16	10	●	
97825918	8	69	19	10	●	
97825924	10	72	22	10	●	
97825929	12	83	26	12	●	
97825932	13	83	26	12	●	
97825935	14	83	26	12	●	
97825937	15	83	26	12	●	
97825940	16	92	32	16	●	
97825945	18	92	32	16	●	
97825950	20	104	38	20	●	
97825952	22	104	38	20	●	
97825955	25	121	45	25	●	
97825958	28	121	45	25	●	
97825960	30	121	45	25	●	
97825961	32	133	53	32	●	

VP-RESF-SP

Roughing end mills
- High performance
- 3 flutes fine pitch D < 25
- 4 flutes D = 25
- Flatted shank

Schruppfräser
- High performance
- 3 Schneiden Feinverzahnung D < 25
- 4 Schneiden D = 25
- Weldon Schaft

Fresa a sgrossare
- Alta prestazione
- 3 denti a passo fine D < 25
- 4 denti D = 25
- Codolo cilindrico Weldon

Fraise ébauche
- Haute performance
- 3 lèvres pas fin D < 25
- 4 lèvres D = 25
- Queue Weldon

Kaba parmak freze
- Yüksek performans
- 3 ağızlı ince hatve D < 25
- 4 ağızlı D = 25
- Düzleştirilmiş şaft

Skrub fræsere
- High performance
- 3 skær, fint fortandet D < 25
- 4 skær D = 25
- Weldon skaft

Skrubbfräs
- High performance
- 3 skär finskrubb D < 25
- 4 skär D = 25
- Weldon

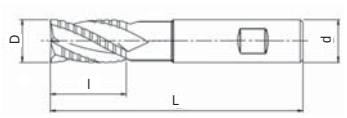
Fresas de desbastar
- Altas prestaciones
- 3 labios paso fino D < 25
- 4 labios D = 25
- Mango weldon

Черновые концевые фрезы
- Высокая производительность
- 3 кромки с мелкой насечкой D <25
- 4 кромок D = 25
- Хвостовик с лыской

Frez do obróbki zgrubnej
- Wysoka wydajność
- 3-ostrzowy drobny łamacz D < 25
- 4-ostrzowy D = 25
- Chwyt Weldon

GO TO LIVE STOCK CHECK

XPM | V | CC | min⁻¹ F.42





EDP	D	L	l	d	Stock	Price
48101060	6	51	6	6	●	
48101080	8	59	8	10	●	
48101100	10	63	10	10	●	
48101120	12	72	12	12	●	
48101160	16	83	16	16	●	
48101200	20	93	20	20	●	
48101250	25	109	25	25	●	

● Delivery from stock
○ Available on short notice

Roughing end mills

- High performance
- 3 flutes fine pitch D < 25
- 4 flutes D = 25
- Flatted shank

Schruppfräser

- High performance
- 3 Schneiden Feinverzahnung D < 25
- 4 Schneiden D = 25
- Weldon Schaft

Fresa a sgrossare

- Alta prestazione
- 3 denti a passo fine D < 25
- 4 denti D = 25
- Codolo cilindrico Weldon

Fraise ébauche

- Haute performance
- 3 lèvres pas fin D < 25
- 4 lèvres D = 25
- Queue Weldon

Kaba parmak freze

- Yüksek performans
- 3 ağızlı ince hatve D < 25
- 4 ağızlı D = 25
- Düzleştirilmiş şaft

Skrub fræsere

- High performance
- 3 skær, fint fortandet D < 25
- 4 skær D = 25
- Weldon skaft

Skrubbfräs

- High performance
- 3 skär finskrubb D < 25
- 4 skär D = 25
- Weldon

Fresas de desbastar

- Altas prestaciones
- 3 labios paso fino D < 25
- 4 labios D = 25
- Mango weldon

Черновые концевые фрезы

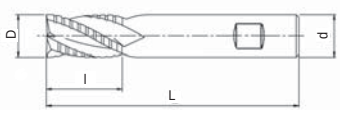
- Высокая производительность
- 3 кромки с мелкой насечкой D <25
- 4 кромок D = 25
- Хвостовик с лыской

Frez do obróbki zgrubnej

- Wysoka wydajność
- 3-ostrzowy drobny łamacz D < 25
- 4-ostrzowy D = 25
- Chwyt Weldon

GO TO LIVE STOCK CHECK

XPM V CC





EDP	D	L	l	d	Stock	Price
48102100	10	95	45	10	●	
48102120	12	110	53	12	●	
48102160	16	123	63	16	●	
48102200	20	141	75	20	●	
48102250	25	166	90	25	●	

Roughing end mills

- High performance
- 4 flutes coarse pitch D ≤ 22
- 5 flutes 22 < D ≤ 30
- 6 flutes D > 30
- Flatted shank

Schruppfräser

- High performance
- 4 Schneiden Normalverzahnung D ≤ 22
- 5 Schneiden 22 < D ≤ 30
- 6 Schneiden D > 30
- Weldon Schaft

Fresa a sgrossare

- Alta prestazione
- 4 denti a passo nomale D ≤ 22
- 5 denti 22 < D ≤ 30
- 6 denti D > 30
- Codolo cilindrico Weldon

Fraise ébauche

- Haute performance
- 4 lèvres pas normal D ≤ 22
- 5 lèvres 22 < D ≤ 30
- 6 lèvres D > 30
- Queue Weldon

Kaba parmak freze

- Yüksek performans
- 4 ağızlı Kaba hatve D ≤ 22
- 5 ağızlı 22 < D ≤ 30
- 6 ağızlı D > 30
- Düzleştirilmiş şaft

Skrub fræsere

- High performance
- 4 skær, groft fortandet D ≤ 22
- 5 skær 22 < D ≤ 30
- 6 skær D > 30
- Weldon skaft

Skrubbfräs

- High performance
- 4 skär grovskrubb D ≤ 22
- 5 skär 22 < D ≤ 30
- 6 skär D > 30
- Weldon

Fresas de desbastar

- Altas prestaciones
- 4 labios paso amplio D ≤ 22
- 5 labios 22 < D ≤ 30
- 6 labios D > 30
- Mango weldon

Черновые концевые фрезы

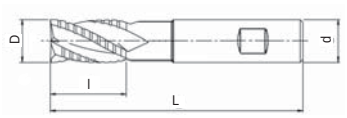
- Высокая производительность
- 4 кромки с крупной насечкой D ≤ 22
- 5 кромок 22 < D ≤ 30
- 6 кромок D > 30
- Хвостовик с лыской

Frez do obróbki zgrubnej

- Wysoka wydajność
- 4-ostrzowy łamacz normalny D≤22
- 5-ostrzowy 22 <D ≤28
- 6-ostrzowy D > 30
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | V | 30° | CC | DIN 844 | min⁻¹ F.50





EDP	D	L	l	d	Stock	Price
2001801600	6	57	13	6	●	
2002800480	7	66	16	10	●	
2001801610	8	69	19	10	●	
2002800490	9	69	19	10	●	
2001801620	10	72	22	10	●	
2002800500	11	79	22	12	●	
2001801630	12	83	26	12	●	
2002801180	13	83	26	12	●	
2001801640	14	83	26	12	●	
2002800510	15	83	26	12	●	
2002801190	16	92	32	16	●	
2002800520	18	92	32	16	●	
2001801650	20	104	38	20	●	
2002800530	22	104	38	20	●	
2001801660	24	121	45	25	●	
2001801670	25	121	45	25	●	
2002801540	26	121	45	25	●	
2001801680	28	121	45	25	●	
2001801690	30	121	45	25	●	
2001801700	32	133	53	32	●	
2003800980	35	133	53	32	●	
2003800990	36	133	53	32	●	
2001801710	40	143	63	32	●	

● Delivery from stock
○ Available on short notice

Roughing end mills
- High performance
- 4 flutes coarse pitch D ≤ 22
- 5 flutes 22 < D ≤ 30
- 6 flutes D > 30
- Flatted shank

Schruppfräser
- High performance
- 4 Schneiden Normalverzahnung D ≤ 22
- 5 Schneiden 22 < D ≤ 30
- 6 Schneiden D > 30
- Weldon Schaft

Fresa a sgrossare
- Alta prestazione
- 4 denti a passo nomale D ≤ 22
- 5 denti 22 < D ≤ 30
- 6 denti D > 30
- Codolo cilindrico Weldon

Fraise ébauche
- Haute performance
- 4 lèvres pas normal D ≤ 22
- 5 lèvres 22 < D ≤ 30
- 6 lèvres D > 30
- Queue Weldon

Kaba parmak freze
- Yüksek performans
- 4 ağızlı Kaba hatve D ≤ 22
- 5 ağızlı 22 < D ≤ 30
- 6 ağızlı D > 30
- Düzleştirilmiş şaft

Skrub fræsere
- High performance
- 4 skær, groft fortandet D ≤ 22
- 5 skær 22 < D ≤ 30
- 6 skær D > 30
- Weldon skaft

Skrubbfräs
- High performance
- 4 skär grovskrubb D ≤ 22
- 5 skär 22 < D ≤ 30
- 6 skär D > 30
- Weldon

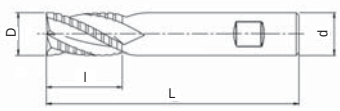
Fresas de desbastar
- Altas prestaciones
- 4 labios paso amplio D ≤ 22
- 5 labios 22 < D ≤ 30
- 6 labios D > 30
- Mango weldon

Черновые концевые фрезы
- Высокая производительность
- 4 кромки с крупной насечкой D ≤ 22
- 5 кромок 22 < D ≤ 30
- 6 кромок D > 30
- Хвостовик с лыской

Frez do obróbki zgrubnej
- Wysoka wydajność
- 4-ostrzowy łamacz normalny D≤22
- 5-ostrzowy 22 <D ≤28
- 6-ostrzowy D > 30
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | 30° | CC | DIN 844 | min⁻¹ F.50





EDP	D	L	l	d	Stock	Price
28520912	6	57	13	6	●	
28520915	7	66	16	10	●	
28520918	8	69	19	10	●	
28520921	9	69	19	10	●	
28520924	10	72	22	10	●	
28520926	11	79	22	12	●	
28520929	12	83	26	12	●	
28520932	13	83	26	12	●	
28520935	14	83	26	12	●	
28520937	15	83	26	12	●	
28520940	16	92	32	16	●	
28520945	18	92	32	16	●	
28520950	20	104	38	20	●	
28520952	22	104	38	20	●	
28520954	24	121	45	25	●	
28520955	25	121	45	25	●	
28520956	26	121	45	25	●	
28520958	28	121	45	25	●	
28520960	30	121	45	25	●	
28520961	32	133	53	32	●	
28520963	35	133	53	32	●	
28520964	36	133	53	32	●	
28521966	40	143	63	32	●	

Roughing end mills
- High performance
- 4 flutes coarse pitch D ≤ 22
- 5 flutes 22 < D ≤ 30
- 6 flutes D > 30
- Flatted shank

Schruppfräser
- High performance
- 4 Schneiden Normalverzahnung D ≤ 22
- 5 Schneiden 22 < D ≤ 30
- 6 Schneiden D > 30
- Weldon Schaft

Fresa a sgrossare
- Alta prestazione
- 4 denti a passo nomale D ≤ 22
- 5 denti 22 < D ≤ 30
- 6 denti D > 30
- Codolo cilindrico Weldon

Fraise ébauche
- Haute performance
- 4 lèvres pas normal D ≤ 22
- 5 lèvres 22 < D ≤ 30
- 6 lèvres D > 30
- Queue Weldon

Kaba parmak freze
- Yüksek performans
- 4 ağızlı Kaba hatve D ≤ 22
- 5 ağızlı 22 < D ≤ 30
- 6 ağızlı D > 30
- Düzleştirilmiş şaft

Skrub fræsere
- High performance
- 4 skær, groft fortandet D ≤ 22
- 5 skær 22 < D ≤ 30
- 6 skær D > 30
- Weldon skaft

Skrubbfräs
- High performance
- 4 skär grovskrubb D ≤ 22
- 5 skär 22 < D ≤ 30
- 6 skär D > 30
- Weldon

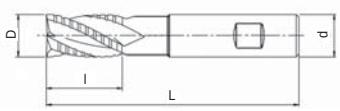
Fresas de desbastar
- Altas prestaciones
- 4 labios paso amplio D ≤ 22
- 5 labios 22 < D ≤ 30
- 6 labios D > 30
- Mango weldon

Черновые концевые фрезы
- Высокая производительность
- 4 кромки с крупной насечкой D ≤ 22
- 5 кромок 22 < D ≤ 30
- 6 кромок D > 30
- Хвостовик с лыской

Frez do obróbki zgrubnej
- Wysoka wydajność
- 4-ostrzowy łamacz normalny D≤22
- 5-ostrzowy 22 <D ≤28
- 6-ostrzowy D > 30
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | V | 30° | CC | DIN 844





EDP	D	L	l	d	Stock	Price
2002801780	8	88	38	10	●	
2002802130	10	95	45	10	●	
2002801790	12	110	53	12	●	
2002801800	14	110	53	12	●	
2003805430	15	110	53	12	●	
2003805440	16	123	63	16	●	
2003805450	18	123	63	16	●	
2002801810	20	141	75	20	●	
2003805460	22	141	75	20	●	
2003805470	24	166	90	90	●	
2002800730	25	166	90	90	●	
2003805480	26	166	90	90	●	
2003805490	28	166	90	90	●	
2002801820	30	166	90	90	●	
2002801560	32	186	106	106	●	
2003805500	36	186	106	106	●	
2002801570	40	205	125	125	●	

HSS

● Delivery from stock
○ Available on short notice

Roughing end mills
- High performance
- 3 flutes
- Flatted shank

Schruppfräser
- High performance
- 3 Schneiden
- Weldon Schaft

Fresa a sgrossare
- Alta prestazione
- 3 denti
- Codolo cilindrico Weldon

Fraise ébauche
- Haute performance
- 3 lèvres
- Queue Weldon

Kaba parmak freze
- Yüksek performans
- 3 ağızlı
- Düzleştirilmiş şaft

Skrub fræsere
- High performance
- 3 skær
- Weldon skaft

Skrubbfräs
- High performance
- 3 skär
- Weldon

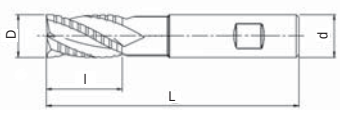
Fresas de desbastar
- Altas prestaciones
- 3 labios
- Mango weldon

Черновые концевые фрезы
- Высокая производительность
- 3 кромок
- Хвостовик с лыской

Frez do obróbki zgrubnej
- Wysoka wydajność
- 3-ostrzowy
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | OX | 35° | CC | DIN 844 | min⁻¹ F.42





EDP	D	L	l	d	Stock	Price
2089647980	6	57	13	6	●	
2089648020	10	72	22	10	●	
2089648040	12	83	26	12	●	
2089648080	16	92	32	16	●	
2089648120	20	104	38	20	●	
2089648140	25	121	45	25	●	

SI-WH-WRESF

Roughing end mills
- High performance
- Introducing highly evolved "variable-lead" shape.
- Suppresses chattering, allowing for outstanding milling performances.

Schruppfräser
- High performance
- Einführung neuer und Hoch entwickelter Schneidengeometrie mit "ungleicher Teilung"
- Reduziert Vibrationen und sorgt für hervorragende Fräs Ergebnisse

Fresa a sgrossare
- Alta prestazione
- Introduzione innovativo sviluppo della geometria a "Passo Variabile"
- Elimina vibrazioni permettendo eccellenti prestazioni di fresatura

Fraise ébauche
- Haute performance
- Hélice à géométrie variable
- Empêche les vibrations et permet des performances extraordinaire

Kaba parmak freze
- Yüksek performans
- Son derece gelişmiş "değişken helisel açılı" yapının kullanımı
- Tırlamayı önler, olağanüstü frezeleme performası elde edilir

Skrub fræsere
- High performance
- Variabel helix
- Modvirker vibrationer og giver en enestående fræse performance

Skrubbfräs
- High performance
- Variabel helix
- Motverkar vibrationer hög avverkning

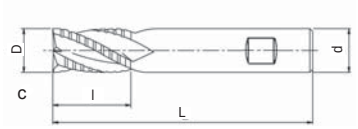
Fresas de desbastar
- Altas prestaciones
- Introduce la helice veriable
- Suprime la vibración permitiendo excelentes prestaciones

Черновые концевые фрезы
- Высокая производительность
- Представляем фрезу с переменным углом наклона витков
- Подавление вибраций обеспечивает выдающуюся производительность

Frez do obróbki zgrubnej
- Wysoka wydajność
- Przedstawiamy frezy ze zmienną spiralą
- Redukuje wibracje, co pozwala na osiągnięcie wyjątkowo dobrych wyników frezowania

GO TO LIVE STOCK CHECK

CPM | WXL | 25°~31,5° | CC | DIN 844 | min⁻¹ F.49





EDP	D	C	L	l	d	ZΔ	Stock	Price
48147006	6	0,5	57	13	6	4	●	
48147008	8	0,5	69	19	10	4	●	
48147010	10	0,5	72	22	10	4	●	
48147012	12	0,6	83	26	12	4	●	
48147016	16	0,6	92	32	16	4	●	
48147020	20	0,6	104	38	20	4	●	
48147025	25	0,8	121	45	25	5	●	

ZΔ= Number of flutes - Anzahl Schneiden - Numero di denti - Nombre de lèvres - Liczba ostrzy
Antal skær - Antal skär - Numero de ranuras - Число режущих кромок - Kanal sayısı

Roughing end mills

- High performance
- 4 flutes coarse pitch D ≤ 22
- 5 flutes 22 < D ≤ 30
- 6 flutes D > 30
- Flatted shank

Schruppfräser

- High performance
- 4 Schneiden Normalverzahnung D ≤ 22
- 5 Schneiden 22 < D ≤ 30
- 6 Schneiden D > 30
- Weldon Schaft

Fresa a sgrossare

- Alta prestazione
- 4 denti a passo nomale D ≤ 22
- 5 denti 22 < D ≤ 30
- 6 denti D > 30
- Codolo cilindrico Weldon

Fraise ébauche

- Haute performance
- 4 lèvres pas normal D ≤ 22
- 5 lèvres 22 < D ≤ 30
- 6 lèvres D > 30
- Queue Weldon

Kaba parmak freze

- Yüksek performans
- 4 ağızlı Kaba hatve D ≤ 22
- 5 ağızlı 22 < D ≤ 30
- 6 ağızlı D > 30
- Düzleştirilmiş şaft

Skrub fræsere

- High performance
- 4 skær, groft fortandet D ≤ 22
- 5 skær 22 < D ≤ 30
- 6 skær D > 30
- Weldon skaft

Skrubbfräs

- High performance
- 4 skär grovskrubb D ≤ 22
- 5 skär 22 < D ≤ 30
- 6 skär D > 30
- Weldon

Fresas de desbastar

- Altas prestaciones
- 4 labios paso amplio D ≤ 22
- 5 labios 22 < D ≤ 30
- 6 labios D > 30
- Mango weldon

Черновые концевые фрезы

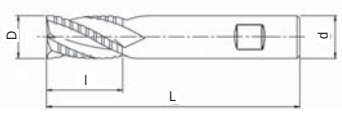
- Высокая производительность
- 4 кромки с крупной насечкой D ≤ 22
- 5 кромок 22 < D ≤ 30
- 6 кромок D > 30
- Хвостовик с лыской

Frez do obróbki zgrubnej

- Wysoka wydajność
- 4-ostrzowy łamacz normalny D≤22
- 5-ostrzowy 22 <D ≤28
- 6-ostrzowy D > 30
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | V | 30° | CC | DIN 844 | min⁻¹ F.50





EDP	D	L	l	d	Stock	Price
2001801720	6	57	13	6	●	
2002800540	7	66	16	10	●	
2001801730	8	69	19	10	●	
2002801200	9	69	19	10	●	
2001801740	10	72	22	10	●	
2002800550	11	79	22	12	●	
2001801750	12	83	26	12	●	
2002800560	13	83	26	12	●	
2001801760	14	83	26	12	●	
2002801210	15	83	26	12	●	
2001801770	16	92	32	16	●	
2002801220	18	92	32	16	●	
2001801780	20	104	38	20	●	
2001801790	22	104	38	20	●	
2001801800	24	121	45	25	●	
2001801810	25	121	45	25	●	
2002801610	26	121	45	25	●	
2002802020	28	121	45	25	●	
2001801820	30	121	45	25	●	
2001801830	32	133	53	32	●	
2003801040	35	133	53	32	●	
2001801840	40	143	63	32	●	

Roughing end mills

- High performance
- 4 flutes coarse pitch D ≤ 22
- 5 flutes 22 < D ≤ 30
- 6 flutes D > 30
- Flatted shank

Schruppfräser

- High performance
- 4 Schneiden Normalverzahnung D ≤ 22
- 5 Schneiden 22 < D ≤ 30
- 6 Schneiden D > 30
- Weldon Schaft

Fresa a sgrossare

- Alta prestazione
- 4 denti a passo nomale D ≤ 22
- 5 denti 22 < D ≤ 30
- 6 denti D > 30
- Codolo cilindrico Weldon

Fraise ébauche

- Haute performance
- 4 lèvres pas normal D ≤ 22
- 5 lèvres 22 < D ≤ 30
- 6 lèvres D > 30
- Queue Weldon

Kaba parmak freze

- Yüksek performans
- 4 ağızlı Kaba hatve D ≤ 22
- 5 ağızlı 22 < D ≤ 30
- 6 ağızlı D > 30
- Düzleştirilmiş şaft

Skrub fræsere

- High performance
- 4 skær, groft fortandet D ≤ 22
- 5 skær 22 < D ≤ 30
- 6 skær D > 30
- Weldon skaft

Skrubbfräs

- High performance
- 4 skär grovskrubb D ≤ 22
- 5 skär 22 < D ≤ 30
- 6 skär D > 30
- Weldon

Fresas de desbastar

- Altas prestaciones
- 4 labios paso amplio D ≤ 22
- 5 labios 22 < D ≤ 30
- 6 labios D > 30
- Mango weldon

Черновые концевые фрезы

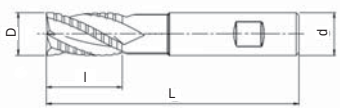
- Высокая производительность
- 4 кромки с крупной насечкой D ≤ 22
- 5 кромок 22 < D ≤ 30
- 6 кромок D > 30
- Хвостовик с лыской

Frez do obróbki zgrubnej

- Wysoka wydajność
- 4-ostrzowy łamacz normalny D≤22
- 5-ostrzowy 22 <D ≤28
- 6-ostrzowy D > 30
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | 30° | CC | DIN 844 | min⁻¹ F.50





EDP	D	L	l	d	Stock	Price
27820912	6	57	13	6	●	
27820915	7	66	16	10	●	
27820918	8	69	19	10	●	
27820921	9	69	19	10	●	
27820924	10	72	22	10	●	
27820926	11	79	22	12	●	
27820929	12	83	26	12	●	
27820932	13	83	26	12	●	
27820935	14	83	26	12	●	
27820937	15	83	26	12	●	
27820940	16	92	32	16	●	
27820945	18	92	32	16	●	
27820950	20	104	38	20	●	
27820952	22	104	38	20	●	
27820954	24	121	45	25	●	
27820955	25	121	45	25	●	
27820956	26	121	45	25	●	
27820958	28	121	45	25	●	
27820960	30	121	53	25	●	
27820961	32	133	53	32	●	
27820963	35	133	53	32	●	
27821966	40	143	63	32	●	

● Delivery from stock
○ Available on short notice

Roughing end mills
- High performance
- 4 flutes coarse pitch
- Flatted shank

Schruppfräser
- High performance
- 4 Schneiden Normalverzahnung
- Weldon Schaft

Fresa a sgrossare
- Alta prestazione
- 4 denti a passo nomale
- Codolo cilindrico Weldon

Fraise ébauche
- Haute performance
- 4 lèvres pas normal
- Queue Weldon

Kaba parmak freze
- Yüksek performans
- 4 ağızlı, kaba hatve
- Düzleştirilmiş şaft

Skrub fræsere
- High performance
- 4 skær, groft fortandet
- Weldon skaft

Skrubbfräs
- High performance
- 4 skär grovskrubb
- Weldon

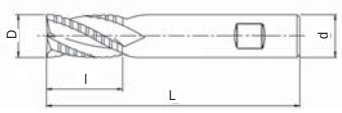
Fresas de desbastar
- Altas prestaciones
- 4 labios paso amplio
- Mango weldon

Черновые концевые фрезы
- Высокая производительность
- 4 кромки с крупной насечкой
- Хвостовик с лыской

Frez do obróbki zgrubnej
- Wysoka wydajność
- 4-ostrzowy, łamacz normalny
- Chwyt Weldon

GO TO LIVE STOCK CHECK

HSS-Co | V | 30° | CC | DIN 844

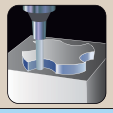




EDP	D	L	l	d	Stock	Price
2002800740	8	88	38	10	●	
2002800750	10	95	45	10	●	
2002800760	12	110	53	12	●	
2002801840	14	110	53	12	●	
2002800770	16	123	63	16	●	
2002800780	18	123	63	16	●	
2002800790	20	141	75	20	●	

AL-WEDS

Slotting - Nutenfräsen - Scanalatura - Rainurage / Roughing - Schruppen - Sgrossatura - Ebauche - Slot kesim
Sporfræsning -Spårfräsning - Ranurado - Пазовое / Skrubfræsning - Grovfräsning - Desbaste - Черновая обработка - Frezowanie rowków

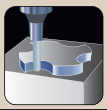


	AU4G Aluminium alloys < 6% Si Magnesium alloys			AS7 Aluminium alloys < 6% S			Thermoplastics			Cu2 Copper alloys		
Vc	180 m/min			75 m/min			180 m/min			75 m/min		
ø	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
3	19.099	344	0,006	7.958	143	0,006	19.099	344	0,006	7.958	143	0,006
4	14.324	344	0,008	5.968	143	0,008	14.324	344	0,008	5.968	143	0,008
5	11.459	344	0,01	4.775	143	0,01	11.459	344	0,01	4.775	143	0,01
6	9.549	430	0,015	3.979	179	0,015	9.549	430	0,015	3.979	179	0,015
8	7.162	537	0,025	2.984	224	0,025	7.162	537	0,025	2.984	224	0,025
10	5.730	602	0,035	2.387	251	0,035	5.730	602	0,035	2.387	251	0,035
12	4.775	716	0,05	1.989	298	0,05	4.775	716	0,05	1.989	298	0,05
14	4.093	675	0,055	1.705	281	0,055	4.093	675	0,055	1.705	281	0,055
16	3.581	645	0,06	1.492	269	0,06	3.581	645	0,06	1.492	269	0,06
18	3.183	668	0,07	1.326	279	0,07	3.183	668	0,07	1.326	279	0,07
20	2.865	645	0,075	1.194	269	0,075	2.865	645	0,075	1.194	269	0,075

These parameters are for use with cutting-depth of 0,5 D and a cutting-width of 1 D	Questi parametri si intendono per un utilizzo con profondità di taglio di 0,5 D ed una larghezza di taglio di 1 D
Diese Schnittdaten sind für eine Frästiefe von 0,5 D und eine Nutenbreite von 1 D	Ces paramètres sont pour une profondeur de passe de 0,5 D sur une largeur de passe de 1 D
Disse parametre er til brug ved en spåndybde på 0,5 D og en bredde på 1 D	Parámetros para usar con profundidad de pasada 0,5 D y ancho de 1 D
Dessa parametrar används vid ett skärdjup av 0,5 D och sidoskär av 1 D	Эти параметры для глубины фрезерования 0,5 D и ширины фрезерования 1 D
Bu parametreler kesme derinliği 0,5D ve kesme genişliği 1D olan operasyonlarda kullanılır	Parametry te są podane dla głębokości frezowania 0,5 D i szerokości 1 D

AL-WREES

Slotting - Nutenfräsen - Scanalatura - Rainurage / Roughing - Schruppen - Sgrossatura - Ebauche - Slot kesim
Sporfræsning -Spårfräsning - Ranurado - Пазовое / Skrubfræsning - Grovfräsning - Desbaste - Черновая обработка - Frezowanie rowków

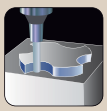


	AU4G Aluminium alloys < 6% Si Magnesium alloys			AS7 Aluminium alloys < 6% S			Thermoplastics			Cu2 Copper alloys		
Vc	180 m/min			75 m/min			180 m/min			75 m/min		
ø	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
6	9.549	716	0,025	3.979	239	0,02	9.549	716	0,025	3.979	239	0,02
8	7.162	967	0,045	2.984	313	0,035	7.162	967	0,045	2.984	313	0,035
10	5.730	1031	0,06	2.387	322	0,045	5.730	1031	0,06	2.387	322	0,045
12	4.775	1218	0,085	1.989	448	0,075	4.775	1218	0,085	1.989	448	0,075
14	4.093	1166	0,095	1.705	409	0,08	4.093	1166	0,095	1.705	409	0,08
16	3.581	1074	0,1	1.492	380	0,085	3.581	1074	0,1	1.492	380	0,085
18	3.183	1146	0,12	1.326	398	0,1	3.183	1146	0,12	1.326	398	0,1
20	2.865	1160	0,135	1.194	412	0,115	2.865	1160	0,135	1.194	412	0,115
22	2.604	1133	0,145	1.085	407	0,125	2.604	1133	0,145	1.085	407	0,125
25	2.292	1100	0,16	955	372	0,13	2.292	1100	0,16	955	372	0,13
30	1.910	1146	0,2	796	358	0,15	1.910	1146	0,2	796	358	0,15

These parameters are for use with cutting-depth of 1 D and a cutting-width of 1 D	Questi parametri si intendono per un utilizzo con profondità di taglio di 1 D ed una larghezza di taglio di 1D
Diese Schnittdaten sind für eine Frästiefe von 1 D und eine Nutenbreite von 1 D	Ces paramètres sont pour une profondeur de passe de 1 D sur une largeur de passe de 1 D
Disse parametre er til brug ved en spåndybde på 1 D og en bredde på 1 D	Parámetros para usar con profundidad de pasada 1 D y ancho de 1 D
Dessa parametrar används vid ett skärdjup av 1 D och sidoskär av 1 D	Эти параметры для глубины фрезерования 1 D и ширины фрезерования 1 D
Bu parametreler kesme derinliği 1D ve kesme genişliği 1D olan operasyonlarda kullanılır	Parametry te są podane dla głębokości frezowania 1 D i szerokości 1 D

VP-RESF-SP

Slotting - Nutenfräsen - Scanalatura - Rainurage / Roughing - Schruppen - Sgrossatura - Ebauche - Slot kesim
Sporfræsning -Spårfräsning - Ranurado - Пазовое / Skrubfræsning - Grovfräsning - Desbaste - Черновая обработка - Frezowanie rowków



		E24 ■ XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron			35NCD16 ■ 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel			316 ■ 304 800 MPA Stainless steel			Z38CDV5 ■ Z40CDV5 40 HRC Treated & pretreated steel		
Vc		53 m/min			45 m/min			25 m/min			40 m/min		
Nb. flutes	**ø**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
3	**8**	2.109	633	0,1	1.790	537	0,1	995	298	0,1	1.592	477	0,1
3	**10**	1.687	506	0,1	1.432	430	0,1	796	239	0,1	1.273	382	0,1
3	**12**	1.406	506	0,12	1.194	430	0,12	663	239	0,12	1.061	382	0,12
3	**16**	1.054	380	0,12	895	322	0,12	497	179	0,12	796	286	0,12
3	**20**	844	329	0,13	716	279	0,13	398	155	0,13	560	218	0,13
3	**25**	675	283	0,14	573	223	0,13	318	134	0,14	450	189	0,14
4	**25**	400	208	0,13	420	218	0,13	220	114	0,13	400	192	0,12

These parameters are for use with cutting-depth of 0,8 D and a cutting-width of 1 D. For the end mill dia 25 mm 4 flutes, the cutting depth may not exceed 0.5D.	Questi parametri si intendono per un utilizzo con profondità di taglio di 0.8 D ed una larghezza di taglio di 1D. Per le frese D.25 mm a 4 denti, la profondità di taglio non deve superare 0,5 D.
Diese Schnittdaten sind für eine Frästiefe von 0,8 D und eine Nutenbreite von 1 D. Für Schaftfräser D25 (4Schneiden) sollte die Schnitttiefe max. 0,5 D sein.	Ces paramètres sont pour une profondeur de passe de 0,8 D sur une largeur de passe de 1 D. Pour la fraise dia 25mm en 4 dents, la profondeur de passe ne devra pas dépasser 0.5D.
Disse parametre er ved spåndybde af 0,8 D og bredde af 1 D For fræseren diameter 25 mm med 4 skær, må spåndybde ikke overstige 0,5 D	Parámetros para usar con profundidad de pasada 0,8 D y ancho de 1 D Para la fresa D 25 mm con 4 labios, no exceder la profundidad de corte de 0,5D
Dessa parametrar används vid ett skärdjup av 0,8 D och sidoskär av 1 D För fräsar med Ø 25mm och 4 skär bör inte skärdjupet överstiga 0,5 D	Эти параметры для глубины фрезерования 0,8 D и ширины фрезерования 1 D Для фрез диаметром 25 мм с четырьмя зубами, глубина фрезерования не должна превышать 0,5 D
Bu parametreler kesme derinliği 0,8D ve kesme genişliği 1D olan operasyonlarda kullanılır Çap 25mm parmak freze için, 4 ağızlı	Parametry te są podane dla głębokości frezowania 1 D i szerokości 1 D. Dla freza ø 25 mm, 4 ostrzowego, głębokość frezowania nie może przekraczać 0,5 D

VPS-EMS

Side milling - Konturfräsen - Contornatura - Coutournage / Semi-finishing - Semi-finitura - Semi-finition - Semi-finition - Kenar frezeleme
Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование / Sletfræsning - Finfräsning - Acabado - Получистовая - Frezowanie boczne

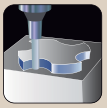


	E24 ■ XC48 Fonte GG25			35NCD16 ■ 40CMD8			316 ■ 304			Z38CDV5 ■ Z40CDV5			Inconel ■ Hastelloy			TA6V		
	490 ~ 750 MPA Low carbon steel, cast iron			750 ~ 1100 MPA Alloy steel, tool steel			800 MPA Stainless steel			38 ~ 45 HRC Treated & pretreated steel			35 ~ 43 HRC Steel alloys, Nickel base			900 ~ 1100 MPA Alloy titanium		
Vc	50 m/min			40 m/min			35 m/min			30 m/min			15 m/min			20 m/min		
nb. flutes	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
6	1.592	573	0,06	1.273	458	0,06	1.114	401	0,06	955	344	0,06	477	172	0,06	637	229	0,06
6	1.326	637	0,08	1.061	509	0,08	928	446	0,08	796	382	0,08	398	191	0,08	531	255	0,08
6	995	537	0,09	796	430	0,09	696	376	0,09	597	322	0,09	298	161	0,09	398	215	0,09
6	796	430	0,09	637	344	0,09	557	301	0,09	477	258	0,09	239	129	0,09	318	172	0,09
6	637	382	0,1	509	306	0,1	446	267	0,1	382	229	0,1	191	115	0,1	255	153	0,1
6	531	318	0,1	424	255	0,1	371	223	0,1	318	191	0,1	159	95	0,1	212	127	0,1
10	1.326	928	0,07	1.061	743	0,07	928	650	0,07	796	557	0,07	398	279	0,07	531	371	0,07
10	995	796	0,08	796	637	0,08	696	557	0,08	597	477	0,08	298	239	0,08	398	318	0,08
10	796	716	0,09	637	573	0,09	557	501	0,09	477	430	0,09	239	215	0,09	318	286	0,09
10	637	637	0,1	509	509	0,1	446	446	0,1	382	382	0,1	191	191	0,1	255	255	0,1
10	531	531	0,1	424	424	0,1	371	371	0,1	318	318	0,1	159	159	0,1	212	212	0,1

These parameters are for use with cutting-depth of 1.5 D and a cutting-width of 0,04 D	Questi parametri si intendono per un utilizzo con profondità di taglio di 1,5 D ed una larghezza di taglio di 0,04 D
Diese Schnittdaten sind für eine Frästiefe von 1,5 D und eine Nutenbreite von 0,04 D	Ces paramètres sont pour une profondeur de passe de 1.5 D sur une largeur de passe de 0,04 D
Disse parametre er ved spåndybde af 1,5 D og bredde af 0,04 D	Parámetros para usar con profundidad de pasada 1,5 D y ancho de 0,04 D
Dessa parametrar används vid ett skärdjup av 1,5 D och sidoskär av 0,04 D	Эти параметры для глубины фрезерования 1,5 D и ширины фрезерования 0,04 D
Bu parametreler kesme derinliği 1.5D ve kesme genişliği 0,04D olan operasyonlarda kullanılır	Parametry te są podane dla głębokości frezowania 1,5 D i szerokości 0,04 D

VPS-EMS

Side milling - Konturfräsen - Contornatura - Coutournage / Semi-finishing - Semi-finitura - Semi-finition - Semi-finition - Kenar frezeleme
Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование / Sletfræsning - Finfräsning - Acabado - Получистовая - Frezowanie boczne



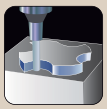
	E24 ■ XC48 Fonte GG25			35NCD16 ■ 40CMD8			316 ■ 304			Z38CDV5 ■ Z40CDV5			Inconel ■ Hastelloy			TA6V		
	490 ~ 750 MPA Low carbon steel, cast iron			750 ~ 1100 MPA Alloy steel, tool steel			800 MPA Stainless steel			38 ~ 45 HRC Treated & pretreated steel			35 ~ 43 HRC Steel alloys, Nickel base			900 ~ 1100 MPA Alloy titanium		
Vc	50 m/min			40 m/min			35 m/min			30 m/min			15 m/min			20 m/min		
nb. flutes	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
6	1.592	286	0,03	1.273	229	0,03	1.114	201	0,03	955	172	0,03	477	86	0,03	637	115	0,03
6	1.326	318	0,04	1.061	255	0,04	928	223	0,04	796	191	0,04	398	95	0,04	531	127	0,04
6	995	239	0,04	796	191	0,04	696	167	0,04	597	143	0,04	298	72	0,04	398	95	0,04
6	796	239	0,05	637	191	0,05	557	167	0,05	477	143	0,05	239	72	0,05	318	95	0,05
6	637	229	0,06	509	183	0,06	446	160	0,06	382	138	0,06	191	69	0,06	255	92	0,06
6	531	223	0,07	424	178	0,07	371	156	0,07	318	134	0,07	159	67	0,07	212	89	0,07
10	1.326	398	0,03	1.061	318	0,03	928	279	0,03	796	239	0,03	398	119	0,03	531	159	0,03
10	995	398	0,04	796	318	0,04	696	279	0,04	597	239	0,04	298	119	0,04	398	159	0,04
10	796	398	0,05	637	318	0,05	557	279	0,05	477	239	0,05	239	119	0,05	318	159	0,05
10	637	382	0,06	509	306	0,06	446	267	0,06	382	229	0,06	191	115	0,06	255	153	0,06
10	531	371	0,07	424	297	0,07	371	260	0,07	318	223	0,07	159	111	0,07	212	149	0,07

These parameters are for use with cutting-depth of 1.5 D and a cutting-width of 0,025 D	Questi parametri si intendono per un utilizzo con profondità di taglio di 1,5 D ed una larghezza di taglio di 0,025 D
Diese Schnittdaten sind für eine Frästiefe von 1,5 D und eine Nutenbreite von 0,025 D	Ces paramètres sont pour une profondeur de passe de 1.5 D sur une largeur de passe de 0,025 D
Disse parametre er ved spåndybde af 1,5 D og bredde af 0,025 D	Parámetros para usar con profundidad de pasada1,5 D y ancho de 0,025 D
Dessa parametrar används vid ett skärdjup av 1,5 D och sidoskär av 0,025 D	Эти параметры для глубины фрезерования 1,5 D и ширины фрезерования 0,025 D
Bu parametreler kesme derinliği 1.5D ve kesme genişliği 0,025D olan operasyonlarda kullanılır	Parametry te są podane dla głębokości frezowania 1,5 D i szerokości 0,025 D

CONDITIONS

V-XPM-WEDS -(V-)WEDS

Slotting - Nutenfräsen - Scanalatura - Rainurage / Roughing - Schruppen - Sgrossatura - Ebauche - Slot kesim
Sporfræsning -Spårfräsning - Ranurado - Пазовое / Skrubfræsning - Grovfräsning - Desbaste - Черновая обработка - Frezowanie rowków



	E24 ■ XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron			35NCD16 ■ 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel			316 ■ 304 800 MPA Stainless steel			Z38CDV5 ■ Z40CDV5 38 ~ 45 HRC Treated & pretreated steel			Inconel ■ Hastelloy 35 ~ 43 HRC Steel alloys, Nickel base			TA6V 900 ~ 1100 MPA Alloy titanium		
Vc	55 m/min			45 m/min			25 m/min			30 m/min			15 m/min			22 m/min		
nb. flutes	**Ø**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
2	**2**	8.754	70	0,004	7.162	57	0,004	3.979	32	0,004	4.775	38	0,004	2.387	19	0,004	3.501	28	0,004
2	**2,5**	7.003	63	0,005	5.730	52	0,005	3.183	29	0,005	3.820	34	0,005	1.910	17	0,005	2.801	25	0,005
2	**3**	5.836	70	0,006	4.775	57	0,006	2.653	32	0,006	3.183	38	0,006	1.592	19	0,006	2.334	28	0,006
2	**3,5**	5.002	70	0,007	4.093	57	0,007	2.274	32	0,007	2.728	38	0,007	1.364	19	0,007	2.001	28	0,007
2	**4**	4.377	70	0,008	3.581	57	0,008	1.989	32	0,008	2.387	38	0,008	1.194	19	0,008	1.751	28	0,008
2	**4,5**	3.890	70	0,009	3.183	57	0,009	1.768	32	0,009	2.122	38	0,009	1.061	19	0,009	1.556	28	0,009
2	**5**	3.501	70	0,01	2.865	57	0,01	1.592	32	0,01	1.910	38	0,01	955	19	0,01	1.401	28	0,01
2	**5,5**	3.183	76	0,012	2.604	63	0,012	1.447	35	0,012	1.736	42	0,012	868	21	0,012	1.273	31	0,012
2	**6**	2.918	82	0,014	2.387	67	0,014	1.326	37	0,014	1.592	45	0,014	796	22	0,014	1.167	33	0,014
2	**6,5**	2.693	81	0,015	2.204	66	0,015	1.224	37	0,015	1.469	44	0,015	735	22	0,015	1.077	32	0,015
2	**7**	2.501	75	0,015	2.046	61	0,015	1.137	34	0,015	1.364	41	0,015	682	20	0,015	1.000	30	0,015
2	**7,5**	2.334	75	0,016	1.910	61	0,016	1.061	34	0,016	1.273	41	0,016	637	20	0,016	934	30	0,016
2	**8**	2.188	79	0,018	1.790	64	0,018	995	36	0,018	1.194	43	0,018	597	21	0,018	875	32	0,018
2	**8,5**	2.060	78	0,019	1.685	64	0,019	936	36	0,019	1.123	43	0,019	562	21	0,019	824	31	0,019
2	**9**	1.945	78	0,02	1.592	64	0,02	884	35	0,02	1.061	42	0,02	531	21	0,02	778	31	0,02
2	**9,5**	1.843	81	0,022	1.508	66	0,022	838	37	0,022	1.005	44	0,022	503	22	0,022	737	32	0,022
2	**10**	1.751	84	0,024	1.432	69	0,024	796	38	0,024	955	46	0,024	477	23	0,024	700	34	0,024

These parameters are for use with cutting-depth of 0,5 D and a cutting-width of 1 D.
For alu. alloys < 6% Si, please use feed/flute as indicated in the colomn by X by 3 times the cutting speed.
For copper alloys, please use the feed/flute as indicated in the colomn by X by 2 times the cutting speed.
For V-WEDS, reduce cutting speed by 20% and feed/flute by 10%.
For WEDS, reduce cutting speed by 30% and feed/flute by 10%.

Questi parametri si intendono per un utilizzo con una profondità di taglio di 0,5 D ed una larghezza di taglio di 1 D.
Per le leghe di Rame, usate avanzamento/denti come indicato nella colonna della tabella con "X" per 2 volte la velocità di taglio.
Per le V-WEDS, ridurre la velocità di taglio del 20% e avanzamento/denti del 10%. Per le WEDS, ridurre la velocità di taglio del 30% e avanzamento/denti del 10%.

Diese Schnittdaten sind für eine Frästiefe von 0,5 D und fur Fräsbreite 1 D.
Für Aluminium-Legierungen < 6%, bitte den Vorschub pro Schneide aus Reihe X verwenden und die Schnittgeschwindigkeit mit 3 multiplizieren.
Für Kupfer-Legierungen, bitte den Vorschub pro Schneide aus Reihe X verwenden und die Schnittgeschwindig keit mit 2 multiplizieren.
Für V-WEDS, bitte die Schnittgeschwindigkeit 20% reduzieren und den Vorschub pro Schneide um 10%.
Für WEDS, bitte die Schnittgeschwindigkeit 30% reduzieren und den Vorschub pro Schneide um 10%.

Ces paramètres sont pour une profondeur de passe de 0,5 D sur une largeur de passe de 1 D. Pour les alliages d'alu < 6% Si, veuillez utiliser l'avance/dent indiquée dans la colonne du tableau en X par 3 la vitesse de coupe.
Pour les alliages de cuivre non allié, veuillez utiliser l'avance/dent indiquée dans la colonne du tableau en X par 2 la vitesse de coupe.
Veuillez svp réduire la vitesse de coupe de 20% ainsi que l'avance/dent de 10% pour les fraises V-WEDS.
Veuillez svp réduire la vitesse de coupe de 30% ainsi que l'avance/dent de 10% pour les fraises WEDS.

Disse parametre er ved spåndybde af 0,5 D og bredde af 1 D
For Aluminium legering <6% Si, benyttes tilspænding per tand som noteret i første materialekolonne, mens skærehastigheden multipliceres med x 3.
For Kobber legering, benyttes tilspænding per tand som noteret i første materialekolonne, mens skærehastigheden multipliceres med x 2.
For V-WEDS, reducer skærehastighed med 20% og tilspænding per tand med 10%
For WEDS, reducer skærehastighed med 30% og tilspænding per tand med 10%

Estos parametros son para usar con profundidad de corte de 0,5D y ancho de pasada de 1D
Para Alum. Aleado < 6% Si, aplique avance por diente como indicado en columna X y 3 veces la velocidad de corte.
XPara Cobre Aleado, aplique avance por diente como indicado en columna X y 2 veces la velocidad de corte.
Para V-WEDS, reducir velocidad de corte el 20% y el avance fz el 10%
Para WEDS reducir velocidad de corte el 30% y el avance fz el 10%

Dessa parametrar används vid ett skärdjup av 0,5 D och sidoskär av 1 D
För Aluminium legeringar < 6% SI, använd matning/tand som visas i första materialkolumn, medan skärhastigheten multipliceras med x 3
För Koppar legeringar, använd matning/tand som visas i första materialkolumn, medan skärhastigheten multipliceras med x 2
För V-WEDS, reducera skärhastigheten med 20% och matningen/tand med 10%
För WEDS, reducera skärhastigheten med 30% och matningen/tand med 10%

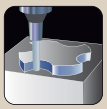
Эти параметры для фрезерования глубиной 0,5D и шириной 1 D.
Для алюминиевых сплавов, с содержанием кремния < 6% SI, используйте подачу на зуб как указано, а скорость резания умножьте на 3.
Для медных сплавов используйте подачу на зуб как указано, а скорость резания умножьте на 2.
Для V-WEDS снизьте скорость резания на 20% и подачу на зуб на 10%
Для WEDS снизьте скорость резания на 30% и подачу на зуб на 10%

Bu parametreler kesme derinliği 0,5 D ve kesme genişliği 1 D olan operasyonlarda kullanılır
Silisyum içeriği %6'nın altında olan alüminyum alaşımlar için, lütfen sütunda X ile belirtildiği gibi kesme hızının 3 katı oranında bir ağız başına ilerleme değeri kullanın
Bakır alaşımlar için, lütfen sütunda X ile belirtildiği gibi kesme hızının 2 katı oranında bir ağız başına ilerleme değeri kullanın
V-WEDS için, kesme hızını 20% ve ilerleme/ağız 10% düşürün
WEDS için, kesme hızını 30% ve ilerleme/ağız 10% düşürün

Parametry te są podane przy głębokości frezowania 0,5 D i szerokości 1 D
Do stopów aluminium < 6% Si użyj parametrów posuwu z kolumnu X a obroty pomnóż x 3
Do stopów miedzi użyj parametrów posuwu z kolumny X a obroty pomnóż x 2
Dla V-WEDS zmniejsz prędkość skrawania o 20% i posuw o 10%.
Dla WEDS zmniejsz prędkość skrawania o 30% i posuw o 10%

V-XPM-WEHS

Slotting - Nutenfräsen - Scanalatura - Rainurage / Roughing - Schruppen - Sgrossatura - Ebauche - Slot kesim
Sporfræsning -Spårfräsning - Ranurado - Пазовое / Skrubfræsning - Grovfräsning - Desbaste - Черновая обработка - Frezowanie rowków



	E24 ■ XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron			35NCD16 ■ 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel			316 ■ 304 800 MPA Stainless steel			Z38CDV5 ■ Z40CDV5 38 ~ 45 HRC Treated & pretreated steel			Inconel ■ Hastelloy 35 ~ 43 HRC Steel alloys, Nickel base			TA6V 900 ~ 1100 MPA Alloy titanium		
Vc	55 m/min			45 m/min			25 m/min			30 m/min			15 m/min			22 m/min		
nb. flutes	**Ø**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
2	**2**	8.754	70	0,004	7.162	57	0,004	3.979	32	0,004	4.775	38	0,004	2.387	19	0,004	3.501	28	0,004
2	**3**	5.836	70	0,006	4.775	57	0,006	2.653	32	0,006	3.183	38	0,006	1.592	19	0,006	2.334	28	0,006
2	**4**	4.377	70	0,008	3.581	57	0,008	1.989	32	0,008	2.387	38	0,008	1.194	19	0,008	1.751	28	0,008
2	**5**	3.501	70	0,01	2.865	57	0,01	1.592	32	0,01	1.910	38	0,01	955	19	0,01	1.401	28	0,01
3	**6**	2.918	96	0,011	2.387	79	0,011	1.326	44	0,011	1.592	53	0,011	796	26	0,011	1.167	39	0,011
3	**7**	2.501	90	0,012	2.046	74	0,012	1.137	41	0,012	1.364	49	0,012	682	25	0,012	1.000	36	0,012
3	**8**	2.188	85	0,013	1.790	70	0,013	995	39	0,013	1.194	47	0,013	597	23	0,013	875	34	0,013
3	**9**	1.945	82	0,014	1.592	67	0,014	884	37	0,014	1.061	45	0,014	531	22	0,014	778	33	0,014
3	**10**	1.751	95	0,018	1.432	77	0,018	796	43	0,018	955	52	0,018	477	26	0,018	700	38	0,018
3	**11**	1.592	95	0,02	1.302	78	0,02	723	43	0,02	868	52	0,02	434	26	0,02	637	38	0,02
3	**12**	1.459	109	0,025	1.194	90	0,025	663	50	0,025	796	60	0,025	398	30	0,025	584	44	0,025
3	**13**	1.347	105	0,026	1.102	86	0,026	612	48	0,026	735	57	0,026	367	29	0,026	539	42	0,026
3	**14**	1.251	105	0,028	1.023	86	0,028	568	48	0,028	682	57	0,028	341	29	0,028	500	42	0,028
3	**15**	1.167	105	0,03	955	86	0,03	531	48	0,03	637	57	0,03	318	29	0,03	467	42	0,03
3	**16**	1.094	105	0,032	895	86	0,032	497	48	0,032	597	57	0,032	298	29	0,032	438	42	0,032
3	**18**	973	102	0,035	796	84	0,035	442	46	0,035	531	56	0,035	265	28	0,035	389	41	0,035
3	**20**	875	105	0,04	716	86	0,04	398	48	0,04	477	57	0,04	239	29	0,04	350	42	0,04
4	**22**	796	111	0,035	651	91	0,035	362	51	0,035	434	61	0,035	217	30	0,035	318	45	0,035
4	**24**	729	117	0,04	597	95	0,04	332	53	0,04	398	64	0,04	199	32	0,04	292	47	0,04
4	**25**	700	126	0,045	573	103	0,045	318	57	0,045	382	69	0,045	191	34	0,045	280	50	0,045
4	**28**	625	125	0,05	512	102	0,05	284	57	0,05	341	68	0,05	171	34	0,05	250	50	0,05
4	**30**	584	128	0,055	477	105	0,055	265	58	0,055	318	70	0,055	159	35	0,055	233	51	0,055

These parameters are for use with cutting-depth of 0,5 D and a cutting-width of 1 D for end mills 2 and 3 flutes.
These parameters are for use with cutting-depth of 0.25 D and a cutting-width of 1 D for end mills 4 flutes.
For alu. alloys < 6% Si, please use feed/flute as indicated in the colomn by X by 3 times the cutting speed.
For copper alloys, please use the feed/flute as indicated in the colomn by X by 2 times the cutting speed.

Questi parametri si intendono per un utilizzo con una profondità di taglio di 1,5 D ed una larghezza di taglio di 0,1 D.
Per le leghe di alluminio, usate avanzamento/denti come indicato nella colonna della tabella con "X" per 3 volte la velocità di taglio.
Per le leghe di Rame, usate avanzamento/denti come indicato nella colonna della tabella con "X" per 2 volte la velocità di taglio.

Diese Schnittdaten sind für eine Frästiefe von 1,5 D und fur Fräsbreite 0,1 D.
Für Aluminium-Legierungen < 6%, bitte den Vorschub pro Schneide aus Reihe X verwenden und die Schnittgeschwindigkeit mit 3 multiplizieren.
Für Kupfer-Legierungen, bitte den Vorschub pro Schneide aus Reihe X verwenden und die Schnittgeschwindig keit mit 2 multiplizieren.

Ces paramètres sont pour une profondeur de passe de 1,5 D sur une largeur de passe de 0,1 D. Pour les alliages d'alu < 6% Si, veuillez utiliser l'avance/dent indiquée dans la colonne du tableau en X par 3 la vitesse de coupe.
Pour les alliages de cuivre non allié, veuillez utiliser l'avance/dent indiquée dans la colonne du tableau en X par 2 la vitesse de coupe.

Disse parametre er ved spåndybde af 0,5 D og bredde af 1 D og for fræser med 2 & 3 skærs
Disse parametre er ved spåndybde af 0,25 D og bredde af 1 D og for fræser med 2 & 3 skærs
For Aluminium legering <6% Si, benyttes tilspænding per tand som noteret i første materialekolonne, mens skærehastigheden multipliceres med x 3.
For Kobber legering, benyttes tilspænding per tand som noteret i første materialekolonne, mens skærehastigheden multipliceres med x 2.

Estos parametros son para usar con profundidad de corte de 0,5D y ancho de pasada de1D
Estos parametros son para usar con profundidad de corte de 0,25D y ancho de pasada de 1D
Para Alum. Aleado < 6% Si, aplique avance por diente como indicado en columna X y 3 veces la velocidad de corte.
Para Cobre Aleado, aplique avance por diente como indicado en columna X y 3 veces la velocidad de corte.

Dessa parametrar används vid ett skärdjup av 0,5 D och sidoskär av 1 D ett 2 & 3 skår
Dessa parametrar används vid ett skärdjup av 0,25 D och sidoskär av 1 D ett 2 & 3 skår
För Aluminium legeringar < 6% SI, använd matning/tand som visas i första materialkolumn, medan skärhastigheten multipliceras med x 3
För Koppar legeringar, använd matning/tand som visas i första materialkolumn, medan skärhastigheten multipliceras med x 2

Эти параметры для фрезерования глубиной 0,5D и шириной 1 D фрезами с 2 и 3 режущими кромками.
Эти параметры для фрезерования глубиной 0,25D и шириной 1 D фрезами с 4 режущими кромками.
Для алюминиевых сплавов, с содержанием кремния < 6% SI, используйте подачу на зуб как указано, а скорость резания умножьте на 3.
Для медных сплавов используйте подачу на зуб как указано, а скорость резания умножьте на 2.

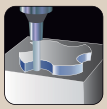
Bu parametreler kesme derinliği 1.5D ve kesme genişliği 1D olan 2 ve 3 ağızlı parmak frezelerde kullanılır.
Bu parametreler kesme derinliği 0.25D ve kesme genişliği 1D olan 4 ağızlı parmak frezelerde kullanılır.
Silisyum içeriği %6'nın altında olan alüminyum alaşımlar için, lütfen sütunda X ile belirtildiği gibi kesme hızının 3 katı oranında bir ağız başına ilerleme değeri kullanın
Bakır alaşımlar için, lütfen sütunda X ile belirtildiği gibi kesme hızının 2 katı oranında bir ağız başına ilerleme değeri kullanın

Parametry te są podane przy głębokości frezowanie 0,5 D i szerokości 1 D dla frezów 2 i 3 ostrzowych
Parametry te są podane przy głębokości frezowania 0,25 D i szerokości 1 D dla frezów 4 ostrzowych
Do stopów aluminium < 6% Si użyj parametrów posuwu z kolumnu X a obroty pomnóż x 3
Do stopów miedzi użyj parametrów posuwu z kolumny X a obroty pomnóż x 2

CONDITIONS

V-XPM-WEHS

Side milling - Konturfräsen - Contornatura - Coutournage / Semi-finishing - Semi-finitura - Semi-finition - Semi-finition - Kenar frezeleme
Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование / Sletfræsning - Finfräsning - Acabado - Получистовая - Frezowanie boczne



	E24 ■ XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron			35NCD16 ■ 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel			316 ■ 304 800 MPA Stainless steel			Z38CDV5 ■ Z40CDV5 38 ~ 45 HRC Treated & pretreated steel			Inconel ■ Hastelloy 35 ~ 43 HRC Steel alloys, Nickel base			TA6V 900 ~ 1100 MPA Alloy titanium		
Vc	55 m/min			45 m/min			25 m/min			30 m/min			15 m/min			22 m/min		
nb. flutes	**Ø**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
2	**2**	8.754	70	0,004	7.162	57	0,004	3.979	32	0,004	4.775	38	0,004	2.387	19	0,004	3.501	28	0,004
2	**3**	5.836	70	0,006	4.775	57	0,006	2.653	32	0,006	3.183	38	0,006	1.592	19	0,006	2.334	28	0,006
2	**4**	4.377	70	0,008	3.581	57	0,008	1.989	32	0,008	2.387	38	0,008	1.194	19	0,008	1.751	28	0,008
2	**5**	3.501	70	0,01	2.865	57	0,01	1.592	32	0,01	1.910	38	0,01	955	19	0,01	1.401	28	0,01
3	**6**	2.918	105	0,012	2.387	86	0,012	1.326	48	0,012	1.592	57	0,012	796	29	0,012	1.167	42	0,012
3	**7**	2.501	105	0,014	2.046	86	0,014	1.137	48	0,014	1.364	57	0,014	682	29	0,014	1.000	42	0,014
3	**8**	2.188	131	0,02	1.790	107	0,02	995	60	0,02	1.194	72	0,02	597	36	0,02	875	53	0,02
3	**9**	1.945	117	0,02	1.592	95	0,02	884	53	0,02	1.061	64	0,02	531	32	0,02	778	47	0,02
3	**10**	1.751	131	0,025	1.432	107	0,025	796	60	0,025	955	72	0,025	477	36	0,025	700	53	0,025
3	**11**	1.592	119	0,025	1.302	98	0,025	723	54	0,025	868	65	0,025	434	33	0,025	637	48	0,025
3	**12**	1.459	153	0,035	1.194	125	0,035	663	70	0,035	796	84	0,035	398	42	0,035	584	61	0,035
3	**13**	1.347	141	0,035	1.102	116	0,035	612	64	0,035	735	77	0,035	367	39	0,035	539	57	0,035
3	**14**	1.251	150	0,04	1.023	123	0,04	568	68	0,04	682	82	0,04	341	41	0,04	500	60	0,04
3	**15**	1.167	140	0,04	955	115	0,04	531	64	0,04	637	76	0,04	318	38	0,04	467	56	0,04
3	**16**	1.094	148	0,045	895	121	0,045	497	67	0,045	597	81	0,045	298	40	0,045	438	59	0,045
3	**18**	973	146	0,05	796	119	0,05	442	66	0,05	531	80	0,05	265	40	0,05	389	58	0,05
3	**20**	875	158	0,06	716	129	0,06	398	72	0,06	477	86	0,06	239	43	0,06	350	63	0,06
4	**22**	796	223	0,07	651	182	0,07	362	101	0,07	434	122	0,07	217	61	0,07	318	89	0,07
4	**24**	729	219	0,075	597	179	0,075	332	99	0,075	398	119	0,075	199	60	0,075	292	88	0,075
4	**25**	700	224	0,08	573	183	0,08	318	102	0,08	382	122	0,08	191	61	0,08	280	90	0,08
4	**28**	625	225	0,09	512	184	0,09	284	102	0,09	341	123	0,09	171	61	0,09	250	90	0,09
4	**30**	584	233	0,1	477	191	0,1	265	106	0,1	318	127	0,1	159	64	0,1	233	93	0,1

These parameters are for use with cutting-depth of 1,5 D and a cutting-width of 0,1 D.
For alu. alloys < 6% Si, please use feed/flute as indicated in the colomm by X by 3 times the cutting speed.
For copper alloys, please use the feed/flute as indicated in the colomm by X by 2 times the cutting speed.

Questi parametri si intendono per un utilizzo con una profondità di taglio di 1,5 D ed una larghezza di taglio di 0,1 D.
Per le leghe di alluminio, usate avanzamento/denti come indicato nella colonna della tabella con "X" per 3 volte la velocità di taglio.
Per le leghe di Rame, usate avanzamento/denti come indicato nella colonna della tabella con "X" per 2 volte la velocità di taglio.

Diese Schnittdaten sind für eine Frästiefe von 1,5 D und fur Fräsbreite 0,1 D
Für Aluminium-Legierungen < 6%, bitte den Vorschub pro Schneide aus Reihe X verwenden und die Schnittgeschwindigkeit mit 3 multiplizieren.
Für Kupfer-Legierungen, bitte den Vorschub pro Schneide aus Reihe X verwenden und die Schnittgeschwindig keit mit 2 multiplizieren.

Ces paramètres sont pour une profondeur de passe de 1,5 D sur une largeur de passe de 0,1 D
Pour les alliages d'alu < 6% Si, veuillez utiliser l'avance/dent indiquée dans la colonne du tableau en X par 3 la vitesse de coupe.
Pour les alliages de cuivre non allié, veuillez utiliser l'avance/dent indiquée dans la colonne du tableau en X par 2 la vitesse de coupe.

Disse parametre er ved spåndybde af 1,5 D og bredde af 0,1 D
For Aluminium legering <6% Si, benyttes tilspænding per tand som noteret i første materialekolonne, mens skærehastigheden multipliceres med x 3.
For Kobber legering, benyttes tilspænding per tand som noteret i første materialekolonne, mens skærehastigheden multipliceres med x 2.

Estos parametros son para usar con profundidad de corte de 1,5 D y ancho de pasada de 0,1 D
Para Alum. Aleado < 6% Si, aplique avance por diente como indicado en columna X y 3 veces la velocidad de corte.
Para Cobre Aleado, aplique avance por diente como indicado en columna X y 3 veces la velocidad de corte.

Dessa parametrar används vid ett skärdjup av 1,5 D och sidoskär av 0,1 D
För Aluminium legeringar < 6% Sl, använd matning/tand som visas i första materialkolumn, medan skärhastigheten multipliceras med x 3
För Koppar legeringar, använd matning/tand som visas i första materialkolumn, medan skärhastigheten multipliceras med x 2

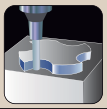
Эти параметры для фрезерования глубиной 1,5 D и шириной 0,1 D.
Для алюминиевых сплавов, с содержанием кремния < 6% Sl, используйте подачу на зуб как указано, а скорость резания умножьте на 3.
Для медных сплавов используйте подачу на зуб как указано, а скорость резания умножьте на 2.

Bu parametreler kesme derinliği 1.5D ve kesme genişliği 0,1D olan operasyonlarda kullanılır
Silisyum içeriği %6'nın altında olan alüminyum alaşımlar için, lütfen sütunda X ile belirtildiği gibi kesme hızının 3 katı oranında bir ağız başına ilerleme değeri kullanın
Bakır alaşımlar için, lütfen sütunda X ile belirtildiği gibi kesme hızının 2 katı oranında bir ağız başına ilerleme değeri kullanın

Parametry te są podane przy głębokości frezowania 1,5 D i szerokości 0,1 D
Do stopów aluminium < 6% Si użyj parametrów posuwu z kolumnu X a obroty pomnóż x 3
Do stopów miedzi użyj parametrów posuwu z kolumny X a obroty pomnóż x 2

V-XPM-WEMS (V-)WEMS

Side milling - Konturfräsen - Contornatura - Coutournage / Semi-finishing - Semi-finitura - Semi-finition - Semi-finition - Kenar frezeleme
Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование / Sletfræsning - Finfräsning - Acabado - Получистовая - Frezowanie boczne



	E24 ■ XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron			35NCD16 ■ 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel			316 ■ 304 800 MPA Stainless steel			Z38CDV5 ■ Z40CDV5 38 ~ 45 HRC Treated & pretreated steel			Inconel ■ Hastelloy 35 ~ 43 HRC Steel alloys, Nickel base			TA6V 900 ~ 1100 MPA Alloy titanium		
Vc	60 m/min			50 m/min			30 m/min			30 m/min			15 m/min			25 m/min		
nb. flutes	**Ø**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
4	**3**	6.366	76	0,003	5.305	64	0,003	3.183	38	0,003	3.183	38	0,003	1.592	19	0,003	2.653	32	0,003
4	**4**	4.775	76	0,004	3.979	64	0,004	2.387	38	0,004	2.387	38	0,004	1.194	19	0,004	1.989	32	0,004
4	**5**	3.820	76	0,005	3.183	64	0,005	1.910	38	0,005	1.910	38	0,005	955	19	0,005	1.592	32	0,005
4	**6**	3.183	127	0,01	2.653	106	0,01	1.592	64	0,01	1.592	64	0,01	796	32	0,01	1.326	53	0,01
4	**7**	2.728	218	0,02	2.274	182	0,02	1.364	109	0,02	1.364	109	0,02	682	55	0,02	1.137	91	0,02
4	**8**	2.387	191	0,02	1.989	159	0,02	1.194	95	0,02	1.194	95	0,02	597	48	0,02	995	80	0,02
4	**10**	1.910	229	0,03	1.592	191	0,03	955	115	0,03	955	115	0,03	477	57	0,03	796	95	0,03
4	**12**	1.592	286	0,045	1.326	239	0,045	796	143	0,045	796	143	0,045	398	72	0,045	663	119	0,045
4	**14**	1.364	273	0,05	1.137	227	0,05	682	136	0,05	682	136	0,05	341	68	0,05	568	114	0,05
4	**15**	1.273	280	0,055	1.061	233	0,055	637	140	0,055	637	140	0,055	318	70	0,055	531	117	0,055
4	**16**	1.194	263	0,055	995	219	0,055	597	131	0,055	597	131	0,055	298	66	0,055	497	109	0,055
4	**18**	1.061	276	0,065	884	230	0,065	531	138	0,065	531	138	0,065	265	69	0,065	442	115	0,065
4	**20**	955	267	0,07	796	223	0,07	477	134	0,07	477	134	0,07	239	67	0,07	398	111	0,07
6	**22**	868	286	0,055	723	239	0,055	434	143	0,055	434	143	0,055	217	72	0,055	362	119	0,055
6	**24**	796	286	0,06	663	239	0,06	398	143	0,06	398	143	0,06	199	72	0,06	332	119	0,06
6	**25**	764	275	0,06	637	229	0,06	382	138	0,06	382	138	0,06	191	69	0,06	318	115	0,06
6	**30**	637	267	0,07	531	223	0,07	318	134	0,07	318	134	0,07	159	67	0,07	265	111	0,07

These parameters are for use with cutting-depth of 1,5 D and a cutting-width of 1 D.
For alu. alloys < 6% Si, please use feed/flute as indicated in the colomn by X by 3 times the cutting speed.
For copper alloys, please use the feed/flute as indicated in the colomn by X by 2 times the cutting speed.
For V-WEMS, reduce cutting speed by 20% and feed/flute by 10%.
For WEMS reduce cutting speed by 30% and feed/flute by 10%.

Questi parametri si intendono per un utilizzo con una profondità di taglio di 1,5 D ed una larghezza di taglio di 1 D.
Per le leghe di alluminio, usate avanzamento/denti come indicato nella colonna della tabella con "X" per 3 volte la velocità di taglio.
Per le leghe di Rame, usate avanzamento/denti come indicato nella colonna della tabella con "X" per 2 volte la velocità di taglio.
Per le V-WEMS, CEMS-TiCN, ridurre la velocità di taglio del 20% e avanzamento/denti del 10%. Per le WEMS, ridurre la velocità di taglio del 30% e avanzamento/denti del 10%.

Diese Schnittdaten sind für eine Frästiefe von 1,5 D und fur Fräsbreite 1 D. Für Aluminium-Legierungen < 6%, bitte den Vorschub pro Schneide aus Reihe X verwenden und die Schnittgeschwindigkeit mit 3 multiplizieren.
Für Kupfer-Legierungen, bitte den Vorschub pro Schneide aus Reihe X verwenden und die Schnittgeschwindigkeit mit 2 multiplizieren.
Für V-WEMS bitte die Schnittgeschwindigkeit 20% reduzieren und den Vorschub pro Schneide um 10%. Für WEMS bitte die Schnittgeschwindigkeit 30% reduzieren und den Vorschub pro Schneide um 10%.

Ces paramètres sont pour une profondeur de passe de 1,5 D sur une largeur de passe de 1 D. Pour les alliages d'alu < 6% Si, veuillez utiliser l'avance/dent indiquée dans la colonne du tableau en X par 3 la vitesse de coupe.
Pour les alliages de cuivre non allié, veuillez utiliser l'avance/dent indiquée dans la colonne du tableau en X par 2 la vitesse de coupe.
Veuillez svp réduire la vitesse de coupe de 20% ainsi que l'avance/dent de 10% pour les fraises V-WEMS, CEMS-TiCN.
Veuillez svp réduire la vitesse de coupe de 30% ainsi que l'avance/dent de 10% pour la fraise WEMS.

Disse parametre er ved spåndybde af 1,5 D og bredde af 1 D
For Aluminium legering <6% Si, benyttes tilspænding per tand som noteret i første materialekolonne, mens skærehastigheden multipliceres med x 3.
For Kobber legering, benyttes tilspænding per tand som noteret i første materialekolonne, mens skærehastigheden multipliceres med x 2.
For V-WEMS, reducer skærehastighed med 20% og tilspænding per tand med 10%
For WEMS, reducer skærehastighed med 30% og tilspænding per tand med 10%

Estos parametros son para usar con profundidad de corte de 1,5D y ancho de pasada de 1D
Para Alum. Aleado < 6% Si, aplique avance por diente como indicado en columna X y 3 veces la velocidad de corte.
Para Cobre Aleado, aplique avance por diente como indicado en columna X y 3 veces la velocidad de corte.
Para V-WEMS, reducir velocidad de corte el 20% y el avance fz el 10%
Para WEMS, CEMS, reducir velocidad de corte el 30% y el avance fz el 10%

Dessa parametrar används vid ett skärdjup av 1,5 D och sidoskär av 1 D
För Aluminium legeringar < 6% SI, använd matning/tand som visas i första materialkolumn, medan skärhastigheten multipliceras med x 3
För Koppar legeringar, använd matning/tand som visas i första materialkolumn, medan skärhastigheten multipliceras med x 2
För V-WEMS, reducera skärhastigheten med 20% och matningen/tand med 10%
För WEMS, reducera skärhastigheten med 30% och matningen/tand med 10%

Эти параметры для фрезерования глубиной 1,5 D и шириной 0,1 D.
Для алюминиевых сплавов, с содержанием кремния < 6% SI, используйте подачу на зуб как указано, а скорость резания умножьте на 3.
Для медных сплавов используйте подачу на зуб как указано, а скорость резания умножьте на 2.
Для V-WEMS снизьте скорость резания на 20% и подачу на зуб на 10%
Для WEMS снизьте скорость резания на 30% и подачу на зуб на 10%

Bu parametreler kesme derinliği 1,5D ve kesme genişliği 1D olan operasyonlarda kullanılır
Silisyum içeriği %6'nın altında olan alüminyum alaşımlar için, lütfen sütunda X ile belirtildiği gibi kesme hızının 3 katı oranında bir ağız başına ilerleme değeri kullanın
Bakır alaşımlar için, lütfen sütunda X ile belirtildiği gibi kesme hızının 2 katı oranında bir ağız başına ilerleme değeri kullanın
V-WEMS için, kesme hızını 20% ve ilerleme/ağız 10% düşürün
WEMS için, kesme hızını 30% ve ilerleme/ağız 10% düşürün

Parametry te są podane przy głębokości frezowania 1,5 D i szerokości 1 D
Do stopów aluminium < 6% Si użyj parametrów posuwu z kolumnu X a obroty pomnóż x 3
Do stopów miedzi użyj parametrów posuwu z kolumny X a obroty pomnóż x 2
Dla V-WEMS zmniejsz prędkość skrawania o 20% i posuw o 10%.
Dla WEMS zmniejsz prędkość skrawania o 30% i posuw o 10%

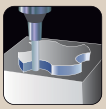
BACK

BACK

BACK

V-XPM-WETS - (V-)WETS

Slotting - Nutenfräsen - Scanalatura - Rainurage / Roughing - Schruppen - Sgrossatura - Ebauche - Slot kesim
Sporfræsning -Spårfräsning - Ranurado - Пазовое / Skrubfræsning - Grovfräsning - Desbaste - Черновая обработка - Frezowanie rowków



	E24 ■ XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron			35NCD16 ■ 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel			316 ■ 304 800 MPA Stainless steel			Z38CDV5 ■ Z40CDV5 38 ~ 45 HRC Treated & pretreated steel			Inconel ■ Hastelloy 35 ~ 43 HRC Steel alloys, Nickel base			TA6V 900 ~ 1100 MPA Alloy titanium		
Vc	55 m/min			45 m/min			25 m/min			30 m/min			15 m/min			22 m/min		
nb. flutes	**Ø**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
3	**3**	5.836	70	0,004	4.775	57	0,004	2.653	32	0,004	3.183	38	0,004	1.592	19	0,004	2.334	28	0,004
3	**4**	4.377	79	0,006	3.581	64	0,006	1.989	36	0,006	2.387	43	0,006	1.194	21	0,006	1.751	32	0,006
3	**5**	3.501	84	0,008	2.865	69	0,008	1.592	38	0,008	1.910	46	0,008	955	23	0,008	1.401	34	0,008
3	**6**	2.918	96	0,011	2.387	79	0,011	1.326	44	0,011	1.592	53	0,011	796	26	0,011	1.167	39	0,011
3	**7**	2.501	83	0,011	2.046	68	0,011	1.137	38	0,011	1.364	45	0,011	682	23	0,011	1.000	33	0,011
3	**8**	2.188	85	0,013	1.790	70	0,013	995	39	0,013	1.194	47	0,013	597	23	0,013	875	34	0,013
3	**10**	1.751	95	0,018	1.432	77	0,018	796	43	0,018	955	52	0,018	477	26	0,018	700	38	0,018
3	**12**	1.459	109	0,025	1.194	90	0,025	663	50	0,025	796	60	0,025	398	30	0,025	584	44	0,025
3	**14**	1.251	105	0,028	1.023	86	0,028	568	48	0,028	682	57	0,028	341	29	0,028	500	42	0,028
3	**15**	1.161	98	0,028	955	80	0,028	531	45	0,028	637	53	0,028	318	27	0,028	467	39	0,028
3	**16**	1.094	105	0,032	895	86	0,032	497	48	0,032	597	57	0,032	298	29	0,032	438	42	0,032
3	**18**	973	102	0,035	796	84	0,035	442	46	0,035	531	56	0,035	265	28	0,035	389	41	0,035
3	**20**	875	105	0,04	716	86	0,04	398	48	0,04	477	57	0,04	239	29	0,04	350	42	0,04
3	**22**	796	107	0,045	651	88	0,045	362	49	0,045	434	59	0,045	217	29	0,045	318	43	0,045
3	**24**	729	109	0,05	597	90	0,05	332	50	0,05	398	60	0,05	199	30	0,05	292	44	0,05
3	**25**	700	116	0,055	573	95	0,055	318	53	0,055	382	63	0,055	191	32	0,055	280	46	0,055
3	**30**	584	105	0,06	477	86	0,06	265	48	0,06	318	57	0,06	159	29	0,06	233	42	0,06

These parameters are for use with cutting-depth of 0,5 D and a cutting-width of 1 D. For alu. alloys < 6% Si, please use feed/flute as indicated in the colomn by X by 3 times the cutting speed. For copper alloys, please use the feed/flute as indicated in the colomn by X by 2 times the cutting speed. For V-WETS, FC-3S-TiCN, reduce cutting speed by 20% and feed/flute by 10%. For WETS, FC-3S reduce cutting speed by 30% and feed/flute by 10%.	Questi parametri si intendono per un utilizzo con una profondità di taglio di 0,5 D ed una larghezza di taglio di 1 D. Per le leghe di alluminio, usate avanzamento/denti come indicato nella colonna della tabella con "X" per 3 volte la velocità di taglio. Per le leghe di Rame, usate avanzamento/denti come indicato nella colonna della tabella con "X" per 2 volte la velocità di taglio. Per le V-WETS, FC-3S-TiCN, ridurre la velocità di taglio del 20% e avanzamento/denti del 10%. Per le WETS, FC-3S ridurre la velocità di taglio del 30% e avanzamento/denti del 10%.
Diese Schnittdaten sind für eine Frästiefe von 0,5 D und fur Fräsbreite 1 D. Für Aluminium-Legierungen < 6%, bitte den Vorschub pro Schneide aus Reihe X verwenden und die Schnittgeschwindigkeit mit 3 multiplizieren. Für Kupfer-Legierungen, bitte den Vorschub pro Schneide aus Reihe X verwenden und die Schnittgeschwindig keit mit 2 multiplizieren. Für V-WETS, FC-3S-TiCN, bitte die Schnittgeschwindigkeit 20% reduzieren und den Vorschub pro Schneide um 10%. Für WETS, FC-3S bitte die Schnittgeschwindigkeit 30% reduzieren und den Vorschub pro Schneide um 10%.	Ces paramètres sont pour une profondeur de passe de 0,5 D sur une largeur de passe de 1 D. Pour les alliages d'alu < 6% Si, veuillez utiliser l'avance/dent indiquée dans la colonne du tableau en X par 3 la vitesse de coupe. Pour les alliages de cuivre non allié, veuillez utiliser l'avance/dent indiquée dans la colonne du tableau en X par 2 la vitesse de coupe. Veuillez svp réduire la vitesse de coupe de 20% ainsi que l'avance/dent de 10% pour les fraises V-WETS, FC-3S-TiCN. Veuillez svp réduire la vitesse de coupe de 30% ainsi que l'avance/dent de 10% pour les fraises WETS, FC-3S.
Disse parametre er ved spåndybde af 0,5 D og bredde af 1 D For Aluminium legering <6% Si, benyttes tilspænding per tand som noteret i første materialekolonne, mens skærehastigheden multipliceres med x 3. For Kobber legering, benyttes tilspænding per tand som noteret i første materialekolonne, mens skærehastigheden multipliceres med x 2. For V-WETS, FC-3S-TiCN, reducer skærehastighed med 20% og tilspænding per tand med 10% For WETS, FC-3S reducer skærehastighed med 30% og tilspænding per tand med 10%	Estos parametros son para usar con profundidad de corte de 0,5D y ancho de pasada de 1D Para Alum. Aleado < 6% Si, aplique avance por diente como indicado en columna X y 3 veces la velocidad de corte. Para Cobre Aleado, aplique avance por diente como indicado en columna X y 2 veces la velocidad de corte. Para V-WETS, FC-3S-TiCN, reducir velocidad de corte el 20% y el avance fz el 10% Para WETS, FC-3S reducir velocidad de corte el 20% y el avance fz el 10%
Dessa parametrar används vid ett skärdjup av 0,5 D och sidoskär av 1 D För Aluminium legeringar < 6% SI, använd matning/tand som visas i första materialkolumn, medan skärhastigheten multipliceras med x 3 För Koppar legeringar, använd matning/tand som visas i första materialkolumn, medan skärhastigheten multipliceras med x 2 För V-WETS, FC-3S-TiCN, reducera skärhastigheten med 20% och matningen/tand med 10% För WETS, FC-3S reducera skärhastigheten med 30% och matningen/tand med 10%	Эти параметры для фрезерования глубиной 0,5 D и шириной 0,1 D. Для алюминиевых сплавов, с содержанием кремния < 6% SI, используйте подачу на зуб как указано, а скорость резания умножьте на 3. Для медных сплавов используйте подачу на зуб как указано, а скорость резания умножьте на 2. Для V-WETS и FC-3S-TiCN снизьте скорость резания на 20% и подачу на зуб на 10% Для WETS и FC-3S снизьте скорость резания на 30% и подачу на зуб на 10%
Bu parametreler kesme derinliği 0,5D ve kesme genişliği 1D olan operasyonlarda kullanılır Silisyum içeriği %6'nın altında olan alüminyum alaşımlar için, lütfen sütunda X ile belirtildiği gibi kesme hızının 3 katı oranında bir ağız başına ilerleme değeri kullanın Bakır alaşımlar için, lütfen sütunda X ile belirtildiği gibi kesme hızının 2 katı oranında bir ağız başına ilerleme değeri kullanın V-WETS, FC-3S-TiCN için, kesme hızını 20% ve ilerleme/ağız 10% düşürün WETS ve FC-3S için, kesme hızını 30% ve ilerleme/ağız 10% düşürün	Parametry te są podane przy głębokości frezowania 0,5 D i szerokości 1 D Do stopów aluminium < 6% Si użyj parametrów posuwu z kolumnu X a obroty pomnóż x 3 Do stopów miedzi użyj parametrów posuwu z kolumny X a obroty pomnóż x 2 For V-WETS,FC-3S TiCN zmniejsz prędkość skrawania o 20% i posuw o 10%. For WETS, FC-3S zmniejsz prędkość skrawania o 30% i posuw o 10%

HSS

HSS

BACK

Side milling - Konturfräsen - Conturnatura - Coutournage / Semi-fi nishing - Semi-finitura - Semi-finition - Semi-finition - Kenar frezeleme - Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование / Sletfræsning - Finfräsning - Acabado - Получистовая - Frezowanie boczne

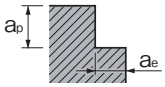
SI-WH-WRESF



MILL DIA. (mm)	CAST IRON FC250		MILD STEELS CARBON STEELS SS400 - S50C		~ 30HRC SCM-SKT-SKS-SKD		~ 45 HRC SKD-NAK80		STAINLESS STEEL SUS304		TITANIUM ALLOY Ti-6Al-4V	
	SPEED (min^{-1})	FEED (mm/min)	SPEED (min^{-1})	FEED (mm/min)	SPEED (min^{-1})	FEED (mm/min)	SPEED (min^{-1})	FEED (mm/min)	SPEED (min^{-1})	FEED (mm/min)	SPEED (min^{-1})	FEED (mm/min)
6	2.920	300	3.450	300	2.650	210	2.390	170	1.860	130	1.330	80
8	2.190	340	2.590	350	1.990	240	1.790	190	1.390	150	990	90
10	1.750	380	2.070	390	1.590	270	1.430	220	1.110	170	800	110
12	1.460	410	1.720	420	1.330	290	1.190	230	930	180	660	110
16	1.090	480	1.290	490	990	340	900	270	700	210	500	130
20	880	510	1.030	520	800	360	720	290	560	230	400	140
25	700	490	830	510	640	350	570	280	450	220	320	140

DEPTH OF CUT

Dc	a_p	a_e
<30	≤15	≤0,5D
≥30	≤1D	



Slotting - Nutenfräsen - Per scanalature profonde - Rainurage - Slot kesme Skæredata - Skärdata - Ranurado - Фрезерование пазов - Frezowanie rowków

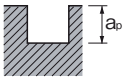
SI-WH-WRESF



MILL DIA. (mm)	CAST IRON FC250		MILD STEELS CARBON STEELS SS400 - S50C		~ 30HRC SCM-SKT-SKS-SKD		~ 45 HRC SKD-NAK80		STAINLESS STEEL SUS304		TITANIUM ALLOY Ti-6Al-4V	
	SPEED (min^{-1})	FEED (mm/min)	SPEED (min^{-1})	FEED (mm/min)	SPEED (min^{-1})	FEED (mm/min)	SPEED (min^{-1})	FEED (mm/min)	SPEED (min^{-1})	FEED (mm/min)	SPEED (min^{-1})	FEED (mm/min)
6	2.390	160	2.650	160	2.120	110	1.860	90	1.330	60	800	30
8	1.790	200	1.990	190	1.590	140	1.390	110	990	80	600	40
10	1.430	220	1.590	210	1.270	150	1.110	120	800	80	480	40
12	1.190	230	1.330	220	1.060	160	930	120	660	90	400	50
16	900	270	990	260	800	190	700	150	500	110	300	60
20	720	290	800	280	640	210	560	160	400	110	240	60
25	570	280	640	280	510	200	450	150	320	110	190	60

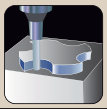
DEPTH OF CUT

$a_p \leq D$
a_p Max = 20mm



V-XPM-WRESF - (V-)WREES - (V-)WRESF

Slotting - Nutenfräsen - Scanalatura - Rainurage / Roughing - Schruppen - Sgrossatura - Ebauche - Slot kesim
Sporfræsning -Spårfräsning - Ranurado - Пазовое / Skrubfræsning - Grovfräsning - Desbaste - Черновая обработка - Frezowanie rowków

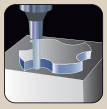


	E24 ■ XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron			35NCD16 ■ 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel			316 ■ 304 800 MPA Stainless steel			Z38CDV5 ■ Z40CDV5 38 ~ 45 HRC Treated & pretreated steel			Inconel ■ Hastelloy 35 ~ 43 HRC Steel alloys, Nickel base			TA6V 900 ~ 1100 MPA Alloy titanium		
Vc	55 m/min			45 m/min			25 m/min			30 m/min			15 m/min			22 m/min		
nb. flutes	**Ø**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
4	6	2.918	233	0,02	2.387	191	0,02	1.326	106	0,02	1.592	127	0,02	796	64	0,02	1.167	93	0,02
4	7	2.501	250	0,025	2.046	205	0,025	1.137	114	0,025	1.364	136	0,025	682	68	0,025	1.000	100	0,025
4	8	2.188	263	0,03	1.790	215	0,03	995	119	0,03	1.194	143	0,03	597	72	0,03	875	105	0,03
4	10	1.751	280	0,04	1.432	229	0,04	796	127	0,04	955	153	0,04	477	76	0,04	700	112	0,04
4	12	1.459	350	0,06	1.194	286	0,06	663	159	0,06	796	191	0,06	398	95	0,06	584	140	0,06
4	14	1.251	325	0,065	1.023	266	0,065	568	148	0,065	682	177	0,065	341	89	0,065	500	130	0,065
4	15	1.167	327	0,07	955	267	0,07	531	149	0,07	637	178	0,07	318	89	0,07	467	131	0,07
4	16	1.094	328	0,075	895	269	0,075	497	149	0,075	597	179	0,075	298	90	0,075	438	131	0,075
4	18	973	331	0,085	796	271	0,085	442	150	0,085	531	180	0,085	265	90	0,085	389	132	0,085
4	20	875	350	0,1	716	286	0,1	398	159	0,1	477	191	0,1	239	95	0,1	350	140	0,1
5	22	796	438	0,11	651	358	0,11	362	199	0,11	434	239	0,11	217	119	0,11	318	175	0,11
5	25	700	438	0,125	573	358	0,125	318	199	0,125	382	239	0,125	191	119	0,125	280	175	0,125
5	28	625	391	0,125	512	320	0,125	284	178	0,125	341	213	0,125	171	107	0,125	250	156	0,125
6	30	584	438	0,125	477	358	0,125	265	199	0,125	318	239	0,125	159	119	0,125	233	175	0,125
6	32	547	410	0,125	448	336	0,125	249	187	0,125	298	224	0,125	149	112	0,125	219	164	0,125
6	35	500	375	0,125	409	307	0,125	227	171	0,125	273	205	0,125	136	102	0,125	200	150	0,125
6	36	486	365	0,125	398	298	0,125	221	166	0,125	265	199	0,125	133	99	0,125	195	146	0,125
6	40	438	328	0,125	358	269	0,125	199	149	0,125	239	179	0,125	119	90	0,125	175	131	0,125
6	45	389	292	0,125	318	239	0,125	177	133	0,125	212	159	0,125	106	80	0,125	156	117	0,125
8	50	350	350	0,125	286	286	0,125	159	159	0,125	191	191	0,125	95	95	0,125	140	140	0,125

These parameters are for use with cutting-depth of 1 D and a cutting-width of 1 D. For V-WREES, V-WRESF, V-WRFES, reduce cutting speed by 20% and feed/flute by 10%. For WREES, reduce cutting speed by 30% and feed/flute by 10%.	Questi parametri si intendono per un utilizzo con una profondità di taglio di 1 D ed una larghezza di taglio di 1 D. Per le V-WREES, V-WRESF, V-WRFES, ridurre la velocità di taglio del 20% e avanzamento/denti del 10%. Per le WREES, ridurre la velocità di taglio del 30% e avanzamento/denti del 10%.
Diese Schnittdaten sind für eine Frästiefe von 1 D und fur Fräsbreite 1 D. Für V-WREES, V-WRESF, V-WRFES, bitte die Schnittgeschwindigkeit 20% reduzieren und den Vorschub pro Schneide um 10%. Für WREES, bitte die Schnittgeschwindigkeit 30% reduzieren und den Vorschub pro Schneide um 10%.	Ces paramètres sont pour une profondeur de passe de 1 D sur une largeur de passe de 1 D. Veuillez svp réduire la vitesse de coupe de 20% ainsi que l'avance/dent de 10% pour les fraises V-WREES, V-WRESF, V-WRFE. Veuillez svp réduire la vitesse de coupe de 30% ainsi que l'avance/dent de 10% pour la fraise WREES.
Disse parametre er ved spåndybde af 1 D og bredde af 1 D For V-WREES, V-WRESF, V-WRFES, reducer skærehastighed med 20% og tilspænding per tand med 10% For WREES, reducer skærehastighed med 30% og tilspænding per tand med 10%	Estos parametros son para usar con profundidad de corte de 1D y ancho de pasada de 1D Para. V-WREES, V-WRESF, V-WRFES, reducir velocidad de corte el 20% y el avance fz el 10% Para WREES, reducir velocidad de corte el 20% y el avance fz el 10%
Dessa parametrar används vid ett skärdjup av1 D och sidoskär av 1 D För V-WREES, V-WRESF, V-WRFES, reducera skärhastigheten med 20% och matningen/tand med 10% För WREES, reducera skärhastigheten med 30% och matningen/tand med 10%	Эти параметры для фрезерования глубиной 1 D и шириной 1 D. Для V-WREES, V-WRESF и V-WRFES снизьте скорость резания на 20% и подачу на зуб на 10% Для WREES, снизьте скорость резания на 30% и подачу на зуб на 10%
Bu parametreler kesme derinliği 1D ve kesme genişliği 1D olan operasyonlarda kullanılır V-WREES, V-WRESF, V-WRFES için, kesme hızını 20% ve ilerleme/ağız 10% düşürün WREES için, kesme hızını 30% ve ilerleme/ağız 10% düşürün	Parametry te są podane przy głębokości frezowania 1 D i szerokości 1 D Dla V-WREES,V-WRESF i V-WRFES, zmniejsz prędkość skrawania o 20% i posuw o 10%. Dla WREES, zmniejsz prędkość skrawania o 30% i posuw o 10%

V-XPM-WRESF - (V-)WREES - (V-)WRESF

Side milling - Konturfräsen - Contornatura - Coutournage / Semi-finishing - Semi-finitura - Semi-finition - Semi-finition - Kenar frezeleme
Sidefræsning - Valsfräsning - Contorneado - Боковое фрезерование / Sletfræsning - Finfräsning - Acabado - Получистовая - Frezowanie boczne



	E24 ■ XC48 Fonte GG25 490 ~ 750 MPA Low carbon steel, cast iron			35NCD16 ■ 40CMD8 750 ~ 1100 MPA Alloy steel, tool steel			316 ■ 304 800 MPA Stainless steel			Z38CDV5 ■ Z40CDV5 38 ~ 45 HRC Treated & pretreated steel			Inconel ■ Hastelloy 35 ~ 43 HRC Steel alloys, Nickel base			TA6V 900 ~ 1100 MPA Alloy titanium		
Vc	55 m/min			45 m/min			25 m/min			30 m/min			15 m/min			22 m/min		
nb. flutes	**Ø**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**	**S (min⁻¹)**	**F (mm/min)**	**AZ (mm)**
4	6	2.918	292	0,025	2.387	239	0,025	1.326	133	0,025	1.592	159	0,025	796	80	0,025	1.167	117	0,025
4	7	2.501	300	0,03	2.046	246	0,03	1.137	136	0,03	1.364	164	0,03	682	82	0,03	1.000	120	0,03
4	8	2.188	394	0,045	1.790	322	0,045	995	179	0,045	1.194	215	0,045	597	107	0,045	875	158	0,045
4	10	1.751	385	0,055	1.432	315	0,055	796	175	0,055	955	210	0,055	477	105	0,055	700	154	0,055
4	12	1.459	467	0,08	1.194	382	0,08	663	212	0,08	796	255	0,08	398	127	0,08	584	187	0,08
4	14	1.251	425	0,085	1.023	348	0,085	568	193	0,085	682	232	0,085	341	116	0,085	500	170	0,085
4	15	1.167	397	0,085	955	325	0,085	531	180	0,085	637	216	0,085	318	108	0,085	467	159	0,085
4	16	1.094	438	0,1	895	358	0,1	497	199	0,1	597	239	0,1	298	119	0,1	438	175	0,1
4	18	973	428	0,11	796	350	0,11	442	195	0,11	531	233	0,11	265	117	0,11	389	171	0,11
4	20	875	455	0,13	716	372	0,13	398	207	0,13	477	248	0,13	239	124	0,13	350	182	0,13
5	22	796	557	0,14	651	456	0,14	362	253	0,14	434	304	0,14	217	152	0,14	318	223	0,14
5	25	700	560	0,16	573	458	0,16	318	255	0,16	382	306	0,16	191	153	0,16	280	224	0,16
5	28	625	438	0,14	512	358	0,14	284	199	0,14	341	239	0,14	171	119	0,14	250	175	0,14
6	30	584	490	0,14	477	401	0,14	265	223	0,14	318	267	0,14	159	134	0,14	233	196	0,14
6	32	547	460	0,14	448	376	0,14	249	209	0,14	298	251	0,14	149	125	0,14	219	184	0,14
6	35	500	420	0,14	409	344	0,14	227	191	0,14	273	229	0,14	136	115	0,14	200	168	0,14
6	36	486	408	0,14	398	334	0,14	221	186	0,14	265	223	0,14	133	111	0,14	195	163	0,14
6	40	438	368	0,14	358	301	0,14	199	167	0,14	239	201	0,14	119	100	0,14	175	147	0,14
6	45	389	327	0,14	318	267	0,14	177	149	0,14	212	178	0,14	106	89	0,14	156	131	0,14
8	50	350	392	0,14	286	321	0,14	159	178	0,14	191	214	0,14	95	107	0,14	140	157	0,14

These parameters are for use with cutting-depth of 1 D and a cutting-width of 0,5 D. For V-WREES, V-WRESF, reduce cutting speed by 20% and feed/flute by 10%. For WREES, reduce cutting speed by 30% and feed/flute by 10%.	Questi parametri si intendono per un utilizzo con una profondità di taglio di 1 D ed una larghezza di taglio di 0,5 D. Per le V-WREES, V-WRESF, ridurre la velocità di taglio del 20% e avanzamento/denti del 10%. Per le WREES, ridurre la velocità di taglio del 30% e avanzamento/denti del 10%.
Diese Schnittdaten sind für eine Frästiefe von 1 D und fur Fräsbreite 0,5 D. Für V-WREES, V-WRESF,bitte die Schnittgeschwindigkeit 20% reduzieren und den Vorschub pro Schneide um 10%. Für WREES, bitte die Schnittgeschwindigkeit 30% reduzieren und den Vorschub pro Schneide um 10%.	Ces paramètres sont pour une profondeur de passe de 1 D sur une largeur de passe de 0,5 D. Veuillez svp réduire la vitesse de coupe de 20% ainsi que l'avance/dent de 10% pour les fraises V-WREES, V-WRESF. Veuillez svp réduire la vitesse de coupe de 30% ainsi que l'avance/dent de 10% pour la fraise WREES.
Disse parametre er ved spåndybde af 1D og bredde af 0,5 D For V-WREES, V-WRESF,reducer skærehastighed med 20% og tilspænding per tand med 10% För WREES, reducera skärhastigheten med 30% och matningen/tand med 10%	Estos parametros son para usar con profundidad de corte de 1 D y ancho de pasada de 0,5 D Para V-WREES, V-WRESF, reducir velocidad de corte el 20% y el avance fz el 10% Para WREES, reducir velocidad de corte el 30% y el avance fz el 10%
Dessa parametrar används vid ett skärdjup av 1D och sidoskär av 0,5D För V-WREES, V-WRESF, reducera skärhastigheten med 20% och matningen/tand med 10%. För WREES, reducera skärhastigheten med 30% och matningen/tand med 10%	Эти параметры для фрезерования глубиной 1 D и шириной 0.5 D. Для V-WREES, V-WRESF, снизьте скорость резания на 20% и подачу на зуб на 10% Для WREES снизьте скорость резания на 30% и подачу на зуб на 10%
Bu parametreler kesme derinliği 1D ve kesme genişliği 0,5 D olan operasyonlarda kullanılır V-WREES ve V-WRESF için, kesme hızını 20% ve ilerleme/ağız 10% düşürün WREES için, kesme hızını 30% ve ilerleme/ağız 10% düşürün	Parametry te są podane przy głębokości frezowania 1 D i szerokości 0,5 D Dla V-WREES i V-WRESF, zmniejsz prędkość skrawania o 20% i posuw o 10%. Dla WREES, zmniejsz prędkość skrawania o 30% i posuw o 10%



TOOL COMMUNICATION
OSG

TOKO-TON SPIRIT
Total Commitment

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Approximate relationship between various hardness scales

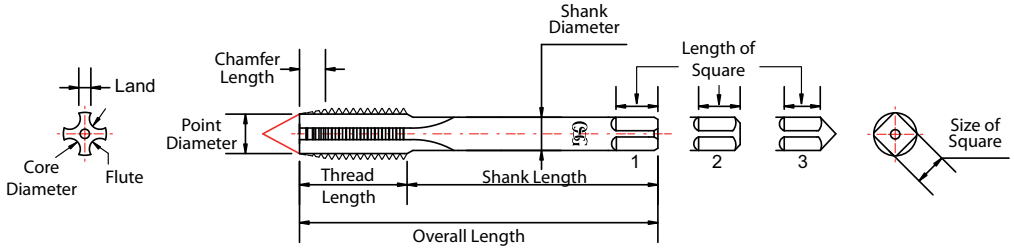
Hardness

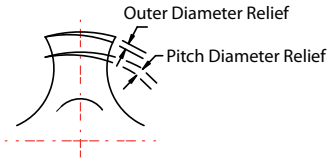
HRA	HRC	HV	HB
		120	114
		125	119
		130	123
		135	128
		140	133
		145	138
		150	142
		155	147
		160	152
		165	157
		170	161
		175	166
		180	171
		185	176
		190	180
		195	185
		200	190
		205	195
		210	199
		215	204
		220	209
		225	214
		230	218
		235	223
60.7	20.5	240	228
61.2	21.5	245	233
61.6	22.0	250	237
62.4	24.0	260	247
63.1	25.5	270	256
63.8	27.0	280	266
64.5	28.5	290	275
65.2	30.0	300	285
65.8	31.0	310	294
66.4	32.0	320	304
67.0	33.5	330	313
67.6	34.5	340	323
68.1	35.5	350	332
68.7	36.5	360	342
69.2	37.5	370	351
69.8	39.0	380	361
70.3	40.0	390	370
70.8	41.0	400	380
71.4	42.0	410	389
71.8	42.5	420	399
72.3	43.5	430	408
72.8	44.5	440	418
73.3	45.5	450	427
73.6	46.0	460	*432*
74.1	47.0	470	*442*
74.5	47.5	480	*450*
74.9	48.5	490	*456*
75.3	49.0	500	*466*
75.7	50.0	510	*475*
76.1	50.5	520	*483*
76.4	51.0	530	*492*
76.7	51.5	540	*500*
77.0	52.5	550	*509*
77.4	53.0	560	*517*
77.8	53.5	570	*526*
78.0	54.0	580	*535*
78.4	54.5	590	*543*
78.6	55.0	600	*552*
79.2	56.5	620	*569*
79.8	57.5	640	*586*
80.3	58.5	660	
80.8	59.0	680	
81.3	60.0	700	
81.8	61.0	720	
82.2	62.0	740	
82.6	62.5	760	
83.0	63.5	780	
83.4	64.0	800	
83.8	64.5	820	
84.1	65.5	840	
84.4	66.0	860	
84.7	66.5	880	
85.0	67.0	900	
85.3	67.5	920	
85.6	68.0	940	

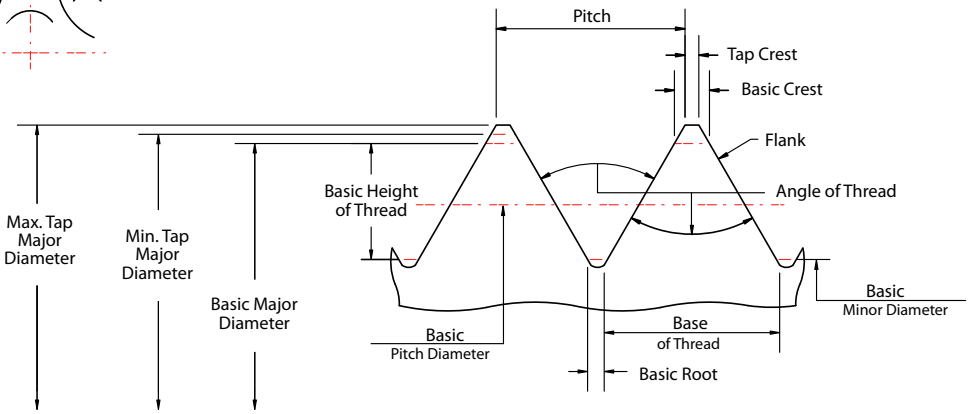
Traction

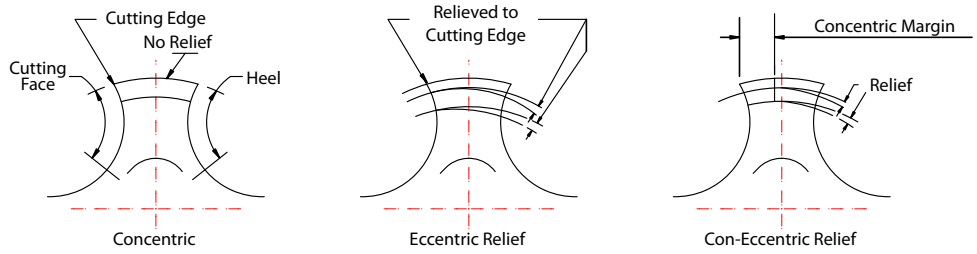
Kgf/mm ^{2}	N/mm^{2}ou Mpa
42	*410*
43	*420*
45	*440*
46	*450*
48	*470*
49	*480*
51	*500*
52	*510*
54	*530*
55	*540*
56	*550*
58	*570*
59	*580*
61	*600*
62	*610*
64.5	*630*
66.5	*650*
67.5	*660*
69.5	*680*
70.5	*690*
72.5	*710*
73.5	*720*
75.5	*740*
76.5	*750*
78.5	*770*
79.5	*780*
81.5	*800*
84.5	*830*
88	*860*
91	*890*
95	*930*
98	*960*
101	*990*
104	*1020*
108	*1060*
111	*1090*
114	*1120*
118	*1160*
121	*1190*
124	*1220*
129	*1260*
132	*1290*
136	*1330*
139	*1360*
143	*1400*
146	*1430*
150	*1470*
153	*1500*
157	*1540*
160	*1570*
164	*1610*
168	*1650*
171	*1680*
175	*1720*
180	*1760*
183	*1790*
187	*1830*
191	*1870*
195	*1910*
198	*1940*
202	*1980*
206	*2020*
214	*2100*
222	*2180*

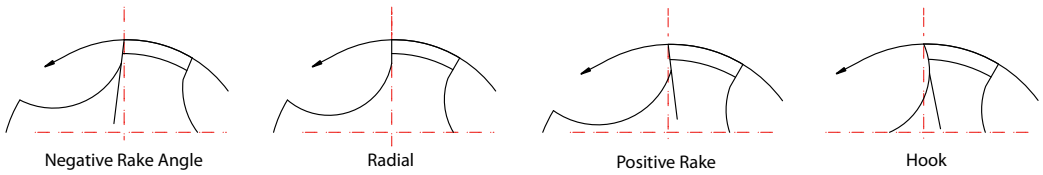
Tap Information





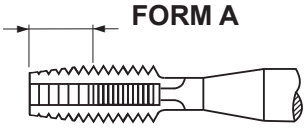






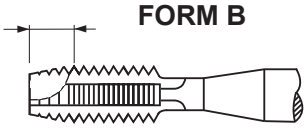
Chamfer Forms

FORM A



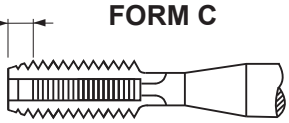
- **Long**
- **6 - 8 threads**
- **For short through holes**
- **Increases the torque and thus the danger of breakage**

FORM B



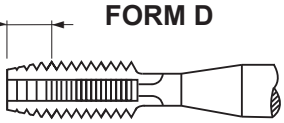
- **Medium**
- **3,5 - 5,5 threads**
- **With spiral point, useful for through holes**
- **For all through holes and deep tapping holes**
- **Efficient in tough and tough hard materials**

FORM C



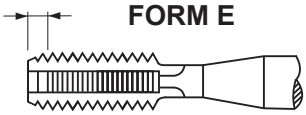
- **Short**
- **2 - 3 threads**
- **For blind holes**
- **Generaly for aluminium, grey cast iron and brass**

FORM D



- **Medium**
- **3,5 - 5 threads**
- **For through and blind holes with sufficient run-out**

FORM E



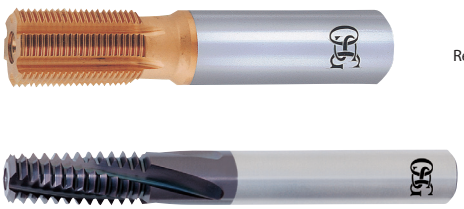
- **Extremely short**
- **1,5 - 2 threads**
- **For blind holes with little run-out depth**

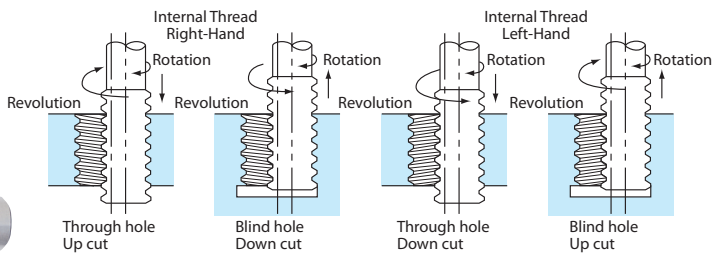
Type of Taps & Features

Type	Features	Application
Spiral Fluted Taps 	- Spiral flute - Chips flow out against tapping direction(ejected from holes) - Lower tapping torque and applicable for tapping to the bottom of holes - Good cutting action	- For blind holes - Materials where chips come out continuously in coil shape
Spiral Pointed Taps 	- Spiral point(Chip Drive) - Pushes chips forward with low cutting torque - Shallow and unique flute form provides strong structure - Good cutting action	- For through holes - Materials where chips come out continuously in coil shape - High speed tapping
Fluteless Taps Forming Taps 	- Fluteless - Taps do not produce chips - Precise uniformity of tapped thread limit - Excellent rigidity	- For both through & blind holes - Materials with Formability
Straight Fluted Taps Hand Taps 	- Straight flute - Strong cutting edges - Applicable for various cuttig conditions - Easy to re-grind	- For both through & blind holes (short thread depth only) - Materials where chips come out in powder form - Hard materials

Thread Milling by CNC Simultaneous Three-Axis Control

The OSG Thread Milling Cutter are designed for thread milling with 3 axis CNC controlled machines.Thread processing is accomplished by advancing one pitch feed per revolution in the axial direction, utilizing planet-like rotation and revolution.

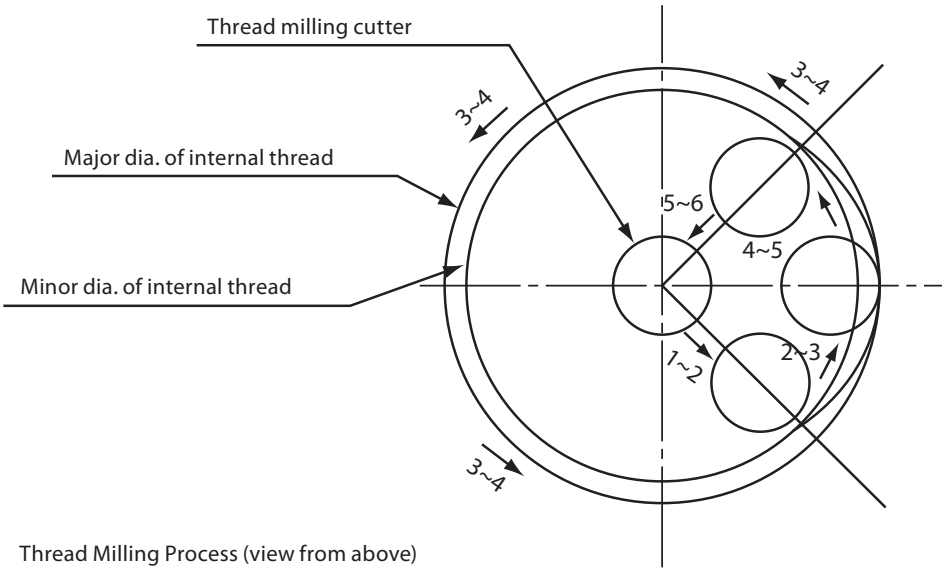




Threading Process

1-2 Move to edge (maintain clearance)
2-3 Cut with helical milling
3-4 Mill the circumference of the circle
4-5 Pull away from the edge
5-6 Remove tool

The transition between the start and finish of the milling operation must be smooth and the appropriate amount of feed is essential for
minimizing milling resistance. There are many different methods for using this tool, but our research has shown that this technique provides the most precise and efficient operation.



Thread Milling Process (view from above)

Tap and Screw Thread Nomenclature

Allowance: The minimum clearance or maximum interference which is intended between mating parts.

Angle of Thread: The angle included between the flanks of a thread measured in an axial plane.

Back Taper: A slight taper on the threaded portion of the tap, making the pitch diameter near the shank smaller than that at the chamfer.

Basic: The theoretical or nominal standard size from which all variations are made.

Chamfer: The tapered and relieved cutting teeth at the front end of the threaded section. Common types of chamfer are taper, 8 to 10 threads long, plug, 3 to 5 threads, semi (or modified) bottom = 2.5 - 3 threads and bottoming, 1-1/2 threads.

Crest: The top surface joining the two sides or flanks of a thread.

Cutting Face: The leading side of the land.

Flute: The longitudinal channels formed on a tap to create cutting edges on the thread profile.

Heel: The following side of the land.

Height of Thread: In profile, distance between crest and bottom section of thread measured to the axis.

Hook Face: A concave cutting face of the land. This may be varied for different materials and conditions.

Interrupted Thread: Alternate teeth are removed in the thread helix on a tap having an odd number of flutes.

Land: Threaded sections between the flutes of a tap.

Lead of Thread: The distance a screw thread advances axially in one turn.

Major Diameter: The largest diameter of the screw or nut on a straight screw thread.

Minor Diameter: The smallest diameter of the screw or nut on a straight screw thread.

Neck: The reduced diameter, on some taps, between the threaded portion and the shank.

Pitch: The distance from a point on one thread to a corresponding point on the next thread, measured parallel to the axis.

Pitch Diameter: On a straight screw thread, the diameter of an imaginary cylinder where the width of the thread and the width of the space between threads is equal.

Point Diameter: The diameter at the leading end of the chamfered portion.

Radial: The straight face of a land, the plane of which passes through the axis of the tap.

Rake: The angle of the cutting face of the land in relation to an axial plane intersecting the cutting face at the major diameter.

Relief: The removal of metal behind the cutting edge to provide clearance between the part being threaded and a portion of the threaded land. Also, see back taper.

Chamfer Relief: The gradual decrease in land height from cutting edge to heel on the chamfered portion of the tap land to provide radial clearance for the cutting edge.

Con-eccentric Relief: Radial relief in the thread form starting back of a concentric margin.

Eccentric Thread Relief: Radial relief in the thread form starting at the cutting edge and continuing to the heel.

Root: The bottom surface joining the flanks of two adjacent threads.
Side or Flank Thread: The surface of the thread which connects the crest to the root.

Shank: The portion of the tap by which it is held.

Spiral Point: An oblique cutting edge ground into the lands to provide a shear cutting action on the first few threads.

Square: The squared end of the tap shank by which the tap is driven.

Thread: The helical formed portion of the tap which produces the pitch in a pre-existing hole.

Thread Lead Angle: The angle made by the helix of the thread at the pitch diameter, with a plane perpendicular to the axis.

Threads per Inch: The number of threads in one inch of length.

Thread:

Single: A thread in which lead is equal to pitch.

Double: A thread in which lead is equal to twice the pitch.

Triple: A thread in which lead is equal to triple the pitch.

Surface Treatments

Generally, a tap properly designed and used under ideal conditions will produce surface results without the use of superficial treatments. However, under certain conditions and types of materials, additional tap life, improvement in finish and better gaging will be noted through the use of surface treatments applied to the finished tap.

The treatments applied can be divided into two groups: those that penetrate the surface, and those that are applied to the external surface itself.

The second group covers a wider range of choices including external treatments such as TiN, TiCN, TiAlN and oxide finishes.

Steam Oxide:
A black oxided surface (Fe_3O_4) produced on the surface of a finished tap by means of a steam furnace. This oxidized surface is porous and helps retain cutting fluid in the working portion of the tap. The materials on which steam oxide has shown improvement in performance are stainless steels, steel forgings, tool and die steels, hot and cold rolled steels, and high nickel alloys.

Nitride:
A hard superficial case, approximately 69 HRC, on the surface of a finished tap produced by means of an ion furnace. The advantages of a Nitride surface treatment is the increase in wear resistance due to the higher surface hardness. This surface treatment is very effective in both abrasive and tough materials such as cast iron, plastics and high silicon cast aluminum.
Note: Extra caution is needed when selecting a Nitride surface treatment because the increased hardness is not recommended for fast spiral flute taps and taps smaller than machine screw No. 2.

Titanium Nitride (TiN):
A thin deposit (approx. 0.0001") applied to the surface of a finished tap utilizing PVD coating technology. TiN coating increases the surface hardness and wear resistance. Use of TiN coating on standard tools will help increase tool life in harder materials (up to 32 HRC), such as stainless steels, steel forgings, tool and die steels and hot and cold rolled steels. TiN coating also works very well with water-base cutting fluids.

Titanium Carbon Nitride (TiCN):
Similar to TiN, TiCN is applied utilizing PVD coating technology. This coating combines high hardness (approx. 2800 vickers) with the anti-seizure properties of Nitride. A lower coefficient of friction helps reduce welding by 75% over TiN coated tools. These features make TiCN especially beneficial in non-ferrous material and hardened steels. OSG's special TiCN coating is incorporated into many of our stocked items.

Titanium Aluminum Nitride (TiAlN):
TiAlN is applied using PVD coating technology. The addition of aluminum reduces friction and increases the coating oxidation temperature. As a result, TiAlN has increased resistance to heat and oxidation wear. This makes TiAlN better suited for High Speed/ High Heat applications. OSG's special TiAlN coating is incorporated into many of our tools.

Chrome Nitride (CrN):
An extremely high surface lubricity makes CrN the proper selection of coating for non-ferrous materials. Aluminum (6061, 7075, etc.) and copper alloys (bronze, brass, etc.) are notorious for their tendency to adhere to the tool when heat is generated. This coating negates the effects of heat by reducing the amount of friction caused when these materials are being machined, while adding increased hardness.

Diamond:
OSG's patented Ultra-Fine diamond coating is grown on the tools at our laboratories. It is ideal for materials such as graphite, aluminum, and copper alloys. Commonly mistaken for a "Diamond-like" coating because of its shiny and smooth surface, this tool promotes finer surface finishes versus the competition's diamond coating and exponentially more tool life than that of PVD coated tools. Special processes enable high adherence to the tool and prevent it from flaking off. Diamond is not intended to cut steel.

Guide to Tap Drill Sizes Recommended Drill Sizes for Tapping

M

According to DIN 13 and DIN-ISO 965-1

Dia	P	
M 1	0,25	0,75
M 1,1	0,25	0,85
M 1,2	0,25	0,95
M 1,4	0,3	1,10
M 1,6	0,35	1,25
M 1,7	0,35	1,35
M 1,8	0,35	1,45
M 2	0,4	1,60
M 2,2	0,45	1,75
M 2,3	0,4	1,90
M 2,5	0,45	2,05
M 2,6	0,45	2,15
M 3	0,5	2,50
M 3,5	0,6	2,90
M 4	0,7	3,30
M 4,5	0,75	3,70
M 5	0,8	4,20
M 6	1	5,00
M 7	1	6,00
M 8	1,25	6,80
M 9	1,25	7,80
M 10	1,5	8,50
M 11	1,5	9,50
M 12	1,75	10,20
M 14	2	12,00
M 16	2	14,00
M 18	2,5	15,50
M 20	2,5	17,50
M 22	2,5	19,50
M 24	3	21,00
M 27	3	24,00
M 30	3,5	26,50
M 33	3,5	29,50
M 36	4	32,00
M 39	4	35,00
M 42	4,5	37,50
M 45	4,5	40,50
M 48	5	43,00
M 52	5	47,00
M 56	5,5	50,50
M 60	5,5	54,50
M 64	6	58,00
M 68	6	62,00

MF

According to DIN 13 and DIN-ISO 965-1

Dia	P	
M 2	0,25	1,75
M 2,2	0,25	1,95
M 2,3	0,25	2,05
M 2,5	0,35	2,15
M 3	0,25	2,75
M 3	0,35	2,65
M 3,5	0,35	3,15
M 4	0,35	3,65
M 4	0,5	3,50
M 4,5	0,5	4,00
M 5	0,35	4,65
M 5	0,5	4,50
M 5	0,75	4,20
M 6	0,5	5,50
M 6	0,75	5,25
M 7	0,5	6,50
M 7	0,75	6,25
M 8	0,5	7,50
M 8	0,75	7,25
M 8	1	7,00
M 9	0,75	8,25
M 9	1	8,00
M 10	0,5	9,50
M 10	0,75	9,25
M 10	1	9,00
M 10	1,25	8,75
M 11	1	10,00
M 12	0,5	11,50
M 12	1	11,00
M 12	1,25	10,75
M 12	1,5	10,50
M 13	1	12,00
M 14	0,75	13,20
M 14	1	13,00
M 14	1,25	12,75
M 14	1,5	12,50
M 15	1	14,00
M 15	1,5	13,50
M 16	0,75	15,20
M 16	1	15,00
M 16	1,25	14,80
M 16	1,5	14,50
M 17	1	16,00
M 18	1	17,00
M 18	1,5	16,50
M 18	2	16,00
M 20	1	19,00
M 20	1,5	18,50
M 20	2	18,00
M 22	1	21,00
M 22	1,5	20,50

MF

According to DIN 13 and DIN-ISO 965-1

Dia	P	
M 22	2	20,00
M 24	1,5	22,50
M 24	2	22,00
M 25	1	23,00
M 25	1,5	23,50
M 26	1,5	24,50
M 27	1	26,00
M 27	1,5	25,50
M 27	2	25,00
M 28	1,5	26,50
M 28	2	26,00
M 30	1	29,00
M 30	1,5	28,50
M 30	2	28,00
M 32	1,5	30,50
M 32	2	30,00
M 33	1,5	31,50
M 33	2	31,00
M 34	1,5	32,50
M 35	1,5	33,50
M 36	1,5	34,50
M 36	2	34,00
M 36	3	33,00
M 38	1,5	36,50
M 39	1,5	37,50
M 39	2	37,00
M 39	3	36,00
M 40	1,5	38,50
M 40	2	38,00
M 40	3	37,00
M 42	1,5	40,50
M 42	2	40,00
M 42	3	39,00
M 45	1,5	43,50
M 45	2	43,00
M 45	3	42,00
M 48	1,5	46,50
M 48	2	46,00
M 48	3	45,00
M 50	1,5	48,50
M 50	2	48,00
M 50	3	47,00
M 52	1,5	50,50
M 52	2	50,00
M 52	3	49,00
M 56	1,5	54,50
M 56	2	54,00
M 56	3	53,00
M 58	1,5	56,50
M 60	1,5	66,50
M 60	2	58,00
M 60	3	57,00

MJ

According to DIN-ISO 5855

Dia	P	
MJ 3	0,5	2,60
MJ 4	0,7	3,40
MJ 5	0,8	4,30
MJ 6	1	5,10
MJ 8	1,25	6,90
MJ 10	1,5	8,70
MJ 12	1,75	10,50
MJ 16	2	14,30

Guide to Tap Drill Sizes Recommended Drill Sizes for Tapping

UN

According to ASME B 1.1

Dia	P	
1 ⅛	8	25,40
1 ¼	8	28,50
1 ⅜	8	32,00
1 ½	8	35,00
1 ⅝	8	38,10
1 ¾	8	41,50
1 ⅞	8	44,45
2	8	48,00
2 ¼	8	54,00

UNC

According to ASME B 1.1

Dia	P	
Nr. 1	64	1,55
Nr. 2	56	1,85
Nr. 3	48	2,00
Nr. 4	40	2,35
Nr. 5	40	2,65
Nr. 6	32	2,70
Nr. 8	32	3,50
Nr. 10	24	3,80
Nr. 12	24	4,50
¼	20	5,10
5⁄16	18	6,50
⅜	16	7,90
7⁄16	14	9,30
½	13	10,70
9⁄16	12	12,30
⅝	11	13,50
¾	10	16,50
⅞	9	19,30
1	8	22,25
1 ⅛	7	25,00
1 ¼	7	28,00
1 ½	6	34,00
1 ¾	5	39,50
2	4,5	45,00

UNJC

According to ASME B 1.1 and ISO 3161

Dia	P	
Nr. 1	64	1,50
Nr. 2	56	1,80
Nr. 3	48	2,05
Nr. 4	40	2,30
Nr. 5	40	2,65
Nr. 6	32	2,80
Nr. 8	32	3,50
Nr. 10	24	3,90
Nr. 12	24	4,60
¼	20	5,20
5⁄16	18	6,70
⅜	16	8,10
7⁄16	14	9,50
½	13	10,90
9⁄16	12	12,30
⅝	11	13,70
¾	10	16,75

UNF

According to ASME B 1.1

Dia	P	
Nr. 0	80	1,25
Nr. 1	72	1,55
Nr. 2	64	1,85
Nr. 3	56	2,15
Nr. 4	48	2,40
Nr. 5	44	2,60
Nr. 6	40	2,95
Nr. 8	36	3,50
Nr. 10	32	4,00
Nr. 12	28	4,60
¼	28	5,40
5⁄16	24	6,90
⅜	24	8,40
7⁄16	20	9,90
½	20	11,50
9⁄16	18	13,00
⅝	18	14,50
¾	16	17,40
⅞	14	20,40
1	12	23,25
1 ⅛	12	26,50
1 ¼	12	29,75
1 ⅜	12	33,00
1 ½	12	36,00

UNJF

According to ASME B1.15 and ISO 3161

Dia	P	
Nr, 0	80	1,25
Nr, 1	72	1,55
Nr. 2	64	1,85
Nr. 3	56	2,10
Nr. 4	48	2,40
Nr. 5	44	2,70
Nr. 6	40	2,95
Nr. 8	36	3,60
Nr. 10	32	4,15
Nr. 12	28	4,70
¼	28	5,60
5⁄16	24	7,00
⅜	24	8,60
7⁄16	20	10,00
½	20	11,50
9⁄16	18	13,00
⅝	18	14,50

UNEF

According to ASME B 1.1

Dia	P	
¼	32	5,55
5⁄16	32	7,20
⅜	32	8,80
7⁄16	28	10,20
½	28	11,80
9⁄16	24	13,20
⅝	24	14,80

NPT

According to ASME B1.20.1 taper 1:16

Dia	P				
		D	D2	D3	Depth
1⁄16	27	6,15	5,95	6,39	10,70
⅛	27	8,40	8,31	8,74	10,80
¼	18	11,10	10,73	11,36	15,60
⅜	18	14,30	14,15	14,80	16,00
½	14	17,90	17,47	19,32	20,80
¾	14	23,30	22,79	23,67	21,30
1	11 ½	29,00	28,64	29,69	25,60
1 ¼	11 ½	37,70	37,37	38,45	26,10
1 ½	11 ½	43,70	43,44	44,52	26,10
2	11 ½	55,60	55,45	56,56	26,50
2 ½	8	66,30	66,14	67,62	36,30
3	8	82,30	81,90	83,52	38,50

Guide to Tap Drill Sizes Recommended Drill Sizes for Tapping

Pg

According to DIN 40430

Dia	P	
7	20	11,40
9	18	14,00
11	18	17,25
13,5	18	19,00
16	18	21,25
21	16	27,00
29	16	35,50
36	16	45,50
42	16	52,50
48	16	58,00

Tr

According to ISO

Dia	P	
8	1,5	6,60
9	2	7,20
10	2	8,20
11	3	8,25
12	3	9,25
14	3	11,25
16	4	12,25
18	4	14,25
20	4	16,25
22	5	17,25
24	5	19,25
26	5	21,25
28	5	23,25
30	6	24,25
32	6	26,25
34	6	28,25
36	6	30,25
38	7	31,50
40	7	33,50
42	7	35,50
44	7	37,50
46	8	38,50
48	8	40,50
50	8	42,50

G

According to DIN EN ISO 228

Dia	P	
1/16	28	6,80
1/8	28	8,70
1/4	19	11,80
3/8	19	15,25
1/2	14	19,00
5/8	14	21,00
3/4	14	24,50
7/8	14	28,25
1	11	30,75
1 1/8	11	35,50
1 1/4	11	39,50
1 3/8	11	41,90
1 1/2	11	45,25
1 3/4	11	51,00
2	11	57,00
2 1/4	11	63,00
2 1/2	11	72,60
3	11	85,00

BSW

According to BS 84

Dia	P	
1/16	60	1,20
3/32	48	1,90
1/8	40	2,50
5/32	32	3,10
3/16	24	3,60
7/32	24	4,50
1/4	20	5,00
5/16	18	6,50
3/8	16	7,90
7/16	14	9,20
1/2	12	10,50
9/16	12	12,00
5/8	11	13,40
3/4	10	16,40
7/8	9	19,25
1	8	22,00
1 1/8	7	24,75
1 1/4	7	27,50
1 3/8	6	30,00
1 1/2	6	33,50
1 5/8	5	35,50
1 3/4	5	39,00
1 7/8	4 1/2	41,50
2	4 1/2	44,50

BSF

According to BS 84

Dia	P	
3/16	32	4,00
7/32	28	4,60
1/4	26	5,30
5/16	22	6,80
3/8	20	8,30
7/16	18	9,70
1/2	16	11,00
9/16	16	12,70
5/8	14	14,00
3/4	12	16,80
7/8	12	19,80
1	10	22,70
1 1/8	9	25,50
1 1/4	9	28,50
1 3/8	8	31,50
1 1/2	8	34,50
1 5/8	8	38,00

Rp

According to DIN EN 10226-2

Dia	P	
1/16	28	6,55
1/8	28	8,60
1/4	19	11,50
3/8	19	15,00
1/2	14	18,50
5/8	14	20,50
3/4	14	24,00
1	11	30,25
1 1/4	11	39,00
1 1/2	11	45,00
2	11	56,50
2 1/2	11	72,20
3	11	85,00

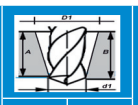
BA

According to BS 949 part 2

Dia	P	
0	1	5,00
1	0,9	4,40
2	0,81	3,90
3	0,73	3,40
4	0,66	3,00
5	0,59	2,60
6	0,53	2,30
7	0,48	2,00
8	0,43	1,80
9	0,39	1,50
10	0,35	1,30
11	0,31	1,20
12	0,28	1,00
13	0,25	0,95
14	0,23	0,75

Rc

According to DIN EN 10226-2 taper 1/16

Dia	P			A	B min
		d1	D1		
1/16	28	6,30	6,49	8,31	10,00
1/8	28	8,30	8,50	8,31	10,10
1/4	19	11,00	11,35	12,37	15,00
3/8	19	14,50	14,85	12,77	15,40
1/2	14	18,10	18,49	16,83	20,50
3/4	14	23,50	23,98	18,13	21,80
1	11	29,60	30,11	21,42	26,00
1 1/4	11	38,10	38,78	23,72	28,30
1 1/2	11	44,00	44,67	23,72	28,30
2	11	55,60	56,48	28,02	32,60
2 1/2	11	71,10	72,00	31,32	37,10
3	11	83,60	84,71	34,42	40,20

Guide to Tap Drill Sizes Recommended Drill Sizes for Fluteless Taps

M

According to DIN 13 and DIN-ISO 965-1

Dia	P	 6 HX		6 GX		7 GX	
		Min.	Max.	Min.	Max.	Min.	Max.
1	0,25	0,87	0,89	-	-	-	-
1,2	0,25	1,07	1,09	-	-	-	-
1,4	0,3	1,244	1,263	-	-	-	-
2	0,4	1,82	1,84	1,85	1,88	-	-
2,2	0,45	2,01	2,04	2,02	2,06	-	-
2,5	0,45	2,31	2,34	2,32	2,36	-	-
3	0,5	2,77	2,81	2,79	2,84	2,81	2,85
3,5	0,6	3,23	3,27	3,24	3,30	-	-
4	0,7	3,66	3,72	3,69	3,73	3,71	3,77
5	0,8	4,61	4,68	4,65	4,71	4,66	4,73
6	1	5,51	5,59	5,55	5,63	5,56	5,64
8	1,25	7,37	7,55	7,40	7,47	7,42	7,50
10	1,5	9,24	9,33	9,26	9,35	9,30	9,39
12	1,75	11,10	11,20	11,14	11,24	11,17	11,28
14	2	12,96	13,08	13,00	13,12	13,04	13,16
16	2	14,96	15,08	15,00	15,12	15,04	15,16
18	2,5	16,66	16,81				
20	2,5	18,66	18,81				
22	2,5	20,66	20,81				
24	3	22,39	22,56				
27	3	25,39	25,56				
30	3,5	28,09	28,28				
33	3,5	31,09	31,28				
36	4	33,80	34,01				
39	4	36,80	37,01				
42	4,5	39,52	39,73				
45	4,5	42,52	42,73				

MF

According to DIN 13 and DIN-ISO 965-1

Dia	P	 6 HX	
		Min.	Max.
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
8	1	7,50	7,56
10	1	9,50	9,56
10	1,25	9,35	9,43
12	1	11,50	11,56
12	1,25	11,35	11,43
12	1,5	11,21	11,30
14	1,5	13,25	13,34
16	1,5	15,25	15,34
18	1,5	17,25	17,34
20	1,5	19,25	19,34

Guide to Tap Drill Sizes Recommended Drill Sizes for Wire Insert Taps

EG M

According to DIN 8140

Dia	P	
2	0,4	2,10
2,5	0,45	2,60
3	0,5	3,10
4	0,7	4,20
5	0,8	5,20
6	1	6,30
8	1,25	8,40
10	1,5	10,50

EG UNC

Dia	P	
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
Nr. 4	40	3,00
Nr. 6	32	3,70
Nr. 8	32	4,40

EG UNF

Dia	P	
-	-	-
-	-	-
Nr. 10	32	5,00
¼	28	6,60
5⁄16	24	8,20
⅜	24	9,80
7⁄16	20	11,50
½	20	13,10

Trouble Shooting for Tapping

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Oversize Pitch Diameter	**Incorrect Tap**	1. Use proper pitch diameter limits of taps. 2. Use longer chamfered taps.
	Chip Packing	1. Use spiral point or spiral fluted taps. 2. Reduce number of flutes to provide extra chip room. 3. Use larger hole size. 4. If tapping a blind hole, allow deeper holes where applicable or shorten the thread length of the parts. 5. Use proper lubricant.
	Galling	1. Apply proper surface treatment such as steam oxide or TiN. 2. Use proper cutting lubricant. 3. Reduce tapping speed. 4. Use proper cutting angle in accordance with material being tapped. 5. Use larger hole size.
	Operating Conditions	1. Apply proper tapping speed. 2. Correct alignment of tap and drilled hole. 3. Use proper tapping speed to avoid torn or rough threads. 4. Use lead screw tapper. 5. Use proper tapping machine with suitable power. 6. Avoid misalignment of the tap and drilled hole from loose spindle or worn holder.
	Tool Conditions	1. Obtain proper indexing angle for the flutes at the cutting edge. 2. Grind proper cutting angle and chamfer angle. 3. Avoid too narrow a land width. 4. Remove burrs from regrinding.
Oversize Internal Diameter	**Hole Size**	1. Use minimum hole size. 2. Avoid tapered hole. 3. Use proper chamfered taps.
	Galling	Galling solutions 1 through 4 under “Tool Conditions” can be applied to this specific problem.

Trouble Shooting for Tapping

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Undersize Pitch Diameter	**Incorrect Tap**	1. Use oversize taps: a. Use for cutting materials such as copper alloy, aluminum alloy, and cast iron. b. Use for cutting tubing which will have "spring back" action after tapping. 2. Apply proper chamfer angle. 3. Increase cutting angle.
	Damaged Thread	Use proper reversing speed to avoid damaging tapped thread on the way out of the hole.
	Left-over Chips	1. Increase cutting performance to avoid any left over chips in the hole. 2. Remove left over chips from the hole for gage checking.
Undersize Internal Diameter	**Hole Size**	Use maximum drill size.

Tool Life		
Specific Problem	**Cause**	**Solution**
Undersize Pitch Diameter	**Chamfer Too Short**	Increase chamfer length.
	Wrong Cutting Angle	Apply proper cutting angle.
	Galling	1. Use thread relieved taps. 2. Reduce land width. 3. Apply surface treatment such as steam oxide or TiN. 4. Use proper cutting lubricant. 5. Reduce tapping speed. 6. Use larger hole size. 7. Obtain proper alignment between tap and work.
	Chip Packing	1. Use spiral pointed or spiral fluted taps. 2. Use larger drill size.
Chattering on Tapped Thread	**Tool Free Cutting**	1. Reduce cutting angle. 2. Reduce amount of thread relief.
Undersize Internal Diameter	**Hole Size**	1. Avoid too narrow a land. 2. Do not grind the bottom of the flute.

Trouble Shooting for Tapping

Tool Life		
Specific Problem	**Cause**	**Solution**
Breakage	**Incorrect Tap Selection**	1. Avoid chip packing in the flutes or the bottom of the hole. Use spiral pointed or spiral fluted taps or fluteless taps. 2. Apply correct surface treatment such as steam oxide or TiN.
	Excessive Tapping Torque	1. Use larger drill size. 2. Try to shorten thread length. 3. Increase cutting angle. 4. Use a tap with more thread relief and reduced land width. 5. Use spiral pointed or spiral fluted taps.
	Operating Conditions	1. Reduce tapping speed. 2. Avoid misalignment between tap and the hole and tapered hole. 3. Use floating type of tapping holder. 4. Use tapping holder with torque adjustment. 5. Avoid hitting bottom of the hole with tap.
	Tool Condition	1. Do not grind the bottom of the flute. 2. Avoid too narrow a land width. 3. Remove all worn sections when regrinding the flutes. 4. Regrind tool more frequently.
Chipping	**Incorrect Tap Selection**	1. Reduce cutting angle. 2. Use a different kind of high-speed steel tap. 3. Reduce hardness of the tap. 4. Increase chamfer length. 5. Avoid chip packing in the flutes or in the bottom of the hole by using spiral fluted or spiral pointed taps.
	Operating Conditions	1. Reduce tapping speed. 2. Avoid misalignment between tap and hole. 3. Avoid sudden return of reverse in blind hole tapping. 4. Avoid galling. 5. Use large hole size.
Wear	**Incorrect Tap Selection**	1. Use specially designed taps for tapping heat treated material. 2. Change to a type of high-speed steel tap that contains vanadium. 3. Apply special surface treatment such as steam oxide or TiN. 4. Increase chamfer length.
	Operating Conditions	1. Reduce tapping speed. 2. Apply proper cutting lubricants. 3. Avoid work hardening. 4. Use larger hole size.
	Tool Condition	1. Grind proper cutting angle. 2. Avoid hardness reduction from grinding process.

Drills Informations

An Entirely New Drill for Production Applications (EX-GOLD Drills)
A. Special Features

- There is no chisel edge in the center part of the drill. This provides a better biting action and reduces thrust requirements. This is according to the radius point thinning Hosoi Theory (patented).
- Reduced production time is achieved through higher feeds and speeds. Unlike conventional drills, chips are broken into small pieces so there is no need for step-drilling.
- Premium grade cobalt high speed steel is coated with titanium nitride to reduce tool wear and chip weld. A thick web provides the rigidity to reduce tool flex and hold tighter tolerances for precision holes.
- The unique tool point design also eliminates center drilling or the use of a punched center.
- Shank sizes are the same as end mill shanks so existing end mill chucks, collets, and holders can be used.
- For sizes under .1535 inches, special OSG designed gash thinning is used in the center section.
- Designed for use with CNC machines and available in both jobber and stub lengths, OSG drills feature a patented tool point, advanced flute geometry, premium steel machined to CNC tolerances, standardized shank diameters and a superior titanium nitride coating. This results in faster speeds and feeds, higher accuracy, and longer tool life. In addition, greater tool rigidity gives you surface finishes that eliminate secondary reaming operations in many cases.

Illustration 1: Nomenclature

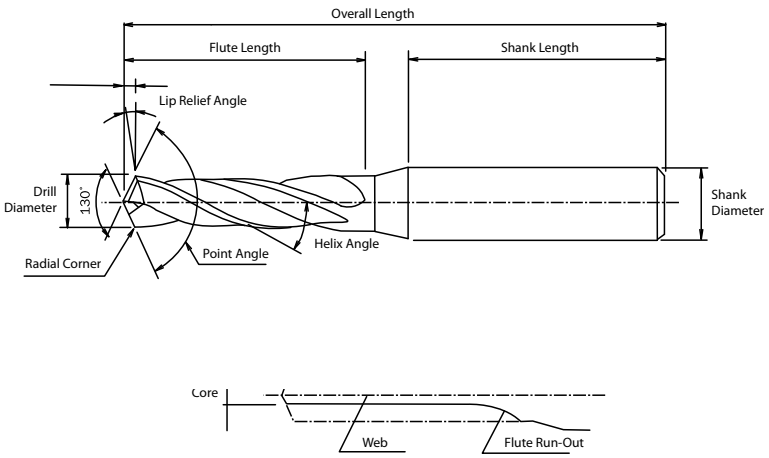


Illustration 2 OSG Drill

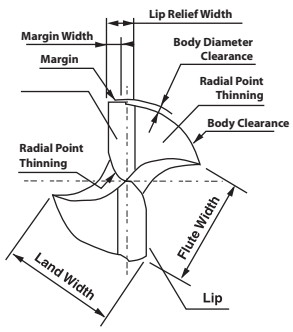
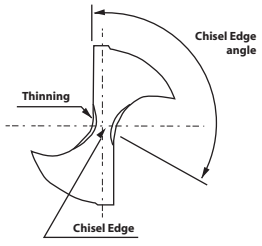


Illustration 3 Conventional Drill

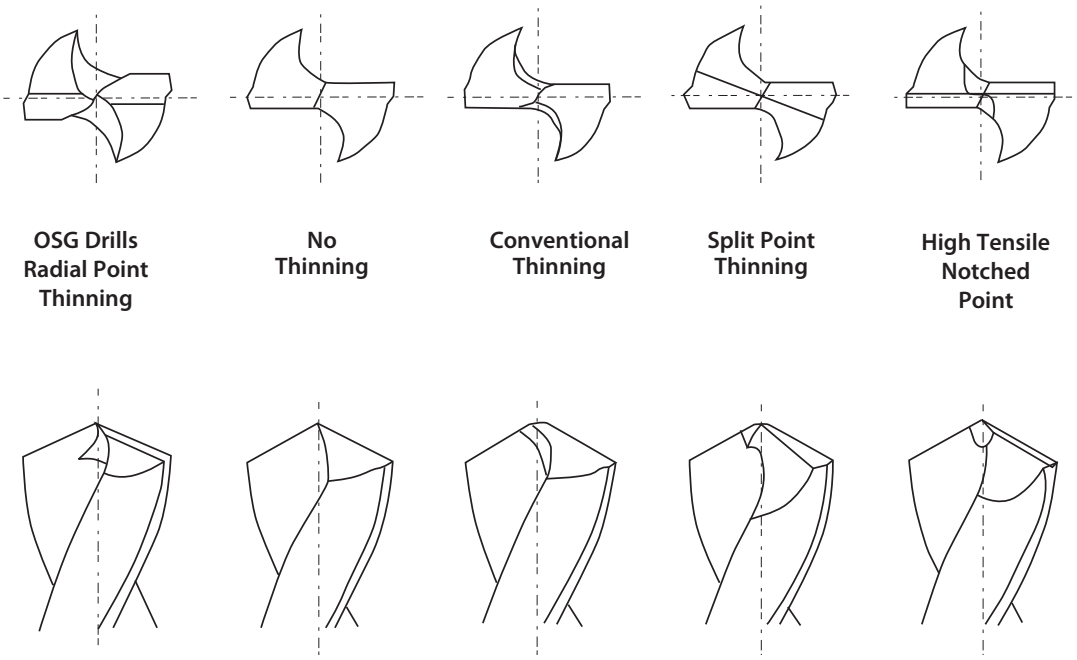


Drills Informations

B. OSG Drill Characteristics
1. Unique Point Design

With OSG drills, the chisel edge in the center section of a conventional drill is eliminated. Instead, there is a radius cutting edge. This provides a better biting action than a conventional drill, where the chisel edge is easily crushed against the harder to drill material.
OSG drills have a chip pocket for smooth chip action along the radius cutting edge. Also, the point angle is 130˚ instead of the conventional 118˚. This creates small broken chips rather than the long, stringy chips created by a conventional drill.

Illustration 4 Point Thinning



OSG Drills Radial Point Thinning | **No Thinning** | **Conventional Thinning** | **Split Point Thinning** | **High Tensile Notched Point**

Cutting Conditions

Cutting Conditions	
$N = \frac{1{,}000V}{\pi Dc}$ $V = \frac{\pi Dc N}{1.000}$ $F = f \cdot N$	V : **Cutting Speed** (m/min) F : **Feed/min.** (m/min) Dc : **Drill Dia.** (mm) N : **Speed** (min-1) π : **The ratio of the circumference of a circle** f : **Feed rate/rev.** (mm/rev)

For excellent results, it is best to follow established criterion for maximizing tool efficiency. Feed per table, expressed as F (mm/min) shows the drills' cutting efficiency. Although the spindle speed significantly influences the life of HSS drills, feed rate does not. Therefore, increasing feed rate will help improve cutting efficiency. However, if feed rate is too high, chips may end up being too thick. Users should be careful to find the appropriate feed rate for their particular operation.

The range of appropriate feed rates for carbide alloy drills is smaller than that of HSS drills because carbide alloy drills have negative chamfered cutting edge. If a feed rate outside the recommended range is used, tool life declines considerably. Carbide alloy drills, however, have higher heat resistance than HSS tools. Also, cutting efficiency can be improved by using a higher cutting speed (i.e. increasing the number of revolutions per minute).

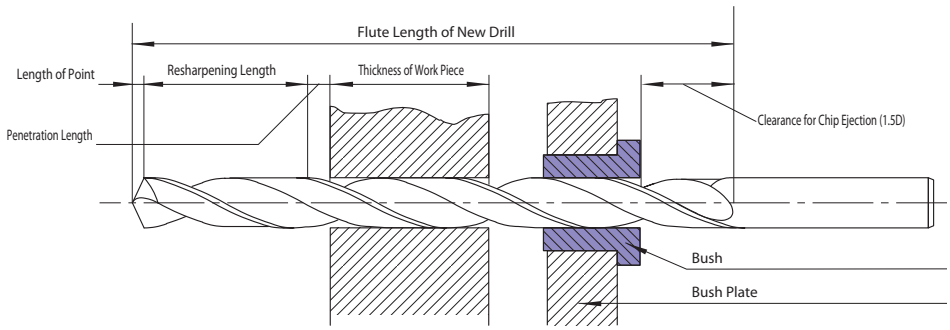
Flute Length

Similar to cutting speed, feed and cutting fluid, flute length is a critical determinant of tool life. Considering drilling depth, bush and resharpening requirements, flute length should usually be as short as possible. Unnecessarily long flute length can cause instability because of lower rigidity and possible twisting or/and deflection (depending on the holder). For most operations, suitable flute length can be calculated by using the following formula.

Depth of Hole* + 1.5×Dc + Resharpening Length + Penetration Length**

*(Includes bush length and distance between bush and work piece.)

**(D = Drill Diameter)



Recommended Cutting luid Selection Table-Based on Work Material

Tool	Coated HSS Drill						Coated Carbide Drill			Coated Carbide Drill			Diamond Coated Carbide Drill					
Type of Supply	Wet				Dry		Wet			Wet	Dry		Wet				Dry	
Type of Cutting Fluid	Non Water Soluble	Water Soluble			Dry	Semi Dry	Non Water Soluble	Water Soluble		Water Soluble	Dry	Semi Dry	Non Water Soluble	Water Soluble			Dry	Semi Dry
Work Material	JIS N (JIS N)	JIS A1 Emulsion (JIS A-1)	JIS A2 Soluble (JIS A-2)	JIS A3 Solution (JIS A-3)	Air Blow	Mist	JIS N (JIS N)	JIS A1 Emulsion (JIS A-1)	JIS A2 Soluble (JIS A-2)	JIS A3 Solution (JIS A-3)	Air Blow	Mist	JIS N (JIS N)	JIS A1 Emulsion (JIS A-1)	JIS A2 Soluble (JIS A-2)	JIS A3 Solution (JIS A-3)	Air Blow	Mist
Carbon Steel		○			○	○		○			○	○		×	×	×	×	×
Cast Iron		○	○		○	○		○	○		○	○					×	×
High Hardened Steel		○				○		○				○		×	×	×	×	×
Stainless Steel		○			×	○		○						×	×	×	×	×
Titanium Alloy		○			×			○			×			×	×	×	×	×
Heat Resistant Alloy (ex. Inconel®)		○			×			○						×	×	×	×	×
Aluminum Alloy		○	○					○	○					○	○		×	○
Copper	○						○				×		○				×	○

Drilling Difficult to Machine Materials

Certain materials have special characteristics (listed below), that make drilling difficult. In order to successfully drill these materials, it is critical to use proper cutting conditions based on information about the material and the tool, and to understand how variations of these characteristics can influence the final outcome.

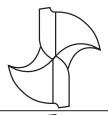
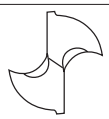
Characteristics of Difficult to Machine Materials

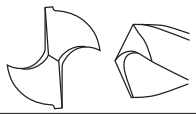
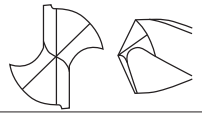
Characteristics	Effect(s)
1. High hardness	Chipping of the cutting edge
2. High tensile strength	Tool wear
3. Low heat conductivity	High temperature at cutting edge
4. High work hardening	High thrust force and torque
5. Contains hardened grain	Chip trouble (discharging, shape)
6. High ductility	Bad surface finish
7. High affinity	

Machining Recommendations for Difficult to Machine Materials

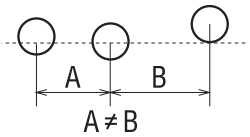
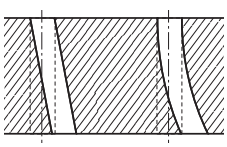
Work Material	Characteristics	Machining Recommendations	Recommended drills	
Austenitic Stainless Steel SUS304-SUS316	• High work hardening • High tensile strength at high temperatures • Low heat conductivity • High ductility. Easy to get build up at the edge. => chipping	• Use tough drill material with sharp cutting edge and coating • High feed rate • High coolant supply	WDO-3D WDO-5D EX-SUS-GDS EX-SUS-GDR	WDO-3D NEXUS-GDS NEXUS-GDR EX-SUS-GDN VP-HO-GDR
Die Steel SKD11	• Made of hard carbide grain (under 0.4%C =>carbide grain is melted)	• Use high rigid HSS coated tools • Use lower cutting speed and higher feed rate	WD-2D WDO-3D	WDO-3D WD-4D WDO-5D VPH-GDS
High Manganese Steel SCMnH	• High tensile strength and high toughness High work hardening	• Use rigid tools, machine and work clamping device		VPH-GDS
Titanium Alloy Ti-6AI-4V	• High tensile strength per Lower case • Low heat conductivity • Chemically active High affinity with tools	• Use sufficient coolant and low cutting speed to maintain low cutting temperature.	EX-SUS-GDS	WDO-3D WDO-5D VP-HO-GDR
Heat Resistant Alloy Inconel-Hastelloy	• High hardness • High work hardening Tough Diifficult to machine	• Improve rigidity of tools and machines • Use an Stub Drill with coating and rigidity	WD-2D VPH-GDS	WDO-3D WD-4D WDO-5D
High Hardened Quenched and Tempered Steels	• High hardness High shearing stress High cutting resistance	• Use a drill made from high hardened and rigid materialif the work material is over 45 HRC, use a carbide drill.	WD-2D	VPH-GDS WDO-15D/20D/30D
High Silicon Aluminum Alloy AC9A-A390	• High hardened grain causes large wear on tools	• Use a drill made from high hardened material • Provide sufficient coolant supply	D-GDN	
Kovar Fe-Ni-Co	• Low thermal Expansion material • Tend to Build-up, but easy to machine	• Use high helix and sharp edge drill	WX-MS-GDS EX-SUS-GDS EX-SUS-GDR	NEXUS-GDS NEXUS-GDR
Co-Cr Alloy	• Better anti-rust, Better rigidity • Harmonize with organism	• Easy to break chips, but recommended to use better drill on wear resistance	WDO-3D WD-4D	WDO-3D WDO-5D
Composite CFRP - GFRP	• Tough fiber causes extrame wear • Tend to have naps and peel off	• Use sharp and wear resistant tools • Design the tool to prevent naps and peeling	D-STAD	

Thinning

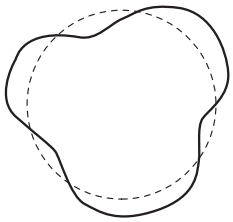
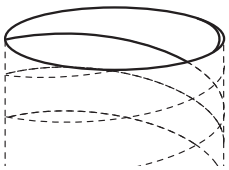
Type	Design	Characteristics and Applications
R Thinning		• For heavy drilling • Good chamfering • Creates small chips • Reduces thrust force
X Thinning		• Good chamfering • For drills with large web diameter • Reduces thrust force
N Thinning		• For drills with small web diameter and/or with small point angle • Large chip pocket • High strength at the point
S Thinning		• For drills with small web diameter and/or with small point angle • High strength at the point • Easy to regrind

Type	Design	Characteristics and Applications
W+R W Thinning, W + R Thinning	 	• For heavy drilling • Prevents chipping on cutting edge • For high hardened materials • Prevents chipping that can xoccus when drilling in high hardened steel materials • High strength on the cutting edge • Reduces thrust force
Three-rake Thinning		• Accurate at cutting edge tolerance Better hole size control not good for high feed rate

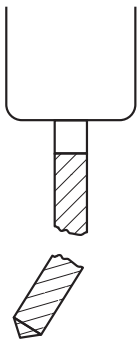
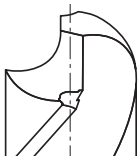
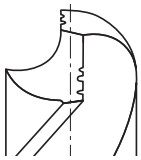
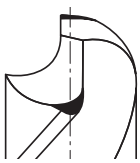
Trouble Shooting for Drilling

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Hole expansion	**Large run out after attachment to the machine** **Large spindle run out**	1. Check holder and/or select another one 2. Check the spindle 3. Check run out after fixing to the chuck
	Non-symmetric point angle **Large lip height** **Run out of chisel edge**	1. Regrind correctly 2. Check precision after regrinding
Irregular hole size	**Non-symmetric point angle** **Large lip height** **Run out of chisel edge** **Major margin wear**	1. Regrind correctly 2. Check precision after regrinding
	Large run out after attachment to machine **Loose hold** **Low work holding rigidity**	1. Check holder and/or select another one 2. Check the spindle 3. Check run out after fixing to the chuck
	Feed rate is too high	Decrease the feed rate
	Not enough coolant	Change method of coolant supply, or increase volume
Poor accuracy **Irregular pitch** 	**Large run out after attachment to machine** **Large spindle run out**	1. Check holder and/or select another one 2. Check the spindle 3. Check run out after fixing to the chuck
	Run out when cutting	1. Increase rigidity of tools and machines 2. Increase work clamping rigidity 3. Select a thinning for low cutting resistance 4. Use centering 5. Double-check that the work piece is horizontal 6. Use a drill bush
	Poor alignment accuracy (lathing)	Check alignment before operation
Bad hole perpendicularity 	**Excessive tool wear**	Regrind correctly
	Poor position accuracy	Increase position accuracy
	Non-symmetric point angle **Large lip height** **Run out of chisel edge**	1. Regrind correctly 2. Check precision after regrinding
	Not enough drill rigidity	Use a more rigid drill
	Drilling surface is not horizontal **Poor alignment accuracy (lathing)**	1. The work piece must be horizontal or pre-drilled 2. Use centering

Trouble Shooting for Drilling

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Bad cylindrical accuracy 	**Non-symmetric point angle** **Large lip height** **Run out of chisel edge**	1. Regrind correctly 2. Check precision after regrinding
	Large run out after attachment to machine **Large spindle run out** **Loose clamping of work material**	1. Check holder and/or select another one 2. Check the spindle 3. Check work clamping after fixing to the machine
	Relief angle is too large	Regrind correctly
	Low drill rigidity	Use a more rigid drill
Poor surface finish	**Poor regrinding**	Regrind correctly
	Not suitable coolant for the material Not enough coolant	Change method of coolant supply, or increase volume Select higher quality coolant
	Large run out after attachment to machineLarge spindle run out	1. Check holder and/or select another one 2. Check the spindle
	Feed rate is too high	Reduce the feed rate
	Excessive wear on cutting edge **Build up on margin is too large**	1. Regrind correctly 2. Use a coated tool
	Chip packing	1. Use the most suitable drill (consider flute form & helix angle) 2. Change cutting conditions (feed rate, try step feed)
Bad cylindrical shape 	**Non-symmetric point angle** **Large lip height** **Run out of chisel edge** **Large margin wear**	1. Regrind correctly 2. Check precision after regrinding
	Feed rate is too low	Increase feed rate

Trouble Shooting for Drilling

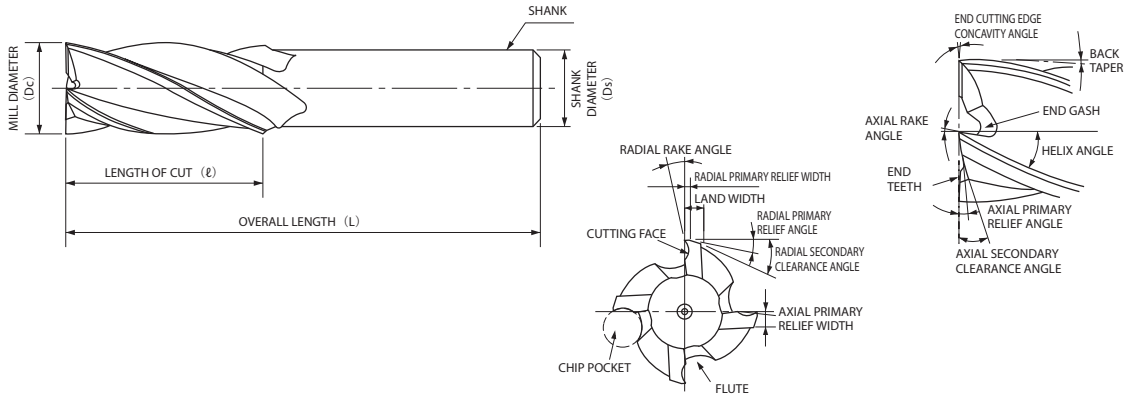
Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Breakage 	**Deflection and recess of machine and work material**	Increase the rigidity of machine, drill and work clamping
	Relief angle is too small	Regrind precisely
	Feed rate is too high	Decrease the feed rate
	Excessive tool wear	Regrind
	Chip packing	Use the most suitable drill (consider flute form & helix angle) Change cutting conditions (feed rate, try step feed)
	Difficulty entering the material	1. Use a highly rigid tool and machine 2. Increase work clamping rigidity 3. Select a thinning for low cutting resistance 4. Use centering 5. The work piece should be horizontal 6. Use drill bush
Chipping of corner edge 	**Inappropriate tool material**	Use the most suitable tool material
	Uneven hardness distribution on the work material	1. Use the most suitable tool material 2. Change cutting conditions (feed rate, drilling speed) or machining method
	Drilling speed or feed rate too high	Reduce drilling speed or feed rate
	Not enough coolant	Change coolant method and increase volume
Chipping of cutting edge 	**Large run out after attachment to machine Large spindle run out**	1. Check holder and/or select another one 2. Check the spindle 3. Check run out after fixing to the chuck
	Drilling speed or feed rate	Reduce drilling or feed rate
	Relief angle is too small	Regrind correctly
	Tool not suitable for work material	Use the most suitable tool material
Abnormal wear on the corner part 	**Regrinding should have occurred earlier**	Regrind sooner
	Poor alignment accuracy (lathing)	Check /adjust alignment before drilling
	Drilling speed or feed rate too high	Decrease the drilling speed
	Point shape is inappropriate	Select correct point dimensions
	Tool not suitable for work material	Use the most suitable tool material
	Inappropriate coolant type	Change coolant

Trouble Shooting for Drilling

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Wear, chipping and crushing of the chisel edge	**Feed rate is too high**	Decrease feed rate
	Point shape is inappropriate	Select correct point dimensions
	Tool not suitable for work material	Choose suitable tool material
	Relief angle is too small	Regrind precisely
Chipping of the margin	**Bush size is too large**	Select correct bush size
Margin build-up	**High heat generation due to large wear on the cutting edge**	Regrind correctly
	Coolant is not sufficient	Change coolant method and increase volume
	Coolant is not suitable	Change coolant
	Bad chip discharging Ductile material	Change drills or alter cutting conditions
Tang breakage	**Shank slippage due to defect**	Eliminate the defect
	Defective inner surface of morse taper holder	Change holders or correct the surface of the morse taper holder
	Inaccurate regrinding	Regrind correctly
Chattering sounds	**Relief angle is too large**	Regrind correctly
	Low tool rigidity	Use a more rigid drill
Chips roll around the drill	**Long chips Chips are stuck in the flute**	Change drill and cutting conditions
One-sided wear	**Poor alignment accuracy (lathing)**	Check/adjust the alignment
	Large run out after attachment to machine	Decrease run out when fixing to the chuck

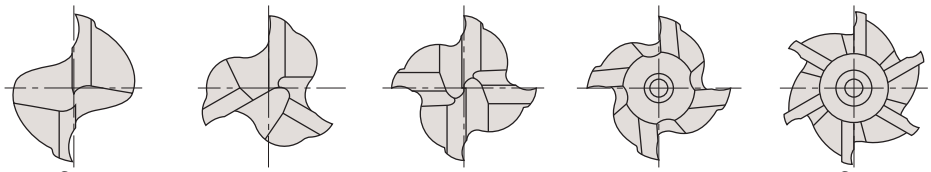
Information

Terminology



Number of Flutes

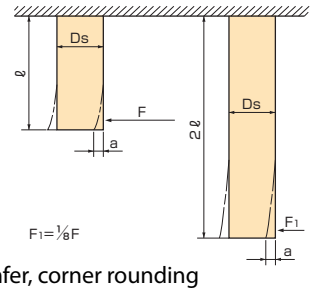
The number of flutes should be determined by the work material, dimensions of the work piece and milling conditions. In general, an end mill with a small number of flutes and large chip room is used for roughing, and an end mill with a large number of flutes is used for finishing.



2 flutes | 3 flutes | 4 flutes (Center Cut) | 4 flutes (with center hole) | 6 flutes (with center hole)

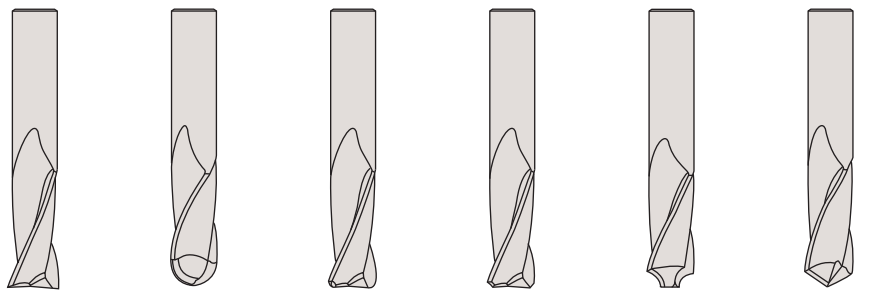
Lenght of Cut

The shorter the end mill, the smaller the deflection and the stronger the rigidity. Because rigidity varies in proportion to length of cut by a factor to the power of 3 (for example, when the length of cut doubles, the rigidity decreases to 1/8), it is necessary to keep the length of cut as short as possible.



End Profile

Stocked end profiles are typically square end ball nose and corner radius, Corner chamfer, corner rounding and drill nose end profiles can be supplied via special oder.



SQUARE | BALL NOSE | CORNER RADIUS | CORNER CHAMFER | CORNER ROUNDING | DRILL NOSE

Trouble Shooting for Milling

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Chip packing	**Too great cutting amount** **Not enough chip room** **Not enough coolant**	1. Adjust feed or speed 2. Use end mill with fewer flutes 3. Apply more coolant. Use air pressure
Rough surface finish	**Feed too fast** **Slow speed** **Too much wear** **Chip biting** **No end tooth concavity**	1. Slow down to correct feed 2. Use higher speed 3. Regrind earlier stage 4. Cut less amount per pass 5. Add margin (touch primary with oilstone)
Burr	**Too much wear on primary relief** **Incorrect conditions** **Impropoer cutting angle**	1. Regrind sooner 2. Correct milling conditions 3. Change to correct cutting edge
No dimensional accuracy	**Too tough conditions** **Lack of accuracy (machine & holder)** **Not enough rigidity (machine & holder)** **Not sufficient number of flutes**	1. Change to easier condition 2. Repair machine or holder 3. Change machine or holder or condition 4. Use end mill with geater number of flutes
No perpendicular side	**Feed too fast** **Too geat cutting amount** **Too long flute length or long overall length** **Not sufficient number of flutes**	1. Slow down to correct feed 2. Reduce cutting amount 3. Use proper length tool. Hold shank deeper 4. Use end mill with greater number of flutes

Trouble Shooting for Milling

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Chipping	**Feed too fast** **Feed too fast on first cut** **Not enough rigidity of machine tool & holder** **Loose tool holder** **Loose fixture (workpiece)** **Lack of rigidity (tool)** **Teeth too sharp**	1. Slow down to propoer feed 2. Slow down on first bite 3. Change rigid machine tool or holder 4. Tighten tool holder 5. Tighten workpiece fixture 6. Use shortest end mill available. Hold shank deeper. Try down cut. 7. Change to lower cutting edge, primary relief
Wear	**Speed too fast** **Hard material** **Bitting chips** **Improper feed spped (too slow)** **Improper cuuting angle** **Too low primary relief angle**	1. Slow down, use more coolant 2. Use higher grade, tool material, add surface treatment 3. Change feed speed to change chip size or clear chips with coolant or air pressure 4. Increase feed speed. Try down cut 5. Change to correct cutting angle 6. Change to larger relief angle
Breakage	**Feed too fast** **Too large cuting amount** **Too long flute length or long overall length** **Too much wear**	1. Slow down feed 2. Adjust to smaller cutting amount per teeth 3. Hold shank deeper, use shorter end mill 4. Regrind at earlier stage
Chattering	**Feed and speed too fast** **Not enough rigidity** **Too much relief angle** **Loose holder (workpiece)** **Cutting too deep** **Too long flute length or long overall lenght**	1. Correct feed and speed 2. Use beter machine tool or holder or change conditions 3. Change to smaller relief angle. Add margin (touch primary with oilstone) 4. Hold workpiece tighter 5. Correct to smaller cutting depth 6. Hold shank deeper, use shorter end mill or try down cut
Short tool life (dull teeth)	**Too much cutting friction** **Tough worx material** **Improper cutting angle**	1. Regrind at earlier stage 2. Select premium tool 3. Change cutting angle & primary

Extract of our General Sales Conditions

1. The conditions of sale hereafter are applicable whatever the general conditions of purchase of the customer. Any modification proposed by the parties must be by written agreement.

2. The order doesn't bind the vendor until a confirmation is sent by the vendor by e-mail. The sold goods will remain the property of the vendor, as long as the price has not have entirely been paid.

3. Delays to delivery will not result in any damages, indemnity or penalty for the vendor. The delivery times are given only as a rough guide and without guarantee.

4. All risks to which the goods are exposed during the transport are chargeable to the buyer, and this, whichever the modalities agreed.

5. For payments not received by the agreed periods, the sums due will be fully subjected to an interest of 1% per month until complete payment. In addition, a lump sum of 15% of the unpaid amounts, with a minimum of 100€, will be asked.

   In case the vendor should pay damages to the buyer for whatever causes, the damages will be limited to the repair of the damage duly undergone by the buyer, without being able to exceed 5 % of the value of the goods.

6. In the case of a dispute or if an amicable agreement cannot be reached, the vendor reserves the right to resort to the competent courts for his registered address

7. In case of honest or clerical errors, the vendor will accept items to be returned within 30 calendar days of the shipping date. A restocking fee of 20% will be applied for those requests that exceed 30 calendar days. The vendor will not accept returns of goods for those items that are more than 60 calendar days from the shipping date and for those that are non-European stocked items. Non-European stocked items are marked with white circles in the General Catalog Volume III.

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Approximate relationship between various hardness scales

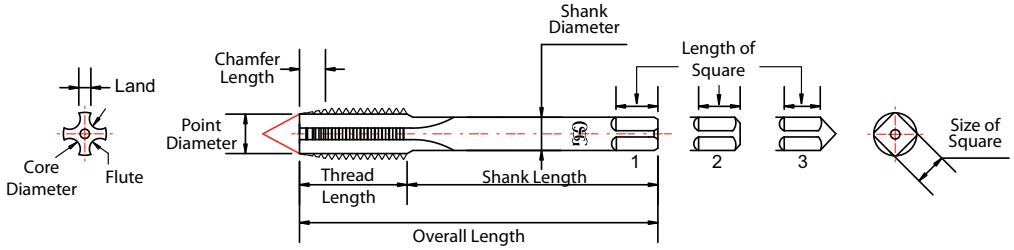
Hardness

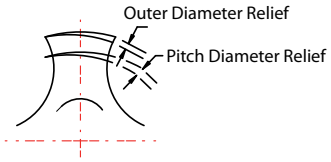
HRA	HRC	HV	HB
		120	114
		125	119
		130	123
		135	128
		140	133
		145	138
		150	142
		155	147
		160	152
		165	157
		170	161
		175	166
		180	171
		185	176
		190	180
		195	185
		200	190
		205	195
		210	199
		215	204
		220	209
		225	214
		230	218
		235	223
60.7	20.5	240	228
61.2	21.5	245	233
61.6	22.0	250	237
62.4	24.0	260	247
63.1	25.5	270	256
63.8	27.0	280	266
64.5	28.5	290	275
65.2	30.0	300	285
65.8	31.0	310	294
66.4	32.0	320	304
67.0	33.5	330	313
67.6	34.5	340	323
68.1	35.5	350	332
68.7	36.5	360	342
69.2	37.5	370	351
69.8	39.0	380	361
70.3	40.0	390	370
70.8	41.0	400	380
71.4	42.0	410	389
71.8	42.5	420	399
72.3	43.5	430	408
72.8	44.5	440	418
73.3	45.5	450	427
73.6	46.0	460	*432*
74.1	47.0	470	*442*
74.5	47.5	480	*450*
74.9	48.5	490	*456*
75.3	49.0	500	*466*
75.7	50.0	510	*475*
76.1	50.5	520	*483*
76.4	51.0	530	*492*
76.7	51.5	540	*500*
77.0	52.5	550	*509*
77.4	53.0	560	*517*
77.8	53.5	570	*526*
78.0	54.0	580	*535*
78.4	54.5	590	*543*
78.6	55.0	600	*552*
79.2	56.5	620	*569*
79.8	57.5	640	*586*
80.3	58.5	660	
80.8	59.0	680	
81.3	60.0	700	
81.8	61.0	720	
82.2	62.0	740	
82.6	62.5	760	
83.0	63.5	780	
83.4	64.0	800	
83.8	64.5	820	
84.1	65.5	840	
84.4	66.0	860	
84.7	66.5	880	
85.0	67.0	900	
85.3	67.5	920	
85.6	68.0	940	

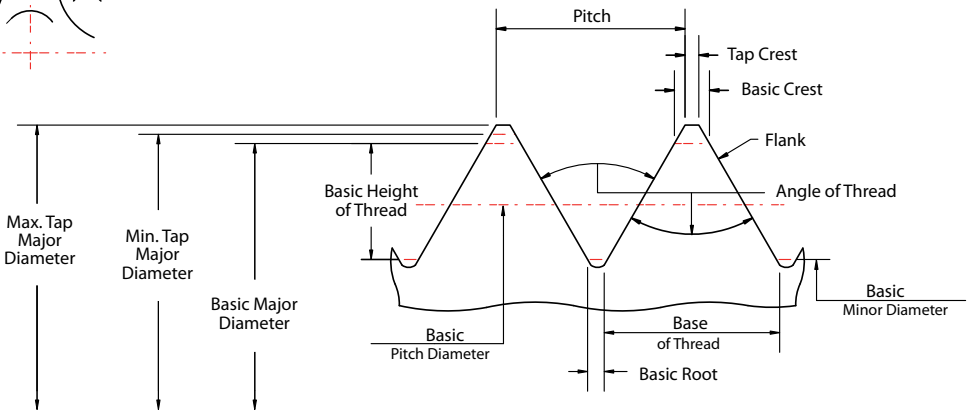
Traction

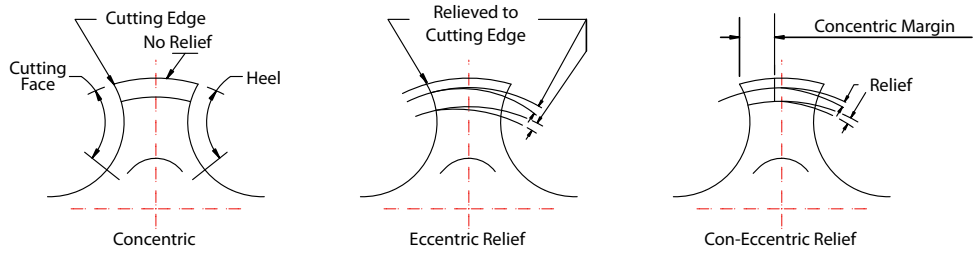
Kgf/mm ^{2}	N/mm^{2}ou Mpa
42	*410*
43	*420*
45	*440*
46	*450*
48	*470*
49	*480*
51	*500*
52	*510*
54	*530*
55	*540*
56	*550*
58	*570*
59	*580*
61	*600*
62	*610*
64.5	*630*
66.5	*650*
67.5	*660*
69.5	*680*
70.5	*690*
72.5	*710*
73.5	*720*
75.5	*740*
76.5	*750*
78.5	*770*
79.5	*780*
81.5	*800*
84.5	*830*
88	*860*
91	*890*
95	*930*
98	*960*
101	*990*
104	*1020*
108	*1060*
111	*1090*
114	*1120*
118	*1160*
121	*1190*
124	*1220*
129	*1260*
132	*1290*
136	*1330*
139	*1360*
143	*1400*
146	*1430*
150	*1470*
153	*1500*
157	*1540*
160	*1570*
164	*1610*
168	*1650*
171	*1680*
175	*1720*
180	*1760*
183	*1790*
187	*1830*
191	*1870*
195	*1910*
198	*1940*
202	*1980*
206	*2020*
214	*2100*
222	*2180*

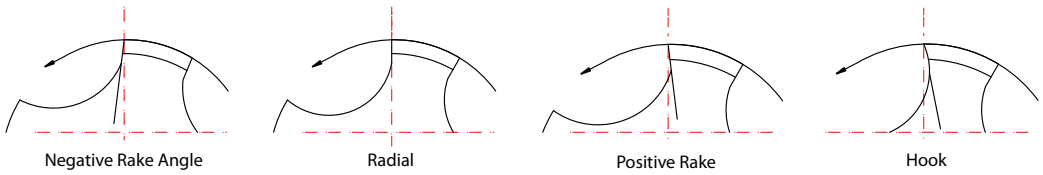
Tap Information





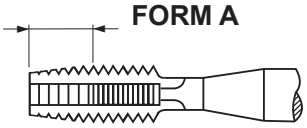






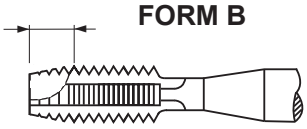
Chamfer Forms

FORM A



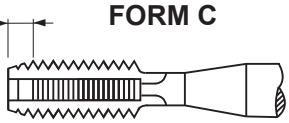
- **Long**
- **6 - 8 threads**
- **For short through holes**
- **Increases the torque and thus the danger of breakage**

FORM B



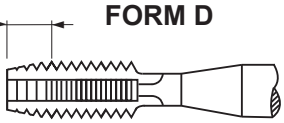
- **Medium**
- **3,5 - 5,5 threads**
- **With spiral point, useful for through holes**
- **For all through holes and deep tapping holes**
- **Efficient in tough and tough hard materials**

FORM C



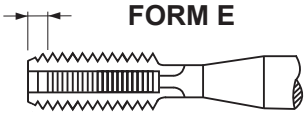
- **Short**
- **2 - 3 threads**
- **For blind holes**
- **Generaly for aluminium, grey cast iron and brass**

FORM D



- **Medium**
- **3,5 - 5 threads**
- **For through and blind holes with sufficient run-out**

FORM E



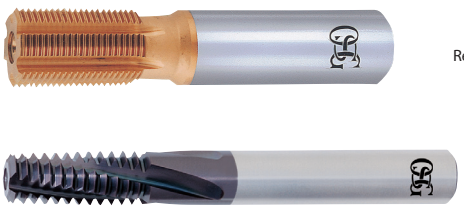
- **Extremely short**
- **1,5 - 2 threads**
- **For blind holes with little run-out depth**

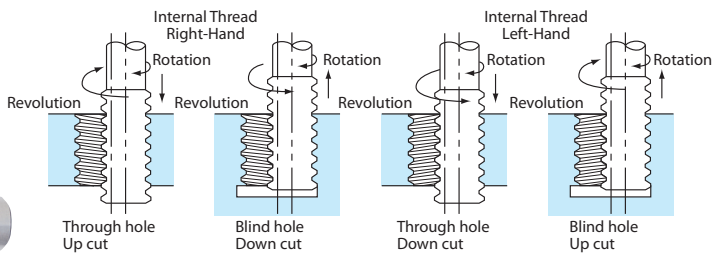
Type of Taps & Features

Type	Features	Application
Spiral Fluted Taps 	- Spiral flute - Chips flow out against tapping direction(ejected from holes) - Lower tapping torque and applicable for tapping to the bottom of holes - Good cutting action	- For blind holes - Materials where chips come out continuously in coil shape
Spiral Pointed Taps 	- Spiral point(Chip Drive) - Pushes chips forward with low cutting torque - Shallow and unique flute form provides strong structure - Good cutting action	- For through holes - Materials where chips come out continuously in coil shape - High speed tapping
Fluteless Taps Forming Taps 	- Fluteless - Taps do not produce chips - Precise uniformity of tapped thread limit - Excellent rigidity	- For both through & blind holes - Materials with Formability
Straight Fluted Taps Hand Taps 	- Straight flute - Strong cutting edges - Applicable for various cuttig conditions - Easy to re-grind	- For both through & blind holes (short thread depth only) - Materials where chips come out in powder form - Hard materials

Thread Milling by CNC Simultaneous Three-Axis Control

The OSG Thread Milling Cutter are designed for thread milling with 3 axis CNC controlled machines.Thread processing is accomplished by advancing one pitch feed per revolution in the axial direction, utilizing planet-like rotation and revolution.

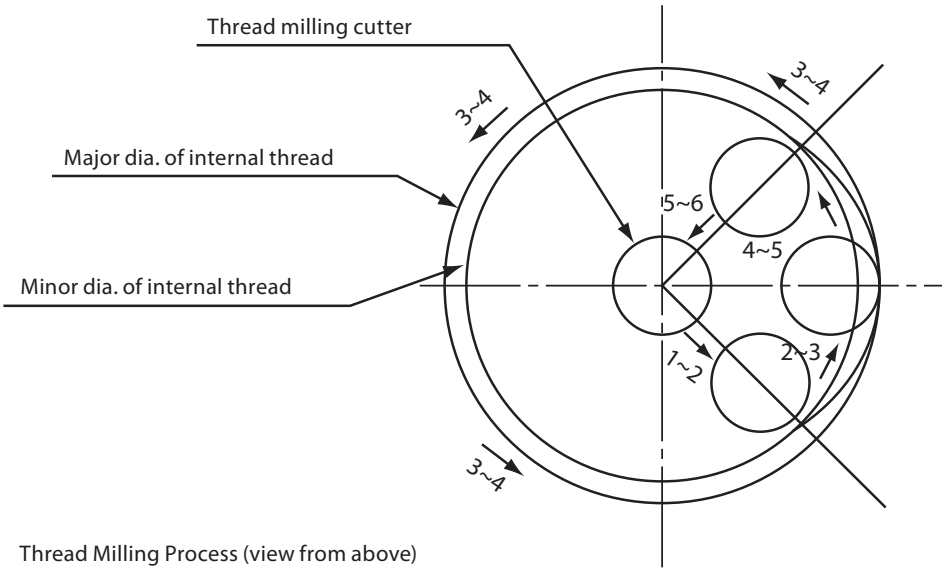




Threading Process

1-2 Move to edge (maintain clearance)
2-3 Cut with helical milling
3-4 Mill the circumference of the circle
4-5 Pull away from the edge
5-6 Remove tool

The transition between the start and finish of the milling operation must be smooth and the appropriate amount of feed is essential for
minimizing milling resistance. There are many different methods for using this tool, but our research has shown that this technique provides the most precise and efficient operation.



Thread Milling Process (view from above)

Tap and Screw Thread Nomenclature

Allowance: The minimum clearance or maximum interference which is intended between mating parts.

Angle of Thread: The angle included between the flanks of a thread measured in an axial plane.

Back Taper: A slight taper on the threaded portion of the tap, making the pitch diameter near the shank smaller than that at the chamfer.

Basic: The theoretical or nominal standard size from which all variations are made.

Chamfer: The tapered and relieved cutting teeth at the front end of the threaded section. Common types of chamfer are taper, 8 to 10 threads long, plug, 3 to 5 threads, semi (or modified) bottom = 2.5 - 3 threads and bottoming, 1-1/2 threads.

Crest: The top surface joining the two sides or flanks of a thread.

Cutting Face: The leading side of the land.

Flute: The longitudinal channels formed on a tap to create cutting edges on the thread profile.

Heel: The following side of the land.

Height of Thread: In profile, distance between crest and bottom section of thread measured to the axis.

Hook Face: A concave cutting face of the land. This may be varied for different materials and conditions.

Interrupted Thread: Alternate teeth are removed in the thread helix on a tap having an odd number of flutes.

Land: Threaded sections between the flutes of a tap.

Lead of Thread: The distance a screw thread advances axially in one turn.

Major Diameter: The largest diameter of the screw or nut on a straight screw thread.

Minor Diameter: The smallest diameter of the screw or nut on a straight screw thread.

Neck: The reduced diameter, on some taps, between the threaded portion and the shank.

Pitch: The distance from a point on one thread to a corresponding point on the next thread, measured parallel to the axis.

Pitch Diameter: On a straight screw thread, the diameter of an imaginary cylinder where the width of the thread and the width of the space between threads is equal.

Point Diameter: The diameter at the leading end of the chamfered portion.

Radial: The straight face of a land, the plane of which passes through the axis of the tap.

Rake: The angle of the cutting face of the land in relation to an axial plane intersecting the cutting face at the major diameter.

Relief: The removal of metal behind the cutting edge to provide clearance between the part being threaded and a portion of the threaded land. Also, see back taper.

Chamfer Relief: The gradual decrease in land height from cutting edge to heel on the chamfered portion of the tap land to provide radial clearance for the cutting edge.

Con-eccentric Relief: Radial relief in the thread form starting back of a concentric margin.

Eccentric Thread Relief: Radial relief in the thread form starting at the cutting edge and continuing to the heel.

Root: The bottom surface joining the flanks of two adjacent threads.
Side or Flank Thread: The surface of the thread which connects the crest to the root.

Shank: The portion of the tap by which it is held.

Spiral Point: An oblique cutting edge ground into the lands to provide a shear cutting action on the first few threads.

Square: The squared end of the tap shank by which the tap is driven.

Thread: The helical formed portion of the tap which produces the pitch in a pre-existing hole.

Thread Lead Angle: The angle made by the helix of the thread at the pitch diameter, with a plane perpendicular to the axis.

Threads per Inch: The number of threads in one inch of length.

Thread:

Single: A thread in which lead is equal to pitch.

Double: A thread in which lead is equal to twice the pitch.

Triple: A thread in which lead is equal to triple the pitch.

Surface Treatments

Generally, a tap properly designed and used under ideal conditions will produce surface results without the use of superficial treatments. However, under certain conditions and types of materials, additional tap life, improvement in finish and better gaging will be noted through the use of surface treatments applied to the finished tap.

The treatments applied can be divided into two groups: those that penetrate the surface, and those that are applied to the external surface itself.

The second group covers a wider range of choices including external treatments such as TiN, TiCN, TiAlN and oxide finishes.

Steam Oxide:
A black oxided surface (Fe_3O_4) produced on the surface of a finished tap by means of a steam furnace. This oxidized surface is porous and helps retain cutting fluid in the working portion of the tap. The materials on which steam oxide has shown improvement in performance are stainless steels, steel forgings, tool and die steels, hot and cold rolled steels, and high nickel alloys.

Nitride:
A hard superficial case, approximately 69 HRC, on the surface of a finished tap produced by means of an ion furnace. The advantages of a Nitride surface treatment is the increase in wear resistance due to the higher surface hardness. This surface treatment is very effective in both abrasive and tough materials such as cast iron, plastics and high silicon cast aluminum.
Note: Extra caution is needed when selecting a Nitride surface treatment because the increased hardness is not recommended for fast spiral flute taps and taps smaller than machine screw No. 2.

Titanium Nitride (TiN):
A thin deposit (approx. 0.0001") applied to the surface of a finished tap utilizing PVD coating technology. TiN coating increases the surface hardness and wear resistance. Use of TiN coating on standard tools will help increase tool life in harder materials (up to 32 HRC), such as stainless steels, steel forgings, tool and die steels and hot and cold rolled steels. TiN coating also works very well with water-base cutting fluids.

Titanium Carbon Nitride (TiCN):
Similar to TiN, TiCN is applied utilizing PVD coating technology. This coating combines high hardness (approx. 2800 vickers) with the anti-seizure properties of Nitride. A lower coefficient of friction helps reduce welding by 75% over TiN coated tools. These features make TiCN especially beneficial in non-ferrous material and hardened steels. OSG's special TiCN coating is incorporated into many of our stocked items.

Titanium Aluminum Nitride (TiAlN):
TiAlN is applied using PVD coating technology. The addition of aluminum reduces friction and increases the coating oxidation temperature. As a result, TiAlN has increased resistance to heat and oxidation wear. This makes TiAlN better suited for High Speed/ High Heat applications. OSG's special TiAlN coating is incorporated into many of our tools.

Chrome Nitride (CrN):
An extremely high surface lubricity makes CrN the proper selection of coating for non-ferrous materials. Aluminum (6061, 7075, etc.) and copper alloys (bronze, brass, etc.) are notorious for their tendency to adhere to the tool when heat is generated. This coating negates the effects of heat by reducing the amount of friction caused when these materials are being machined, while adding increased hardness.

Diamond:
OSG's patented Ultra-Fine diamond coating is grown on the tools at our laboratories. It is ideal for materials such as graphite, aluminum, and copper alloys. Commonly mistaken for a "Diamond-like" coating because of its shiny and smooth surface, this tool promotes finer surface finishes versus the competition's diamond coating and exponentially more tool life than that of PVD coated tools. Special processes enable high adherence to the tool and prevent it from flaking off. Diamond is not intended to cut steel.

Guide to Tap Drill Sizes Recommended Drill Sizes for Tapping

M

According to DIN 13 and DIN-ISO 965-1

Dia	P	
M 1	0,25	0,75
M 1,1	0,25	0,85
M 1,2	0,25	0,95
M 1,4	0,3	1,10
M 1,6	0,35	1,25
M 1,7	0,35	1,35
M 1,8	0,35	1,45
M 2	0,4	1,60
M 2,2	0,45	1,75
M 2,3	0,4	1,90
M 2,5	0,45	2,05
M 2,6	0,45	2,15
M 3	0,5	2,50
M 3,5	0,6	2,90
M 4	0,7	3,30
M 4,5	0,75	3,70
M 5	0,8	4,20
M 6	1	5,00
M 7	1	6,00
M 8	1,25	6,80
M 9	1,25	7,80
M 10	1,5	8,50
M 11	1,5	9,50
M 12	1,75	10,20
M 14	2	12,00
M 16	2	14,00
M 18	2,5	15,50
M 20	2,5	17,50
M 22	2,5	19,50
M 24	3	21,00
M 27	3	24,00
M 30	3,5	26,50
M 33	3,5	29,50
M 36	4	32,00
M 39	4	35,00
M 42	4,5	37,50
M 45	4,5	40,50
M 48	5	43,00
M 52	5	47,00
M 56	5,5	50,50
M 60	5,5	54,50
M 64	6	58,00
M 68	6	62,00

MF

According to DIN 13 and DIN-ISO 965-1

Dia	P	
M 2	0,25	1,75
M 2,2	0,25	1,95
M 2,3	0,25	2,05
M 2,5	0,35	2,15
M 3	0,25	2,75
M 3	0,35	2,65
M 3,5	0,35	3,15
M 4	0,35	3,65
M 4	0,5	3,50
M 4,5	0,5	4,00
M 5	0,35	4,65
M 5	0,5	4,50
M 5	0,75	4,20
M 6	0,5	5,50
M 6	0,75	5,25
M 7	0,5	6,50
M 7	0,75	6,25
M 8	0,5	7,50
M 8	0,75	7,25
M 8	1	7,00
M 9	0,75	8,25
M 9	1	8,00
M 10	0,5	9,50
M 10	0,75	9,25
M 10	1	9,00
M 10	1,25	8,75
M 11	1	10,00
M 12	0,5	11,50
M 12	1	11,00
M 12	1,25	10,75
M 12	1,5	10,50
M 13	1	12,00
M 14	0,75	13,20
M 14	1	13,00
M 14	1,25	12,75
M 14	1,5	12,50
M 15	1	14,00
M 15	1,5	13,50
M 16	0,75	15,20
M 16	1	15,00
M 16	1,25	14,80
M 16	1,5	14,50
M 17	1	16,00
M 18	1	17,00
M 18	1,5	16,50
M 18	2	16,00
M 20	1	19,00
M 20	1,5	18,50
M 20	2	18,00
M 22	1	21,00
M 22	1,5	20,50

MF

According to DIN 13 and DIN-ISO 965-1

Dia	P	
M 22	2	20,00
M 24	1,5	22,50
M 24	2	22,00
M 25	1	23,00
M 25	1,5	23,50
M 26	1,5	24,50
M 27	1	26,00
M 27	1,5	25,50
M 27	2	25,00
M 28	1,5	26,50
M 28	2	26,00
M 30	1	29,00
M 30	1,5	28,50
M 30	2	28,00
M 32	1,5	30,50
M 32	2	30,00
M 33	1,5	31,50
M 33	2	31,00
M 34	1,5	32,50
M 35	1,5	33,50
M 36	1,5	34,50
M 36	2	34,00
M 36	3	33,00
M 38	1,5	36,50
M 39	1,5	37,50
M 39	2	37,00
M 39	3	36,00
M 40	1,5	38,50
M 40	2	38,00
M 40	3	37,00
M 42	1,5	40,50
M 42	2	40,00
M 42	3	39,00
M 45	1,5	43,50
M 45	2	43,00
M 45	3	42,00
M 48	1,5	46,50
M 48	2	46,00
M 48	3	45,00
M 50	1,5	48,50
M 50	2	48,00
M 50	3	47,00
M 52	1,5	50,50
M 52	2	50,00
M 52	3	49,00
M 56	1,5	54,50
M 56	2	54,00
M 56	3	53,00
M 58	1,5	56,50
M 60	1,5	66,50
M 60	2	58,00
M 60	3	57,00

MJ

According to DIN-ISO 5855

Dia	P	
MJ 3	0,5	2,60
MJ 4	0,7	3,40
MJ 5	0,8	4,30
MJ 6	1	5,10
MJ 8	1,25	6,90
MJ 10	1,5	8,70
MJ 12	1,75	10,50
MJ 16	2	14,30

Guide to Tap Drill Sizes Recommended Drill Sizes for Tapping

UN

According to ASME B 1.1

Dia	P	
1 ⅛	8	25,40
1 ¼	8	28,50
1 ⅜	8	32,00
1 ½	8	35,00
1 ⅝	8	38,10
1 ¾	8	41,50
1 ⅞	8	44,45
2	8	48,00
2 ¼	8	54,00

UNC

According to ASME B 1.1

Dia	P	
Nr. 1	64	1,55
Nr. 2	56	1,85
Nr. 3	48	2,00
Nr. 4	40	2,35
Nr. 5	40	2,65
Nr. 6	32	2,70
Nr. 8	32	3,50
Nr. 10	24	3,80
Nr. 12	24	4,50
¼	20	5,10
5⁄16	18	6,50
⅜	16	7,90
7⁄16	14	9,30
½	13	10,70
9⁄16	12	12,30
⅝	11	13,50
¾	10	16,50
⅞	9	19,30
1	8	22,25
1 ⅛	7	25,00
1 ¼	7	28,00
1 ½	6	34,00
1 ¾	5	39,50
2	4,5	45,00

UNJC

According to ASME B 1.1 and ISO 3161

Dia	P	
Nr. 1	64	1,50
Nr. 2	56	1,80
Nr. 3	48	2,05
Nr. 4	40	2,30
Nr. 5	40	2,65
Nr. 6	32	2,80
Nr. 8	32	3,50
Nr. 10	24	3,90
Nr. 12	24	4,60
¼	20	5,20
5⁄16	18	6,70
⅜	16	8,10
7⁄16	14	9,50
½	13	10,90
9⁄16	12	12,30
⅝	11	13,70
¾	10	16,75

UNF

According to ASME B 1.1

Dia	P	
Nr. 0	80	1,25
Nr. 1	72	1,55
Nr. 2	64	1,85
Nr. 3	56	2,15
Nr. 4	48	2,40
Nr. 5	44	2,60
Nr. 6	40	2,95
Nr. 8	36	3,50
Nr. 10	32	4,00
Nr. 12	28	4,60
¼	28	5,40
5⁄16	24	6,90
⅜	24	8,40
7⁄16	20	9,90
½	20	11,50
9⁄16	18	13,00
⅝	18	14,50
¾	16	17,40
⅞	14	20,40
1	12	23,25
1 ⅛	12	26,50
1 ¼	12	29,75
1 ⅜	12	33,00
1 ½	12	36,00

UNJF

According to ASME B1.15 and ISO 3161

Dia	P	
Nr, 0	80	1,25
Nr, 1	72	1,55
Nr. 2	64	1,85
Nr. 3	56	2,10
Nr. 4	48	2,40
Nr. 5	44	2,70
Nr. 6	40	2,95
Nr. 8	36	3,60
Nr. 10	32	4,15
Nr. 12	28	4,70
¼	28	5,60
5⁄16	24	7,00
⅜	24	8,60
7⁄16	20	10,00
½	20	11,50
9⁄16	18	13,00
⅝	18	14,50

UNEF

According to ASME B 1.1

Dia	P	
¼	32	5,55
5⁄16	32	7,20
⅜	32	8,80
7⁄16	28	10,20
½	28	11,80
9⁄16	24	13,20
⅝	24	14,80

NPT

According to ASME B1.20.1 taper 1:16

Dia	P				
		D	D2	D3	Depth
1⁄16	27	6,15	5,95	6,39	10,70
⅛	27	8,40	8,31	8,74	10,80
¼	18	11,10	10,73	11,36	15,60
⅜	18	14,30	14,15	14,80	16,00
½	14	17,90	17,47	19,32	20,80
¾	14	23,30	22,79	23,67	21,30
1	11 ½	29,00	28,64	29,69	25,60
1 ¼	11 ½	37,70	37,37	38,45	26,10
1 ½	11 ½	43,70	43,44	44,52	26,10
2	11 ½	55,60	55,45	56,56	26,50
2 ½	8	66,30	66,14	67,62	36,30
3	8	82,30	81,90	83,52	38,50

Guide to Tap Drill Sizes Recommended Drill Sizes for Tapping

Pg

According to DIN 40430

Dia	P	
7	20	11,40
9	18	14,00
11	18	17,25
13,5	18	19,00
16	18	21,25
21	16	27,00
29	16	35,50
36	16	45,50
42	16	52,50
48	16	58,00

Tr

According to ISO

Dia	P	
8	1,5	6,60
9	2	7,20
10	2	8,20
11	3	8,25
12	3	9,25
14	3	11,25
16	4	12,25
18	4	14,25
20	4	16,25
22	5	17,25
24	5	19,25
26	5	21,25
28	5	23,25
30	6	24,25
32	6	26,25
34	6	28,25
36	6	30,25
38	7	31,50
40	7	33,50
42	7	35,50
44	7	37,50
46	8	38,50
48	8	40,50
50	8	42,50

G

According to DIN EN ISO 228

Dia	P	
1/16	28	6,80
1/8	28	8,70
1/4	19	11,80
3/8	19	15,25
1/2	14	19,00
5/8	14	21,00
3/4	14	24,50
7/8	14	28,25
1	11	30,75
1 1/8	11	35,50
1 1/4	11	39,50
1 3/8	11	41,90
1 1/2	11	45,25
1 3/4	11	51,00
2	11	57,00
2 1/4	11	63,00
2 1/2	11	72,60
3	11	85,00

BSW

According to BS 84

Dia	P	
1/16	60	1,20
3/32	48	1,90
1/8	40	2,50
5/32	32	3,10
3/16	24	3,60
7/32	24	4,50
1/4	20	5,00
5/16	18	6,50
3/8	16	7,90
7/16	14	9,20
1/2	12	10,50
9/16	12	12,00
5/8	11	13,40
3/4	10	16,40
7/8	9	19,25
1	8	22,00
1 1/8	7	24,75
1 1/4	7	27,50
1 3/8	6	30,00
1 1/2	6	33,50
1 5/8	5	35,50
1 3/4	5	39,00
1 7/8	4 1/2	41,50
2	4 1/2	44,50

BSF

According to BS 84

Dia	P	
3/16	32	4,00
7/32	28	4,60
1/4	26	5,30
5/16	22	6,80
3/8	20	8,30
7/16	18	9,70
1/2	16	11,00
9/16	16	12,70
5/8	14	14,00
3/4	12	16,80
7/8	12	19,80
1	10	22,70
1 1/8	9	25,50
1 1/4	9	28,50
1 3/8	8	31,50
1 1/2	8	34,50
1 5/8	8	38,00

Rp

According to DIN EN 10226-2

Dia	P	
1/16	28	6,55
1/8	28	8,60
1/4	19	11,50
3/8	19	15,00
1/2	14	18,50
5/8	14	20,50
3/4	14	24,00
1	11	30,25
1 1/4	11	39,00
1 1/2	11	45,00
2	11	56,50
2 1/2	11	72,20
3	11	85,00

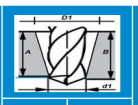
BA

According to BS 949 part 2

Dia	P	
0	1	5,00
1	0,9	4,40
2	0,81	3,90
3	0,73	3,40
4	0,66	3,00
5	0,59	2,60
6	0,53	2,30
7	0,48	2,00
8	0,43	1,80
9	0,39	1,50
10	0,35	1,30
11	0,31	1,20
12	0,28	1,00
13	0,25	0,95
14	0,23	0,75

Rc

According to DIN EN 10226-2 taper 1/16

Dia	P			A	B min
		d1	D1		
1/16	28	6,30	6,49	8,31	10,00
1/8	28	8,30	8,50	8,31	10,10
1/4	19	11,00	11,35	12,37	15,00
3/8	19	14,50	14,85	12,77	15,40
1/2	14	18,10	18,49	16,83	20,50
3/4	14	23,50	23,98	18,13	21,80
1	11	29,60	30,11	21,42	26,00
1 1/4	11	38,10	38,78	23,72	28,30
1 1/2	11	44,00	44,67	23,72	28,30
2	11	55,60	56,48	28,02	32,60
2 1/2	11	71,10	72,00	31,32	37,10
3	11	83,60	84,71	34,42	40,20

Guide to Tap Drill Sizes Recommended Drill Sizes for Fluteless Taps

M

According to DIN 13 and DIN-ISO 965-1

Dia	P	 6 HX		6 GX		7 GX	
		Min.	Max.	Min.	Max.	Min.	Max.
1	0,25	0,87	0,89	-	-	-	-
1,2	0,25	1,07	1,09	-	-	-	-
1,4	0,3	1,244	1,263	-	-	-	-
2	0,4	1,82	1,84	1,85	1,88	-	-
2,2	0,45	2,01	2,04	2,02	2,06	-	-
2,5	0,45	2,31	2,34	2,32	2,36	-	-
3	0,5	2,77	2,81	2,79	2,84	2,81	2,85
3,5	0,6	3,23	3,27	3,24	3,30	-	-
4	0,7	3,66	3,72	3,69	3,73	3,71	3,77
5	0,8	4,61	4,68	4,65	4,71	4,66	4,73
6	1	5,51	5,59	5,55	5,63	5,56	5,64
8	1,25	7,37	7,55	7,40	7,47	7,42	7,50
10	1,5	9,24	9,33	9,26	9,35	9,30	9,39
12	1,75	11,10	11,20	11,14	11,24	11,17	11,28
14	2	12,96	13,08	13,00	13,12	13,04	13,16
16	2	14,96	15,08	15,00	15,12	15,04	15,16
18	2,5	16,66	16,81				
20	2,5	18,66	18,81				
22	2,5	20,66	20,81				
24	3	22,39	22,56				
27	3	25,39	25,56				
30	3,5	28,09	28,28				
33	3,5	31,09	31,28				
36	4	33,80	34,01				
39	4	36,80	37,01				
42	4,5	39,52	39,73				
45	4,5	42,52	42,73				

MF

According to DIN 13 and DIN-ISO 965-1

Dia	P	 6 HX	
		Min.	Max.
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
8	1	7,50	7,56
10	1	9,50	9,56
10	1,25	9,35	9,43
12	1	11,50	11,56
12	1,25	11,35	11,43
12	1,5	11,21	11,30
14	1,5	13,25	13,34
16	1,5	15,25	15,34
18	1,5	17,25	17,34
20	1,5	19,25	19,34

Guide to Tap Drill Sizes Recommended Drill Sizes for Wire Insert Taps

EG M

According to DIN 8140

Dia	P	
2	0,4	2,10
2,5	0,45	2,60
3	0,5	3,10
4	0,7	4,20
5	0,8	5,20
6	1	6,30
8	1,25	8,40
10	1,5	10,50

EG UNC

Dia	P	
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
Nr. 4	40	3,00
Nr. 6	32	3,70
Nr. 8	32	4,40

EG UNF

Dia	P	
-	-	-
-	-	-
Nr. 10	32	5,00
¼	28	6,60
5⁄16	24	8,20
⅜	24	9,80
7⁄16	20	11,50
½	20	13,10

Trouble Shooting for Tapping

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Oversize Pitch Diameter	**Incorrect Tap**	1. Use proper pitch diameter limits of taps. 2. Use longer chamfered taps.
	Chip Packing	1. Use spiral point or spiral fluted taps. 2. Reduce number of flutes to provide extra chip room. 3. Use larger hole size. 4. If tapping a blind hole, allow deeper holes where applicable or shorten the thread length of the parts. 5. Use proper lubricant.
	Galling	1. Apply proper surface treatment such as steam oxide or TiN. 2. Use proper cutting lubricant. 3. Reduce tapping speed. 4. Use proper cutting angle in accordance with material being tapped. 5. Use larger hole size.
	Operating Conditions	1. Apply proper tapping speed. 2. Correct alignment of tap and drilled hole. 3. Use proper tapping speed to avoid torn or rough threads. 4. Use lead screw tapper. 5. Use proper tapping machine with suitable power. 6. Avoid misalignment of the tap and drilled hole from loose spindle or worn holder.
	Tool Conditions	1. Obtain proper indexing angle for the flutes at the cutting edge. 2. Grind proper cutting angle and chamfer angle. 3. Avoid too narrow a land width. 4. Remove burrs from regrinding.
Oversize Internal Diameter	**Hole Size**	1. Use minimum hole size. 2. Avoid tapered hole. 3. Use proper chamfered taps.
	Galling	Galling solutions 1 through 4 under “Tool Conditions” can be applied to this specific problem.

Trouble Shooting for Tapping

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Undersize Pitch Diameter	**Incorrect Tap**	1. Use oversize taps: a. Use for cutting materials such as copper alloy, aluminum alloy, and cast iron. b. Use for cutting tubing which will have "spring back" action after tapping. 2. Apply proper chamfer angle. 3. Increase cutting angle.
	Damaged Thread	Use proper reversing speed to avoid damaging tapped thread on the way out of the hole.
	Left-over Chips	1. Increase cutting performance to avoid any left over chips in the hole. 2. Remove left over chips from the hole for gage checking.
Undersize Internal Diameter	**Hole Size**	Use maximum drill size.

Tool Life		
Specific Problem	**Cause**	**Solution**
Undersize Pitch Diameter	**Chamfer Too Short**	Increase chamfer length.
	Wrong Cutting Angle	Apply proper cutting angle.
	Galling	1. Use thread relieved taps. 2. Reduce land width. 3. Apply surface treatment such as steam oxide or TiN. 4. Use proper cutting lubricant. 5. Reduce tapping speed. 6. Use larger hole size. 7. Obtain proper alignment between tap and work.
	Chip Packing	1. Use spiral pointed or spiral fluted taps. 2. Use larger drill size.
Chattering on Tapped Thread	**Tool Free Cutting**	1. Reduce cutting angle. 2. Reduce amount of thread relief.
Undersize Internal Diameter	**Hole Size**	1. Avoid too narrow a land. 2. Do not grind the bottom of the flute.

Trouble Shooting for Tapping

Tool Life		
Specific Problem	**Cause**	**Solution**
Breakage	**Incorrect Tap Selection**	1. Avoid chip packing in the flutes or the bottom of the hole. Use spiral pointed or spiral fluted taps or fluteless taps. 2. Apply correct surface treatment such as steam oxide or TiN.
	Excessive Tapping Torque	1. Use larger drill size. 2. Try to shorten thread length. 3. Increase cutting angle. 4. Use a tap with more thread relief and reduced land width. 5. Use spiral pointed or spiral fluted taps.
	Operating Conditions	1. Reduce tapping speed. 2. Avoid misalignment between tap and the hole and tapered hole. 3. Use floating type of tapping holder. 4. Use tapping holder with torque adjustment. 5. Avoid hitting bottom of the hole with tap.
	Tool Condition	1. Do not grind the bottom of the flute. 2. Avoid too narrow a land width. 3. Remove all worn sections when regrinding the flutes. 4. Regrind tool more frequently.
Chipping	**Incorrect Tap Selection**	1. Reduce cutting angle. 2. Use a different kind of high-speed steel tap. 3. Reduce hardness of the tap. 4. Increase chamfer length. 5. Avoid chip packing in the flutes or in the bottom of the hole by using spiral fluted or spiral pointed taps.
	Operating Conditions	1. Reduce tapping speed. 2. Avoid misalignment between tap and hole. 3. Avoid sudden return of reverse in blind hole tapping. 4. Avoid galling. 5. Use large hole size.
Wear	**Incorrect Tap Selection**	1. Use specially designed taps for tapping heat treated material. 2. Change to a type of high-speed steel tap that contains vanadium. 3. Apply special surface treatment such as steam oxide or TiN. 4. Increase chamfer length.
	Operating Conditions	1. Reduce tapping speed. 2. Apply proper cutting lubricants. 3. Avoid work hardening. 4. Use larger hole size.
	Tool Condition	1. Grind proper cutting angle. 2. Avoid hardness reduction from grinding process.

Drills Informations

An Entirely New Drill for Production Applications (EX-GOLD Drills)
A. Special Features

- There is no chisel edge in the center part of the drill. This provides a better biting action and reduces thrust requirements. This is according to the radius point thinning Hosoi Theory (patented).
- Reduced production time is achieved through higher feeds and speeds. Unlike conventional drills, chips are broken into small pieces so there is no need for step-drilling.
- Premium grade cobalt high speed steel is coated with titanium nitride to reduce tool wear and chip weld. A thick web provides the rigidity to reduce tool flex and hold tighter tolerances for precision holes.
- The unique tool point design also eliminates center drilling or the use of a punched center.
- Shank sizes are the same as end mill shanks so existing end mill chucks, collets, and holders can be used.
- For sizes under .1535 inches, special OSG designed gash thinning is used in the center section.
- Designed for use with CNC machines and available in both jobber and stub lengths, OSG drills feature a patented tool point, advanced flute geometry, premium steel machined to CNC tolerances, standardized shank diameters and a superior titanium nitride coating. This results in faster speeds and feeds, higher accuracy, and longer tool life. In addition, greater tool rigidity gives you surface finishes that eliminate secondary reaming operations in many cases.

Illustration 1: Nomenclature

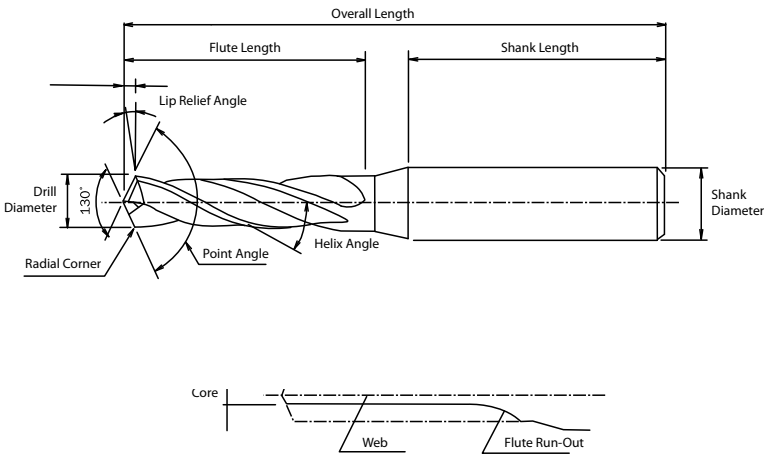


Illustration 2 OSG Drill

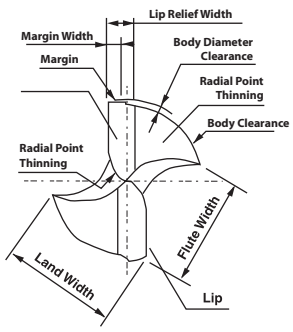
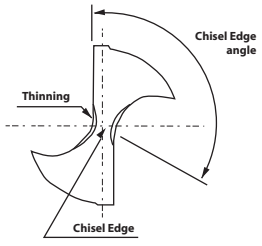


Illustration 3 Conventional Drill

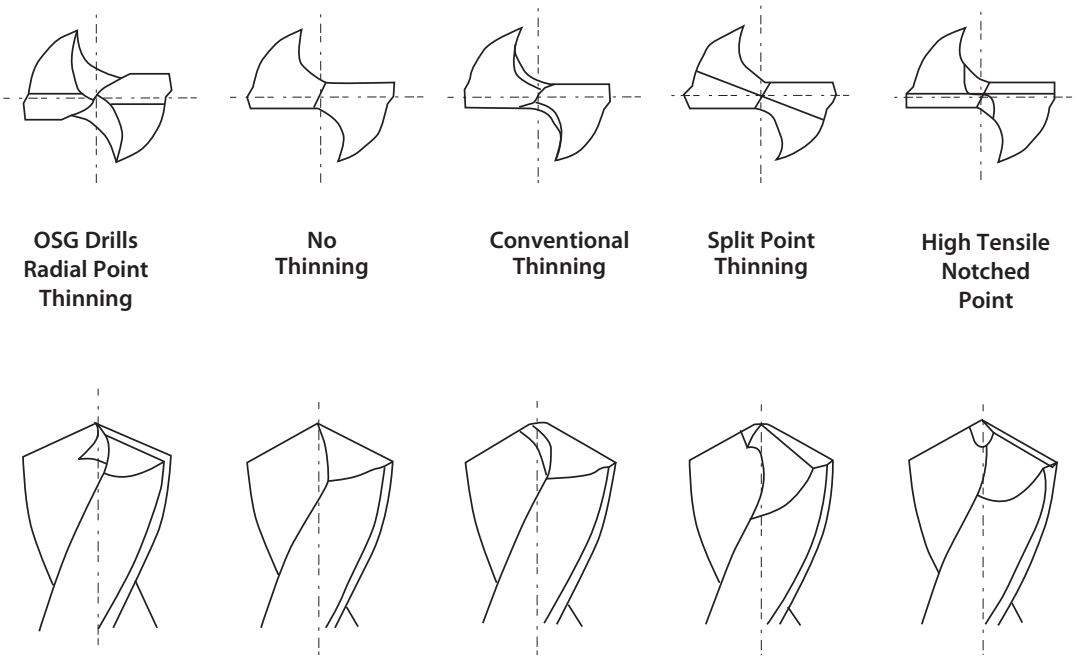


Drills Informations

B. OSG Drill Characteristics
1. Unique Point Design

With OSG drills, the chisel edge in the center section of a conventional drill is eliminated. Instead, there is a radius cutting edge. This provides a better biting action than a conventional drill, where the chisel edge is easily crushed against the harder to drill material.
OSG drills have a chip pocket for smooth chip action along the radius cutting edge. Also, the point angle is 130˚ instead of the conventional 118˚. This creates small broken chips rather than the long, stringy chips created by a conventional drill.

Illustration 4 Point Thinning



OSG Drills Radial Point Thinning | **No Thinning** | **Conventional Thinning** | **Split Point Thinning** | **High Tensile Notched Point**

Cutting Conditions

Cutting Conditions	
$N = \frac{1{,}000V}{\pi Dc}$ $V = \frac{\pi Dc N}{1.000}$ $F = f \cdot N$	V : **Cutting Speed** (m/min) F : **Feed/min.** (m/min) Dc : **Drill Dia.** (mm) N : **Speed** (min-1) π : **The ratio of the circumference of a circle** f : **Feed rate/rev.** (mm/rev)

For excellent results, it is best to follow established criterion for maximizing tool efficiency. Feed per table, expressed as F (mm/min) shows the drills' cutting efficiency. Although the spindle speed significantly influences the life of HSS drills, feed rate does not. Therefore, increasing feed rate will help improve cutting efficiency. However, if feed rate is too high, chips may end up being too thick. Users should be careful to find the appropriate feed rate for their particular operation.

The range of appropriate feed rates for carbide alloy drills is smaller than that of HSS drills because carbide alloy drills have negative chamfered cutting edge. If a feed rate outside the recommended range is used, tool life declines considerably. Carbide alloy drills, however, have higher heat resistance than HSS tools. Also, cutting efficiency can be improved by using a higher cutting speed (i.e. increasing the number of revolutions per minute).

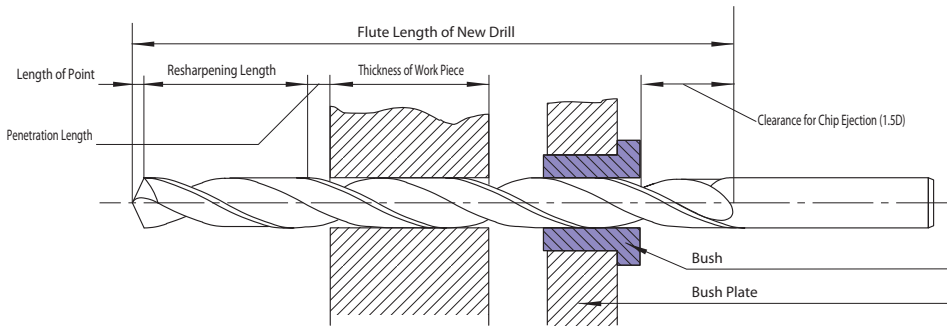
Flute Length

Similar to cutting speed, feed and cutting fluid, flute length is a critical determinant of tool life. Considering drilling depth, bush and resharpening requirements, flute length should usually be as short as possible. Unnecessarily long flute length can cause instability because of lower rigidity and possible twisting or/and deflection (depending on the holder). For most operations, suitable flute length can be calculated by using the following formula.

Depth of Hole* + 1.5×Dc + Resharpening Length + Penetration Length**

*(Includes bush length and distance between bush and work piece.)

**(D = Drill Diameter)



Recommended Cutting luid Selection Table-Based on Work Material

Tool	Coated HSS Drill						Coated Carbide Drill			Coated Carbide Drill			Diamond Coated Carbide Drill					
Type of Supply	Wet				Dry		Wet			Wet	Dry		Wet				Dry	
Type of Cutting Fluid	Non Water Soluble	Water Soluble			Dry	Semi Dry	Non Water Soluble	Water Soluble		Water Soluble	Dry	Semi Dry	Non Water Soluble	Water Soluble			Dry	Semi Dry
Work Material	JIS N (JIS N)	JIS A1 Emulsion (JIS A-1)	JIS A2 Soluble (JIS A-2)	JIS A3 Solution (JIS A-3)	Air Blow	Mist	JIS N (JIS N)	JIS A1 Emulsion (JIS A-1)	JIS A2 Soluble (JIS A-2)	JIS A3 Solution (JIS A-3)	Air Blow	Mist	JIS N (JIS N)	JIS A1 Emulsion (JIS A-1)	JIS A2 Soluble (JIS A-2)	JIS A3 Solution (JIS A-3)	Air Blow	Mist
Carbon Steel		○			○	○		○			○	○		×	×	×	×	×
Cast Iron		○	○		○	○		○	○		○	○					×	×
High Hardened Steel		○				○		○				○		×	×	×	×	×
Stainless Steel		○			×	○		○						×	×	×	×	×
Titanium Alloy		○			×			○			×			×	×	×	×	×
Heat Resistant Alloy (ex. Inconel®)		○			×			○						×	×	×	×	×
Aluminum Alloy		○	○					○	○					○	○		×	○
Copper	○						○				×		○				×	○

Drilling Difficult to Machine Materials

Certain materials have special characteristics (listed below), that make drilling difficult. In order to successfully drill these materials, it is critical to use proper cutting conditions based on information about the material and the tool, and to understand how variations of these characteristics can influence the final outcome.

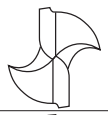
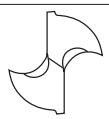
Characteristics of Difficult to Machine Materials

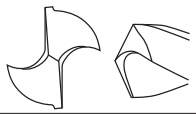
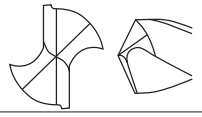
Characteristics	Effect(s)
1. High hardness	Chipping of the cutting edge
2. High tensile strength	Tool wear
3. Low heat conductivity	High temperature at cutting edge
4. High work hardening	High thrust force and torque
5. Contains hardened grain	Chip trouble (discharging, shape)
6. High ductility	Bad surface finish
7. High affinity	

Machining Recommendations for Difficult to Machine Materials

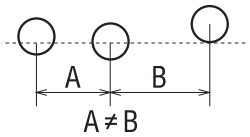
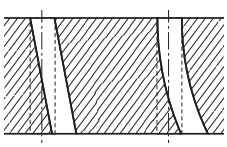
Work Material	Characteristics	Machining Recommendations	Recommended drills	
Austenitic Stainless Steel SUS304-SUS316	• High work hardening • High tensile strength at high temperatures • Low heat conductivity • High ductility. Easy to get build up at the edge. => chipping	• Use tough drill material with sharp cutting edge and coating • High feed rate • High coolant supply	WDO-3D WDO-5D EX-SUS-GDS EX-SUS-GDR	WDO-3D NEXUS-GDS NEXUS-GDR EX-SUS-GDN VP-HO-GDR
Die Steel SKD11	• Made of hard carbide grain (under 0.4%C =>carbide grain is melted)	• Use high rigid HSS coated tools • Use lower cutting speed and higher feed rate	WD-2D WDO-3D	WDO-3D WD-4D WDO-5D VPH-GDS
High Manganese Steel SCMnH	• High tensile strength and high toughness High work hardening	• Use rigid tools, machine and work clamping device		VPH-GDS
Titanium Alloy Ti-6AI-4V	• High tensile strength per Lower case • Low heat conductivity • Chemically active High affinity with tools	• Use sufficient coolant and low cutting speed to maintain low cutting temperature.	EX-SUS-GDS	WDO-3D WDO-5D VP-HO-GDR
Heat Resistant Alloy Inconel-Hastelloy	• High hardness • High work hardening Tough Diifficult to machine	• Improve rigidity of tools and machines • Use an Stub Drill with coating and rigidity	WD-2D VPH-GDS	WDO-3D WD-4D WDO-5D
High Hardened Quenched and Tempered Steels	• High hardness High shearing stress High cutting resistance	• Use a drill made from high hardened and rigid materialif the work material is over 45 HRC, use a carbide drill.	WD-2D	VPH-GDS WDO-15D/20D/30D
High Silicon Aluminum Alloy AC9A-A390	• High hardened grain causes large wear on tools	• Use a drill made from high hardened material • Provide sufficient coolant supply	D-GDN	
Kovar Fe-Ni-Co	• Low thermal Expansion material • Tend to Build-up, but easy to machine	• Use high helix and sharp edge drill	WX-MS-GDS EX-SUS-GDS EX-SUS-GDR	NEXUS-GDS NEXUS-GDR
Co-Cr Alloy	• Better anti-rust, Better rigidity • Harmonize with organism	• Easy to break chips, but recommended to use better drill on wear resistance	WDO-3D WD-4D	WDO-3D WDO-5D
Composite CFRP - GFRP	• Tough fiber causes extrame wear • Tend to have naps and peel off	• Use sharp and wear resistant tools • Design the tool to prevent naps and peeling	D-STAD	

Thinning

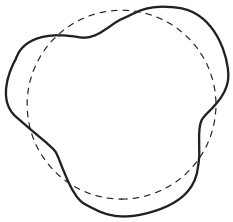
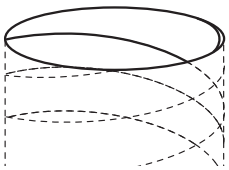
Type	Design	Characteristics and Applications
R Thinning		• For heavy drilling • Good chamfering • Creates small chips • Reduces thrust force
X Thinning		• Good chamfering • For drills with large web diameter • Reduces thrust force
N Thinning		• For drills with small web diameter and/or with small point angle • Large chip pocket • High strength at the point
S Thinning		• For drills with small web diameter and/or with small point angle • High strength at the point • Easy to regrind

Type	Design	Characteristics and Applications
W+R W Thinning, W + R Thinning	 	• For heavy drilling • Prevents chipping on cutting edge • For high hardened materials • Prevents chipping that can xoccus when drilling in high hardened steel materials • High strength on the cutting edge • Reduces thrust force
Three-rake Thinning		• Accurate at cutting edge tolerance Better hole size control not good for high feed rate

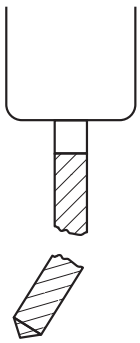
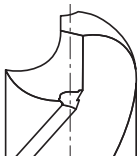
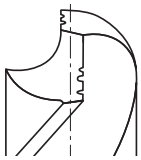
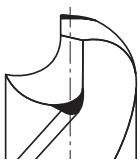
Trouble Shooting for Drilling

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Hole expansion	**Large run out after attachment to the machine** **Large spindle run out**	1. Check holder and/or select another one 2. Check the spindle 3. Check run out after fixing to the chuck
	Non-symmetric point angle **Large lip height** **Run out of chisel edge**	1. Regrind correctly 2. Check precision after regrinding
Irregular hole size	**Non-symmetric point angle** **Large lip height** **Run out of chisel edge** **Major margin wear**	1. Regrind correctly 2. Check precision after regrinding
	Large run out after attachment to machine **Loose hold** **Low work holding rigidity**	1. Check holder and/or select another one 2. Check the spindle 3. Check run out after fixing to the chuck
	Feed rate is too high	Decrease the feed rate
	Not enough coolant	Change method of coolant supply, or increase volume
Poor accuracy **Irregular pitch** 	**Large run out after attachment to machine** **Large spindle run out**	1. Check holder and/or select another one 2. Check the spindle 3. Check run out after fixing to the chuck
	Run out when cutting	1. Increase rigidity of tools and machines 2. Increase work clamping rigidity 3. Select a thinning for low cutting resistance 4. Use centering 5. Double-check that the work piece is horizontal 6. Use a drill bush
	Poor alignment accuracy (lathing)	Check alignment before operation
Bad hole perpendicularity 	**Excessive tool wear**	Regrind correctly
	Poor position accuracy	Increase position accuracy
	Non-symmetric point angle **Large lip height** **Run out of chisel edge**	1. Regrind correctly 2. Check precision after regrinding
	Not enough drill rigidity	Use a more rigid drill
	Drilling surface is not horizontal **Poor alignment accuracy (lathing)**	1. The work piece must be horizontal or pre-drilled 2. Use centering

Trouble Shooting for Drilling

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Bad cylindrical accuracy 	**Non-symmetric point angle** **Large lip height** **Run out of chisel edge**	1. Regrind correctly 2. Check precision after regrinding
	Large run out after attachment to machine **Large spindle run out** **Loose clamping of work material**	1. Check holder and/or select another one 2. Check the spindle 3. Check work clamping after fixing to the machine
	Relief angle is too large	Regrind correctly
	Low drill rigidity	Use a more rigid drill
Poor surface finish	**Poor regrinding**	Regrind correctly
	Not suitable coolant for the material Not enough coolant	Change method of coolant supply, or increase volume Select higher quality coolant
	Large run out after attachment to machineLarge spindle run out	1. Check holder and/or select another one 2. Check the spindle
	Feed rate is too high	Reduce the feed rate
	Excessive wear on cutting edge **Build up on margin is too large**	1. Regrind correctly 2. Use a coated tool
	Chip packing	1. Use the most suitable drill (consider flute form & helix angle) 2. Change cutting conditions (feed rate, try step feed)
Bad cylindrical shape 	**Non-symmetric point angle** **Large lip height** **Run out of chisel edge** **Large margin wear**	1. Regrind correctly 2. Check precision after regrinding
	Feed rate is too low	Increase feed rate

Trouble Shooting for Drilling

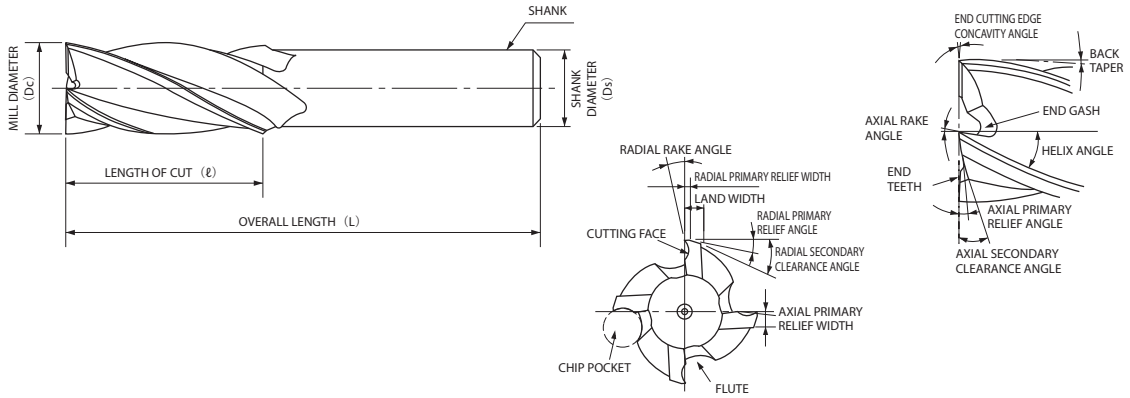
Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Breakage 	**Deflection and recess of machine and work material**	Increase the rigidity of machine, drill and work clamping
	Relief angle is too small	Regrind precisely
	Feed rate is too high	Decrease the feed rate
	Excessive tool wear	Regrind
	Chip packing	Use the most suitable drill (consider flute form & helix angle) Change cutting conditions (feed rate, try step feed)
	Difficulty entering the material	1. Use a highly rigid tool and machine 2. Increase work clamping rigidity 3. Select a thinning for low cutting resistance 4. Use centering 5. The work piece should be horizontal 6. Use drill bush
Chipping of corner edge 	**Inappropriate tool material**	Use the most suitable tool material
	Uneven hardness distribution on the work material	1. Use the most suitable tool material 2. Change cutting conditions (feed rate, drilling speed) or machining method
	Drilling speed or feed rate too high	Reduce drilling speed or feed rate
	Not enough coolant	Change coolant method and increase volume
Chipping of cutting edge 	**Large run out after attachment to machine Large spindle run out**	1. Check holder and/or select another one 2. Check the spindle 3. Check run out after fixing to the chuck
	Drilling speed or feed rate	Reduce drilling or feed rate
	Relief angle is too small	Regrind correctly
	Tool not suitable for work material	Use the most suitable tool material
Abnormal wear on the corner part 	**Regrinding should have occurred earlier**	Regrind sooner
	Poor alignment accuracy (lathing)	Check /adjust alignment before drilling
	Drilling speed or feed rate too high	Decrease the drilling speed
	Point shape is inappropriate	Select correct point dimensions
	Tool not suitable for work material	Use the most suitable tool material
	Inappropriate coolant type	Change coolant

Trouble Shooting for Drilling

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Wear, chipping and crushing of the chisel edge	**Feed rate is too high**	Decrease feed rate
	Point shape is inappropriate	Select correct point dimensions
	Tool not suitable for work material	Choose suitable tool material
	Relief angle is too small	Regrind precisely
Chipping of the margin	**Bush size is too large**	Select correct bush size
Margin build-up	**High heat generation due to large wear on the cutting edge**	Regrind correctly
	Coolant is not sufficient	Change coolant method and increase volume
	Coolant is not suitable	Change coolant
	Bad chip discharging Ductile material	Change drills or alter cutting conditions
Tang breakage	**Shank slippage due to defect**	Eliminate the defect
	Defective inner surface of morse taper holder	Change holders or correct the surface of the morse taper holder
	Inaccurate regrinding	Regrind correctly
Chattering sounds	**Relief angle is too large**	Regrind correctly
	Low tool rigidity	Use a more rigid drill
Chips roll around the drill	**Long chips Chips are stuck in the flute**	Change drill and cutting conditions
One-sided wear	**Poor alignment accuracy (lathing)**	Check/adjust the alignment
	Large run out after attachment to machine	Decrease run out when fixing to the chuck

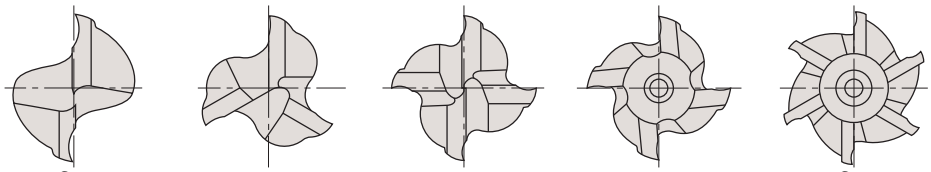
Information

Terminology



Number of Flutes

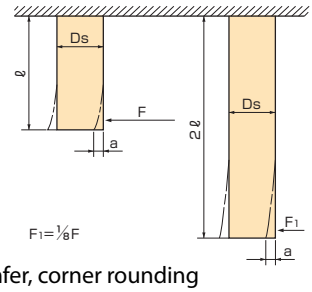
The number of flutes should be determined by the work material, dimensions of the work piece and milling conditions. In general, an end mill with a small number of flutes and large chip room is used for roughing, and an end mill with a large number of flutes is used for finishing.



2 flutes | 3 flutes | 4 flutes (Center Cut) | 4 flutes (with center hole) | 6 flutes (with center hole)

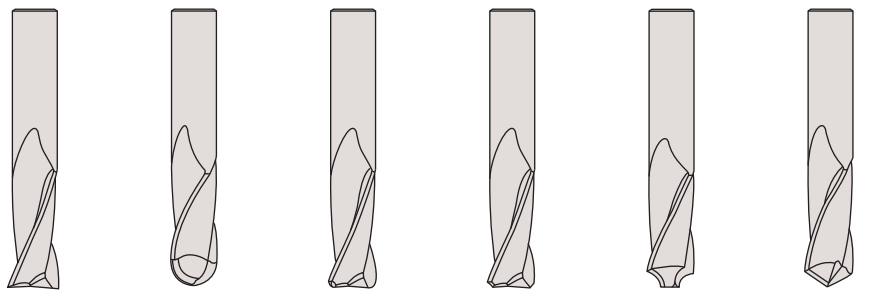
Lenght of Cut

The shorter the end mill, the smaller the deflection and the stronger the rigidity. Because rigidity varies in proportion to length of cut by a factor to the power of 3 (for example, when the length of cut doubles, the rigidity decreases to 1/8), it is necessary to keep the length of cut as short as possible.



End Profile

Stocked end profiles are typically square end ball nose and corner radius, Corner chamfer, corner rounding and drill nose end profiles can be supplied via special oder.



SQUARE | BALL NOSE | CORNER RADIUS | CORNER CHAMFER | CORNER ROUNDING | DRILL NOSE

Trouble Shooting for Milling

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Chip packing	**Too great cutting amount** **Not enough chip room** **Not enough coolant**	1. Adjust feed or speed 2. Use end mill with fewer flutes 3. Apply more coolant. Use air pressure
Rough surface finish	**Feed too fast** **Slow speed** **Too much wear** **Chip biting** **No end tooth concavity**	1. Slow down to correct feed 2. Use higher speed 3. Regrind earlier stage 4. Cut less amount per pass 5. Add margin (touch primary with oilstone)
Burr	**Too much wear on primary relief** **Incorrect conditions** **Impropoer cutting angle**	1. Regrind sooner 2. Correct milling conditions 3. Change to correct cutting edge
No dimensional accuracy	**Too tough conditions** **Lack of accuracy (machine & holder)** **Not enough rigidity (machine & holder)** **Not sufficient number of flutes**	1. Change to easier condition 2. Repair machine or holder 3. Change machine or holder or condition 4. Use end mill with geater number of flutes
No perpendicular side	**Feed too fast** **Too geat cutting amount** **Too long flute length or long overall length** **Not sufficient number of flutes**	1. Slow down to correct feed 2. Reduce cutting amount 3. Use proper length tool. Hold shank deeper 4. Use end mill with greater number of flutes

Trouble Shooting for Milling

Dimensional Accuracy		
Specific Problem	**Cause**	**Solution**
Chipping	**Feed too fast** **Feed too fast on first cut** **Not enough rigidity of machine tool & holder** **Loose tool holder** **Loose fixture (workpiece)** **Lack of rigidity (tool)** **Teeth too sharp**	1. Slow down to propoer feed 2. Slow down on first bite 3. Change rigid machine tool or holder 4. Tighten tool holder 5. Tighten workpiece fixture 6. Use shortest end mill available. Hold shank deeper. Try down cut. 7. Change to lower cutting edge, primary relief
Wear	**Speed too fast** **Hard material** **Bitting chips** **Improper feed spped (too slow)** **Improper cuuting angle** **Too low primary relief angle**	1. Slow down, use more coolant 2. Use higher grade, tool material, add surface treatment 3. Change feed speed to change chip size or clear chips with coolant or air pressure 4. Increase feed speed. Try down cut 5. Change to correct cutting angle 6. Change to larger relief angle
Breakage	**Feed too fast** **Too large cuting amount** **Too long flute length or long overall length** **Too much wear**	1. Slow down feed 2. Adjust to smaller cutting amount per teeth 3. Hold shank deeper, use shorter end mill 4. Regrind at earlier stage
Chattering	**Feed and speed too fast** **Not enough rigidity** **Too much relief angle** **Loose holder (workpiece)** **Cutting too deep** **Too long flute length or long overall lenght**	1. Correct feed and speed 2. Use beter machine tool or holder or change conditions 3. Change to smaller relief angle. Add margin (touch primary with oilstone) 4. Hold workpiece tighter 5. Correct to smaller cutting depth 6. Hold shank deeper, use shorter end mill or try down cut
Short tool life (dull teeth)	**Too much cutting friction** **Tough worx material** **Improper cutting angle**	1. Regrind at earlier stage 2. Select premium tool 3. Change cutting angle & primary

Extract of our General Sales Conditions

1. The conditions of sale hereafter are applicable whatever the general conditions of purchase of the customer. Any modification proposed by the parties must be by written agreement.

2. The order doesn't bind the vendor until a confirmation is sent by the vendor by e-mail. The sold goods will remain the property of the vendor, as long as the price has not have entirely been paid.

3. Delays to delivery will not result in any damages, indemnity or penalty for the vendor. The delivery times are given only as a rough guide and without guarantee.

4. All risks to which the goods are exposed during the transport are chargeable to the buyer, and this, whichever the modalities agreed.

5. For payments not received by the agreed periods, the sums due will be fully subjected to an interest of 1% per month until complete payment. In addition, a lump sum of 15% of the unpaid amounts, with a minimum of 100€, will be asked.

   In case the vendor should pay damages to the buyer for whatever causes, the damages will be limited to the repair of the damage duly undergone by the buyer, without being able to exceed 5 % of the value of the goods.

6. In the case of a dispute or if an amicable agreement cannot be reached, the vendor reserves the right to resort to the competent courts for his registered address

7. In case of honest or clerical errors, the vendor will accept items to be returned within 30 calendar days of the shipping date. A restocking fee of 20% will be applied for those requests that exceed 30 calendar days. The vendor will not accept returns of goods for those items that are more than 60 calendar days from the shipping date and for those that are non-European stocked items. Non-European stocked items are marked with white circles in the General Catalog Volume III.

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