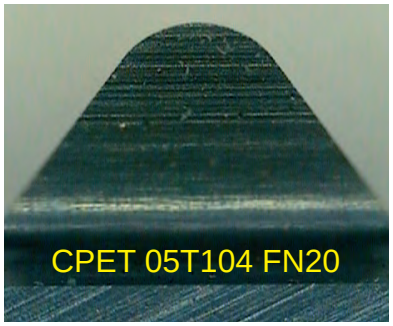
PERFORMANCE
INNOVATION
QUALITY

Swiss Precision Cutting Tools

DENITOOL®

METRIC PROGRAM 2016

DENITOOL®



Problemlösungsorientierte Präzisionswerkzeuge für die Maschinenindustrie

Seit über 40 Jahren sind Denitool® Präzisionswerkzeuge der Inbegriff für innovative, leistungsfähige Qualitätsprodukte für höchste Ansprüche.

Deni® AG bietet ein eigenes, umfangreiches Standardprogramm an Werkzeugen und Wendeschneidplatten zum Drehen und Fräsen, vorzugsweise für Anwendungen in kleinen Abmessungen. Die Herstellung von individuellen, kundenspezifischen Sonderwerkzeugen und Spezialplatten, Beschichtungsservice sowie ein Reparaturservice für Hartmetallbohrstangen gehören ebenso zum Angebot.

Herausragende Merkmale aller Denitool® Produkte sind die speziell auf die unterschiedlichen Werkstoffe und Anwendungen abgestimmten, optimierten Wendeplatten- und Werkzeuggeometrien. Die schnittigen Denitool® Wendeschneidplatten führen auch bei geringen Spanquerschnitten zu extrem tiefen Schnittkräften und somit zu hervorragenden Oberflächenqualitäten, Schnittleistungen und Standzeiten.

Wendeschneidplatten sind in Hartmetall und Cermet in allen gängigen wie auch in Spezialbeschichtungen sowie mit PKD-, MDC- oder CBN-Bestückung erhältlich.

Problemsolving Precisiontools for the Manufacturing Industry

For more than 40 years Denitool® Precision Tools have been known for innovative, high-performance, quality products that meet the highest quality standards.

Deni® Ltd. offers a wide range of cutting tools and inserts for turning and milling, preferably for applications in very small dimensions. Individual custom designed specialty tools, custom inserts, coating service and repair service for carbide boring bars are also part of the program.

One of the highlights at Denitool® are the optimized insert and tool designs with specific cutting angles for different applications and materials. The sharp Denitool® inserts cut with extremely low force and produce high quality surface, cutting speed and tool life.

Inserts are available in carbide and Cermet with all the common but also with special coatings and some are also available with PCD, MDC or CBN.

Des outils de précision orienté à la solution des problèmes pour l'industrie

Depuis plus de 40 ans les outils de précision Denitool® sont connus par leurs grandes performances, qualité et esprit novateur. Ils sont parfaitement adaptés aux demandes les plus exigeantes.

Deni® SA propose une large gamme d'outils de coupe et de plaquettes amovibles destinées au tournage et au fraisage, tout particulièrement, pour des applications dans de très petites dimensions. Deni® SA fabrique également des outils spéciaux individuels, spécifiques au besoin de ses clients, comme des plaquettes, ainsi que le service de revêtement et un service de réparation pour les barres d'alésage en carbure.

La totalité des produits Denitool® se caractérise avant tout par des matériaux variés et des géométries d'outils et de plaquettes amovibles particulièrement bien adaptées à leur utilisation.
Les plaquettes amovibles Denitool® coupent avec des forces extrêmement faibles qui permettent d'obtenir ainsi une excellente qualité de surface, vitesse de coupe et une longue durée de vie de l'outil.

Les plaquettes amovibles sont disponibles en carbure et en Cermet dans tous les revêtements courants et spéciaux et également renforcées avec du PCD, MDC ou CBN.

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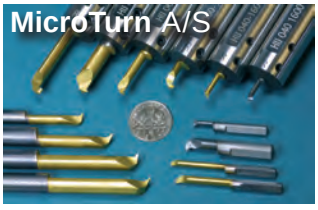
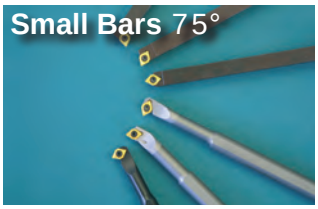
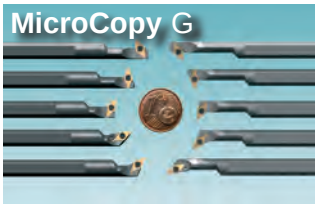
Tools for turning operations

Drehwerkzeuge / Outils de tournage







MicroTurn A/S

Microdrehwerkzeuge für Innenbearbeitungen ab ∅ 2.8 mm

Leistungsfähige MicroTools für präzise Innendreh- & Kopieroperationen. Die PVD-beschichteten Dreheinsätze aus Denalloy® Speziallegierung sind handelsüblichen HM-Einsätzen in Bezug auf Leistung und Standzeit weit überlegen.

Micro turning tools for ID turning operations from 2.8 mm dia.

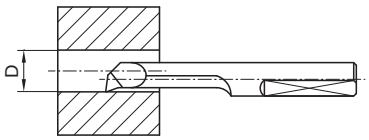
The advanced MicroTools for precise internal turning and copying operations. PVD coated turning tips in Denalloy® special alloy are far superior in performance and tool life to any standard carbide tips on the market.

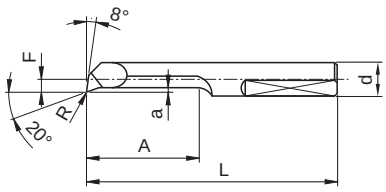
Outils d'alésage micro pour usinage intérieur à partir de ∅ 2.8 mm

Des MicroTools performants pour des opérations précises de tournage et copiage internes. Les pointes d'alésage recouverts en PVD sont fabriqués en alliage spécial Denalloy®. Leur performance et longévité sont bien supérieures aux pointes en carbures qu'on trouve sur le marché.

AUSDREHEINSATZ / TURNING ADAPTER / ADAPTEUR DE TOURNAGE

NSA..

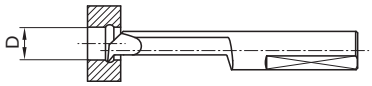


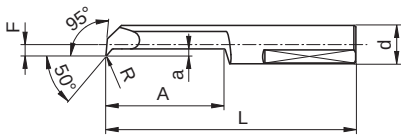


Artikel-Nr. Article No. No. d'article R	L	[mm] d	L	A	F	D_{min}	a	R	Halter (R + L) Toolholder (R + L) Porte outils (D + G)
NSAR 2804 000 10	**NSAL 2804 000 10**		30	10					
NSAR 2804 000 15	**NSAL 2804 000 15**	4	35	15	0.6	2.8	0.2	0.1	
NSAR 2804 000 22	**NSAL 2804 000 22**		42.5	22.5					HIJ040-1200-080 / HIJ040-1600-080
NSAR 3804 000 10	**NSAL 3804 000 10**		30	10					
NSAR 3804 000 15	**NSAL 3804 000 15**	4	35	15	1.5	3.8	0.3	0.1	
NSAR 3804 000 22	**NSAL 3804 000 22**		42.5	22.5					

KOPIEREINSATZ / COPYING ADAPTER / ADAPTEUR DE COPIAGE

95°
NSL..

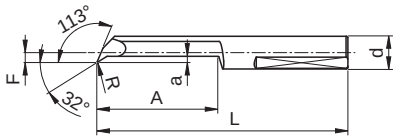




Artikel-Nr. Article No. No. d'article R	L	[mm] d	L	A	F	D_{min}	a	R	Halter (R + L) Toolholder (R + L) Porte outils (D + G)
NSLR 2804 000 10		4	32	10	0.5	2.8	0.5	0.1	HIJ040-1200-080
NSLR 3804 000 15		4	37	15	1.5	3.8	1.0	0.1	/ HIJ040-1600-080
NSLR 4806 000 18		6	40	18	1.5	4.8	1.0	0.1	HIJ060-1600-080
NSLR 5806 000 23		6	45	23	2.3	5.8	1.3	0.1	
NSLR 6808 000 30		8	52	30	2.3	6.8	1.4	0.1	HIJ080-1600-080
NSLR 7808 000 40		8	62	40	3.3	7.8	1.4	0.1	

KOPIEREINSATZ / COPYING ADAPTER / ADAPTEUR DE COPIAGE

113°
NSX..

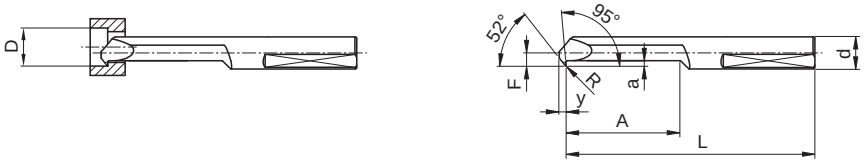


Artikel-Nr. Article No. No. d'article R	L	[mm] d	L	A	F	D_{min}	a	R	Halter (R + L) Toolholder (R + L) Porte outils (D + G)
NSXR 2804 000 10		4	32	10	0.5	2.8	0.5	0.1	HIJ040-1200-080
NSXR 3804 000 15		4	37	15	1.5	3.8	1.0	0.1	/ HIJ040-1600-080
NSXR 4806 000 18		6	40	18	1.5	4.8	1.0	0.1	HIJ060-1600-080
NSXR 5806 000 23		6	45	23	2.3	5.8	1.3	0.1	
NSXR 6808 000 30		8	52	30	2.3	6.8	1.4	0.1	HIJ080-1600-080
NSXR 7808 000 40		8	62	40	3.3	7.8	1.4	0.1	

Andere Abmessungen & Geometrien auf Anfrage / Different dimensions & geometries upon request / Dimensions et géométries differentes sur demande

KOPIEREINSATZ / COPYING ADAPTER / ADAPTEUR DE COPIAGE

52°
NSQ..



Artikel-Nr. Article No. No. d'article		[mm]								Halter (R + L) Toolholder (R + L) Porte outils (D + G)
R	**L**	d	y	L	A	F	D_{min}	a	R	
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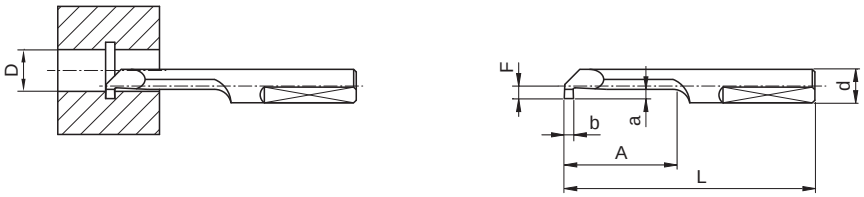
NSQR 3804 000 15		4	1	37	15	1.5	3.8	1.0	0.1	/ HIJ040-1600-080
NSQR 4806 000 18		6	1.5	40	18	1.5	4.8	1.0	0.1	HIJ060-1600-080
NSQR 5806 000 23		6	2	45	23	2.3	5.8	1.3	0.1	
NSQR 6808 000 30		8	2	52	30	2.3	6.8	1.4	0.1	HIJ080-1600-080
NSQR 7808 000 40		8	2	62	40	3.3	7.8	1.4	0.1	

EINSTECHEINSATZ / GROOVING ADAPTER / ADAPTEUR POUR RAINURER

NSE..



Artikel-Nr. Article No. No. d'article		[mm]							Halter (R + L) Toolholder (R + L) Porte outils (D + G)
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NSER 3804 110 15	**NSEL 3804 110 15**	4	35	15	1.5	1.1	3.8	1.0	/ HIJ040-1600-080
NSER 4806 110 10	**NSEL 4806 110 10**	6	30	10	1.5	1.1	4.8	1.0	
NSER 4806 110 18	**NSEL 4806 110 18**	6	38	18	1.5	1.1	4.8	1.0	
NSER 4806 110 25	**NSEL 4806 110 25**	6	45	25	1.5	1.1	4.8	1.0	
NSER 4806 160 10	**NSEL 4806 160 10**	6	30.5	10.5	1.5	1.6	4.8	1.4	
NSER 4806 160 18	**NSEL 4806 160 18**	6	38.5	18.5	1.5	1.6	4.8	1.4	
NSER 4806 160 25	**NSEL 4806 160 25**	6	45.5	25.5	1.5	1.6	4.8	1.4	HIJ060-1600-080
NSER 5806 160 15	**NSEL 5806 160 15**	6	35.5	15.5	2.5	1.6	5.8	1.4	
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NSER 5806 230 30	**NSEL 5806 230 30**	6	50	30	2.5	2.3	5.8	1.9	
NSER 6808 160 15	**NSEL 6808 160 15**	8	35.5	15.5	2.5	1.6	6.8	1.4	
NSER 6808 160 25	**NSEL 6808 160 25**	8	45.5	25.5	2.5	1.6	6.8	1.4	
NSER 6808 230 15	**NSEL 6808 230 15**	8	35	15	2.5	2.3	6.8	1.9	
NSER 6808 230 24	**NSEL 6808 230 24**	8	44	24	2.5	2.3	6.8	1.9	
NSER 6808 230 30	**NSEL 6808 230 30**	8	50	30	2.5	2.3	6.8	1.9	HIJ080-1600-080
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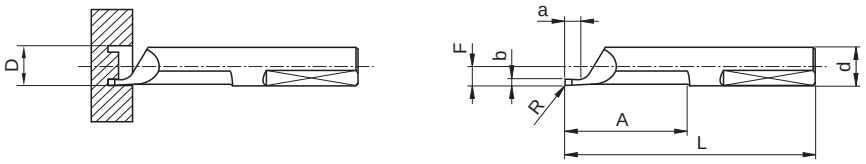
NSER 7808 230 24	**NSEL 7808 230 24**	8	44	24	3.5	2.3	7.8	1.9	
NSER 7808 230 30	**NSEL 7808 230 30**	8	50	30	3.5	2.3	7.8	1.9	

Andere Abmessungen & Geometrien auf Anfrage / Different dimensions & geometries upon request / Dimensions et géométries differentes sur demande

AXIAL EINSTECHSCHNEIDEINSATZ / FACE GROOVING ADAPTER / ADAPTEUR DE TREPANNAGE

NSF..



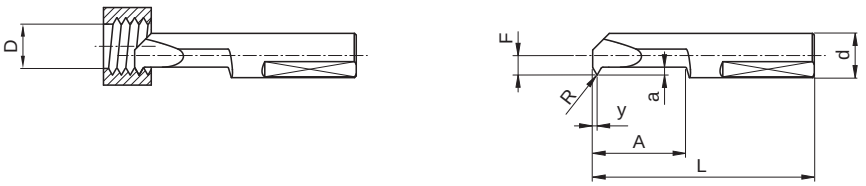
Artikel-Nr. Article No. No. d'article		[mm]								Halter (R + L) Toolholder (R + L) Porte outils (D + G)
R	**L**	d	L	A	F	$b^{+0.05}_{-0.0}$	D_{min}	a	R	
NSFR 6206 100 15		6	37	15	2.95	1.0	6.2	2.0	0.15	
NSFR 6206 150 15		6	37	15	2.95	1.5	6.2	3.0	0.15	
NSFR 6206 200 15		6	37	15	2.95	2.0	6.2	4.0	0.15	HIJ060-1600-080
NSFR 6206 250 15		6	37	15	2.95	2.5	6.2	5.0	0.15	
NSFR 6206 300 15		6	37	15	2.95	3.0	6.2	6.0	0.15	

Andere Abmessungen & Geometrien auf Anfrage / Different dimensions & geometries upon request / Dimensions et géométries differentes sur demande

GEWINDESCHNEIDEINSATZ / THREADING ADAPTER / ADAPTEUR DE FILETAGE
TEILPROFIL 60° / PARTIAL PROFILE 60° / PROFIL PARTIEL 60°

metrisch
metrical
métric

NSM..



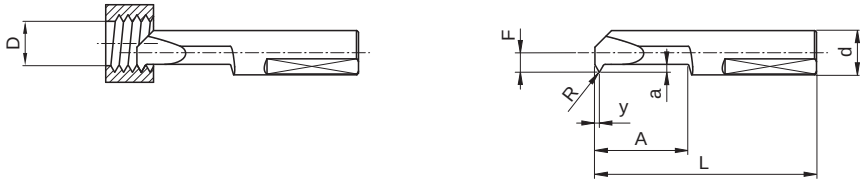
Artikel-Nr. Article No. No. d'article	[mm]					Gewindesteigung Lead of thread Montée de fil		Bereich Range Secteur					Halter (R + L) Toolholder (R + L) Porte outils (D + G)
R	d	L	A	F	D_{min}	mm	TPI	ISO	UNC	y	a	R	
NSMR 3104 025 100 08	4	30	8	1.0	3.1	0.25 - 1.00	101 - 24	÷ M5	÷ 10-24 UNC	0.5	1.0	0.02	HIJ040-1200-080
NSMR 4104 025 125 10	4	32	10	1.9	4.1	0.25 - 1.25	101 - 20	÷ M6	÷ 1/4-20 UNC	0.6	1.1	0.02	/ HIJ040-1600-080
NSMR 5706 050 150 13	6	35	13	2.5	5.7	0.50 - 1.50	51 - 17	÷ M8	÷ 5/16-18 UNC	0.7	1.3	0.04	HIJ060-1600-080
NSMR 7708 075 160 16	8	38	16	3.5	7.7	0.75 - 1.60	34 - 16	÷ M10	÷ 3/8-16 UNC	0.8	1.4	0.04	HIJ080-1600-080

Andere Abmessungen & Geometrien auf Anfrage / Different dimensions & geometries upon request / Dimensions et géométries differentes sur demande

GEWINDESCHNEIDEINSATZ / THREADING ADAPTER / ADAPTEUR DE FILETAGE
TEILPROFIL 55° / PARTIAL PROFILE 55° / PROFIL PARTIEL 55°

DIN ISO 228-1
Pipe thread

NSW..

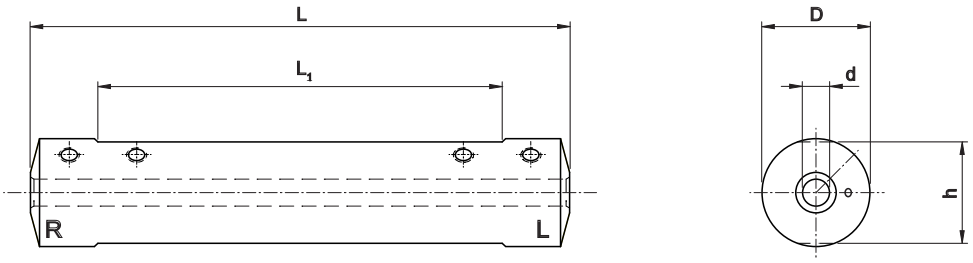


Artikel-Nr. Article No. No. d'article	[mm]					Bereich Range Secteur				Halter (R + L) Toolholder (R + L) Porte outils (D + G)
R	d	L	A	F	D_{min}	G	y	a	R	
NSWR 6006 090 000 15	6	37	15	2.8	6.0	÷ G 1/16"	0.6	1.1	0.05	HIJ060-1600-080
NSWR 7708 090 000 20	8	42	20	3.5	7.7	÷ G 1/8"	0.6	1.1	0.05	HIJ080-1600-080

Andere Abmessungen & Geometrien auf Anfrage / Different dimensions & geometries upon request / Dimensions et géométries differentes sur demande

HALTER ZU MICROTURN A/S / TOOLHOLDER FOR MICROTURN A/S / PORTE-OUTIL POUR MICROTURN A/S

mit Kühlmittelbohrung with internal coolant avec arrosage centralisé



Artikel-Nr. Article No. No. d'article	[mm]						
	D	d	L	L_1	h		
HIJ040-1200-080	12	4	80	60	11	T1221 03040	T15S
HIJ040-1600-080	16	4	80	60	15	T1221 03060	T15S
HIJ060-1600-080	16	6	80	60	15	T1221 04050	T20S
HIJ080-1600-080	16	8	80	60	15	T1221 05040	T25S
HIJ040-2000-080	20	4	80	60	19	T1221 03060	T15S
HIJ060-2000-080	20	6	80	60	19	T1221 04050	T20S
HIJ080-2000-080	20	8	80	60	19	T1221 05040	T25S
HIJ040-"120-080	19.05	4	80	60	18	T1221 03060	T15S
HIJ060-"120-080 3/4"	19.05	6	80	60	18	T1221 04050	T20S
HIJ080-"120-080	19.05	8	80	60	18	T1221 05040	T25S

MicroTurn D

Micro Ausdrehwerkzeuge für Innenbearbeitungen ab ∅ 4.8mm

Micro turning tools for ID turning operations from min. bore dia. 4.8mm

Outils d'alésage Micro pour usinage intérieur à partir de ∅ 4.8mm

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

95°

SCLD

S.. SCLD A.. SCLD E.. SCLD

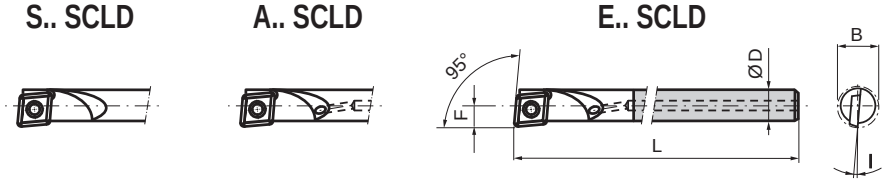


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution

Artikel-Nr. Article No. No. d'article R	L	[mm] D	d	L	F	B_{min}	A	I	sw			
S04E SCLDR-04	**S04E SCLDL-04**	4	-	70	2.5	4.8	-	5.5°	-	**CD..0401..**	**T18.Z30A**	**T5F**
S05E SCLDR-04	**S05E SCLDL-04**	5	-	70	2.9	5.8	-	4°	-			
S06F SCLDR-04	**S06F SCLDL-04**	6	-	80	3.4	6.8	-	3°	-			
A04E SCLDR-04	**A04E SCLDL-04**	4	-	70	2.5	4.8	-	5.5°	-	**CD..0401..**	**T18.Z30A**	**T5F**
A05E SCLDR-04	**A05E SCLDL-04**	5	-	70	2.9	5.8	-	4°	-			
A06F SCLDR-04	**A06F SCLDL-04**	6	-	80	3.4	6.8	-	3°	-			
E04F SCLDR-04	**E04F SCLDL-04**	4	-	80	2.5	4.8	-	5.5°	-	**CD..0401..**	**T18.Z30A**	**T5F**
E05F SCLDR-04	**E05F SCLDL-04**	5	-	85	2.9	5.8	-	4°	-			
E06G SCLDR-04	**E06G SCLDL-04**	6	-	95	3.4	6.8	-	3°	-			

- Reduzierhülsen für zylindrische Bohrstangen vgl. S.14
- Reduction bushings for cylindrical bars see p.14
- Douilles de reduction pour barres d'alésage cylindriques voir p.14

95°

SCLD

S.. SCLD A.. SCLD E.. SCLD

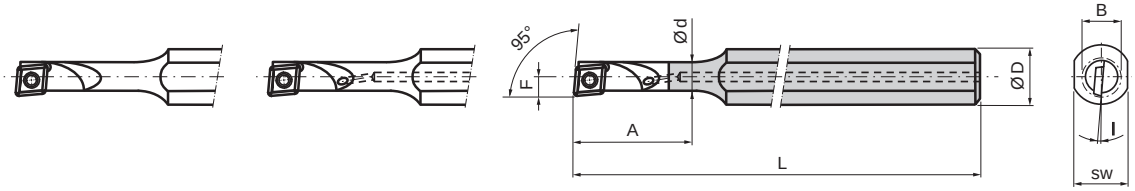


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	d	L	F	B_{min}	A	I	sw			
S0408H SCLDR-04	**S0408H SCLDL-04**	8	4	100	2.5	4.8	16	5.5°	7	**CD..0401..**	**T18.Z30A**	**T5F**
S0508H SCLDR-04	**S0508H SCLDL-04**		5		2.9	5.8	20	4°				
S0608H SCLDR-04	**S0608H SCLDL-04**		6		3.4	6.8	24	3°				
A0408H SCLDR-04	**A0408H SCLDL-04**	8	4	100	2.5	4.8	16	5.5°	7	**CD..0401..**	**T18.Z30A**	**T5F**
A0508H SCLDR-04	**A0508H SCLDL-04**		5		2.9	5.8	20	4°				
A0608H SCLDR-04	**A0608H SCLDL-04**		6		3.4	6.8	24	3°				
E0408H SCLDR-04	**E0408H SCLDL-04**	8	4	100	2.5	4.8	24	5.5°	7	**CD..0401..**	**T18.Z30A**	**T5F**
E0508H SCLDR-04	**E0508H SCLDL-04**		5		2.9	5.8	30	4°				
E0608H SCLDR-04	**E0608H SCLDL-04**		6		3.4	6.8	36	3°				

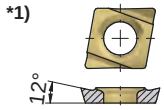
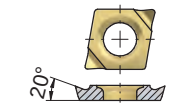
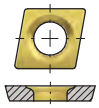
S = Stahlschaft
S = steel shank
S = queue en acier

A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

DENITOOL®

HARTMETALL WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	R	d_1	DX 2	DX 20	DX 30	DX 50	DX 52	DS 10	DS 20
*1) 	**CDGT 040100 FR/L**	4.03	3.97	0.025	1.0	0.025	1.103	0.025	0.0	2.2	■	■	□	□			
	CDGT 040101 FR/L						1.048		0.1		■	■	□	□			
	CDGT 040102 FR/L						0.992		0.2		■	■	■	□			
	CDGT 040104 FR/L						0.881		0.4		■	■	■	□			
	**CDGT 040101 FN**	4.03	3.97	0.025	1.0	0.025	1.048	0.025	0.1	2.2	■	■	□	□	□	□	□
	CDGT 040102 FN						0.992		0.2		■	■	□	□	□	□	□
	CDGT 040104 FN						0.881		0.4		■	■	□	□	□	□	□
	**CDGW 040100 FN**	4.03	3.97	0.025	1.0	0.025	1.103	0.025	0.0	2.2	■	□	□	□			
	CDGW 040101 FN						1.048		0.1		■	□	□	□			
	CDGW 040102 FN						0.992		0.2		■	■	■	□			
	CDGW 040104 FN						0.881		0.4		■	■	■	□			

*) **Achtung** Rechte Bohrstangen benötigen linke Platten, linke Bohrstangen benötigen rechte Platten.
Caution Right hand boring bars require left hand inserts, left hand boring bars require right hand inserts.
Attention Des barres d'alésage droites utilisent des plaquettes gauches et vice versa.

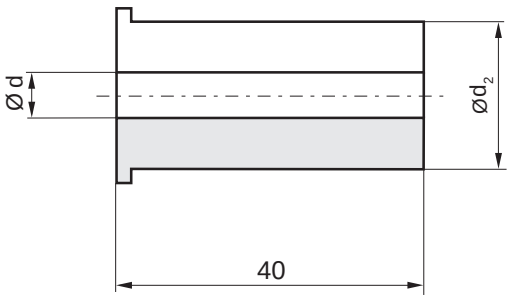
■ ab Lager / stock item

□ auf Anfrage / upon request

ZUBEHÖR / ACCESSORIES / ACCESSOIRES

REDUZIERHÜLSEN / REDUCTION BUSHINGS / DOUILLES DE REDUCTION

Artikel-Nr. Article No. No. d'article	∅ d	∅ d_2
D 1004	4	10
D 1005	5	10
D 1006	6	10
D 1604	4	16
D 1605	5	16
D 1606	6	16
D 2004	4	20
D 2005	5	20
D 2006	6	20



MiniTools 80°

Miniwerkzeuge für Innenbearbeitung

- **ab ∅ 5.8mm mit WC 02**
- **ab ∅ 8.0mm mit CP 05**

Mini tools for ID turning operations

- ***min. bore dia. 5.8mm with 80° trigon inserts***
- ***min. bore dia. 8.0mm with 80° diamond inserts***

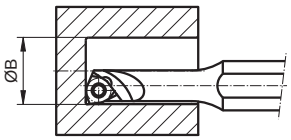
Mini utils pour tournage intérieur

- **à partir de ∅ 5.8mm avec WC 02**
- **à partir de ∅ 8.0mm avec CP 05**

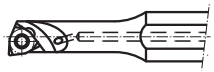
BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

93°

S.. SWUCR



A.. SWUCR



E.. SWUCR

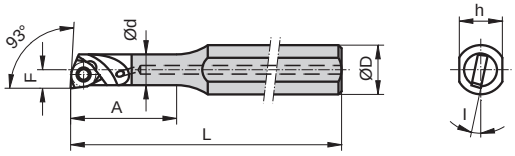


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	d	L	F	B_{min}	A	l	h			
S0508H SWUCR-02	**S0508H SWUCL-02**	8	5	100	2.9	5.8 *	18	17°	7	WC.. 0201..	T20.037	T6F
S0608H SWUCR-02	**S0608H SWUCL-02**	8	6	100	3.9	7.8	24	12°	7	WC.. 0201..	T20.037	T6F
A0508H SWUCR-02	**A0508H SWUCL-02**	8	5	100	2.9	5.8 *	18	17°	7	WC.. 0201..	T20.037	T6F
A0608H SWUCR-02	**A0608H SWUCL-02**	8	6	100	3.9	7.8	24	12°	7	WC.. 0201..	T20.037	T6F
E0508H SWUCR-02	**E0508H SWUCL-02**	8	5	100	2.9	5.8 *	30	17°	7	WC.. 0201..	T20.037	T6F
E0608H SWUCR-02	**E0608H SWUCL-02**	8	6	100	3.9	7.8	36	12°	7	WC.. 0201..	T20.037	T6F

*** Achtung / Caution / Attention: Einsatz von / Use of / Utilisation des - WCGT 020104 FR/L : B_{min} = *6.5* mm !**

93°

E.. SWUCR

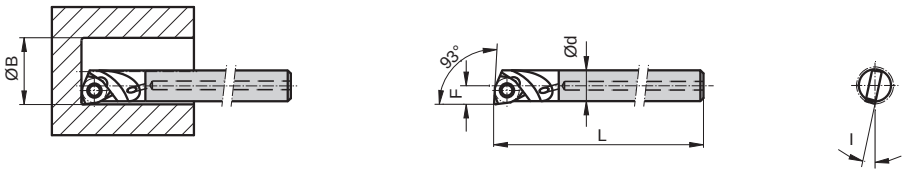


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] d	L	F	B_{min}	l	h			
E05F SWUCR-02	**E05F SWUCL-02**	5	85	2.9	5.8 *	17°		WC.. 0201..	T20.037	T6F
E06G SWUCR-02	**E06G SWUCL-02**	6	95	3.9	7.8	12°		WC.. 0201..	T20.037	T6F

*** Achtung / Caution / Attention: Einsatz von / Use of / Utilisation des - WCGT 020104 FR/L : B_{min} = *6.5* mm !**

- Reduzierhülsen für zylindrische Bohrstangen — vgl. S.14 (MicroTurn D)
- Reduction bushings for cylindrical bars — see p.14 (MicroTurn D)
- Douilles de reduction pour barres d'alésage cylindriques — voir p.14 (MicroTurn D)

S = Stahlschaft
S = steel shank
S = queue en acier

A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

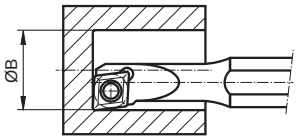
E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

DENITOOL®

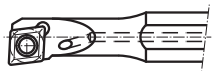
BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

93°

S.. SCUPR



A.. SCUPR



E.. SCUPR

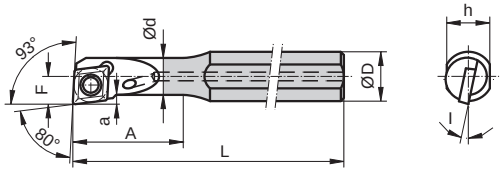
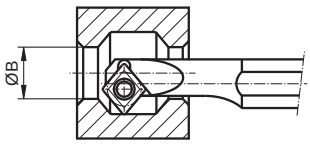


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	d	L	F	B_{min}	A	a	l	h			
S0608H SCUPR-05	**S0608H SCUPL-05**	8	6	100	4.5	8	20	1.3	8°	7	CP.. 05T1..	T22.045	T7F
S0810J SCUPR-05	**S0810J SCUPL-05**	10	8	110	6	11	26	1.8	5°	9	CP.. 05T1..	T22.045	T7F
S1012K SCUPR-05	**S1012K SCUPL-05**	12	10	125	7	13	32	1.8	5°	11	CP.. 05T1..	T22.050	T7F
S1216M SCUPR-05	**S1216M SCUPL-05**	16	12	150	9	16	40	2.8	2°	15	CP.. 05T1..	T22.050	T7F
A0608H SCUPR-05	**A0608H SCUPL-05**	8	6	100	4.5	8	20	1.3	8°	7	CP.. 05T1..	T22.045	T7F
A0810J SCUPR-05	**A0810J SCUPL-05**	10	8	110	6	11	26	1.8	5°	9	CP.. 05T1..	T22.045	T7F
A1012K SCUPR-05	**A1012K SCUPL-05**	12	10	125	7	13	32	1.8	5°	11	CP.. 05T1..	T22.050	T7F
A1216M SCUPR-05	**A1216M SCUPL-05**	16	12	150	9	16	40	2.8	2°	15	CP.. 05T1..	T22.050	T7F
E0608H SCUPR-05	**E0608H SCUPL-05**	8	6	100	4.5	8	28	1.3	8°	7	CP.. 05T1..	T22.045	T7F
E0810J SCUPR-05	**E0810J SCUPL-05**	10	8	110	6	11	36	1.8	5°	9	CP.. 05T1..	T22.045	T7F
E1012K SCUPR-05	**E1012K SCUPL-05**	12	10	125	7	13	44	1.8	5°	11	CP.. 05T1..	T22.050	T7F
E1216M SCUPR-05	**E1216M SCUPL-05**	16	12	150	9	16	55	2.8	2°	15	CP.. 05T1..	T22.050	T7F

40°

S.. SCMPR



A.. SCMPR

E.. SCMPR

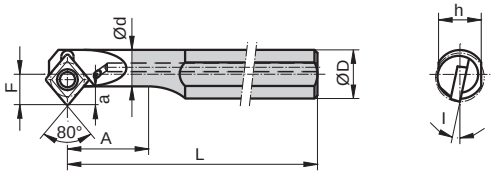


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

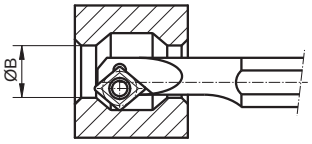
Artikel-Nr. Article No. No. d'article R	L	[mm] D	d	L	F	B_{min}	A	a	l	h			
S0608H SCMPR-05	**S0608H SCMPL-05**	8	6	100	5	9.5	20	2.8	8°	7	CP.. 05T1..	T22.045	T7F
S0810J SCMPR-05	**S0810J SCMPL-05**	10	7	110	6	11	26	2.8	5°	9	CP.. 05T1..	T22.045	T7F
S1012K SCMPR-05	**S1012K SCMPL-05**	12	8.5	125	7	13	32	3.3	5°	11	CP.. 05T1..	T22.050	T7F
S1216M SCMPR-05	**S1216M SCMPL-05**	16	12	150	9	16	40	2.8	2°	15	CP.. 05T1..	T22.050	T7F
A0608H SCMPR-05	**A0608H SCMPL-05**	8	6	100	5	9.5	20	2.8	8°	7	CP.. 05T1..	T22.045	T7F
A0810J SCMPR-05	**A0810J SCMPL-05**	10	7	110	6	11	26	2.8	5°	9	CP.. 05T1..	T22.045	T7F
A1012K SCMPR-05	**A1012K SCMPL-05**	12	8.5	125	7	13	32	3.3	5°	11	CP.. 05T1..	T22.050	T7F
A1216M SCMPR-05	**A1216M SCMPL-05**	16	12	150	9	16	40	2.8	2°	15	CP.. 05T1..	T22.050	T7F
E0608H SCMPR-05	**E0608H SCMPL-05**	8	6	100	5	9.5	28	2.8	8°	7	CP.. 05T1..	T22.045	T7F
E0810J SCMPR-05	**E0810J SCMPL-05**	10	7	110	6	11	36	2.8	5°	9	CP.. 05T1..	T22.045	T7F
E1012K SCMPR-05	**E1012K SCMPL-05**	12	8.5	125	7	13	44	3.3	5°	11	CP.. 05T1..	T22.050	T7F
E1216M SCMPR-05	**E1216M SCMPL-05**	16	12	150	9	16	55	2.8	2°	15	CP.. 05T1..	T22.050	T7F

Achtung: Angabe für Abmessung **B_{min}** nur im Bereich **A** gültig!
Caution: Value for dimension **B_{min}** only valid for range **A** !
Attention: L'indication pour la dimension **B_{min}** n'est valable que dans le secteur **A** !

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

50°

S.. SCXPR



A.. SCXPR

E.. SCXPR

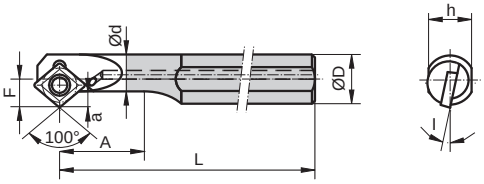
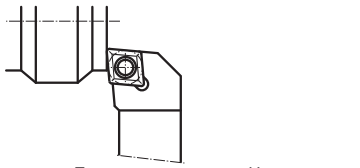


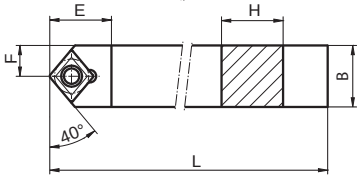
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	d	L	F	B_{min}	A	a	l	h			
S0608H SCXPR-05	S0608H SCXPL-05	8	6	100	4.5	8.5	20	2.3	8°	7	CP.. 05T1..	T22.045	T7F
S0810J SCXPR-05	S0810J SCXPL-05	10	7	110	6	11	26	2.8	5°	9	CP.. 05T1..	T22.045	T7F
S1012K SCXPR-05	S1012K SCXPL-05	12	8.5	125	7	13	32	3.3	5°	11	CP.. 05T1..	T22.050	T7F
S1216M SCXPR-05	S1216M SCXPL-05	16	12	150	9	16	40	2.8	2°	15	CP.. 05T1..	T22.050	T7F
A0608H SCXPR-05	A0608H SCXPL-05	8	6	100	4.5	8.5	20	2.3	8°	7	CP.. 05T1..	T22.045	T7F
A0810J SCXPR-05	A0810J SCXPL-05	10	7	110	6	11	26	2.8	5°	9	CP.. 05T1..	T22.045	T7F
A1012K SCXPR-05	A1012K SCXPL-05	12	8.5	125	7	13	32	3.3	5°	11	CP.. 05T1..	T22.050	T7F
A1216M SCXPR-05	A1216M SCXPL-05	16	12	150	9	16	40	2.8	2°	15	CP.. 05T1..	T22.050	T7F
E0608H SCXPR-05	E0608H SCXPL-05	8	6	100	4.5	8.5	28	2.3	8°	7	CP.. 05T1..	T22.045	T7F
E0810J SCXPR-05	E0810J SCXPL-05	10	7	110	6	11	36	2.8	5°	9	CP.. 05T1..	T22.045	T7F
E1012K SCXPR-05	E1012K SCXPL-05	12	8.5	125	7	13	44	3.3	5°	11	CP.. 05T1..	T22.050	T7F
E1216M SCXPR-05	E1216M SCXPL-05	16	12	150	9	16	55	2.8	2°	15	CP.. 05T1..	T22.050	T7F

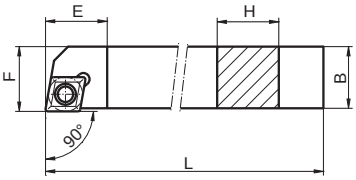
KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRIEUR



50°
SCXPN



90°
SCAPR



95°
SCLPR

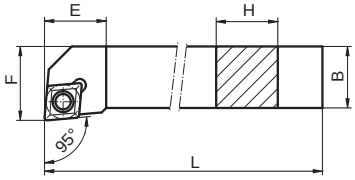
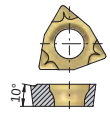
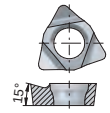
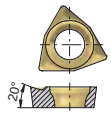
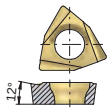
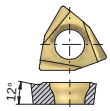
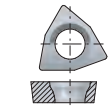
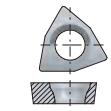
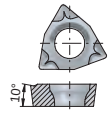


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F			
SCAPR 0808 K05	SCAPL 0808 K05	8	8	125	10	8.5	CP.. 05T1..	T22.050	T7F
SCAPR 1010 M05	SCAPL 1010 M05	10	10	150	10	10.5	CP.. 05T1..	T22.050	T7F
SCAPR 1212 M05	SCAPL 1212 M05	12	12	150	12	12.5	CP.. 05T1..	T22.050	T7F
SCLPR 0808 D05	SCLPL 0808 D05	8	8	60	10	10	CP.. 05T1..	T22.050	T7F
SCLPR 1010 E05	SCLPL 1010 E05	10	10	70	10	12	CP.. 05T1..	T22.050	T7F
SCLPR 1212 F05	SCLPL 1212 F05	12	12	80	12	16	CP.. 05T1..	T22.050	T7F
SCXPN 0808 K05		8	8	125	12	4	CP.. 05T1..	T22.050	T7F
SCXPN 1010 M05		10	10	150	12	5	CP.. 05T1..	T22.050	T7F
SCXPN 1212 M05		12	12	150	12	6	CP.. 05T1..	T22.050	T7F

DENITOOL®

HARTMETALL WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	r	d_1	DX 2	DX 20	DX 30	DX 50	DX 52	DS 10	DS 20	DT 55	DT 255	DT 355	CBN	PKD
	WCET 020101 FN-20	2.3	3.97	0.025	1.59	0.025	1.048	0.025	0.1	2.3	■	■	□	□	□	□	□					
	WCET 020102 FN-20						0.992		0.2		■	■	□	□	□	□	□					
	WCET 020104 FN-20						0.881		0.4		■	■	■	□	□	□	□					
	**WCGT 020101 EN**	2.3	3.97	0.025	1.59	0.13	1.048	0.025	0.1	2.3	■	■	□	□				■	■	■		
	WCGT 020102 EN						0.992		0.2		■	■	■	■				■	■	■		
	WCGT 020104 EN						0.881		0.4		■	■	■	□				■	■	■		
	**WCGT 020104 FN**	2.3	3.97	0.025	1.59	0.13	0.881	0.025	0.4	2.3								■	□	■		
	**WCGT 020101 FN-20**	2.3	3.97	0.025	1.59	0.13	1.048	0.025	0.1	2.3	■	■	■	□								
	WCGT 020102 FN-20						0.992		0.2		■	■	■	□								
	WCGT 020104 FN-20						0.881		0.4		■	■	■	□								
*1), 2) 	**WCGT 020100 FR/L**	2.3	3.97	0.025	1.59	0.13	1.089	0.025	0.0	2.3								●	●	●		
*1) 	**WCGT 020102 FR/L**	2.3	3.97	0.025	1.59	0.13	0.992	0.025	0.2	2.3	■	■	■	■				■	■	■		
	WCGT 020104 FR/L						0.881		0.4		■	□	□	□				■	■	■		
	**WCGW 0201005 FN**	2.3	3.97	0.025	1.59	0.13	1.075	0.025	0.05	2.3								■	■	□		
	WCGW 020102						0.992		0.2												□	□
	WCGW 020104						0.881		0.4												□	□
*1), 2) 	**WCGW 020100 FR**	2.3	3.97	0.025	1.59	0.13	1.089	0.025	0.0	2.3								●	●	●		
	WCGW 0201005 FR						1.075		0.05									●	●	●		
	FL						1.075		0.05									●	●	●		
	**WCMT 020102 EN**	2.3	3.97	0.05	1.59	0.13	0.992	0.08	0.2	2.3								■	■	■		
	WCMT 020104 EN						0.881		0.4									■	■	□		

■ ab Lager
stock item
disponible du stock

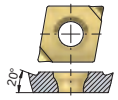
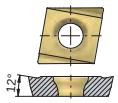
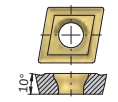
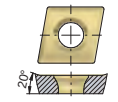
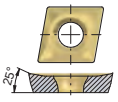
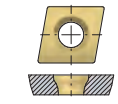
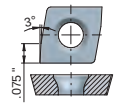
□ auf Anfrage
upon request
sur demande

● Nur solange Vorrat
as long as available
jusqu' à l'épuisement du stock

*1) Rechte Ausführung
Right hand execution
Exécution droite

*2) Nur geeignet für Werkzeuge mit Anstellwinkel < 93°. Weitere auf Anfrage
Suitable only for tools with angle < 93°. Others on request
Convient que pour des outils avec angle < 93°. D'autres sur demande

HARTMETALL WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	R	d_1	DX 2	P 25	DX 20	DP 25	DX 30	DP 35	DX 50	DP 55	DX 52	DX70	DS 10	DS 20	DT 55	DT 255	DT 355	CBN	PKD
	**CPET 05T101 FN-20**	5.6	5.56	0.025	1.97	0.025	1.489	0.025	0.1	2.5	■		■		□		□		□		□	□					
	CPET 05T102 FN-20						1.432		0.2		■		■		□		□		□		■	□					
	CPET 05T104 FN-20						1.323		0.4		■		■		□		□		□		■	□					
*1) 	**CPET 05T101 FR/L**	5.6	5.56	0.025	1.97	0.025	1.489	0.025	0.1	2.5	■		■		□		□										
	CPET 05T102 FR/L						1.432		0.2		■		■		■		□										
	CPET 05T104 FR/L						1.323		0.4		■		■		■		□										
	CPGT 05T102 FR/L	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5													■	■	■		
	CPGT 05T104 FR/L						1.323		0.4														■	■	■		
	**CPGT 05T101 EN**	5.6	5.56	0.025	1.97	0.13	1.489	0.025	0.1	2.5		■		■		■											
	CPGT 05T102 EN						1.432		0.2		■	■		■		■		□		■			■	■	■		
	CPGT 05T104 EN						1.323		0.4		■	■		■		■		□		■			■	■	■		
	CPGT 05T101 FN	5.6	5.56	0.025	1.97	0.13	1.489	0.025	0.1	2.5	■		■		□		□		□								
	CPGT 05T102 FN						1.432		0.2		■		■		■		■		□								
	CPGT 05T104 FN						1.323		0.4		■		■		■		■		□								
	**CPGT 05T101 FN-20**	5.6	5.56	0.025	1.97	0.13	1.489	0.025	0.1	2.5	■		□		□		□		□								
	CPGT 05T102 FN-20						1.432		0.2		■		■		■		■		□								
	CPGT 05T104 FN-20						1.323		0.4		■		■		■		■		□								
	**CPGT 05T102 FN-250**	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5	■		□		□		□										
	CPGT 05T104 FN-250						1.323		0.4		■		□		□		□										
	**CPGW05T102**	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5																■	■
	CPGW05T104						1.323		0.4																	■	■
	CPGW05T102 FN						1.432		0.2		■		■		□		□										
	CPGW05T104 FN						1.323		0.4		■		■		□		□										
*2) 	**CPGW05T100 FR/L**	5.6	5.56	0.025	1.97	0.13	1.363	0.025	0.0	2.5												■	■	□			

■ ab Lager
stock item
disponible du stock

□ auf Anfrage
upon request
sur demande

● nur solange Vorrat
as long as available
jusqu' à l'épuisement du stock

*1) Rechte Ausführung
Right hand execution
Exécution droite

*2) Nur geeignet für Werkzeuge mit Anstellwinkel < 93°. Weitere auf Anfrage
Suitable only for tools with angle < 93°. Others on request
Convient que pour des outils avec angle < 93°. D'autres sur demande

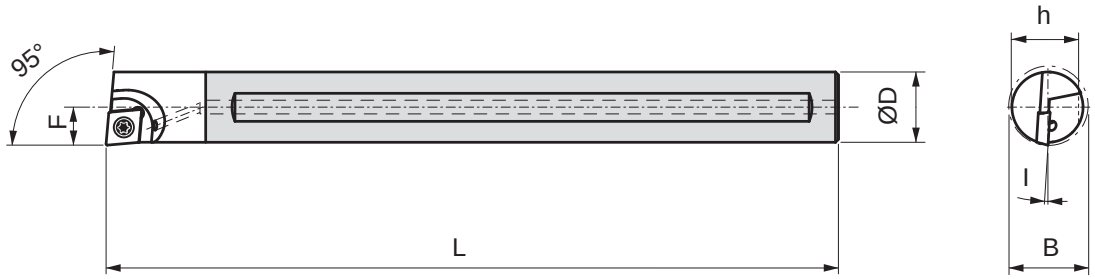
HardTurn 80°

Drehwerkzeuge zur Innenbearbeitung von gehärteten Werkstoffen bis 62 HRC

Tools for turning operations in hardened material up to 62 HRC

Outils de tournage pour usinage intérieur des matériaux durcis jusqu'à 62 HRC

Bohrstangen / Boring bars / Barres d'alésage



95°

SCLP

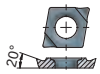
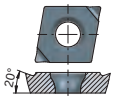
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L *)	[mm] D	L	F	B_{min}	l	h			
E08H SCLPR-05	**E08H SCLPL-05**	8	100	4.5	8.7	12°	7.5	CP.. 05T1..	T22.050	T7F
E10J SCLPR-05	**E10J SCLPL-05**	10	110	5.5	10.7	5°	9.5	CP.. 05T1..	T22.050	T7F
E12K SCLPR-05	**E12K SCLPL-05**	12	125	6.5	12.7	4°	11.5	CP.. 05T1..	T22.050	T7F
E16M SCLPR-05	**E16M SCLPL-05**	16	150	8.5	16.7	2°	15.5	CP.. 05T1..	T22.050	T7F

***)** auf Bestellung / upon request / sur demande

E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

Wendeschneidplatten / Carbide inserts / Plaquettes en carbure "SuperHard"

	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	R	d_1	DS10	DS20
	**CDGT 040101 FN**	4.03	3.97	0.025	1.0	0.025	1.048	0.025	0.1	2.2	□	□
	CDGT 040102 FN						0.992		0.2		□	□
	CDGT 040104 FN						0.881		0.4		□	□
	**CPET 05T101 FN-20**	5.6	5.56	0.025	1.97	0.025	1.489	0.025	0.1	2.5	□	□
	CPET 05T102 FN-20						1.432		0.2		■	□
	CPET 05T104 FN-20						1.323		0.4		■	□
	WCET 020101 FN-20	2.3	3.97	0.025	1.59	0.025	1.048	0.025	0.1	2.3	□	□
	WCET 020102 FN-20						1.992		0.2		□	□
	WCET 020104 FN-20						1.881		0.4		□	□

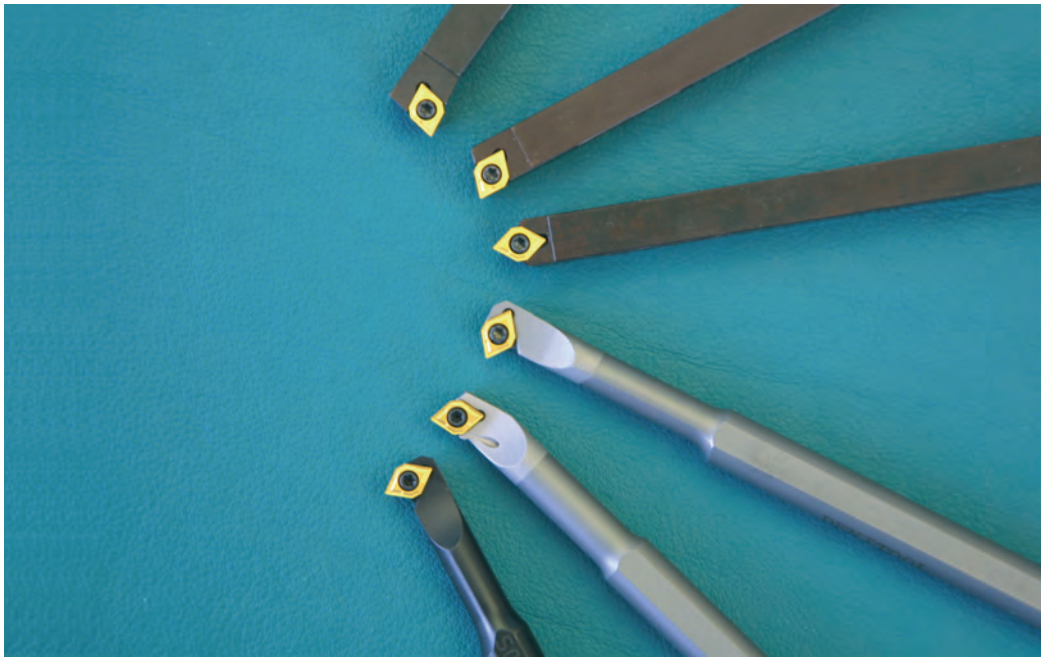
■ ab Lager
stock item
disponible du stock

□ auf Anfrage
upon request
sur demande

*1) Linke Ausführung
Left hand execution
Exécution gauche

Rechte Bohrstangen benötigen linke Platten
Right hand boring bars require left hand inserts
Des barres d'alésage droites utilisent des plaquettes gauches

SmallBars 75°



Kleinwerkzeuge für Bearbeitungen bei schwierigen Platzverhältnissen

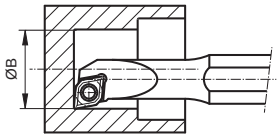
Small tools for limited access machining

Outils petits pour l'usinage à accès restreint

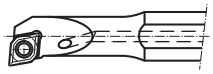
BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

95°

S.. SELPR



A.. SELPR



E.. SELPR

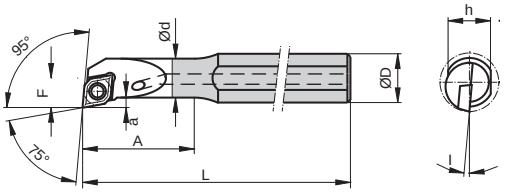
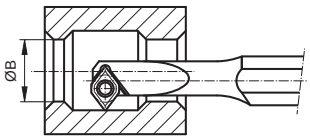


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

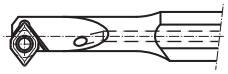
Artikel-Nr. Article No. No. d'article R	L	[mm] D	d	L	F	B_{min}	A	a	l	h			
S0608H SELPR-05	S0608H SELPL-05	8	6	100	4.5	8	20	1.3	10°	7	EP.. 0502..	T22.045	T7F
S0810J SELPR-05	S0810J SELPL-05	10	8	110	6	11	26	1.8	5°	9			
S1012K SELPR-05	S1012K SELPL-05	12	10	125	7	13	32	1.8	5°	11			
S1216M SELPR-05	S1216M SELPL-05	16	12	150	9	16	40	2.8	2°	15			
A0608H SELPR-05	A0608H SELPL-05	8	6	100	4.5	8	20	1.3	10°	7	EP.. 0502..	T22.045	T7F
A0810J SELPR-05	A0810J SELPL-05	10	8	110	6	11	26	1.8	5°	9			
A1012K SELPR-05	A1012K SELPL-05	12	10	125	7	13	32	1.8	5°	11			
A1216M SELPR-05	A1216M SELPL-05	16	12	150	9	16	40	2.8	2°	15			
E0608H SELPR-05	E0608H SELPL-05	8	6	100	4.5	8	28	1.3	10°	7	EP.. 0502..	T22.045	T7F
E0810J SELPR-05	E0810J SELPL-05	10	8	110	6	11	36	1.8	5°	9			
E1012K SELPR-05	E1012K SELPL-05	12	10	125	7	13	44	1.8	5°	11			
E1216M SELPR-05	E1216M SELPL-05	16	12	150	9	16	55	2.8	2°	15			

52.5°

S.. SEXPR



A.. SEXPR



E.. SEXPR

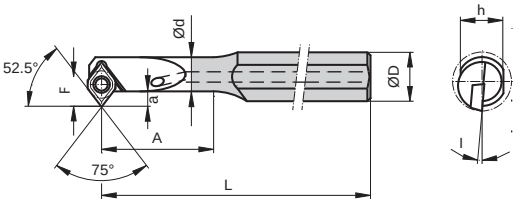


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	d	L	F	B_{min}	A	a	l	h			
S0608H SEXPR-05	S0608H SEXPL-05	8	6	100	5.5	9.5	20	3.3	8°	7	EP.. 0502..	T22.045	T7F
S0810J SEXPR-05	S0810J SEXPL-05	10	7	110	6	11	26	2.8	5°	9			
S1012K SEXPR-05	S1012K SEXPL-05	12	8.5	125	7	13	32	3.3	5°	11			
S1216M SEXPR-05	S1216M SEXPL-05	16	12	150	9	16	40	2.8	2°	15			
A0608H SEXPR-05	A0608H SEXPL-05	8	6	100	5.5	9.5	20	3.3	8°	7	EP.. 0502..	T22.045	T7F
A0810J SEXPR-05	A0810J SEXPL-05	10	7	110	6	11	26	2.8	5°	9			
A1012K SEXPR-05	A1012K SEXPL-05	12	8.5	125	7	13	32	3.3	5°	11			
A1216M SEXPR-05	A1216M SEXPL-05	16	12	150	9	16	40	2.8	2°	15			
E0608H SEXPR-05	E0608H SEXPL-05	8	6	100	5.5	9.5	28	3.3	8°	7	EP.. 0502..	T22.045	T7F
E0810J SEXPR-05	E0810J SEXPL-05	10	7	110	6	11	36	2.8	5°	9			
E1012K SEXPR-05	E1012K SEXPL-05	12	8.5	125	7	13	44	3.3	5°	11			
E1216M SEXPR-05	E1216M SEXPL-05	16	12	150	9	16	55	2.8	2°	15			

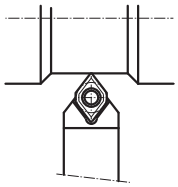
S = Stahlschaft
S = steel shank
S = queue en acier

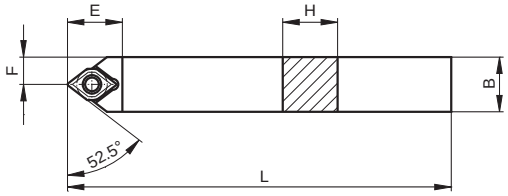
A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRIEUR

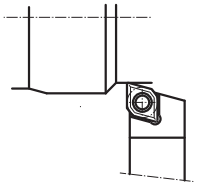
52.5°





Artikel-Nr. Article No. No. d'article	[mm]							
	H	B	L	E	F			
SEXPN 0808 K05	8	8	125	12	4	EP.. 0502..	T22.050	T7F
SEXPN 1010 M05	10	10	150	12	5	EP.. 0502..	T22.050	T7F
SEXPN 1212 M05	12	12	150	12	6	EP.. 0502..	T22.050	T7F

90°



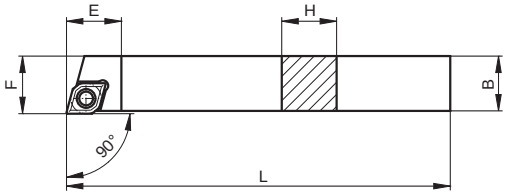
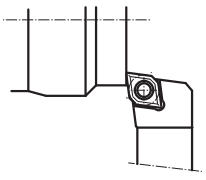


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article		[mm]							
R	**L**	H	B	L	E	F			
SEAPR 0808 K05	**SEAPL 0808 K05**	8	8	125	10	8.5	EP.. 0502..	T22.050	T7F
SEAPR 1010 M05	**SEAPL 1010 M05**	10	10	150	10	10.5			
SEAPR 1212 M05	**SEAPL 1212 M05**	12	12	150	12	12.5			

97.5°



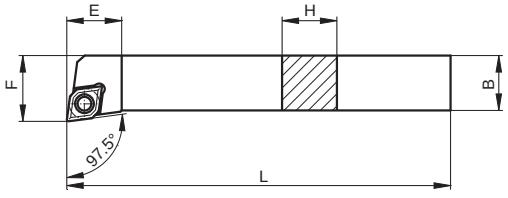
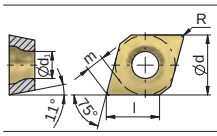
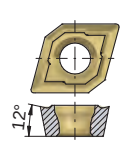
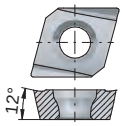
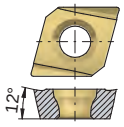
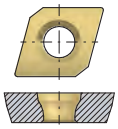


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article		[mm]							
R	**L**	H	B	L	E	F			
SELPR 0808 D05	**SELPL 0808 D05**	8	8	60	10	10	EP.. 0502..	T22.050	T7F
SELPR 1010 E05	**SELPL 1010 E05**	10	10	70	10	12			
SELPR 1212 F05	**SELPL 1212 F05**	12	12	80	12	16			

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	r	d_1	DX 2	DC 15	DX 20	DX 30	DX 50	DX 52	DT 10	DT 55	DT 210	DT 310	DT 255	DT 355	CBN	PKD	MDC
	**EPGT 050202 EN**	5.6	5.56	0.025	2.38	0.13	1.658	0.025	0.2	2.5	■		■	■	□	□									
	EPGT 050204 EN						1.530		0.4		■		■	■	□	□									
	**EPGT 050202 EN**						1.658		0.2									■			■	□			
	EPGT 050204 EN						1.530		0.4									■			■	□			
*1) 	**EPGT 050202 FR**	5.6	5.56	0.025	2.38	0.13	1.658	0.025	0.2	2.5								■			■	□			
	EPGT 050202 FL						1.658		0.2									■			■	□			
	EPGT 050204 FR						1.530		0.4									■			■	□			
	EPGT 050204 FL						1.530		0.4									■			■	□			
*1) 	**EPGT 050202 FR-10**	5.6	5.56	0.05	2.38	0.13	1.658	0.08	0.2	2.5	■		■	□	□										
	EPGT 050202 FL-10						1.658		0.2		■		■	□	□										
	EPGT 050204 FR-10						1.530		0.4		■		■	□	□										
	EPGT 050204 FL-10						1.530		0.4		■		■	□	□										
	**EPMW 050202 FN**	5.6	5.56	0.05	2.38	0.13	1.658	0.08	0.2	2.5	●														
	EPMW 050202						1.658		0.2															●	
	EPMW 050204						1.530		0.4															●	

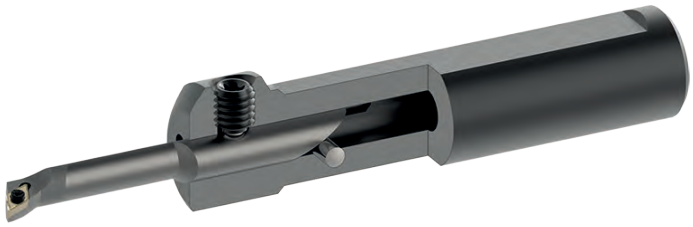
■ ab Lager
stock item
disponible du stock

□ auf Anfrage
upon request
sur demande

● nur solange Vorrat
as long as available
jusqu' à l'épuisement du stock

*1) Rechte Ausführung
Right hand execution
Exécution droite

NEW



SynTool®
by Denitool®

NEW

Nutzen Sie die Synergie vorhandener Werkzeugsysteme mit SynTool **!**

Denitool® WSP-Einsätze mit HM-Schaft - adaptiert für handelsübliche Halter

Für Anwendungen welche mit handelsüblichen Monobloc-Dreheinsätzen nicht möglich sind, bieten wir HM-Schaft Einsätze für Denitool® Wendeschneidplatten
► ca. 70% Kostenersparnis pro Schneide gegenüber traditionellen Monobloc-Einsätzen

Use the synergy of existing tooling systems with** SynTool **!

Denitool® carbide shank tips with inserts - An indexable solution adapted for third party holders

For applications which are not possible with conventional monobloc turning tips, an indexable solution with Denitool® inserts is now available
► *Cost savings per edge is approximately 70% compared with traditional monobloc tips*

Utilisez la synergie des systèmes d'outillage existants avec SynTool **!**

Des pointes Denitool® en carbure à plaquettes - Une solution indexable adaptée pour les douilles tiers

Pour les applications qui ne sont pas possible avec des pointes monobloc traditionnels, une solution avec des plaquettes Denitool® est disponible
► Les économies de coûts par arête est d'environ 70% par rapport à des pointes monobloc traditionnels

VORTEILE / BENEFITS / AVANTAGES

- Vorteilhafte Geometrien mit umlaufender Spanleitstufe erlauben z.B. Kopierarbeiten in beide Richtungen
- 20° positiver Spanwinkel → hervorragende Resultate auch in schwierig zu zerspanenden Werkstoffen
- Kostengünstige Lösung durch 2- bzw. 3-schneidige Wendeplatten (ca. 70% Kostenersparnis pro Schneide gegenüber traditionellen Monobloc-Einsätzen)
- Einfacher, schneller Plattenwechsel ausserhalb der Maschine durch hohe Positioniergenauigkeit im Halter

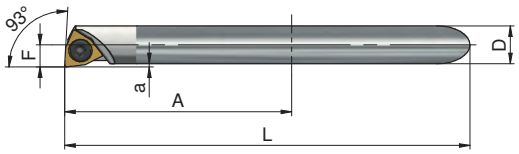
- *Advantageous geometries with peripheral chipbreaker designs allow for bi-directional copy operations*
- *20° positive rake angle → gives excellent results even in difficult to machine materials*
- *Cost-effective solutions with 2- or 3-edge inserts (Cost savings per edge is approximately 70% compared with traditional monobloc tips)*
- *Productivity is maximized due to the quick change capability of the holder and its high position accuracy*

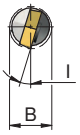
- Des géométries avantageuses avec des brise-copeaux périphériques permettent des opérations de copiage bi-directionelles
- 20° angle de coupe positif → d'excellents résultats même dans des matériaux difficiles à usiner
- Solutions économiques avec des plaquettes à 2 ou 3 arêtes de coupe (Les économies de coûts par arête est d'environ 70% par rapport à des pointes monobloc traditionnels)
- La productivité est maximisée en raison de la capacité de changement rapide de la douille et la grande précision de positionnement

WSP-EINSÄTZE MIT HM-SCHAFT / CARBIDE SHANK TIPS WITH INSERTS / POINTES EN CARBURE À PLAQUETTES

NEW WCGT 02

93°

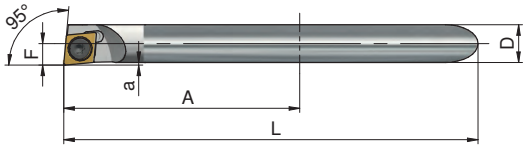


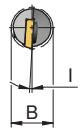


Artikel-Nr. / Article No. / No. d'article R	L	[mm] D	L	F	B_{min}	A	a	I			
C0520 SWUCR-02		5	43.6	2.9	5.8	20.0	0.3	17.0°	WC.. 0201..	T20.037	T6F
C0525 SWUCR-02		5	48.6	2.9	5.8	25.0	0.3	17.0°	WC.. 0201..	T20.037	T6F
C0530 SWUCR-02		5	53.6	2.9	5.8	30.0	0.3	17.0°	WC.. 0201..	T20.037	T6F
C0624 SWUCR-02		6	48.4	3.9	7.8	24.0	0.8	12.0°	WC.. 0201..	T20.037	T6F
C0630 SWUCR-02		6	54.4	3.9	7.8	30.0	0.8	12.0°	WC.. 0201..	T20.037	T6F
C0636 SWUCR-02		6	60.4	3.9	7.8	36.0	0.8	12.0°	WC.. 0201..	T20.037	T6F

NEW CDGT 04

95°



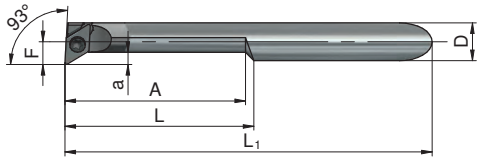


Artikel-Nr. / Article No. / No. d'article R	L	[mm] D	L	F	B_{min}	A	a	I			
C0416 SCLDR-04		4	33.7	2.5	4.8	16.0	0.45	5.5°	CD.. 0401..	T18.Z30A	T5F
C0420 SCLDR-04		4	37.7	2.5	4.8	20.0	0.45	5.5°	CD.. 0401..	T18.Z30A	T5F
C0424 SCLDR-04		4	41.7	2.5	4.8	24.0	0.45	5.5°	CD.. 0401..	T18.Z30A	T5F
C0521 SCLDR-04		5	44.8	2.9	5.8	21.2	0.30	4.0°	CD.. 0401..	T18.Z30A	T5F
C0526 SCLDR-04		5	49.8	2.9	5.8	26.2	0.30	4.0°	CD.. 0401..	T18.Z30A	T5F
C0531 SCLDR-04		5	54.8	2.9	5.8	31.2	0.30	4.0°	CD.. 0401..	T18.Z30A	T5F
C0625 SCLDR-04		6	50.1	3.4	6.8	25.7	0.30	3.0°	CD.. 0401..	T18.Z30A	T5F
C0631 SCLDR-04		6	56.1	3.4	6.8	31.7	0.30	3.0°	CD.. 0401..	T18.Z30A	T5F
C0637 SCLDR-04		6	62.1	3.4	6.8	37.7	0.30	3.0°	CD.. 0401..	T18.Z30A	T5F

WSP-EINSÄTZE MIT HM-SCHAFT / CARBIDE SHANK TIPS WITH INSERTS / POINTES EN CARBURE À PLAQUETTES

DCGT 04

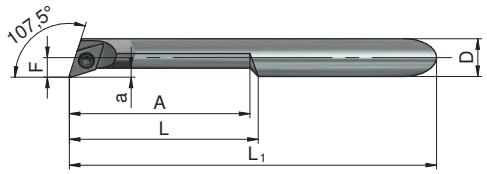
93°



Artikel-Nr. / Article No. / No. d'article R	L	[mm] D	L_1	L	F	B_{min}	A	a	I			
C0520 SDUCR-04		5	43.6	20	3.0	5.6	18.9	1.5	12.0°	DC.. 04T0..	T16.035	T5F
C0525 SDUCR-04		5	48.6	25	3.0	5.6	23.9	1.5	12.0°	DC.. 04T0..	T16.035	T5F

DCGT 04

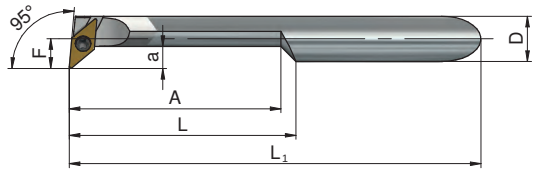
107.5°



Artikel-Nr. / Article No. / No. d'article R	L	[mm] D	L_1	L	F	B_{min}	A	a	I			
C0520 SDQCR-04		5	43.6	20	2.6	5.2	18.9	1.1	12.0°	DC.. 04T0..	T16.035	T5F
C0525 SDQCR-04		5	48.6	25	2.6	5.2	23.9	1.1	12.0°	DC.. 04T0..	T16.035	T5F

GCGT 04

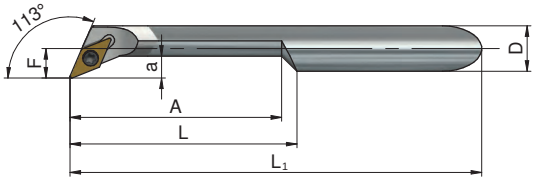
95°



Artikel-Nr. / Article No. / No. d'article R	L	[mm] D	L_1	L	F	B_{min}	A	a	I			
C0624 SGLCR-04		6	48.4	24	3.9	7.0	22.0	2.9	10.0°	GC.. 04T0..	T16.035	T5F
C0630 SGLCR-04		6	54.4	30	3.9	7.0	28.0	2.9	10.0°	GC.. 04T0..	T16.035	T5F

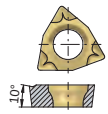
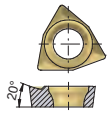
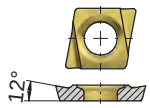
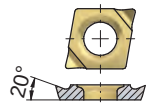
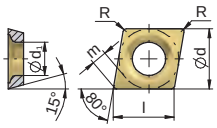
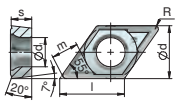
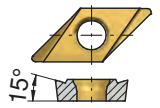
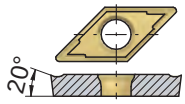
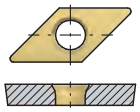
GCGT 04

113°



Artikel-Nr. / Article No. / No. d'article R	L	[mm] D	L_1	L	F	B_{min}	A	a	I			
C0624 SGXCR-04		6	48.4	24	3.9	7.0	22.0	2.9	10.0°	GC.. 04T0..	T16.035	T5F
C0630 SGXCR-04		6	54.4	30	3.9	7.0	28.0	2.9	10.0°	GC.. 04T0..	T16.035	T5F

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

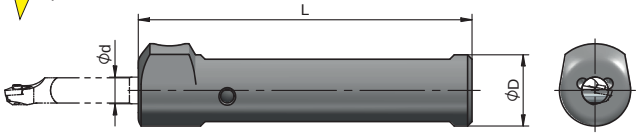
	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	r	d_1	DX 2	DX 20	DX 30	DX 32	DX 50	DX 70	DT 55	DT 255	DT 355
	WCET 020101 FN-20	2.3	3.97	0.025	1.59	0.025	1.048	0.025	0.1	2.3	■	■	□		□				
	WCET 020102 FN-20						0.992		0.2		■	■	□		□				
	WCET 020104 FN-20						0.881		0.4		■	■	■		□				
	**WCGT 020101 EN**	2.3	3.97	0.025	1.59	0.13	1.048	0.025	0.1	2.3	■	■	□		□				
	WCGT 020102 EN						0.992		0.2		■	■	■		■		■	■	■
	WCGT 020104 EN						0.881		0.4		■	■	■		□		■	■	■
	**WCGT 020101 FN-20**	2.3	3.97	0.025	1.59	0.13	1.048	0.025	0.1	2.3	■	■	□		□				
	WCGT 020102 FN-20						0.992		0.2		■	■	□		□				
	WCGT 020104 FN-20						0.881		0.4		■	■	■		□				
	**CDGT 040100 FL**	4.03	3.97	0.025	1.0	0.025	1.103	0.025	0.0	2.2	■	■	□						
	CDGT 040101 FL						1.048		0.1		■	■	□						
	CDGT 040102 FL						0.992		0.2		■	■	■						
	CDGT 040104 FL						0.881		0.4		■	■	■						
	**CDGT 040101 FN**	4.03	3.97	0.025	1.0	0.025	1.048	0.025	0.1	2.2	■	■	□						
	CDGT 040102 FN						0.992		0.2		■	■	□						
	CDGT 040104 FN						0.881		0.4		■	■	□						
	**CDGW 040100 FN**	4.03	3.97	0.025	1.0	0.025	1.103	0.025	0.0	2.2	■	■	■						
	CDGW 040101 FN						1.048		0.1		■	□	□						
	CDGW 040102 FN						0.992		0.2		■	■	■						
	CDGW 040104 FN						0.881		0.4		■	■	■						
	**DCGT 04T001-20**	3.78	3.1	0.025	1.2	0.05	1.69	0.025	0.1	1.7	■			■					
	DCGT 04T002-20						1.57		0.2		■			■					
	**GCGT 04T0005 FL**	4.384	3.1	0.025	1.2	0.05	2.42	0.025	0.05	1.7	■					■			
	GCGT 04T001 FL						2.34		0.1		■					■			
	GCGT 04T002 FL						2.18		0.2		■					■			
	**GCGT 04T001-20**	4.384	3.1	0.025	1.2	0.05	2.34	0.025	0.1	1.7	■					■			
	GCGT 04T002-20						2.18		0.2		■					■			
	**GCGW 04T001**	4.384	3.1	0.025	1.2	0.05	2.34	0.025	0.1	1.7	■					■			
	GCGW 04T002						2.18		0.2		■					■			

Weitere Plattenvarianten vgl.: / *More insert variants please refer to:* / D'autres variantes de plaquettes voir s.v.p.: "MicroTurn D" / "MiniTools" / "MicroCopy G"

KLEMMHALTER / *TOOLHOLDER* / PORTE OUTIL *SynTool*

Article No.	∅ d	∅ D	L [mm]	
ST04 1065	4.0	10	65	□
ST04 1270		12	70	□
ST04 1675		16	75	□
ST04 2084		20	84	□
ST05 1065	5.0	10	65	□
ST05 1270		12	70	□
ST05 1675		16	75	□
ST05 2084		20	84	□
ST06 1065	6.0	10	65	□
ST06 1270		12	70	□
ST06 1675		16	75	□
ST06 2084		20	84	□

NEW

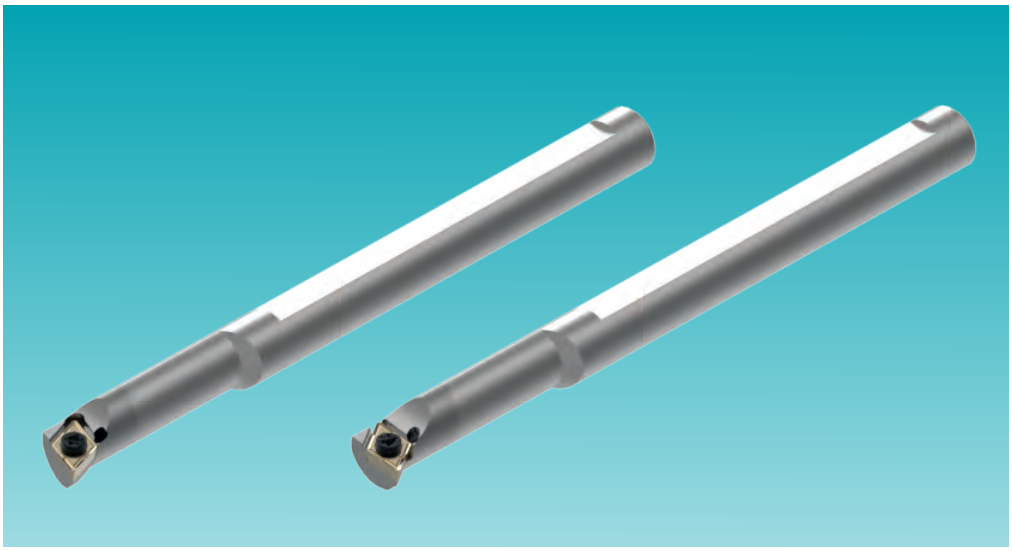


auf Anfrage / *upon request* / sur demande

DENITOOL®

NEW

MicroCopy D



Micro Kopierwerkzeuge für Innenbearbeitungen ab ∅ 5.2 mm mit 55° Wendeschneidplatten DC 04

Micro copying tools for ID turning operations in min. bore dia. 5.2 mm with 55° diamond inserts DC 04

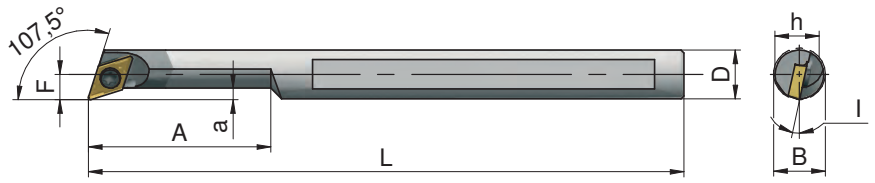
Micro outils de copiage à plaquettes 55° DC 04 pour usinage intérieur à partir de ∅ 5.2 mm

Massstab / Scale / Echelle 1:1

DENITOOL®

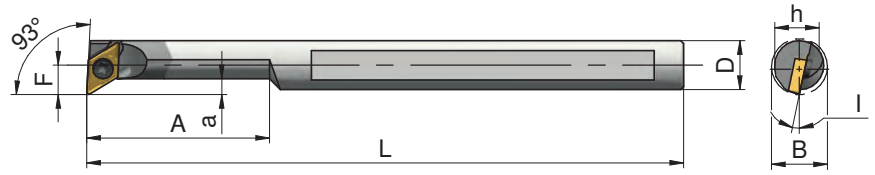
BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

107.5°



Artikel-Nr. / Article No. / No. d'article R	L	[mm] D	L	F	B_{min}	A	a	l	h			
E05D SDQCR-04		5	60	2.6	5.2	18	1.1	12°	4.5	DC.. 04T0..	T16.035	T5F

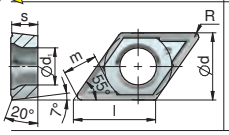
93°



Artikel-Nr. / Article No. / No. d'article R	L	[mm] D	L	F	B_{min}	A	a	l	h			
E05D SDUCR-04		5	60	3.0	5.6	18	1.5	12°	4.5	DC.. 04T0..	T16.035	T5F

E: Hartmetallschaft mit Kühlmittelbohrung / E: carbide shank with internal coolant / E: queue en carbure avec arrosage centralisé

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

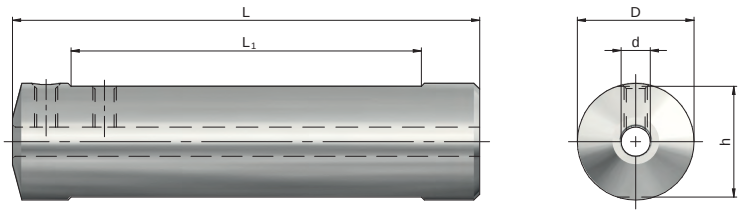


Artikel-Nr. / Article No. / No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	R	d_1	DX 2	DX 32
DCGT 04T001-20	3.784	3.1	0.025	1.2	0.05	1.69	0.025	0.1	1.7	■	■
DCGT 04T002-20						1.57		0.2		■	■

DX32: Universal Sorte / Universal grade / Qualité universelle ■ ab Lager / stock item / disponible du stock

REDUZIERHÜLSE / REDUCTION BUSHING / DOUILLE DE REDUCTION

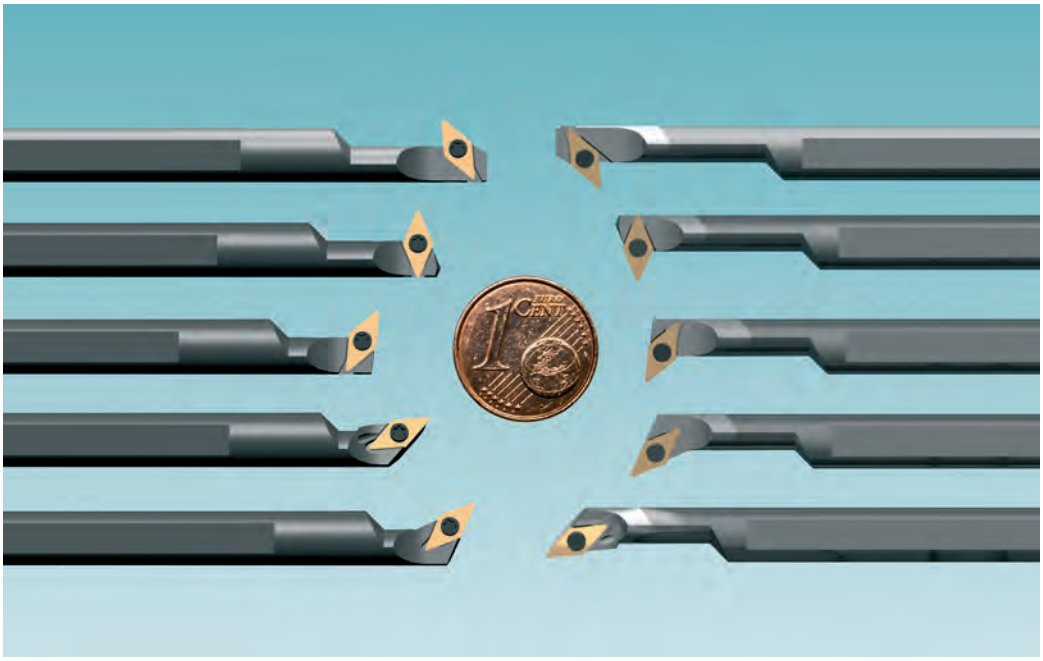
Reduktion / Reduction Ø 20mm → Ø 5 mm



Artikel-Nr. / Article No. / No. d'article	[mm] D	d	L	L_1	H		
DAG 050-2000-080	20	5	80	60	19	T1221 04050	T20S

DENIAG Industriestrasse 18 • CH-5106 Veltheim • Switzerland
Tel +41 (0) 56 463 69 69 • Fax +41 (0) 56 463 69 00 • info@deni.ch • www.denitool.ch

MicroCopy G



Micro Kopierwerkzeuge für Innenbearbeitungen ab ∅ 6.0 mm mit 45° Wendeschneidplatten GC 04

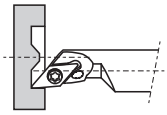
Micro copying tools for ID turning operations in min. bore dia. 6.0 mm with 45° diamond inserts GC 04

Micro outils de copiage à plaquettes 45° GC 04 pour usinage intérieur à partir de ∅ 6.0 mm

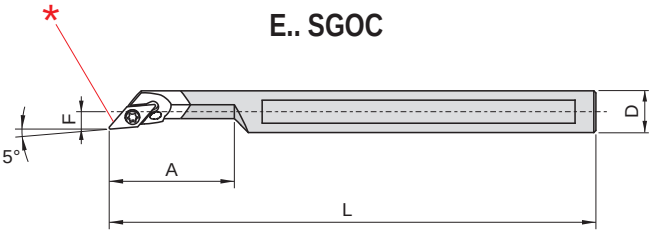
BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

5°

A.. SGOC



E.. SGOC



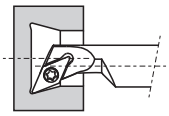
* Achtung: Sekundärschneide nicht für Bearbeitung geeignet!
Caution: Do not use secondary cutting edge for machining!
Attention: L' arête secondaire ne doit pas être utilisée pour l'usinage!

Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. / Article No. / No. d'article		[mm]										
R	L	D	L	F	B_{min}	A	a	l	h			
A06E SGOCR-04		6	70	2.5	6.0	10	--	15°	5.5	GC.. 04T0..	T16.035	T5F
E06E SGOCR-04		6	70	2.5	6.0	18	--	15°	5.5	GC.. 04T0..	T16.035	T5F

113°

A.. SGXC



E.. SGXC

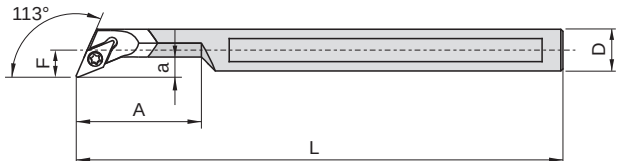
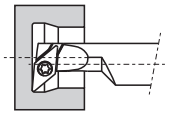


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

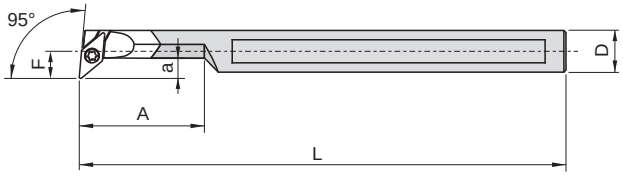
Artikel-Nr. / Article No. / No. d'article		[mm]										
R	L	D	L	F	B_{min}	A	a	l	h			
A06E SGXCR-04		6	70	3.9	7.0	10	2.9	10°	5.5	GC.. 04T0..	T16.035	T5F
E06E SGXCR-04		6	70	3.9	7.0	18	2.9	10°	5.5	GC.. 04T0..	T16.035	T5F

95°

A.. SGLC



E.. SGLC



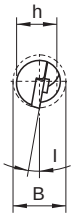


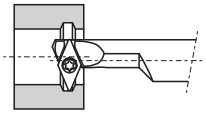
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. / Article No. / No. d'article		[mm]										
R	L	D	L	F	B_{min}	A	a	l	h			
A06E SGLCR-04		6	70	3.9	7.0	10	2.9	10°	5.5	GC.. 04T0..	T16.035	T5F
E06E SGLCR-04		6	70	3.9	7.0	18	2.9	10°	5.5	GC.. 04T0..	T16.035	T5F

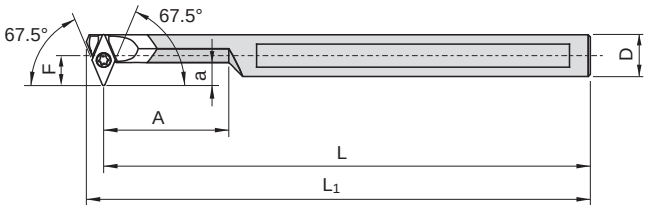
BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

67.5°

A.. SGVC



E.. SGVC



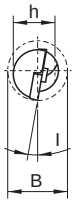
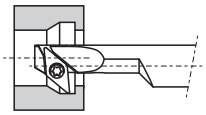


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

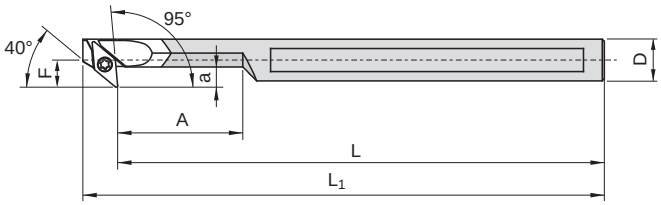
Artikel-Nr. / Article No. / No. d'article		[mm]											
R	L	D	L	L_1	F	B_{min}	A	a	l	h			
A06E SGVCR-04		6	70	72.5	4.3	7.5	10	3.3	10°	5.5	GC.. 04T0..	T16.035	T5F
E06E SGVCR-04		6	70	72.5	4.3	7.5	18	3.3	10°	5.5	GC.. 04T0..	T16.035	T5F

40°

A.. SGQC



E.. SGQC



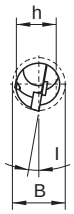


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

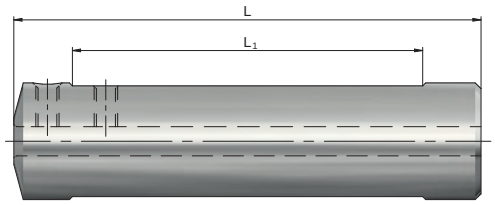
Artikel-Nr. / Article No. / No. d'article		[mm]											
R	L	D	L	L_1	F	B_{min}	A	a	l	h			
A06E SGQCR-04		6	70	75	3.9	7.0	10	2.9	10°	5.5	GC.. 04T0..	T16.035	T5F
E06E SGQCR-04		6	70	75	3.9	7.0	18	2.9	10°	5.5	GC.. 04T0..	T16.035	T5F

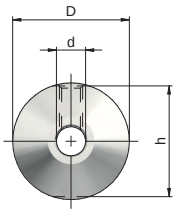
A: Stahlschaft mit Kühlmittelbohrung / A: steel shank with internal coolant / A: queue en acier avec arrosage centralisé
E: Hartmetallschaft mit Kühlmittelbohrung / E: carbide shank with internal coolant / E: queue en carbure avec arrosage centralisé

ANDERE ABMESSUNGEN & GEOMETRIEN AUF ANFRAGE / DIFFERENT DIMENSIONS & GEOMETRIES UPON REQUEST / DIMENSIONS ET GÉOMÉTRIES DIFFERENTES SUR DEMANDE

REDUZIERHÜLSE / REDUCTION BUSHING / DOUILLE DE REDUCTION

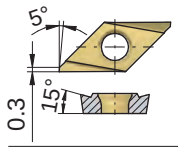
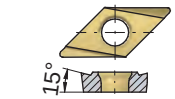
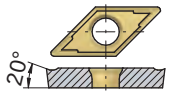
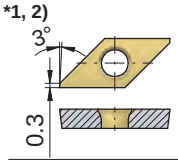
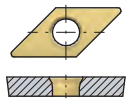
Reduktion / Reduction Ø 20mm → Ø 6mm





Artikel-Nr. / Article No. / No. d'article	[mm]						
	D	d	L	L_1	H		
DAG 060-2000-080	20	6	80	60	19	T1221 04050	T25S

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	R	d_1	DX 2	DX 70
*1, 2) 	**GCGT 04T000 FL**	4.384	3.1	0.025	1.2	0.05	2.25	0.025	0.0	1.7	■	■
	GCGT 04T000 FR						2.25		0.0		■	■
*1) 	**GCGT 04T0005 FL**	4.384	3.1	0.025	1.2	0.05	2.42	0.025	0.03	1.7	■	■
	GCGT 04T0005 FR						2.42		0.05		■	■
	GCGT 04T001 FL						2.34		0.1		■	■
	GCGT 04T001 FR						2.34		0.1		■	■
	GCGT 04T002 FL						2.18		0.2		■	■
	GCGT 04T002 FR						2.18		0.2		■	■
	**GCGT 04T001-20**	4.384	3.1	0.025	1.2	0.05	2.34	0.025	0.1	1.7	■	■
	GCGT 04T002-20						2.18		0.2		■	■
*1, 2) 	**GCGW 04T000 FL**	4.384	3.1	0.025	1.2	0.05	2.25	0.025	0.0	1.7	■	■
	GCGW 04T000 FR						2.25		0.0		■	■
	**GCGW 04T001**	4.384	3.1	0.025	1.2	0.05	2.34	0.025	0.1	1.7	■	■
	GCGW 04T002						2.18		0.2		■	■

■ ab Lager / stock item / disponible du stock

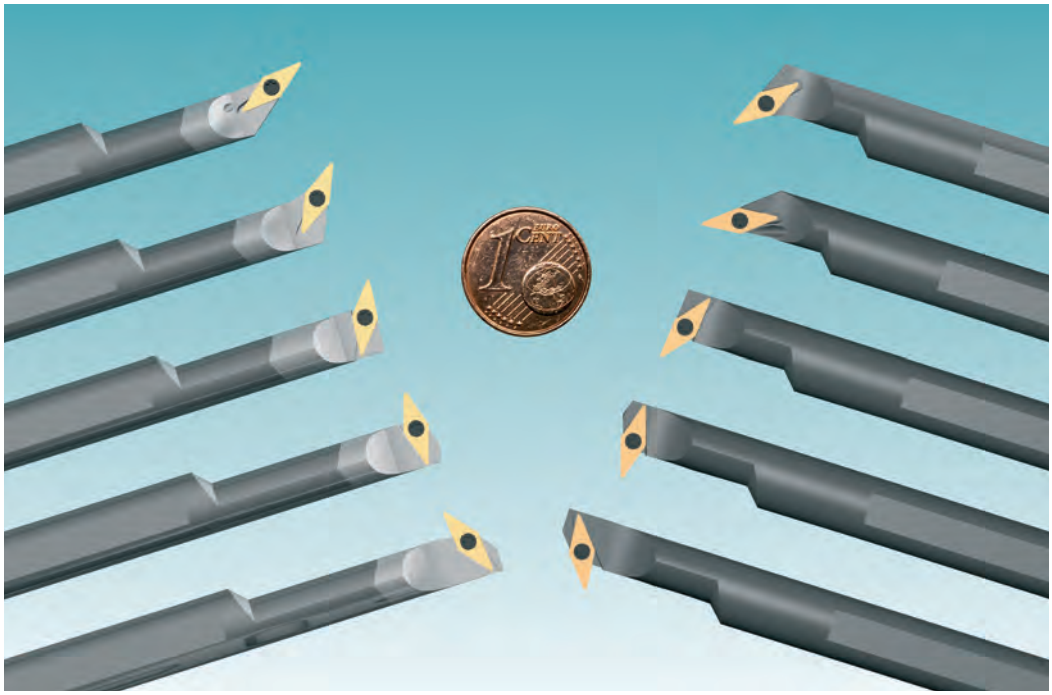
□ auf Anfrage / upon request / sur demande

***1)** Illustration: Rechte Ausführung / Right hand execution / Exécution droite

***2)** Geeignet für Werkzeuge mit 95° Anstellwinkel. Weitere Ausführungen auf Anfrage.
Suitable for tools with 95° angle. Other geometries upon request.
Convient pour des outils avec angle à 95°. D'autres géométries sur demande.

DX70: Universalgrade für Leichtmetalle, Stähle und Superlegierungen
Universal grade for aluminium alloys, steel and superalloys
Qualité universelle pour alliages légers, aciers et superalliages

MicroCopy 35°



Micro Kopierwerkzeuge für Innenbearbeitungen ab ∅ 8.0 mm mit 35° Wendeschneidplatten VC 05

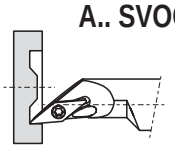
Micro copying tools for ID turning operations in min. bore dia. 8.0 mm with 35° diamond inserts VC 05

Micro outils de copiage à plaquettes 35° VC 05 pour usinage intérieur à partir de ∅ 8.0 mm

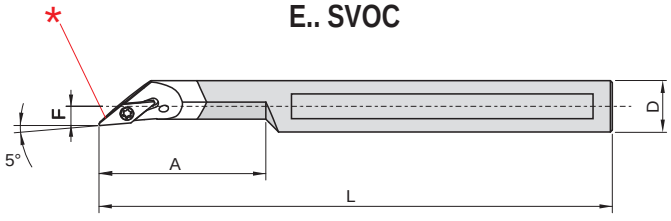
BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

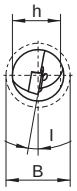
5°

A.. SVOC



E.. SVOC





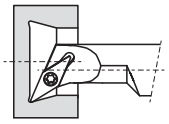
* Achtung: Sekundärschneide nicht für Bearbeitung geeignet!
Caution: Do not use secondary cutting edge for machining!
Attention: L' arête secondaire ne doit pas être utilisée pour l'usinage!

Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

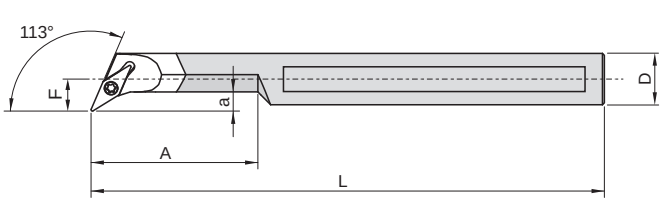
Artikel-Nr. / Article No. / No. d'article		[mm]										
R	L	D	L	F	B_{min}	A	a	l	h			
A08F SVOCR-05		8	80	3	8.0	15	--	10°	7.5	VC.. 0501..	T16.045	T5F
E08F SVOCR-05		8	80	3	8.0	26	--	10°	7.5	VC.. 0501..	T16.045	T5F

113°

A.. SVXC



E.. SVXC



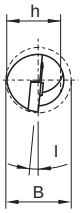
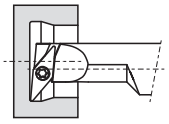


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

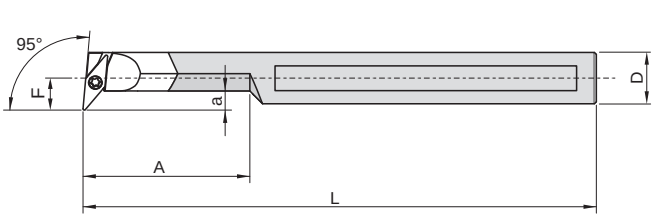
Artikel-Nr. / Article No. / No. d'article		[mm]										
R	L	D	L	F	B_{min}	A	a	l	h			
A08F SVXCR-05		8	80	5	9.2	15	3	5.5°	7.5	VC.. 0501..	T16.045	T5F
E08F SVXCR-05		8	80	5	9.2	26	3	5.5°	7.5	VC.. 0501..	T16.045	T5F

95°

A.. SVLC



E.. SVLC



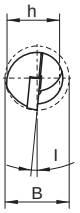


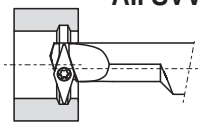
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. / Article No. / No. d'article		[mm]										
R	L	D	L	F	B_{min}	A	a	l	h			
A08F SVLCR-05		8	80	5	9.2	15	3	5.5°	7.5	VC.. 0501..	T16.045	T5F
E08F SVLCR-05		8	80	5	9.2	26	3	5.5°	7.5	VC.. 0501..	T16.045	T5F

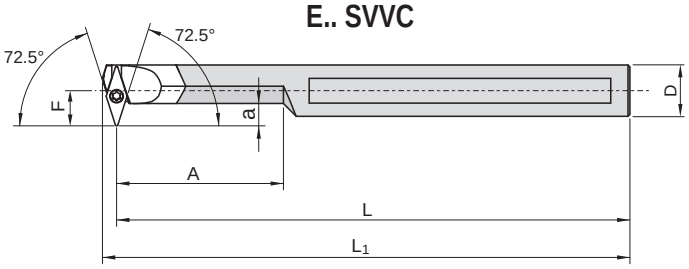
BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

72.5°

A.. SVVC



E.. SVVC



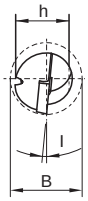
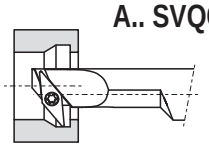


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

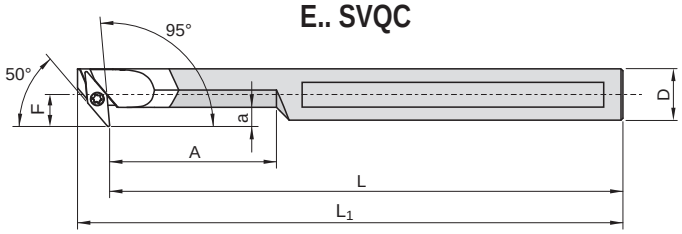
Artikel-Nr. / Article No. / No. d'article		[mm]											
R	L	D	L	L_1	F	B_{min}	A	a	l	h			
A08F SVVCR-05		8	80	82.2	5.5	9.7	15	3.5	5.5°	7.5	VC.. 0501..	T16.045	T5F
E08F SVVCR-05		8	80	82.2	5.5	9.7	26	3.5	5.5°	7.5	VC.. 0501..	T16.045	T5F

50°

A.. SVQC



E.. SVQC



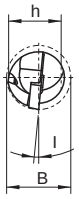


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. / Article No. / No. d'article		[mm]											
R	L	D	L	L_1	F	B_{min}	A	a	l	h			
A08F SVQCR-05		8	80	85	5	9.2	15	3	5.5°	7.5	VC.. 0501..	T16.045	T5F
E08F SVQCR-05		8	80	85	5	9.2	26	3	5.5°	7.5	VC.. 0501..	T16.045	T5F

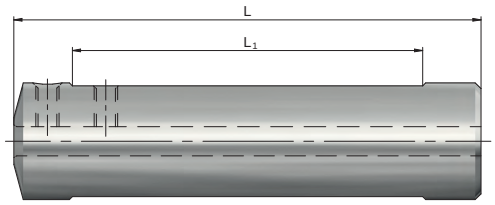
A: Stahlschaft mit Kühlmittelbohrung / A: steel shank with internal coolant / A: queue en acier avec arrosage centralisé

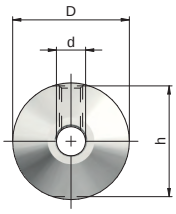
E: Hartmetallschaft mit Kühlmittelbohrung / E: carbide shank with internal coolant / E: queue en carbure avec arrosage centralisé

ANDERE ABMESSUNGEN & GEOMETRIEN AUF ANFRAGE / DIFFERENT DIMENSIONS & GEOMETRIES UPON REQUEST / DIMENSIONS ET GÉOMÉTRIES DIFFERENTES SUR DEMANDE

REDUZIERHÜLSE / REDUCTION BUSHING / DOUILLE DE REDUCTION

Reduktion / Reduction Ø 20mm → Ø 8mm

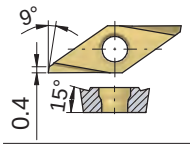
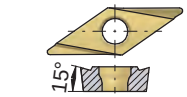
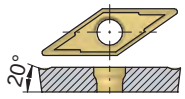
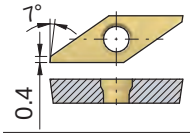
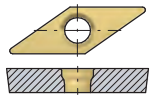




Artikel-Nr. / Article No. / No. d'article	[mm]						
	D	d	L	L_1	H		
DAG 080-2000-080	20	8	80	60	19	T1221 04050	T25S

DENITOOL®

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	R	d_1	DX 2	DX 70
*1, 2) 	**VCGT 050100 FL**	5.405	3.1	0.025	1.59	0.05	3.10	0.025	0.0	1.7	■	■
	VCGT 050100 FR						3.10		0.0		■	■
*1) 	**VCGT 0501005 FL**	5.405	3.1	0.025	1.59	0.05	3.49	0.025	0.05	1.7	■	■
	VCGT 0501005 FR						3.49		0.05		■	■
	VCGT 050101 FL						3.37		0.1		■	■
	VCGT 050101 FR						3.37		0.1		■	■
	VCGT 050102 FL						3.13		0.2		■	■
	VCGT 050102 FR						3.13		0.2		■	■
	**VCGT 050101-20**	5.405	3.1	0.025	1.59	0.05	3.37	0.025	0.1	1.7	■	■
	VCGT 050102-20						3.13		0.2		■	■
*1, 2) 	**VCGW 050100 FL**	5.405	3.1	0.025	1.59	0.05	3.10	0.025	0.0	1.7	■	■
	VCGW 050100 FR						3.10		0.0		■	■
	**VCGW 050101**	5.405	3.1	0.025	1.59	0.05	3.37	0.025	0.1	1.7	■	■
	VCGW 050102						3.13		0.2		■	■

*1, 2)

■ ab Lager / stock item / disponible du stock

□ auf Anfrage / upon request / sur demande

***1)** Illustration: Rechte Ausführung / Right hand execution / Exécution droite

***2)** Geeignet für Werkzeuge mit 95° Anstellwinkel. Weitere Ausführungen auf Anfrage.
Suitable for tools with 95° angle. Other geometries upon request.
Convient pour des outils avec angle à 95°. D'autres géométries sur demande.

DX70: Universalgrade für Leichtmetalle, Stähle und Superlegierungen
Universal grade for aluminium alloys, steel and superalloys
Qualité universelle pour alliages légers, aciers et superalliages

MiniCopy 35°

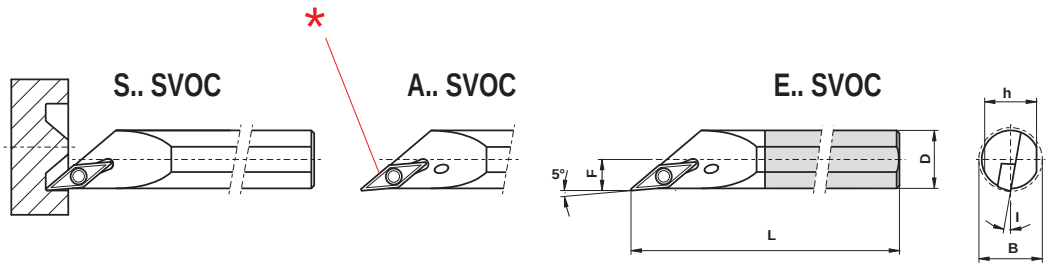
Mini Kopierwerkzeuge für Innenbearbeitungen ab ∅ 12.5mm mit 35° Wendeschneidplatten VC 07

Mini copying tools for ID turning operations in min. bore dia. 12.5mm with 35° diamond inserts VC 07

Mini outils de copiage à plaquettes 35° VC 07 pour usinage intérieur à partir de ∅ 12.5mm

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

5°



* Achtung: Sekundärschneide nicht für Bearbeitung geeignet!
Caution: Do not use secondary cutting edge for machining!
Attention: L' arête secondaire ne doit pas être utilisée pour l'usinage!

Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	L	F	B_{min}	A	a	l	h			
S10H SVOCR-07	**S10H SVOCL-07**	10	100	5.5	11	--	--	10°	9			
S12K SVOCR-07	**S12K SVOCL-07**	12	125	6.5	13	--	--	8°	11	VC.. 0702..	T20.055	T6F
S16M SVOCR-07	**S16M SVOCL-07**	16	150	8.5	17	--	--	6°	15			
A10H SVOCR-07	**A10H SVOCL-07**	10	100	5.5	11	--	--	10°	9			
A12K SVOCR-07	**A12K SVOCL-07**	12	125	6.5	13	--	--	8°	11	VC.. 0702..	T20.055	T6F
A16M SVOCR-07	**A16M SVOCL-07**	16	150	8.5	17	--	--	6°	15			
E10H SVOCR-07	**E10H SVOCL-07**	10	100	5.5	11	--	--	10°	9			
E12K SVOCR-07	**E12K SVOCL-07**	12	125	6.5	13	--	--	8°	11	VC.. 0702..	T20.055	T6F
E16M SVOCR-07	**E16M SVOCL-07**	16	150	8.5	17	--	--	6°	15			

113°

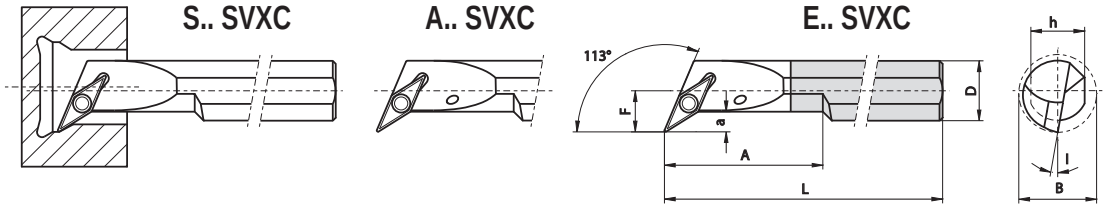


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	L	F	B_{min}	A	a	l	h			
S10H SVXCR-07	**S10H SVXCL-07**	10	100	7	12.5	22	3	10°	9			
S12K SVXCR-07	**S12K SVXCL-07**	12	125	9	15.5	28	3	8°	11	VC.. 0702..	T20.055	T6F
S16M SVXCR-07	**S16M SVXCL-07**	16	150	11	17.5	36	3	6°	15			
A10H SVXCR-07	**A10H SVXCL-07**	10	100	7	12.5	22	3	10°	9			
A12K SVXCR-07	**A12K SVXCL-07**	12	125	9	15.5	28	3	8°	11	VC.. 0702..	T20.055	T6F
A16M SVXCR-07	**A16M SVXCL-07**	16	150	11	17.5	36	3	6°	15			
E10H SVXCR-07	**E10H SVXCL-07**	10	100	7	12.5	32	3	10°	9			
E12K SVXCR-07	**E12K SVXCL-07**	12	125	9	15.5	40	3	8°	11	VC.. 0702..	T20.055	T6F
E16M SVXCR-07	**E16M SVXCL-07**	16	150	11	17.5	55	3	6°	15			

S = Stahlschaft
S = steel shank
S = queue en acier

A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

95°

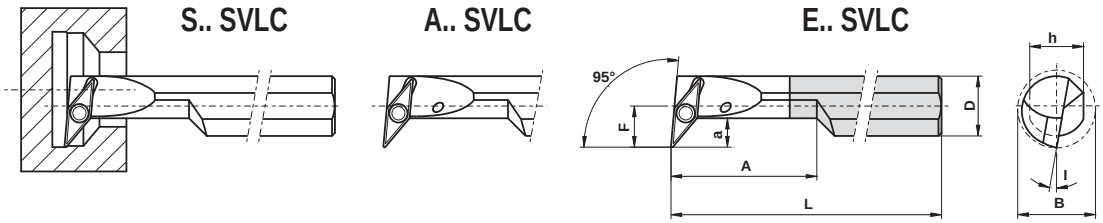


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	L	F	B_{min}	A	a	l	h			
S10H SVLCR-07	**S10H SVLCL-07**	10	100	7	12.5	22	5	10°	9	VC.. 0702..	T20.055	T6F
S12K SVLCR-07	**S12K SVLCL-07**	12	125	9	15.5	28	5	8°	11			
S16M SVLCR-07	**S16M SVLCL-07**	16	150	11	17.5	36	5	6°	15			
A10H SVLCR-07	**A10H SVLCL-07**	10	100	7	12.5	22	5	10°	9	VC.. 0702..	T20.055	T6F
A12K SVLCR-07	**A12K SVLCL-07**	12	125	9	15.5	28	5	8°	11			
A16M SVLCR-07	**A16M SVLCL-07**	16	150	11	17.5	36	5	6°	15			
E10H SVLCR-07	**E10H SVLCL-07**	10	100	7	12.5	32	5	10°	9	VC.. 0702..	T20.055	T6F
E12K SVLCR-07	**E12K SVLCL-07**	12	125	9	15.5	40	5	8°	11			
E16M SVLCR-07	**E16M SVLCL-07**	16	150	11	17.5	55	5	6°	15			

72.5°

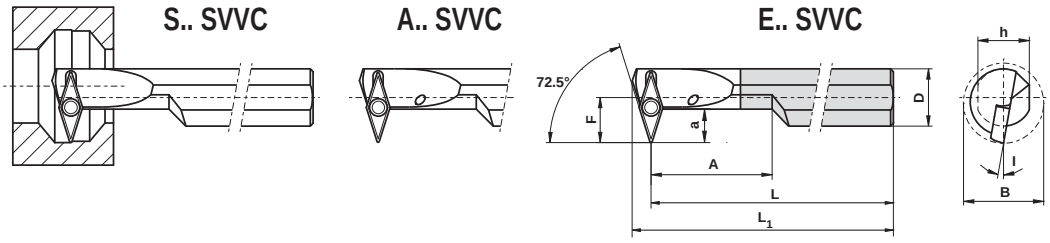


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	L	L_1	F	B_{min}	A	a	l	h			
S10H SVVCR-07	**S10H SVVCL-07**	10	100	103	8	13.5	22	6	10°	9	VC.. 0702..	T20.055	T6F
S12K SVVCR-07	**S12K SVVCL-07**	12	125	129	9	15.5	28	5	8°	11			
S16M SVVCR-07	**S16M SVVCL-07**	16	150	154	11	17.5	36	5	6°	15			
A10H SVVCR-07	**A10H SVVCL-07**	10	100	103	8	13.5	22	6	10°	9	VC.. 0702..	T20.055	T6F
A12K SVVCR-07	**A12K SVVCL-07**	12	125	129	9	15.5	28	5	8°	11			
A16M SVVCR-07	**A16M SVVCL-07**	16	150	154	11	17.5	36	5	6°	15			
E10H SVVCR-07	**E10H SVVCL-07**	10	100	103	8	13.5	32	6	10°	9	VC.. 0702..	T20.055	T6F
E12K SVVCR-07	**E12K SVVCL-07**	12	125	129	9	15.5	40	5	8°	11			
E16M SVVCR-07	**E16M SVVCL-07**	16	150	154	11	17.5	55	5	6°	15			

S = Stahlschaft
S = steel shank
S = queue en acier

A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

50°

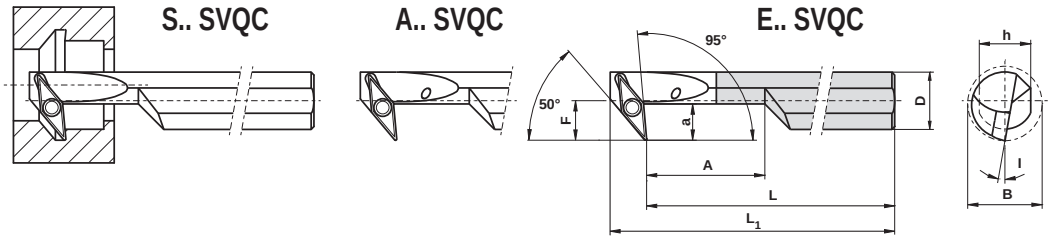


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	L	L_1	F	B_{min}	A	a	l	h			
S10H SVQCR-07	**S10H SVQCL-07**	10	100	107	7	12.5	22	5	10°	9	VC.. 0702..	T20.055	T6F
S12K SVQCR-07	**S12K SVQCL-07**	12	125	132	9	15.5	28	5	8°	11			
S16M SVQCR-07	**S16M SVQCL-07**	16	150	158	11	17.5	36	5	6°	15			
A10H SVQCR-07	**A10H SVQCL-07**	10	100	107	7	12.5	22	5	10°	9	VC.. 0702..	T20.055	T6F
A12K SVQCR-07	**A12K SVQCL-07**	12	125	132	9	15.5	28	5	8°	11			
A16M SVQCR-07	**A16M SVQCL-07**	16	150	158	11	17.5	36	5	6°	15			
E10H SVQCR-07	**E10H SVQCL-07**	10	100	107	7	12.5	32	5	10°	9	VC.. 0702..	T20.055	T6F
E12K SVQCR-07	**E12K SVQCL-07**	12	125	132	9	15.5	40	5	8°	11			
E16M SVQCR-07	**E16M SVQCL-07**	16	150	158	11	17.5	55	5	6°	15			

S = Stahlschaft
S = steel shank
S = queue en acier

A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

ANDERE ABMESSUNGEN & GEOMETRIEN AUF ANFRAGE / DIFFERENT DIMENSIONS & GEOMETRIES UPON REQUEST / DIMENSIONS ET GÉOMÉTRIES DIFFERENTES SUR DEMANDE

KLEMMHALTER / EXTERNAL TOOLHOLDER / PORTE-OUTILS EXTÉRIEUR

113°

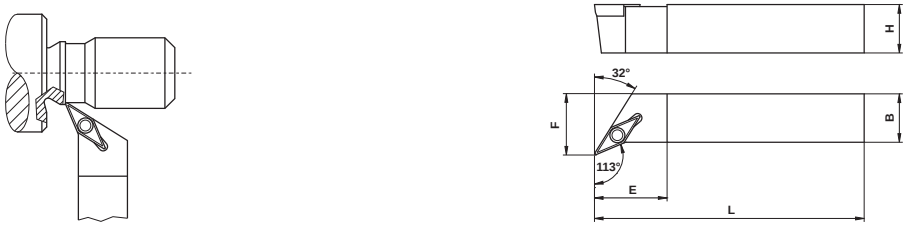
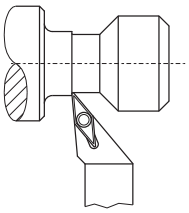


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F			
SVXCR 0808 D07	**SVXCL 0808 D07**	8	8	60	12	10	VC.. 0702..	T20.055	T6F
SVXCR 1010 E07	**SVXCL 1010 E07**	10	10	70	12	12			
SVXCR 1212 F07	**SVXCL 1212 F07**	12	12	80	12	16			

KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRIEUR

95°



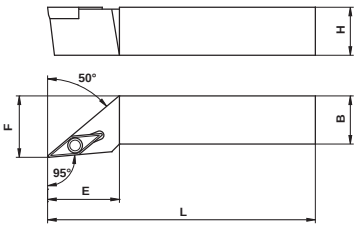
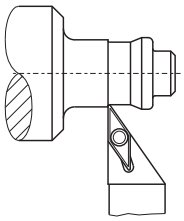


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F			
SVLCR 0808 D07	**SVLCL 0808 D07**	8	8	60	15	10			
SVLCR 1010 E07	**SVLCL 1010 E07**	10	10	70	15	12	VC.. 0702..	T20.055	T6F
SVLCR 1212 F07	**SVLCL 1212 F07**	12	12	80	18	16			

90°



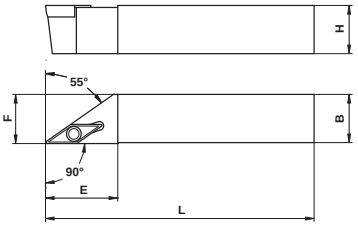
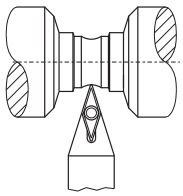
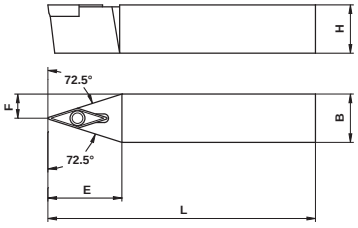


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F			
SVGCR 0808 K07	**SVGCL 0808 K07**	8	8	125	15	8.5			
SVGCR 1010 M07	**SVGCL 1010 M07**	10	10	150	15	10.5	VC.. 0702..	T20.055	T6F
SVGCR 1212 M07	**SVGCL 1212 M07**	12	12	150	18	12.5			

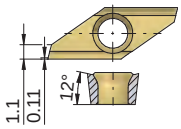
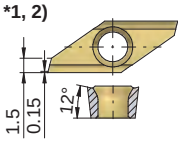
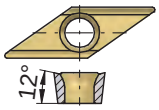
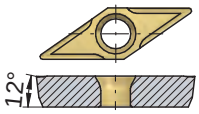
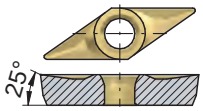
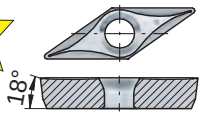
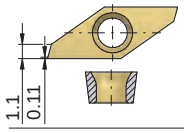
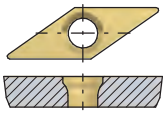
72.5°





Artikel-Nr. Article No. No. d'article	[mm] H	B	L	E	F			
SVVCN 0808 K07	8	8	125	15	4			
SVVCN 1010 M07	10	10	150	15	5	VC.. 0702..	T20.055	T6F
SVVCN 1212 M07	12	12	150	19	6			

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	R	d_1	DX 2	DX 20	DX 30	DX 32	DX 50	DX 52	CBN	PKD
*1, 2) 	**VCGT 070200-08 FR**	6.921	3.97	0.025	2.38	0.05	3.38	0.025	0.0	2.3	■	■	□					
	VCGT 070200-08 FL						3.38		0.0		■	■	□					
*1, 2) 	**VCGT 0702003-08 FR**	6.921	3.97	0.025	2.38	0.05	3.35	0.025	0.03	2.3	■	□	□					
	VCGT 0702005-08 FR						3.34		0.05		■	□	□					
	**VCGT 070201-08 FR**	6.921	3.97	0.025	2.38	0.05	4.38	0.025	0.1	2.3	■	□	□					
	VCGT 070201-08 FL						4.38		0.1		■	□	□					
	VCGT 070202-08 FR						4.15		0.2		■	■	■		□			
	VCGT 070202-08 FL						4.15		0.2		■	■	■		□			
	VCGT 070204-08 FR						3.69		0.4		■	■	■		□			
	VCGT 070204-08 FL						3.69		0.4		■	■	■		□			
	**VCGT 070201-12**	6.921	3.97	0.025	2.38	0.05	4.38	0.025	0.1	2.3	■	■	□		□	□		
	VCGT 070202-12						4.15		0.2		■	■	■		■	□		
	VCGT 070204-12						3.69		0.4		■	■	■		■	□		
	**VCGT 070201-25**	6.921	3.97	0.025	2.38	0.05	4.38	0.025	0.1	2.3	■	■	■		□	□		
	VCGT 070202-25						4.15		0.2		■	■	■		■	□		
	VCGT 070204-25						3.69		0.4		■	■	■		■	□		
NEW 	**VCGT 070202 FN-18M**	6.921	3.97	0.025	2.38	0.05	4.15	0.025	0.2	2.3	■			■				NEW
	VCGT 070204 FN-18M						3.69		0.4		■			■				
	M: Top face polished																	
*1, 2) 	**VCGW 070200 FR**	6.921	3.97	0.025	2.38	0.05	3.36	0.025	0.0	2.3	■	■	□		□			
	VCGW 070200 FL						3.36		0.0		■	■	□		□			
	**VCGW 070201**	6.921	3.97	0.025	2.38	0.05	4.38	0.025	0.1	2.3	■	□	□		□			□
	VCGW 070202						4.15		0.2		■	■	■		□		■	■
	VCGW 070204						3.69		0.4		■	■	■		■		■	■

■ ab Lager / stock item / disponible du stock

□ auf Anfrage / upon request / sur demande

***1)** Illustration: Rechte Ausführung / Right hand execution / Exécution droite

***2)** Geeignet für Werkzeuge mit 95° Anstellwinkel. Weitere Ausführungen auf Anfrage.
Suitable for tools with 95° angle. Other geometries upon request.
Convient pour des outils avec angle à 95°. D'autres géométries sur demande.

Copy 35°

Kopierwerkzeuge für Innen- & Aussenbearbeitung mit 35° WSP VC 13

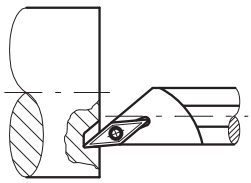
Copying tools for turning operations in min. bore dia. 20mm with VC 13 35° diamond inserts

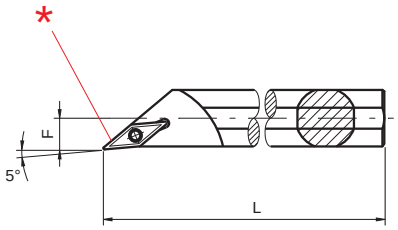
Outils de copiage pour usinage intérieur et extérieur

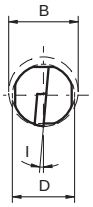
BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

5°

SVOC







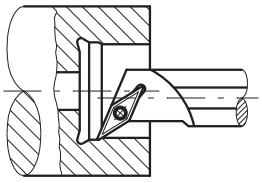
* Achtung: Sekundärschneide nicht für Bearbeitung geeignet!
Caution: Do not use secondary cutting edge for machining!
Attention: L' arête secondaire ne doit pas être utilisée pour l'usinage!

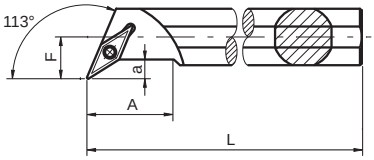
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	L	F	B	A	a	I	U-Platte Anvil				
S16Q SVOCR-13	**S16Q SVOCL-13**	16	180	11	20	-	-	10°	-	-	VC.. 1303..	T30.090	T8F
S20R SVOCR-13	**S20R SVOCL-13**	20	200	12.5	23	-	-	8°	-	-	VC.. 1303..	T30.090	T8F
S25S SVOCR-13	**S25S SVOCL-13**	25	250	16.5	30	-	-	5°	-	-	VC.. 1303..	T30.090	T8F
A16Q SVOCR-13	**A16Q SVOCL-13**	16	180	11	20	-	-	10°	-	-	VC.. 1303..	T30.090	T8F
A20R SVOCR-13	**A20R SVOCL-13**	20	200	12.5	23	-	-	8°	-	-	VC.. 1303..	T30.090	T8F
A25S SVOCR-13	**A25S SVOCL-13**	25	250	16.5	30	-	-	5°	-	-	VC.. 1303..	T30.090	T8F
E16R SVOCR-13	**E16R SVOCL-13**	16	200	11	20	-	-	10°	-	-	VC.. 1303..	T30.090	T8F
E20S SVOCR-13	**E20S SVOCL-13**	20	250	12.5	23	-	-	8°	-	-	VC.. 1303..	T30.090	T8F
E25T SVOCR-13	**E25T SVOCL-13**	25	300	16.5	30	-	-	5°	-	-	VC.. 1303..	T30.090	T8F

113°

SVXC





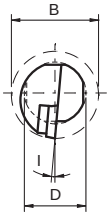


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	L	F	B	A	a	I	U-Platte Anvil				
S16Q SVXCR-13	**S16Q SVXCL-13**	16	180	11	21	25	4	5°	-	-	VC.. 1303..	T30.090	T8F
S20R SVXCR-13	**S20R SVXCL-13**	20	200	13	25	28	4	5°	-	-	VC.. 1303..	T30.090	T8F
S25S SVXCR-13	**S25S SVXCL-13**	25	250	17	32	-	4	2°	-	-	VC.. 1303..	T30.090	T8F
S32T SVXCR-13	**S32T SVXCL-13**	32	300	22	40	-	6	0°	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
A16Q SVXCR-13	**A16Q SVXCL-13**	16	180	11	21	25	4	5°	-	-	VC.. 1303..	T30.090	T8F
A20R SVXCR-13	**A20R SVXCL-13**	20	200	13	25	28	4	5°	-	-	VC.. 1303..	T30.090	T8F
A25S SVXCR-13	**A25S SVXCL-13**	25	250	17	32	-	4	2°	-	-	VC.. 1303..	T30.090	T8F
A32T SVXCR-13	**A32T SVXCL-13**	32	300	22	40	-	6	0°	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
E16R SVXCR-13	**E16R SVXCL-13**	16	200	11	21	25	4	5°	-	-	VC.. 1303..	T30.090	T8F
E20S SVXCR-13	**E20S SVXCL-13**	20	250	13	25	28	4	5°	-	-	VC.. 1303..	T30.090	T8F
E25T SVXCR-13	**E25T SVXCL-13**	25	300	17	32	-	4	2°	-	-	VC.. 1303..	T30.090	T8F

S = Stahlschaft
S = steel shank
S = queue en acier

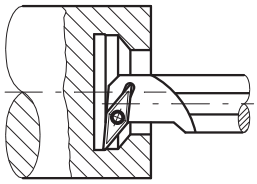
A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

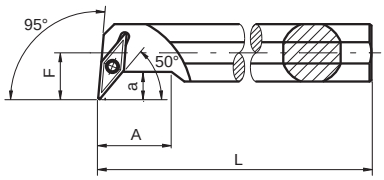
E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

95°

SVLC





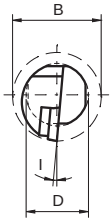
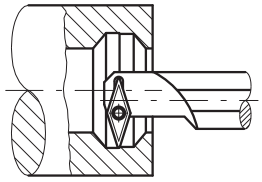


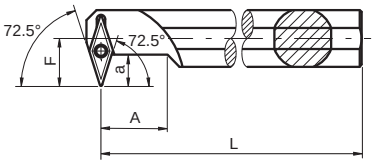
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	L	F	B	A	a	I	U-Platte Anvil				
S20R SVLCR-13	**S20R SVLCL-13**	20	200	13	25	25	7	5°	-	-	VC.. 1303..	T30.090	T8F
S25S SVLCR-13	**S25S SVLCL-13**	25	250	17	32	30	7	2°	-	-	VC.. 1303..	T30.090	T8F
S32T SVLCR-13	**S32T SVLCL-13**	32	300	22	40	-	6	0°	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
A20R SVLCR-13	**A20R SVLCL-13**	20	200	13	25	25	7	5°	-	-	VC.. 1303..	T30.090	T8F
A25S SVLCR-13	**A25S SVLCL-13**	25	250	17	32	30	7	2°	-	-	VC.. 1303..	T30.090	T8F
A32T SVLCR-13	**A32T SVLCL-13**	32	300	22	40	-	6	0°	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
E20S SVLCR-13	**E20S SVLCL-13**	20	250	13	25	25	7	5°	-	-	VC.. 1303..	T30.090	T8F
E25T SVLCR-13	**E25T SVLCL-13**	25	300	17	32	30	7	2°	-	-	VC.. 1303..	T30.090	T8F

72.5°

SVVC





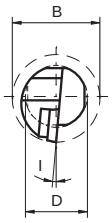


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	L	F	B	A	a	I	U-Platte Anvil				
S20R SVVCR-13	**S20R SVVCL-13**	20	200	15	27	22	9	5°	-	-	VC.. 1303..	T30.090	T8F
S25S SVVCR-13	**S25S SVVCL-13**	25	250	17	32	22	9	2°	-	-	VC.. 1303..	T30.090	T8F
S32T SVVCR-13	**S32T SVVCL-13**	32	300	22	40	29	10	0°	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
A20R SVVCR-13	**A20R SVVCL-13**	20	200	15	27	22	9	5°	-	-	VC.. 1303..	T30.090	T8F
A25S SVVCR-13	**A25S SVVCL-13**	25	250	17	32	22	9	2°	-	-	VC.. 1303..	T30.090	T8F
A32T SVVCR-13	**A32T SVVCL-13**	32	300	22	40	29	10	0°	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
E20S SVVCR-13	**E20S SVVCL-13**	20	250	15	27	22	9	5°	-	-	VC.. 1303..	T30.090	T8F
E25T SVVCR-13	**E25T SVVCL-13**	25	300	17	32	22	9	2°	-	-	VC.. 1303..	T30.090	T8F

Copy 35 Hartmetallbohrstangen sind auch in kostengünstiger, kurzer Ausführung lieferbar.
Copy 35 carbide bars are also available in low-cost, short version.
Les barres d'alésage en carbure Copy 35 sont également disponibles en low-cost version courte.

S = Stahlschaft
S = steel shank
S = queue en acier

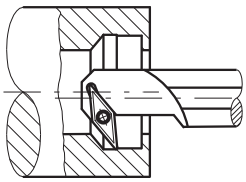
A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

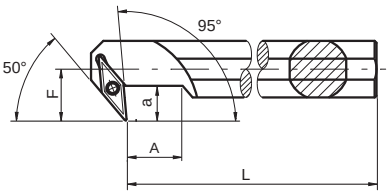
E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

50°

SVQC





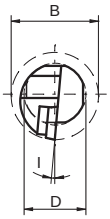


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] D	L	F	B	A	a	I	U-Platte Anvil				
S20R SVQCR-13	**S20R SVQCL-13**	20	200	15	27	19	9	5°	-	-	VC.. 1303..	T30.090	T8F
S25S SVQCR-13	**S25S SVQCL-13**	25	250	20	35	19	10	2°	-	-	VC.. 1303..	T30.090	T8F
S32T SVQCR-13	**S32T SVQCL-13**	32	300	25	43	25	13	0°	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
A20R SVQCR-13	**A20R SVQCL-13**	20	200	15	27	19	9	5°	-	-	VC.. 1303..	T30.090	T8F
A25S SVQCR-13	**A25S SVQCL-13**	25	250	20	35	19	10	2°	-	-	VC.. 1303..	T30.090	T8F
A32T SVQCR-13	**A32T SVQCL-13**	32	300	25	43	25	13	0°	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
E20S SVQCR-13	**E20S SVQCL-13**	20	250	15	27	19	9	5°	-	-	VC.. 1303..	T30.090	T8F
E25T SVQCR-13	**E25T SVQCL-13**	25	300	20	35	19	10	2°	-	-	VC.. 1303..	T30.090	T8F

S = Stahlschaft
S = steel shank
S = queue en acier

A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

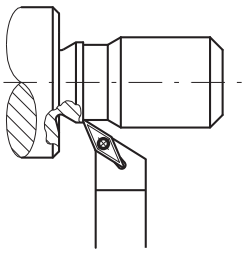
Copy 35 Hartmetallbohrstangen sind auch in kostengünstiger, kurzer Ausführung lieferbar.
Copy 35 carbide bars are also available in low-cost, short version.
Les barres d'alésage en carbure Copy 35 sont également disponibles en low-cost version courte.

ANDERE ABMESSUNGEN & GEOMETRIEN AUF ANFRAGE / DIFFERENT DIMENSIONS & GEOMETRIES UPON REQUEST / DIMENSIONS ET GÉOMÉTRIES DIFFERENTES SUR DEMANDE

KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRIEUR

113°

SVXC



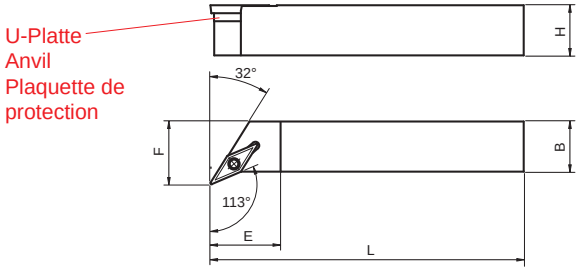


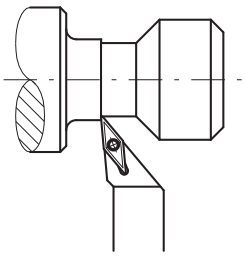
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F	U-Platte Anvil				
SVXCR 1212 G13	**SVXCL 1212 G13**	12	12	90	19	18	-	-	VC.. 1303..	T30.090	T8F
SVXCR 1616 H13	**SVXCL 1616 H13**	16	16	100	22	20	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
SVXCR 2020 K13	**SVXCL 2020 K13**	20	20	125	22	25	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
SVXCR 2525 M13	**SVXCL 2525 M13**	25	25	150	22	32	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
SVXCR 3225 P13	**SVXCL 3225 P13**	32	25	170	22	32	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F

KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRIEUR

95°

SVLC



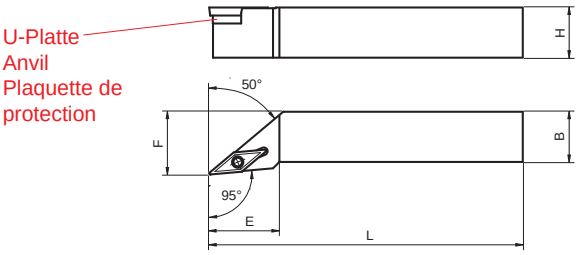
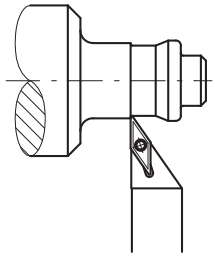


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F	U-Platte Anvil				
SVLCR 1212 G13	**SVLCL 1212 G13**	12	12	90	25	16	-	-	VC.. 1303..	T30.090	T8F
SVLCR 1616 H13	**SVLCL 1616 H13**	16	16	100	25	20	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
SVLCR 2020 K13	**SVLCL 2020 K13**	20	20	125	28	25	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
SVLCR 2525 M13	**SVLCL 2525 M13**	25	25	150	30	32	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
SVLCR 3225 P13	**SVLCL 3225 P13**	32	25	170	30	32	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F

90°

SVGC



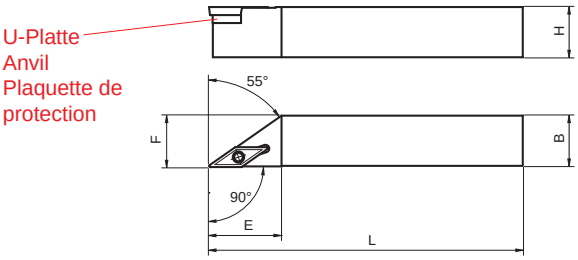
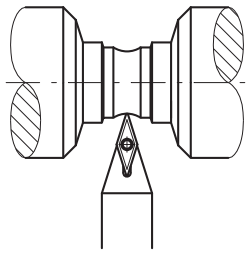


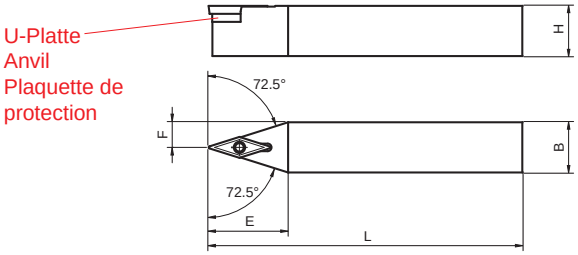
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F	U-Platte Anvil				
SVGCR 1010 M13	**SVGCL 1010 M13**	10	10	150	25	10.5	-	-	VC.. 1303..	T30.090	T8F
SVGCR 1212 M13	**SVGCL 1212 M13**	12	12	150	25	12.5	-	-	VC.. 1303..	T30.090	T8F
SVGCR 1616 H13	**SVGCL 1616 H13**	16	16	100	25	16.5	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F

72.5°

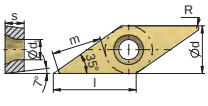
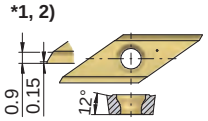
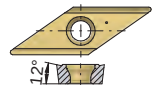
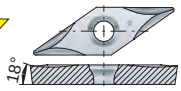
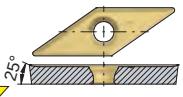
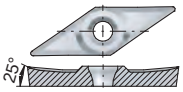
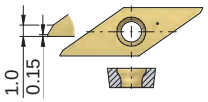
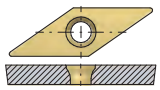
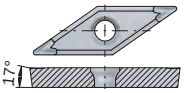
SVVC





Artikel-Nr. Article No. No. d'article	[mm] H	B	L	E	F	U-Platte Anvil				
SVVCN 1212 M13	12	12	150	30	6	-	-	VC.. 1303..	T30.090	T8F
SVVCN 1616 H13	16	16	100	30	8	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
SVVCN 2020 K13	20	20	125	30	10	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
SVVCN 2525 M13	25	25	150	30	12.5	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F
SVVCN 3225 P13	32	25	170	30	12.5	U1010 VC13N 318	TU 45 30 110	VC.. 1303..	T30.090	T8F

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	R	d_1	DX 2	DC 15	DX 20	DX 30	DX 32	DX 50	DX 52	DT 10	DT 55	DT 210	DT 310	DT 255	DT 355	CBN	PKD
	**VCGT 130301** **VCGT 130302** **VCGT 130304** **VCGT 130308**	13	7.94	0.025	3.18	0.13	9.000 8.767 8.302 7.372	0.025	0.1 0.2 0.4 0.8	3.4	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■		□ ■ ■ □	□ □ □ □	 ■ ■ □		■ ■ ■ □	■ ■ ■ □				
	*1, 2) **VCGT 130300 FR/L-10**	13	7.94	0.025	3.18	0.13	8.400	0.025	0.0	3.4	■		■	■		□								
	*1) **VCGT 130301 FR/L-10** **VCGT 130302 FR/L-10** **VCGT 130304 FR/L-10** **VCGT 130308 FR/L-15**	13	7.94	0.025	3.18	0.13	9.000 8.767 8.302 7.372	0.025	0.1 0.2 0.4 0.8	3.4	■ ■ ■ ■		□ ■ ■ ■	□ ■ ■ ■		□								
	**VCGT 130302 EN-18M** **VCGT 130302 FN-18M** **VCGT 130304 EN-18M** **VCGT 130304 FN-18M** *M: Top face polished*	13 13	7.94 7.94	0.025 0.025	3.18 3.18	0.13 0.13	8.767 8.767 8.302 8.302	0.02 0.02	0.2 0.2 0.4 0.4	3.4 3.4	 ■ ■	■ ■ 		 ■ ■										
	**VCGT 130301-25** **VCGT 130302-25** **VCGT 130304-25** **VCGT 130308-25** **VCGT 130302 FN-25M** **VCGT 130304 FN-25M** *M: Top face polished*	13 13	7.94 7.94	0.025 0.025	3.18 3.18	0.13 0.13	9.000 8.767 8.302 7.372 8.767 8.302	0.025 0.02	0.1 0.2 0.4 0.8 0.2 0.4	3.4 3.4	■ ■ ■ ■ ■ ■	■ ■ ■ ■ 	■ ■ ■ ■ 	■ ■ ■ ■ 		□ ■ ■ ■ 	□ □ □ □ 								
	**VCGT 130301 FN-250** **VCGT 130302 FN-250** **VCGT 130304 FN-250** **VCGT 130308 FN-250**	13	7.94	0.025	3.18	0.13	9.000 8.767 8.302 7.372	0.025	0.1 0.2 0.4 0.8	3.4	■ ■ ■ ■		□ □ □ □	□ □ □ □		□ □ □ □								
	*1, 2) **VCGW 130300 FR/L**	13	7.94	0.025	3.18	0.13	8.400	0.025	0.0	3.4	■		■	■		□								
	**VCGW 130301** (FN) **VCGW 130302** (FN) **VCGW 130304** (FN) **VCGW 130308** (FN)	13	7.94	0.025	3.18	0.13	9.000 8.767 8.302 7.371	0.025	0.1 0.2 0.4 0.8	3.4	■ ■ ■ ■		□ ■ ■ ■	□ ■ ■ ■		 □ □ □							■ ■	□ □
	**VCMT 130302-17**	13	7.94	0.025	3.18	0.13	8.767	0.16	0.2	3.4								●				●	●		

■ ab Lager
stock item
disponible du stock

□ auf Anfrage
upon request
sur demande

● nur solange Vorrat
as long as available
jusqu' à l'épuisement du stock

*1) Geeignet für Werkzeuge mit 90° Anstellwinkel.
Suitable for tools with 90° angle.
Convient pour des outils avec angle à 90°.

*2) Rechte Ausführung
Right hand execution
Exécution droite

SwissLine®

Drehwerkzeuge für Langdrehmaschinen mit anwendungs-spezifisch optimierter Spankontrolle

Turning tools for Swiss type machines with application-specifically optimized chip control

Outils de tournage pour décolleteuses avec contrôle des copeaux spécifiquement optimisé à l'application

- **Wirtschaftliches Arbeiten mit bekannter Denitool® Performance dank Präzisions-Platten & -Plattensitz**
- **Der Präzisions-Schliff garantiert stabile Drehverhältnisse unter allen Einsatzbedingungen**
- **Rasche Vorjustierung der Halter nach Werkzeugwechsel dank Hilfsskala**

- ***Economic operation with well known Denitool® performance thanks to precision inserts & -holders***
- ***The precision cut ensures extremely stable turning under different operating conditions***
- ***Quick pre-adjustment after each tool change thanks to the smart auxiliary scale***

- **Usinage économique en performance bien connu Denitool®, grâce aux plaquettes et porte-outils de précision**
- **Le rectifiage de précision garanti un tournage extrêmement stable sous différentes conditions d'opération**
- **Pre-ajustage rapide du porte-outil apres chaque changement de plaquette, grâce à l'échelle auxiliaire**

KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRIEUR

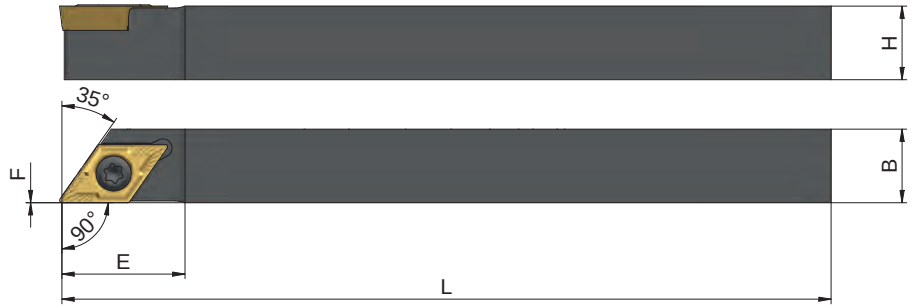
90°

SCAC

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F			
SCACR 1212 K09		12	12	125	20	0	CC.. 09T3..	T35.110	T15H
SCACR 1616 K09		16	16	125	20	0	CC.. 09T3..	T35.110	T15H

90°

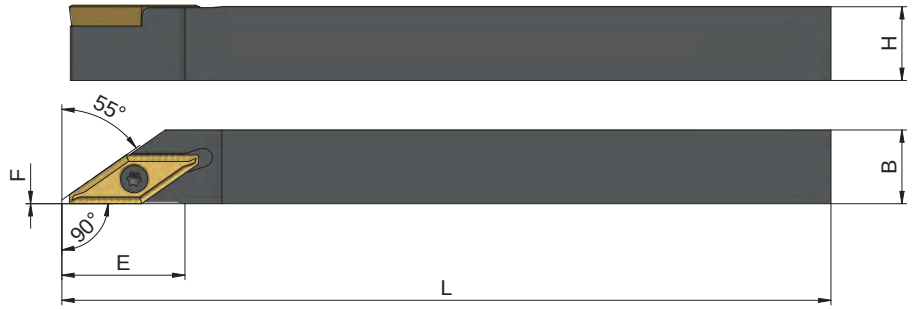
SDAC



Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F			
SDACR 1212 K11		12	12	125	20	0	DC.. 11T3..	T35.110	T15H
SDACR 1616 K11		16	16	125	20	0	DC.. 11T3..	T35.110	T15H

90°

SVAC



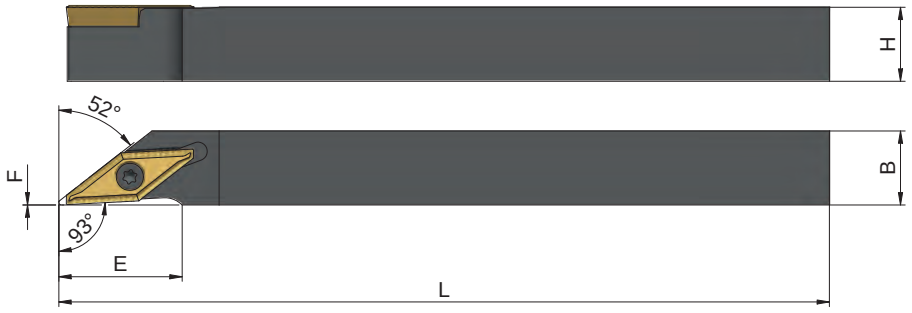
Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F			
SVACR 1212 K13		12	12	125	20	0	VC.. 1303..	T30.090	T8F
SVACR 1616 K13		16	16	125	20	0	VC.. 1303..	T30.090	T8F

KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRIEUR

93°

SVJC

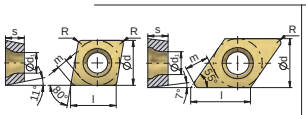
NEW

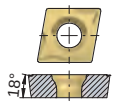
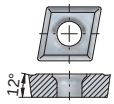
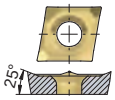
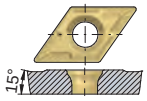
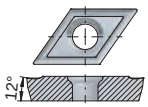
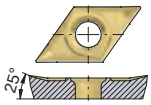


Artikel-Nr. Article No. No. d'article **R**	**L**	[mm] H	B	L	E	F			
SVJCR 1212 K13		12	12	125	20	0	VC.. 1303..	T30.090	T8F
SVJCR 1616 K13		16	16	125	20	0	VC.. 1303..	T30.090	T8F

ANDERE ABMESSUNGEN & GEOMETRIEN AUF ANFRAGE / DIFFERENT DIMENSIONS & GEOMETRIES UPON REQUEST / DIMENSIONS ET GÉOMÉTRIES DIFFERENTES SUR DEMANDE

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE



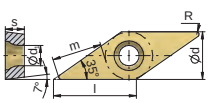
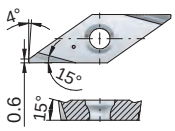
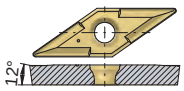
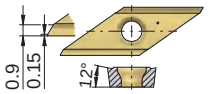
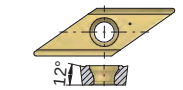
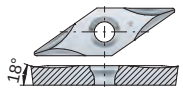
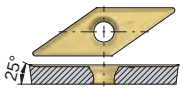
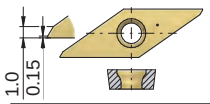
	Artikel-Nr. Article No. No. d'article	[mm] l	⌀d	+/-	s	+/-	m	+/-	R	⌀d_1	DC 10	DX 2	DX 20	DX 30	DX32	DX 50	DX 52	DT 55	DT 255	DT 355
NEW 	**CCGT 09T302 FN-18M** **CCGT 09T304 FN-18M** *M: Top face polished*	9.7	9.52	0.025	3.97	0.13	2.538 2.423	0.025	0.2 0.4	4.4		■ ■			■ ■					
	**CCGT 09T304 EN**	9.7	9.52	0.025	3.97	0.13	2.423	0.025	0.4	4.4								■	□	□
	**CCGT 09T301 FN-250** **CCGT 09T302 FN-250** **CCGT 09T304 FN-250** **CCGT 09T308 FN-250**	9.7	9.52	0.025	3.97	0.13	2.589 2.534 2.423 2.201	0.025	0.1 0.2 0.4 0.8	4.4		□ ■ ■ ■	□ ■ ■ □	□ □ □ □						
	**DCGT 11T302-15** **DCGT 11T304-15**	11.6	9.52	0.025	3.97	0.13	5.323 5.082	0.025	0.2 0.4	4.4		■ ■			■ ■					
	**DCGT 11T302 EN** **DCGT 11T304 EN** **DCGT 11T308 EN**	11.6	9.52	0.025	3.97	0.13	5.316 5.082 4.616	0.025	0.2 0.4 0.8	4.4							■	■ ■ □	□ □ □	□ □
	**DCGT 11T301 FN-250** **DCGT 11T302 FN-250** **DCGT 11T304 FN-250** **DCGT 11T308 FN-250**	11.6	9.52	0.025	3.97	0.13	5.432 5.316 5.082 4.616	0.025	0.1 0.2 0.4 0.8	4.4		■ ■ ■ ■	■ ■ ■ ■	□ □ □ □						

NEW

■ ab Lager / stock item / disponible du stock □ auf Anfrage / upon request / sur demande

WEITERE QUALITÄTEN & GEOMETRIEN VGL. S.69 / OTHER GRADES & GEOMETRIES SEE P.69 / AUTRES QUALITÉS ET GÉOMÉTRIES VOIR P.69 S.V.P.

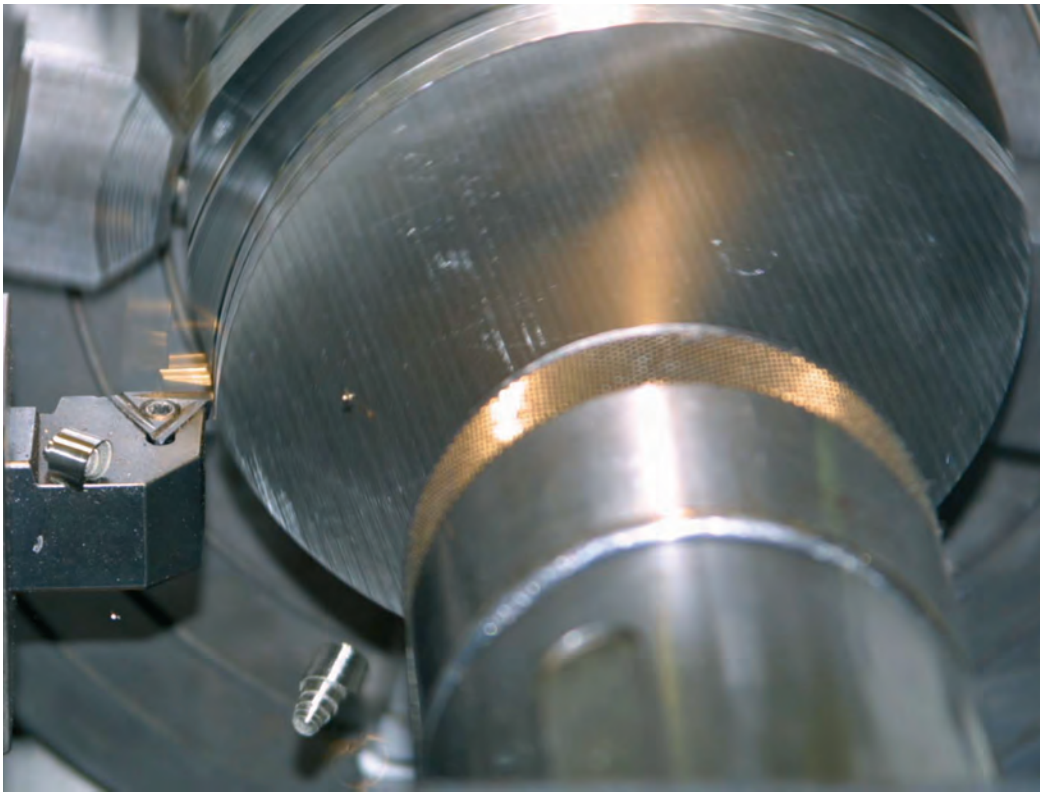
WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	∅d	+/-	s	+/-	m	+/-	R	∅d_1	DX 2	DC 15	DX 20	DX 30	DX 32	DX 50	DX 52	DT 10	DT 55	DT 210	DT 310	DT 255	DT 355
	**VCGT 130300 FR-01W**	13	7.94	0.025	3.18	0.13	7.282	0.025	0.0	3.4	■				■								
	VCGT 130301 FR-01W						7.250		0.1		■				■								
	VCGT 130302 FR-01W						7.217		0.2		■				■								
	**VCGT 130300 FR-15W**	13	7.94	0.025	3.18	0.13	8.400	0.025	0.0	3.4	■				■								
	VCGT 130301 FR-15W						8.367		0.1		■				■								
	VCGT 130302 FR-15W						8.336		0.2		■				■								
	**VCGT 130301**	13	7.94	0.025	3.18	0.13	9.000	0.025	0.1	3.4	■	■	■	■		□	□						
	VCGT 130302						8.767		0.2		■	■	■	■		■	□	■		■	■		
	VCGT 130304						8.302		0.4		■	■	■	■		■	□	■		■	■		
	**VCGT 130300 FR-10**	13	7.94	0.025	3.18	0.13	8.400	0.025	0.0	3.4	■		■	■		□							
	**VCGT 130301 FR-10**	13	7.94	0.025	3.18	0.13	9.000	0.025	0.1	3.4	■		□	□									
	VCGT 130302 FR-10						8.767		0.2		■		■	■									
	VCGT 130304 FR-10						8.302		0.4		■		■	■									
NEW 	**VCGT 130302 FN-18M**	13	7.94	0.025	3.18	0.13	8.767	0.02	0.2	3.4	■				■								NEW
	VCGT 130304 FN-18M						8.302		0.4		■				■								
	M: Top face polished																						
NEW 	**VCGT 130301-25**	13	7.94	0.025	3.18	0.13	9.000	0.025	0.1	3.4	■	■	■	■		□	□						
	VCGT 130302-25						8.767		0.2		■	■	■	■		■	□						
	VCGT 130304-25						8.302		0.4		■	■	■	■		■	□						
	VCGT 130302 FN-25M	13	7.94	0.025	3.18	0.13	8.767	0.02	0.2	3.4	■												NEW
	VCGT 130304 FN-25M						8.302		0.4		■												
	M: Top face polished																						
	**VCGW 130300 FR**	13	7.94	0.025	3.18	0.13	8.400	0.025	0.0	3.4	■		■	■		□							

■ ab Lager / stock item / disponible du stock □ auf Anfrage / upon request / sur demande

WEITERE QUALITÄTEN & GEOMETRIEN VGL. S.52 / OTHER GRADES & GEOMETRIES SEE P.52 / AUTRES QUALITÉS ET GÉOMÉTRIES VOIR P.52 S.V.P.

Turning 60°



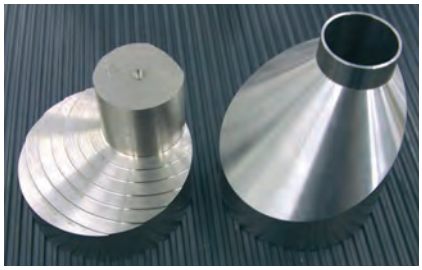
Drehwerkzeuge mit T-Platte für schwierige Zerspanungsoperationen

Turning tools with inserts type 'T' for difficult to machine turning operations

Outils de tournage à plaquette 'T' pour des opérations à usinabilité difficile

DENITOOL®

BEARBEITUNGSBEISPIEL / EXAMPLE FOR APPLICATION / EXEMPLE POUR L'APPLICATION



Muster zu Schnittdaten **Musterteil Rohrreduktion**
Sample for machining data **Sample tubing**
Modèle pour données d'usinage **Modèle Tube**

Rohrteile für Chemieanlagen:
- Hervorragende Schnittleistung und hohe Standzeit trotz unterbrochenem Schnitt bei Bearbeitung von säurebeständigem Stahl
- Erhöhte Anforderung an die Oberflächenqualität

Tubing for chemical industry:
- Excellent cutting performance and high toollife despite interrupted cut in machining of stainless steel parts
- increased demand for surface quality

Tubes pour l'industrie chimique:
- Rendement d'usinage excellent et haute durée de la vie de l'outil malgré la coupe interrompu dans l'usinage de l'acier inoxidable.
- Exigence élevé pour la qualitée de la surface

Bearbeitungsdaten		**Machining data**		**Données d'usinage**	
Werkzeug	STGPR 2020 K16	Toolholder	STGPR 2020 K16	Porte-outils	STGPR 2020 K16
Schneidplatte	TPHT 16T308 ER	Insert type	TPHT 16T308 ER	Plaquette	TPHT 16T308 ER
Beschichtung	AlTiN - Spezial	Coating	AlTiN - Spezial	Revêtement	AlTiN - Spezial
Werkstoff	DIN 1.4435 BN 2	Material	DIN 1.4435 BN 2	Materiel	DIN 1.4435 BN 2
Roh Ø	117 mm	Diameter (raw material)	117 mm	Diamètre (materiel brut)	117 mm
Fertig Ø	56 mm	Diameter (finished)	56 mm	Diamètre (produit fini)	56 mm
Exzentrizität radial	32 mm	Radial excentricity	32 mm	Excentricité radiale	32 mm
Drehlänge	55 mm	Turning length	55 mm	Longueur de tournage	55 mm

1.Schnitt	Schnittgeschwindigkeit	300 m/min	*Cut No.1*	Cutting speed	300 m/min	*Coupe 1*	Vitesse de coupe	300 m/min
	Bearbeitungs-Ø	164 mm		Machining diameter	164 mm		Diamètre d'opération	164 mm
	Drehzahl	582 U/min		Turning speed	582 RPM		Vitesse rotative	582 T/m
	Vorschub	0.05 mm/U		Feed rate	0.05 mm/R		Avance	0.05 mm/T
	Eingriffszeit	115 sec		Cutting time	115 sec		Temps de coupe	115 sec
2.Schnitt	Schnittgeschwindigkeit	260 m/min	*Cut No.2*	Cutting speed	260 m/min	*Coupe 2*	Vitesse de coupe	260 m/min
	Bearbeitungs-Ø	146 mm		Machining diameter	146 mm		Diamètre d'opération	146 mm
	Drehzahl	582 U/min		Turning speed	582 RPM		Vitesse rotative	582 T/m
	Vorschub	0.05 mm/U		Feed rate	0.05 mm/R		Avance	0.05 mm/T
	Eingriffszeit	115 sec		Cutting time	115 sec		Temps de coupe	115 sec
3.Schnitt	Schnittgeschwindigkeit	230 m/min	*Cut No.3*	Cutting speed	230 m/min	*Coupe 3*	Vitesse de coupe	230 m/min
	Bearbeitungs-Ø	128 mm		Machining diameter	128 mm		Diamètre d'opération	128 mm
	Drehzahl	582 U/min		Turning speed	582 RPM		Vitesse rotative	582 T/m
	Vorschub	0.05 mm/U		Feed rate	0.05 mm/R		Avance	0.05 mm/T
	Eingriffszeit	115 sec		Cutting time	115 sec		Temps de coupe	115 sec
4.Schnitt	Schnittgeschwindigkeit	200 m/min	*Cut No.4*	Cutting speed	200 m/min	*Coupe 4*	Vitesse de coupe	200 m/min
	Bearbeitungs-Ø	110 mm		Machining diameter	110 mm		Diamètre d'opération	110 mm
	Drehzahl	582 U/min		Turning speed	582 RPM		Vitesse rotative	582 T/m
	Vorschub	0.05 mm/U		Feed rate	0.05 mm/R		Avance	0.05 mm/T
	Eingriffszeit	115 sec		Cutting time	115 sec		Temps de coupe	115 sec
5.Schnitt	Schnittgeschwindigkeit	180 m/min	*Cut No.5*	Cutting speed	180 m/min	*Coupe 5*	Vitesse de coupe	180 m/min
	Bearbeitungs-Ø	92 mm		Machining diameter	92 mm		Diamètre d'opération	92 mm
	Drehzahl	625 U/min		Turning speed	625 RPM		Vitesse rotative	625 T/m
	Vorschub	0.05 mm/U		Feed rate	0.05 mm/R		Avance	0.05 mm/T
	Eingriffszeit	105 sec		Cutting time	105 sec		Temps de coupe	105 sec
6.Schnitt	Schnittgeschwindigkeit	170 m/min	*Cut No.6*	Cutting speed	170 m/min	*Coupe 6*	Vitesse de coupe	170 m/min
	Bearbeitungs-Ø	74 mm		Machining diameter	74 mm		Diamètre d'opération	74 mm
	Drehzahl	730 U/min		Turning speed	730 RPM		Vitesse rotative	730 T/m
	Vorschub	0.05 mm/U		Feed rate	0.05 mm/R		Avance	0.05 mm/T
	Eingriffszeit	90 sec		Cutting time	90 sec		Temps de coupe	90 sec
7.Schnitt	Schnittgeschwindigkeit	160 m/min	*Cut No.7*	Cutting speed	160 m/min	*Coupe 7*	Vitesse de coupe	160 m/min
	Bearbeitungs-Ø	56 mm		Machining diameter	56 mm		Diamètre d'opération	56 mm
	Drehzahl	960 U/min		Turning speed	960 RPM		Vitesse rotative	960 T/m
	Vorschub	0.05 mm/U		Feed rate	0.05 mm/R		Avance	0.05 mm/T
	Eingriffszeit	68 sec		Cutting time	68 sec		Temps de coupe	68 sec
Eingriffszeit total		732 sec (=12 min)	Total cutting time		732 sec (=12 min)	Temps de coupe totale		732 sec (=12 min)
Zerspantes Volumen total		455.6 cm³	Total machined volume		455.6 cm³	Volume usiné total		455.6 cm³

Mit abnehmendem Ø wird der Span zunehmend stärker erhitzt und in der Spanleitstufe gestaucht -» rauher Schnitt.

Abhilfe durch proportional zum Ø reduzierte Schnittgeschwindigkeit.

The chip heats up increasingly at reduced diameters and therefore tends to jolt in the chip breaker -» rough cut, poor surface quality.

This problem can be solved by reducing the cutting speed proportional to the dia.

Avec la diminution du dia. la temperature du copeau augmente et il se déforme dans le brise-copeau. -» coupe grossier, mauvaise surface.

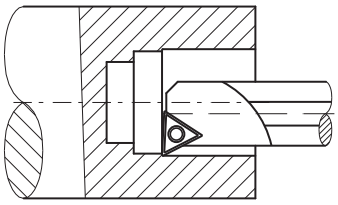
Ce problème peut être résolu en réduistant la vitesse de coupe en proportion du dia.

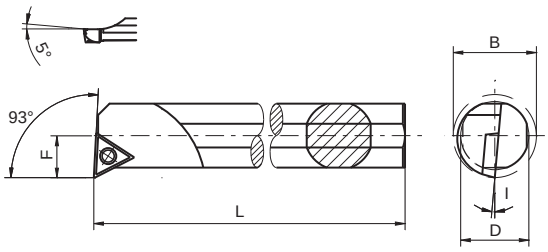
DENITOOL®

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

93°

STUP





Artikel-Nr. Article No. No. d'article R	L	[mm] D	L	F	B	A	a	I					
S10H STUPR-11	**S10H STUPL-11**	10	100	7	13	-	-	5°	-	-	TP.. 1102..	T25.055	T7F
S12K STUPR-11	**S12K STUPL-11**	12	125	9	16	-	-	3°	-	-	TP.. 1102..	T25.055	T7F
S16Q STUPR-11	**S16Q STUPL-11**	16	180	11	20	-	-	2°	-	-	TP.. 1102..	T25.055	T7F
S16Q STUPR-16	**S16Q STUPL-16**	16	180	11	20	-	-	4°	-	-	TP.. 16T3..	T35.084	T15H
S20R STUPR-16	**S20R STUPL-16**	20	200	13	24	-	-	2°	-	-	TP.. 16T3..	T35.084	T15H
S25S STUPR-16	**S25S STUPL-16**	25	250	17	30	-	-	0°	-	-	TP.. 16T3..	T35.084	T15H
A10H STUPR-11	**A10H STUPL-11**	10	100	7	13	-	-	5°	-	-	TP.. 1102..	T25.055	T7F
A12K STUPR-11	**A12K STUPL-11**	12	125	9	16	-	-	3°	-	-	TP.. 1102..	T25.055	T7F
A16Q STUPR-11	**A16Q STUPL-11**	16	180	11	20	-	-	2°	-	-	TP.. 1102..	T25.055	T7F
A16Q STUPR-16	**A16Q STUPL-16**	16	180	11	20	-	-	4°	-	-	TP.. 16T3..	T35.084	T15H
A20R STUPR-16	**A20R STUPL-16**	20	200	13	24	-	-	2°	-	-	TP.. 16T3..	T35.084	T15H
A25S STUPR-16	**A25S STUPL-16**	25	250	17	30	-	-	0°	-	-	TP.. 16T3..	T35.084	T15H
E10M STUPR-11	**E10M STUPL-11**	10	150	7	13	-	-	5°	-	-	TP.. 1102..	T25.055	T7F
E12Q STUPR-11	**E12Q STUPL-11**	12	180	9	16	-	-	3°	-	-	TP.. 1102..	T25.055	T7F
E16R STUPR-11	**E16R STUPL-11**	16	200	11	20	-	-	2°	-	-	TP.. 1102..	T25.055	T7F
E16R STUPR-16	**E16R STUPL-16**	16	200	11	20	-	-	4°	-	-	TP.. 16T3..	T35.084	T15H
E20S STUPR-16	**E20S STUPL-16**	20	250	13	24	-	-	2°	-	-	TP.. 16T3..	T35.084	T15H
E25T STUPR-16	**E25T STUPL-16**	25	300	17	30	-	-	0°	-	-	TP.. 16T3..	T35.084	T15H

Rechte Bohrstangen benötigen linke Platten und umgekehrt / Right hand boring bars require left hand inserts and vice versa / Les barres d'alésage droits utilisent des plaquettes gauches et inversement.

S = Stahlschaft
S = steel shank
S = queue en acier

A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

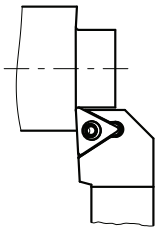
E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

Turning 60° Hartmetallbohrstangen sind auch in kostengünstiger, kurzer Ausführung lieferbar.
Turning 60° carbide bars are also available in low-cost, short version.
Les barres d'alésage en carbure Turning 60° sont également disponibles en low-cost version courte.

KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRIEUR

93°

STJP



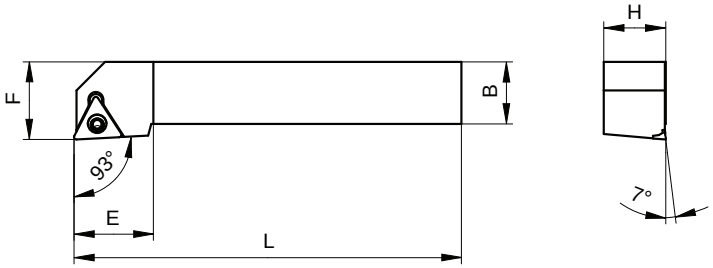


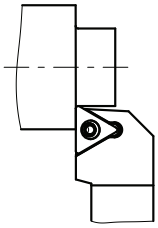
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

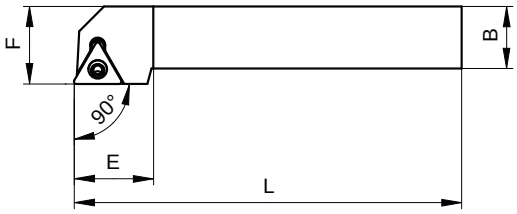
Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F					
STJPR 2020 K16	**STJPL 2020 K16**	20	20	125	25	25	-	-	TP.. 16T3..	T35.084	T15H

KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRIEUR

90°

STGP





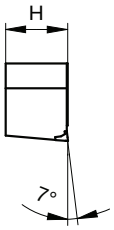
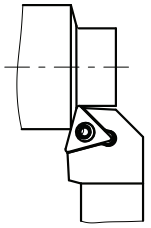


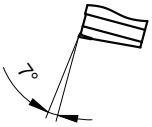
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

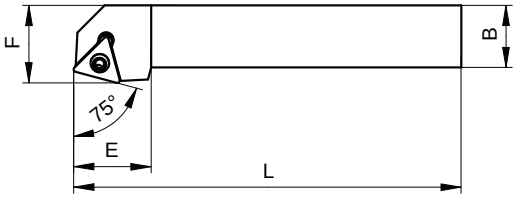
Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F					
STGPR 1616 H16		16	16	100	25	20	-	-	TP.. 16T3..	T35.084	T15H
STGPR 2020 K16		20	20	125	25	25	-	-	TP.. 16T3..	T35.084	T15H
STGPR 2525 M16		25	25	150	25	32	-	-	TP.. 16T3..	T35.084	T15H

75°

STRP







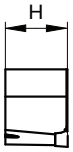
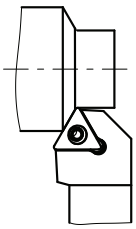


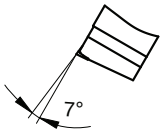
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

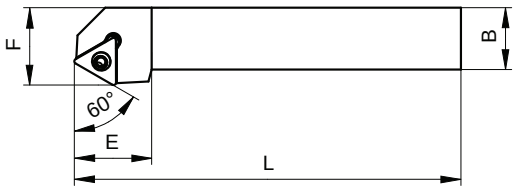
Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F					
STRPR 2020 K16		20	20	125	25	25	-	-	TP.. 16T3..	T35.084	T15H

60°

STTP







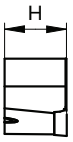


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F					
STTPR 2020 K16		20	20	125	25	25	-	-	TP.. 16T3..	T35.084	T15H

ANDERE ABMESSUNGEN & GEOMETRIEN AUF ANFRAGE / DIFFERENT DIMENSIONS & GEOMETRIES UPON REQUEST / DIMENSIONS ET GÉOMÉTRIES DIFFERENTES SUR DEMANDE

DENITOOL®

KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRIEUR

45°

STSP

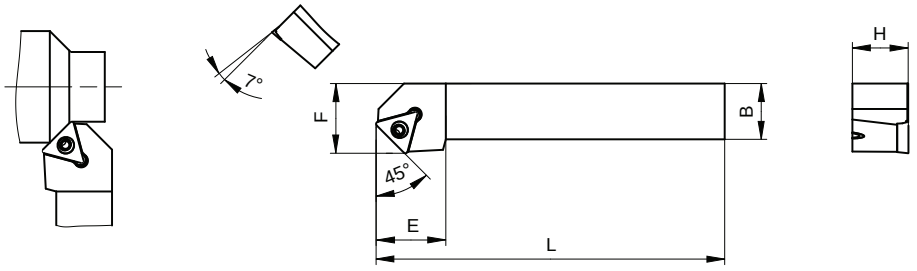


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F					
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15°

STKP

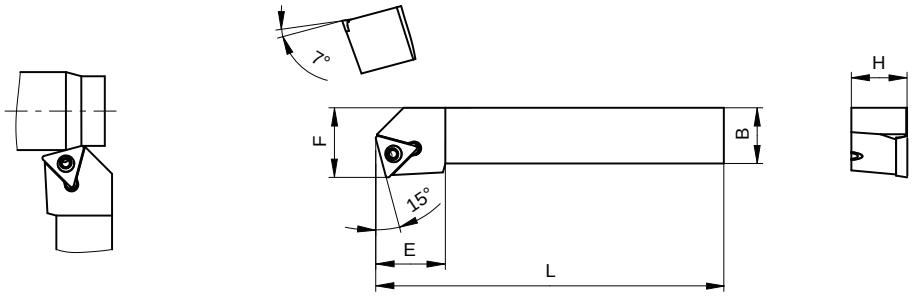

Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F					
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0°

STFP

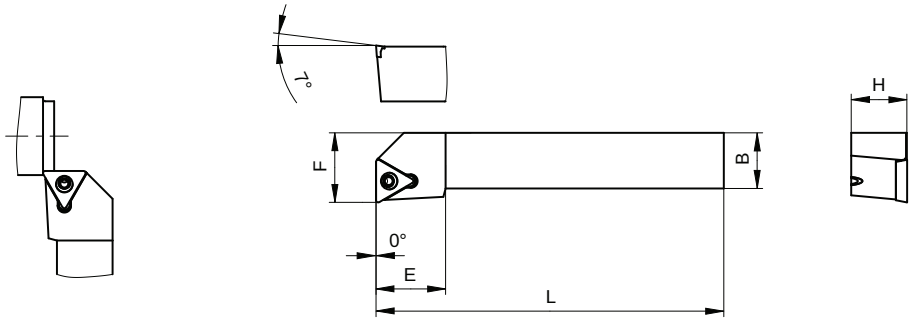


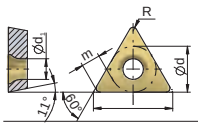
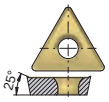
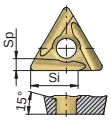
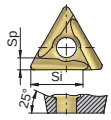
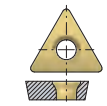
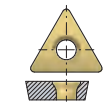
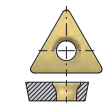
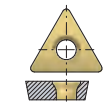
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution droite

Artikel-Nr. Article No. No. d'article R	L	[mm] H	B	L	E	F					
STFPR 2020 K16		20	20	125	25	25	-	-	TP.. 16T3..	T35.084	T15H

ANDERE ABMESSUNGEN & GEOMETRIEN AUF ANFRAGE / DIFFERENT DIMENSIONS & GEOMETRIES UPON REQUEST / DIMENSIONS ET GÉOMÉTRIES DIFFERENTES SUR DEMANDE

DENITOOL®

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

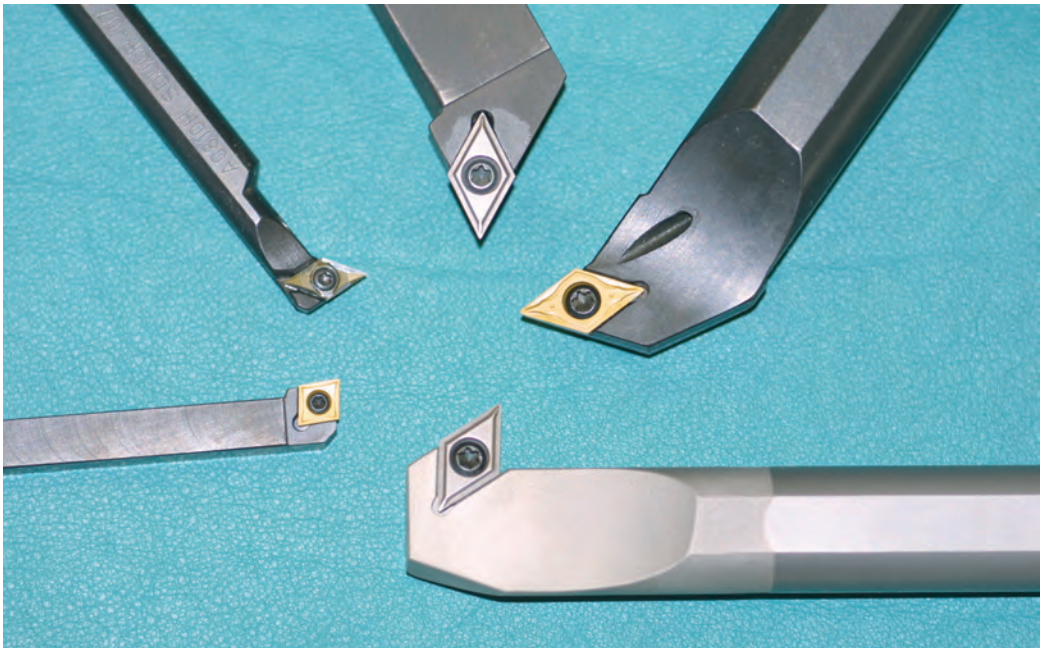
	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	R	d_1	DX 2	P 25	DX 20	DP 25	DX 30	DP 35	DX 50	DP 55	DX 52
	**TPGT 16T304 EN**	16.5	9.52	0.025	3.97	0.13	13.89	0.025	0.4	4.35		■		■		□		□	
	TPGT 16T308 EN						13.49		0.8			■		■		□		□	
	**TPGT 16T304-25**	16.5	9.52	0.025	3.97	0.13	13.89	0.025	0.4	4.35	■		■		□		□		□
	TPGT 16T308-25						13.49		0.8		■		■		□		□		□
*1) 	**TPHT 110202 ER/L**	11	6.35	0.013	2.38	0.025	9.33	0.013	0.2	2.83		■		■		□		□	
	TPHT 110204 ER/L						9.13		0.4			■		■		□		□	
	TPHT 110208 ER/L						8.73		0.8			■		■		□		□	
	TPHT 16T304 ER/L	16.5	9.52	0.013	3.97	0.025	13.89	0.013	0.4	4.35		■		■		□		□	
	TPHT 16T308 ER/L						13.49		0.8			■		■		□		□	
*1) 	**TPHT 110202 FR/L**	11	6.35	0.013	2.38	0.025	9.33	0.013	0.2	2.83	■		■		□				
	TPHT 110204 FR/L						9.13		0.4		■		■		□				
	TPHT 110208 FR/L						8.73		0.8		■		■		□				
	TPHT 16T304 FR/L	16.5	9.52	0.013	3.97	0.025	13.89	0.013	0.4	4.35	■		□		□				
	TPHT 16T308 FR/L						13.49		0.8		■		□		□				
	**TPHW 110202 EN**	11	6.35	0.013	2.38	0.025	9.33	0.013	0.2	2.83		■		■		□		■	
	TPHW 110204 EN						9.13		0.4			■		■		□		■	
	TPHW 110208 EN						8.73		0.8			■		□		□		■	
	TPHW 16T304 EN	16.5	9.52	0.013	3.97	0.025	13.89	0.013	0.4	4.35		■		■		□		■	
	TPHW 16T308 EN						13.49		0.8			■		■		□		■	
	**TPHW 110202 FN**	11	6.35	0.013	2.38	0.025	9.33	0.013	0.2	2.83	■		■		□		□		
	TPHW 110204 FN						9.13		0.4		■		■		■		■		
	TPHW 110208 FN						8.73		0.8		■		□		□		□		
	TPHW 16T304 FN	16.5	9.52	0.013	3.97	0.025	13.89	0.013	0.4	4.35	■		■		□		■		
	TPHW 16T308 FN						13.49		0.8		■		■		□		□		
	**TPHW 16T304 SN**	16.5	9.52	0.013	3.97	0.025	13.89	0.013	0.4	4.35		■							
	TPHW 16T308 SN						13.49		0.8	4.35		■							
	**TPMW 16T304 FN**	16.5	9.52	0.05	3.97	0.13	13.89	0.08	0.4	4.35	■		□		□		□		
	TPMW 16T308 FN						13.49		0.8		■		■		□		□		

*1) rechte Ausführung
Right hand execution
Exécution droite

■ ab Lager
stock item
disponible du stock

□ auf Anfrage
upon request
sur demande

IsoTools



Optimiertes Iso Programm für hervorragende Bearbeitungsresultate

Expanded Iso tool program starting at dia. 8.5mm with high precision Iso-type inserts

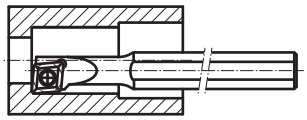
Programme Iso optimisé pour des résultats d‘usinage extraordinaires

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

95°

SCLC

S.. SCLC



A.. SCLC

E.. SCLC

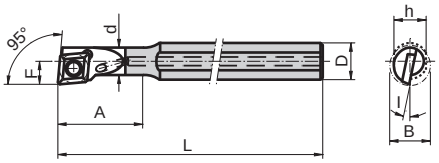


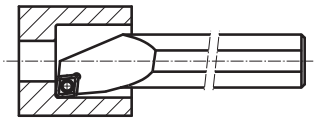
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution

Artikel-Nr. / Article No. / No. d'article		[mm]										
R	L	D	d	L	F	B_{min}	A	l	h			
S0608H SCLCR-06	S0608H SCLCL-06	8	6	100	4	8.5	20	17°	7	CC.. 0602..	T25.055	T7F
S0810J SCLCR-06	S0810J SCLCL-06	10	8	110	6	11	26	15°	9	CC.. 0602..	T25.055	T7F
S1012K SCLCR-06	S1012K SCLCL-06	12	10	125	7	13	32	13°	11	CC.. 0602..	T25.055	T7F
S1216M SCLCR-06	S1216M SCLCL-06	16	12	150	9	16	40	10°	15	CC.. 0602..	T25.055	T7F
A0608H SCLCR-06	A0608H SCLCL-06	8	6	100	4	8.5	20	17°	7	CC.. 0602..	T25.055	T7F
A0810J SCLCR-06	A0810J SCLCL-06	10	8	110	6	11	26	15°	9	CC.. 0602..	T25.055	T7F
A1012K SCLCR-06	A1012K SCLCL-06	12	10	125	7	13	32	13°	11	CC.. 0602..	T25.055	T7F
A1216M SCLCR-06	A1216M SCLCL-06	16	12	150	9	16	40	10°	15	CC.. 0602..	T25.055	T7F
E0608H SCLCR-06	E0608H SCLCL-06	8	6	100	4	8.5	28	17°	7	CC.. 0602..	T25.055	T7F
E0810J SCLCR-06	E0810J SCLCL-06	10	8	110	6	11	36	15°	9	CC.. 0602..	T25.055	T7F
E1012K SCLCR-06	E1012K SCLCL-06	12	10	125	7	13	44	13°	11	CC.. 0602..	T25.055	T7F
E1216M SCLCR-06	E1216M SCLCL-06	16	12	150	9	16	55	10°	15	CC.. 0602..	T25.055	T7F

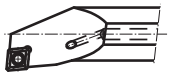
95°

SCLC

S.. SCLC



A.. SCLC



E.. SCLC

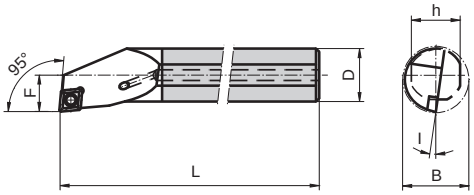


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution

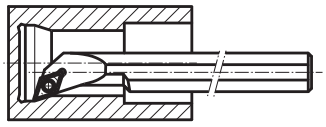
Artikel-Nr. / Article No. / No. d'article		[mm]									
R	L	D	L	F	B_{min}	l	h			
S08F SCLCR-06	S08F SCLCL-06	8	80	6	11	13°	7	CC.. 0602..	T25.055	T7F
S10H SCLCR-06	S10H SCLCL-06	10	100	7	13	8°	9	CC.. 0602..	T25.055	T7F
S12K SCLCR-06	S12K SCLCL-06	12	125	9	16	6°	11	CC.. 0602..	T25.055	T7F
S16M SCLCR-06	S16M SCLCL-06	16	150	11	20	5°	15	CC.. 0602..	T25.055	T7F
S16M SCLCR-09	S16M SCLCL-09	16	150	11	21	7°	15	CC.. 09T3..	T35.084	T15H
S20Q SCLCR-09	S20Q SCLCL-09	20	180	13	25	7°	18	CC.. 09T3..	T35.084	T15H
S25R SCLCR-09	S25R SCLCL-09	25	200	17	31.5	6°	23	CC.. 09T3..	T35.084	T15H
A08F SCLCR-06	A08F SCLCL-06	8	80	6	11	13°	7	CC.. 0602..	T25.055	T7F
A10H SCLCR-06	A10H SCLCL-06	10	100	7	13	8°	9	CC.. 0602..	T25.055	T7F
A12K SCLCR-06	A12K SCLCL-06	12	125	9	16	6°	11	CC.. 0602..	T25.055	T7F
A16M SCLCR-06	A16M SCLCL-06	16	150	11	20	5°	15	CC.. 0602..	T25.055	T7F
A16M SCLCR-09	A16M SCLCL-09	16	150	11	21	7°	15	CC.. 09T3..	T35.084	T15H
A20Q SCLCR-09	A20Q SCLCL-09	20	180	13	25	7°	18	CC.. 09T3..	T35.084	T15H
A25R SCLCR-09	A25R SCLCL-09	25	200	17	31.5	6°	23	CC.. 09T3..	T35.084	T15H
E08K SCLCR-06	E08K SCLCL-06	8	125	6	11	13°	7	CC.. 0602..	T25.055	T7F
E10M SCLCR-06	E10M SCLCL-06	10	150	7	13	8°	9	CC.. 0602..	T25.055	T7F
E12Q SCLCR-06	E12Q SCLCL-06	12	180	9	16	6°	11	CC.. 0602..	T25.055	T7F
E16R SCLCR-06	E16R SCLCL-06	16	200	11	20	5°	15	CC.. 0602..	T25.055	T7F
E16R SCLCR-09	E16R SCLCL-09	16	200	11	21	7°	15	CC.. 09T3..	T35.084	T15H
E20S SCLCR-09	E20S SCLCL-09	20	250	13	25	7°	18	CC.. 09T3..	T35.084	T15H
E25T SCLCR-09	E25T SCLCL-09	25	300	17	31.5	6°	23	CC.. 09T3..	T35.084	T15H

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

107.5°

SDQC

S.. SDQC A.. SDQC



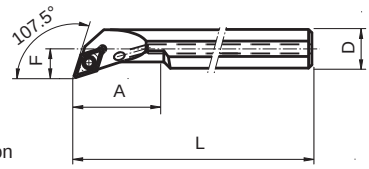


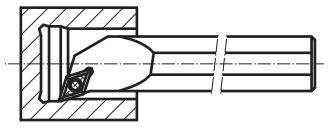
Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution

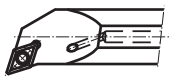
Artikel-Nr. / Article No. / No. d'article		[mm]										
R	L	D	d	L	F	B_{min}	A	l	h			
S0810H SDQCR-07	S0810H SDQCL-07	10	8	100	7	12	22	10°	9	DC.. 0702..	T25.055	T7F
S1012K SDQCR-07	S1012K SDQCL-07	12	10	125	9	15	28	8°	11	DC.. 0702..	T25.055	T7F
S1216M SDQCR-07	S1216M SDQCL-07	16	12	150	11	18	36	6°	15	DC.. 0702..	T25.055	T7F
A0810H SDQCR-07	A0810H SDQCL-07	10	8	100	7	12	22	10°	9	DC.. 0702..	T25.055	T7F
A1012K SDQCR-07	A1012K SDQCL-07	12	10	125	9	15	28	8°	11	DC.. 0702..	T25.055	T7F
A1216M SDQCR-07	A1216M SDQCL-07	16	12	150	11	18	36	6°	15	DC.. 0702..	T25.055	T7F

107.5°

SDQC

S.. SDQC A.. SDQC E.. SDQC





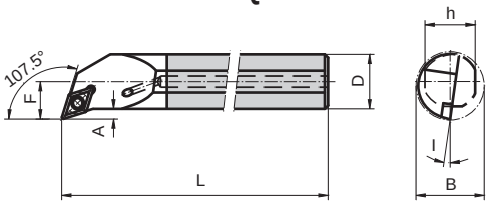


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution

Artikel-Nr. / Article No. / No. d'article		[mm]									
R	L	D	L	F	B_{min}	l	h			
S10H SDQCR-07	S10H SDQCL-07	10	100	7	14	8°	9	DC.. 0702..	T25.055	T7F
S12K SDQCR-07	S12K SDQCL-07	12	125	9	17	6°	11	DC.. 0702..	T25.055	T7F
S16M SDQCR-07	S16M SDQCL-07	16	150	11	21	6°	15	DC.. 0702..	T25.055	T7F
S20Q SDQCR-07	S20Q SDQCL-07	20	180	13	25	5°	18	DC.. 0702..	T25.055	T7F
S20Q SDQCR-11	S20Q SDQCL-11	20	180	13	25	8°	18	DC.. 11T3..	T35.084	T15H
S25R SDQCR-11	S25R SDQCL-11	25	200	17	31.5	6°	23	DC.. 11T3..	T35.084	T15H
A10H SDQCR-07	A10H SDQCL-07	10	100	7	14	8°	9	DC.. 0702..	T25.055	T7F
A12K SDQCR-07	A12K SDQCL-07	12	125	9	17	6°	11	DC.. 0702..	T25.055	T7F
A16M SDQCR-07	A16M SDQCL-07	16	150	11	21	6°	15	DC.. 0702..	T25.055	T7F
A20Q SDQCR-07	A20Q SDQCL-07	20	180	13	25	5°	18	DC.. 0702..	T25.055	T7F
A20Q SDQCR-11	A20Q SDQCL-11	20	180	13	25	8°	18	DC.. 11T3..	T35.084	T15H
A25R SDQCR-11	A25R SDQCL-11	25	200	17	31.5	6°	23	DC.. 11T3..	T35.084	T15H
E10M SDQCR-07	E10M SDQCL-07	10	150	7	14	8°	9	DC.. 0702..	T25.055	T7F
E12Q SDQCR-07	E12Q SDQCL-07	12	180	9	17	6°	11	DC.. 0702..	T25.055	T7F
E16R SDQCR-07	E16R SDQCL-07	16	200	11	21	6°	15	DC.. 0702..	T25.055	T7F
E20S SDQCR-07	E20S SDQCL-07	20	250	13	25	5°	18	DC.. 0702..	T25.055	T7F
E20S SDQCR-11	E20S SDQCL-11	20	250	13	25	8°	18	DC.. 11T3..	T35.084	T15H
E25T SDQCR-11	E25T SDQCL-11	25	300	17	31.5	6°	23	DC.. 11T3..	T35.084	T15H

S = Stahlschaft
S = steel shank
S = queue en acier

A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

IsoTools Hartmetallbohrstangen sind auch in kostengünstiger, kurzer Ausführung lieferbar.
IsoTools carbide bars are also available in low-cost, short version.
Les barres d'alésage en carbure IsoTools sont également disponibles en low-cost version courte.

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

93°

SDUC

S.. SDUC A.. SDUC

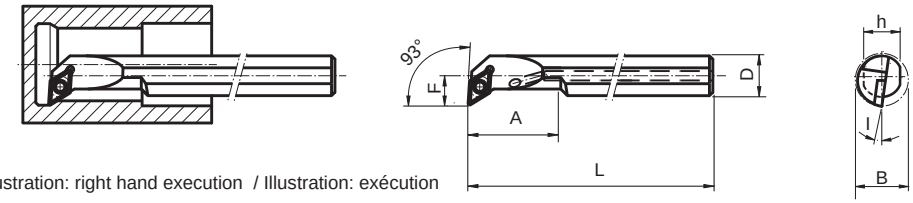


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution

Artikel-Nr. / Article No. / No. d'article		[mm]										
R	L	D	d	L	F	B_{min}	A	l	h			
S0810H SDUCR-07	S0810H SDUCL-07	10	8	100	7	12	22	10°	9	DC.. 0702..	T25.055	T7F
S1012K SDUCR-07	S1012K SDUCL-07	12	10	125	9	15	28	8°	11	DC.. 0702..	T25.055	T7F
S1216M SDUCR-07	S1216M SDUCL-07	16	12	150	11	18	36	6°	15	DC.. 0702..	T25.055	T7F
A0810H SDUCR-07	A0810H SDUCL-07	10	8	100	7	12	22	10°	9	DC.. 0702..	T25.055	T7F
A1012K SDUCR-07	A1012K SDUCL-07	12	10	125	9	15	28	8°	11	DC.. 0702..	T25.055	T7F
A1216M SDUCR-07	A1216M SDUCL-07	16	12	150	11	18	36	6°	15	DC.. 0702..	T25.055	T7F

93°

SDUC

S.. SDUC A.. SDUC E.. SDUC

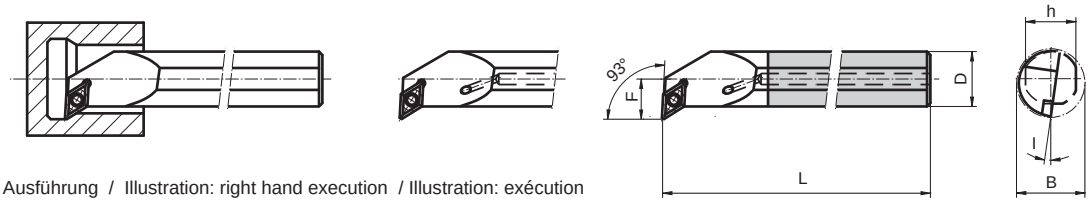


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution

Artikel-Nr. / Article No. / No. d'article		[mm]									
R	L	D	L	F	B_{min}	l	h			
S10H SDUCR-07	S10H SDUCL-07	10	100	7	14	8°	9	DC.. 0702..	T25.055	T7F
S12K SDUCR-07	S12K SDUCL-07	12	125	9	17	6°	11	DC.. 0702..	T25.055	T7F
S16M SDUCR-07	S16M SDUCL-07	16	150	11	21	6°	15	DC.. 0702..	T25.055	T7F
S20Q SDUCR-07	S20Q SDUCL-07	20	180	13	25	5°	18	DC.. 0702..	T25.055	T7F
S20Q SDUCR-11	S20Q SDUCL-11	20	180	13	25	8°	18	DC.. 11T3..	T35.084	T15H
S25R SDUCR-11	S25R SDUCL-11	25	200	17	31.5	6°	23	DC.. 11T3..	T35.084	T15H
A10H SDUCR-07	A10H SDUCL-07	10	100	7	14	8°	9	DC.. 0702..	T25.055	T7F
A12K SDUCR-07	A12K SDUCL-07	12	125	9	17	6°	11	DC.. 0702..	T25.055	T7F
A16M SDUCR-07	A16M SDUCL-07	16	150	11	21	6°	15	DC.. 0702..	T25.055	T7F
A20Q SDUCR-07	A20Q SDUCL-07	20	180	13	25	5°	18	DC.. 0702..	T25.055	T7F
A20Q SDUCR-11	A20Q SDUCL-11	20	180	13	25	8°	18	DC.. 11T3..	T35.084	T15H
A25R SDUCR-11	A25R SDUCL-11	25	200	17	31.5	6°	23	DC.. 11T3..	T35.084	T15H
E10M SDUCR-07	E10M SDUCL-07	10	150	7	14	8°	9	DC.. 0702..	T25.055	T7F
E12Q SDUCR-07	E12Q SDUCL-07	12	180	9	17	6°	11	DC.. 0702..	T25.055	T7F
E16R SDUCR-07	E16R SDUCL-07	16	200	11	21	6°	15	DC.. 0702..	T25.055	T7F
E20S SDUCR-07	E20S SDUCL-07	20	250	13	25	5°	18	DC.. 0702..	T25.055	T7F
E20S SDUCR-11	E20S SDUCL-11	20	250	13	25	8°	18	DC.. 11T3..	T35.084	T15H
E25T SDUCR-11	E25T SDUCL-11	25	300	17	31.5	6°	23	DC.. 11T3..	T35.084	T15H

S = Stahlschaft
S = steel shank
S = queue en acier

A = Stahlschaft mit Kühlmittelbohrung
A = steel shank with internal coolant
A = queue en acier avec arrosage centralisé

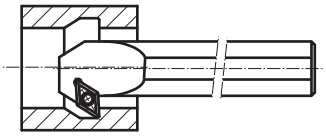
E = Hartmetallschaft mit Kühlmittelbohrung
E = carbide shank with internal coolant
E = queue en carbure avec arrosage centralisé

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

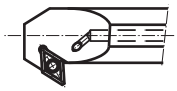
93°

SDXC

S.. SDXC



A.. SDXC



E.. SDXC

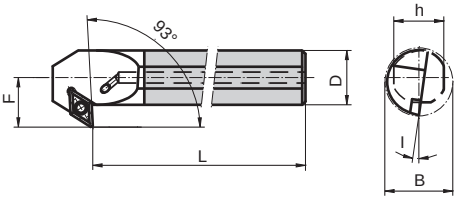


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution

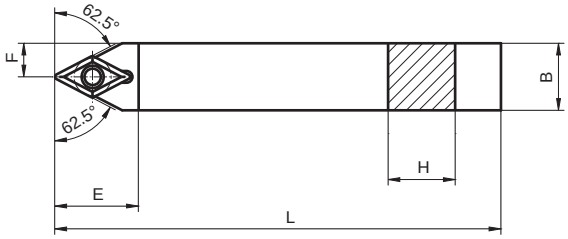
Artikel-Nr. / Article No. / No. d'article		[mm]								
R	L	D	L	F	B_{min}	l	h			
S12K SDXCR-07 **S16M SDXCR-07**	**S12K SDXCL-07** **S16M SDXCL-07**	12 16	125 150	10.5 12.5	17 21	6° 4°	11 15	DC.. 0702 DC.. 0702	T25.055 T25.055	T7F T7F
S20Q SDXCR-11 **S25R SDXCR-11**	**S20Q SDXCL-11** **S25R SDXCL-11**	20 25	180 200	20 22.5	31 36	6° 4°	18 23	DC.. 11T3.. DC.. 11T3..	T35.084 T35.084	T15H T15H
A12K SDXCR-07 **A16M SDXCR-07**	**A12K SDXCL-07** **A16M SDXCL-07**	12 16	125 150	10.5 12.5	17 21	6° 4°	11 15	DC.. 0702 DC.. 0702	T25.055 T25.055	T7F T7F
A20Q SDXCR-11 **A25R SDXCR-11**	**A20Q SDXCL-11** **A25R SDXCL-11**	20 25	180 200	20 22.5	31 36	6° 4°	18 23	DC.. 11T3.. DC.. 11T3..	T35.084 T35.084	T15H T15H
E12Q SDXCR-07 **E16R SDXCR-07**	**E12Q SDXCL-07** **E16R SDXCL-07**	12 16	180 200	10.5 12.5	17 21	6° 4°	11 15	DC.. 0702 DC.. 0702	T25.055 T25.055	T7F T7F
E20S SDXCR-11 **E25T SDXCR-11**	**E20S SDXCL-11** **E25T SDXCL-11**	20 25	250 300	20 22.5	31 36	6° 4°	18 23	DC.. 11T3.. DC.. 11T3..	T35.084 T35.084	T15H T15H

IsoTools Hartmetallbohrstangen sind auch in kostengünstiger, kurzer Ausführung lieferbar.
IsoTools carbide bars are also available in low-cost, short version.
Les barres d'alésage en carbure IsoTools sont également disponibles en low-cost version courte.

KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRIEUR

62.5°

SDNC



Artikel-Nr. / Article No. / No. d'article	[mm]					U-Platte Anvil					
	H	B	L	E	F						
SDNCN 0808 D07	8	8	60	8	4				DC.. 0702..	T25.055	T7F
SDNCN 1010 E07	10	10	70	10	5				DC.. 0702..	T25.055	T7F
SDNCN 1212 F07	12	12	80	11.5	6				DC.. 0702..	T25.055	T7F
SDNCN 1616 H11	16	16	100	15.5	8	U1107 DC11N 318	TU50 35 079	T35S	DC.. 11T3..	T35.110	T15H
SDNCN 2020 K11	20	20	125	19	10	U1107 DC11N 318	TU50 35 079	T35S	DC.. 11T3..	T35.110	T15H
SDNCN 2525 M11	25	25	150	24	12.5	U1107 DC11N 318	TU50 35 079	T35S	DC.. 11T3..	T35.110	T15H

KLEMMHALTER / EXTERNAL TOOLHOLDERS / PORTE-OUTILS EXTÉRI-

93°

SDJC

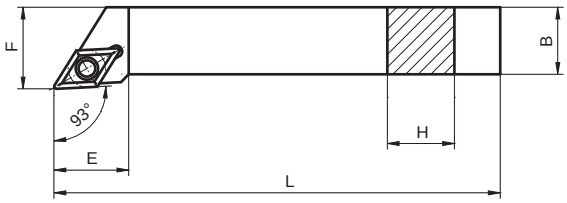


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution

Artikel-Nr. / Article No. / No. d'article		[mm]											
R	L	H	B	L	E	F	U-Platte	Anvil					
SDJCR 0808 D07	**SDJCL 0808 D07**	8	8	60	13	10					DC.. 0702..	T25.055	T7F
SDJCR 1010 E07	**SDJCL 1010 E07**	10	10	70	13	12					DC.. 0702..	T25.055	T7F
SDJCR 1212 F07	**SDJCL 1212 F07**	12	12	80	14.5	16					DC.. 0702..	T25.055	T7F
SDJCR 1616 H11	**SDJCL 1616 H11**	16	16	100	20	20	U1107 DC11N 318	TU50 35 079	T35S		DC.. 11T3..	T35.110	T15H
SDJCR 2020 K11	**SDJCL 2020 K11**	20	20	125	20.5	25	U1107 DC11N 318	TU50 35 079	T35S		DC.. 11T3..	T35.110	T15H
SDJCR 2525 M11	**SDJCL 2525 M11**	25	25	150	21.5	32	U1107 DC11N 318	TU50 35 079	T35S		DC.. 11T3..	T35.110	T15H

107.5°

SDHC

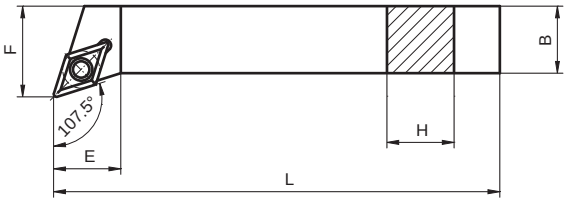


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution

Artikel-Nr. / Article No. / No. d'article		[mm]											
R	L	H	B	L	E	F	U-Platte	Anvil					
SDHCR 1010 E07	**SDHCL 1010 E07**	10	10	70	10	12					DC.. 0702..	T25.055	T7F
SDHCR 1212 F07	**SDHCL 1212 F07**	12	12	80	12	16					DC.. 0702..	T25.055	T7F
SDHCR 1616 H11	**SDHCL 1616 H11**	16	16	100	10.5	20	U1107 DC11N 318	TU50 35 079	T35S		DC.. 11T3..	T35.110	T15H
SDHCR 2020 K11	**SDHCL 2020 K11**	20	20	125	14	25	U1107 DC11N 318	TU50 35 079	T35S		DC.. 11T3..	T35.110	T15H
SDHCR 2525 M11	**SDHCL 2525 M11**	25	25	150	20	32	U1107 DC11N 318	TU50 35 079	T35S		DC.. 11T3..	T35.110	T15H

95°

SCLC

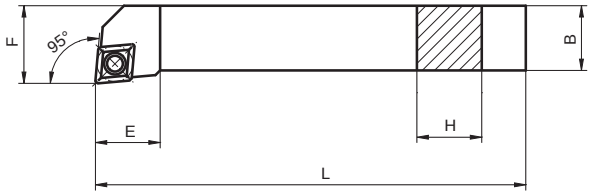
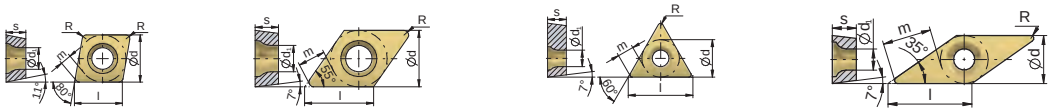
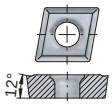
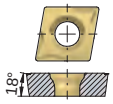
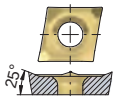
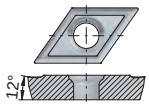
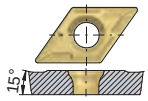
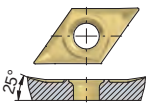
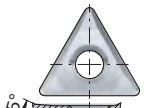
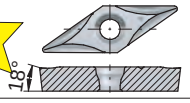
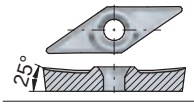


Illustration: rechte Ausführung / Illustration: right hand execution / Illustration: exécution

Artikel-Nr. / Article No. / No. d'article		[mm]											
R	L	H	B	L	E	F	U-Platte	Anvil					
SCLCR 0808 D06	**SCLCL 0808 D06**	8	8	60	9	10					CC.. 0602..	T25.055	T7F
SCLCR 1010 E06	**SCLCL 1010 E06**	10	10	70	9	12					CC.. 0602..	T25.055	T7F
SCLCR 1212 F09	**SCLCL 1212 F09**	12	12	80	15	16					CC.. 09T3..	T35.110	T15H
SCLCR 1616 H09	**SCLCL 1616 H09**	16	16	100	17	20	U1206 CC09N 238	TU50 35 079	T35S		CC.. 09T3..	T35.110	T15H
SCLCR 2020 K09	**SCLCL 2020 K09**	20	20	125	17	25	U1206 CC09N 238	TU50 35 079	T35S		CC.. 09T3..	T35.110	T15H

WENDESCHNEIDPLATTEN / INSERTS / PLAQUETTES



	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	r	d_1	DX 2	DX 20	DX 30	DX 32	DX 50	DX 52	DT 55	DT 255	DT 355
	**CCGT 09T304 EN**	9.7	9.52	0.025	3.97	0.13	2.423	0.025	0.4	4.4							■	□	■
	CCGT 09T308 EN						2.201		0.8								■	□	□
NEW 	**CCGT 09T302 FN-18M**	9.7	9.52	0.025	3.97	0.13	2.423	0.025	0.4	4.4	■			■					
	CCGT 09T302 FN-18M						2.201		0.8		■			■					
	CCGT 060201 FN-250	6.4	6.35	0.025	2.38	0.13	1.708	0.025	0.1	2.8	■	□	□						
	CCGT 060202 FN-250						1.651		0.2		■	■	■						
	CCGT 060204 FN-250						1.544		0.4		■	■	■						
	**CCGT 09T301 FN-250**	9.7	9.52	0.025	3.97	0.13	2.589	0.025	0.1	4.4	□	□	□						
	CCGT 09T302 FN-250						2.534		0.2		■	■	□						
	CCGT 09T304 FN-250						2.423		0.4		■	■	□						
	CCGT 09T308 FN-250						2.201		0.8		■	■	□						
	CCGT 120402 FN-250	12.9	12.7	0.025	4.76	0.13	3.417	0.025	0.2	5.5	■	□	□						
	CCGT 120404 FN-250						3.306		0.4		■	□	□						
	CCGT 120408 FN-250						3.084		0.8		■	□	□						
	**DCGT 070202 EN**	7.7	6.35	0.025	2.38	0.13	3.468	0.025	0.2	2.8							■	□	□
	DCGT 070204 EN						3.235		0.4								■	□	□
	DCGT 11T302 EN	11.6	9.52	0.025	3.97	0.13	5.316	0.025	0.2	4.4							■	□	□
	DCGT 11T304 EN						5.082		0.4								■	□	□
	DCGT 11T308 EN						4.616		0.8								■	□	□
	**DCGT 11T302-15**	11.6	9.52	0.025	3.97	0.13	5.316	0.025	0.2	4.4	■			■					
	DCGT 11T304-15						5.082		0.4		■			■					
	DCGT 070201 FN-250	7.7	6.35	0.025	2.38	0.13	3.584	0.025	0.2	2.8	■	□	□						
	DCGT 070202 FN-250						3.468		0.2		■	■	□						
	DCGT 070204 FN-250						3.235		0.4		■	■	□						
	**DCGT 11T301 FN-250**	11.6	9.52	0.025	3.97	0.13	5.432	0.025	0.1	4.4	□	□	□						
	DCGT 11T302 FN-250						5.316		0.2		■	■	□						
	DCGT 11T304 FN-250						5.082		0.4		■	■	□						
	DCGT 11T308 FN-250						4.616		0.8		■	■	□						
	**TCGT 110202 FN-250**	11	6.35	0.025	2.38	0.13	9.35	0.025	0.2	2.8	■	□	□						
	TCGT 110204 FN-250						9.12		0.4		■	□	□						
	TCGT 16T302 FN-250	16.5	9.52	0.025	3.97	0.13	14.09	0.025	0.2	4.4	■	□	□						
	TCGT 16T304 FN-250						13.89		0.4		■	□	□						
	TCGT 16T308 FN-250						13.49		0.8		■	□	□						
NEW 	**VCGT 110302 FN-18M**	11	6.35	0.025	3.18	0.13	6.92	0.025	0.2	2.9	■			■					
	VCGT 110304 FN-18M						6.45		0.4		■			■					
	VCGT 110308 FN-18M						5.52		0.8		□			□					
	**VCGT 110302 FN-250**	11	6.35	0.025	3.18	0.13	6.92	0.025	0.2	2.9	■	□	□						
	VCGT 110304 FN-250						6.45		0.4		■	□	□						
	VCGT 110308 FN-250						5.52		0.8		■	□	□						

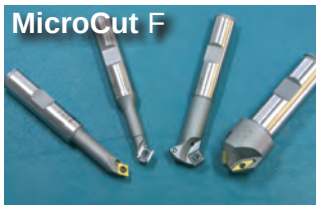
NEW

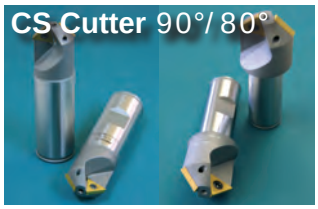
■ ab Lager / stock item / disponible du stock

□ auf Anfrage / upon request / sur demande

Tools for milling operations

Fräswerkzeuge / Outils de fraisage





MicroCut F

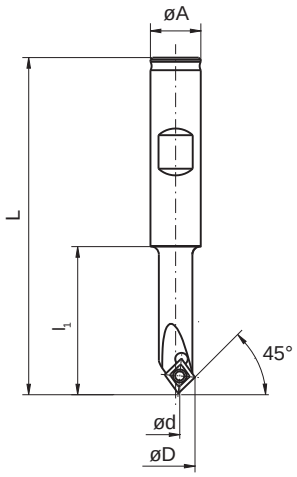
Mini Fasenfräser für Bohrungen ab ∅ 2.0mm bzw. Eckenradien ab 1mm

Mini Chamfer Mill for bore dia. 2.0mm up or corner radii starting at 1mm

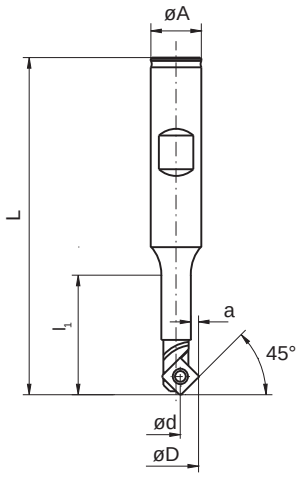
Mini Fraise à chanfeiner pour dia. à partir de 2.0mm / rayon de coin 1mm

MINIFASENFRÄSER / MINICHAMFERMILL / MINIFRAISE À CHANFREINER

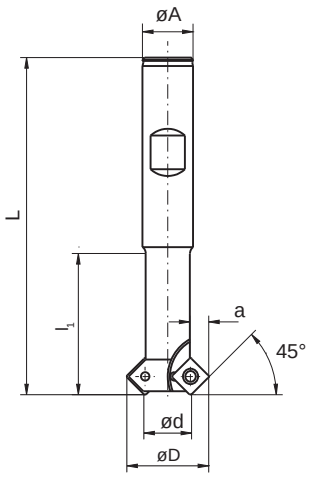
FW 0212 RCDS-05



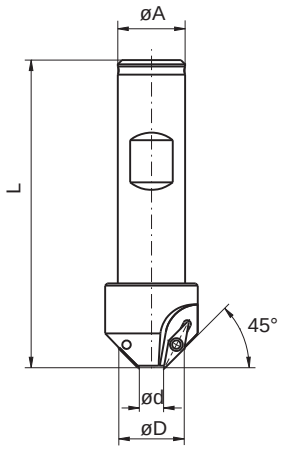
FW 0412 RSDS-06



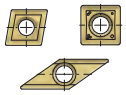
FW 1112 RSDS-06



FW 0616 RVDS-07



FW 1112 RSDS-06 mit integrierter Kühlmittelbohrung / **FW 1112 RSDS-06** with internal coolant / **FW 1112 RSDS-06** avec arrosage centralisé

Artikel-Nr. Article No. No. d'article	[mm]									
	$øD_{(max)}$	$ød_{(min)}$	øA	L	l_1	a	Z			
FW 0212 RCDS-05	9 *	2 *	12	80	35	-	1	CP.. 05T1..	T22.045	T7F
FW 0412 RSDS-06	11 **	3.9 **	12	80	28	1.5	1	SC.. 0602..	T25.055	T7F
FW 1112 RSDS-06	19.5 **	11.4 **	12	80	33	3.9	2	SC.. 0602..	T25.055	T7F
FW 0616 RVDS-07	15.6 *	6.9 *	16	73	-	-	3	VC.. 0702	T20.055	T6F

Z Zähnezahl / Number of teeth / Nombre des dents

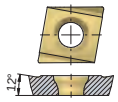
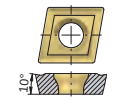
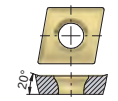
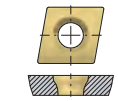
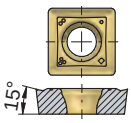
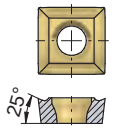
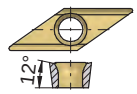
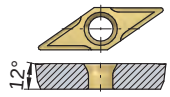
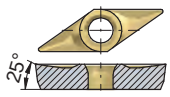
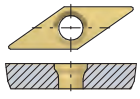
* WSP mit r = 0.2mm / Insert with r = 0.2mm / Plaquette avec r = 0.2mm

** WSP mit r = 0.4mm / Insert with r = 0.4mm / Plaquette avec r = 0.4mm

Andere Ausführungen auf Anfrage / Additional executions upon request / D'autres exécutions livrables sur demande

DENITOOL®

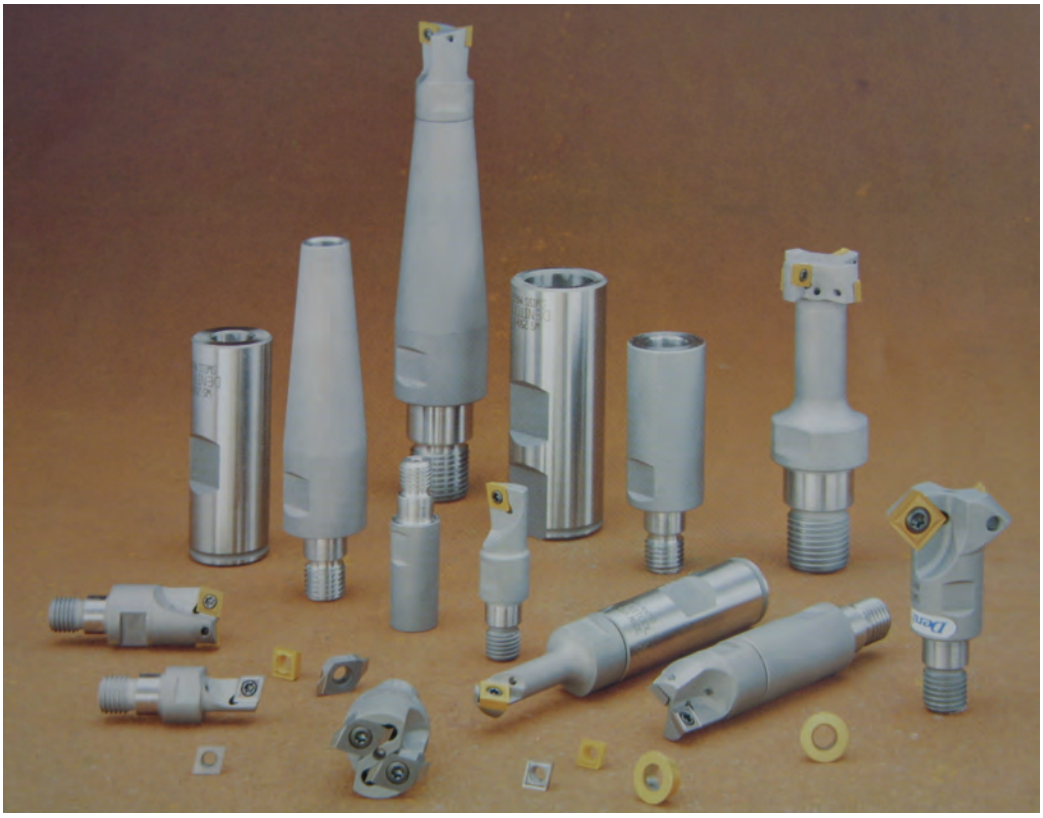
WENDESCHNEIDPLATTEN / INSERTS / PLAQUETTES

	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/	R	d_1	DX 2	P 25	DC 15	DX 20	DP 25	DX 30	DX 32	DP 35	DX 50	DP 55	DX 52	DP57	DX 70
	**CPET 05T102 FR**	5.6	5.56	0.025	1.97	0.025	1.432	0.025	0.2	2.5	■			■		■			□				
	CPET 05T104 FR						1.323		0.4		■			■		■			□				
	**CPGT 05T102 EN**	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5	■	■			■			■		□			■	
	CPGT 05T104 EN						1.323		0.4		■	■			■			■		□			■	
	CPGT 05T102 FN	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5	■			■		■			□		□		
	CPGT 05T104 FN						1.323		0.4		■			■		■			□		□		
	**CPGT 05T102 FN-20**	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5	■			■		■			□		□		
	CPGT 05T104 FN-20						1.323		0.4		■			■		■			□		□		
	**CPGW 05T102 FN**	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5	■			■		□			□				
	CPGW 05T104 FN						1.323		0.4		■			■		□			□				
	**SCGT 060202 EN**	6.35	6.35	0.025	2.38	0.05	1.232	0.025	0.2	2.8	■	■												
	SCGT 060204 EN						1.156		0.4		■	■												
	SCGT 060202 FN	6.35	6.35	0.025	2.38	0.05	1.232	0.025	0.2	2.8	■						■							
	SCGT 060204 FN						1.156		0.4		■						■							
	**SCGT 060202 FN-25**	6.35	6.35	0.025	2.38	0.05	1.229	0.025	0.2	2.8	■			■		■			□				
	**VCGT 070202-08 FR**	6.921	3.97	0.025	2.38	0.05	4.15	0.025	0.2	2.2	■			■		■			□				
	VCGT 070204-08 FR						3.69		0.4		■			■		■			□				
	**VCGT 070202-12**	6.921	3.97	0.025	2.38	0.05	4.15	0.025	0.2	2.2	■			■		■			■		□		
	VCGT 070204-12						3.69		0.4		■			■		■			■		□		
	**VCGT 070202-25**	6.921	3.97	0.025	2.38	0.05	4.15	0.025	0.2	2.2	■			■		■			■		□		
	VCGT 070204-25						3.69		0.4		■			■		■			■		□		
	**VCGW 070202**	6.921	3.97	0.025	2.38	0.05	4.15	0.025	0.2	2.2	■			■		■			□				
	VCGW 070204						3.69		0.4		■			■		■			□				

■ ab Lager / stock item / disponible du stock

□ auf Anfrage / upon request / sur demande

MicroMill

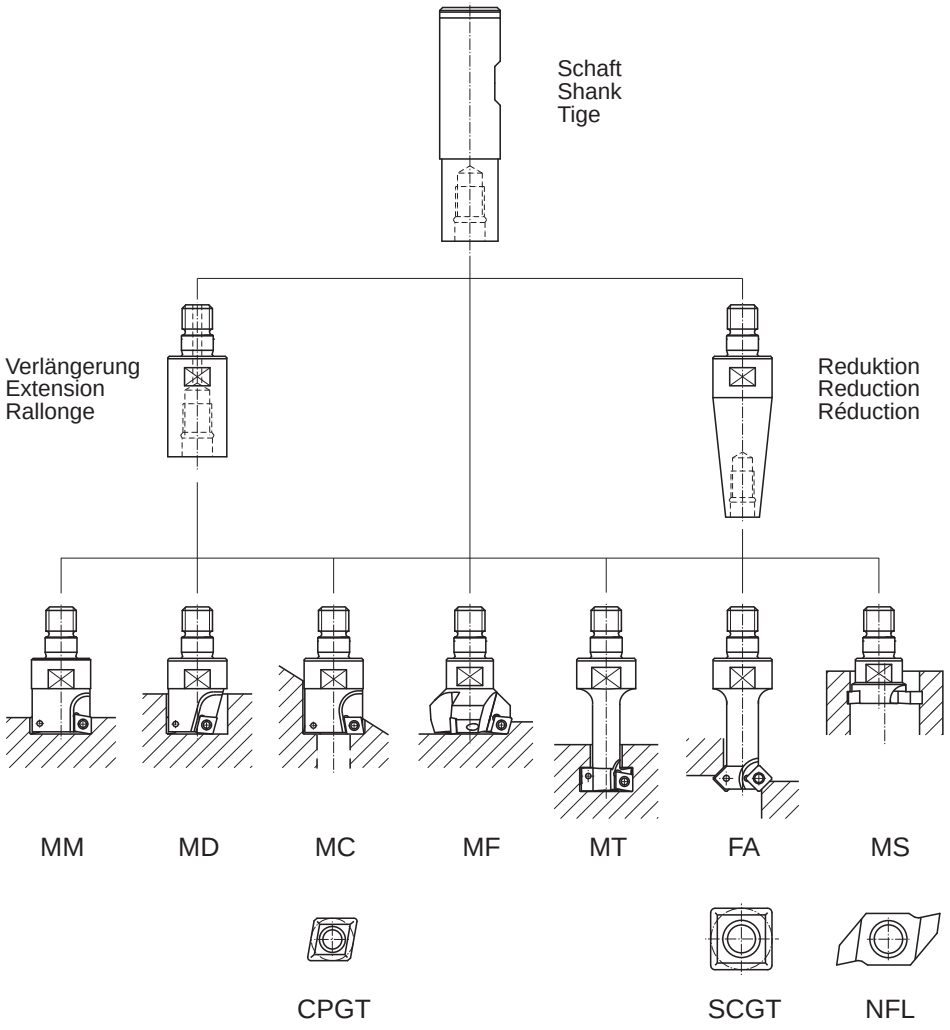


Modulares Micro Fräser Programm

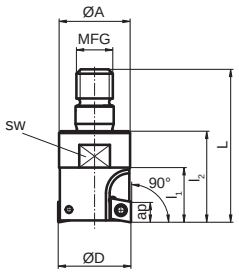
Modular Micro Milling Program

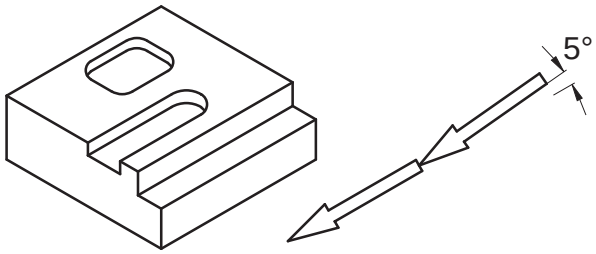
Programme modulaire des micro fraises

ÜBERSICHT / OVERVIEW / VUE D'ENSEMBLE



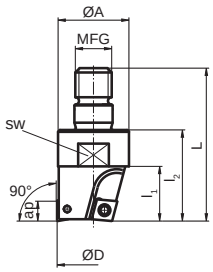
Mini Cutter 90°

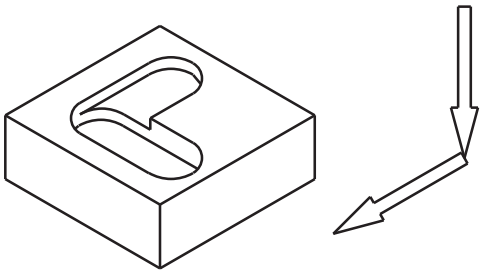




Artikel-Nr. Article No. No. d'article	[mm]											
	øD	øA	ap	L	l_1	l_2	MFG	z	sw			
MM 0812 RCAS-05	8	11.5	5	34	10	20	8 x 1	1	10	CP.. 05T1..	T22.045	T7F
MM 1012 RCAS-05	10	11.5	5	39	15	25	8 x 1	1	10	CP.. 05T1..	T22.045	T7F
MM 1212 RCAS-05	12	11.5	5	39	15	25	8 x 1	1	10	CP.. 05T1..	T22.045	T7F
MM 1616 RCAS-05	16	15.5	5	42	15	25	10 x 1.25	2	13	CP.. 05T1..	T22.045	T7F
MM 2020 RCAS-05	20	19.5	5	42	15	25	10 x 1.25	2	17	CP.. 05T1..	T22.045	T7F

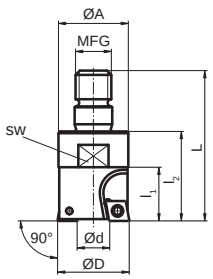
Drilling Cutter 90°

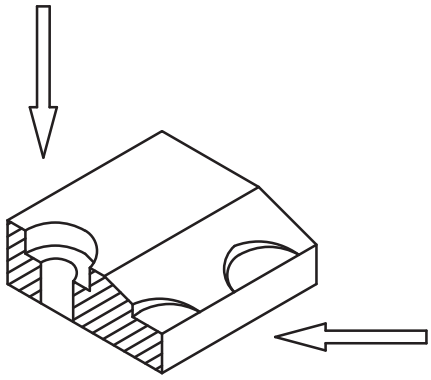




Artikel-Nr. Article No. No. d'article	[mm]												
	øD	øA	ap	L	l_1	l_2	MFG	z	k	sw			
MD 1412 RCAS-05	14	11.5	5	39	15	25	8 x 1	2	1	10	CP.. 05T1..	T22.045	T7F
MD 1616 RCAS-05	16	15.5	5	42	15	25	10 x 1.25	2	1	13	CP.. 05T1..	T22.045	T7F
MD 2020 RCAS-05	20	19.5	5	42	15	25	10 x 1.25	2	1	17	CP.. 05T1..	T22.045	T7F

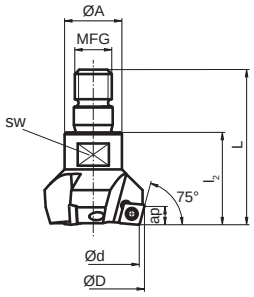
Countersink Cutter

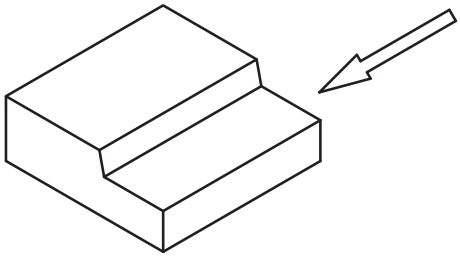




Artikel-Nr. Article No. No. d'article	[mm]											
	øD	ød	øA	L	l_1	l_2	MFG	z	sw			
MC 1012 RCMS-05	10	2	11.5	39	15	25	8 x 1	1	10	CP.. 05T1..	T22.045	T7F
MC 1112 RCMS-05	11	2	11.5	39	15	25	8 x 1	1	10	CP.. 05T1..	T22.045	T7F
MC 1516 RCMS-05	15	5	14.5	42	15	25	10 x 1.25	2	13	CP.. 05T1..	T22.045	T7F
MC 1816 RCMS-05	18	8	15.5	42	15	25	10 x 1.25	2	13	CP.. 05T1..	T22.045	T7F
MC 2020 RCMS-05	20	10	19.5	42	15	25	10 x 1.25	2	17	CP.. 05T1..	T22.045	T7F
MC 2625 RCMS-05	26	16	24.5	52	15	25	16 x 1.50	2	22	CP.. 05T1..	T22.045	T7F

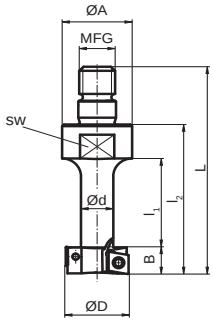
Mini Cutter 75°

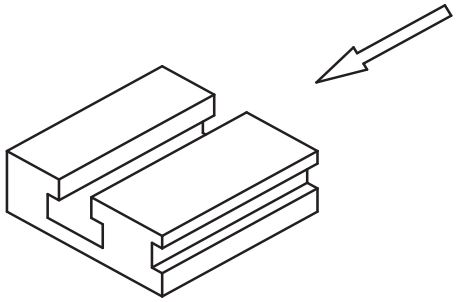




Artikel-Nr. Article No. No. d'article	[mm]											
	øD	ød	øA	ap	L	l_2	MFG	z	sw			
MF 2520 RCBS-05	27.7	25	19.5	4.5	42	25	10 x 1.25	3	17	CP.. 05T1..	T22.045	T7F

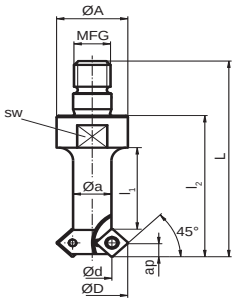
T - Cutter

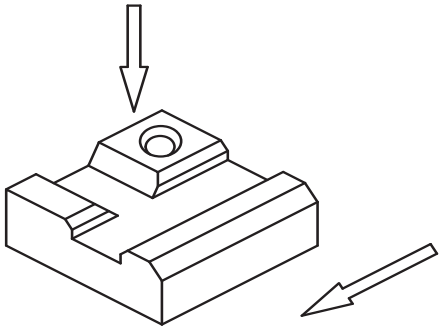




Artikel-Nr. Article No. No. d'article	[mm]													
	øD	ød	øA	B	L	l_1	l_2	MFG	z	k	sw			
MT 1720 RCAS-05	17.5	9	19.5	8	53	18	36	10 x 1.25	2	1	17	CP.. 05T1..	T22.045	T7F
MT 2020 RCAS-05	20.5	10	19.5	9	56.5	20.5	39.5	10 x 1.25	2	1	17	CP.. 05T1..	T22.045	T7F
MT 2325 RCAS-05	23.5	13	24.5	10	70.5	23.5	43.5	16 x 1.50	2	1	22	CP.. 05T1..	T22.045	T7F

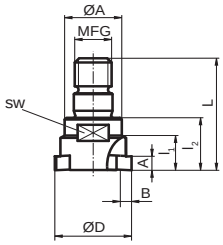
Chamfer Cutter 45°

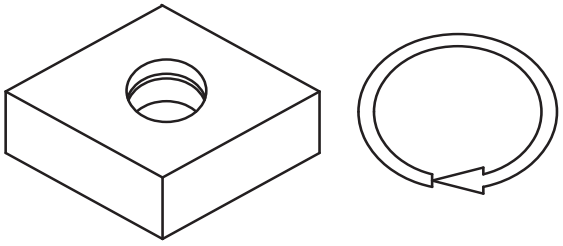




Artikel-Nr. Article No. No. d'article	[mm]													
	øD	ød	øA	ap	øa	L	l_1	l_2	MFG	z	sw			
FA 0216 RSDS-06	11	4	15.5	4	7	56	20.4	39	10 x 1.25	1	13	SC.. 0602..	T25.055	T7F
FA 1120 RSDS-06	19.5	11.4	19.5	4	10.5	61	25.4	44	10 x 1.25	2	17	SC.. 0602..	T25.055	T7F
FA 1616 RSDS-09	29	16	15.5	5	--	48.5	--	31.5	10 x 1.25	2	13	SC.. 09T3..	T40.082	T15H
FA 2020 RSDS-09	33	20	19.5	5	--	53.5	--	36.5	10 x 1.25	2	17	SC.. 09T3..	T40.082	T15H
FA 2525 RSDS-09	38	25	24.5	5	--	68.5	--	41.5	16 x 1.50	2	22	SC.. 09T3..	T40.082	T15H
FA 3232 RSDS-09	45	32	32	5	--	73.5	--	46.5	16 x 1.50	3	27	SC.. 09T3..	T40.082	T15H

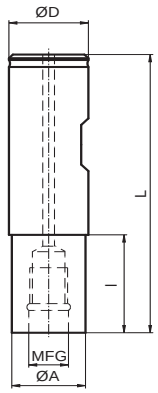
Slot Cutter





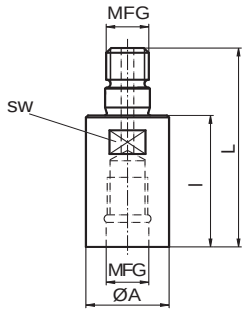
Artikel-Nr. Article No. No. d'article	[mm]												
	øD	øA	$A_{max.}$	$B_{max.}$	L	l_1	l_2	MFG	z	sw			
MS 1212 RNAS-00	12	11.5	1.35	1.00	62	32	48	8 x 1	2	10	NFL-0	T30.090	T8F
MS 2116 RNAS-01	21	15.5	2.70	1.90	32	--	15	10 x 1.25	2	13	NFL-1	T30.090	T8F
MS 3325 RNAS-01	33	24.5	2.70	1.90	47	--	20	16 x 1.5	3	22	NFL-1	T30.090	T8F

Weldonschaft / Weldon Shank / Tige Weldon



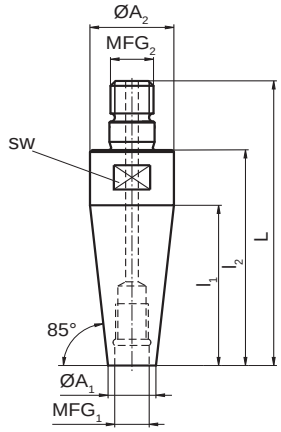
Artikel-Nr. Article No. No. d'article	[mm] øD	øA	L	l	MFG
WS 12045-W	12	-	45	-	8 x 1.00
WS 12060-W	12	11.5	60	15	8 x 1.00
WS 16050-W	16	-	50	-	10 x 1.25
WS 16075-W	16	15.5	75	27	10 x 1.25
WS 20055-W	20	-	55	-	10 x 1.25
WS 20095-W	20	19.5	95	45	10 x 1.25
WS 25065-W	25	-	65	-	16 x 1.50
WS 25115-W	25	24.5	115	59	16 x 1.50
WS 32085-W	32	-	85	-	16 x 1.50
WS 32160-W	32	31.5	160	100	16 x 1.50

Verlängerung / Extension / Rallonge



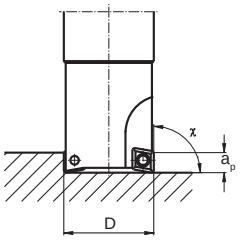
Artikel-Nr. Article No. No. d'article	[mm] øA	L	l	MFG	sw
VH 12025	11.5	39	25	8 x 1	10
VH 16030	15.5	47	30	10 x 1.25	13
VH 20040	19.5	57	40	10 x 1.25	17
VH 25050	24.5	77	50	16 x 1.5	22
VH 32050	32	77	50	16 x 1.5	27

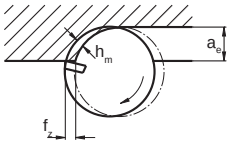
Reduktion / Reduction / Réduction



Artikel-Nr. Article No. No. d'article	[mm] øA1	øA2	L	l1	l2	MFG1	MFG2	sw
KR 1220	11.5	20	86	49	69	8 x 1.00	10 x 1.25	17
KR 1625	15.5	25	102	55	75	10 x 1.25	16 x 1.50	22
KR 2032	19.5	32	119	72	92	10 x 1.25	16 x 1.50	27

DENITOOL DATA





$$h_m = f_z \sqrt{\frac{a_e}{D}} \quad [mm]$$

a_e / D	Vorschub/Zahn - Feed/tooth - Avence/dent f_z (mm)								
	0.05	0.08	0.10	0.16	0.20	0.30	0.40	0.50	0.60
	Mittenspandicke - Mean depth of cut Epaisseur du copeau moyen h_m (mm)								
0.020($^1/_{50}$)				0.02	0.03	0.04	0.06	0.07	0.08
0.025($^1/_{40}$)			0.03	0.03	0.05	0.05	0.06	0.08	0.09
0.040($^1/_{25}$)				0.03	0.04	0.06	0.08	0.10	0.12
0.050($^1/_{20}$)			0.02	0.03	0.04	0.07	0.09	0.11	0.13
0.100($^1/_{10}$)		0.02	0.03	0.05	0.06	0.09	0.12	0.16	
0.200($^2/_{10}$)	0.02	0.03	0.04	0.07	0.09	0.13	0.17		
0.300($^3/_{10}$)	0.03	0.04	0.05	0.08	0.10	0.16			
0.400($^4/_{10}$)	0.03	0.05	0.06	0.09	0.12				

$$v_{fi} = (1 - \frac{D}{D_w}) \cdot n \cdot f_z \quad [mm/min]$$

$$v_{fa} = (1 + \frac{D}{D_w}) \cdot n \cdot f_z \quad [mm/min]$$

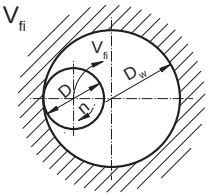
$$a_e = \frac{D_2^2 - D_1^2}{4(D_2 - D)} \quad [mm]$$

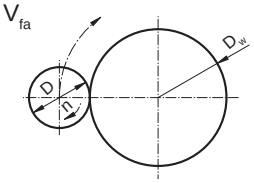
$$n = \frac{v_c \cdot 1000}{\pi \cdot D} \quad [min]$$

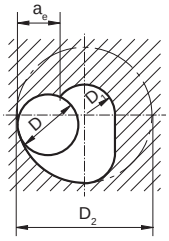
$$v_c = \frac{n \cdot \pi \cdot D}{1000}$$

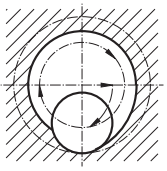
$$v_f = n \cdot z \cdot f_z$$

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



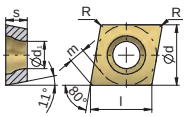


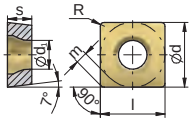


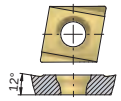
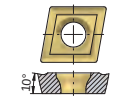
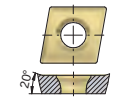
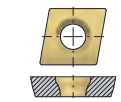
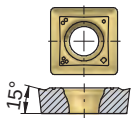
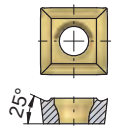
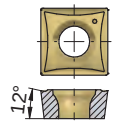
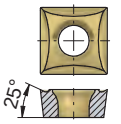


n	Drehzahl	Spindle revolutions (RPM)	Rotation
V_c	Schnittgeschwindigkeit	Cutting speed	Vitesse de coupe
V_f	Vorschub	Feed rate	Avance table
V_{fa}	Programmiervorschub, Aussenbearbeitung	Programmable feed, external operation	Programmation d'avance, opération externe
V_{fi}	Programmiervorschub, Innenbearbeitung	Programmable feed, internal operation	Programmation d'avance, opération interne
f_z	Vorschub / Zahn	Feed rate per tooth	Avance par dent
k	Effektive Zähnezahl	Effectif number of teeth	Nombre de dents effectives
z	Zähnezahl	Number of teeth	Nombre de dents
a_p	Spantiefel	Cutting depth	Engagement axial
a_e	Fräsbreite	Cutting width	Engagement radial
D	Fräserdurchmesser	Tool diameter	Diamètre d' outil
D_w	Werkstückdurchmesser	Workpiece diameter	Diamètre de la pièce
D_1	Bohrungs-Rohdurchmesser	Bore diameter blank	Diamètre d'alésage ébauché
D_2	Bohrungs-Fertigdurchmesser	Bore diameter finished	Diamètre d'alésage fini

WENDESCHNEIDPLATTEN / INSERTS / PLAQUETTES





	Artikel-Nr. Article No. No. d'article	[mm] l	d	+/-	s	+/-	m	+/	R	d_1	DX 2	P 25	DC 15	DX 20	DP 25	DX 30	DX 32	DP 35	DX 50	DP 55	DX 52	DP57	DX 70
	**CPET 05T102 FR**	5.6	5.56	0.025	1.97	0.025	1.432	0.025	0.2	2.5	■			■		■			□				
	CPET 05T104 FR						1.323		0.4		■			■		■			□				
	**CPGT 05T102 EN**	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5	■	■			■			■		□		□	■
	CPGT 05T104 EN						1.323		0.4		■	■			■			■		□		□	■
	CPGT 05T102 FN	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5	■			■		■			□		□		
	CPGT 05T104 FN						1.323		0.4		■			■		■			□		□		
	**CPGT 05T102 FN-20**	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5	■			■		■			□		□		
	CPGT 05T104 FN-20						1.323		0.4		■			■		■			□		□		
	**CPGW 05T102 FN**	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5	■			■		□			□				
	CPGW 05T104 FN						1.323		0.4		■			■		□			□				
	**SCGT 060202 EN**	6.35	6.35	0.025	2.38	0.05	1.232	0.025	0.2	2.8	■		■										
	SCGT 060204 EN						1.156		0.4		■		■										
	SCGT 060202 FN	6.35	6.35	0.025	2.38	0.05	1.232	0.025	0.2	2.8	■						■						
	SCGT 060204 FN						1.156		0.4		■						■						
	**SCGT 060202 FN-25**	6.35	6.35	0.025	2.38	0.05	1.229	0.025	0.2	2.8	■			■		■			□				
	**SCGT 09T302 EN**	9.52	9.52	0.025	3.97	0.13	1.889	0.025	0.2	4.4	■			■		□			□				
	SCGT 09T304 EN	9.52	9.52	0.025	3.97	0.13	1.644	0.025	0.4	4.4	■			■		□			□				
	**SCGT 09T302 FN-25**	9.52	9.52	0.025	3.97	0.13	1.889	0.025	0.2	4.4	■			■									

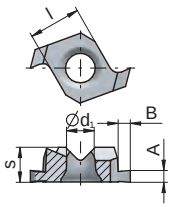
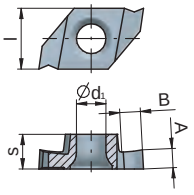
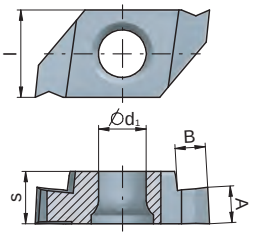
■ ab Lager / stock item / disponible du stock

□ auf Anfrage / upon request / sur demande

DENITOOL®

WENDEPLATTEN FÜR SICHERUNGSNUTEN NACH DIN 472
INDEXABLE INSERTS FOR CIRCLIP GROOVES ACCORDING TO DIN 472
PLAQUETTES INDEXABLES POUR RAINURES DE BAGUES D'ARRÊT SELON DIN 472

DESIGNATION SYSTEM: vgl S.95 / see p.95 / voir p.95

Platten-Typ Insert type Type de plaquette	Artikel-Nr. Article No. No. d'article	[mm] A±0.01	B	s	l	d	P 20	DX 2	DP 25	DX 20	DP 35	DX 30
0 	**NFL 0 1 115 070 ST**	1.15	0.7	4	6	3.4	■		□		□	
	NFL 0 1 115 070 GE	1.15	0.7	4	6	3.4		■		□		□
	NFL 0 1 115 070 AL	1.15	0.7	4	6	3.4		■		□		□
	NFL 0 1 135 100 ST	1.35	1.0	4	6	3.4	■		□		□	
	NFL 0 1 135 100 GE	1.35	1.0	4	6	3.4		■		□		□
	NFL 0 1 135 100 AL	1.35	1.0	4	6	3.4		■		□		□
1 	**NFL 1 1 115 070 ST**	1.15	0.7	4	7	3.4	■		□		□	
	NFL 1 1 115 070 GE	1.15	0.7	4	7	3.4		■		□		□
	NFL 1 1 115 070 AL	1.15	0.7	4	7	3.4		■		□		□
	NFL 1 1 135 100 ST	1.35	1.0	4	7	3.4	■		□		□	
	NFL 1 1 135 100 GE	1.35	1.0	4	7	3.4		■		□		□
	NFL 1 1 135 100 AL	1.35	1.0	4	7	3.4		■		□		□
	NFL 1 1 165 110 ST	1.65	1.1	4	7	3.4	■		□		□	
	NFL 1 1 165 110 GE	1.65	1.1	4	7	3.4		■		□		□
	NFL 1 1 165 110 AL	1.65	1.1	4	7	3.4		■		□		□
	NFL 1 1 190 140 ST	1.90	1.4	4	7	3.4	■		□		□	
	NFL 1 1 190 140 GE	1.90	1.4	4	7	3.4		■		□		□
	NFL 1 1 190 140 AL	1.90	1.4	4	7	3.4		■		□		□
	NFL 1 1 220 160 ST	2.20	1.6	4	7	3.4	■		□		□	
	NFL 1 1 220 160 GE	2.20	1.6	4	7	3.4		■		□		□
	NFL 1 1 220 160 AL	2.20	1.6	4	7	3.4		■		□		□
	NFL 1 1 270 190 ST	2.70	1.9	4	7	3.4	■		□		□	
	NFL 1 1 270 190 GE	2.70	1.9	4	7	3.4		■		□		□
	NFL 1 1 270 190 AL	2.70	1.9	4	7	3.4		■		□		□
2 	**NFL 2 1 320 210 ST**	3.20	2.1	6	10	5.5	■		□		□	
	NFL 2 1 320 210 GE	3.20	2.1	6	10	5.5		■		□		□
	NFL 2 1 320 210 AL	3.20	2.1	6	10	5.5		■		□		□
	NFL 2 1 420 250 ST	4.20	2.5	6	10	5.5	■		□		□	
	NFL 2 1 420 250 GE	4.20	2.5	6	10	5.5		■		□		□
	NFL 2 1 420 250 AL	4.20	2.5	6	10	5.5		■		□		□

Abbildungen zeigen linke Platten für rechtsschneidende Werkzeuge
Illustrations show left-hand inserts for right-hand cutters
Les illustrations montrent des plaquettes gauches pour des outils coupant à droite

■ ab Lager / stock item / disponible du stock

□ auf Anfrage / upon request / sur demande

WENDESCHNEIDPLATTEN-AUSFÜHRUNG:	INDEXABLE INSERTS:	ÉXÉCUTION DES PLAQUETTES:	
• **ST** für Stahlbearbeitung	for cutting steel	pour usinage d'acier	P20 α = 12°
• **GE** für Graugussbearbeitung	for cutting cast iron	pour usinage de fonte grise	K10 α = 6°
• **AL** für Aluminiumbearbeitung	for cutting aluminium	pour usinage d'aluminium	K10 α = 23°

Sonderformen auf Anfrage
Special geometries upon request
Des géométries spéciaux sur demande

Countersink Cutter 90°

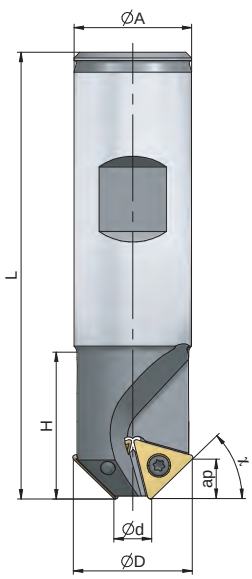
Senkfräser 90° / Fraise à lamer 90°

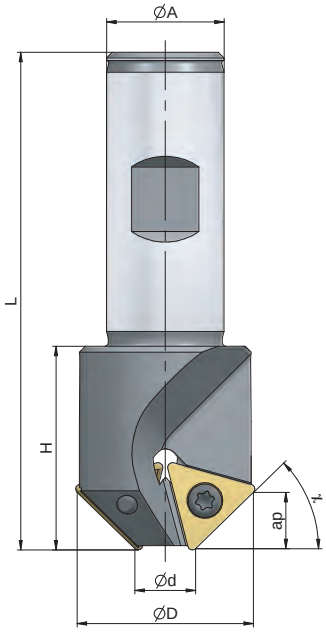
Diese Fräswerkzeuge verfügen aufgrund ihrer optimierten Geometrie über hervorragende Eigenschaften bei Senkoperationen. Dank vibrationsfreiem Lauf und weichem Schnitt entfallen nachträgliche Entgratoperationen.

When it comes to countersink operations our milling cutters have a superior design thanks to the optimised position of the cutting edge. The vibration free running and the soft cut avoid subsequent burr operations.

Ces outils de fraisage disposent sur la base de leur géometrie de coupe optimisée des qualités extraordinaires dans des opérations de lamage. Grâce à l'absence des vibrations et une coupe douce des opérations d'ébavurage supplémentaires sont supprimées.

SENKFRÄSER 90° / COUNTERSINK CUTTER 90° / FRAISE À LAMER 90°





Artikel-Nr. Article No. No. d'article	[mm] øD	ød	L_1	L_2	H	z	øA			
FW 0720 RTDS-11 ■	20.5	6	76		26	2	20	TPHW 1102..	T25.055	T7F
FW 0920 RTDS-16 ■	30.5	9	85		35	2	20	TPHW 16T3.. TPGT 16T3..	T35.084	T15H

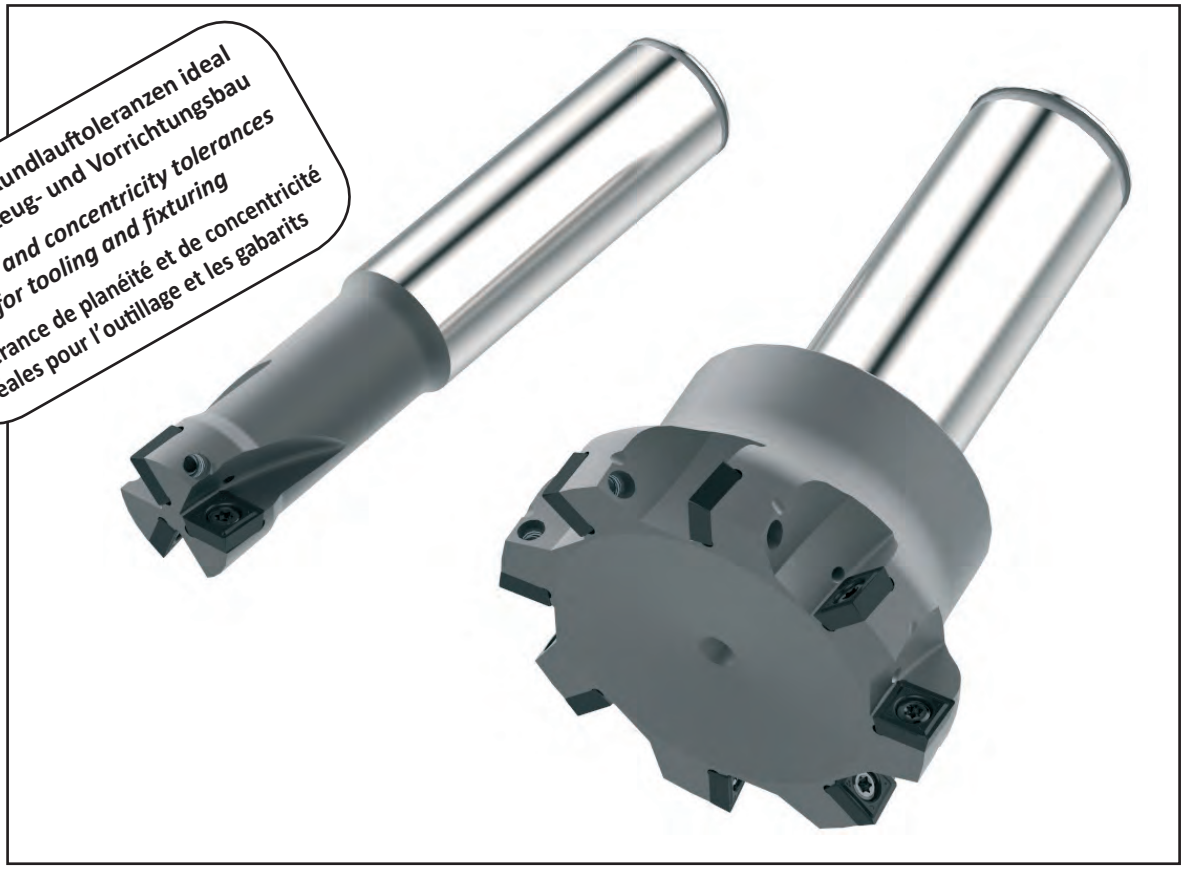
■ ab Lager / stock item / disponible du stock

Wendeschneidplatten vgl. S106 / Inserts see p.106 / Plaquettes voir p. 106

DENITOOL®

NEW

Plan- und Eckfräser 90°
Corner and face milling cutters 90°
Fraises en bout à surfacer et à chanfreiner 90°



Optimierte Werkzeuge für wirtschaftliches Fräsen

- Winkel **exakt** 90°
- Wendeschneidplatten **SPHT 06 / SPHW 06** mit **4 Schneiden**
- Sanfter Schnitt - hervorragende Oberflächenqualität bei erhöhtem Vorschub
- Zylinderschaft für Spannzangen- Hydro Dehn- und Schrumpfspannung

Optimized Tools for economic milling solutions

- *Angle **exactly** 90°*
- *Inserts **SPHT 06 / SPHW 06** with **4 cutting edges***
- *smooth cutting - superior surface finish at increased feed rates*
- *Cylindrical shank for collets, hydraulic chucks and shrink fit chucks*

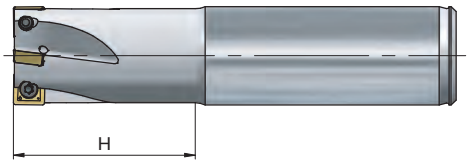
Outils optimisés pour un fraisage économique

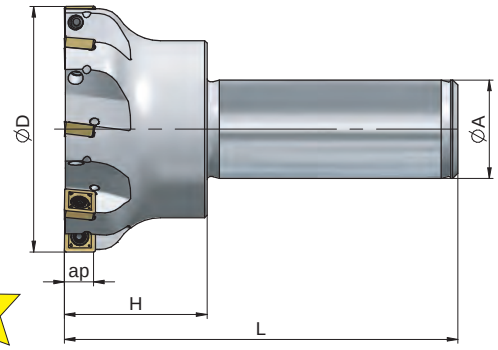
- Angle **exact** de 90°
- Plaquettes **SPHT 06 / SPHW 06** avec **4 arêtes de coupe**
- Coupe douce - meilleur état de surface à des vitesses d'avance élevées
- Queue cylindrique pour pinces, mandrins hydrauliques et mandrins de frettage

DENITOOL®

PLAN- UND ECKFRÄSER 90°
CORNER AND FACE MILLING CUTTERS 90°
FRAISES EN BOUT À SURFACER ET À CHANFREINER 90°

90°





Artikel-Nr. Article No. No. d'article	[mm]								
	⌀D	⌀A	L	H	ap	z			
FZ 1616 RSAS-06	16.0	16.0	85.0	33.0	5.9	3	SP.. 0602..	T25.055	T7F
FZ 2020 RSAS-06	20.0	20.0	90.0	37.0	5.9	4			
FZ 2520 RSAS-06	25.0	20.0	80.0	29.0	5.9	5			
FZ 3220 RSAS-06	32.0	20.0	80.0	29.0	5.9	6			
FZ 4020 RSAS-06	40.0	20.0	80.0	29.0	5.9	7			
FZ 5020 RSAS-06	50.0	20.0	80.0	29.0	5.9	8			

Alle Fräser mit integrierter Kühlmittelbohrung / All milling cutters with internal coolant / Toutes les fraises avec arrosage centralisé

Auf Wunsch mit Weldonfläche / Upon request with Weldon area / Sur demande avec queue Weldon

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	⌀d	+/-	s	+/-	m	+/-	R	$⌀d_1$	DC 10	DX 2	DX 20	DX 30	DX 32	DX 50	DX 52	DT 55	DT 255	DT 355
NEW	**SPHT 060204 EN**	6.35	6.35	0.013	2.38	0.025	1.152	0.013	0.4	2.8		■			■					
NEW	**SPHW 060204 FN**	6.35	6.35	0.013	2.38	0.025	1.149	0.013	0.4	2.8						■				
	SPHW 060208 FN	6.35	6.35	0.013	2.38	0.025	0.984	0.013	0.8	2.8						■				

■ ab Lager / stock item / disponible du stock

□ auf Anfrage / upon request / sur demande

MillingCutters

FräsWerkzeuge / Outils de fraisage

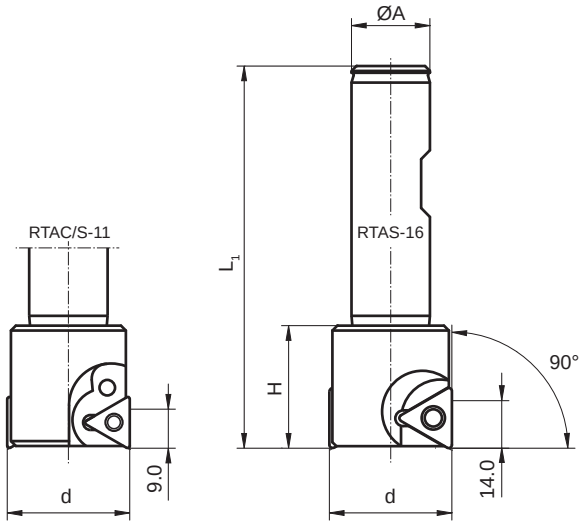
Eck- & Stirnfräserprogramm mit enger Rundlauftoleranz

Close run-out tolerance corner & face milling cutter series

Série de forets d'affilage & de front avec déroulement au minimum

PLAN- UND ECKFRÄSER POSITIV 90°
CORNER AND FACE MILLING CUTTERS POSITIVE 90°
FRAISES EN BOUT À SURFACER ET FRAISES À CHANFREINER POSITIVES 90°

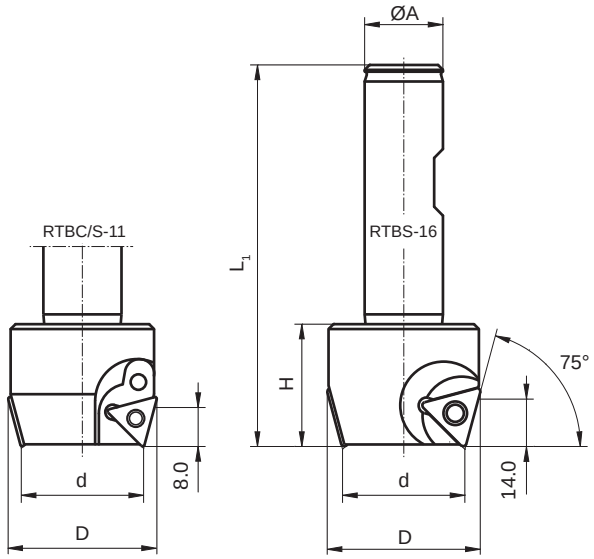
90°



Artikel-Nr. Article No. No. d'article	[mm] ⌀D	⌀d	L_1	H	z	⌀A			
FW 2016 RTAS-11	--	20	73	25	2	16			
FW 2020 RTAS-11	--	20	75	25	2	20			
FW 2516 RTAS-11	--	25	73	25	2	16	TPHW 1102..	T25.055	T7F
FW 2520 RTAS-11	--	25	75	25	2	20	TPHT 1102..		
FW 3220 RTAS-11	--	32	80	30	3	20			
FW 2520 RTAS-16	--	25	80	30	1	20			
FW 3220 RTAS-16	--	32	80	30	2	20	TPMT 16T3.. TPHW 16T3..		
FW 3225 RTAS-16	--	32	86	30	2	25	TPHT 16T3.. TPMW 16T3..	T35.084	T15H
FW 4025 RTAS-16	--	40	86	30	3	25	TPGT 16T3..		

PLAN- UND FASENFRÄSER POSITIV 75°
CORNER AND FACE MILLING CUTTERS POSITIVE 75°
FRAISES EN BOUT À SURFACER ET FRAISES À CHANFREINER POSITIVES 75°

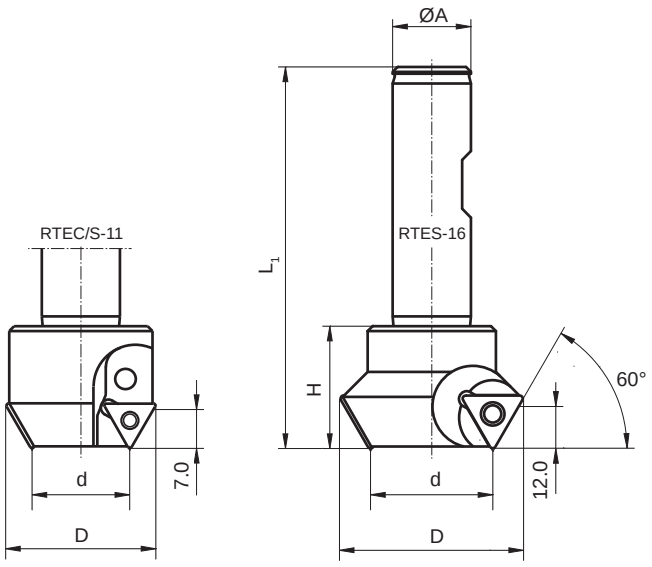
75°



Artikel-Nr. Article No. No. d'article	[mm] ⌀D	⌀d	L_1	H	z	⌀A			
FW 1616 RTBS-11	21	16	73	25	2	16	TPHW 1102..	T25.055	T7F
FW 1620 RTBS-11	21	16	75	25	2	20			
FW 2520 RTBS-16	33	25	80	30	2	20	TPMT 16T3.. TPHW 16T3 TPHT 16T3.. TPMW 16T3.. TPGT 16T3..	T35.084	T15H
FW 3220 RTBS-16	40	32	80	30	2	20			
FW 3225 RTBS-16	40	32	86	30	2	25			
FW 4025 RTBS-16	48	40	86	30	3	25			

PLAN- UND FASENFRÄSER POSITIV 60°
CORNER AND FACE MILLING CUTTERS POSITIVE 60°
FRAISES EN BOUT À SURFACER ET FRAISES À CHANFREINER POSITIVES 60°

60°

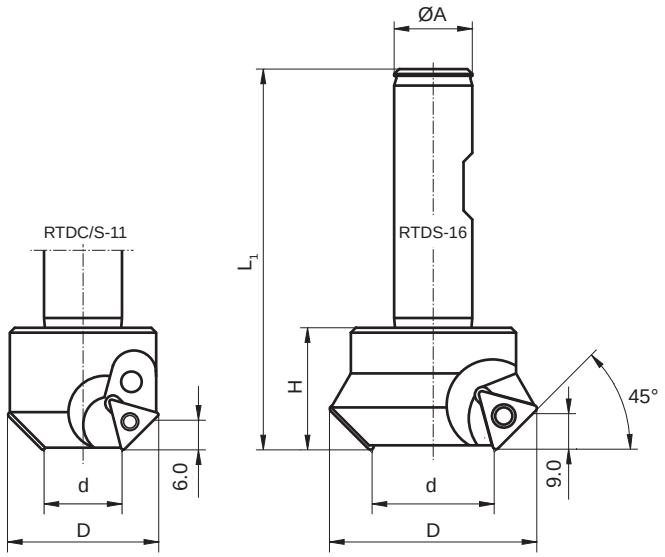


Artikel-Nr. Article No. No. d'article	[mm] ØD	Ød	L_1	H	z	ØA			
FW 1616 RTES-11	26	16	73	25	2	16	TPHT 1102..	T25.055	T7F
FW 1620 RTES-11	26	16	75	25	2	20			
FW 2520 RTES-16	41	25	80	30	2	20	TPMT 16T3.. TPHW 16T3.. TPHT 16T3.. TPMW 16T3.. TPGT 16T3.	T35.084	T15H
FW 3220 RTES-16	48	32	80	30	3	20			
FW 3225 RTES-16	48	32	86	30	3	25			

DENITOOL®

PLAN- UND FASENFRÄSER POSITIV 45°
CORNER AND FACE MILLING CUTTERS POSITIVE 45°
FRAISES EN BOUT À SURFACER ET FRAISES À CHANFREINER POSITIVES 45°

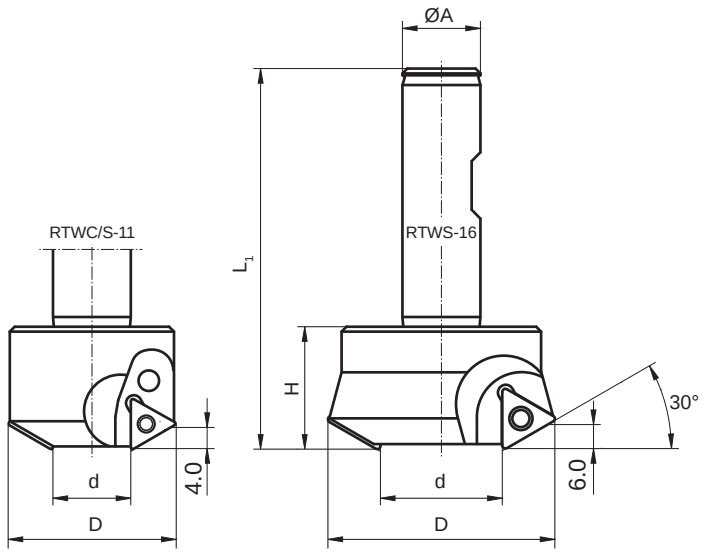
45°



Artikel-Nr. Article No. No. d'article	[mm] ⌀D	⌀d	L_1	H	z	⌀A			
FW 1616 RTDC/S-11	30	16	73	25	2	16	TPHT 1102..	T25.055	T7F
FW 1620 RTDC/S-11	30	16	75	25	2	20			
FW 2520 RTDS-16	47	25	80	30	2	20	TPMT 16T3.. TPHW 16T3.. TPHT 16T3.. TPMW 16T3.. TPGT 16T3.	T35.084	T15H
FW 3220 RTDS-16	54	32	80	30	3	20			
FW 3225 RTDS-16	54	32	86	30	3	25			

PLAN- UND FASENFRÄSER POSITIV 30°
CORNER AND FACE MILLING CUTTERS POSITIVE 30°
FRAISES EN BOUT À SURFACER ET FRAISES À CHANFREINER POSITIVES 30°

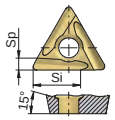
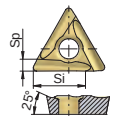
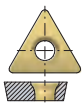
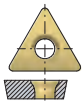
30°



Artikel-Nr. Article No. No. d'article	[mm] ⌀D	⌀d	L_1	H	z	⌀A			
FW 1616 RTWS-11	34	16	73	25	3	16	TPHT 1102..	T25.055	T7F
FW 1620 RTWS-11	34	16	80	30	3	20			
FW 2520 RTWS-11	43	25	80	30	3	20			
FW 2520 RTWS-16	53	25	80	30	3	20	TPMT 16T3.. TPHW 16T3.. TPHT 16T3.. TPMW 16T3.. TPGT 16T3.	T35.084	T15H
FW 3225 RTWS-16	60	32	86	30	3	25			

DENITOOL®

HARTMETALL WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	d	s	R	m	d_1	Sp	Sl	DX 2	P 25	DX 20	DP 25	DX 30	DP 35	DX 50	DP 55	DX 52
	TPGT 16T304 EN	16.5	9.52	3.97	0.4	13.89	4.35	1.7			■		■		□		□	
	TPGT 16T308 EN				0.8	13.49					■		■		□		□	
	TPGT 16T304-25	16.5	9.52	3.97	0.4	13.89	4.35	1.7		■		■		□		□		□
	TPGT 16T308-25				0.8	13.49				■		■		□		□		□
*1) 	**TPHT 110202 ER/L**	11	6.35	2.38	0.2	9.33	2.83	1.7	6.6		■		■		□		□	
	TPHT 110204 ER/L				0.4	9.13			6.7		■		■		□		□	
	TPHT 110208 ER/L				0.8	8.73			6.7		■		■		□		□	
	TPHT 16T304 ER/L	16.5	9.52	3.97	0.4	13.89	4.35	2.4	8.5		■		■		□		□	
	TPHT 16T308 ER/L				0.8	13.49			8.5		■		■		□		□	
*1) 	**TPHT 110202 FR/L**	11	6.35	2.38	0.2	9.33	2.83	1.7	6.9	■		■		□				
	TPHT 110204 FR/L				0.4	9.13			6.7	■		■		□				
	TPHT 110208 FR/L				0.8	8.73			6.4	■		■		□				
	TPHT 16T304 FR/L	16.5	9.52	3.97	0.4	13.89	4.35	2.4	10	■		□		□				
	TPHT 16T308 FR/L				0.8	13.49				■		□		□				
	**TPHW 110202 EN**	11	6.35	2.38	0.2	9.33	2.83				■		■		□		■	
	TPHW 110204 EN				0.4	9.13					■		■		□		■	
	TPHW 110208 EN				0.8	8.73					■		□		□		■	
	TPHW 110202 FN	11	6.35	2.38	0.2	9.33	2.83			■		■		□		□		
	TPHW 110204 FN				0.4	9.13				■		■		■		■		
	TPHW 110208 FN				0.8	8.73				■		□		□		□		
	TPHW 16T304 EN	16.5	9.52	3.97	0.4	13.89	4.35				■		■		□		■	
	TPHW 16T308 EN				0.8	13.49					■		■		□		■	
	TPHW 16T304 FN	16.5	9.52	3.97	0.4	13.89	4.35			■		■		□		■		
	TPHW 16T308 FN				0.8	13.49				■		■		□		□		
	TPHW 16T304 SN	16.5	9.52	3.97	0.4	13.89	4.35				■							
	TPHW 16T308 SN				0.8	13.49					■							
	**TPMW 16T304 FN**	16.5	9.52	3.97	0.4	13.89	4.35			■		□		□		□		
	TPMW 16T308 FN				0.8	13.49				■		■		□		□		

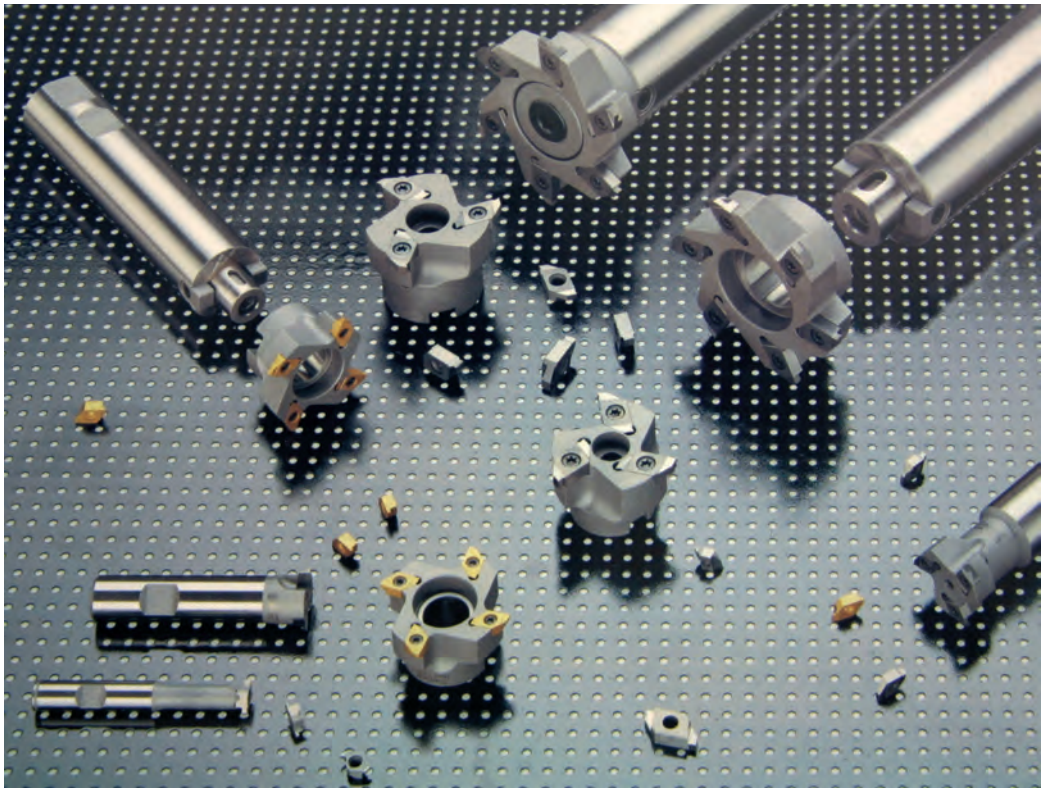
■ ab Lager
stock item
disponible du stock

□ auf Anfrage
upon request
sur demande

*1) Rechte Ausführung
Right hand execution
Exécution droite

Slot MillingCutters

Nutenfräser / Fraises à rainurer



Das Nutenfräsprogramm wird in A, CH, D & FL exclusiv durch Heinz Kaiser AG vertrieben
(Ausnahme: Sondergeometrien)

The slot milling cutter program is exclusively distributed through Heinz Kaiser Ltd in A, CH, D & FL
(Exception: Custom made geometries)

Le programme des fraises à rainurer est distribué exclusivement en A, CH, D & FL par Heinz Kaiser SA
(Exception: Géométries speciaux)

DENITOOL BEZEICHNUNGSSYSTEM / DESIGNATION SYSTEM / SYSTÈME DE DÉSIGNATION

FÜR WENDESCHNEIDPLATTEN ZUM NUTENFRÄSEN / FOR INSERTS FOR SLOT MILLING / POUR PLAQUETTES DESTINÉES AU FRAISAGE DE RAINURES

N	F	L	1	1	165	110	ST	DX20
Plattenform *Insert form* Façon de la plaquette	Werkzeugart *Type of tool* Type d'outil	Schneidrichtung *Cutting direction* Sens de coupe	Plattengrösse *Insert size* Dimension de la plaquette	Einstichform *Shape of groove* Façon de la rainure	Einstichbreite A *Groove width A* Largeur du fonçage A	Einstichtiefe B *Groove depth B* Profondeur du fonçage B	Ausführung *Exécution* Execution	Beschichtung *Coating* Revêtement
N: - Nutenstechplatte - *Slot recessing insert* - Plaquette pour rainurer 	- Fräser - *Milling cutter* - Fraise	L: - Links - *Left* - Gauche R: - Rechts - *Right* - Droite X: - Spezial - *Special* - Spécial			165 = 1.65mm	110 = 1.1mm	ST: Stahl *Steel* Acier GE: Grauguss *Cast iron* Fonte grise AL: Aluminium *Aluminum* Aluminium	DX2: -- DX20: **TiN** DX30: **TiCN** DX30 **AlTiN**

DENITOOL® NUTENFRÄSER EIGNEN SICH BESONDERS FÜR:

- Zirkularfräsen auf CNC-Bearbeitungszentren
- Fräsen von Ringnuten, Dichtungsrillen usw.
- direkte Aufnahme im Weldon Spannsystem bzw. auf Fräsdornen nach ISO 240 resp. DIN 138 (mit Längs- oder Querkeil)

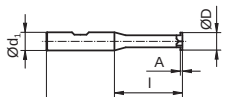
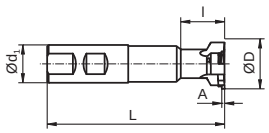
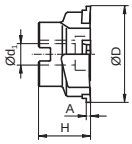
DENITOOL® SLOT MILLING CUTTERS ARE SPECIALLY SUITABLE FOR:

- Countersink milling on CNC machining centres
- Milling of circular slots, sealing grooves etc.
- Direct mounting on Weldon clamping system or milling arbors according to ISO 240 or DIN 138 (with taper key or driving catches)

LES FRAISES À RAINURER DENITOOL® SONT PARTICULIÈREMENT ADAPTÉES POUR:

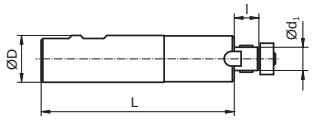
- fraisage circulaire sur des centres d'usinage CNC.
- fraisage de rainures pour joints toriques, rainures d'étanchéité, etc.
- fixation directe sur porte-fraises système Weldon ou sur tasseaux de fraisage selon ISO 240 résp. DIN 138 (avec clavette longitudinale ou transversale)

NUTENFRÄSER / SLOT MILLING CUTTERS / FRAISES À RAINURER

Fräser-Typ Milling cutter type Type de fraise	Artikel-Nr. Article No. No. d'article	[mm] D	d_1	L	l	H	Z	A_{max} *	Platten-Typ Insert type Type de plaquette
	**FW 1210 RNAS-00**	12	10	80	40		2	1.35	0
	**FW 2116 RNAS-01** **FW 3325 RNAS-01**	21 33	16 25	75 110	15 29		2 3	2.70 2.70	1 1
	**FA 4816 RNAS-01** **FA 8327 RNAS-02**	48 83	16 27			26 32	4 6	2.70 4.20	1 2

* Masse für Sonder-WSP vgl. S.98 / dimensions for custom made inserts see p.98 / dimensions pour plaquettes en exécution spéciale voir p.98 svp.

AUFSPANNDORN / WORK ARBOR / PORTE-FRAISE

	Artikel-Nr. Article No. No. d'article	[mm] D	d_1	L	l	
	**AFW 3216**	32	16	151	17	

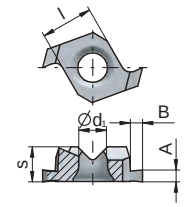
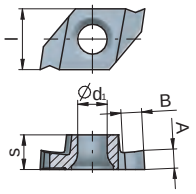
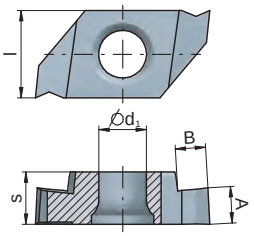
ERSATZTEILE / SPARE PARTS / PIÈCES DE RECHANGE

Platten-Typ Insert type Type de plaquette			
0 1 2	T30.090 T30.090 T50.160	T8F T8F T20H	

DENITOOL®

WENDEPLATTEN FÜR SICHERUNGSNUTEN NACH DIN 472
INDEXABLE INSERTS FOR CIRCLIP GROOVES ACCORDING TO DIN 472
PLAQUETTES INDEXABLES POUR RAINURES DE BAGUES D'ARRÊT SELON DIN 472

DESIGNATION SYSTEM: vgl S.95 / see p.95 / voir p.95

Platten-Typ Insert type Type de plaquette	Artikel-Nr. Article No. No. d'article	[mm] A±0.01	B	s	l	d	P 20	DX 2	DP 25	DX 20	DP 35	DX 30
0 	**NFL 0 1 115 070 ST**	1.15	0.7	4	6	3.4	■		□		□	
	NFL 0 1 115 070 GE	1.15	0.7	4	6	3.4		■		□		□
	NFL 0 1 115 070 AL	1.15	0.7	4	6	3.4		■		□		□
	NFL 0 1 135 100 ST	1.35	1.0	4	6	3.4	■		□		□	
	NFL 0 1 135 100 GE	1.35	1.0	4	6	3.4		■		□		□
	NFL 0 1 135 100 AL	1.35	1.0	4	6	3.4		■		□		□
1 	**NFL 1 1 115 070 ST**	1.15	0.7	4	7	3.4	■		□		□	
	NFL 1 1 115 070 GE	1.15	0.7	4	7	3.4		■		□		□
	NFL 1 1 115 070 AL	1.15	0.7	4	7	3.4		■		□		□
	NFL 1 1 135 100 ST	1.35	1.0	4	7	3.4	■		□		□	
	NFL 1 1 135 100 GE	1.35	1.0	4	7	3.4		■		□		□
	NFL 1 1 135 100 AL	1.35	1.0	4	7	3.4		■		□		□
	NFL 1 1 165 110 ST	1.65	1.1	4	7	3.4	■		□		□	
	NFL 1 1 165 110 GE	1.65	1.1	4	7	3.4		■		□		□
	NFL 1 1 165 110 AL	1.65	1.1	4	7	3.4		■		□		□
	NFL 1 1 190 140 ST	1.90	1.4	4	7	3.4	■		□		□	
	NFL 1 1 190 140 GE	1.90	1.4	4	7	3.4		■		□		□
	NFL 1 1 190 140 AL	1.90	1.4	4	7	3.4		■		□		□
	NFL 1 1 220 160 ST	2.20	1.6	4	7	3.4	■		□		□	
	NFL 1 1 220 160 GE	2.20	1.6	4	7	3.4		■		□		□
	NFL 1 1 220 160 AL	2.20	1.6	4	7	3.4		■		□		□
	NFL 1 1 270 190 ST	2.70	1.9	4	7	3.4	■		□		□	
	NFL 1 1 270 190 GE	2.70	1.9	4	7	3.4		■		□		□
	NFL 1 1 270 190 AL	2.70	1.9	4	7	3.4		■		□		□
2 	**NFL 2 1 320 210 ST**	3.20	2.1	6	10	5.5	■		□		□	
	NFL 2 1 320 210 GE	3.20	2.1	6	10	5.5		■		□		□
	NFL 2 1 320 210 AL	3.20	2.1	6	10	5.5		■		□		□
	NFL 2 1 420 250 ST	4.20	2.5	6	10	5.5	■		□		□	
	NFL 2 1 420 250 GE	4.20	2.5	6	10	5.5		■		□		□
	NFL 2 1 420 250 AL	4.20	2.5	6	10	5.5		■		□		□

Abbildungen zeigen linke Platten für rechtsschneidende Werkzeuge
Illustrations show left-hand inserts for right-hand cutters
Les illustrations montrent des plaquettes gauches pour des outils coupant à droite

■ ab Lager / stock item / disponible du stock

□ auf Anfrage / upon request / sur demande

WENDESCHNEIDPLATTEN-AUSFÜHRUNG:	INDEXABLE INSERTS:	EXÉCUTION DES PLAQUETTES:	
• **ST** für Stahlbearbeitung	for cutting steel	pour usinage d'acier	P20 α = 12°
• **GE** für Graugussbearbeitung	for cutting cast iron	pour usinage de fonte grise	K10 α = 6°
• **AL** für Aluminiumbearbeitung	for cutting aluminium	pour usinage d'aluminium	K10 α = 23°

Sonderformen auf Anfrage
Special geometries upon request
Des géométries spéciaux sur demande

DENIAG® Industriestrasse 18 • CH-5106 Veltheim • Switzerland
Tel +41 (0) 56 463 69 69 • Fax +41 (0) 56 463 69 00 • info@deni.ch • www.denitool.ch

WENDEPLATTEN IN SPEZIALAUSFÜHRUNG / CUSTOM MADE INDEXABLE INSERTS / PLAQUETTES INDEXABLES EN EXÉCUTION SPÉCIALE

DENITOOL-Wendeplatten sind standard-mässig lieferbar für Sicherungsnuten nach DIN 472 (vgl. S.97). Es können aber auch Sonderformen gemäss nachstehender Tabelle oder nach Ihrer Zeichnung angeboten werden. Die Wendeplatten sind allseitig und im Profil präzisionsgeschliffen und garantieren daher:

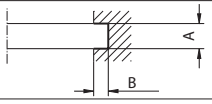
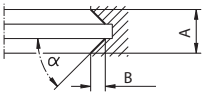
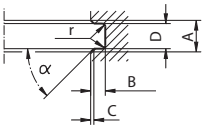
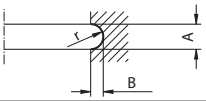
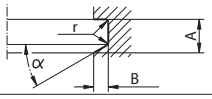
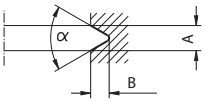
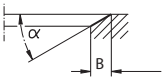
- gleichbleibende Arbeitsgenauigkeit
- lange Standzeiten
- kürzere Nebenzeiten

DENITOOL indexable inserts can be supplied as standard for circlip grooves according to DIN 472 (see p.97). Special forms can also be supplied, however, according to the table below or to your drawing. The inserts are precision-grinded on all sides and in section and therefore guarantee:

- constant working accuracy
- long service life
- shorter down-times

Les plaquettes indexables DENITOOL standard sont livrables pour rainures de bagues d'arrêt selon DIN 472 (voir p.111). Des plaquettes de façon spéciales peuvent être livrées selon tableau ci-dessous ou conformément à vos dessins. Les plaquettes indexables sont rectifiées sur chaque côté et sont profilées avec une haut précision et garantissent ainsi:

- exactitude de travail constante
- grande longévité d'usinage
- réduction de temps mort

Einstichform Form of groove Forme de la rainure		Fräser-Nenndurchmesser / Milling cutter nominal dia. / Diamètre nominal de la fraise				
	D	12	21	33	48	83
	Platten-Typ / Insert type / Type de plaquette	**0**	**1**	**1**	**1**	**2**
1 	A_{max}	2.4	3.8	3.8	3.8	5.5
	B_{max}	1.0	1.2	1.6	2.5	3.5
2 	A_{max}	2.4	3.8	3.8	3.8	5.5
	B_{max}	1.0	1.2	1.6	2.5	3.5
3 	A_{max}	2.4	3.8	3.8	3.8	5.5
	B_{max}	1.0	1.2	1.6	2.5	3.5
	C_{max}	0.3	0.3	0.4	0.5	0.8
4 	A_{max}	2.4	3.8	3.8	3.8	5.5
	B_{max}	1.0	1.2	1.6	2.5	3.5
5 	A_{max}	2.4	3.8	3.8	3.8	5.5
	B_{max}	1.0	1.2	1.6	2.5	3.5
6 	A_{max}	2.4	3.8	3.8	3.8	5.5
	B_{max}	1.0	1.2	1.6	2.5	3.5
7 	B_{max}	1.0	1.2	1.6	2.5	3.5

Erforderliche Bestellangaben:

- Einstichform
- Mass A, B, ev. C, D, r, α
- Fräser- und Bohrungsdurchmesser
- Werkstoff
- Drehrichtung der Spindel

Details required when ordering:

- form of groove
- dimension A, B, eventually C, D, r, α
- diameters of milling cutter and bore
- material specification
- direction of spindle rotation

Indicatios nécessaires pour commandes:

- façon de la rainure
- dimension A, B, évent. C, D, r, α
- diamétre de la fraise et d'alésage
- spécification du matériel
- sens de rotation de la broche

RICHTWERTE FÜR DAS ZIRKULARFRÄSEN / NOMINAL VALUES FOR CIRCULAR MILLING / VALEURS DE RÉFÉRENCE POUR FRAISER DES RAINURES CIRCULAIRES

Um optimales Schnittverhalten des Fräsers zu gewährleisten wird empfohlen, kontinuierlich auf die maximale Eingriffsbreite (Nutentiefe) zu fahren. Einfahren in radialer Richtung erfordert eine Reduktion des Vorschubes auf die Hälfte.

Wenn im Verhältnis zum Bohrungsdurchmesser grosse Fräser eingesetzt werden, muss die Eingriffsbreite (a_e) gemäss nachstehender Formel berechnet werden.

Für die Berechnung des Vorschubes pro Zahn (f_z) ist die Mittenspandicke (h_m) massgebend. Je nach Schneidenausführung soll h_m eine Dicke von 0.05mm für unbeschichtete und 0.08mm für beschichtete Wendeplatten nicht unterschreiten. Die entsprechenden Vorschübe ergeben sich aus nachstehender Tabelle. Gleichlauffräsen ergibt in der Regel ein besseres Resultat in Bezug auf Standzeit und Oberflächengüte.

In order to ensure optimum cutting behaviour of the milling cutter, it is recommended to work continuously at the maximum groove width (slot depth). Entry in the radial direction means that the feed must be reduced by half.

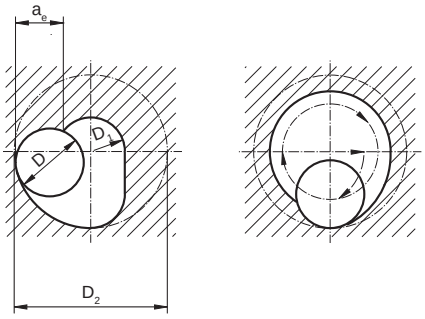
If large milling cutters are used in relation to the bore diameter, the groove width (a_e) must be calculated from the following formula.

The mean depth of cut (h_m) is decisive for calculation of the feed per tooth (f_z). Depending on the cutting procedure the depth h_m should not be less than 0.05mm for uncoated and 0.08mm for coated indexables inserts. The corresponding feeds are given in the following table. Climb milling usually provides a better result with respect to tool life and surface quality.

Afin d'assurer des caractéristiques de coupe optimales pour la fraise, il est recommandé de travailler en continu sur largeur de prise maximale (profondeur de la rainure). Le fonçage en direction radiales nécessite une réduction de moitié de l'avance.

Lorsque des fraises de grand diamètre sont utilisées comparé au diamètre de l'alésage, l'engrènement da la largeur (a_e) doit être calculée selon la formule ci-après.

L'épaisseur du copeau moyen (h_m) est déterminant pour le calcul de l'avance par dent (f_z). En fonction de l'exécution du tranchant, l'épaisseur h_m ne doit pas être inférieure à 0.05mm pour les plaquettes sans revêtement et à 0.08mm pour les plaquettes avec revêtement. Les valeurs d'avance correspondantes sont indiquées dans le tableau ci-après. Le fraisage en sens direct permet en général un meilleur résulat en ce qui concerne la durée de vie d'outil et la qualité de surface.



a_e/D	Vorschub/Zahn - Feed/tooth - Avence/dent f_z (mm)								
	0.04	0.08	0.10	0.16	0.20	0.30	0.40	0.50	0.60
	Mittenspandicke - Mean depth of cut / Epaisseur du copeau moyen h_m (mm)								
0.020($^1/_{50}$)					0.03	0.04	0.06	0.07	0.08
0.025($^1/_{40}$)				0.03	0.03	0.05	0.06	0.08	0.09
0.040($^1/_{25}$)				0.03	0.04	0.06	0.08	0.10	0.12
0.050($^1/_{20}$)				0.03	0.04	0.07	0.09	0.11	0.13
0.100($^1/_{10}$)			0.03	0.05	0.06	0.09	0.12	0.16	
0.200($^2/_{10}$)		0.03	0.04	0.07	0.09	0.13	0.17		
0.300($^3/_{10}$)		0.04	0.05	0.08	0.10	0.16			
0.400($^4/_{10}$)		0.05	0.06	0.09	0.12				

Berechnungsbeispiel:
Calculation example:
Exemple de calcul:

$$a_e = \frac{D_2^2 - D_1^2}{4(D_2 - D)} \quad \text{mm}$$

Fräser Ø / Cutter diameter / Diamètre de fraise: 33.0 mm
Bohrungs-Roh Ø / Rough bore diameter / Diamètre préliminaire de l'alésage: 50.0 mm
Stechtiefe / Groove depth / Profondeur de la rainure: 1.9 mm
Fertig Ø / Finished diameter / Diamètre à usiner: 53.8 mm

$$a_e = \frac{53.8^2 - 50^2}{4(53.8 - 33)} = 4{,}74 \text{ mm}$$

Verhältnis / Ratio / Rapport $\quad \frac{a_e}{D} = \frac{4.7}{33} = 0.14$

Laut Tabelle ergibt sich somit bei einer Mittenspandicke h_m von 0.06mm ein **Vorschub / Zahn von 0.20mm.** (Siehe unter Spalte a_e/D 0.100(1/10): nach rechts bis Feld 0.06. Vorschub / Zahn im entsprechenden Feld ablesen).

The table therefore gives a **feed / tooth of 0.20mm** with a mean depth of cut h_m of 0.06mm. (Refer to column a_e/D at 0.100 (1/10): to right to field 0.06, read off feed /tooth in corresponding field).

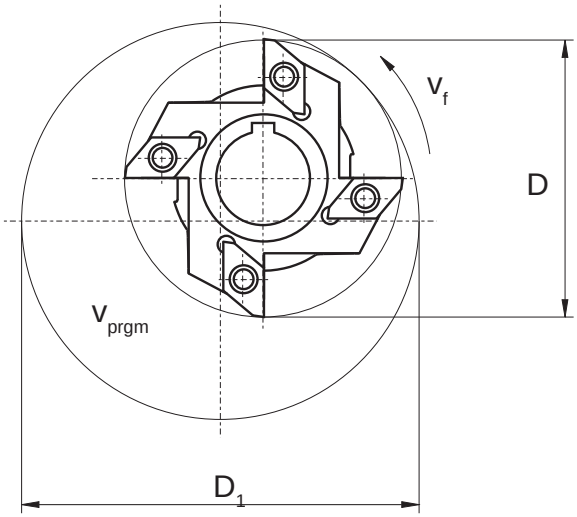
Selon le tableau, on obtient ainsi une **avance / dent de 0.20mm** avec une épaisseur du copeau moyen h_m de 0.06mm. (Prendre dans la colonne a_e/D la case 0.100 (1/10): passer vers la droite jusqu'au cadre 0.06. Lire la valeur avance / dent en remontant dans le cadre correspondant).

RICHTWERTE FÜR DAS ZIRKULARFRÄSEN / NOMINAL VALUES FOR COUNTERSINK MILLING / VALEURS DE RÉFÉRENCE POUR FRAISER LES RAINURES CIRCULAIRES

Bei Vorschubprogrammierung kreisförmiger Fräskonturen ist zu beachten, dass der programmierte Vorschub bei älteren Steuerungen in der Regel für die Fräser-**mitte** gilt. Die Vorschubgeschwindigkeit v_f entspricht dem effektiv wirksamen Vorschub am Fräserumfang. Sie muss deshalb mit der untenstehenden Formel umgerechnet werden. Bei neueren Steuerungen erfolgt die Umrechnung automatisch.

When programming the feed of circular milling contours, it must be considered that the programmed feed for older controllers is usually applicable to the **centre** of the slot cutter . The feed rate v_f corresponds to the effective feed at the slot cutter circumference. It must therefore be converted with the formula below. This conversion is made automatically with newer controllers.

Lors de la programmation de l'avance pour le fraisage de rainures circulaires, il faut tenir compte que l'avance programmée est généralement valable pour le **centre** de la fraise, lorsqu'il s'agit des anciennes commandes. L'avance indiquée v_f correspond à l'avance efficace sur la circonférence de la fraise. Il faut donc procéder à la conversion selon la formule ci-dessous. Cette conversion s'effectue automatiquement sur les nouvelles commandes.



$v_{prgm} = \frac{v_f \cdot (D_1 - D)}{D}$	[mm/min]
$v_f = n \cdot z \cdot fz$	[mm/min]

Schnittgeschwindigkeiten v_c
Cutting speeds v_c
Vitesses de coupe v_c

Stahl, Steel, Acier	120 - 200 [m/min]
Grauguss, Cast iron, Fonte drise	80 - 130 [m/min]
Aluminium, Aluminium, Aluminium	700 - 800 [m/min]

Vario System

Einstellbares Präzisionsausdreh- und Feinbohrsystem

Adjustable high precision ID tool and finish machining system

Le système de précision réglable pour des applications d'alésage et rotatives

VARIO® MINI / VARIO® STANDARD

Das wirtschaftliche Präzisions Werkzeugsystem

- Feinjustiermechanismus für Feinbohroperationen mit Bohrungstoleranz < Toleranz Wendeschneidplatte
- einfache Justierung innerhalb Bearbeitungsmaschine mittels Messuhr, Anzeigewert 0.01mm, Verstellgenauigkeit ΔRadius 0.002mm
- austauschbare Kassetten für unterschiedliche Plattengeometrien und Anstellwinkel
- kostengünstige Problemlösung für anspruchsvolle Bearbeitungsaufgaben dank modularem Aufbau
- Standardaufnahme: Weldon, DIN 1835 Form B. Weitere Schnittstellen auf Anfrage

The economical precision tool system

- fine adjustment mecanism for ID and fine machining operations with tolerance of bore < tolerance of insert
- easily adjustable inside machining center, w. gauge 0.01mm, accuracy of adjustment Δradius 0.002mm
- interchangeable cassettes (insert-carriers) for a variety of insert geometries and angles
- the economic solution for sophisticated machining operations due to the modular design
- Standard interface: Weldon, DIN 1835 Form B. Other interfaces upon request

Le système d'outil de précision economique

- méchanisme d'ajustage fin pour des opérations de perçage à haute précision (tolérance du trou d'alésage < tolérance de la plaquette de coupe)
- ajustage simple à l'intérieur de la machine d'usinage avec comparateur 0.01mm, précision d'adjustement Δradius 0.002mm
- cassettes (porte plaquette) interchangeables pour des géométries de plaquettes et des angles de coupe différentes
- la solution économique pour des opérations d'usinage élevées grâce à la construction modulaire
- Fixation standard: Weldon, DIN 1835 Form B. D'autres fixations sur demande.

Baugrösse 1: Vario Mini
Bohrungen ∅ 9.8 - 11.8 mm

1 Grösse Mini-Grundkörper (mit integrierter Kühlmittelführung) und 5 abgestufte Kassetten pro ∅-Bereich

Size 1: Vario Mini
Bore size ∅ 9.8 - 11.8 mm

1 size Mini-body (w. internal cooling) plus 5 different cassettes per dia-range

Dimension 1: Vario Mini
pour perçages ∅ 9.8 - 11.8 mm

1 dim. de corps de base Mini (avec arrosage intégré) plus 5 cassettes diffeérentes par rang de diamètre

Baugrösse 2: Vario Standard
Bohrungen ∅ 11.8 - 21.8 mm

5 Grössen Standard-Grundkörper (mit integrierter Kühlmittelführung) und 5 abgestufte Kassetten pro ∅ -Bereich

Size 2: Vario Standard
Bore size ∅ 11.8 - 21.8 mm

5 sizes Standard body (w. internal cooling) plus 5 different cassettes per dia-range

Dimension 2: Vario Standard
pour perçages ∅ 11.8 - 21.8 mm

5 dim. de corps de base Standard (avec arrosage intégré) plus 5 cassettes différentes par rang de diamètre

Achtung

Kassetten für Baugrösse 1 passen nur zu Mini-Grundkörper, Kassetten für Baugrösse 2 passen nur zu Standard-Grundkörper

Caution

Cassettes for size 1 fit only the Mini-body, cassettes for size 2 fit only the Standard-body

Attention

Les cassettes en dimension 1 peuvent être utilisées qu'en combinaison avec les corps de base Mini, les cassettes en dimension 2 peuvent être utilisées qu'en combinaison avec les corps de base standard

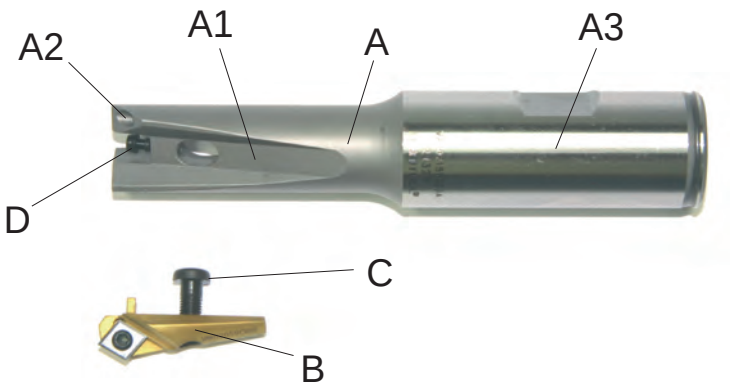
Sonder
-Materialien
-Längen
-Schnittstellen
auf Anfrage

Special
-materials
-lengths
-interfaces
upon request

Des
-matériaux
-dimensions
-fixations
spéciaux sur demande

SYSTEM BESCHREIBUNG / DESCRIPTION / DESCRIPTION

1.) Aufbau Vario



A Grundkörper
- A1 Präzisionsführung
- A2 Kühlmittelführung
- A3 Werkzeugaufnahme

B Kassette für WSP
C Befestigungsschraube
D Justierschraube

2.) Justiervorgang

Achtung
Schraube D darf nur bei gelöster Schraube C verstellt werden.

a) Ausmessen der Probebohrung (-> radiale Abweichung)
b) Berechnung axiale Korrektur aus radialer Abweichung (pro 0.01mm axiale Korrektur ändert der Radius um 0.002mm)
c) Anbringen Messuhr (Kontrolle axiale Korrektur)
d) Lösen der Befestigungsschraube C
e) Einstellen der axialen Korrektur mittels Justierschraube D
f) Festziehen Befestigungsschraube C "Mini": 2.5 Nm, "Standard": 4.0 Nm *)
g) Überprüfen der Anzeige der Messuhr

*) Wir empfehlen die Verwendung eines Drehmomentschlüssels

1.) Vario assembly

A Body
- A1 precision ground guide
- A2 internal cooling
- A3 interface

B Cassette for insert
C Fixing screw
D Adjusting screw

2.) Adjusting operation

Caution
Never operate screw D while screw C is tightened.

a) Measure test bore (-> radial difference)
b) Evaluate axial correction factor in relation to radial difference (radius changes by 0.002mm per 0.01mm axial correction)
c) Install measuring gauge (check axial correction)
d) Loosen fixing screw C
e) Adjust axial correction by turning screw D
f) Tighten fixing screw C "Mini": 2.5 Nm, "Standard": 4.0 Nm *)
g) Check indication of measuring gauge again

*) We recommend the use of a torque meter

1.) Vue d'ensemble Vario

A Corps de base
- A1 guide de précision
- A2 arrosage intégré
- A3 fixation

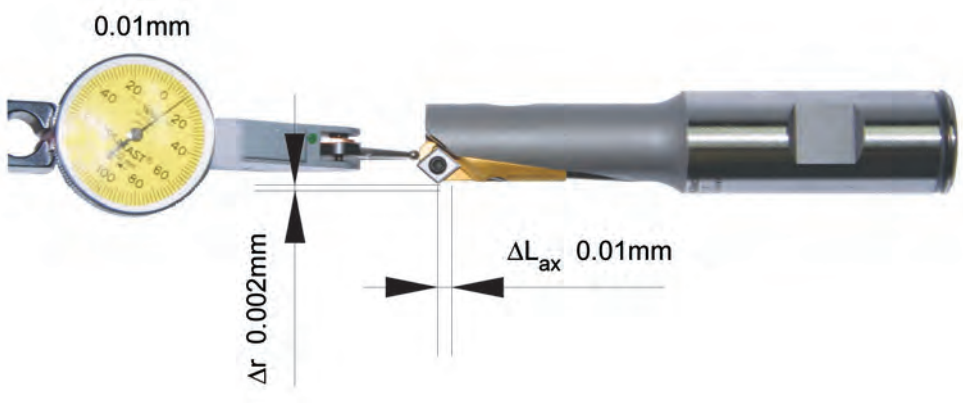
B Cassette pour plaquette
C Vis de fixation
D Vis d'ajustage

2.) Opération d'ajustage

Attention
Ne jamais tourner la vis D sans desserrer la vis C.

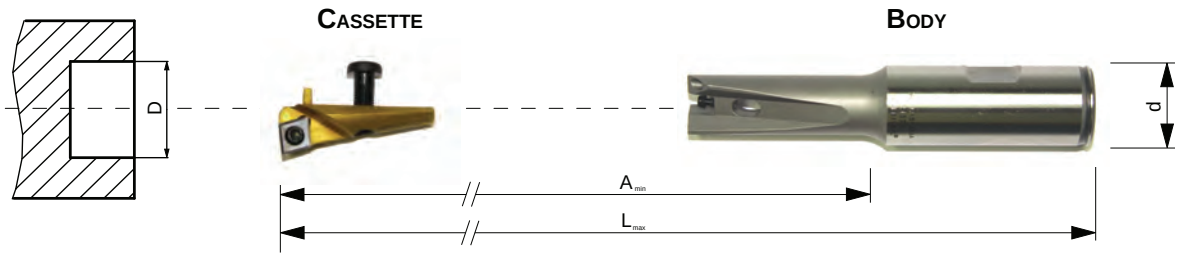
a) Mesurer le perçage d'essai (-> différence radiale)
b) Calculer la correction axiale du rayon par rapport à la différence radiale (le rayon change de 0.002mm pour une correction axiale de 0.01mm)
c) Installer le comparateur (contrôler la correction axiale)
d) Desserrer la vis de fixation C
e) Ajuster la correction axiale en tournant la vis d'ajustage D
f) Resserrer la vis C à fond "Mini": 2.5 Nm, "Standard": 4.0 Nm *)
g) Vérifier les indications sur le comparateur

*) Nous recommendons l'utilisation d'une clef dynamométrique



DENITOOL®

VARIO® MINI / VARIO® STANDARD



Baugrösse Size Dimension	[mm] D_{min}	D_{max}	d	L_{max}	A_{min}	WSP Insert Plaquette		Kassette Cassette Cassette Artikel-Nr.	Grundkörper Body Corps de base Article No.	Vario komplett Vario assemly Vario complèt No. d'article
1 'Mini'	9.8	10.2	16	84	27	WC. 0201..	T20.037 & T6F	VAK01049WU02	VAS0109W016A	VAR0109W016A049WU02
	10.2	10.6						051WU02		051WU02
	10.6	11.0						053WU02		053WU02
	11.0	11.4						055WU02		055WU02
	11.4	11.8						057WU02		057WU02
1 'Mini'	9.8	10.2	16	84	27	CD. 0401..	T18.Z30A & T5F	VAK01049CL04	VAS0109W016A	VAR0109W016A049CL04
	10.2	10.6						051CL04		051CL04
	10.6	11.0						053CL04		053CL04
	11.0	11.4						055CL04		055CL04
	11.4	11.8						057CL04		057CL04
2 'Standard'	11.8	12.2	16	90	33.5	CP. 05T1..	T22.045 & T7F	VAK02057CU05	VAS0211W016A	VAR0211W016A057CU05
	12.2	12.6						059CU05		059CU05
	12.6	13.0						061CU05		061CU05
	13.0	13.4						063CU05		063CU05
	13.4	13.8						065CU05		065CU05
2 'Standard'	13.8	14.2	16	96	40.5	CP. 05T1..	T22.045 & T7F	VAK02057CU05	VAS0213W016A	VAR0213W016A057CU05
	14.2	14.6						059CU05		059CU05
	14.6	15.0						061CU05		061CU05
	15.0	15.4						063CU05		063CU05
	15.4	15.8						065CU05		065CU05
2 'Standard'	15.8	16.2	20	104	43.5	CP. 05T1..	T22.045 & T7F	VAK02057CU05	VAS0215W020A	VAR0215W020A057CU05
	16.2	16.6						059CU05		059CU05
	16.6	17.0						061CU05		061CU05
	17.0	17.4						063CU05		063CU05
	17.4	17.8						065CU05		065CU05
2 'Standard'	17.8	18.2	20	110	50.5	CP. 05T1..	T22.045 & T7F	VAK02057CU05	VAS0217W020A	VAR0217W020A057CU05
	18.2	18.6						059CU05		059CU05
	18.6	19.0						061CU05		061CU05
	19.0	19.4						063CU05		063CU05
	19.4	19.8						065CU05		065CU05
2 'Standard'	19.8	20.2	25	122	54.5	CP. 05T1..	T22.045 & T7F	VAK02057CU05	VAS0219W025A	VAR0219W025A057CU05
	20.2	20.6						059CU05		059CU05
	20.6	21.0						061CU05		061CU05
	21.0	21.4						063CU05		063CU05
	21.4	21.8						065CU05		065CU05

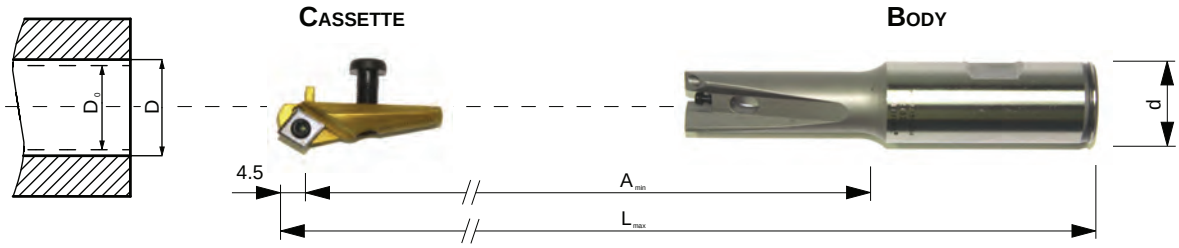
Achtung Der Einsatzbereich D_{min}- D_{max} ist nur bei Verwendung von Denitool WSP in Toleranz G mit R02 & R04 gewährleistet

Caution The range of operation D_{min}- D_{max} is only guaranteed when using Denitool inserts in tolerance G with R02 & R04

Attention La portée d'opération D_{min}- D_{max} n'est garanti qu' avec des plaquettes Denitool en tolerance G et avec R02 & R04

Andere Geometrien auf Anfrage / Different geometries upon request / Géométries differentes sur demande

VARIO® MINI / VARIO® STANDARD



Baugrösse Size Dimension	[mm]						WSP Insert Plaquette	Kassette Cassette Cassette	Grundkörper Body Corps de base	Vario komplett Vario assemly Vario complèt
	D_{min}	D_{max}	d	L_{max}	A_{min}	D_0 *)		Artikel-Nr.	Article No.	No. d'article
1 'Mini'										
1 'Mini'										
2 'Standard'	11.8	12.2	16	90	29	11.3	CP. 05T1..	VAK02057CX05	VAS0211W016A	VAR0211W016A057CX05
	12.2	12.6						059CX05		059CX05
	12.6	13.0						061CX05		061CX05
	13.0	13.4						063CX05		063CX05
	13.4	13.8						065CX05		065CX05
2 'Standard'	13.8	14.2	16	96	36	13.3	CP. 05T1..	VAK02057CX05	VAS0213W016A	VAR0213W016A057CX05
	14.2	14.6						059CX05		059CX05
	14.6	15.0						061CX05		061CX05
	15.0	15.4						063CX05		063CX05
	15.4	15.8						065CX05		065CX05
2 'Standard'	15.8	16.2	20	104	39	15.3	CP. 05T1..	VAK02057CX05	VAS0215W020A	VAR0215W020A057CX05
	16.2	16.6						059CX05		059CX05
	16.6	17.0						061CX05		061CX05
	17.0	17.4						063CX05		063CX05
	17.4	17.8						065CX05		065CX05
2 'Standard'	17.8	18.2	20	110	46	17.3	CP. 05T1..	VAK02057CX05	VAS0217W020A	VAR0217W020A057CX05
	18.2	18.6						059CX05		059CX05
	18.6	19.0						061CX05		061CX05
	19.0	19.4						063CX05		063CX05
	19.4	19.8						065CX05		065CX05
2 'Standard'	19.8	20.2	25	122	50	19.3	CP. 05T1..	VAK02057CX05	VAS0219W025A	VAR0219W025A057CX05
	20.2	20.6						059CX05		059CX05
	20.6	21.0						061CX05		061CX05
	21.0	21.4						063CX05		063CX05
	21.4	21.8						065CX05		065CX05

Achtung Der Einsatzbereich D_{min}- D_{max} ist nur bei Verwendung von Denitool WSP in Toleranz G mit R02 & R04 gewährleistet
*) Bei Einsatz von Kassetten vom Typ CX05 muss die Vorbohrung mindestens D_0 betragen

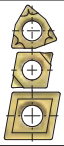
Caution The range of operation D_{min}- D_{max} is only guaranteed when using Denitool inserts in tolerance G with R02 & R04
*) When using CX05 type cassettes the dia of the rough-bore must be at least D_0

Attention La portée d'opération D_{min}- D_{max} n'est garanti qu' avec des plaquettes Denitool en tolerance G et avec R02 & R04
*) En cas d'utilisation des cassettes du type CX05 le perçage préliminaire doit être effectué au minimum avec diamètre D_0

Andere Geometrien auf Anfrage / Different geometries upon request / Géométries differentes sur demande

ZUBEHÖR / ACCESSORIES / ACCESSOIRES

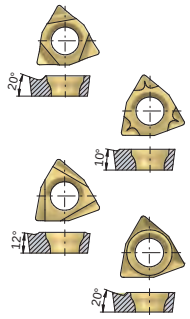
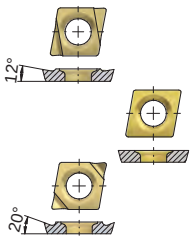
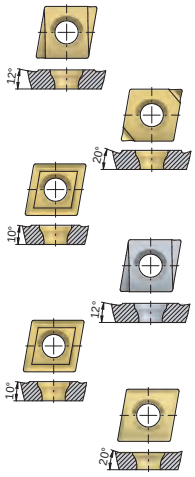
Baugrösse Size Dimension	Bezeichnung Designation Désignation	Inhalt Content Contenu		Artikel-Nr. Article No. No. d'article
'Mini'	Zubehörset Set of accessories Jeu d'accessoires 1	1 Stk Befestigungsschraube Fixing screw T30.0850010 Vis de fixation 5 pcs Justierschraube Adjusting screw T20.0340008 Vis d'ajustage 1 pce Fahnendreher Torx driver T6F Outil Torx		**VAZ01 001**
	Handdreher T10 für Befestigungsschraube Screwdriver T10 for fixing screw Tournevis T10 pour vis de fixation			**T10H**
'Standard'	Zubehörset Set of accessories Jeu d'accessoires 2	1 Stk Befestigungsschraube Fixing screw T40.1000009 Vis de fixation 5 pcs Justierschraube Adjusting screw T30.0900001 Vis d'ajustage 1 pce Fahnendreher Torx driver T8F Outil Torx		**VAZ02 001**
	Handdreher T15 für Befestigungsschraube Screwdriver T15 for fixing screw Tournevis T15 pour vis de fixation			**T15H**

Platten-Typ Insert type Type de plaquette			
 WC.. 02	T20.037	T6F	
CD.. 04	T18.Z30A	T5F	
CP.. 05	T22.045	T7F	

Vario® MIT HARTMETALLSCHAFT / WITH CARBIDE SHANK / AVEC TIGE EN CARBURE

DENITOOL®

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

Baugrösse Size Dimension		Artikel-Nr. Article No. No. d'article	l	d	+/-	s	m	+/-	r	d_1	DX2	P25	DX20	DP25	DX30	DP35	DX50	DP55	DX52	DP57	DX70	DT55	DT255	DT355
1 'Mini'		**WCET 020102 FN-20**	2.3	3.97	0.025	1.59	0.992	0.025	0.2	2.3	■		■	□	□		□							
		WCET 020104 FN-20					0.881		0.4		■		■	■	□		□							
		WCGT 020102 EN	2.3	3.97	0.025	1.59	0.992	0.025	0.2	2.3	■		■	■	■		■					■	■	■
		WCGT 020104 EN					0.881		0.4		■		■	■	□							■	■	■
		WCGT 020102 FL	2.3	3.97	0.025	1.59	0.992	0.025	0.2	2.3	■		■	■	■		■					■	■	■
		WCGT 020104 FL					0.881		0.4		■		■	■	□							■	■	■
		WCGT 020102 FN-20	2.3	3.97	0.025	1.59	0.992	0.025	0.2	2.3	■		■	□	□									
		WCGT 020104 FN-20					0.881		0.4		■		■	■	□									
		**CDGT 040102 FL**	4.0	3.97	0.025	1.0	0.992	0.025	0.2	2.2	■		■	■	□									
		CDGT 040104 FL					0.881		0.4		■		■	■	□									
		CDGT 040102 FN	4.0	3.97	0.025	1.0	0.992	0.025	0.2	2.2	■		■	□	□									
		CDGT 040104 FN					0.881		0.4		■		■	□	□									
		CDGW 040102 FN	4.0	3.97	0.025	1.0	0.992	0.025	0.2	2.2	■		■	■	□									
		CDGW 040104 FN					0.881		0.4		■		■	■	□									
2 'Standard'		**CPET 05T102 FL**	5.6	5.56	0.025	1.97	1.432	0.025	0.2	2.5	■		■	■	□									
		CPET 05T104 FL					1.323		0.4		■		■	■	□									
		CPET 05T102 FN-20	5.6	5.56	0.025	1.97	1.432	0.025	0.2	2.5	■		■	□	□		□							
		CPET 05T104 FN-20					1.323		0.4		■		■	□	□		□							
		CPGT 05T102 EN	5.6	5.56	0.025	1.97	1.432	0.025	0.2	2.5	■	■		■		■		□		■		■	■	■
		CPGT 05T104 EN					1.323		0.4		■	■		■		■		□		■		■	■	■
		CPGT 05T102 FL	5.6	5.56	0.025	1.97	1.432	0.025	0.2	2.5												■	■	■
		CPGT 05T104 FL					1.323		0.4													■	■	■
		CPGT 05T102 FN	5.6	5.56	0.025	1.97	1.432	0.025	0.2	2.5	■		■	■	□		□		□					
		CPGT 05T104 FN					1.323		0.4		■		■	■	□		□		□					
		CPGT 05T102 FN-20	5.6	5.56	0.025	1.97	1.432	0.025	0.2	2.5	■		■	□	□		□		□					
		CPGT 05T104 FN-20					1.323		0.4		■		■	□	□		□		□					

■ ab Lager
stock item
disponible du stock

□ auf Anfrage
upon request
sur demande

Sondergeometrien auf Anfrage
special geometries upon request
des géometries spéciaux sur demande

Achtung Der Einsatzbereich D_{min}- D_{max} ist nur bei Verwendung von Denitool WSP in Toleranz G mit R02 & R04 gewährleistet !

Caution The range of operation D_{min}- D_{max} is only guaranteed when using Denitool inserts in tolerance G with R02 & R04 !

Attention La portée d'opération D_{min}- D_{max} n'est garanti qu' avec des plaquettes Denitool en tolerance G et avec R02 & R04 !

NEW

DENITOOL®

SYSTEMWERKZEUGE FÜR ANGETRIEBENE EINHEITEN

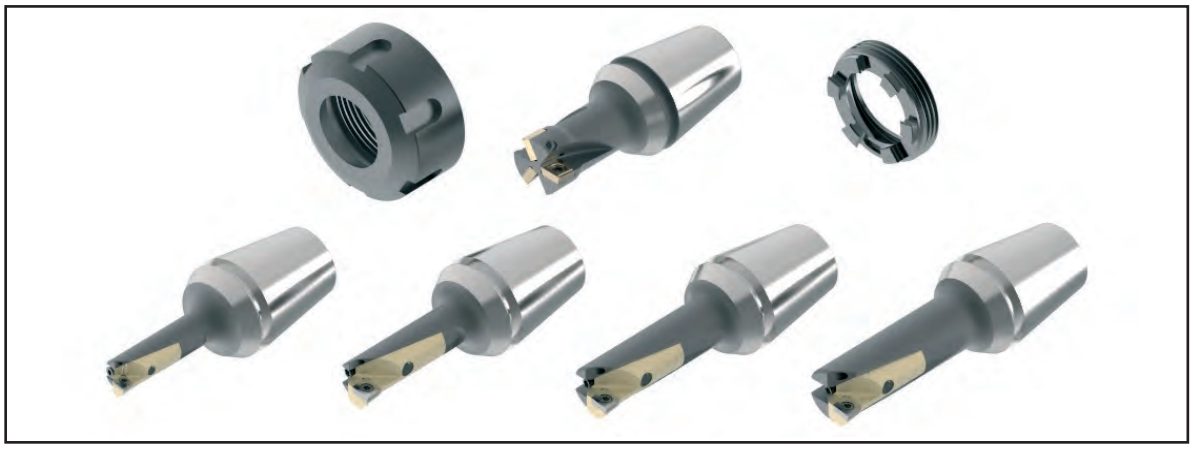
SYSTEM TOOLS FOR LIVE TOOLING

SYSTÈME DES OUTILS POUR DES UNITÉS ENTRAÎNÉS

Angetriebene Werkzeuge mit ER 25 Schnittstelle

Driven tooling portfolio for usage with ER 25 interface

Outils entraînés avec interface ER 25



- **Hochleistungs Fräser-System mit hochstabiler Schnittstelle**
- **Umfangreiches Sortiment mit Denitool Vario® Feinbohrwerkzeugen**

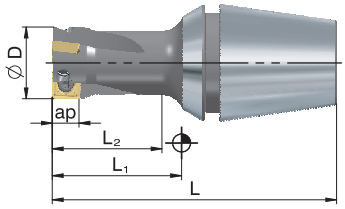
- ***Premiere performance milling cutter system with highly rigid interface***
- ***Expanded live tool offering with introduction of Denitool's Vario® system for high precision boring***

- **Système de fraises à haute performance avec interface à haute rigidité**
- **Large gamme avec système de précision d'alésage réglable Denitool Vario®**

• ER 25 & STANDARD MUTTER / STANDARD LOCKNUT / ECROU STANDARD

PLAN- UND ECKFRÄSER POSITIV 90°
CORNER AND FACE MILLING CUTTERS POSITIVE 90°
FRAISES EN BOUT À SURFACER ET À CHANFREINER POSITIVES 90°

90°



NEW

Artikel-Nr. Article No. No. d'article	[mm] ⌀D	⌀d	⌀A	ER	L	L_1	L_2	ap	z			
LTS 1625 RSAS-06	16.0			25	63.0	28.7	27.3	5.9	3	SP.. 0602...	T25.055	T7F

Fräser mit integrierter Kühlmittelbohrung / Milling cutter with internal coolant / Fraise avec arrosage centralisé

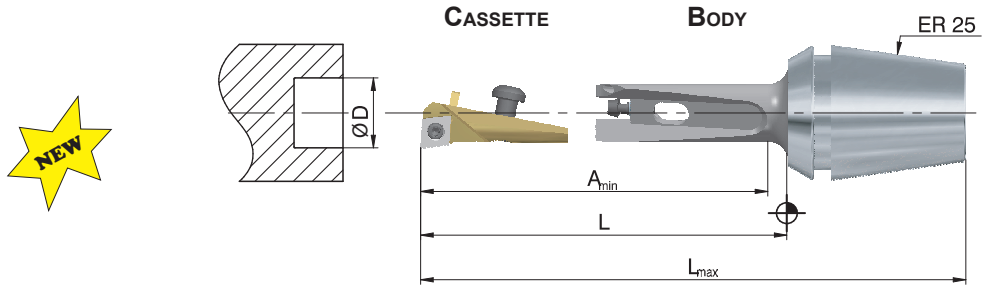
WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. Article No. No. d'article	[mm] l	⌀d	+/-	s	+/-	m	+/-	R	$⌀d_1$	DC 10	DX 2	DX 20	DX 30	DX 32	DX 50	DX 52	DT 55	DT 255	DT 355
	SPHT 060204 EN	6.35	6.35	0.013	2.38	0.025	1.152	0.013	0.4	2.8		■			■					
	SPHW 060204 FN	6.35	6.35	0.013	2.38	0.025	1.149	0.013	0.4	2.8						■				

NEW

NEW

VARIO® MINI / VARIO® STANDARD



Baugrösse Size Dimension	[mm]					WSP Insert Plaquette		Kassette Cassette Cassette	Grundkörper Body Corps de base	Vario komplett Vario assembly Vario complèt
	D_{min}	D_{max}	L_{1max}	L_{max}	A_{min}			Artikel-Nr.	Article No.	No. d'article
1 'Mini' ER 25	9.8	10.2	35.3	69.6	29.4	WC. 0201..	T20.037 & T6F	VAK01 049WU02	LTS 0925 VAS 01	LTS 0925 VAR01 049WU02
	10.2	10.6	↓	↓	↓	↓	↓	051WU02	↓	051WU02
	10.6	11.0	↓	↓	↓	↓	↓	053WU02	↓	053WU02
	11.0	11.4	↓	↓	↓	↓	↓	055WU02	↓	055WU02
	11.4	11.8	↓	↓	↓	↓	↓	057WU02	↓	057WU02
1 'Mini' ER 25	9.8	10.2	35.3	69.6	29.4	CD. 0401..	T18.Z30A & T5F	VAK01 049CL04	LTS 0925 VAS 01	LTS 0925 VAR01 049CL04
	10.2	10.6	↓	↓	↓	↓	↓	051CL04	↓	051CL04
	10.6	11.0	↓	↓	↓	↓	↓	053CL04	↓	053CL04
	11.0	11.4	↓	↓	↓	↓	↓	055CL04	↓	055CL04
	11.4	11.8	↓	↓	↓	↓	↓	057CL04	↓	057CL04
2 'Standard' ER 25	11.8	12.2	39.2	73.5	34.5	CP. 05T1..	T22.045 & T7F	VAK02 057CU05	LTS 1125 VAS02	LTS 1125 VAR02 057CU05
	12.2	12.6	↓	↓	↓	↓	↓	059CU05	↓	059CU05
	12.6	13.0	↓	↓	↓	↓	↓	061CU05	↓	061CU05
	13.0	13.4	↓	↓	↓	↓	↓	063CU05	↓	063CU05
	13.4	13.8	↓	↓	↓	↓	↓	065CU05	↓	065CU05
2 'Standard' ER 25	13.8	14.2	45.2	79.5	40.9	CP. 05T1..	T22.045 & T7F	VAK02 057CU05	LTS 1325 VAS02	LTS 1325 VAR02 057CU05
	14.2	14.6	↓	↓	↓	↓	↓	059CU05	↓	059CU05
	14.6	15.0	↓	↓	↓	↓	↓	061CU05	↓	061CU05
	15.0	15.4	↓	↓	↓	↓	↓	063CU05	↓	063CU05
	15.4	15.8	↓	↓	↓	↓	↓	065CU05	↓	065CU05
2 'Standard' ER 25	15.8	16.2	49.2	83.5	44.0	CP. 05T1..	T22.045 & T7F	VAK02 057CU05	LTS 1525 VAS02	LTS 1525 VAR02 057CU05
	16.2	16.6	↓	↓	↓	↓	↓	059CU05	↓	059CU05
	16.6	17.0	↓	↓	↓	↓	↓	061CU05	↓	061CU05
	17.0	17.4	↓	↓	↓	↓	↓	063CU05	↓	063CU05
	17.4	17.8	↓	↓	↓	↓	↓	065CU05	↓	065CU05

Achtung Der Einsatzbereich D_{min}- D_{max} ist nur bei Verwendung von Denitool WSP in Toleranz G mit R02 & R04 gewährleistet

Caution The range of operation D_{min}- D_{max} is only guaranteed when using Denitool inserts in tolerance G with R02 & R04

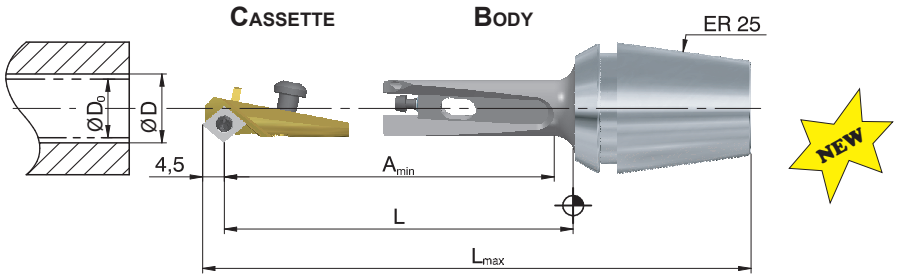
Attention La portée d'opération D_{min}- D_{max} n'est garanti qu' avec des plaquettes Denitool en tolerance G et avec R02 & R04

Alle Vario® mit integrierter Kühlmittelbohrung / All Vario® with internal coolant / Tous les Vario® avec arrosage centralisé

Für Wendeplatten siehe Katalog / Please refer to catalog for insert details / Pour des plaquettes voir catalogue svp

Andere Geometrien auf Anfrage / Different geometries upon request / Géométries differentes sur demande

VARIO® STANDARD



Baugrösse Size Dimension	[mm]						WSP Insert Plaquette	Kassette Cassette Cassette	Grundkörper Body Corps de base	Vario komplett Vario assembly Vario complèt
	D_{min}	D_{max}	L_{1max}	L_{max}	A_{min}	D_0 *)		Artikel-Nr.	Article No.	No. d'article
1 'Mini' ER 25										
1 'Mini' ER 25										
2 'Standard' ER 25	11.8	12.2	39.2	73.5	30.3	11.3	CP. 05T1..	VAK02057CX05	LTS 1125 VAS02	LTS 1125 VAR02057CX05
	12.2	12.6	↓	↓	↓		↓	059CX05	↓	059CX05
	12.6	13.0						061CX05		061CX05
	13.0	13.4						063CX05		063CX05
	13.4	13.8						065CX05		065CX05
2 'Standard' ER 25	13.8	14.2	45.2	79.5	36.7	13.3	CP. 05T1..	VAK02057CX05	LTS 1325 VAS02	LTS 1325 VAR02057CX05
	14.2	14.6	↓	↓	↓		↓	059CX05	↓	059CX05
	14.6	15.0						061CX05		061CX05
	15.0	15.4						063CX05		063CX05
	15.4	15.8						065CX05		065CX05
2 'Standard' ER 25	15.8	16.2	49.2	83.5	39.8	15.3	CP. 05T1..	VAK02057CX05	LTS 1525 VAS02	LTS 1525 VAR02057CX05
	16.2	16.6	↓	↓	↓		↓	059CX05	↓	059CX05
	16.6	17.0						061CX05		061CX05
	17.0	17.4						063CX05		063CX05
	17.4	17.8						065CX05		065CX05

Achtung Der Einsatzbereich D_{min}- D_{max} ist nur bei Verwendung von Denitool WSP in Toleranz G mit R02 & R04 gewährleistet
*) Bei Einsatz von Kassetten vom Typ CX05 muss die Vorbohrung mindestens D_0 betragen

Caution The range of operation D_{min}- D_{max} is only guaranteed when using Denitool inserts in tolerance G with R02 & R04
*) When using CX05 type cassettes the dia of the rough-bore must be at least D_0

Attention La portée d'opération D_{min}- D_{max} n'est garanti qu' avec des plaquettes Denitool en tolerance G et avec R02 & R04
*) En cas d'utilisation des cassettes du type CX05 le perçage préliminaire doit être effectué au minimum avec diamètre D_0

Alle Vario® mit integrierter Kühlmittelbohrung / All Vario® with internal coolant / Tous les Vario® avec arrosage centralisé

Für Wendeplatten siehe Katalog / Please refer to catalog for insert details / Pour des plaquettes voir catalogue svp

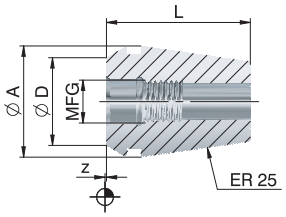
Andere Geometrien auf Anfrage / Different geometries upon request / Géométries differentes sur demande

NEW

DENITOOL®

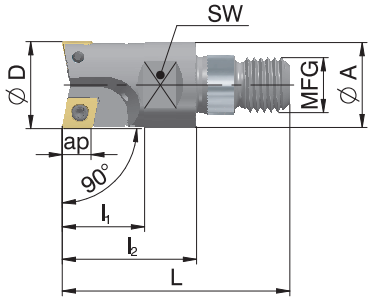
ADAPTER
ADAPTER ER 25 - MFG
ADAPTEUR

NEW



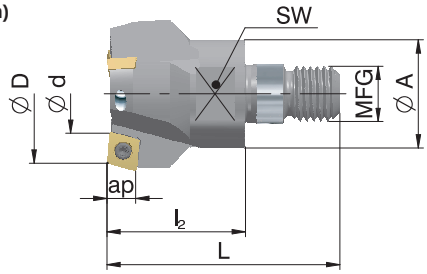
Artikel-Nr. Article No. No. d'article	[mm] øA	øD	L	z	MFG
LTS 0825 MM	26.0	20.5	34.0	0.34	8 x 1.00
LTS 1025 MM	26.0	20.5	34.0	0.34	10 x 1.25

MiniCutter 90° (MicroMill Program)



Artikel-Nr. Article No. No. d'article	[mm] øD	øA	ap	L	l_1	l_2	MFG	z	SW			
MM 0812 RCAS-05	8	11.5	5	34	10	20	8 x 1	1	10	CP.. 05T1..	T22.045	T7F
MM 1012 RCAS-05	10	11.5	5	39	15	25	8 x 1	1	10	CP.. 05T1..	T22.045	T7F
MM 1212 RCAS-05	12	11.5	5	39	15	25	8 x 1	1	10	CP.. 05T1..	T22.045	T7F
MM 1616 RCAS-05	16	15.5	5	42	15	25	10 x 1.25	2	13	CP.. 05T1..	T22.045	T7F
MM 2020 RCAS-05	20	19.5	5	42	15	25	10 x 1.25	2	17	CP.. 05T1..	T22.045	T7F

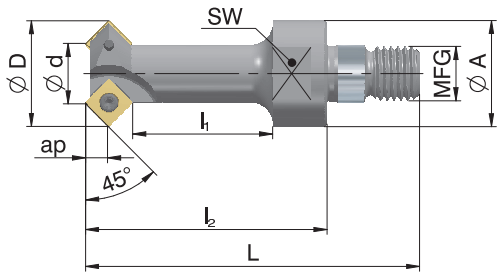
MiniCutter 75° (MicroMill Program)



Artikel-Nr. Article No. No. d'article	[mm] øD	ød	øA	ap	L	l_2	MFG	z	SW			
MF 2520 RCBS-05	27.7	25.0	19.5	4.5	42	25	10 x 1.25	3	17	CP.. 05T1..	T22.045	T7H

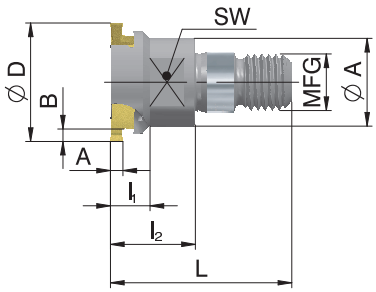
Alle Fräser mit integrierter Kühlmittelbohrung / All milling cutters with internal coolant / Toutes les fraises avec arrosage centralisé

Chamfer Cutter 45° (MicroMill Program)



Artikel-Nr. Article No. No. d'article	[mm] øD	ød	øA	ap	øa	L	l_1	l_2	MFG	z	SW			
FA 0216 RSDS-06	11	4	15.5	4	7	56	20.4	39	10 x 1.25	1	13	SC.. 0602..	T25.055	T7F
FA 1120 RSDS-06	19.5	11.4	19.5	4	10.5	61	25.4	44	10 x 1.25	2	17	SC.. 0602..	T25.055	T7F
FA 1616 RSDS-09	29	16	15.5	5	--	48.5	--	31.5	10 x 1.25	2	13	SC.. 09T3..	T40.082	T15H
FA 2020 RSDS-09	33	20	19.5	5	--	53.5	--	36.5	10 x 1.25	2	17	SC.. 09T3..	T40.082	T15H

Slot Cutter (MicroMill Program)



Artikel-Nr. Article No. No. d'article	[mm] øD	øA	$A_{max.}$	$B_{max.}$	L	l_1	l_2	MFG	z	SW			
MS 2116 RNAS-01	21	15.5	2.70	1.90	32	--	15	10 x 1.25	2	13	NFL-1	T30.090	T8F

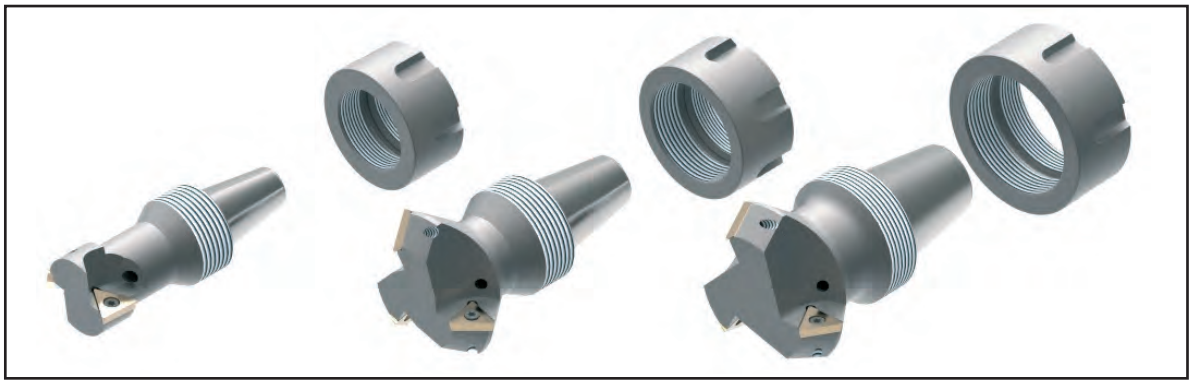
Alle Fräser mit integrierter Kühlmittelbohrung / All milling cutters with internal coolant / Toutes les fraises avec arrosage centralisé

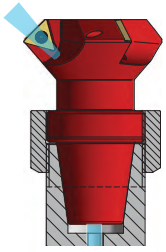
Für Wendeplatten siehe Katalog / Please refer to catalog for insert details / Pour des plaquettes voir catalogue svp

Hochleistungsfräser System mit hochstabiler Schnittstelle und DPC® Differenzialverschraubung, für angetriebene Werkzeugeinheiten etc. mit Spannzangenfutter ER 16 / 20 / 25

High performance milling cutter system with highly stable interface and DPC® differential locknut, for live tooling units etc. with collet chuck ER 16 / 20 / 25

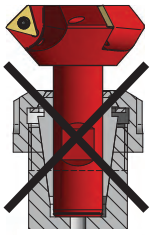
Système de fraises à haute performance avec interface à haute stabilité et **fixation differentielle** DPC®, pour des outils entraînés etc. avec mandrin à pince ER 16 / 20 / 25





DPC® System

Système DPC®



Schaftfräser konventionell
(Zyl. Schaft, ER Spannzange)

Standard end mill
(Cyl. shank, ER collet)

Fraise conventionnelle
(Tige cylindrique, pince ER)

Das patentierte, hochstabile Hochleistungsfräser System

- Vielfach höhere Werkzeugstabilität gegenüber Schaftfräsern
- Passt **ohne Modifikation** auf handelsübliche Spindeln mit Aussengewinde ERS (Standard) oder ERM (Mini-mutter)
- Lieferbar in Ø 20 - ER 16 / 25 - ER 20 / 32 - ER 25
- Standard-Winkel 45° / 60° / 90° andere Winkel auf Anfrage

The patented extremely stable high performance milling cutter system

- Much higher tool stability compared to standard end mills
- Fits **without modification** to commercially available spindles with male thread ERS (Standard) or ERM (Mini-nut)
- Available in dia. 20 - ER 16 / 25 - ER 20 / 32 - ER 25
- Standard angles 45° / 60° / 90° other angles upon request

Le système breveté de fraises à haute performance à haute stabilité

- Stabilité beaucoup plus élevé par rapport aux fraises conventionelles
- S'adapte **sans modification** aux broches avec filetage mâle ERS (Standard) ou ERM (Ecrou mini)
- Disponible en Ø 20 - ER 16 / 25 - ER 20 / 32 - ER 25
- Angles standard 45° / 60° / 90° d'autres angles sur demande

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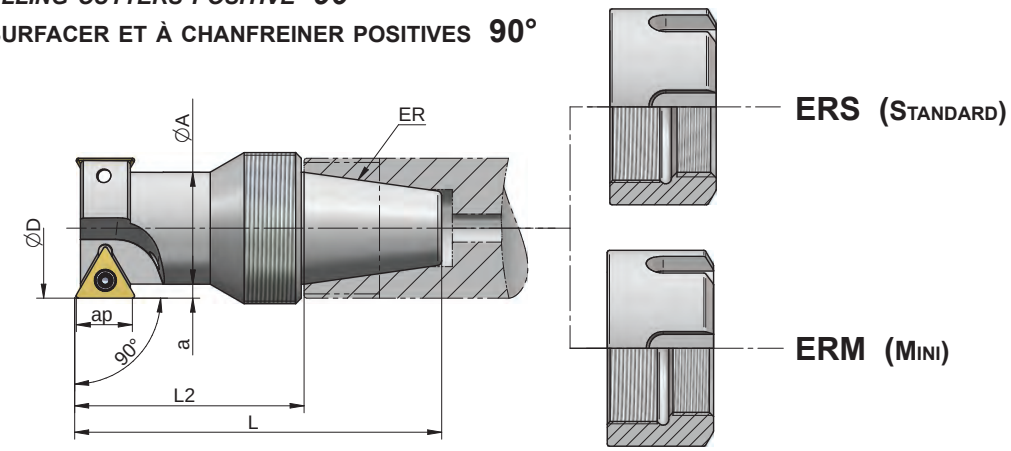
PLAN- UND ECKFRÄSER POSITIV 90°
CORNER AND FACE MILLING CUTTERS POSITIVE 90°
FRAISES EN BOUT À SURFACER ET À CHANFREINER POSITIVES 90°

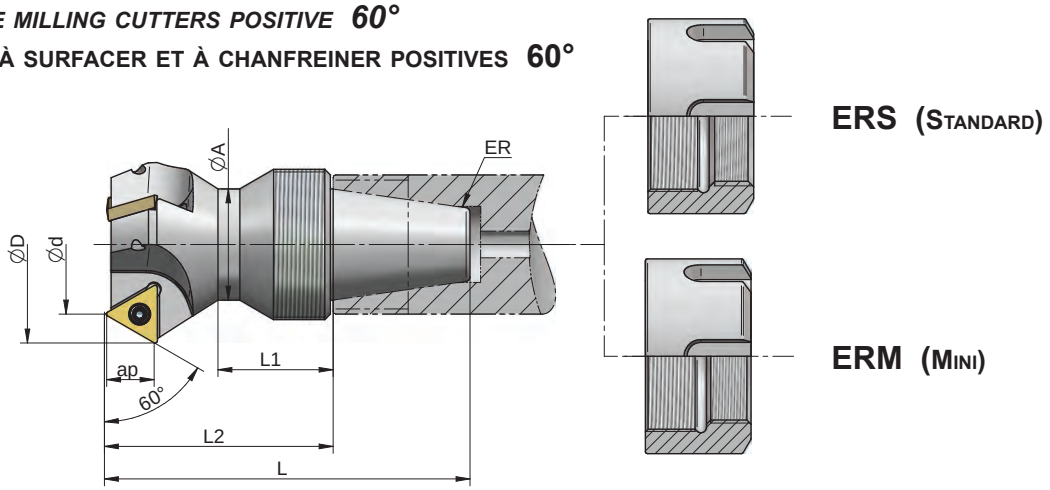
90°



Artikel-Nr. Article No. No. d'article	[mm]									ERS	ERM			
	⌀D	⌀d	⌀A/ER	L	L_1	L_2	a	ap	z					
FC 2016 RTAS-11	20.0		16	61.9	20.7	40.7	2.0	9.0	2	TM ERS-16	TM ERM-16	TPHW 1102.. TPHT 1102..	T25.055	T7F
FC 2520 RTAS-11	25.0		20	65.3	20.7	40.7	2.5	9.0	2	TM ERS-20	TM ERM-20			
FC 3225 RTAS-11	32.0		25	66.7	20.7	40.7	3.5	9.0	3	TM ERS-25	TM ERM-25			

Alle Fräser mit integrierter Kühlmittelbohrung / All milling cutters with internal coolant / Toutes les fraises avec arrosage centralisé

PLAN- UND FASENFRÄSER POSITIV 60°
CORNER AND FACE MILLING CUTTERS POSITIVE 60°
FRAISES EN BOUT À SURFACER ET À CHANFREINER POSITIVES 60°

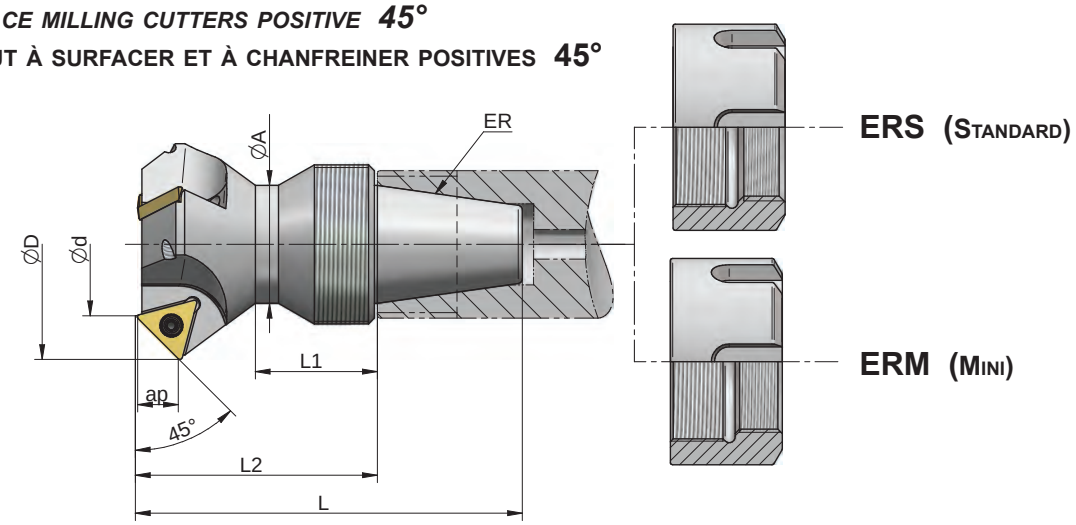


Artikel-Nr. Article No. No. d'article	[mm]									ERS	ERM			
	⌀D	⌀d	⌀A/ER	L	L_1	L_2	a	ap	z					
FC 2016 RTES-11	29.8	20	16	61.9	20.7	40.7		7.5	2	TM ERS-16	TM ERM-16	TPHW 1102.. TPHT 1102..	T25.055	T7F
FC 2520 RTES-11	34.8	25	20	65.3	20.7	40.7		7.5	3	TM ERS-20	TM ERM-20			
FC 3225 RTES-11	41.8	32	25	66.7	20.7	40.7		7.5	3	TM ERS-25	TM ERM-25			

Alle Fräser mit integrierter Kühlmittelbohrung / All milling cutters with internal coolant / Toutes les fraises avec arrosage centralisé

PLAN- UND FASENFRÄSER POSITIV 45°
CORNER AND FACE MILLING CUTTERS POSITIVE 45°
FRAISES EN BOUT À SURFACER ET À CHANFREINER POSITIVES 45°

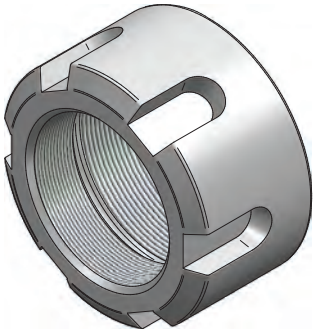
45°

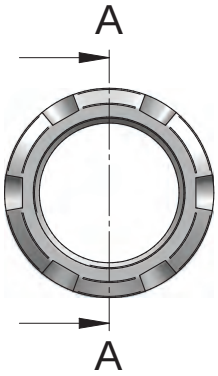


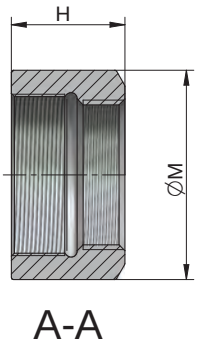
Artikel-Nr. Article No. No. d'article	[mm]													
	ØD	Ød	ØA / ER	L	L_1	L_2	a	ap	z	ERS	ERM			
FC 2016 RTDS-11	34.0	20	16	61.9	20.7	40.7		6.0	3	TM ERS-16	TM ERM-16	TPHW 1102.. TPHT 1102..	T25.055	T7F
FC 2520 RTDS-11	39.0	25	20	65.3	20.7	40.7		6.0	3	TM ERS-20	TM ERM-20			
FC 3225 RTDS-11	46.0	32	25	66.7	20.7	40.7		6.0	3	TM ERS-25	TM ERM-25			

Alle Fräser mit integrierter Kühlmittelbohrung / All milling cutters with internal coolant / Toutes les fraises avec arrosage centralisé

DIFFERENZIALMUTTERN FÜR ERS (STANDARD) UND ERM SPINDELN
DIFFERENTIAL LOCKNUTS FOR ERS (STANDARD) AND ERM SPINDLES
ECROUS DIFFÉRENTIELS POUR BROCHES ERS (STANDARD) ET ERM



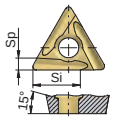
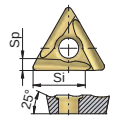
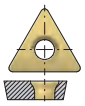




Artikel-Nr. Article No. No. d'article			[mm]		
	ERS	**ERM**	ØER	ØM	H
	TM ERS-16	**TM ERM-16**	16	32	17.5
	TM ERS-20	**TM ERM-20**	20	35	19.0
	TM ERS-25	**TM ERM-25**	25	42	20.0

Für ERS & ERM Differenzialmuttern bitte die Standard Schlüssel für ER Spannmuttern verwenden
Please use the standard keys for ER locknuts for both types of differential locknuts (ERS & ERM)
Utilisez les clés standard pour écrous ER pour les deux types d'écrous différentiels (ERS & ERM) s.v.p.

WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

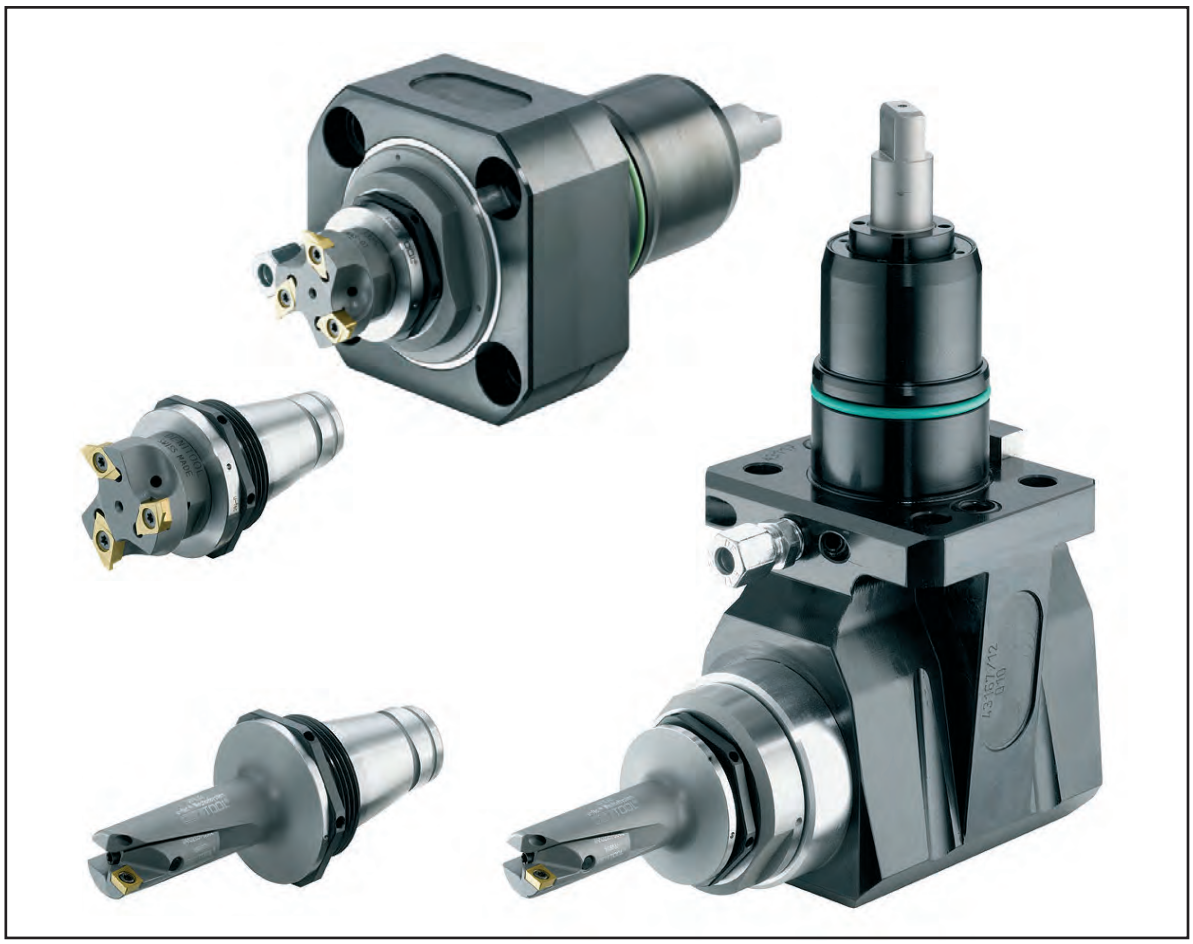
	Artikel-Nr. Article No. No. d'article	[mm] l	⌀d	s	R	m	⌀d_1	Sp	Sl	DX 2	P 25	DX 20	DP 25	DX 30	DP 35	DX 50	DP 55
*1) 	**TPHT 110202 ER/L**	11	6.35	2.38	0.2	9.33	2.85	1.7	6.6		■		■		□		□
	TPHT 110204 ER/L				0.4	9.13			6.7		■		■		□		□
	TPHT 110208 ER/L				0.8	8.73			6.7		■		■		□		□
*1) 	**TPHT 110202 FR/L**	11	6.35	2.38	0.2	9.33	2.85	1.7	6.9	■		■		□			
	TPHT 110204 FR/L				0.4	9.13			6.7	■		■		□			
	TPHT 110208 FR/L				0.8	8.73			6.4	■		■		□			
	**TPHW 110202 EN**	11	6.35	2.38	0.2	9.33	2.85				■		■		□		■
	TPHW 110204 EN				0.4	9.13					■		■		□		■
	TPHW 110208 EN				0.8	8.73					■		□		□		■
	TPHW 110202 FN	11	6.35	2.38	0.2	9.33	2.85			■		■		□		□	
	TPHW 110204 FN				0.4	9.13				■		■		■		■	
	TPHW 110208 FN				0.8	8.73				■		□		□		□	

*1) Rechte Ausführung
Right hand execution
Exécution droite

■ ab Lager
stock item
disponible du stock

□ auf Anfrage
upon request
sur demande

LIVE TOOLS FOR heimatec® u-tec®



Hochleistungsfräser-System mit hochstabiler Schnittstelle für u-tec® angetriebene Werkzeuge von heimatec®

- **Vielfach höhere Werkzeugstabilität gegenüber Schaftfräsern**
- **Umfangreiches Sortiment mit Fräsern und Denitool Vario® Feinbohr-einsätzen für angetriebene Werkzeuge**

Driven tooling portfolio for usage with heimatec® u-tec® interface

- ***Premiere performance milling cutter system with extremely rigid interface***
- ***Expanded live tool offering with introduction of Denitool's Vario® system for high precision boring***

► **Siehe Denitool®** Live Tooling u-tec® Katalog
► *Please refer to the Denitool® Live Tooling u-tec® catalog*
► **Se référer au catalogue Denitool®** Live Tooling u-tec®

HM BOHRSTANGEN FÜR PRÄZISIONS-AUSDREHKÖPFE

CARBIDE BARS FOR PRECISION BORING HEADS

BARRES EN CARBURE POUR TÊTES DE FORAGE

NEW

NEW

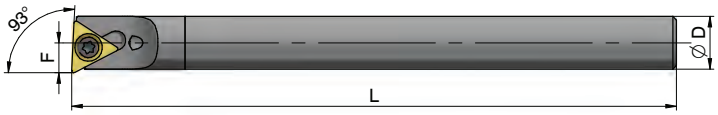
93°
SWUCR

Hartmetallschaft mit Kühlmittelbohrung / *Carbide shank with internal coolant* / Queue en carbure avec arrosage centralisé

Artikel-Nr. / *Article No.* / No. d'article R	[mm] ØD	L	F	B_{min}	A	a	l	h			
E05F SWUCR-02-0001	5	85	2.9	5.8	--	--	17°	--	WC.. 0201..	T20.037	T6F
E06G SWUCR-02-0001	6	95	3.6	7.3	--	--	12°	--	WC.. 0201..	T20.037	T6F

NEW

93°
STUPR

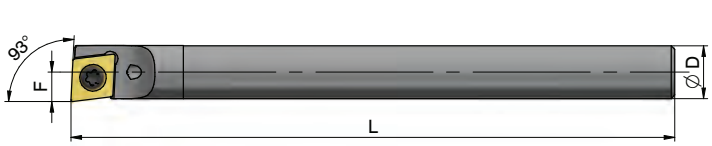


Hartmetallschaft mit Kühlmittelbohrung / *Carbide shank with internal coolant* / Queue en carbure avec arrosage centralisé

Artikel-Nr. / *Article No.* / No. d'article R	[mm] ØD	L	F	B_{min}	A	a	l	h			
E07F STUPR-07-0002	7	80	4.0	7.8	--	--	10°	--	TP.. 0702..	T20.041	T6F
E07X STUPR-07-0001	7	115	4.0	7.8	--	--	10°	--	TP.. 0702..	T20.041	T6F
E09H STUPR-07-0002	9	100	5.0	9.8	--	--	8°	--	TP.. 0702..	T20.041	T6F
E09X STUPR-07-0001	9	135	5.0	9.8	--	--	8°	--	TP.. 0702..	T20.041	T6F

NEW

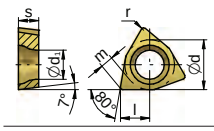
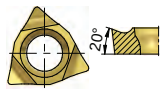
93°
SCUPR

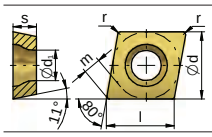
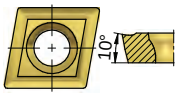
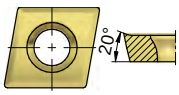
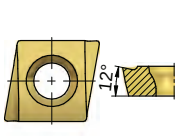


Hartmetallschaft mit Kühlmittelbohrung / *Carbide shank with internal coolant* / Queue en carbure avec arrosage centralisé

Artikel-Nr. / *Article No.* / No. d'article R	[mm] ØD	L	F	B_{min}	A	a	l	h			
E07F SCUPR-05-0006	7	80	4.0	7.8	--	--	10°	--	CP.. 05T1..	T22.041	T7F
E07X SCUPR-05-0007	7	115	4.0	7.8	--	--	10°	--	CP.. 05T1..	T22.041	T7F
E09H SCUPR-05-0004	9	100	5.0	9.8	--	--	8°	--	CP.. 05T1..	T22.041	T7F
E09X SCUPR-05-0003	9	135	5.0	9.8	--	--	8°	--	CP.. 05T1..	T22.041	T7F

HARTMETALL WENDESCHNEIDPLATTEN / CARBIDE INSERTS / PLAQUETTES EN CARBURE

	Artikel-Nr. *Article No.* No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	r	d_1	DX 2	DX 20	DX 30	DX 50	DT 55	DT 255	DT 355
	WCGT 020101 EN	2.3	3.97	0.025	1.59	0.13	1.048	0.025	0.1	2.3		■					
	WCGT 020102 EN						0.992		0.2			■	■	■	■	■	■
	WCGT 020104 EN						0.881		0.4			■	■	■	■	■	■
	WCGT 020101 FN-20	2.3	3.97	0.025	1.59	0.13	1.048	0.025	0.1	2.3	■	■					
	WCGT 020102 FN-20						0.992		0.2		■	■	■				
	WCGT 020104 FN-20						0.881		0.4		■	■	■				
	**WCET 020101 FN-20**	2.3	3.97	0.025	1.59	0.025	1.048	0.025	0.1	2.3	■	■					
	WCET 020102 FN-20						0.992		0.2		■	■	■				
	WCET 020104 FN-20						0.881		0.4		■	■	■				
	WCGT 020104 FN	2.3	3.97	0.025	1.59	0.13	0.881	0.025	0.4	2.3					■		
	WCGT 020102 FL	2.3	3.97	0.025	1.59	0.13	0.992	0.025	0.2	2.3	■	■	■		■	■	■
	WCGT 020104 FL						0.881		0.4		■	□	□		■	■	■

	Artikel-Nr. *Article No.* No. d'article	[mm] l	d	+/-	s	+/-	m	+/-	r	d_1	DX 2	DX 20	DX 30	DX 50	DX 70	DT 55	DT 255	DT 355
	**CPGT 05T102 EN**	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5					■	■	■	■
	CPGT 05T104 EN						1.323		0.4						■	■	■	■
	CPGT 05T101 FN	5.6	5.56	0.025	1.97	0.13	1.489	0.025	0.1	2.5		■						
	CPGT 05T102 FN						1.432		0.2			■	■	■				
	CPGT 05T104 FN						1.323		0.4			■	■	■				
	**CPGT 05T101 FN-20**	5.6	5.56	0.025	1.97	0.13	1.489	0.025	0.1	2.5	■	■						
	CPGT 05T102 FN-20						1.432		0.2		■	■	■	■				
	CPGT 05T104 FN-20						1.323		0.4		■	■	■	■				
	CPET 05T101 FN-20	5.6	5.56	0.025	1.97	0.025	1.489	0.025	0.1	2.5	■	■	□					
	CPET 05T102 FN-20						1.432		0.2		■	■	□					
	CPET 05T104 FN-20						1.323		0.4		■	■	■					
	**CPGT 05T102 FL**	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5						■	■	■
	CPGT 05T104 FL						1.323		0.4							■	■	■
	CPET 05T101 FL	5.6	5.56	0.025	1.97	0.025	1.489	0.025	0.1	2.5	■	■						
	CPET 05T102 FL						1.432		0.2		■	■	■	□				
	CPET 05T104 FL						1.323		0.4		■	■	■	□				

■ ab Lager
stock item
disponible du stock

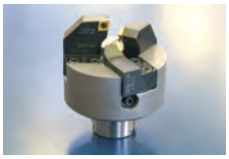
Special Tools

- ► MT-Tools HSK T40 NEW

- ► MT-Tools CHIRON PRECISION+ NEW

- ► Modulo D® System

- ► MultiCut® System



NEW

MT-Tools HSK T40

NEW

Denitool® Drehwerkzeuge für Mill Turn Maschinen

Super kompakte Werkzeuge für Innen- & Aussenbearbeitung mit Schnittstelle HSK T40

Denitool® Turning Tools for Mill Turn machines

Super compact tools for internal & external turning with interface HSK T40

Outils de tournage Denitool® pour machines multitâches

Outils super compacts pour le tournage interne et externe avec une interface HSK T40

- **Denitool® MT-Tools mit CAPTO C4 (PSC 40) auf Anfrage**
- ***Denitool® MT-Tools with CAPTO C4 (PSC 40) upon request***
- **Denitool® MT-Tools avec CAPTO C4 (PSC 40) sur demande**

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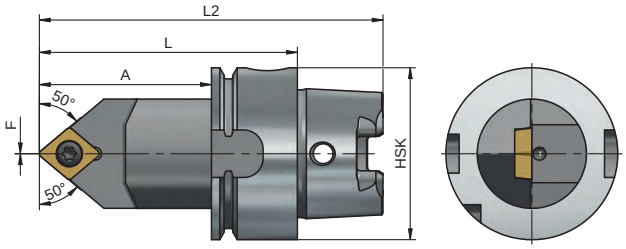
AUSSENBEARBEITUNG / *EXTERNAL TURNING* / TOURNAGE EXTÉRIEUR

50°

SCMCN

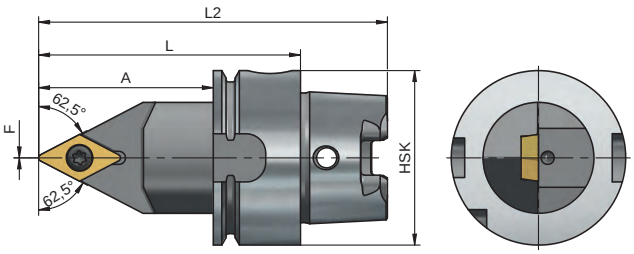


Artikel-Nr. / *Article No.* / No. d'article	[mm] HSK*)	L	L_2	F	A			
MT HT4D 060 CMN09	T40	60	80	0	40	CCG.. 09T3	T35.110	T15H

*) ICTM Standard

62.5°

SDNCN

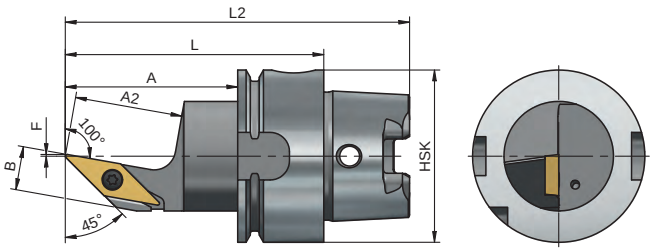


Artikel-Nr. / *Article No.* / No. d'article	[mm] HSK*)	L	L_2	F	A			
MT HT4D 060 DNN11	T40	60	80	0	40	DCG.. 11T3..	T35.110	T15H

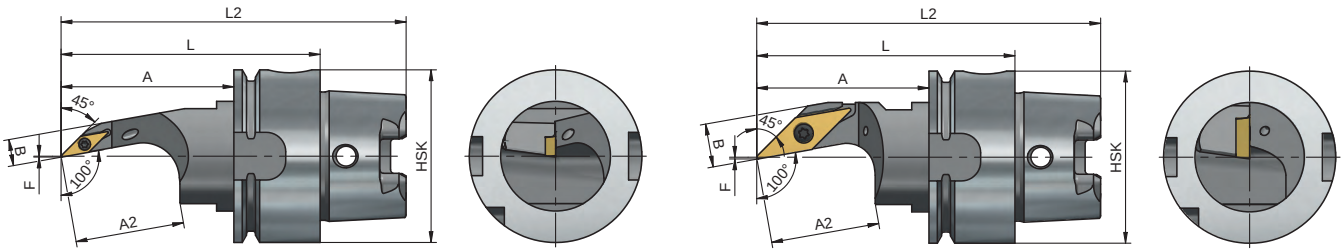
*) ICTM Standard

AUSSENBEARBEITUNG / *EXTERNAL TURNING* / TOURNAGE EXTÉRIEUR

100°
SVXCL



100°
SVXCR

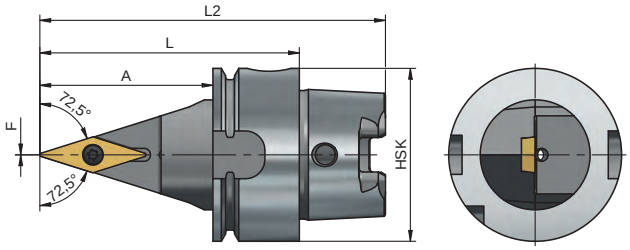


Artikel-Nr. / *Article No.* / No. d'article	[mm] HSK*)	L	L_2	F	A	A_2	B			
MT HT4D 060 VXL13	T40	60	80	0,4	40	25	10,1	VCG.. 1303..	T30.090	T8F
MT HT4D 060 VXR07	T40	60	80	0,2	40	25	6.1	VCG.. 0702..	T20.055	T6F
MT HT4D 060 VXR13	T40	60	80	0,4	40	25	10,1	VCG.. 1303..	T30.090	T8F

*) ICTM Standard

MT Tools in Ausführung R werden für rechte WSP's mit Wiper benötigt / Right hand inserts with Wiper need MT Tools in execution R / Les outils MT Tools en version R sont utilisés pour des plaquettes droites avec Wiper

72.5°
SVVCN



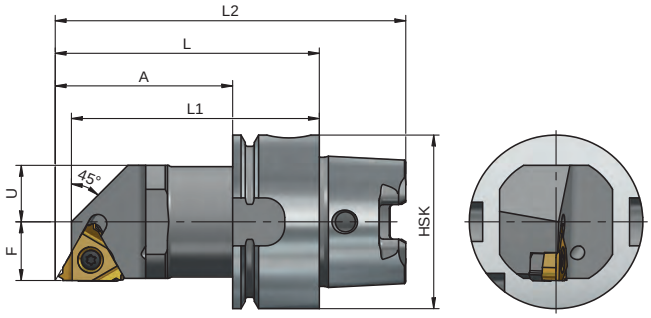
Artikel-Nr. / *Article No.* / No. d'article	[mm] HSK*)	L	L_2	F	A				
MT HT4D 060 VVN13	T40	60	80	0	40			VCG.. 1303..	T30.090	T8F

*) ICTM Standard

AUSSENBEARBEITUNG / *EXTERNAL TURNING* / TOURNAGE EXTÉRIEUR

GEWINDESCHNEIDEN / *THREADING* / FILETAGE

LT16ER RECHTSGEWINDE
RIGHT-HAND THREAD
FILETAGE À DROITE



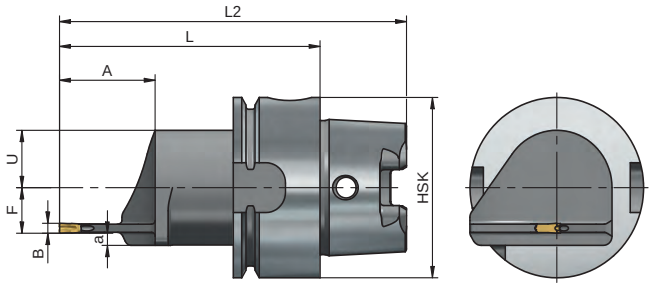
Artikel-Nr. / *Article No.* / No. d'article	[mm] HSK*)	L	L_1	L_2	F	A	U		Schraubensatz *Screw set* Ensemble de vis
MT HT4D 060 LTR16	T40	60	57	80	13.5	40	13	LT 16ER..	TDE 001

*) ICTM Standard

TDE 001 : 1 x SMYE3 309018 Unterlage / *Anvil* / Plaquette de lit
1 x SSY3T 309019 Schraube / *Screw* / Vis
1 x SSA3T 309016 WSP Schraube / *Insert screw* / Vis pour plaquette

ABSTECHEN / *GROOVING* / REINURAGE

D2

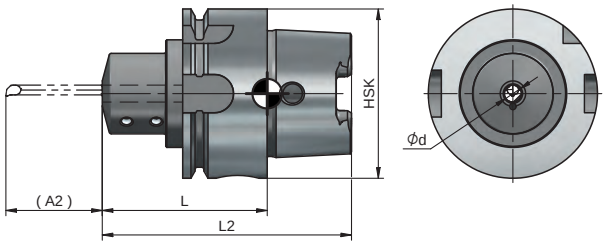


Artikel-Nr. / *Article No.* / No. d'article	[mm] HSK*)	L	L_2	F	A	a	B	U		Montagehebel *Mounting lever* Levier de montage
MT HT4D 060 D2022	T40	60	80	10.1	22	2.7	2.2	12.7	D 2022	K-170137
MT HT4D 060 D2040	T40	60	80	11.0	22	1.7	4.0	12.7	D 2040	K-170137

*) ICTM Standard

INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

MICROTURN A/S ADAPTER

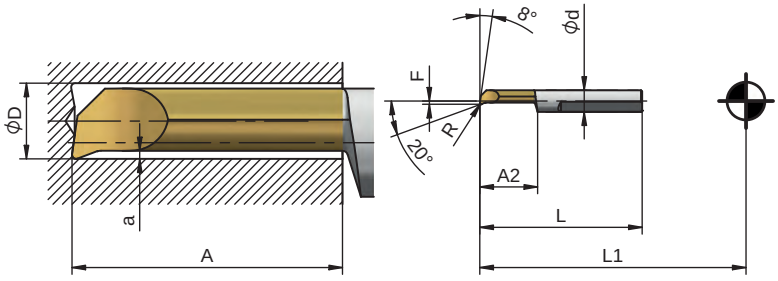


Artikel-Nr. / *Article No.* / No. d'article	[mm] HSK*)	Ød	L	L_2		
MT HT4D AS06	T40	6	40	60	T1221 04050	T20S
MT HT4D AS08	T40	8	42	62	T1221 05040	T25S

*) ICTM Standard

MICROTURN A/S AUSDREHEINSÄTZE / *TURNING TIPS* / POINTES DE TOURNAGE

NSAR



Artikel-Nr. *Article No.* No. d'article **R**	[mm] Ød	L_1	L	A	A_2	F	$ØD_{min}$	a	R	MT A/S Adapter *MT A/S Adapter* Adaptateur MT A/S
NSAR 2804 000 10	4	49.2	30	8.6	10.2	0.6	2.8	0.2	0.1	MT HA3C AS04 A / MT HA4C AS04 A
NSAR 2804 000 15		54.2	35	13.6	15.2					
NSAR 2804 000 22		61.7	42.5	21.1	22.7					
NSAR 3804 000 10	4	49.2	30	9.1	10.2	1.5	3.8	0.3	0.1	
NSAR 3804 000 15		54.2	35	14.1	15.2					
NSAR 3804 000 22		61.7	42.5	21.6	22.7					

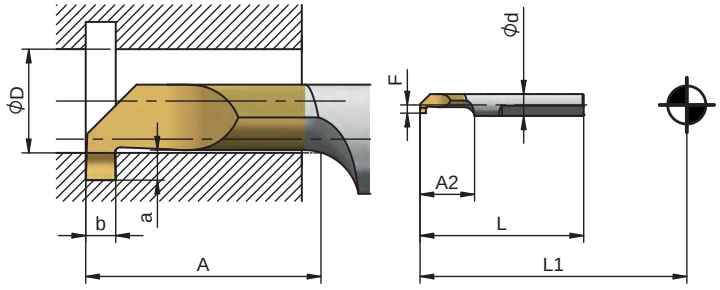
Andere Abmessungen & Geometrien auf Anfrage / *Different dimensions & geometries upon request* / Dimensions et géométries differentes sur demande

INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

MICROTURN A/S EINSTECHEINSÄTZE / *GROOVING TIPS* / POINTES POUR RAINURER

NSER

NEW



Artikel-Nr. *Article No.* No. d'article **R**	[mm] Ød	L_1	L	A	A_2	F	$b^{+0.05}_{-0.0}$	$ØD_{min}$	a	MT A/S Adapter *MT A/S Adapter* Adaptateur MT A/S
NSER 3804 110 10	4	49.2	30	8.6	10.2	1.5	1.1	3.8	1.0	MT HA3C AS04 A / MT HA4C AS04 A
NSER 3804 110 15		54.2	35	13.6	15.2					
NSER 4806 110 10	6	50.2	30	8.6	10.2	1.5	1.1	4.8	1.0	
NSER 4806 110 18		58.2	38	16.6	18.2					
NSER 4806 110 25		65.2	45	23.6	25.2					
NSER 4806 160 10	6	50.7	30.5	9.1	10.7	1.5	1.6	4.8	1.4	
NSER 4806 160 18		58.7	38.5	17.1	18.7					
NSER 4806 160 25		65.7	45.5	24.1	25.7					MT HA3C AS06 A / MT HA4C AS06 A
NSER 5806 160 15	6	55.7	35.5	14.1	15.7	2.5	1.6	5.8	1.4	
NSER 5806 160 25		65.7	45.5	24.1	25.7					
NSER 5806 160 30		70.2	50	28.6	30.2					
NSER 5806 230 15	6	55.2	35	13.6	15.2	2.5	2.3	5.8	1.9	
NSER 5806 230 24		64.2	44	22.6	24.2					
NSER 5806 230 30		70.2	50	28.6	30.2					
NSER 6808 160 15	8	57.7	35.5	14.1	15.7	2.5	1.6	6.8	1.4	
NSER 6808 160 25		67.7	45.5	24.1	25.7					
NSER 6808 230 15	8	57.2	35	13.6	15.2	2.5	2.3	6.8	1.9	
NSER 6808 230 24		66.2	44	22.6	24.2					
NSER 6808 230 30		72.2	50	28.6	30.2					MT HA3C AS08 A / MT HA4C AS08 A
NSER 7808 160 15	8	57.7	35.5	14.1	15.7	3.5	1.6	7.8	1.4	
NSER 7808 160 25		67.7	45.5	24.1	25.7					
NSER 7808 230 15	8	57.2	35	13.6	15.2	3.5	2.3	7.8	1.9	
NSER 7808 230 24		66.2	44	22.6	24.2					
NSER 7808 230 30		68.2	50	28.6	30.2					

Andere Abmessungen & Geometrien auf Anfrage / *Different dimensions & geometries upon request* / Dimensions et géométries differentes sur demande

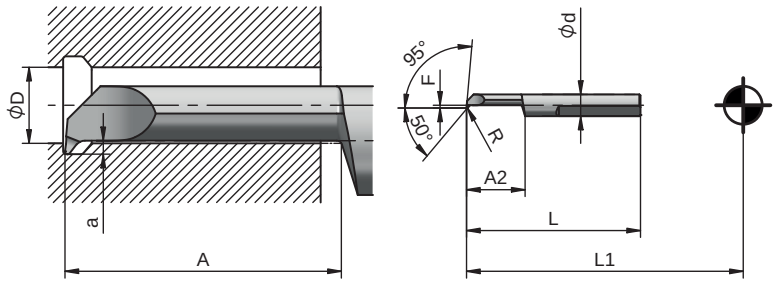
INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

MICROTURN A/S KOPIEREINSÄTZE / *COPYING TIPS* / POINTES DE COPIAGE

95°

NSLR

NEW

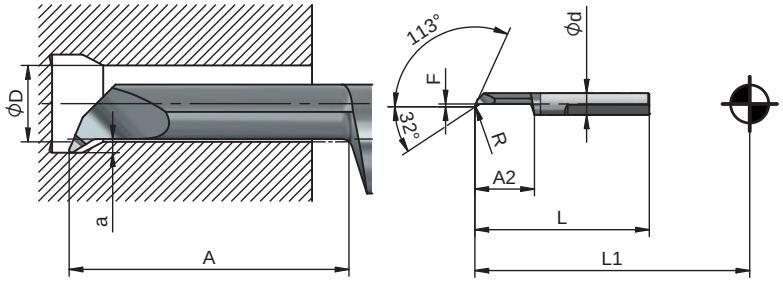


Artikel-Nr. *Article No.* No. d'article **R**	[mm] Ød	L_1	L	A	A_2	F	$ØD_{min}$	a	R	MT A/S Adapter *MT A/S Adapter* Adaptateur MT A/S
NSLR 2804 000 10	4	51.2	32	10.3	12.2	0.5	2.8	0.5	0.1	MT HA3C AS04 A
NSLR 3804 000 15		56.2	37	15.3	17.2	1.5	3.8	1.0		/ MT HA4C AS04 A
NSLR 4806 000 18	6	60.2	40	18.3	20.2	1.5	4.8	1.0	0.1	MT HA3C AS06 A
NSLR 5806 000 23		65.2	45	23.3	25.2	2.3	5.8	1.3		/ MT HA4C AS06 A
NSLR 6808 000 30	8	74.2	52	30.3	32.2	2.3	6.8	1.4	0.1	MT HA3C AS08 A
NSLR 7808 000 40		84.2	62	40.3	42.2	3.3	7.8	1.4		/ MT HA4C AS08 A

113°

NSXR

NEW



Artikel-Nr. *Article No.* No. d'article **R**	[mm] Ød	L_1	L	A	A_2	F	$ØD_{min}$	a	R	MT A/S Adapter *MT A/S Adapter* Adaptateur MT A/S
NSXR 2804 000 10	4	51.2	32	10.3	12.2	0.5	2.8	0.5	0.1	MT HA3C AS04 A
NSXR 3804 000 15		56.2	37	15.3	17.2	1.5	3.8	1.0		/ MT HA4C AS04 A
NSXR 4806 000 18	6	60.2	40	18.3	20.2	1.5	4.8	1.0	0.1	MT HA3C AS06 A
NSXR 5806 000 23		65.2	45	23.3	25.2	2.3	5.8	1.3		/ MT HA4C AS06 A
NSXR 6808 000 30	8	74.2	52	30.3	32.2	2.3	6.8	1.4	0.1	MT HA3C AS08 A
NSXR 7808 000 40		84.2	62	40.3	42.2	3.3	7.8	1.4		/ MT HA4C AS08 A

Andere Abmessungen & Geometrien auf Anfrage / *Different dimensions & geometries upon request* / Dimensions et géométries differentes sur demande

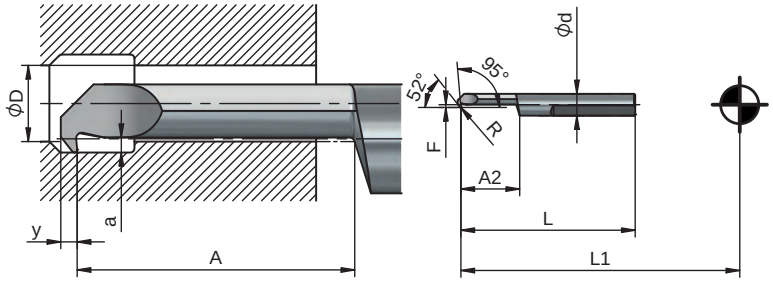
INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

MICROTURN A/S KOPIEREINSÄTZE / *COPYING TIPS* / POINTES DE COPIAGE

NEW

52°

NSQR

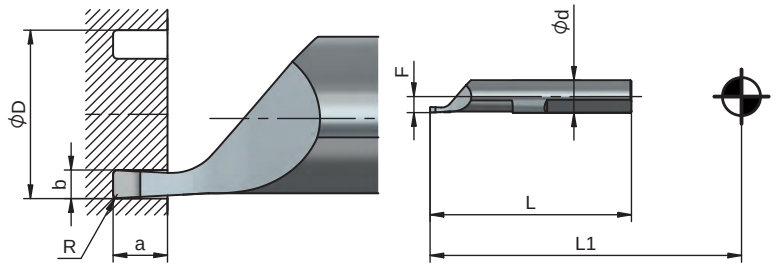


Artikel-Nr. *Article No.* No. d'article **R**	[mm] Ød	y	L_1	L	A	A_2	F	$ØD_{min}$	a	R	MT A/S Adapter *MT A/S Adapter* Adaptateur MT A/S
NSQR 2804 000 10	4	1	51.2	32	10.3	12.2	0.5	2.8	0.5	0.1	MT HA3C AS04 A
NSQR 3804 000 15			56.2	37	15.3	17.2	1.5	3.8	1.0		/ MT HA4C AS04 A
NSQR 4806 000 18	6	1.5	60.2	40	18.3	20.2	1.5	4.8	1.0	0.1	MT HA3C AS06 A
NSQR 5806 000 23		2.0	65.2	45	23.3	25.2	2.3	5.8	1.3		/ MT HA4C AS06 A
NSQR 6808 000 30	8	2	74.2	52	30.3	32.2	2.3	6.8	1.4	0.1	MT HA3C AS08 A
NSQR 7808 000 40			84.2	62	40.3	42.2	3.3	7.8	1.4		/ MT HA4C AS08 A

MICROTURN A/S AXIAL EINSTECHSCHNEIDEINSÄTZE / *FACE GROOVING TIPS* / POINTES DE TREPANNAGE

NEW

NSFR



Artikel-Nr. *Article No.* No. d'article **R**	[mm] Ød	L_1	L	A	A_2	F	$b^{+0.05}$	$ØD_{min}^{-0.0}$	a	R	MT A/S Adapter *MT A/S Adapter* Adaptateur MT A/S
NSFR 6206 100 15	6	57.2	37	15	17.2	2.95	1.0	6.2	2.0	0.15	
NSFR 6206 150 15							1.5		3.0		MT HA3C AS06 A
NSFR 6206 200 15							2.0		4.0		/ MT HA4C AS06 A
NSFR 6206 250 15							2.5		5.0		
NSFR 6206 300 15							3.0		6.0		

Andere Abmessungen & Geometrien auf Anfrage / *Different dimensions & geometries upon request* / Dimensions et géométries differentes sur demande

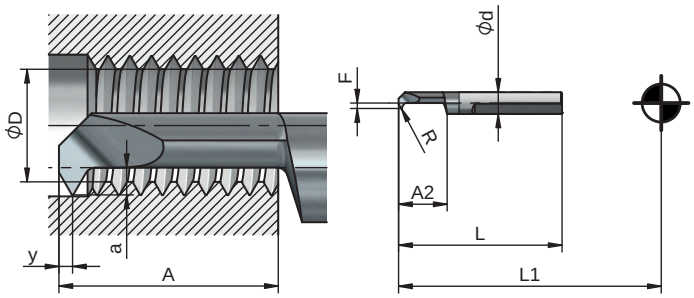
INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

MICROTURN A/S GEWINDESCHNEIDEINSÄTZE / *THREADING ADAPTER* / ADAPTEUR DE FILETAGE
TEILPROFIL 60° / *PARTIAL PROFILE 60°* / PROFIL PARTIEL 60°

metrisch
metric
métric

NEW

NSMR



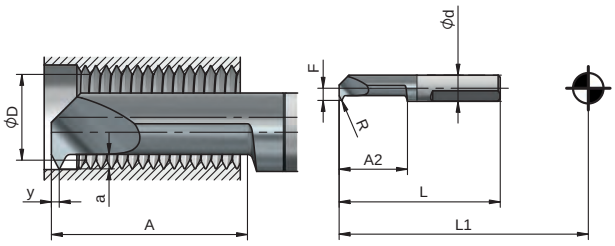
Artikel-Nr. *Article No.* No. d'article	[mm]							Gewindesteigung *Lead of thread* Montée de fil		Bereich *Range* Secteur					MT A/S Adapter *MT A/S Adapter* Adaptateur MT A/S
R	Ød	L_1	L	A	A_2	F	$ØD_{min}$	mm	TPI	ISO	UNC	y	a	R	
NSMR 3104 025 100 08	4	49.2	30	8	10.2	1.0	3.1	0.25 - 1.00	101 - 24	÷ M5	÷10-24 UNC	0.5	1.0	0.02	MT HA3C AS04 A
NSMR 4104 025 125 10		51.2	32	10	12.2	1.9	4.1	0.25 - 1.25	101 - 20	÷ M6	÷1/4-20 UNC	0.6	1.1	0.02	/ MT HA4C AS04 A
NSMR 5706 050 150 13	6	55.2	35	13	15.2	2.5	5.7	0.50 - 1.50	51 - 17	÷ M8	÷5/16-18 UNC	0.7	1.3	0.04	MT HA3C AS06 A / MT HA4C AS06 A
NSMR 7708 075 160 16	8	60.2	38	16	18.2	3.5	7.7	0.75 - 1.60	34 - 16	÷ M10	÷3/8-16 UNC	0.8	1.4	0.04	MT HA3C AS08 A / MT HA4C AS08 A

MICROTURN A/S GEWINDESCHNEIDEINSATZ / *THREADING ADAPTER* / ADAPTEUR DE FILETAGE
TEILPROFIL 55° / *PARTIAL PROFILE 55°* / PROFIL PARTIEL 55°

DIN ISO 228-1
Pipe thread

NEW

NSWR



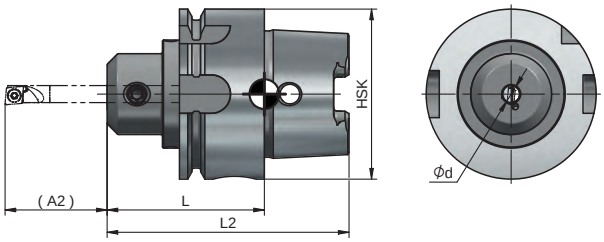
Artikel-Nr. *Article No.* No. d'article	[mm]							Bereich *Range* Secteur				MT A/S Adapter *MT A/S Adapter* Adaptateur MT A/S
R	Ød	L_1	L	A	A_2	F	$ØD_{min}$	G	y	a	R	
NSWR 6006 090 000 15	6	57.2	37	15	17.2	2.8	6.0	÷ G 1/16"	0.6	1.1	0.05	MT HA3C AS06 A / MT HA4C AS06 A
NSWR 7708 090 000 20	8	64.2	42	20	22.2	3.5	7.7	÷ G 1/8"	0.6	1.1	0.05	MT HA3C AS08 A / MT HA4C AS08 A

Andere Abmessungen & Geometrien auf Anfrage / *Different dimensions & geometries upon request* / Dimensions et géométries differentes sur demande

INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

SYNTOOL ADAPTER

NEW



Artikel-Nr. / *Article No.* / No. d'article		[mm] HSK*)	Ød	L	L_2		
MT HT4D ST04 A	**n.a.**	T40	4	37	57	T60.075	T15H
MT HT4D ST05 A		T40	5	42	62		
MT HT4D ST06 A		T40	6	42	62		

*) ICTM Standard

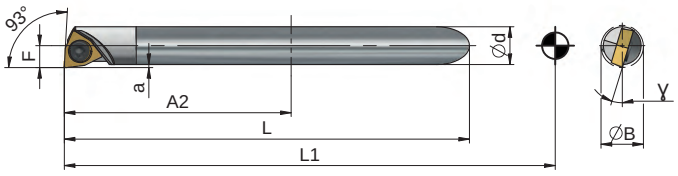
SYNTOOL

WSP-EINSÄTZE MIT HM-SCHAFT / *CARBIDE SHANK TIPS WITH INSERTS* / POINTES À PLAQUETTES EN CARBURE

93°

SWUCR *SYNTOOL*

NEW



Artikel-Nr. *Article No.* No. d'article **R**	[mm] Ød	L_1	L	F	$ØB_{min}$	A_2	a	γ				MT *SYNTOOL* Adapter *MT SYNTOOL Adapter* Adaptateur MT *SYNTOOL*
C0520 SWUCR-02	5	62	43.6	2.9	5.8	20.0	0.3	17.0°	WC.. 0201..	T20.037	T6F	MT HA3C ST05 A / MT HA4C ST05 A
C0525 SWUCR-02	5	67	48.6	2.9	5.8	25.0	0.3	17.0°	WC.. 0201..	T20.037	T6F	
C0530 SWUCR-02	5	72	53.6	2.9	5.8	30.0	0.3	17.0°	WC.. 0201..	T20.037	T6F	
C0624 SWUCR-02	6	66	48.4	3.9	7.8	24.0	0.8	12.0°	WC.. 0201..	T20.037	T6F	MT HA3C ST06 A / MT HA4C ST06 A
C0630 SWUCR-02	6	72	54.4	3.9	7.8	30.0	0.8	12.0°	WC.. 0201..	T20.037	T6F	
C0636 SWUCR-02	6	78	60.4	3.9	7.8	36.0	0.8	12.0°	WC.. 0201..	T20.037	T6F	

Andere Abmessungen & Geometrien auf Anfrage / *Different dimensions & geometries upon request* / Dimensions et géométries differentes sur demande

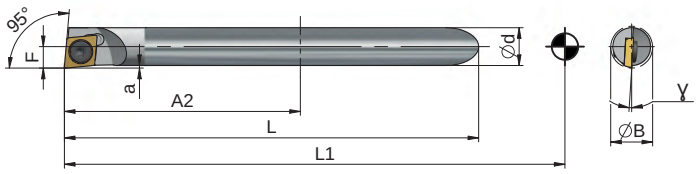
INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

SYNTOOL

WSP-EINSÄTZE MIT HM-SCHAFT / *CARBIDE SHANK TIPS WITH INSERTS* / POINTES À PLAQUETTES EN CARBURE

95° NEW

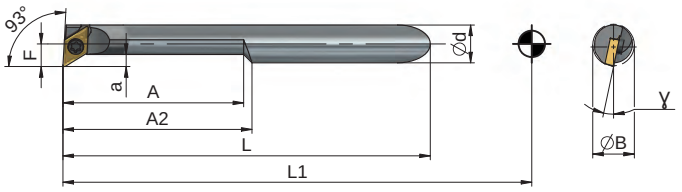
SCLDR *SYNTOOL*



Artikel-Nr. / *Article No.* / No. d'article **R**	[mm] Ød	L_1	L	F	$ØB_{min}$	A_2	a	γ				MT *SYNTOOL* Adapter / *MT SYNTOOL Adapter* / Adaptateur MT *SYNTOOL*
C0416 SCLDR-04	4	53	33.7	2.5	4.8	16.0	0.45	5.5°	CD.. 0401..	T18.Z30A	T5F	MT HA3C ST04 A / MT HA4C ST04 A
C0420 SCLDR-04	4	57	37.7	2.5	4.8	20.0	0.45	5.5°	CD.. 0401..	T18.Z30A	T5F	
C0424 SCLDR-04	4	61	41.7	2.5	4.8	24.0	0.45	5.5°	CD.. 0401..	T18.Z30A	T5F	
C0521 SCLDR-04	5	63.2	44.8	2.9	5.8	21.2	0.30	4.0°	CD.. 0401..	T18.Z30A	T5F	MT HA3C ST05 A / MT HA4C ST05 A
C0526 SCLDR-04	5	68.2	49.8	2.9	5.8	26.2	0.30	4.0°	CD.. 0401..	T18.Z30A	T5F	
C0531 SCLDR-04	5	73.2	54.8	2.9	5.8	31.2	0.30	4.0°	CD.. 0401..	T18.Z30A	T5F	
C0625 SCLDR-04	6	67.7	50.1	3.4	6.8	25.7	0.30	3.0°	CD.. 0401..	T18.Z30A	T5F	MT HA3C ST06 A / MT HA4C ST06 A
C0631 SCLDR-04	6	73.7	56.1	3.4	6.8	31.7	0.30	3.0°	CD.. 0401..	T18.Z30A	T5F	
C0637 SCLDR-04	6	79.7	62.1	3.4	6.8	37.7	0.30	3.0°	CD.. 0401..	T18.Z30A	T5F	

93° NEW

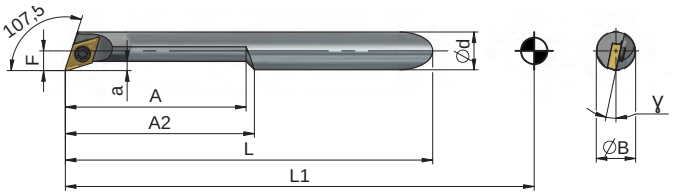
SDUCR *SYNTOOL*



Artikel-Nr. / *Article No.* / No. d'article **R**	[mm] Ød	L_1	L	F	$ØB_{min}$	A	A_2	a	γ				MT *SYNTOOL* Adapter / *MT SYNTOOL Adapter* / Adaptateur MT *SYNTOOL*
C0520 SDUCR-04	5	62	43.6	3.0	5.6	18.9	20	1.5	12.0°	DC.. 04T0..	T16.035	T5F	MT HA3C ST05 A / MT HA4C ST05 A
C0525 SDUCR-04	5	67	48.6	3.0	5.6	23.9	25	1.5	12.0°	DC.. 04T0..	T16.035	T5F	

107.5° NEW

SDQCR *SYNTOOL*



Artikel-Nr. / *Article No.* / No. d'article **R**	[mm] Ød	L_1	L	F	$ØB_{min}$	A	A_2	a	γ				MT *SYNTOOL* Adapter / *MT SYNTOOL Adapter* / Adaptateur MT *SYNTOOL*
C0520 SDQCR-04	5	62	43.6	2.6	5.2	18.9	20	1.1	12.0°	DC.. 04T0..	T16.035	T5F	MT HA3C ST05 A / MT HA4C ST05 A
C0525 SDQCR-04	5	67	48.6	2.6	5.2	23.9	25	1.1	12.0°	DC.. 04T0..	T16.035	T5F	

Andere Abmessungen & Geometrien auf Anfrage / *Different dimensions & geometries upon request* / Dimensions et géométries differentes sur demande

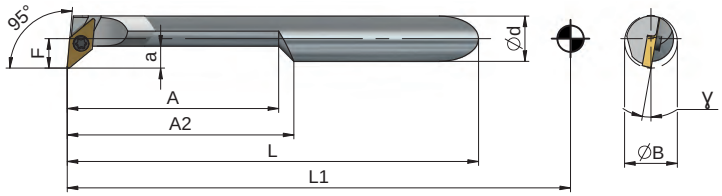
INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

SYNTOOL

WSP-EINSÄTZE MIT HM-SCHAFT / *CARBIDE SHANK TIPS WITH INSERTS* / POINTES À PLAQUETTES EN CARBURE

95°

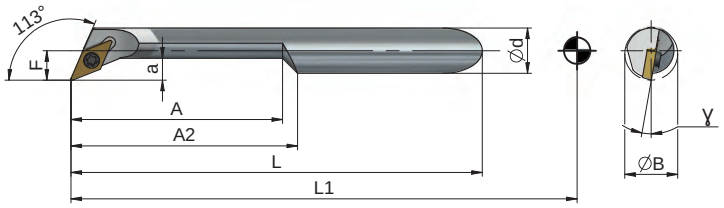
SGLCR *SYNTOOL*



Artikel-Nr. *Article No.* No. d'article **R**	[mm] Ød	L_1	L	F	$ØB_{min}$	A	A_2	a	ɣ				MT *SYNTOOL* Adapter *MT SYNTOOL Adapter* Adaptateur MT *SYNTOOL*
C0624 SGLCR-04	6	66	48.4	3.9	7.0	22.0	24	2.9	10.0°	GC.. 04T0..	T16.035	T5F	MT HA3C ST06 A
C0630 SGLCR-04	6	72	54.4	3.9	7.0	28.0	30	2.9	10.0°	GC.. 04T0..	T16.035	T5F	/ MT HA4C ST06 A

113°

SGXCR *SYNTOOL*

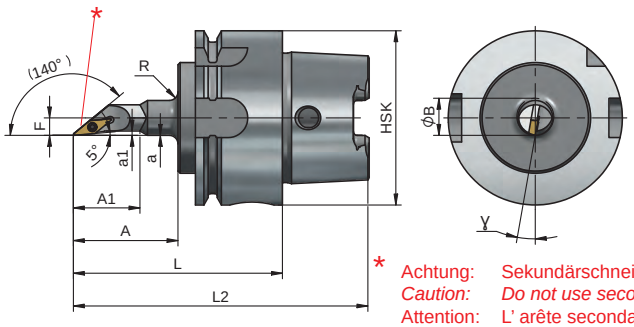


Artikel-Nr. *Article No.* No. d'article **R**	[mm] Ød	L_1	L	F	$ØB_{min}$	A	A_2	a	ɣ				MT *SYNTOOL* Adapter *MT SYNTOOL Adapter* Adaptateur MT *SYNTOOL*
C0624 SGXCR-04	6	66	48.4	3.9	7.0	22.0	24	2.9	10.0°	GC.. 04T0..	T16.035	T5F	MT HA3C ST06 A
C0630 SGXCR-04	6	72	54.4	3.9	7.0	28.0	30	2.9	10.0°	GC.. 04T0..	T16.035	T5F	/ MT HA4C ST06 A

Andere Abmessungen & Geometrien auf Anfrage / *Different dimensions & geometries upon request* / Dimensions et géométries differentes sur demande

INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

5°
SVOCR

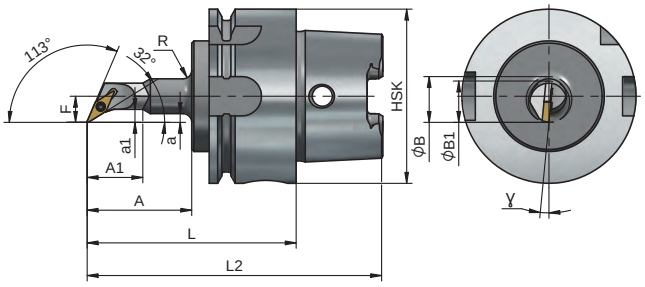


Achtung: Sekundärschneide nicht für Bearbeitung geeignet!
Caution: Do not use secondary cutting edge for machining!
Attention: L' arête secondaire ne doit pas être utilisée pour l'usinage!

Artikel-Nr. / *Article No.*	[mm]														
	HSK*)	Ød	L	L_2	F	A	a	A_1	a_1	ØB	γ	R			
MT HT4D 0824 VOR05	T40	8	58	68	4	24	0	15.3	1	8.2	10°	2	VC.. 0501..	T16.045	T5F
MT HT4D 0832 VOR05	T40	8	56	76	4	32	0	15.3	1	8.2	10°	2	VC.. 0501..	T16.045	T5F
MT HT4D 1030 VOR07	T40	10	54	74	5.5	30	0.5	-	-	11	10°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1040 VOR07	T40	10	64	84	5.5	40	0.5	-	-	11	10°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1236 VOR07	T40	12	60	80	6.5	36	0.5	-	-	13	8°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1248 VOR07	T40	12	72	92	6.5	48	0.5	-	-	13	8°	2	VC.. 0702..	T20.055	T6F

*) ICTM Standard

113°
SVXCR



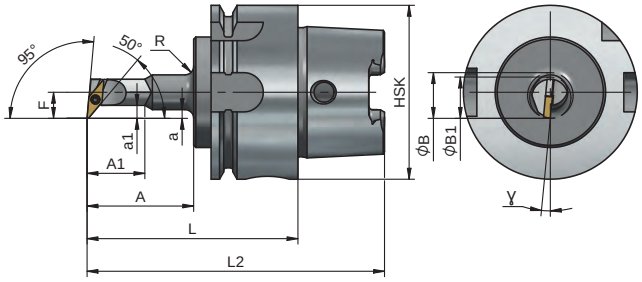
Artikel-Nr. / *Article No.*	[mm]															
	HSK*)	Ød	L	L_2	F	A	a	A_1	a_1	ØB	$ØB_1$	γ	R			
MT HT4D 0824 VXR05	T40	8	48	68	6	24	2	12.8	3	10.2	9.2	5.5°	2	VC.. 0501..	T16.045	T5F
MT HT4D 0832 VXR05	T40	8	56	76	6	32	2	12.8	3	10.2	9.2	5.5°	2	VC.. 0501..	T16.045	T5F
MT HT4D 1030 VXR07	T40	10	54	74	7.7	30	2.7	18.7	3.4	13.3	12.5	10°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1040 VXR07	T40	10	64	84	7.7	40	2.7	18.7	3.4	13.3	12.5	10°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1236 VXR07	T40	12	60	80	11	36	5	-	-	17.5	-	6°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1248 VXR07	T40	12	72	92	11	48	5	-	-	17.5	-	6°	2	VC.. 0702..	T20.055	T6F

*) ICTM Standard

INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

95°
SVLCR

NEW

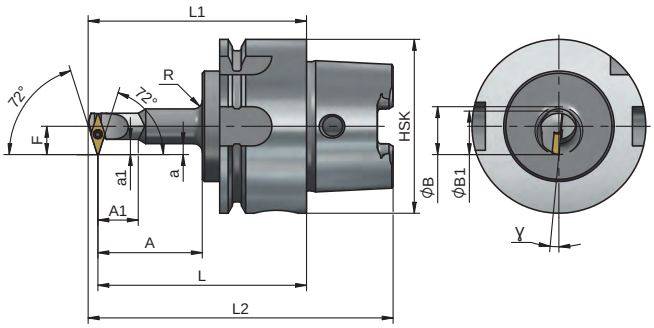


Artikel-Nr. / *Article No.*	[mm]															
	HSK*)	Ød	L	L_2	F	A	a	A_1	a_1	ØB	$ØB_1$	γ	R			
MT HT4D 0824 VLR05	T40	8	48	68	6	24	2	13.3	3	10.2	9.2	5.5°	2	VC.. 0501..	T16.045	T5F
MT HT4D 0832 VLR05	T40	8	56	76	6	32	2	13.3	3	10.2	9.2	5.5°	2	VC.. 0501..	T16.045	T5F
MT HT4D 1030 VLR07	T40	10	54	74	8.5	30	3.5	12.9	5	14	12.5	10°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1040 VLR07	T40	10	64	84	8.5	40	3.5	12.9	5	14	12.5	10°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1236 VLR07	T40	12	60	80	11	36	5	-	-	17.5	-	6°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1248 VLR07	T40	12	72	92	11	48	5	-	-	17.5	-	6°	2	VC.. 0702..	T20.055	T6F

*) ICTM Standard

72.5°
SVVCR

NEW



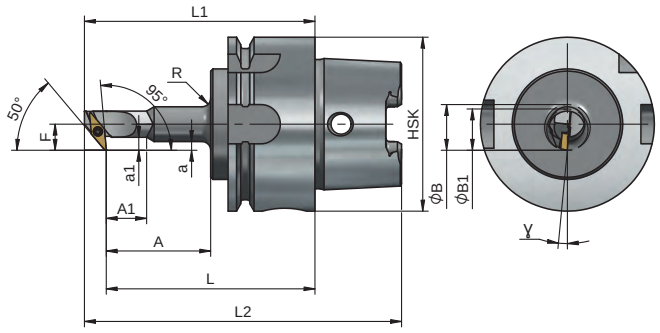
Artikel-Nr. / *Article No.*	[mm]															
	HSK*)	Ød	L	L_1	L_2	F	A	a	A_1	a_1	ØB	$ØB_1$	γ	R		
MT HT4D 0824 VVR05	T40	8	48	50.2	70.1	6.5	24	2.5	9.3	3.5	10.7	9.7	5.5°	2	VC.. 0501..	T16.045	T5F
MT HT4D 0832 VVR05	T40	8	56	58.2	78.1	6.5	32	2.5	9.3	3.5	10.7	9.7	5.5°	2	VC.. 0501..	T16.045	T5F
MT HT4D 1030 VVR07	T40	10	54	57.1	77	9.5	30	4.5	12.9	6	15	13.5	10°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1040 VVR07	T40	10	64	67.1	87	9.5	40	4.5	12.9	6	15	13.5	10°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1236 VVR07	T40	12	60	63.3	83.2	11	36	5	-	-	17.5	-	6°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1248 VVR07	T40	12	72	75.3	95.2	11	48	5	-	-	17.5	-	6°	2	VC.. 0702..	T20.055	T6F

*) ICTM Standard

INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

50°
SVQCR

NEW

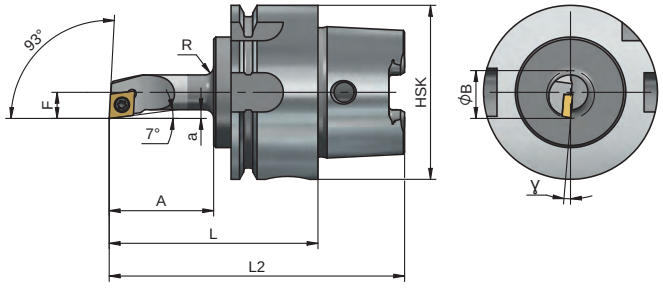


Artikel-Nr. / *Article No.*	[mm]															
	HSK*)	Ød	L	L_1	L_2	F	A	a	A_1	a_1	ØB	$ØB_1$	γ	R		
MT HT4D 0824 VQR05	T40	8	48	53	73	6	24	2	9.3	3	10.2	9.2	5.5°	2	VC.. 0501..	T16.045	T5F
MT HT4D 0832 VQR05	T40	8	56	61	81	6	32	2	9.3	3	10.2	9.2	5.5°	2	VC.. 0501..	T16.045	T5F
MT HT4D 1030 VQR07	T40	10	54	61.3	81.2	8.5	30	3.5	12.9	5	14	12.5	10°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1040 VQR07	T40	10	64	71.3	91.2	8.5	40	3.5	12.9	5	14	12.5	10°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1236 VQR07	T40	12	60	67.6	87.5	11	36	5	-	-	17.5	-	6°	2	VC.. 0702..	T20.055	T6F
MT HT4D 1248 VQR07	T40	12	72	79.6	99.5	11	48	5	-	-	17.5	-	6°	2	VC.. 0702..	T20.055	T6F

*) ICTM Standard

93°
SCUPR

NEW



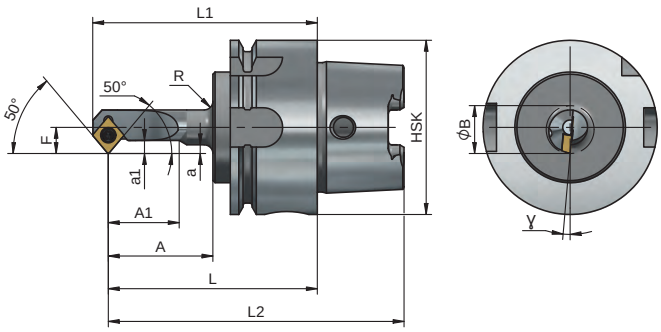
Artikel-Nr. / *Article No.*	[mm]												
	HSK*)	Ød	L	L_2	F	A	a	ØB	γ	R			
MT HT4D 0824 CUR05	T40	8	48	68	6	24	2	11	5°	2	CP.. 05T1..	T22.045	T7F
MT HT4D 0832 CUR05	T40	8	56	76	6	32	2	11	5°	2	CP.. 05T1..	T22.045	T7F
MT HT4D 1030 CUR05	T40	10	54	74	7	30	2	13	5°	2	CP.. 05T1..	T22.045	T7F
MT HT4D 1040 CUR05	T40	10	64	84	7	40	2	13	5°	2	CP.. 05T1..	T22.045	T7F
MT HT4D 1236 CUR05	T40	12	60	80	9	36	3	16	2°	2	CP.. 05T1..	T22.050	T7F
MT HT4D 1248 CUR05	T40	12	72	92	9	48	3	16	2°	2	CP.. 05T1..	T22.050	T7F

*) ICTM Standard

INNENBEARBEITUNG / *INTERNAL TURNING* / TOURNAGE INTÉRIEUR

50°

SCMPR

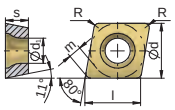
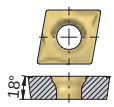
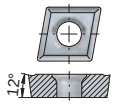
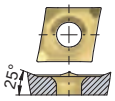


Artikel-Nr. / *Article No.*	[mm]															
	HSK*)	Ød	L	L_1	L_2	F	A	a	A_1	a_1	ØB	γ	R			
MT HT4D 0824 CMR05	T40	8	48	51.5	71.4	6	24	2	16.3	3	10.5	5°	2	CP.. 05T1..	T22.045	T7F
MT HT4D 0832 CMR05	T40	8	56	59.5	79.4	6	32	2	16.3	3	10.5	5°	2	CP.. 05T1..	T22.045	T7F
MT HT4D 1030 CMR05	T40	10	54	57.5	77.4	7	30	2	18.4	3.5	12.5	5°	2	CP.. 05T1..	T22.045	T7F
MT HT4D 1040 CMR05	T40	10	64	67.5	87.4	7	40	2	18.4	3.5	12.5	5°	2	CP.. 05T1..	T22.045	T7F
MT HT4D 1236 CMR05	T40	12	60	63.5	83.4	9	36	3	-	-	15.5	2°	2	CP.. 05T1..	T22.050	T7F
MT HT4D 1248 CMR05	T40	12	72	75.5	95.4	9	48	3	-	-	15.5	2°	2	CP.. 05T1..	T22.050	T7F

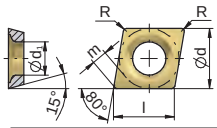
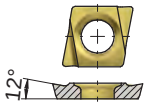
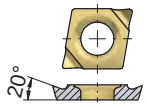
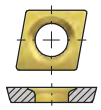
*) ICTM Standard

WENDESCHNEIDPLATTEN / *CARBIDE INSERTS* / PLAQUETTES EN CARBURE

CCGT 09 ISO

	Artikel-Nr. *Article No.* No. d'article	[mm] l	⌀d	+/-	s	+/-	m	+/-	R	⌀d_1	DX 2	DX 20	DX 30	DX 32	DX 50	DX 52	DT 55	DT 255	DT 355
	**CCGT 09T302 FN-18M** **CCGT 09T304 FN-18M** ***M**: Poliert / Top face polished*	9.7	9.52	0.025	3.97	0.13	2.538 2.423	0.025	0.2 0.4	4.4	■ ■			■ ■					
	**CCGT 09T304 EN** **CCGT 09T308 EN**	9.7	9.52	0.025	3.97	0.13	2.423 2.201	0.025	0.4 0.8	4.4							■ ■	□ □	■ □
	**CCGT 09T301 FN-250** **CCGT 09T302 FN-250** **CCGT 09T304 FN-250** **CCGT 09T308 FN-250**	9.7	9.52	0.025	3.97	0.13	2.589 2.534 2.423 2.201	0.025	0.1 0.2 0.4 0.8	4.4	■ ■ ■ ■	□ ■ ■ ■	□ ■ ■ ■	□ □ □ □	□ □ □ □	□ □ □ □			

CDG.. 04 MicroTurn D

	Artikel-Nr. *Article No.* No. d'article	[mm] l	⌀d	+/-	s	+/-	m	+/-	R	⌀d_1	DX 2	DX 20	DX 30	DS10	DS20
	**CDGT 040100 FL** **CDGT 040101 FL** **CDGT 040102 FL** **CDGT 040104 FL**	4.03	3.97	0.025	1.0	0.025	1.103 1.048 0.992 0.881	0.025	0.0 0.1 0.2 0.4	2.2	■ ■ ■ ■	■ ■ ■ ■	□ □ ■ ■		
	**CDGT 040101 FN** **CDGT 040102 FN** **CDGT 040104 FN**	4.03	3.97	0.025	1.0	0.025	1.048 0.992 0.881	0.025	0.1 0.2 0.4	2.2	■ ■ ■	■ ■ ■	□ □ □	□ □ □	□ □ □
	**CDGW 040100 FN** **CDGW 040101 FN** **CDGW 040102 FN** **CDGW 040104 FN**	4.03	3.97	0.025	1.0	0.025	1.103 1.048 0.992 0.881	0.025	0.0 0.1 0.2 0.4	2.2	■ ■ ■ ■	□ □ ■ ■	□ □ ■ ■		

■ ab Lager / *stock item* / disponible du stock □ auf Anfrage / *upon request* / sur demande

Achtung: DX32 & DX52 sind für medizinische Implantate nicht geeignet !
Caution: DX32 & DX52 are not suitable for medical implants !
Attention: DX32 & DX52 ne convient pas pour les implants médicaux !

WENDESCHNEIDPLATTEN / *CARBIDE INSERTS* / PLAQUETTES EN CARBURE

CP.... 05 MiniTools 80°

	Artikel-Nr. *Article No.* No. d'article	[mm] l	∅d	+/-	s	+/-	m	+/-	R	∅d_1	DX 2	P 25	DX 20	DP 25	DX 30	DP 35	DX 50	DP 55	DX 52	DP57	DS10	DS20	DX70	DT 55	DT 255	DT 355	CBN
	CPET 05T101 FN-20	5.6	5.56	0.025	1.97	0.025	1.489	0.025	0.1	2.5	■		■		□		□		□		□	□					
	CPET 05T102 FN-20						1.432		0.2		■		■		□		□		□		■	□					
	CPET 05T104 FN-20						1.323		0.4		■		■		□		□		□		■	□					
*1)	**CPET 05T101 FL/R**	5.6	5.56	0.025	1.97	0.025	1.489	0.025	0.1	2.5	■		■		□		□										
	CPET 05T102 FL/R						1.432		0.2		■		■		■		■										
	CPET 05T104 FL/R						1.323		0.4		■		■		■		■										
	CPGT 05T102 FL/R	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5														■	■	■	
	CPGT 05T104 FL/R						1.323		0.4															■	■	■	
	CPGT 05T101 EN	5.6	5.56	0.025	1.97	0.13	1.489	0.025	0.1	2.5		■		■		■											
	CPGT 05T102 EN						1.432		0.2		■	■		■		■		□						■	■	■	
	CPGT 05T104 EN						1.323		0.4		■	■		■		■		□						■	■	■	
	CPGT 05T101 FN	5.6	5.56	0.025	1.97	0.13	1.489	0.025	0.1	2.5	■		■		□		□		□								
	CPGT 05T102 FN						1.432		0.2		■		■		■		■		□								
	CPGT 05T104 FN						1.323		0.4		■		■		■		■		□								
	CPGT 05T101 FN-20	5.6	5.56	0.025	1.97	0.13	1.489	0.025	0.1	2.5	■		□		□		□		□								
	CPGT 05T102 FN-20						1.432		0.2		■		■		■		■		□								
	CPGT 05T104 FN-20						1.323		0.4		■		■		■		■		□								
	CPGT 05T102 FN-250	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5	■		■		□		□										
	CPGT 05T104 FN-250						1.323		0.4		■		■		□		□										
	CPGW05T102 *)**	5.6	5.56	0.025	1.97	0.13	1.432	0.025	0.2	2.5																	■
	CPGW05T104 *)**						1.323		0.4																		■
	CPGW05T102 EN						1.432		0.2			■		■		■		■		□							
	CPGW05T104 EN						1.323		0.4			■		■		■		■		□							
	CPGW05T102 FN						1.432		0.2		■		■		■		□										
	CPGW05T104 FN						1.323		0.4		■		■		■		□										
*1, 3)	**CPGW05T100 FL**	5.6	5.56	0.025	1.97	0.13	1.363	0.025	0.0	2.5														■	■	□	

■ ab Lager / *stock item* / disponible du stock □ auf Anfrage / *upon request* / sur demande

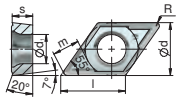
*1) Illustration: Linke Ausführung
Left hand execution
Exécution gauche

*3) Achtung: Nur geeignet für Werkzeuge mit Anstellwinkel 93° (SCUPR, S.16)
Caution: Suitable only for tools with angle 93° (SCUPR, p.16)
Attention: Convient que pour des outils avec angle 93° (SCUPR, p.16)

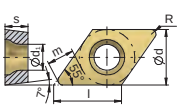
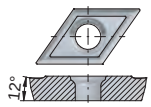
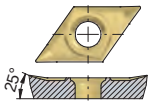
***) auf Anfrage mit PKD / MDC
upon request with PCD / MDC
sur demande avec PCD / MDC

WENDESCHNEIDPLATTEN / *CARBIDE INSERTS* / PLAQUETTES EN CARBURE

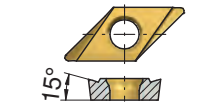
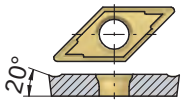
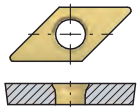
DCGT 04 MicroCopy D

	Artikel-Nr. *Article No.* No. d'article	[mm] l	∅d	+/-	s	+/-	m	+/-	r	∅d_1	DX 2	DX 32
	**DCGT 04T001-20**	3.78	3.1	0.025	1.2	0.05	1.69	0.025	0.1	1.7	■	■
	DCGT 04T002-20						1.57		0.2		■	■

DCGT 11 ISO

	Artikel-Nr. *Article No.* No. d'article	[mm] l	∅d	+/-	s	+/-	m	+/-	R	∅d_1	DX 2	DX 20	DX 30	DX 50	DX 52	DX 70	DT 55	DT 255	DT 355
	**DCGT 11T302-15**	11.6	9.52	0.025	3.97	0.13	5.323	0.025	0.2	4.4	■					■			
	DCGT 11T304-15						5.082		0.4		■					■			
	**DCGT 11T302 EN**	11.6	9.52	0.025	3.97	0.13	5.316	0.025	0.2	4.4							■	□	□
	DCGT 11T304 EN						5.082		0.4								■	□	□
	**DCGT 11T301 FN-250**	11.6	9.52	0.025	3.97	0.13	5.432	0.025	0.1	4.4	□	□	□						
	DCGT 11T302 FN-250						5.316		0.2		■	■	□						
	DCGT 11T304 FN-250						5.082		0.4		■	■	□						
	DCGT 11T308 FN-250						4.616		0.8		■	■	□						

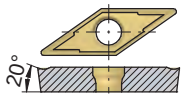
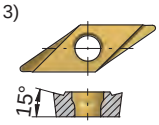
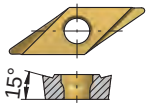
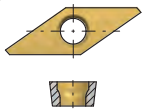
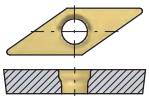
GCG.. 04 MicroCopy G

	Artikel-Nr. *Article No.* No. d'article	[mm] l	∅d	+/-	s	+/-	m	+/-	R	∅d_1	DX 2	DX 70
	**GCGT 04T0005 FL**	4.384	3.1	0.025	1.2	0.05	2.42	0.025	0.05	1.7	■	■
	GCGT 04T001 FL						2.34		0.1		■	■
	GCGT 04T002 FL						2.18		0.2		■	■
	**GCGT 04T001-20**	4.384	3.1	0.025	1.2	0.05	2.34	0.025	0.1	1.7	■	■
	GCGT 04T002-20						2.18		0.2		■	■
	**GCGW 04T001**	4.384	3.1	0.025	1.2	0.05	2.34	0.025	0.1	1.7	■	■
	GCGW 04T002						2.18		0.2		■	■

■ ab Lager / *stock item* / disponible du stock □ auf Anfrage / *upon request* / sur demande

WENDESCHNEIDPLATTEN / *CARBIDE INSERTS* / PLAQUETTES EN CARBURE

VCG.. 05 MicroCopy 35°

	Artikel-Nr. *Article No.* No. d'article	[mm] l	∅d	+/-	s	+/-	m	+/-	R	∅d_1	DX 2	DX 70
	**VCGT 050101-20**	5.405	3.1	0.025	1.59	0.05	3.37	0.025	0.1	1.7	■	■
	VCGT 050102-20						3.13		0.2		■	■
*1, 3) 	**VCGT 050100 FL**	5.405	3.1	0.025	1.59	0.05	3.10	0.025	0.0	1.7	■	■
	VCGT 050100 FR						3.10		0.0		■	■
*1) 	**VCGT 0501005 FL**	5.405	3.1	0.025	1.59	0.05	3.49	0.025	0.05	1.7	■	■
	VCGT 0501005 FR						3.49		0.05		■	■
	VCGT 050101 FL						3.37		0.1		■	■
	VCGT 050101 FR						3.37		0.1		■	■
	VCGT 050102 FL						3.13		0.2		■	■
	VCGT 050102 FR						3.13		0.2		■	■
*1, 3) 	**VCGW 050100 FL**	5.405	3.1	0.025	1.59	0.05	3.10	0.025	0.0	1.7	■	■
	VCGW 050100 FR						3.10		0.0		■	■
	**VCGW 050101**	5.405	3.1	0.025	1.59	0.05	3.37	0.025	0.1	1.7	■	■
	VCGW 050102						3.13		0.2		■	■

■ ab Lager / *stock item* / disponible du stock □ auf Anfrage / *upon request* / sur demande

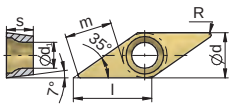
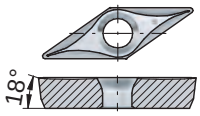
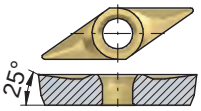
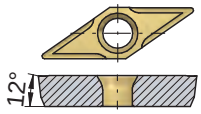
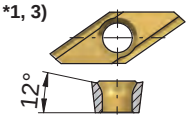
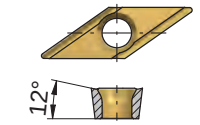
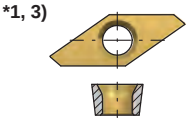
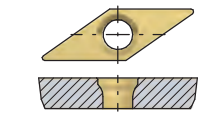
*1) Illustration: Linke Ausführung
Left hand execution
Exécution gauche

*3) Achtung: Nur geeignet für Werkzeuge mit Anstellwinkel 95° (SVOCR, SVLCR, SVQCR, S.14 - S.16)
Caution: *Suitable only for tools with angle 95° (SVOCR, SVLCR, SVQCR, p.14 - p.16)*
Attention: Convient que pour des outils avec angle 95° (SVOCR, SVLCR, SVQCR, p.14 - p.16)

Achtung: DX32 & DX52 sind für medizinische Implantate nicht geeignet !
Caution: DX32 & DX52 are not suitable for medical implants !
Attention: DX32 & DX52 ne convient pas pour les implants médicaux !

WENDESCHNEIDPLATTEN / *CARBIDE INSERTS* / PLAQUETTES EN CARBURE

VCG.. 07 MiniCopy 35°

	Artikel-Nr. *Article No.* No. d'article	[mm] l	⌀d	+/-	s	+/-	m	+/-	R	$⌀d_1$	DX 2	DX 20	DX 30	DX32	DX 50	DX 52	CBN	PKD	MDC
	**VCGT 070202 FN-18N**	6.921	3.97	0.025	2.38	0.05	4.15	0.025	0.2	2.3	■			■					
	VCGT 070204 FN-18N						3.69		0.4		■			■					
	M: Poliert / Top face polished																		
	**VCGT 070201-25**	6.921	3.97	0.025	2.38	0.05	4.38	0.025	0.1	2.3	■	■	■		□	□			
	VCGT 070202-25						4.15		0.2		■	■	■		■	□			
	VCGT 070204-25						3.69		0.4		■	■	■		■	□			
	**VCGT 070201-12**	6.921	3.97	0.025	2.38	0.05	4.38	0.025	0.1	2.3	■	■	□		□	□			
	VCGT 070202-12						4.15		0.2		■	■	■		■	□			
	VCGT 070204-12						3.69		0.4		■	■	■		■	□			
*1, 3) 	**VCGT 070200-08 FL**	6.921	3.97	0.025	2.38	0.05	3.38	0.025	0.0	2.3	■	■	□						
	VCGT 070200-08 FR						3.38		0.0		■	■	□						
*1) 	**VCGT 070201-08 FL**	6.921	3.97	0.025	2.38	0.05	4.38	0.025	0.1	2.3	■	□	□						
	VCGT 070201-08 FR						4.38		0.1		■	□	□						
	VCGT 070202-08 FL						4.15		0.2		■	■	■		□				
	VCGT 070202-08 FR						4.15		0.2		■	■	■		□				
	VCGT 070204-08 FL						3.69		0.4		■	■	■		□				
	VCGT 070204-08 FR						3.69		0.4		■	■	■		□				
*1, 3) 	**VCGW 070200 FL**	6.921	3.97	0.025	2.38	0.05	3.36	0.025	0.0	2.3	■	■	□		□				
	VCGW 070200 FR						3.36		0.0		■	■	□		□				
	**VCGW 070201**	6.921	3.97	0.025	2.38	0.05	4.38	0.025	0.1	2.3	■	□	□		□				□
	VCGW 070202						4.15		0.2		■	■	■		□		■	■	■
	VCGW 070204						3.69		0.4		■	■	■		■		■	■	■

■ ab Lager / *stock item* / disponible du stock □ auf Anfrage / *upon request* / sur demande

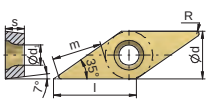
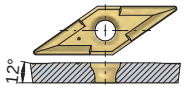
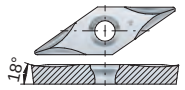
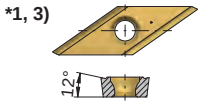
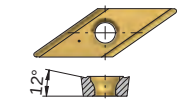
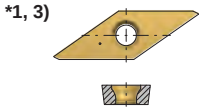
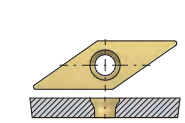
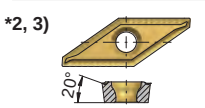
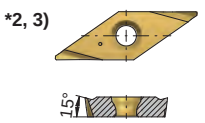
*1) Illustration: Linke Ausführung
Left hand execution
Exécution gauche

*3) Achtung: Stirnseitige Schutzfase (Wiper) unter 0° -> Anstellwinkel muss auf 90° korrigiert werden
Caution: *Frontal protection chamfer (wiper) at 0° -> angle must be corrected to 90°*
Attention: Chanfrein de protection frontale (wiper) à 0° -> l'angle doit être corrigé à 90°

Achtung: DX32 & DX52 sind für medizinische Implantate nicht geeignet !
Caution: DX32 & DX52 are not suitable for medical implants !
Attention: DX32 & DX52 ne convient pas pour les implants médicaux !

WENDESCHNEIDPLATTEN / *CARBIDE INSERTS* / PLAQUETTES EN CARBURE

VCG.. 13 Copy 35°

	Artikel-Nr. Article No. No. d'article	[mm] l	ød	+/-	s	+/-	m	+/-	R	ød$_1$	DX 2	DC 15	DX 20	DX 30	DX32	DX 50	DX 52	DX 70	DT 10	DT 210	DT 310	CBN	PKD	MDC
	**VCGT 130301-25**	13	7.94	0.025	3.18	0.13	9.000	0.025	0.1	3.4	■	■	■	■		□	□							
	VCGT 130302-25						8.767		0.2		■	■	■	■		■	□							
	VCGT 130304-25						8.302		0.4		■	■	■	■		■	□							
	VCGT 130308-25						7.372		0.8		■	■	■	■		■	□							
25°	**VCGT 130302 FN-25M**						8.767		0.2		■													
	VCGT 130304 FN-25M						8.302		0.4		■													
	***M**: Poliert / Top face polished*																							
	**VCGT 130301**	13	7.94	0.025	3.18	0.13	9.000	0.025	0.1	3.4	■	■	■	■		□	□							
	VCGT 130302						8.767		0.2		■	■	■	■		■	□		■	■	■			
	VCGT 130304						8.302		0.4		■	■	■	■		■	□		■	■	■			
12°	**VCGT 130308**						7.372		0.8		■	■	■	■		□	□		□	□	□			
	**VCGT 130302 EN-18M***	13	7.94	0.025	3.18	0.13	8.767	0.025	0.2	3.4		■*												
	VCGT 130302 FN-18M*						8.767		0.2		■*				■*									
	VCGT 130304 EN-18M	13	7.94	0.025	3.18	0.13	8.302	0.025	0.4	3.4		■												
18°	**VCGT 130304 FN-18M**						8.302		0.4		■				■									
	***M**: Poliert / Top face polished*																							
***1, 3)** 	**VCGT 130300 FL/R-10**	13	7.94	0.025	3.18	0.13	8.400	0.025	0.0	3.4	■		■	■		□								
12°																								
	**VCGT 130301 FL/R-10**	13	7.94	0.025	3.18	0.13	9.000	0.025	0.1	3.4	■		□	□										
	VCGT 130302 FL/R-10						8.767		0.2		■		■	■										
	VCGT 130304 FL/R-10						8.302		0.4		■		■	■										
12°	**VCGT 130308 FL/R-15**						7.372		0.8		■		■	■		□								
***1, 3)** 	**VCGW 130300 FL/R**	13	7.94	0.025	3.18	0.13	8.400	0.025	0.0	3.4	■		■	■		□								
	**VCGW 130301** (FN)	13	7.94	0.025	3.18	0.13	9.000	0.025	0.1	3.4	■		□	□										
	VCGW 130302 (FN)						8.767		0.2		■		■	■		□						■	■	
	VCGW 130304 (FN)						8.302		0.4		■		■	■		□						■	■	
	VCGW 130308 (FN)						7.371		0.8		■		■	■		□						□	□	
***2, 3)** 	**VCGT 130300 FR-01W**	13	7.94	0.025	3.18	0.13	7.282	0.025	0.0	3.4	■							■						
	VCGT 130301 FR-01W						7.250		0.1		■							■						
	VCGT 130302 FR-01W						7.217		0.2		■							■						
20°																								
***2, 3)** 	**VCGT 130300 FR-15W**	13	7.94	0.025	3.18	0.13	8.400	0.025	0.0	3.4	■							■						
	VCGT 130301 FR-15W						8.367		0.1		■							■						
	VCGT 130302 FR-15W						8.336		0.2		■							■						
15°																								

■ ab Lager / *stock item* / disponible du stock □ auf Anfrage / *upon request* / sur demande

*1) Illustration: Linke Ausführung / *Left hand execution* / Exécution gauche

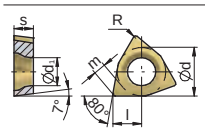
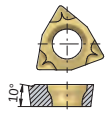
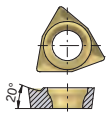
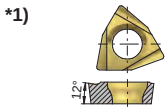
*2) Illustration: Rechte Ausführung / *Right hand execution* / Exécution droite

* R0.2 lieferbar April 2016 / *R0.2 available April 2016* / R0.2 disponible Avril 2016

*3) Achtung: Wiper muss parallel zu Werkstückachse liegen -> auf korrekten Anstellwinkel der Wendeschneidplatte achten !
Caution: Wiper must be parallel to axis of workpiece -> ensure proper angle of insert !
Attention: Chanfrein de protection (wiper) doît être parallèle à l'axe de la pièce -> assurer l'angle correct de la plaquette s.v.p.!

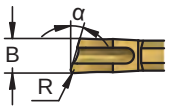
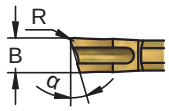
WENDESCHNEIDPLATTEN / *CARBIDE INSERTS* / PLAQUETTES EN CARBURE

WC..T 02 MiniTools 80°

	Artikel-Nr. *Article No.* No. d'article	[mm] l	∅d	+/-	s	+/-	m	+/-	R	$∅d_1$	DX 2	DX 20	DX 30	DX 50	DX 70	DS10	DS20	DT 55	DT 255	DT 355
	**WCET 020101 FN-20**	2.3	3.97	0.025	1.59	0.025	1.048	0.025	0.1	2.3	■	■	□	□		□	□			
	WCET 020102 FN-20						0.992		0.2		■	■	□	□		□	□			
	WCET 020104 FN-20						0.881		0.4		■	■	■	□		□	□			
	**WCGT 020101 EN**	2.3	3.97	0.025	1.59	0.13	1.048	0.025	0.1	2.3	■	■	□	□						
	WCGT 020102 EN						0.992		0.2		■	■	■	■				■	■	■
	WCGT 020104 EN						0.881		0.4		■	■	■	□				■	■	■
	**WCGT 020101 FN-20**	2.3	3.97	0.025	1.59	0.13	1.048	0.025	0.1	2.3	■	■	■	□						
	WCGT 020102 FN-20						0.992		0.2		■	■	■	□						
	WCGT 020104 FN-20						0.881		0.4		■	■	■	□						
*1) 	**WCGT 020102 FL/R**	2.3	3.97	0.025	1.59	0.13	0.992	0.025	0.2	2.3	■	■	■	■				■	■	■
	WCGT 020104 FL/R						0.881		0.4		■	□	□	□				■	■	■

*1) Illustration: Linke Ausführung / *Left hand execution* / Exécution gauche

D20.. Abstechplatten / *Cut-Off Inserts* / Plaquettes de rainurage

	Artikel-Nr. *Article No.* No. d'article	[mm] B	R	α	DX 50
	**D2022 L10 CF00**	2.2	0	10°	□
	D2022 L16 CF00	2.2	0	16°	□
	D2022 N00 CF00	2.2	0	0°	□
	D2022 N00 CF02	2.2	0.2	0°	□
	D2040 N00 CF00	4.0	0	0°	□
	D2040 N00 CF02	4.0	0.2	0°	□
	**D2022 R10 CF00**	2.2	0	10°	□
	D2022 R16 CF00	2.2	0	16°	□

Andere Geometrien auf Anfrage / *Different geometries upon request* / Géometries differentes sur demande

■ ab Lager / *stock item* / disponible du stock □ auf Anfrage / *upon request* / sur demande

NEW

MT-Tools CHIRON® PRECISION+

NEW

Denitool® Drehwerkzeuge für Mill Turn Maschinen
CHIRON® FZ 08 MT PRECISION+

Super kompakte Werkzeuge für Innen- & Aussenbearbeitung mit Spezial-Schnittstelle HSK A32-CHIRON / HSK A40-CHIRON

Denitool® Turning Tools for Mill Turn machines
CHIRON® FZ 08 MT PRECISION+

Super compact tools for internal & external turning with special interface HSK A32-CHIRON / HSK A40-CHIRON

Outils de tournage Denitool® pour machines multitâches
CHIRON® FZ 08 MT PRECISION+

Outils super compacts pour le tournage interne et externe avec une interface spéciale HSK A32-CHIRON / HSK A40-CHIRON

► **Siehe Denitool®** MT-Tools CHIRON PRECISION+ Katalog
► *Please refer to Denitool® MT-Tools CHIRON PRECISION+ catalog*
► **Se référer au catalogue Denitool®** MT-Tools CHIRON PRECISION+

Modulo D® System

HSK "T" Norm (ICTM Standard)

Modulares Werkzeugsystem für Drehmaschinen und Kombi Dreh-Fräscenter

Modular Tool System for Turning Machines and Combined MillTurn Centers

Système d'outil modulaire pour des centres de tournage et des centres d'usinage combinés CNC

MODULO D® HSK "T" NORM (ICTM STANDARD)

Das wirtschaftliche modulare Werkzeugsystem für den Einsatz auf Drehmaschinen und kombinierten Dreh-Fräscenter

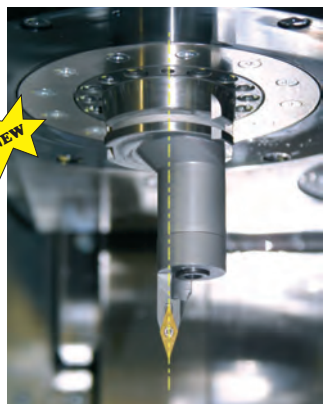
- Kostengünstige, flexible Lösung für die Verwendung hochpositiver Denitool® Schneidplatten auf Drehcenter mit modernen Aufnahmesystemen
- Patentierte, hochstabile Verbindung mit integrierter Kühlmittelführung zwischen Schneidkopf und Spanneinheit
- Schneidkopf bei Bedarf um 180° versetzt einbaubar (zB. bei radialer Anordnung am Revolver)
- Austauschbare, hochfeste Schneidköpfe, Spanneinheit mit konventionellen Festigkeitswerten
- Austauschbare Schneidköpfe mit verschiedenen Anstellwinkeln für Kopierarbeiten mit VC 13 Platten als Standard verfügbar
- Sonderschneidköpfe für eine Vielzahl von Plattengeometrien und -befestigungsarten kostengünstig und mit kurzen Lieferzeiten verfügbar
- Standard-Spanneinheit: HSK 40 "T", HSK 50 "T", HSK 63 "T"
  Andere Dimensionen und Systeme (ABS, CAPTO, KM etc.) auf Anfrage
- Kostengünstiger Ersatz bei Platten- bzw. Werkzeugbruch (Kollision)

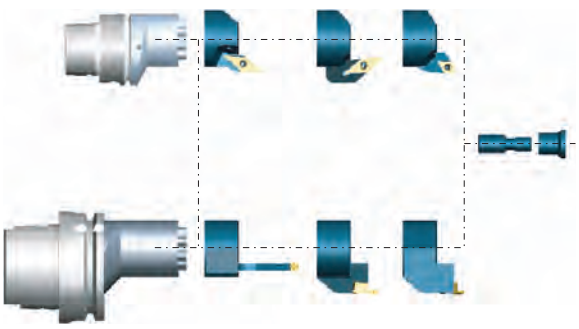
The economic modular tool system for operation on CNC turning machines and combined millturn centers

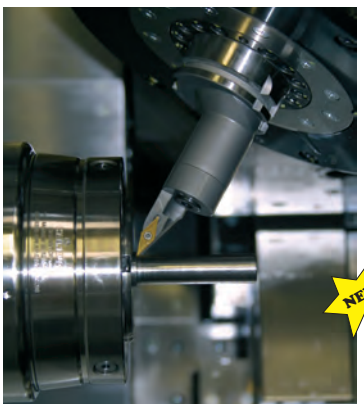
- Cost-effective, flexible solution for the use of highly positive Denitool® cutting inserts on CNC turning center with modern chucking system
- Patented, extremely rigid connection with integrated coolant between insert carrier and chuck unit
- The position of the insert carrier can be turned by 180° (e.g. radial assembly at the revolver)
- Exchangeable high-tensile insert carrier, chuck unit with conventional strength factor
- Exchangeable insert carriers with different positioning angles for copying operations available with VC13 inserts as standard
- Special insert carriers for various insert geometries and fixing possibilities at low costs and with short delivery times available
- Standard chuck units:
  HSK 40 "T", HSK 50 "T", HSK 63 "T"
  Other dimensions and systems (ABS, CAPTO, KM etc.) upon request
- Low-cost replacement in case of damage of insert or tool (collision)

Le système d'outils modulaires économique pour tours CNC et centres de tournage-fraisage

- Solution économique et flexible pour l'utilisation de plaquettes positives Denitool® sur centres de tournage, avec un système d'attachement moderne
- Attachement breveté à haute stabilité, avec arrosage intégré entre le tasseau porte-outil et le porte-plaquette
- Possibilité d'indexation à 180° de la tête de coupe (par ex. pour disposition radiale sur le revolver)
- Porte-plaquettes interchangeables à haute résistance, tasseau porte-outil avec résistance conventionnelle
- Porte-plaquettes interchangeables, avec divers angles d'incidence, pour copiage avec plaquettes VC 13
- Porte-plaquettes spéciaux pour un nombre élevé de plaquettes diverses, disponibles rapidement et à faible coût
- Tasseaux porte-outil standards :
  HSK 40 "T", HSK 50 "T", HSK 63 "T"
  Autres dimensions et systèmes (ABS, CAPTO, KM etc.) livrables sur demande
- Frais de remplacements réduits en cas de bris de plaquette ou d'outil (collision)



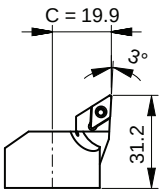




MODULO D® HSK "T" NORM (ICTM STANDARD)

WSP / Insert / Plaquette
DC 0702..

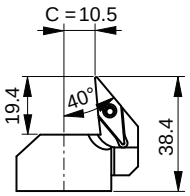
Schraube / Screw / Vis
T25.055



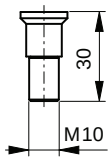
Schneidkopf / Insert Carrier / Porte-plaquette **TDJL07**
MOD M32 SDJCL0731199

WSP / Insert / Plaquette
VC 1303..

Schraube / Screw / Vis
T30.090



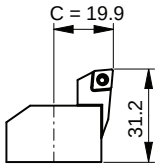
Schneidkopf / Insert Carrier / Porte-plaquette **TVXL13**
MOD M32 SVXCL1338105



Differentialsatz / Differential Set / Ensemble vis différentielle T25
TDS 100300

WSP / Insert / Plaquette
CC 0602..

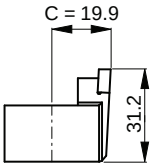
Schraube / Screw / Vis
T25.055



Schneidkopf / Insert Carrier / Porte-plaquette **TCLL06**
MOD M32 SCLCL0631199

WSP / Insert / Plaquette
NFL 1..

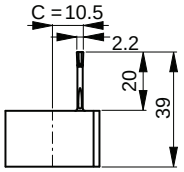
Schraube / Screw / Vis
T30.090



Schneidkopf / Insert Carrier / Porte-plaquette **SNFL01**
MOD M32 SNFOL0131199

WSP / Insert / Plaquette
A2022..

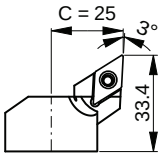
Montagehebel / Mounting Lever / Levier d'assemblage
K-170137



Schneidkopf / Insert Carrier / Porte-plaquette **SA22220**
MOD M32 3870260239105

WSP / Insert / Plaquette
DC 11T3..

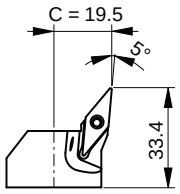
Schraube / Screw / Vis
T35.084



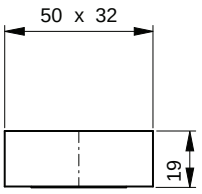
Schneidkopf / Insert Carrier / Porte-plaquette **TDJL11**
MOD M32 SDJCL1133250

WSP / Insert / Plaquette
VC 1303..

Schraube / Screw / Vis
T30.090



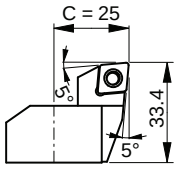
Schneidkopf / Insert Carrier / Porte-plaquette **TVLL13**
MOD M32 SVLCL1331195



Ausrichtkopf / Alignment Head / Tête d'ajustage **A100**
MOD M32 30503219

WSP / Insert / Plaquette
CC 09T3..

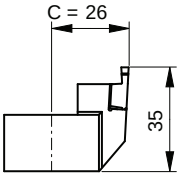
Schraube / Screw / Vis
T35.084



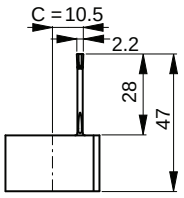
Schneidkopf / Insert Carrier / Porte-plaquette **TCLL09**
MOD M32 SCLCL0933250

WSP / Insert / Plaquette
NFL 2..

Schraube / Screw / Vis
T50.160



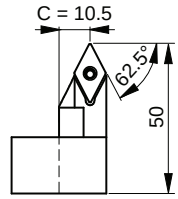
Schneidkopf / Insert Carrier / Porte-plaquette **SNFL02**
MOD M32 SNFOL0235260



Schneidkopf / Insert Carrier / Porte-plaquette **SA22228**
MOD M32 3870260247105

WSP / Insert / Plaquette
DC 11T3..

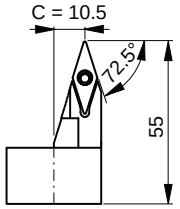
Schraube / Screw / Vis
T35.084



Schneidkopf / Insert Carrier / Porte-plaquette **TDNL11**
MOD M32 SDNCL 1150105

WSP / Insert / Plaquette
VC 1303..

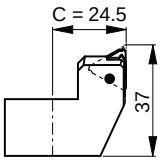
Schraube / Screw / Vis
T30.090



Schneidkopf / Insert Carrier / Porte-plaquette **TVVL13**
MOD M32 SVVCL 1355105

Gewinde-WSP / Threading Insert / Plaquette de Filetage **LT 16 ER..**

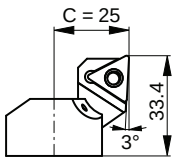
Schraubensatz / Screw Set / Ensemble de Vis **TDE 001**



Schneidkopf / Insert Carrier / Porte-plaquette **FLTR16**
MOD M32 LTR1637245

WSP / Insert / Plaquette
TP 16T3..

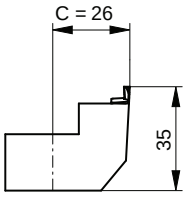
Schraube / Screw / Vis
T35.084



Schneidkopf / Insert Carrier / Porte-plaquette **TTJL16**
MOD M32 STJPL1633250

Spezial - WSP / Special Insert Plaquette Spéciale **NFR 2..**

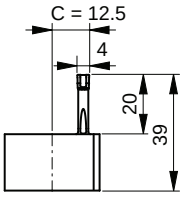
Schraube / Screw / Vis
T50.160



Schneidkopf / Insert Carrier / Porte-plaquette **SNFR02**
MOD M32 SNFOR0235260

WSP / Insert / Plaquette
A2040..

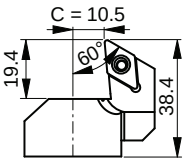
Montagehebel / Mounting Lever / Levier d'assemblage
K-170137



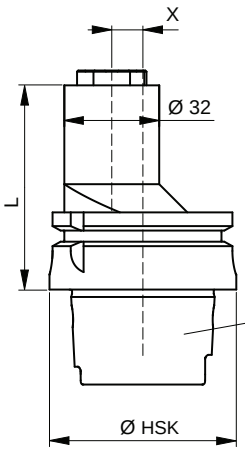
Schneidkopf / Insert Carrier / Porte-plaquette **SA24020**
MOD M32 3870320439125

WSP / Insert / Plaquette
DC 11T3..

Schraube / Screw / Vis
T35.084



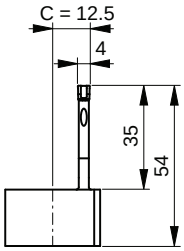
Schneidkopf / Insert Carrier / Porte-plaquette **TDXL11**
MOD M32 SDXCL1138105



Spanneinheit / Chuck Unit / Tasseau porte-outil
MOD HSK A . . DS20 . . .M32

Artikel Nr. / Article No. / No. d'article	Ø HSK	L	X
MOD HSK A40 DS20 450M32	40	45.0	6.0
MOD HSK A50 DS20 640M32	50	64.0	8.0
MOD HSK A63 DS20 688M32	63	68.8	10.5
MOD HSK A63 DS20 X88M32	63	108.8	10.5

F-Dimension
F = C - X



Schneidkopf / Insert Carrier / Porte-plaquette **SA24035**
MOD M32 3870320454125

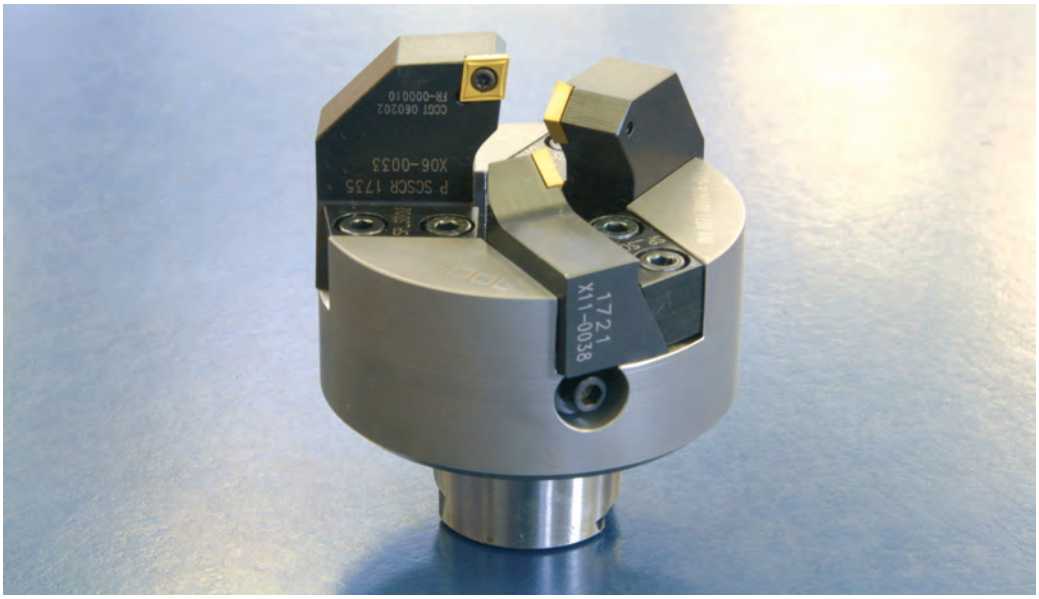
Andere Abmessungen & Geometrien auf Anfrage / Different dimensions & geometries upon request / Dimensions et géométries differentes sur demande

MultiCut® System

Multifunktions Schneidkopf System mit Präzisionsjustierung für Rundtakt Transfermaschinen (Typ Hydromat®)

The precision adjustable Multifunction Cutting Head System for Rotary Indexing Machines (Hydromat®-Type)

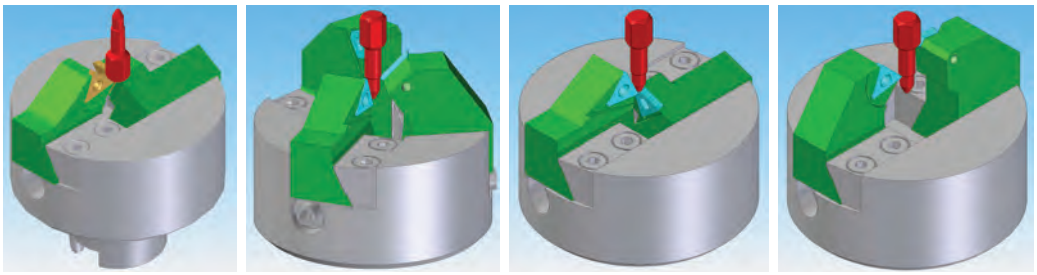
Système Multifonctionnel de Têtes de Coupe réglables à précision pour des Machines de Transfert Rotatives



Diese zwei- und dreischneidigen Köpfe werden aus Halbfabrikaten mit Standard-schnittstelle kundenspezifisch für die jeweilige Maschinenspezifikation gefertigt.

These two- and three-flute heads are made of semi-finished products manufactured with standard interface customized for the particular machine specification.

Ces têtes à deux et à trois pales sont faites de produits semi-finis fabriqués avec interface standard adapté pour la spécification de machine particulier.

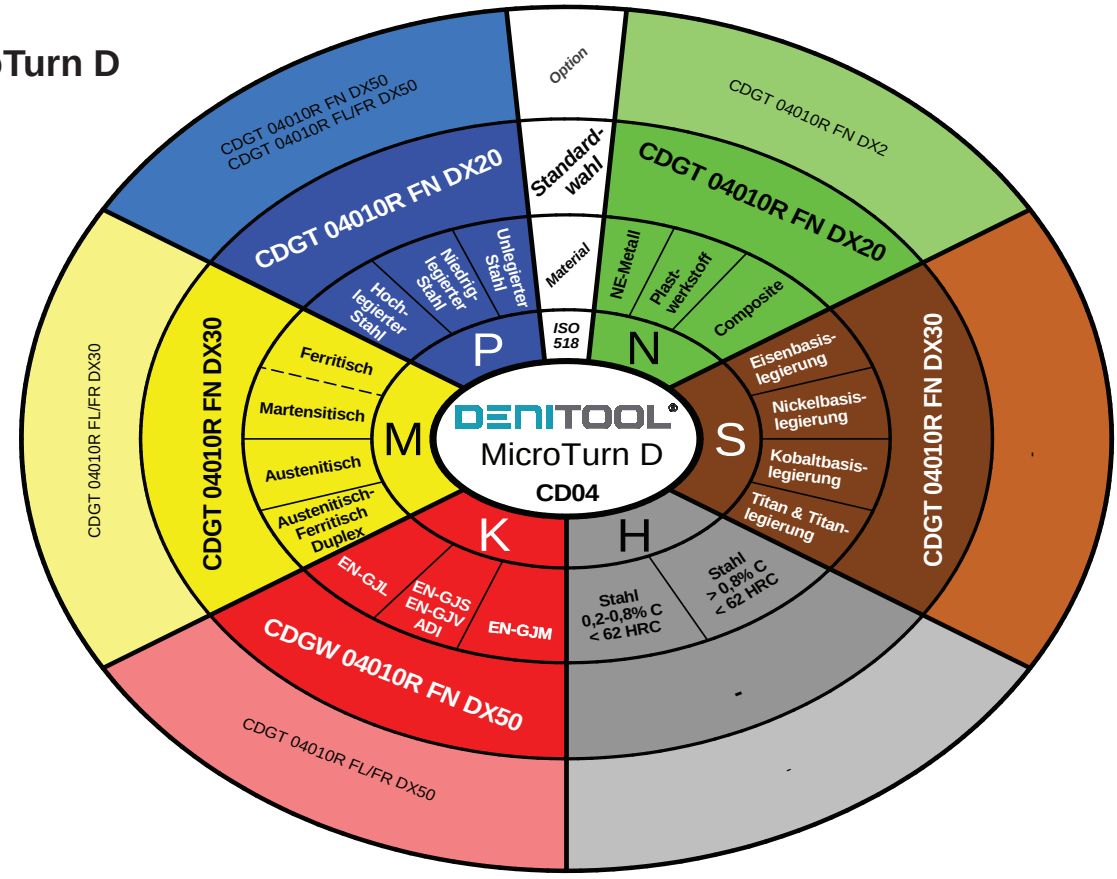


Denitool® Data

- ▶ WSP Selector / Insert Selector / Sélecteur pour plaquettes

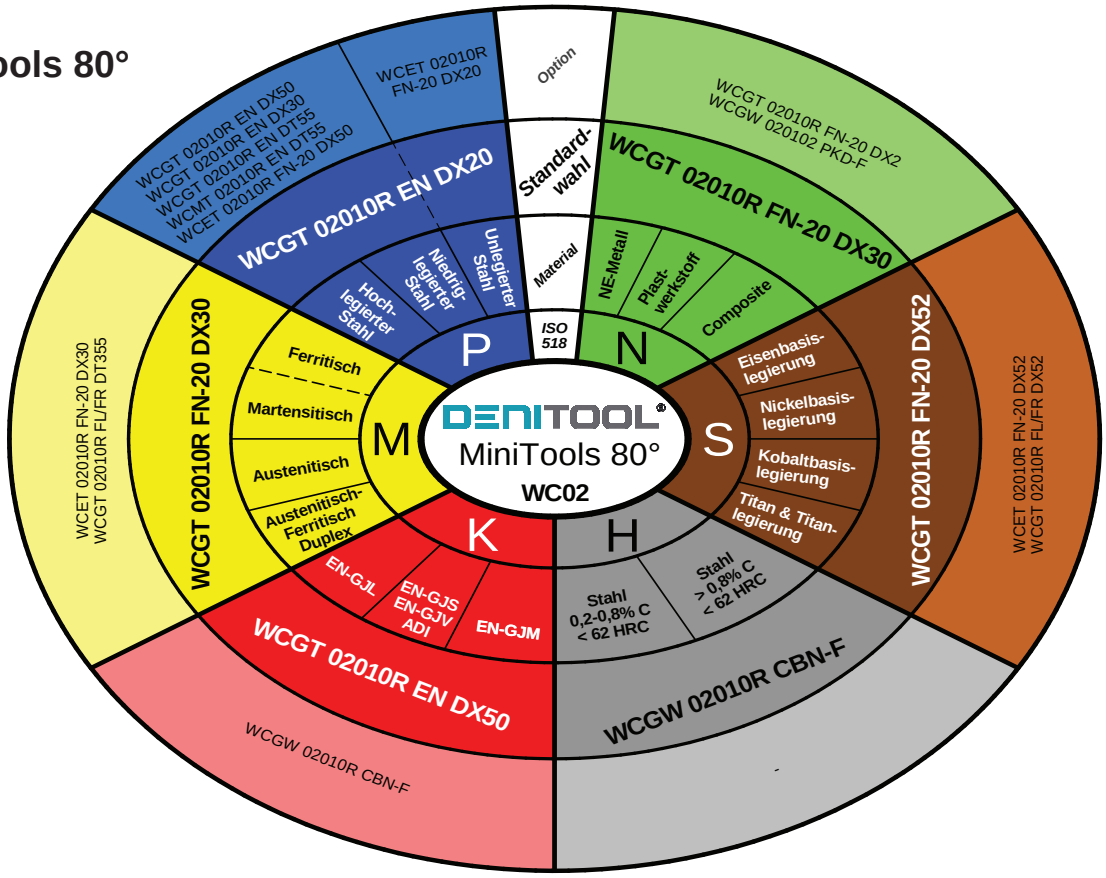
- ▶ Grades & Coatings
- ▶ Denitool® PVD-Coatings
- ▶ Cutting Data
- ▶ Material Cross Reference
- ▶ Handling Instruction
- ▶ Designation Codes
- ▶ Sicherheit / Safety Warning / Consignes de securité

MicroTurn D
CD04



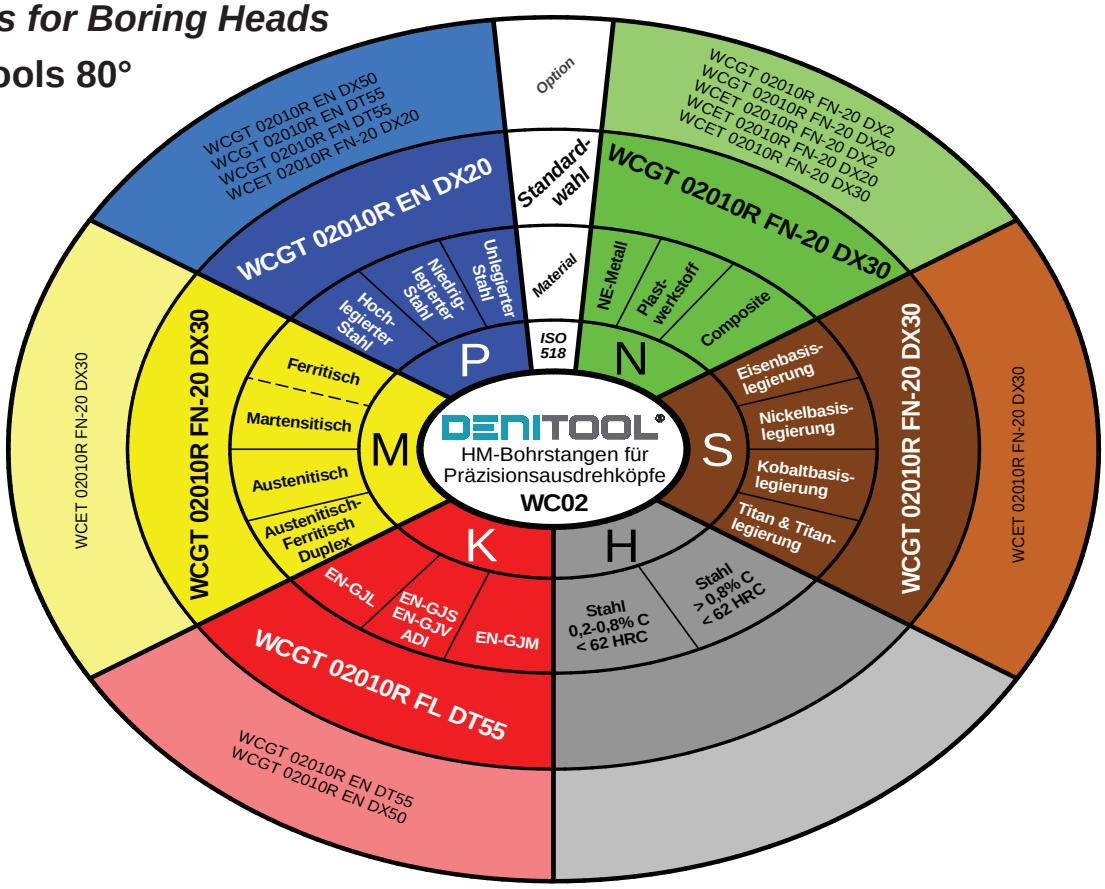
"R" = Plattenradius

MiniTools 80°
WC02



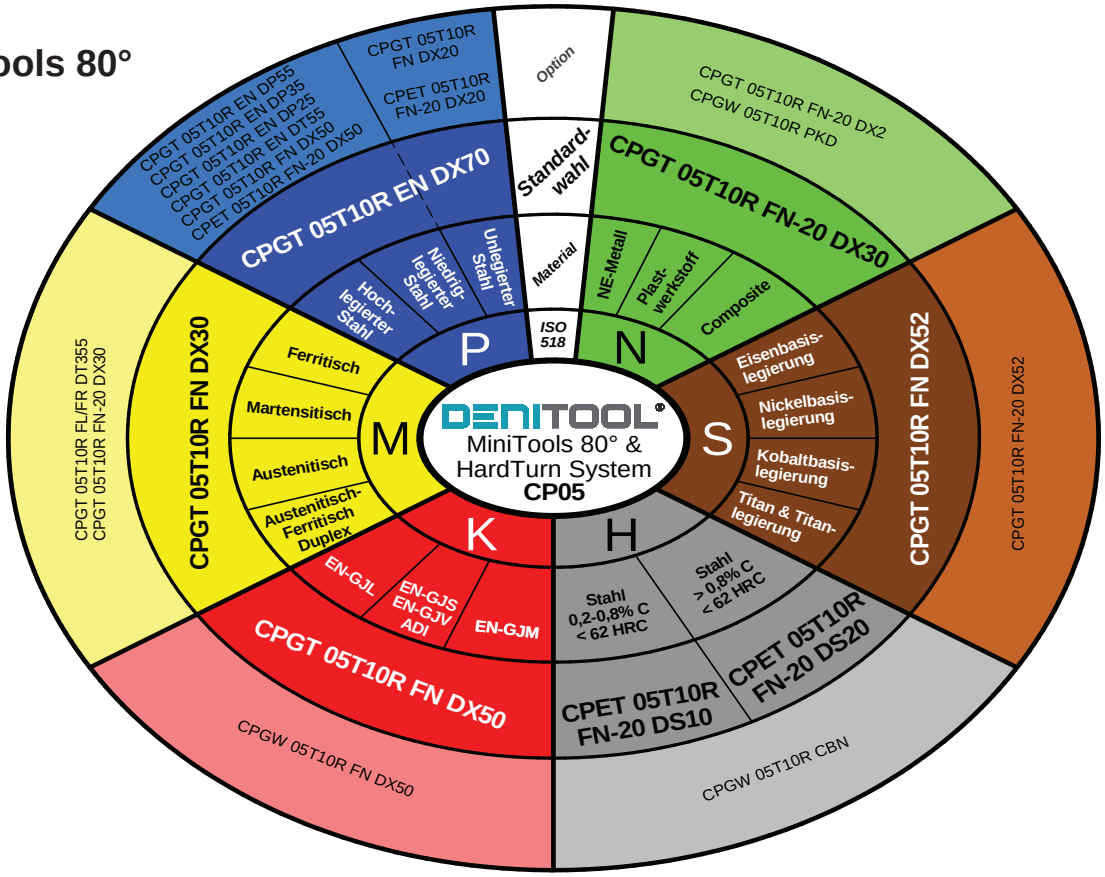
HM-Stangen für Präzisions-Ausdrehköpfe / *C-Bars for Boring Heads*

MiniTools 80° WC02



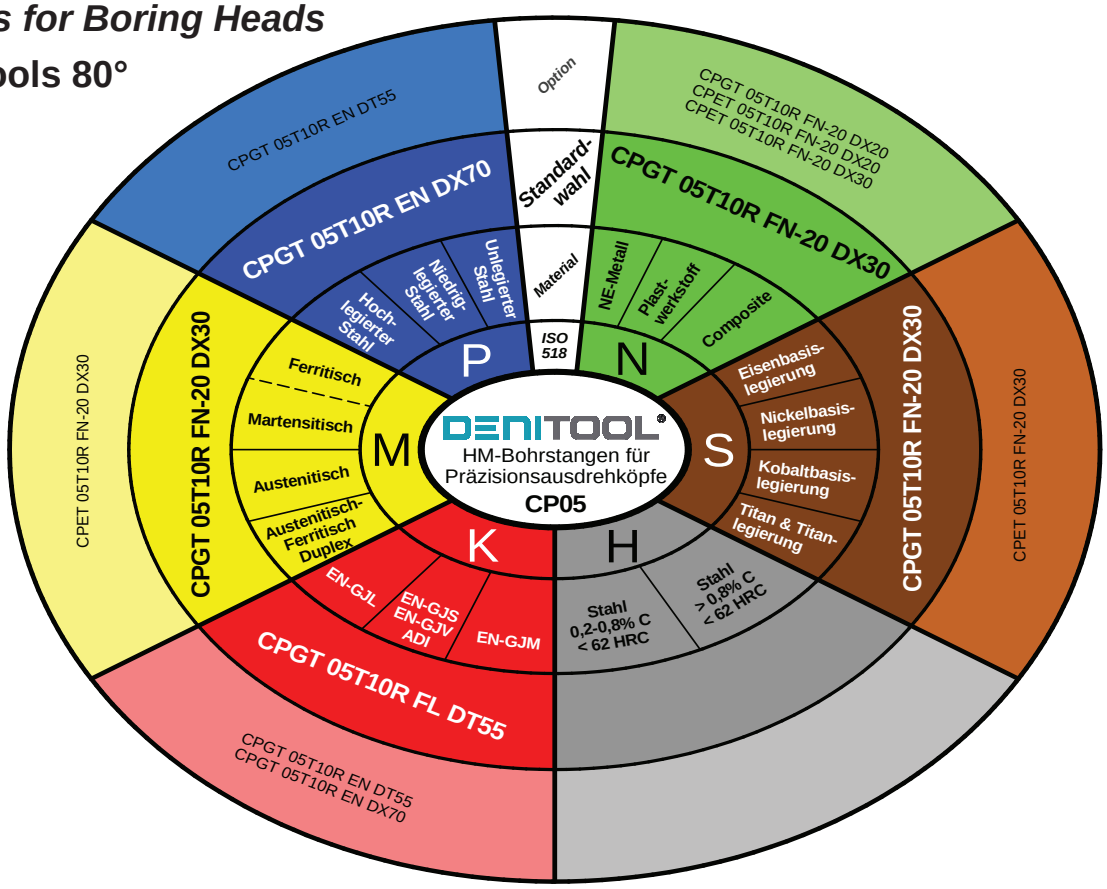
"R" = Plattenradius

MiniTools 80° CP05



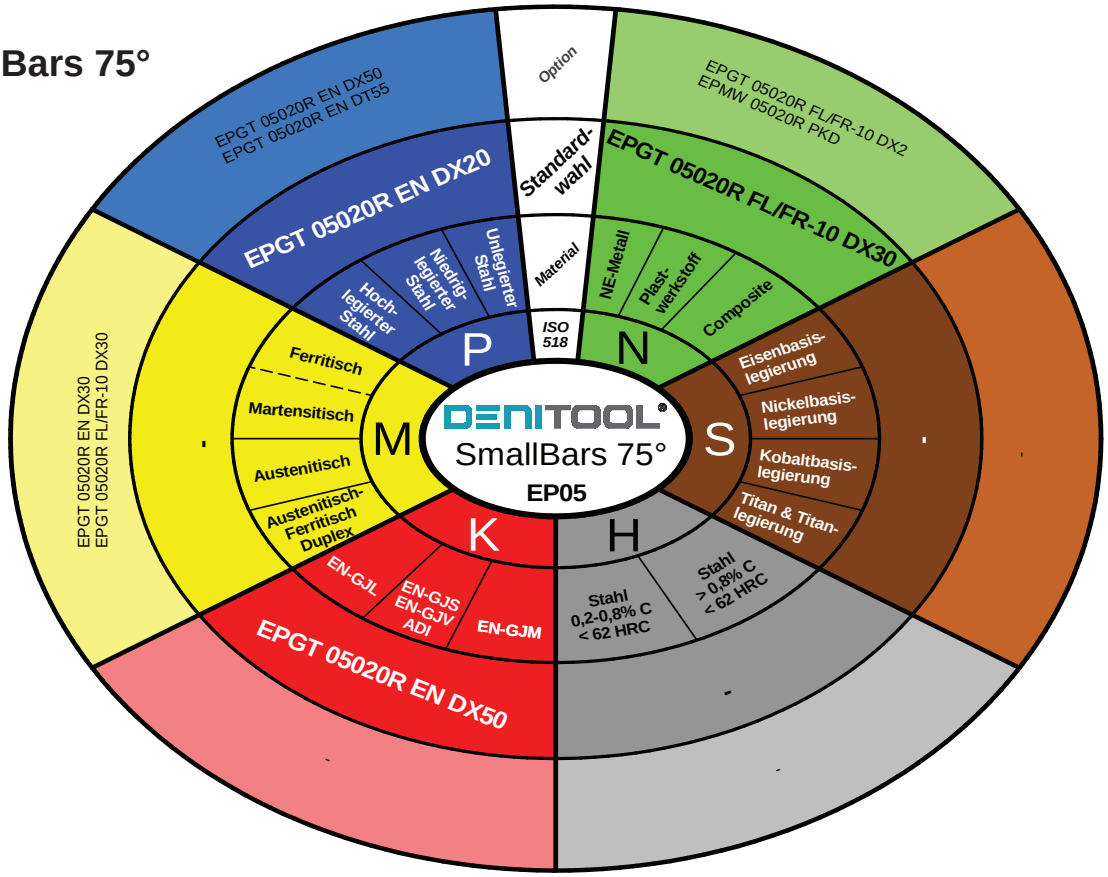
HM-Stangen für Präzisions-Ausdrehköpfe / *C-Bars for Boring Heads*

MiniTools 80°
CP05

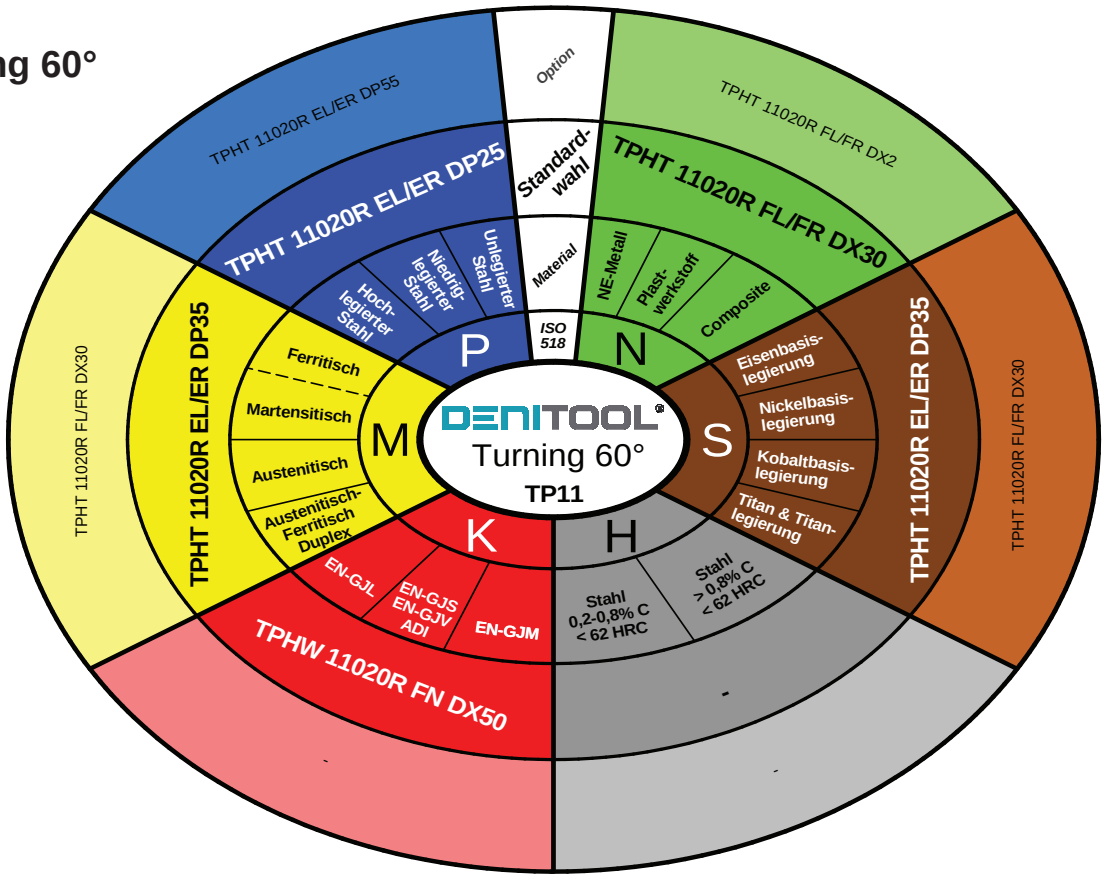


"R" = Plattenradius

Small Bars 75°
EP05

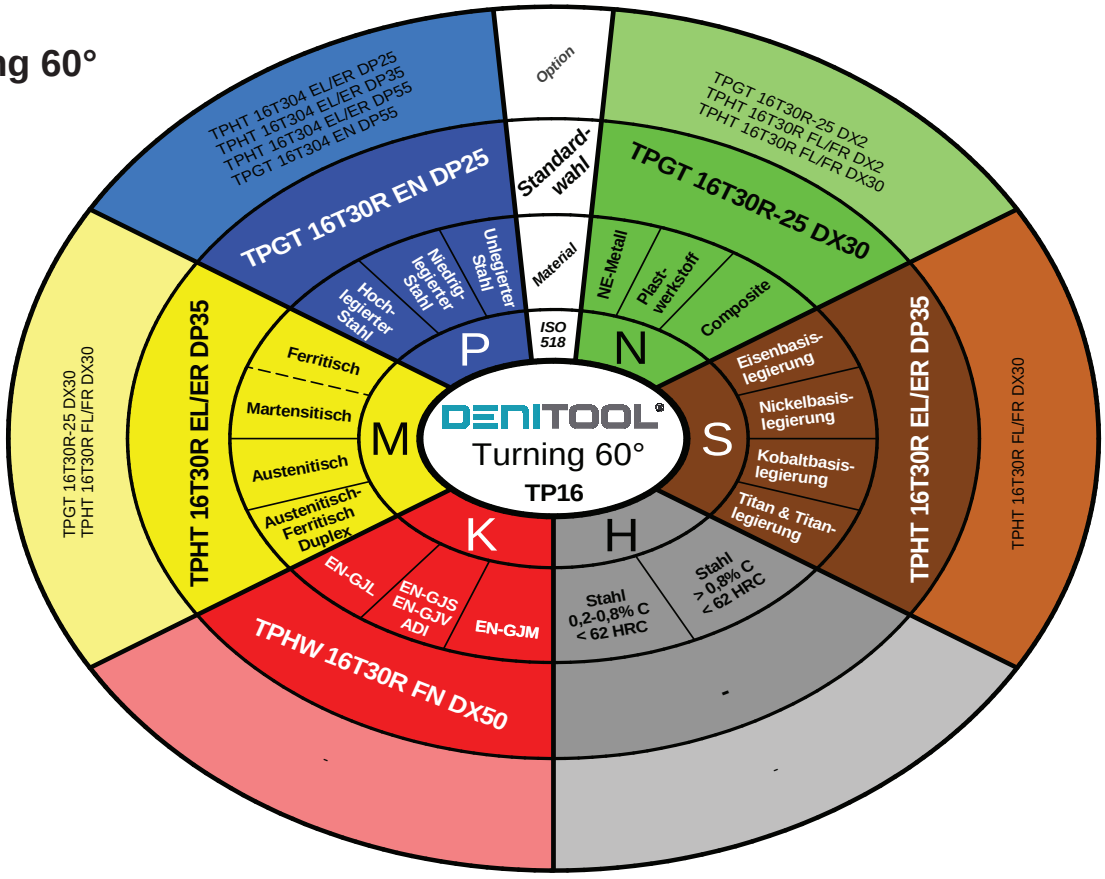


Turning 60°
TP11

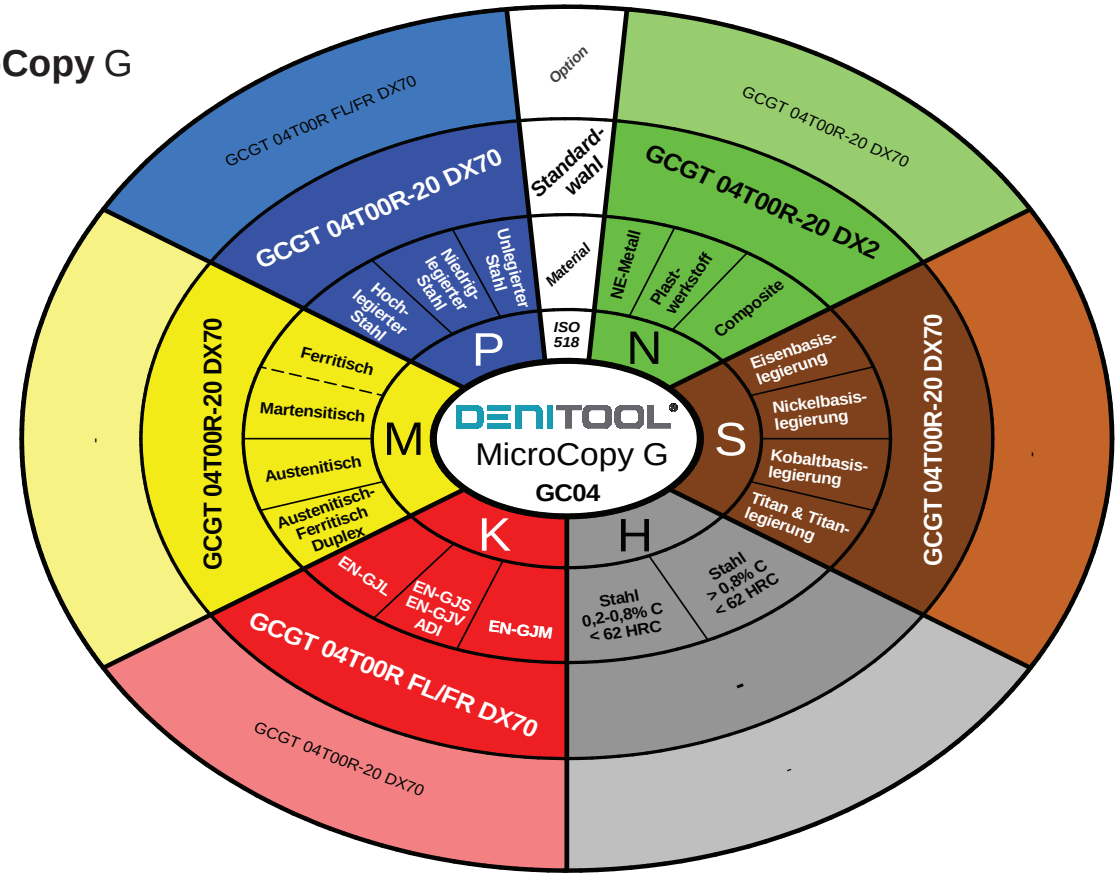


"R" = Plattenradius

Turning 60°
TP16

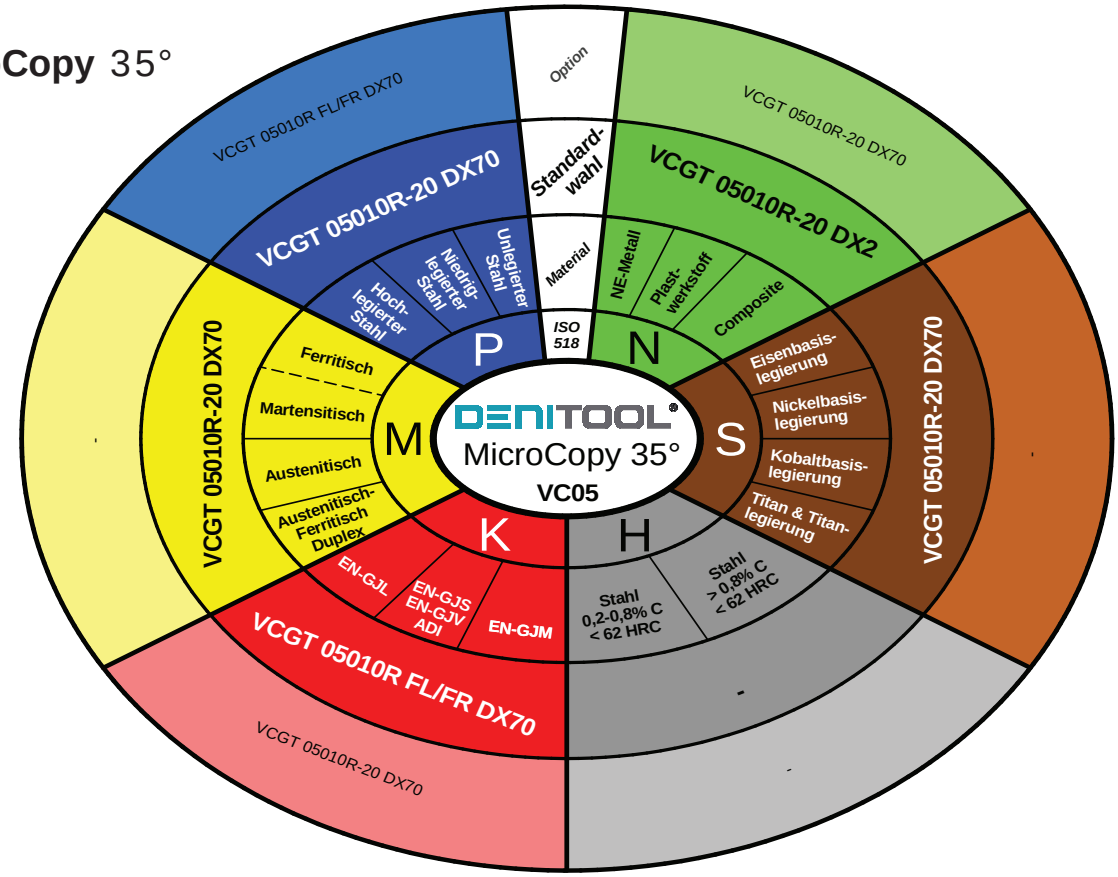


MicroCopy G
GC04

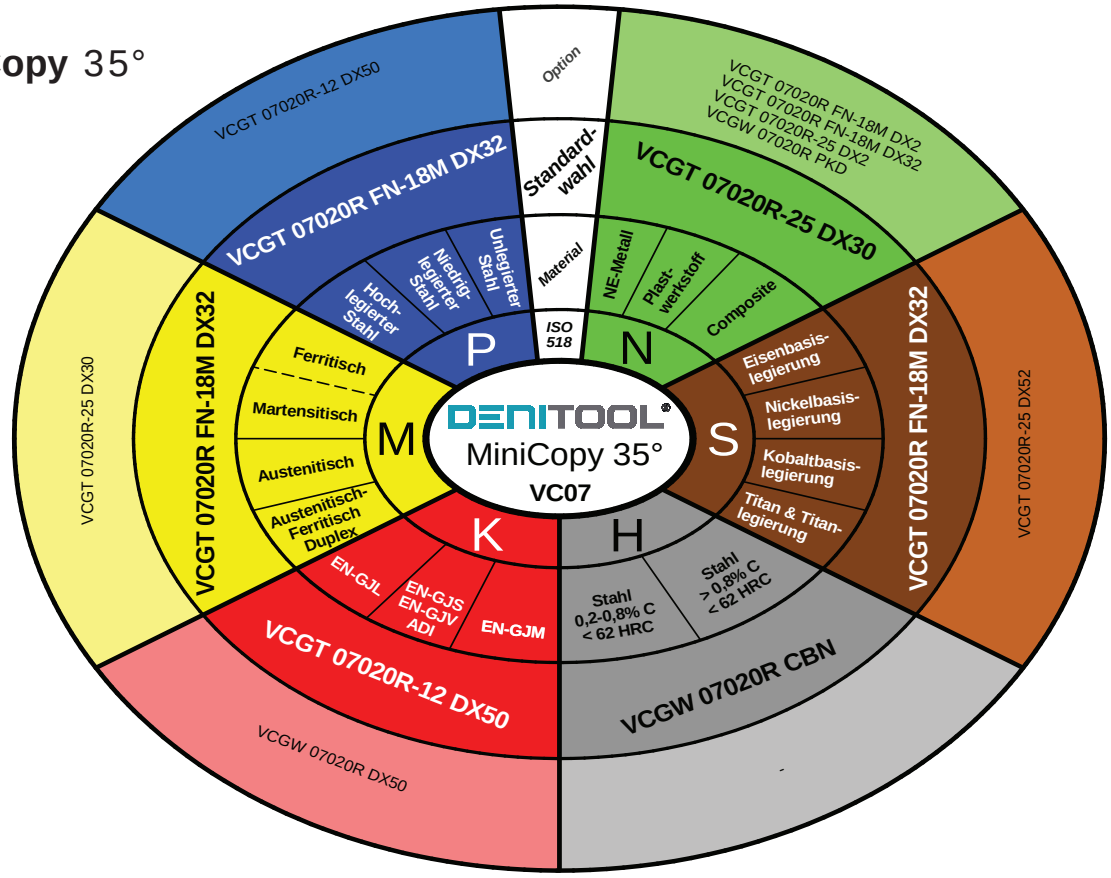


"R" = Plattenradius

MicroCopy 35°
VC05

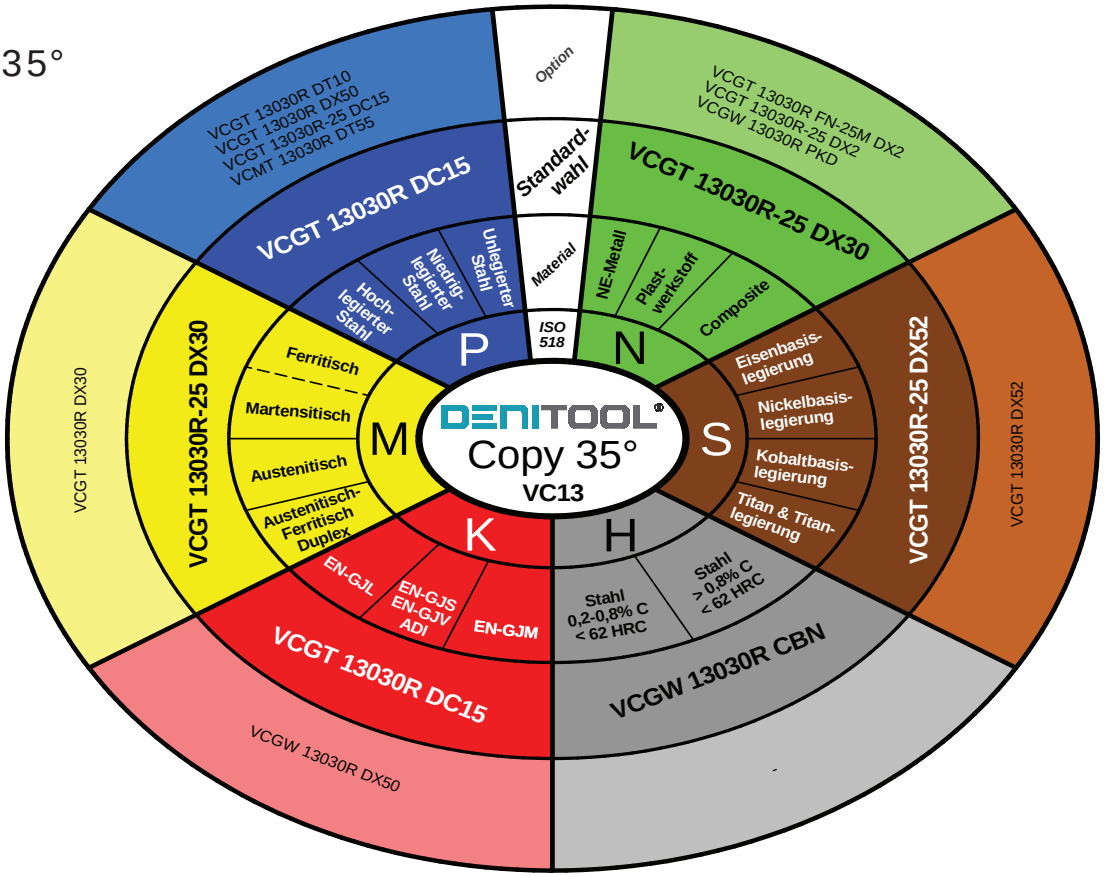


MiniCopy 35°
VC07



"R" = Plattenradius

Copy 35°
VC13



DENITOOL

DENITOOL® PVD-SCHICHTEN / -COATINGS / -REVÊTEMENTS

DATEN / EIGENSCHAFTEN / EINSATZEMPFEHLUNGEN
DATASHEET / PROPERTIES / APPLICATION

SCHICHT TYP TYPE OF COATING	EINSATZ-TEMPERATUR WORKING TEMPERATURE (MAX. °C)	MICRO-HÄRTE MICRO HARDNESS (HV 0.01)	SCHICHT-DICKE COATING LAYER THIKNESS (µm)	REIBWERT GEGEN STAHL (TROCKEN) COEFFICIENT OF FRICTION VS. DRY STEEL	FARBE COLOUR		STAHL / STEEL	GRAUGUSS / CAST IRON	TI-/ NI-LEGIERUNGEN / TI-/ NI-ALLOYS	HART DREHEN / HARD TURNING	AL-/ MG-LEGIERUNGEN / AL-/ MG-ALLOYS	KUPFER / COPPER	MESSING, BRONZE, NEUSIILBER / BRASS, BRONZE, NICKELSILVER	KUNSTSTOFFE / PLASTIC MATERIAL
DX20 DP25	600	2'500	1-4	0.4	GOLD		😊😊😊	😐	😊	☹	😊😊	😊	😊😊	😊
DX30 DP35	400	3'500	2-4	0.2	VIOLETT-GRAU VIOLET-GREY		😊😊😊	😊	😊😊	☹	😊😊	😊😊	😊😊	😊😊
DX32 (PLC ANTI-FRICTION TOP LAYER)	400	3'500	2-4	0.15	DUNKEL BLAU-GRAU DARK BLUE-GREY		😊😊	😊	😊😊	☹	😊😊😊	😊😊😊	😊😊😊😊	😊😊
DX50 DP55	900	3'500	1-2	0.3	DUNKEL BLAU-GRAU DARK BLUE-GREY		😊😊😊	😊😊😊	😊😊😊	😐	😐	😊😊	😊😊	
DX52 DP57 (PLC ANTI-FRICTION TOP LAYER)	900	3'500	1-2	0.15	DUNKEL BLAU-GRAU DARK BLUE-GREY		☹	☹	😊😊	☹	😊😊😊	😊😊	😊😊	
DX70	900	3'500	2-3	0.4	GOLD		😊😊😊	😊😊	😊😊	☹	😊😊	😊😊	😊😊	
DS10	1'100	4'200	1-3	0.35	BLAU-GRAU BLUE-GREY					😊😊				
DS20 (STEEL W. HIGHER C - CONTENT)	1'200	4'500	1-3	0.45	DUNKEL BLAU-GRAU DARK BLUE-GREY					😊😊😊				

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DENITOOL® DATA

DENITOOL® DATA

HARTMETALL UNBESCHICHTET *CARBIDE UNCOATED* CARBURE NON REVÊTU

DX2
Feinkornsorte für Guss, Kunststoffe und Alu. Rostfreie Stähle bei niedrigen Schnittgeschwindigkeiten.
Micrograin grade for machining of cast iron, plastics and aluminium. Stainless steel at lower cutting speed.
Qualité micrograin pour l'usinage de fonte, plastique et aluminium. Acier inox à basse vitesse de coupe.

P20 / P25
Universalsorte für mittlere Bearbeitung in Stahl, Stahlguss und rostfreiem Stahl bei mittleren Schnittgeschwindigkeiten.
Universal grade for medium machining of steel, cast iron and stainless steel at medium cutting speed.
Qualité standard pour l'usinage moyenne de l'acier, fonte spheroïdale et acier inox à vitesse de coupe moyenne.

HARTMETALL BESCHICHTET *CARBIDE COATED* CARBURE REVÊTU

DC15 / DC25 (CVD)
Feinkornsorte für Stahl, rostfreien Stahl, Grau- und Sphäroguss. Gute Kolkverschleissfestigkeit und Kantenstabilität.
Micrograin grade for machining of steel, stainless steel, cast iron steel and nodular cast iron. Good stability of cutting edge and resistance against crater-wear.
Qualité micrograin pour l'usinage de l'acier, acier inox, fonte et fonte spheroïdale. Bonne résistance de l'arêt de coupe et à la cratérisation.

DP25 / DX20 (PVD)
Für Stahl, leicht zerspanbare rostfreie Stähle und Sonderlegierungen bei mittleren Schnittgeschwindigkeiten.
For steel, free-cutting stainless steel and super alloys at medium cutting speed.
Usinage de l'acier, acier inox à bonne usinabilité et alliages spéciaux. Vitesse de coupe moyenne.

DP35 / DX30 (PVD)
Für Stahl, schwer zerspanbaren rostfreien Stahl, Grau- und Sphäroguss bei mittleren bis hohen Schnitteschwindigkeiten. Hohe Verschleissfestigkeit.
For steel, difficult to machine stainless steel, grey and nodular cast iron at medium up to high cutting speed. Excellent wear resistance.
Usinage de l'acier, acier inox à usinabilité difficile, fonte grise et spheroïdale de moyenne à haute vitesse de coupe. Excellente résistance à l'usure.

DX32 (PVD)
Universalsorte für Leichtmetall-Legierungen und rostfreien Stahl. Wirksamer Schutz gegen Aufbauschneiden.
Universal grade for light metal alloys and stainless steel. High protection against edge build-up.
Qualité universelle pour des alliages de métaux légers et acier inox. Haute protection contre le bord bâties.

DP55 / DX50 (PVD)
Für Stahl, schwer zerspanbaren rostfreien Stahl, Grau- und Sphäroguss bei hohen Schnittgeschwindigkeiten. Hohe thermische Stabilität. Für Trockenbearbeitung bestens geeignet.
For steel, difficult to machine stainless steel, grey and nodular cast iron at high cutting speed. High thermal stability. Excellent for dry machining.
Usinage de l'acier, acier inox à usinabilité difficile, fonte grise et spheroïdale à haute vitesse de coupe. Haute résistance thermale. Excellent pour l'usinage à sec.

DP57 / DX52 (PVD+PLC)
Wie **DP55 / DX 50** jedoch mit **PLC-Gleitfilm gegen Kaltschweissungen**. Hohe thermische Stabilität. Für Trockenbearbeitung bestens geeignet.
*Similar to **DP55 / DX 50** but with additional **PLC-antifriction film against cold-welding tendency**. High thermal stability.*
Similaire à **DP55 / DX 50** mais avec **film antifriction PLC additionel contre la tendence de soudage à froid**. Haute résistance thermale. Excellent pour l'usinage à sec.

DX70 (PVD)
Universalsorte für Alu-Legierungen, Stahl und Superlegierungen. Hohe thermische Stabilität.
Universal grade for aluminium alloys, steel and super alloys. High thermal stability.
Qualité universelle pour des alliages d'aluminium, acier et super alliages. Haute résistance thermale.

DS10 (PVD)
Feinkornsorte mit SuperHard Spezialbeschichtung für **Hartdrehen** bis **62 HRC**. Hohe thermische Stabilität.
*Micrograin with SuperHard special coating for **Hard Turning Operations** up to **62 HRC**. High thermal stability.*
Qualité micrograin avec revêtement spécial SuperHard pour des **opérations de tournage en dur** jusqu'à **62 HRC**. Haute résistance thermale.

DS20 (PVD)
High-End Sorte für **Hartdrehen** bis **62 HRC** in Stahl mit höherem Kohlenstoffgehalt. Hohe thermische Stabilität.
*High-end quality for **Hard Turning Operations** up to **62 HRC** in steel with higher carbon content. High thermal stability.*
Qualité haute de gamme pour des **opérations de tournage en dur** jusqu'à **62 HRC** dans de l'acier à teneur en carbone élevé. Haute résistance thermale.

CERMET UNBESCHICHTET *CERMET UNCOATED* CERMET NON REVÊTU

DT10 / DT55
Für Schlichtanwendungen in Stahl und leicht zerspanbaren rostfreien Stahl bei mittleren Schnittgeschwindigkeiten.
For finishing applications in steel and free-cutting stainless steel at medium cutting speed.
Usinage en finition dans l'acier et acier inox à bonne usinabilité. Vitesse de coupe moyenne.

CERMET BESCHICHTET *CERMET COATED* CERMET REVÊTU

DT210 / DT255 (PVD)
Für Stahl, leicht zerspanbare rostfreie Stähle und Sonderlegierungen bei mittleren und hohen Schnittgeschwindigkeiten.
For steel, free-cutting stainless steel and super alloys at medium up to high cutting speed.
Usinage de l'acier, acier inox à bonne usinabilité et super-alliages. Moyenne à haute vitesse de coupe.

DT310 / DT355 (PVD)
Für Stahl, schwer zerspanbaren rostfreien Stahl, Grau- und Sphäroguss bei mittleren bis hohen Schnittgeschwindigkeiten. Hohe Verschleissfestigkeit.
For steel, difficult to machine stainless steel, grey and nodular cast iron at medium up to high cutting speed. Excellent wear resistance.
Usinage de l'acier, acier inox à usinabilité difficile,fonte grise et spheroïdale de moyenne à haute vitesse de coupe. Excellente résistance à l'usure.

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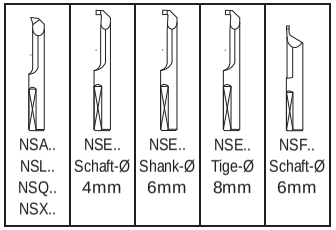

	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté
				Rm (N/mm²)	HB
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300

f (mm/U) *)					(mm) **)	DENALLOY®									Vc (m/min)
						unbeschichtet uncoated non revêtu		beschichtet coated revêtu							
								PVD							
0.01 ÷ 0.06	0.005 ÷ 0.030	0.005 ÷ 0.040	0.005 ÷ 0.060	0.005 ÷ 0.040	0.005 ÷ 0.040			50							
0.01 ÷ 0.06	0.005 ÷ 0.030	0.005 ÷ 0.040	0.005 ÷ 0.060	0.005 ÷ 0.040	0.005 ÷ 0.040			43							
0.01 ÷ 0.06	0.005 ÷ 0.030	0.005 ÷ 0.040	0.005 ÷ 0.060	0.005 ÷ 0.040	0.005 ÷ 0.040			36							
0.01 ÷ 0.04	0.005 ÷ 0.020	0.005 ÷ 0.030	0.005 ÷ 0.030	0.005 ÷ 0.030	0.005 ÷ 0.030			25							
0.01 ÷ 0.04	0.005 ÷ 0.020	0.005 ÷ 0.030	0.005 ÷ 0.030	0.005 ÷ 0.030	0.005 ÷ 0.030			20							
0.01 ÷ 0.06	0.005 ÷ 0.030	0.005 ÷ 0.040	0.005 ÷ 0.060	0.005 ÷ 0.040	0.005 ÷ 0.040			35							
0.01 ÷ 0.04	0.005 ÷ 0.020	0.005 ÷ 0.030	0.005 ÷ 0.030	0.005 ÷ 0.030	0.005 ÷ 0.030			28							
0.03 ÷ 0.10	0.015 ÷ 0.050	0.015 ÷ 0.070	0.015 ÷ 0.090	0.015 ÷ 0.070	0.015 ÷ 0.070			30							
0.03 ÷ 0.10	0.010 ÷ 0.040	0.015 ÷ 0.050	0.015 ÷ 0.060	0.015 ÷ 0.050	0.015 ÷ 0.050			25							
0.01 ÷ 0.10	0.015 ÷ 0.060	0.015 ÷ 0.080	0.015 ÷ 0.120	0.015 ÷ 0.080	0.015 ÷ 0.080			160							
0.01 ÷ 0.10	0.015 ÷ 0.050	0.015 ÷ 0.100	0.015 ÷ 0.120	0.015 ÷ 0.100	0.015 ÷ 0.100			300							

*) tiefe Werte für Werkzeuge mit langem Schaft / low data for tool w. long shank / petites valeurs pour outils longues
höhere Werte für Werkzeuge mit kurzem Schaft / high data for tool w. short shank / hautes valeurs pour outils courts

**) Spandicke / chip thickness / épaisseur de copeau

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	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté	CDGT 04 FR/L	CDGT 04 FN	CDGW 04 FN		Hartmetall / Carbide / Carbure						Cermet		
										unbeschichtet uncoated non revêtu		beschichtet coated revêtu				un - un - non -	beschichtet coated revêtu	
										DX2		DX20	DX30 DX50 DX52					
				Rm (N/mm²)	HB	f (mm/U) *)				Vc (m/min)								
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160	0.01 ÷ 0.10	0.01 ÷ 0.10	0.01 ÷ 0.15		160		230	280					
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200	0.01 ÷ 0.10	0.01 ÷ 0.10	0.01 ÷ 0.15		140		210	260					
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275			0.01 ÷ 0.10		130		180	250					
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325			0.01 ÷ 0.10				180	250					
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390			0.01 ÷ 0.07				160	220					
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250	0.01 ÷ 0.10	0.01 ÷ 0.10	0.01 ÷ 0.15				160	220					
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325	0.01 ÷ 0.06	0.01 ÷ 0.06	0.01 ÷ 0.10				110	170					
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200			0.01 ÷ 0.20		90		150	200					
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250			0.01 ÷ 0.10		70		120	180					
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180	0.01 ÷ 0.15	0.01 ÷ 0.15	0.03 ÷ 0.15		200		>300	>300					
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300	0.01 ÷ 0.15	0.01 ÷ 0.15			>600		>1000	>1000					

*) abhängig von Werkzeug- & Werkstückstabilität / in function of stability of tool & workpiece / en fonction de la stabilité de l'outil et de la pièce

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	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté
				Rm (N/mm²)	HB
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300

	CPET FR/FL	CPET FN-20	CPGT EN	CPGT FR/FL	CPGT FN	CPGT FN-20	CPGT FN-250	CPGW
	f (mm/U) *)							
1	0.03 0.07 0.14	0.03 0.07	0.05 0.15 0.25	0.03 0.07	0.03 0.10 0.15	0.02		
2	0.03 0.07	0.03 0.07	0.05 0.15 0.25	0.03 0.07	0.03 0.10			
3	0.03 0.07	0.03 0.07	0.05 0.15 0.20	0.03 0.07	0.03 0.10			
4	0.03 0.07	0.03 0.07	0.05 0.15 0.20	0.03 0.07				0.05 0.15 0.20
5	0.03	0.03	0.05 0.15 0.20	0.03				0.05 0.15 0.20
6		0.03 0.07	0.05 0.15		0.03 0.10	0.02 0.15		
7		0.02 0.07	0.02 0.15		0.02 0.10	0.02 0.15		
8	0.03 0.08		0.05 0.15 0.20	0.03 0.08	0.05 0.15 0.20			0.05 0.15 0.25
9	0.03 0.08		0.05 0.15 0.20	0.03 0.08	0.05 0.15 0.20			0.05 0.15 0.25
10	0.02 0.15 0.25	0.02 0.15	0.02 0.15 0.20		0.02 0.15 0.20	0.02 0.10	0.02 0.10	0.02 0.12 0.25
11		0.02 0.15			0.05 0.10 0.20	0.02 0.15 0.30	0.02 0.15 0.30	

	Hartmetall / Carbide / Carbure						Cermet		
	unbeschichtet uncoated non revêtu		beschichtet coated revêtu				un - un - non -	beschichtet coated revêtu	
	DX2	P25	DP25	DP35 DP55	DX20	DX30 DX50 DX52	DT55	DT255	DT355
	Vc (m/min)								
1	220 180 130	340 290 240	380 320 260	340 290 240	380 320 260	460 370 250	580 470 320	580 470 320	
2	130 100 80	320 270 220	360 300 240	320 270 220	360 300 240	440 350 220	550 440 280	550 440 280	
3	110 80 50	260 210 170	320 290 200	260 210 170	320 290 200	410 340 230	510 420 290	510 420 290	
4	90 60 40	200 180 120	260 220 160			220 200 140	270 240 170	270 240 170	
5		140 120 90	200 160 120			180 150 120	220 190 150	220 190 150	
6		160 140	170 160	160 140	170 160		200 190	200 190	
7		120 100	130 110	120 100	130 110		150 130	150 130	
8	140 120 100	260 220 200	280 250 230	260 220 200	280 250 230	180 160 130	340 280 260	360 320 300	
9	120 90 70	220 200 180	250 220 200	220 200 180	250 220 200	160 120 90	280 260 240	320 280 260	
10	450 400 350	550 500 450	600 550 500	550 500 450	600 550 500	580 520 450	720 650 580	780 720 650	
11					>1'900	>2'000			

*) abhängig von Werkzeug- & Werkstückstabilität / in function of stability of tool & workpiece / en fonction de la stabilité de l'outil et de la pièce

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MiniTools 1 für Präzisions Bohrköpfe / for Precision Boring Heads

Achtung: Allgemeine Sicherheitsbestimmungen sowie Vorschriften der Maschinenhersteller unbedingt beachten!
Caution: General safety regulations and directions of machine manufacturers must be observed at any time!
Attention: Impératif de tenir compte des instructions générales de sécurité et des recommandations du fabricant de la machine!

	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté	CPET FL	CPET FN-20	CPGT EN	CPGT FL	CPGT FN	CPGT FN-20	Hartmetall / Carbide / Carbure: unbeschichtet / uncoated / non revêtu: DX2		Hartmetall / Carbide / Carbure: beschichtet / coated / revêtu: DX20	DX30 DX50 DX70		Cermet: un- / un- / non-: DT55	Cermet: beschichtet / coated / revêtu: DT255	DT355
				Rm (N/mm²)	HB	f (mm/U) *)						Vc (m/min)							
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160	0.03 0.07	0.03 0.07	0.05 0.15	0.03 0.07	0.03 0.10				340 290	380 320		460 370	580 470	580 470
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200	0.03 0.07	0.03 0.07	0.05 0.15	0.03 0.07	0.03 0.10				320 270	360 300		440 350	550 440	550 440
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275	0.03 0.07	0.03 0.07	0.05 0.15	0.03 0.07	0.03 0.10				260 210	320 290		410 340	510 420	510 420
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325	0.03 0.07	0.03 0.07	0.05 0.15	0.03 0.07	0.03 0.08							220 200	270 240	270 240
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390	0.03	0.03	0.05 0.15	0.03	0.03 0.08							180 150	220 190	220 190
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250		0.03 0.07			0.03 0.10	0.02 0.15			160 140	170 160				
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325		0.02 0.07			0.02 0.10	0.02 0.15			120 100	130 110				
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200	0.03 0.08		0.05 0.15	0.03 0.08	0.05 0.15		140 120		260 220	280 250		180 160	340 280	360 320
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250	0.03 0.08		0.05 0.15	0.03 0.08	0.05 0.15				220 200	250 220		160 120	280 260	320 280
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180		0.02 0.15			0.02 0.15	0.02 0.10	450 400		550 500	600 550				
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300		0.02 0.15				0.02 0.15 0.30			>1'900	>2'000				

*) abhängig von Werkzeug- & Werkstückstabilität / in function of stability of tool & workpiece / en fonction de la stabilité de l'outil et de la pièce

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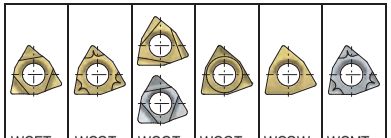
	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté
				Rm (N/mm²)	HB
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300



f (mm/U) *)

	WCET FN-20	WCGT EN	WCGT FR/FL FN	WCGT FN-20	WCGW	WCMT
1	0.03 0.10	0.05 0.15	0.03 0.10 0.15		0.05 0.15	0.05 0.15
2	0.03 0.10	0.05 0.15	0.03 0.10 0.15		0.05 0.15	0.05 0.15
3	0.03 0.10	0.05 0.15	0.03 0.10 0.15		0.05 0.15	0.05 0.15
4	0.03 0.10	0.05 0.15	0.03 0.10 0.15		0.05 0.15	0.05 0.15
5	0.02	0.05 0.10	0.02		0.05 0.10	0.05 0.10
6	0.03 0.10			0.01 0.06	0.02 0.10	0.02 0.10
7	0.02 0.10			0.01 0.06	0.02 0.10	0.02 0.10
8		0.05 0.15	0.03 0.08		0.05 0.15	0.05 0.15
9		0.05 0.15	0.03 0.08		0.05 0.15	0.05 0.15
10	0.03 0.10		0.03 0.10 0.15	0.01 0.08	0.02 0.15	0.02 0.15
11	0.02 0.15 0.20		0.02 0.15 0.20	0.01 0.10 0.20		

Vc (m/min)

	Hartmetall / Carbide / Carbure						Cermet		
	unbeschichtet uncoated non revêtu		beschichtet coated revêtu				un - un - non -	beschichtet coated revêtu	
	DX2		DX20	DX30 DX50 DX52			DT55	DT255	DT355
1	150 130 90		340 290 240	380 320 260			460 370 250	580 470 320	580 470 320
2	120 90 60		340 290 240	360 300 280			440 350 220	550 440 280	550 440 280
3							410 340 230	510 420 290	510 420 290
4							220 200 140	270 240 170	270 240 170
5							180 150 120	220 190 150	220 190 150
6			160 140	170 160				200 190	200 190
7			120 100	130 110				150 130	150 130
8	140 120 100		260 220 200	280 250 230			250 220 200	340 280 260	360 320 300
9	120 90 70		220 200 180	250 220 200			210 190 170	280 260 240	320 280 260
10	450 400 350		550 500 450	600 550 500			580 520 450	720 650 580	780 720 650
11	>1'000		>1'900	>2'000					

*) abhängig von Werkzeug- & Werkstückstabilität / in function of stability of tool & workpiece / en fonction de la stabilité de l'outil et de la pièce

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MiniTools 2 für Präzisions Bohrköpfe / for Precision Boring Heads

Achtung: Allgemeine Sicherheitsbestimmungen sowie Vorschriften der Maschinenhersteller unbedingt beachten!
Caution: General safety regulations and directions of machine manufacturers must be observed at any time!
Attention: Impératif de tenir compte des instructions générales de sécurité et des recommandations du fabricant de la machine!

	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté	WCET FN-20	WCGT EN	WCGT FL	WCGT FN	WCGT FN-20	Hartmetall / Carbide / Carbure: unbeschichtet uncoated non revêtu: DX2		Hartmetall / Carbide / Carbure: beschichtet coated revêtu: DX20	DX30 DX50		Cermet: un - un - non -: DT55	Cermet: beschichtet coated revêtu: DT255	DT355
				Rm (N/mm²)	HB	f (mm/U) *)					Vc (m/min)							
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160	0.03 0.10	0.05 0.15	0.03 0.10	0.03 0.10				340 290	380 320		460 370	580 470	580 470
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200	0.03 0.10	0.05 0.15	0.03 0.10	0.03 0.10				340 290	360 300		440 350	550 440	550 440
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275	0.03 0.10	0.05 0.15	0.03 0.10	0.03 0.10							410 340	510 420	510 420
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325	0.03 0.10	0.05 0.15	0.03 0.10	0.03 0.10							220 200	270 240	270 240
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390	0.02	0.05 0.10	0.02	0.02							180 150	220 190	220 190
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250	0.03 0.10				0.01 0.06			160 140	170 160				
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325	0.02 0.10				0.01 0.06			120 100	130 110				
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200		0.05 0.15	0.03 0.08	0.03 0.08		140 120		260 220	280 250		250 220	340 280	360 320
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250		0.05 0.15	0.03 0.08	0.03 0.08				220 200	250 220		210 190	280 260	320 280
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180	0.03 0.10				0.01 0.08	450 400		550 500	600 550				
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300	0.02 0.15 0.20				0.01 0.10 0.20	>1'000		>1'900	>2'000				

*) abhängig von Werkzeug- & Werkstückstabilität / in function of stability of tool & workpiece / en fonction de la stabilité de l'outil et de la pièce

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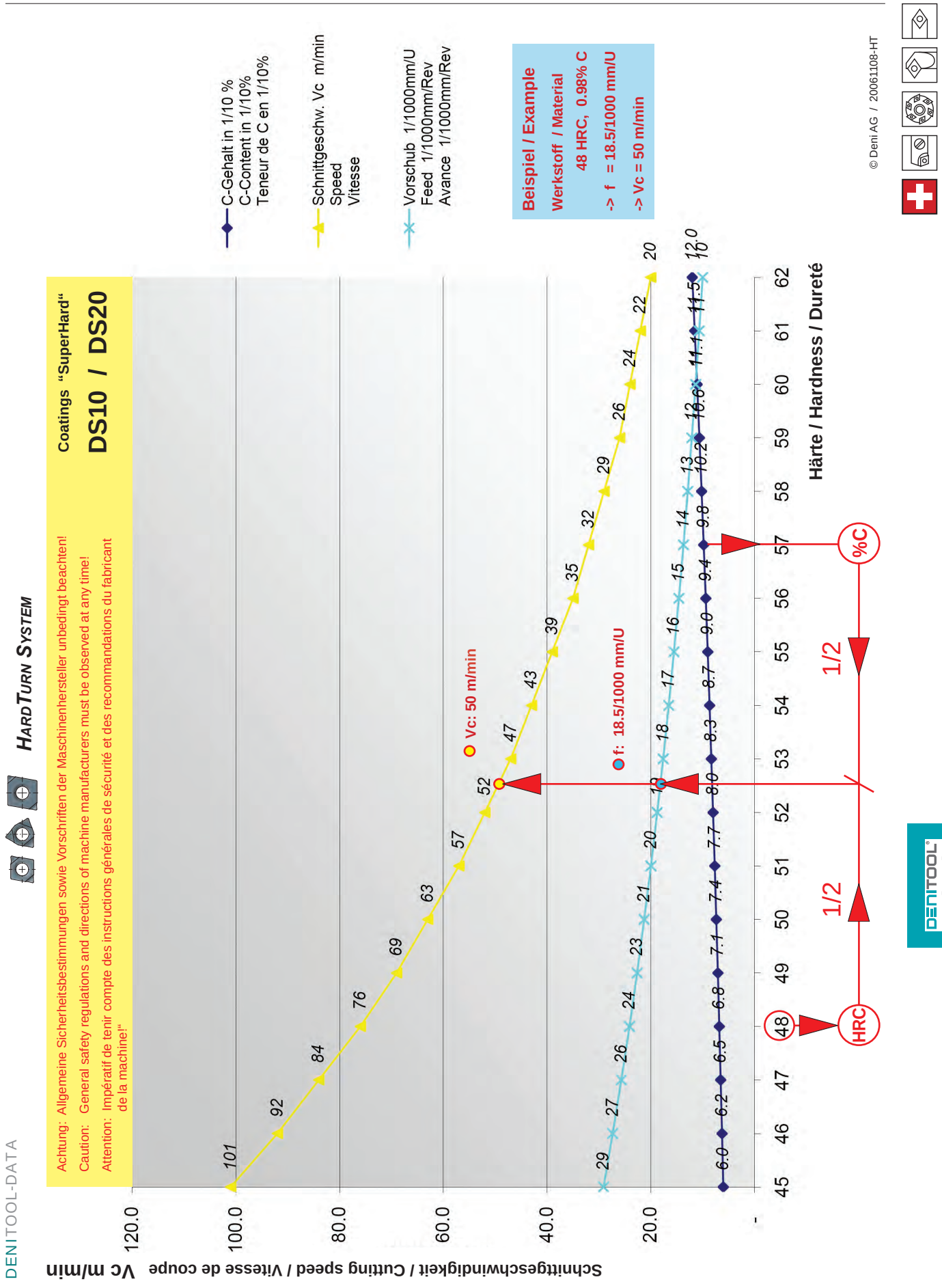
DENITOOL-DATA
HARDTURN SYSTEM
Coatings "SuperHard"
DS10 / DS20
Achtung: Allgemeine Sicherheitsbestimmungen sowie Vorschriften der Maschinenhersteller unbedingt beachten!
Caution: General safety regulations and directions of machine manufacturers must be observed at any time!
Attention: Impératif de tenir compte des instructions générales de sécurité et des recommandations du fabricant de la machine!"
C-Gehalt in 1/10 %
C-Content in 1/10%
Teneur de C en 1/10%
Schnittgeschw. Vc m/min
Speed
Vitesse
Vorschub 1/1000mm/U
Feed 1/1000mm/Rev
Avance 1/1000mm/Rev
Beispiel / Example
Werkstoff / Material
48 HRC, 0.98% C
-> f = 18.5/1000 mm/U
-> Vc = 50 m/min
Vc: 50 m/min
f: 18.5/1000 mm/U
1/2
1/2
%C
HRC
Härte / Hardness / Dureté
Schnittgeschwindigkeit / Cutting speed / Vitesse de coupe Vc m/min
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DENITOOL DATA

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	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté	EPGT EN	EPGT FR/FL	EPGT FR/FL -10			Hartmetall / Carbide / Carbure: unbeschichtet uncoated non revêtu		Hartmetall / Carbide / Carbure: beschichtet coated revêtu			Cermet: un - un - non -	Cermet: beschichtet coated revêtu	
											DX2		DX20	DX30 DX50 DX52		DT55	DT255	DT355
				Rm (N/mm²)	HB	f (mm/U) *)					Vc (m/min)							
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160	0.05 0.15 0.25	0.03 0.07 0.14	0.03 0.07 0.14			150 130 90		340 290 240	380 320 260		460 370 250	580 470 320	580 470 320
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200	0.05 0.15 0.25	0.03 0.07	0.03 0.07			120 90 60		320 270 220	360 300 280		440 350 220	550 440 280	550 440 280
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275	0.05 0.15 0.20	0.03 0.07	0.03 0.07			90 70 50		260 210 170	320 290 200		410 340 230	510 420 290	510 420 290
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325	0.05 0.15 0.20	0.03 0.07	0.03 0.07			60 50 40		200 180 120	260 220 160		220 200 140	270 240 170	270 240 170
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390	0.05 0.15 0.20	0.03 0.05	0.03 0.05					140 120 90	200 160 120		180 150 120	220 190 150	220 190 150
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250	0.05 0.15		0.03 0.07					160 140	170 160				
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325	0.02 0.15		0.02 0.07					120 100	130 110				
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200	0.05 0.15 0.20					140 120 100		260 220 200	280 250 230		180 160 130	340 280 240	360 320 300
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250	0.05 0.15 0.20					120 90 70		220 200 180	250 220 200		160 120 90	280 260 240	320 280 260
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180	0.02 0.15 0.20		0.02 0.15 0.25			450 400 350		550 500 450	600 550 500				
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300			0.02 0.15 0.25					>1'900	>2'000				

*) abhängig von Werkzeug- & Werkstückstabilität / in function of stability of tool & workpiece / en fonction de la stabilité de l'outil et de la pièce

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				Rm (N/mm²)	HB
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300

TPGT 16..-25	TPGT 16.. EN	TPHT 11../16.. ER/L	TPHT 11../16.. FR/L	TPHW 11../16.. EN	TPHW 11../16.. FN
f (mm/U) *)					
	0.10 0.20 0.30	0.08 0.15 0.30			
	0.10 0.20 0.30	0.08 0.15 0.30			
	0.10 0.20	0.08 0.15 0.25		0.08 0.18 0.30	
	0.10 0.20	0.08 0.15 0.25		0.08 0.18 0.30	
	0.10 0.20	0.08 0.15 0.15		0.08 0.15 0.20	
0.02 0.06 0.10		0.08 0.15 0.30			
0.02 0.06 0.10		0.08 0.15 0.30			
	0.10 0.20 0.30			0.06 0.12 0.30	0.03 0.10 0.20
	0.10 0.20			0.06 0.12 0.25	0.03 0.10 0.20
			0.05 0.15 0.30		0.05 0.20 0.40
0.05 0.20 0.40			0.05 0.15 0.20		

Hartmetall / Carbide / Carbure						Cermet	
unbeschichtet uncoated non revêtu		beschichtet coated revêtu					
DX2	P25	DP25	DP35 DP55	DX20	DX30 DX50 DX52		
Vc (m/min)							
	150 130 90	320 260 220	370 300 250				
	120 90 60	300 250 210	340 280 240				
	90 70 50	260 220 190	300 250 210				
	60 50 40	200 160 120	230 180 140				
		160 110 80	185 125 95				
		200 160 140	230 180 140				
		180 140 120	200 160 135				
120 100 80	120 100 80	200 170 130	230 190 145	200 170 130	230 190 145		
120 90 70	120 100 80	170 140 110	190 160 125	170 140 110	190 160 125		
550 500 400	550 500 400	800 700 600	800 700 600	800 700 600	800 700 600		
800 500 300				>1'000	>1'000		

*) abhängig von Werkzeug- & Werkstückstabilität / in function of stability of tool & workpiece / en fonction de la stabilité de l'outil et de la pièce

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	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté
				Rm (N/mm²)	HB
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300

DCGT 04.. -20

GCGT 04.. FL / FR

GCGT 04.. -20

GCGW 04T00...

VCGT 05.. FL / FR

VCGT 05.. -20

VCGW 05..

Hartmetall / Carbide / Carbure

unbeschichtet uncoated non revêtu		beschichtet coated revêtu	
DX2		DX32	DX70

f (mm/U) *)									Vc (m/min)			
0.01 ÷ 0.10		0.01 ÷ 0.04	0.01 ÷ 0.10	0.01 ÷ 0.10		0.01 ÷ 0.04	0.01 ÷ 0.10	0.01 ÷ 0.10			300	300
0.01 ÷ 0.10		0.01 ÷ 0.04	0.01 ÷ 0.10	0.01 ÷ 0.10		0.01 ÷ 0.04	0.01 ÷ 0.10	0.01 ÷ 0.10			250	250
0.01 ÷ 0.10		0.01 ÷ 0.04	0.01 ÷ 0.10	0.01 ÷ 0.07		0.01 ÷ 0.04	0.01 ÷ 0.10	0.01 ÷ 0.07			220	220
0.01 ÷ 0.07		0.01 ÷ 0.04	0.01 ÷ 0.07	0.01 ÷ 0.07		0.01 ÷ 0.04	0.01 ÷ 0.07	0.01 ÷ 0.07			180	180
0.01 ÷ 0.07		0.01 ÷ 0.04	0.01 ÷ 0.07	0.01 ÷ 0.05		0.01 ÷ 0.04	0.01 ÷ 0.07	0.01 ÷ 0.05			140	140
0.01 ÷ 0.10		0.01 ÷ 0.04	0.01 ÷ 0.10			0.01 ÷ 0.04	0.01 ÷ 0.10				200	200
0.01 ÷ 0.08		0.01 ÷ 0.04	0.01 ÷ 0.08			0.01 ÷ 0.04	0.01 ÷ 0.08				150	150
0.01 ÷ 0.10		0.01 ÷ 0.04	0.01 ÷ 0.10	0.01 ÷ 0.15		0.01 ÷ 0.04	0.01 ÷ 0.10	0.01 ÷ 0.15	90		210	210
0.01 ÷ 0.10		0.01 ÷ 0.04	0.01 ÷ 0.10	0.01 ÷ 0.10		0.01 ÷ 0.04	0.01 ÷ 0.10	0.01 ÷ 0.10	80		160	160
0.01 ÷ 0.20		0.01 ÷ 0.10	0.01 ÷ 0.20	0.01 ÷ 0.20		0.01 ÷ 0.10	0.01 ÷ 0.20	0.01 ÷ 0.20	200		>300	>300
0.01 ÷ 0.15		0.01 ÷ 0.04	0.01 ÷ 0.15			0.01 ÷ 0.04	0.01 ÷ 0.15				>1000	>1000

*) abhängig von Werkzeug- & Werkstückstabilität / in function of stability of tool & workpiece / en fonction de la stabilité de l'outil et de la pièce

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	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté
				Rm (N/mm²)	HB
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300

NEW

VCGT 07.. -12	VCGT 07.. -25	VCGT 07.. -08 FR/L	VCGT 07.. FN-18M	VCGW 07..	
f (mm/U) *)					
0.02 ÷ 0.15		0.01 ÷ 0.08	0.02 ÷ 0.15	0.01 ÷ 0.10	
0.02 ÷ 0.13		0.01 ÷ 0.08	0.02 ÷ 0.15	0.01 ÷ 0.10	
0.02 ÷ 0.10		0.01 ÷ 0.05	0.02 ÷ 0.10	0.01 ÷ 0.07	
0.02 ÷ 0.10		0.01 ÷ 0.05	0.02 ÷ 0.10	0.01 ÷ 0.07	
0.02 ÷ 0.07		0.01 ÷ 0.05		0.01 ÷ 0.07	
0.02 ÷ 0.15	0.01 ÷ 0.06	0.01 ÷ 0.08	0.02 ÷ 0.15		
0.02 ÷ 0.10	0.01 ÷ 0.06	0.01 ÷ 0.05	0.02 ÷ 0.13		
0.02 ÷ 0.15				0.02 ÷ 0.20	
0.02 0.15				0.02 0.15	
0.01 ÷ 0.20	0.01 ÷ 0.10	0.01 ÷ 0.10	0.02 ÷ 0.30	0.02 ÷ 0.20	
0.04 ÷ 0.15	0.01 ÷ 0.30	0.01 ÷ 0.10	0.02 ÷ 0.25		

Hartmetall / Carbide / Carbure					Cermet	
unbeschichtet uncoated non revêtu		beschichtet coated revêtu				
DX2		DX20 DX32	DX30 DX50 DX52			
Vc (m/min)						
150		250	290			
120		220	250			
90		200	230			
		160	180			
		130	150			
		200	230			
		160	180			
90		180	210			
80		140	160			
200		>300	>300			
>1'000		>1'000	>1'000			

*) abhängig von Werkzeug- & Werkstückstabilität / in function of stability of tool & workpiece / en fonction de la stabilité de l'outil et de la pièce .

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	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté
				Rm (N/mm²)	HB
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300

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	VCGT 13..	VCGT 13..-25	VCGT 13.. FR-01W	VCGT 13.. FR/L-10	VCGT 13.. FR-15W	VCGT 13.. FN-18M	VCGT 13.. FN-25M	VCGT 13.. FN-250	VCGW 13..	VCMT 13..-17
f (mm/U) *)										
1	0.08 0.10 0.30	0.06 0.10 0.14	0.04 0.10 0.20	0.05 0.10 0.25	0.03 0.06 0.12	0.04 0.08 0.15				0.08 0.15 0.30
2	0.08 0.10 0.30	0.06 0.10 0.14	0.04 0.10 0.20	0.05 0.10 0.25	0.03 0.06 0.12	0.04 0.08 0.15				0.08 0.15 0.30
3	0.08 0.10 0.30	0.06 0.10	0.03 0.06 0.12	0.05 0.10 0.15	0.03 0.06 0.12	0.03 0.06 0.12				0.08 0.15 0.25
4	0.08 0.10 0.30		0.03 0.06 0.12	0.05 0.10 0.15	0.03 0.06 0.12	0.03 0.06 0.12				0.08 0.15 0.25
5	0.08 0.10 0.30		0.03 0.05 0.10	0.05 0.10 0.10	0.03 0.05 0.10					0.08 0.15 0.15
6	0.08 0.10 0.30	0.05 0.10 0.15	0.04 0.08 0.15	0.05 0.10 0.15	0.04 0.06 0.12	0.04 0.08 0.15		0.05 0.10 0.15		0.08 0.15 0.20
7	0.08 0.10 0.30	0.05 0.10 0.15	0.03 0.06 0.12	0.05 0.10 0.15	0.03 0.06 0.12	0.03 0.06 0.12		0.05 0.10 0.15		0.08 0.15 0.20
8	0.05 0.15 0.25								0.05 0.15 0.25	0.10 0.20 0.30
9	0.05 0.15 0.25								0.05 0.15 0.25	0.08 0.15 0.25
10	0.05 0.15 0.30	0.05 0.15 0.25	0.05 0.10 0.20	0.05 0.15 0.30	0.05 0.15 0.30	0.05 0.15 0.30	0.05 0.15 0.30	0.05 0.15 0.25	0.03 0.15 0.4	0.05 0.15 0.3
11	0.08 0.20 0.30	0.10 0.20 0.40		0.05 0.15 0.25	0.10 0.20 0.40	0.10 0.20 0.40	0.10 0.20 0.40	0.10 0.20 0.40		

	Hartmetall / Carbide / Carbure				Cermet			
	un - un - non -	beschichtet coated revêtu			unbeschichtet uncoated non revêtu		beschichtet coated revêtu	
	DX2	DX20 DX32	DX30 DX50 DX52	DC15	DT10	DT55	DT210 DT310	DT255 DT355
Vc (m/min)								
1	150 130 90	340 290 240	410 370 330	360 340 310	600 500 350	580 470 320	600 500 350	580 470 320
2	120 90 60	320 270 220	350 330 290	330 300 250	570 470 320	590 440 280		
3	90 70 50	260 210 170	280 260 230	260 220 200	530 440 310	510 420 290		
4	60 50 40	240 220 190	260 240 210	240 220 200	290 260 180	270 240 170		
5		140 120 90	160 130 110	140 120 100	240 210 170	220 190 150		
6	120 90 70	240 220 170	260 240 190				320 300 270	320 300 270
7	100 70 50	170 120 100	190 160 130				250 210 180	250 210 180
8	160 130 100	230 205 170	250 230 200	230 210 190	270 250 220	250 220 200		
9	120 90 70	140 110 90	150 120 100	130 120 90	180 160 140	170 150 130		
10	550 500 400	700 600 500	800 700 600	800 700 600			800 700 600	800 700 600
11	800 500 300	>1'000	>1'000					

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	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté	DCGT 07 02 EN	DCGT 07 02 FN-250 CCGT 06 02 FN-250	DCGT 11 T3 EN CCGT 09 T3 EN	DCGT 11 T3-15	CCGT 09 T3FN-18M	DCGT 11 T3FN-250 CCGT 09 T3FN-250	TCGT 11 02 FN-250	TCGT 16 T3 FN-250	VCGT 11 03 FN-18M	VCGT 11 03 FN-250	Hartmetall / Carbide / Carbu un - un - non -	Hartmetall / Carbide / Carbu beschichtet coated revêtu			Cermet un - un - non -	Cermet beschichtet coated revêtu	
				Rm (N/mm²)	HB	f (mm/U) *)										DX2	DX20 DX32	DX30 DX50 DX52	DC10	DT55	DT255	DT355
						Vc (m/min)																
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160	0.07 ÷ 0.20		0.08 ÷ 0.30	0.03 ÷ 0.12	0.03 ÷ 0.15				0.02 ÷ 0.12			340 290 240		360 300 250	460 370 250	580 470 320	580 470 320
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200	0.07 ÷ 0.20		0.08 ÷ 0.30	0.03 ÷ 0.12	0.03 ÷ 0.15				0.02 ÷ 0.12			320 270 220		330 280 230	440 350 220	550 440 280	550 440 280
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275	0.06 ÷ 0.15		0.08 ÷ 0.25	0.03 ÷ 0.10	0.03 ÷ 0.10				0.02 ÷ 0.08			260 210 170		300 240 200	410 340 230	510 420 290	510 420 290
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325	0.06 ÷ 0.15		0.08 ÷ 0.25	0.03 ÷ 0.10	0.03 ÷ 0.10				0.02 ÷ 0.08			240 220 190		250 200 150	220 200 140	270 240 170	270 240 170
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390	0.06 ÷ 0.15		0.08 ÷ 0.25						0.02 ÷ 0.05					180 140 100	180 150 120	220 190 150	220 190 150
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250	0.06 ÷ 0.15		0.08 ÷ 0.25	0.02 ÷ 0.15	0.02 ÷ 0.15	0.02 ÷ 0.12	0.02 ÷ 0.12	0.02 ÷ 0.12	0.02 ÷ 0.08			160 140	170 160			200 190	200 190
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325	0.06 ÷ 0.15		0.08 ÷ 0.25	0.02 ÷ 0.15	0.02 ÷ 0.15	0.02 ÷ 0.12	0.02 ÷ 0.12	0.02 ÷ 0.12	0.02 ÷ 0.08			120 100	130 110			150 130	150 130
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200	0.05 ÷ 0.30		0.05 ÷ 0.40											260 230 210	180 160 130	340 280 240	360 320 300
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250	0.05 ÷ 0.15		0.05 ÷ 0.25											220 200 180	160 120 90	280 260 240	320 280 260
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180	0.10 ÷ 0.35	0.02 ÷ 0.15	0.10 ÷ 0.40	0.02 ÷ 0.10	0.02 ÷ 0.10	0.02 ÷ 0.15	0.02 ÷ 0.15	0.02 ÷ 0.15	0.02 ÷ 0.15	0.02 ÷ 0.15	450 400 350	550 500 450	600 550 500	500 450 400	580 520 450	720 650 580	780 720 650
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300		0.02 ÷ 0.30		0.02 ÷ 0.15	0.02 ÷ 0.15	0.02 ÷ 0.30	0.02 ÷ 0.30	0.02 ÷ 0.30	0.02 ÷ 0.20	0.02 ÷ 0.30	>800	>1'900	>2'000				

*) abhängig von Werkzeug- & Werkstückstabilität / in function of stability of tool & workpiece / en fonction de la stabilité de l'outil et de la pièce

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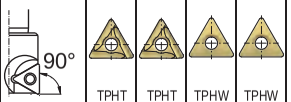
Caution: General safety regulations and directions of machine manufacturers must be observed at any time!
Attention: Impératif de tenir compte des instructions générales de sécurité et des recommandations du fabricant de la machine!

	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté
				Rm (N/mm²)	HB
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300



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TPHT 1102.. ER/L	TPHT 1102.. FR/L	TPHW 1102.. EN	TPHW 1102.. FN		TPGT 16T3.. EN	TPGT 16T3.. -25	TPHT 16T3.. ER/L	TPHT 16T3.. FR/L	TPHW 16T3.. EN	TPHW 16T3.. FN	TPHW 16T3.. SN	TPMW 16T3.. FN	
fz (mm) *)													
0.02 ÷ 0.15		0.05 ÷ 0.20	0.03 ÷ 0.15		0.15 ÷ 0.30		0.02 ÷ 0.20		0.05 ÷ 0.30	0.03 ÷ 0.20	0.15 ÷ 0.30		
0.02 ÷ 0.15		0.05 ÷ 0.20	0.03 ÷ 0.12		0.15 ÷ 0.30		0.02 ÷ 0.20		0.05 ÷ 0.30	0.03 ÷ 0.15	0.15 ÷ 0.30		
0.02 ÷ 0.10		0.05 ÷ 0.15	0.03 ÷ 0.12		0.15 ÷ 0.30		0.02 ÷ 0.16		0.05 ÷ 0.20	0.03 ÷ 0.15	0.15 ÷ 0.30		
0.02 ÷ 0.10		0.05 ÷ 0.15			0.15 ÷ 0.20		0.02 ÷ 0.16		0.05 ÷ 0.20		0.15 ÷ 0.20		
0.02 ÷ 0.10		0.05 ÷ 0.10			0.15 ÷ 0.20		0.02 ÷ 0.13		0.05 ÷ 0.20		0.15 ÷ 0.20		
0.02 ÷ 0.15		0.05 ÷ 0.20	0.03 ÷ 0.10		0.05 ÷ 0.30	0.03 ÷ 0.05	0.02 ÷ 0.20		0.05 ÷ 0.30	0.03 ÷ 0.10			
0.02 ÷ 0.10		0.05 ÷ 0.15	0.03 ÷ 0.10		0.05 ÷ 0.20	0.03 ÷ 0.05	0.02 ÷ 0.15		0.05 ÷ 0.20	0.03 ÷ 0.10			
0.02 ÷ 0.13		0.05 ÷ 0.20	0.05 ÷ 0.20		0.10 ÷ 0.30		0.02 ÷ 0.15		0.05 ÷ 0.30	0.05 ÷ 0.30		0.05 ÷ 0.25	
0.02 ÷ 0.10		0.05 ÷ 0.15	0.05 ÷ 0.15		0.10 ÷ 0.30		0.02 ÷ 0.10		0.05 ÷ 0.20	0.05 ÷ 0.20		0.05 ÷ 0.25	
0.03 ÷ 0.20	0.01 ÷ 0.20		0.05 ÷ 0.30			0.05 ÷ 0.30	0.03 ÷ 0.30	0.01 ÷ 0.30		0.05 ÷ 0.30		0.05 ÷ 0.40	
	0.01 ÷ 0.20					0.05 ÷ 0.40		0.01 ÷ 0.20					

Hartmetall / Carbide / Carbure					
unbeschichtet uncoated non revêtu		beschichtet coated revêtu			
DX2	P25	DP25	DP35 DP55 DP57	DX20	DX30 DX50 DX52
Vc (m/min)					
	120 ÷ 150	200 ÷ 260	240 ÷ 310		
		180 ÷ 230	210 ÷ 280		
		170 ÷ 190	200 ÷ 230		
		180 ÷ 200	210 ÷ 240		
		130 ÷ 170	160 ÷ 200		
		180 ÷ 220	210 ÷ 260		
		130 ÷ 180	150 ÷ 210		
120 ÷ 150	100 ÷ 120	170 ÷ 260	200 ÷ 310	200 ÷ 260	240 ÷ 310
100 ÷ 130	80 ÷ 120	140 ÷ 220	170 ÷ 260	200 ÷ 220	240 ÷ 260
200 ÷ 400	200 ÷ 400	350 ÷ 700	400 ÷ 800	350 ÷ 700	400 ÷ 800
400 ÷ >1'000				600 ÷ >2'000	600 ÷ >2'000

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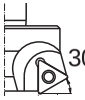
*) abhängig von Werkzeug- & Werkstückstabilität / in function of stability of tool & workpiece / en fonction de la stabilité de l'outil et de la pièce

**) Obenstehende Werte gelten für Anstellwinkel $\chi = 90°$! Für nachstehende Winkel sind die Vorschubwerte mit dem entsprechenden Faktor F_χ zu multiplizieren:

Above mentioned Cutting Data are valid for angle $\chi = 90°$! For angles mentioned hereafter please multiply the feed rate by the corresponding factor F_χ:

Les valeurs mentionnées ci-devant sont valable pour un angle $\chi = 90°$! Pour les angles suivants il faut multiplier les valeurs d'avance par le facteur F_χ



$\chi = 30°$ -> $F_{30°} = 2,5$

$\chi = 45°$ -> $F_{45°} = 1,6$

$\chi = 60°$ -> $F_{60°} = 1,3$

$\chi = 75°$ -> $F_{75°} = 1,1$

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	Werkstoff-Bezeichnung Material description Designation matière	Nr.	DIN	Zugfestigkeit Tensile strength Rés. à la traction	Härte Hardness Dureté
				Rm (N/mm²)	HB
1	Unlegierter Kohlenstoffstahl Low Carbon Steel Acier carbone	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	- 500	- 160
2	Vergütungsstahl - Einsatzstahl Alloy Steel Acier d'amélioration - de cémentation	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	500 - 700	140 - 200
3	Vergütungsstahl - Werkzeugstahl Tool Steel Acier d'amélioration - à outils	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	900 - 1'100	170 - 275
4	Hochlegierter Werkzeugstahl - Stahlguss Alloy Tool Steel Acier à outils fortement allié - Acier coulé	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	700 - 900	250 - 325
5	Hochlegierter Stahlguss Alloy Cast Steel Acier coulé fortement allié	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	1'100 - 1'500 800 - 1'000	325 - 450 250 - 390
6	Rostfreier Stahl Stainless Steel Acier inoxydable	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	- 800	- 250
7	Rostfreier Stahl, austenitisch, martensitisch Stainless Steel - Austenitic, Martensitic Acier inoxydable, austénitique, martensitique	1.4300 1.4301 1.4435 1.4573	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	500 - 1100	200 - 325
8	Grauguss Grey Cast Iron Fonte grise	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	- 250	- 200
9	Grauguss - Temperguss Cast Iron Malleable Fonte grise - Fonte trempée	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	250 - 350	200 - 250
10	Kupfer-Legierungen Copper Alloys Alliages cuivre	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	450 - 650	120 - 180
11	Aluminium-Legierungen Aluminium Alloys Alliages d'aluminium	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	250 - 350	200 - 300

**)

NEW NEW

SCGT 0602.. EN	SCGT 0602.. FN	SCGT 0602.. FN-25	SPHT 0602.. EN	SPHW 0602.. FN		SCGT 09T3.. EN	SCGT 09T3.. FN-25						
fz (mm) *)													
0.06 ÷ 0.20	0.03 ÷ 0.15	0.01 ÷ 0.10	0.03 ÷ 0.15	0.03 ÷ 0.20		0.07 ÷ 0.30	0.03 ÷ 0.15						
0.06 ÷ 0.20	0.03 ÷ 0.15	0.01 ÷ 0.10	0.03 ÷ 0.15	0.03 ÷ 0.20		0.07 ÷ 0.30	0.03 ÷ 0.15						
0.06 ÷ 0.10	0.03 ÷ 0.10	0.01 ÷ 0.08		0.03 ÷ 0.15		0.07 ÷ 0.20	0.03 ÷ 0.10						
0.06 ÷ 0.10	0.03 ÷ 0.10	0.01 ÷ 0.08		0.03 ÷ 0.15		0.07 ÷ 0.20	0.03 ÷ 0.10						
	0.03 ÷ 0.08	0.01 ÷ 0.05		0.03 ÷ 0.10		0.07 ÷ 0.15	0.03 ÷ 0.10						
	0.03 ÷ 0.10	0.01 ÷ 0.08	0.03 ÷ 0.10	0.03 ÷ 0.13		0.07 ÷ 0.20	0.03 ÷ 0.15						
	0.03 ÷ 0.10	0.01 ÷ 0.08	0.03 ÷ 0.10	0.03 ÷ 0.13		0.07 ÷ 0.20	0.03 ÷ 0.12						
0.06 ÷ 0.15	0.03 ÷ 0.15			0.03 ÷ 0.20		0.07 ÷ 0.30							
0.06 ÷ 0.15	0.03 ÷ 0.15			0.03 ÷ 0.20		0.07 ÷ 0.30							
	0.03 ÷ 0.15	0.01 ÷ 0.10	0.03 ÷ 0.15			0.07 ÷ 0.30	0.03 ÷ 0.15						
	0.03 ÷ 0.15	0.01 ÷ 0.10	0.03 ÷ 0.15			0.07 ÷ 0.30	0.03 ÷ 0.20						

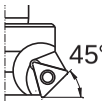
Hartmetall / Carbide / Carbure						
unbeschichtet uncoated non revêtu		beschichtet coated revêtu				
DX2	P25	DX20 DX32	DX30 DX50	DC15		
Vc (m/min)						
		200 ÷ 260	240 ÷ 300	240 ÷ 300		
		180 ÷ 230	210 ÷ 260	210 ÷ 280		
		170 ÷ 190	200 ÷ 220	200 ÷ 280		
		180 ÷ 200	200 ÷ 220	200 ÷ 250		
		130 ÷ 170	130 ÷ 170	120 ÷ 180		
		180 ÷ 220	180 ÷ 220			
		130 ÷ 180	140 ÷ 200			
		170 ÷ 260	180 ÷ 280	180 ÷ 280		
		140 ÷ 220	180 ÷ 280	180 ÷ 280		
200 ÷ 400		350 ÷ 700	350 ÷ 700			
400 ÷ >1'000		400 ÷ >1'000	400 ÷ >1'000			

*) abhängig von Werkzeug- & Werkstückstabilität sowie vom Eingriffsbereich des Fräsers / in function of stability of tool & workpiece and engagement portion / en fonction de la stabilité de l'outil et de la pièce et de la partie d'en

**) Obenstehende Werte gelten für Anstellwinkel χ = 90 ° ! Für nachstehende Winkel sind die Vorschubwerte mit dem entsprechenden Faktor F_χ zu multiplizieren:

Above mentioned Cutting Data are valid for angle χ = 90 ° ! For angles mentioned hereafter please multiply the feed rate by the corresponding factor F_χ:

Les valeurs mentionnées ci-devant sont valable pour un angle χ = 90 ° ! Pour les angles suivants il faut multiplier les valeurs d'avance par le facteur F_χ



χ = 45° -> $F_{45°}$ = 1,6

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	Material Description	W-Nr. German	DIN ~ German	AISI/SAE ~ USA
1	**Low Carbon Steel**	1.0035 1.0038 1.0401 1.0050	St 33 RSt 37-2 C 15 St 50-2	1010 1045 1015 1050
2	**Alloy Steel**	1.0501 1.1141 1.5732 1.7225	Ck 35 V Ck 15 14 NiCr 14 42 CrMo 4 G	1035 1115 3415 4140
3	**Tool Steel**	1.1221 1.3505 1.7225 1.5141	Ck 60 100 Cr 6 42 CrMo 4 53 MnSi 4	1060 52100 4140 -
4	**Alloy Tool Steel**	1.1191 1.7225 1.2080 1.7220	Ck 45 V 42 CrMo 4 X 210 Cr 12 GS-34 CrMo 4	4140 4142 D3 4135
5	**Alloy Cast Steel**	1.6582 1.8159 1.2367 1.7361	34 CrNiMo 6 50 CrV 4 X 38 CrMoV 5 3 32 CrMo 12	4340 6150 A2 4145
6	**Stainless Steel**	1.4006 1.4057 1.4034 1.4005	X 10 Cr 13 X 22 CrNi 12 X 40 Cr 13 X 12 CrS 13	403 431 420 416
7	**Stainless Steel - Austenitic, Martensitic**	1.4300 1.4301 1.4435 1.4542	X 12 CrNi 18 8 X 5 CrNi 18 9 X 2 CrNiMo 18 12 X 10 CrNiMoTi 18 12	302 304 (304H) 316 17-4 ph
8	**Grey Cast Iron**	0.6010 0.6015 0.6020	GG-10 GG-15 GG-20	A48-20B A48-25B A48-30B
9	**Cast Iron Malleable**	0.6025 0.8135 0.8140 0.7050	GG-25 GTS-35 GTS-40 GGG-50	A48-35B A48-40B A48-45B 80-55-06
10	**Copper Alloys**	2.0331 2.0401 2.1030 2.0920	CuZn 36 Pb 1.5 CuZn 36 Pb 3 CuSn 8 CuAl 8	B121 B121 B103 CuAl 8
11	**Aluminium Alloys**	3.2582.05 3.3541.01 3.2315 3.0205	GD-AlSi 12 G-AlMg 3 AlMgSi 1 Al 99	383.2 (ALSi-12) 514.0 (AlMg 3) 413.0 (ALMgSi 1) 1200 AL 99

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EINSATZEMPFEHLUNG FÜR DENITOOL® HARTMETALL-BOHRSTANGEN

Allgemein: Empfohlene Schnittdaten gelten sowohl für Stahl- wie auch für HM-Bohrstangen

Durch sorgfältige Beachtung nachstehender Punkte können Probleme beim Einsatz von HM-Bohrstangen vermieden werden:

a) mechanische Einflüsse

HM-Bohrstangenschäfte sind relativ spröde und verlangen deshalb eine sorgfältige Behandlung:

- Schläge und Stösse können zu Rissen im Hartmetall und somit zum Bruch des Werkzeuges führen.
- Programmierfehler (Kollision mit Werkstück) führen meistens zum Bruch des Werkzeuges.
- Reststücke welche bei der Bearbeitung entstehen, können sich zwischen Schaft und Werkstück verklemmen und einen Werkzeugbruch verursachen.

b) thermische Einflüsse

Jegliche Art von Reibungswärme reduziert die Festigkeit der Lötstelle. Es ist deshalb unbedingt zu beachten, dass:

- die HM-Bohrstange im gesamten Kopf- und Schaftbereich berührungsfrei arbeitet.
- die Kühlmittelversorgung mit einem einwandfrei funktionierenden Filtersystem ausgerüstet ist, um ein Verstopfen der Kühlmittelbohrung zu vermeiden.
- keine Fliessspäne entstehen. Diese neigen dazu, in die Kühlmittelbohrung einzudringen und dieselbe zu verstopfen. Eine gute Spankontrolle reduziert zudem die thermische Belastung der Schneide und verbessert die Standzeit.

OPERATING RECOMMENDATION FOR DENITOOL® CARBIDE BORING BARS

General: The recommended cutting data are valid for steel as well as carbide boring bars

Problems operating carbide boring bars can be avoided by carefully observing the following points:

a) mechanical influence

Carbide boring bars are fragile and need careful treatment:

- The tool can break because heavy contact usually leads to cracks in the carbide.
- Errors in programming (collision with workpiece) are mostly resulting in breaking of the tool.
- Chips which are produced during processing can get jamed between shank and workpiece. Subsequently the tool will break.

b) thermal influence

Frictional heat reduces the stability of the soldered connection. Therefore it is very important to pay attention to:

- The carbide boring bar must work clear in the whole head and shank area.
- The coolant supply must be equipped with a properly running filtersystem in order to avoid choking of the internal coolant.
- Avoid production of flowing chips. Flowing chips are often penetrating and therefore blocking the internal coolant. A good control over the flow of the chips reduces the thermal load of the cutting edge and improves tool life.

RECOMMANDATIONS D'UTILISATION POUR LES BARRES D'ALÉSAGE EN CARBURE DENITOOL®

General: Les conditions de coupe sont valables aussi bien pour les barres d'alésage en acier qu'en carbure

L'observation stricte des points suivants permet d'éviter les problèmes lors de l'utilisation de barres d'alésage en carbure:

a) influences méchaniques

Les barres d'alésage en carbure sont relativement fragiles et réclament une utilisation appropriée:

- Les coups peuvent provoquer des fissures et conduirent à la rupture de l'outil.
- Les erreurs de programmation (collisions) provoquent généralement la casse de l'outil.
- Les déchets résultants de l'usinage qui bloquent entre la pièce et l'outil peuvent provoquer la rupture de ce dernier.

b) influences thermiques

Tout échauffement résultant d'un frottement diminue la résistance de la brasure. Il est donc important de contrôler que:

- la barre d'alésage travaille sans contact parasite, dans toute la zone de la tige et de la tête.
- le système d'arrosage soit équipé d'un filtre efficace, garantissant l'arrivée du liquide d'arrosage.
- des copeaux longs ne se forment pas. Des copeaux longs tendent à pénétrer et obstruer le conduit d'arrosage. Un bon contrôle des copeaux réduit les contraintes thermiques sur l'arête de coupe, et améliore la durée de vie de l'outil.

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ANWENDUNGSHINWEISE FÜR ZYLINDRISCHE BOHRSTANGEN
APPLICATION ADVICE FOR CYLINDRICAL BORING BARS
RECOMMANDATIONS D'EMPLOI POUR DES BARRES D'ALÉSAGE CYLINDRIQUES

Zylindrische Bohrstangen verfügen über keine Spannflächen am Schaft.

Achtung

Beim Spannen zylindrischer Bohrstangen muss auf korrekte Einstellung der Spitzenhöhe geachtet werden.

Cylindrical type boring bars don't have a clamping face on the toolshank.

Caution

On adjusting the cylindrical boring bars it is necessary to adjust the correct height of the cutting edge.

Le corps des barres d'alésage cylindrique ne dispose d'aucun plat de serrage.

Attention

En serrant les barres d'alésage cylindriques, ajustez toujours l'hauteur correcte de la pointe de l'outil.

Spannmöglichkeiten

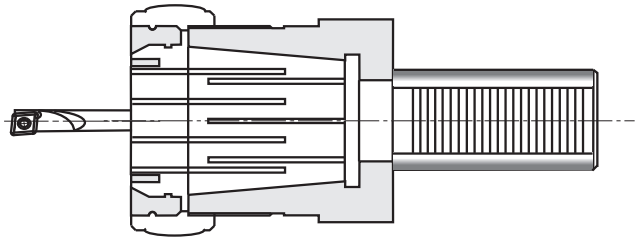
• Halter mit Spannzange

Clamping methods

• Toolholder with collet

Possibilités de serrage

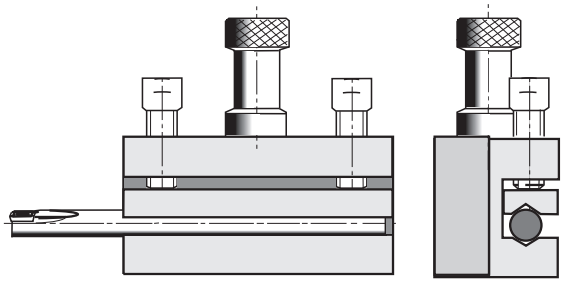
• Porte-outil à serrage en pince



• Halter mit Prismenaufnahme

• Toolholder with prismatic fixing

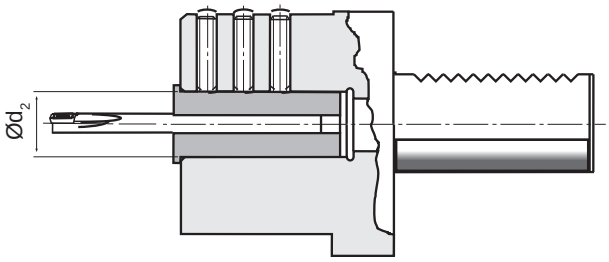
• Porte-outil à serrage prismatique



• Halter mit Zylinderaufnahme *)

• Toolholder with cylindrical fixing *)

• Porte-outil à serrage cylindrique *)

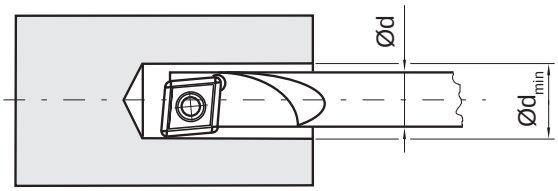


*) Für diese Spannmethode sind Denitool® Reduzierhülsen (S.17) in verschiedenen Durchmessern d2 lieferbar.

*) For this clamping method Denitool® reduction bushings (p.17) are available with different diameters d2.

*) Pour ce type de serrage, des douilles de réduction Denitool® (p.17) sont disponibles dans des diamètres d2 divers.

ANWENDUNGSHINWEISE / APPLICATION ADVICE / RECOMMANDATIONS D'EMPLOI



Der Mindestdurchmesser ∅ d_{min} der Bohrung muss sicherheitshalber 0.8mm grösser als ∅ d (Bohrstange) sein.

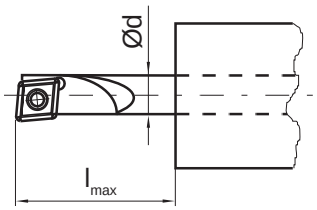
For safety reasons the internal hole dia. ∅ d_{min} must be 0.8mm bigger than dia. ∅ d (boring bar).

Par sécurité, le diamètre interieur ∅ d_{min} doit être au minimum 0.8mm plus grand que ∅ d (barre d'alésage).

Maximale Auskragung

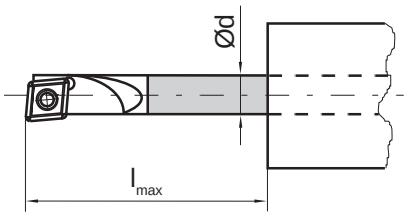
Maximum overhang

Porte-à-faux max.



- Stahlschaft
- Steel shank
- Barre en acier

$l_{max} \leq 4 \times \varnothing d$



- Hartmetallschaft
- Carbide shank
- Barre en carbure

$l_{max} \leq 6 \times \varnothing d$

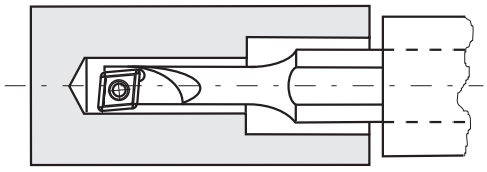


Abb 1
Fig. 1

Mit abgesetzten Bohrstangen (vgl. Abb.1) kann entsprechend tiefer bearbeitet werden.

With stepped boring bars (see fig.1) the overall machining depth may be increased.

Avec des barres d'alésage étagéés (voir fig.1) la profondeur d'usinage peut être augmentée en conséquence.

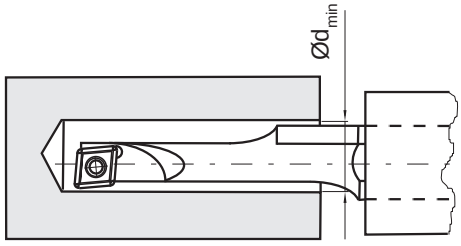
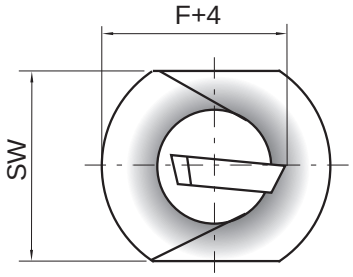


Abb 2
Fig. 2



Bei Bedarf kann bei abgesetzten Bohrstangen durch seitliches Nachschleifen des Schaftes die max. Bearbeitungstiefe - ohne nennenswerte Schwächung des Werkzeuges - vergrössert werden (vgl. Abb.2). SW und F+4 dürfen nicht verändert werden.

Achtung: Bohrstangen mit HM-Schaft beim Nachschleifen unbedingt gut kühlen!

With stepped boring bars, the maximum machining depth may be increased - without reducing to much the rigidity - by grinding the sides of the bar (see fig.2). However, the dimensions SW and F+4 must remain unaltered.

Caution: Dont grind boring bars with carbide shank without sufficient cooling!

Le cas échéant, en rectificant latéralement les barres d'alésage étagées, la profondeur d'usinage de l'outil peut être augmentée (voir fig.2) sans affaiblissement notable de sa rigidité. Toutefois SW et F+4 doivent rester inchangé.

Attention: Ne pas rectifier des barres d'alésage en carbure sans refroidissement suffisant!

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WENDESCHNEIDPLATTEN / INSERTS / PLAQUETTES

C	P	G	T	05	T1	02	F	N	-	20
1	2	3	4	5	6	7	8	9		10

1 Plattenform / Insert shape / Façon de la plaquette

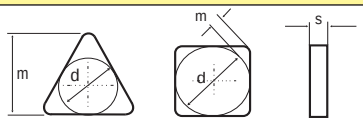
C	80°	D	55°
K	55°	R	
S		T	
V	35°	W	80°
E	75°		

2 Freiwinkel / Clearance angle / Angle de dégagement

B	5°	C	7°
N	0°	P	11°
E	20°		

0 Nicht standardmässiger Freiwinkel, spezielle Definition erforderlich
Non standard clearance angle requiring special definition
Angle non standard de dégagement exigeant définition spéciale

3 Toleranz / Tolerance / Tolérance

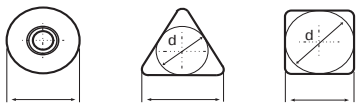


	m ±	s±	d ±
	[mm]	[mm]	[mm]
A	0,005	0,025	0,025
F	0,005	0,025	0,013
C	0,013	0,025	0,025
H	0,013	0,025	0,013
E	0,025	0,025	0,025
G	0,025	0,13	0,025
J	0,005	0,025	0,05-0,15
K	0,013	0,025	0,05-0,15
L	0,025	0,025	0,05-0,15
M	0,08-0,20	0,13	0,05-0,15
U	0,13-0,38	0,13	0,08-0,25

4 Plattentyp / Insert type / Type de plaquette

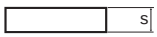
N		R	
A		M	
G		W	
T		X	Spezialform Special shape Forme spéciale

5 Schneidkantenlänge / Cutting edge length / Longueur de l'arrêt de coupe



[mm]	[inch]	[mm]	[mm]
06	5/32	3,18	03
09	7/32	3,97	04
11	1/4	5,56	05
16	3/8	6,35	06
		9,52	09
		12,7	12
		15,8	15

6 Plattendicke / Insert thickness / Epaisseur de la plaquette



Index	[mm]	[inch]
01	1.59	1/16
T1	1.98	1/13
02	2.38	3/32
03	3.18	1/8
T3	3.97	5/32
04	4.76	3/16
05	5.56	7/32
06	6.35	1/4
07	7.94	5/16
09	9.52	3/8

7 Eckradius / Corner radius / Rayon de coin

Index	r [mm]
00	0
01	0,1
02	0,2
04	0,4
08	0,8
12	1,2
16	1,6
24	2,4
32	3,2

00 Zollumwandlung / Inch conversion / Conversion de pouce

M0 Metrischer Wert / Metric value / Valeur métrique

8 Kantenbeschaffenheit / Edge conditioning / Traitement de l'arrêt

F Scharfer Rand / Sharp edge / arrêt pointu

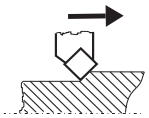
E Abgerundeter Rand / Honed edge / arrêt rectifié

T Abgeschrägter Rand / Chamfered edge / arrêt chanfreiné

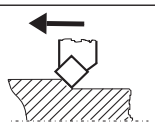
S Abgeschrägt und abgerundeter Rand / Chamfered and honed edge / arrêt rectifié et chanfreiné

9 Schnittrichtung / Cutting direction / Sens de coupe

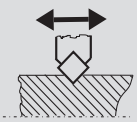
R



L



N



10 Angaben nach Wahl des Herstellers / Special indications of the manufacturer / Indications supplémentaires du fournisseur

Position 8 und 9 werden nur falls nötig verwendet. Spezielle Spanleitstufenformen können durch ein internes Firmencodierungssystem an der 10. Pos. angegeben werden.

Pos. 8 and 9 are only used if required. Special chip breaker shapes can be indicated by an internal company coding system at the 10th position.

Les positions 8 et 9 sont seulement utilisées si nécessaire. Des brises-copeaux spéciales peuvent être indiqué par un système interne de codage de compagnie à la 10ième position.

DENITOOL® DATA

BOHRSTANGEN / BORING BARS / BARRES D'ALÉSAGE

S	20	R		S	V	L	C	R	-	13	-	
1	2	3		4	5	6	7	8		9		10

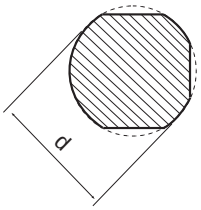
S	0608	H		S	C	U	P	R	-	05	-	
1	2	3		4	5	6	7	8		9		10

1 Schafttyp / Shaft type / Type de tige

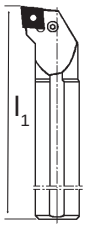
A	Stahlschaft mit integriertem Kühlmittelbohrung Steel shank with internal coolant Tige en acier avec arrosage centralisé
C	Hartmetallschaft mit Stahlkopf (ohne Kühlung) Carbide shank with steel head (no coolant) Tige d'alliage avec tête en acier (sans arrosage)
E	Hartmetallschaft mit Stahlkopf und Kühlmittelbohrung Carbide shank with steel head & internal coolant Tige d'alliage avec tête en acier et arrosage centralisé
S	Stahlschaft (ohne Kühlung) Steel shank (no coolant) Tige en acier (sans arrosage)

2 Schaft Ø / Shank Ø / Ø de la tige

mm	
04	0408
05	0508
06	0608
08	0810
10	1012
12	1216
16	
20	
25	
32	



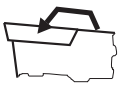
3 Werkzeuglänge / Tool length / Longueur d'outil l_1 [mm]



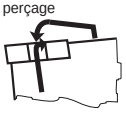
	[mm]		[mm]
F	80	S	250
H	100	T	300
J	110	U	350
K	125	V	400
M	150	W	450
P	170	Y	500
Q	180	X	Special
R	200		

4 Klemmsystem / Clamping method / Système de fixation

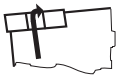
C — Von oben / From above / d'en haut



M — Von oben m. Bohrung / From above with hole / D'en haut avec perçage



P — Bohrung / Hole / Perçage

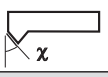
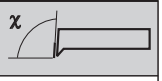
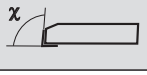
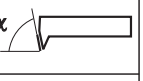
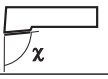


S — Mit Schraube durch Bohrung / With screw through hole / Avec vis par perçage

5 Plattenform / Insert shape / Façon de la plaquette

C	80°	D	55°
E	75°	R	
S		T	
V	35°	W	80°

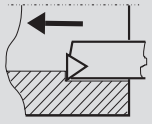
6 Halterform / Style / Modèle χ

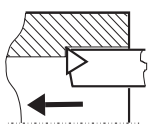
M	40° 	U	93° 
L	95° 	V	72,5° 
O	95° 		
Q+X	Spezielle Form siehe 10 Special style see 10 Modèle spéciale consulte 10		

7 Freiwinkel / Clearance angle / Angle de dégagement α

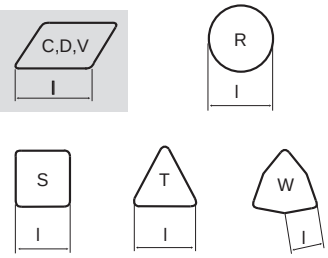
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°

8 Schnittrichtung / Cutting direction / sens de la coupe

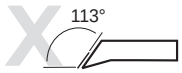
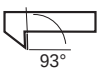
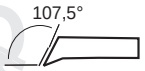
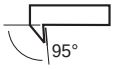
R 

L 

9 Schneidkantenlänge / Cutting edge length / Longueur de l'arrêt de coupe



10 Spezialtypen / Special styles / Types spéciales

50 CP..	113 VC..	93 DC..	107 DC..	95 VC..
50°	 113°	 93°	 107,5°	 95°

KLEMMHALTER / TOOLHOLDERS / PORTE OUTILS

S	V	L	C	R	20	20	K	13	-	
1	2	3	4	5	6	7	8	9		10

1 Klemmsystem / Clamping method / Système de fixation

C	M	P	S
von oben / from above d'en haut	von oben mit Bohrung / from above with hole / d'en haut avec perçage	Bohrung / Hole / Perçage	Schraube / Screw / Vis

2 Plattenform / Insert shape Façon de plaquette

C	80°	D	55°
S		R	
V	35°	T	
E	75°	W	80°

3 Halterform / Style / Modèle

A	G	H	J
90°	90°	107.5°	93°
CP.. and WC..	VC..		
L	**N**	**V**	**X**
95°	63°	72.5°	Spezielle Form Special style Modèle spéciale (10)

4 Freiwinkel / Clearance angle Angle de dégagement α

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

5 Schnittrichtung / Cutting direction Sens de la coupe

R L N

6 Werkzeughöhe / Tool height / Hauteur d'outil (h)

h

[mm]	
08	20
10	25
12	32
16	

7 Werkzeugbreite / Tool width / largeur d'outil (b)

b

[mm]	
08	20
10	25
12	32
16	

8 Werkzeuglänge / Tool length Longueur d'outil l_1 [mm]

l_1

[mm]		[mm]	
A	32	Q	180
B	40	R	200
C	50	S	250
D	60	T	300
E	70	U	350
F	80	V	400
G	90	W	450
H	100	X	500
J	110	Y	Special
K	125		
L	140		
M	150		
N	160		
P	170		

9 Schneidkantenlänge / Cutting edge length / Longueur de l'arrêt de coupe

C,D,V l | R l | S l | T l | W l

10 Spezialtypen / Special styles / Types spéciales

40	113
X	X
40° with CP..	113°with VC..

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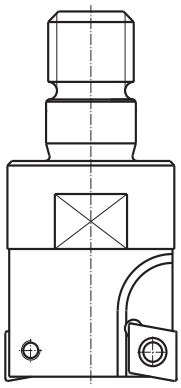
Designation Code - Fräsen / Milling / Fraisage

MicroMill Programm / Program

M	M	10	12	R	C	A	S	-	05		
1	2	3	4	5	6	7	8		9		10

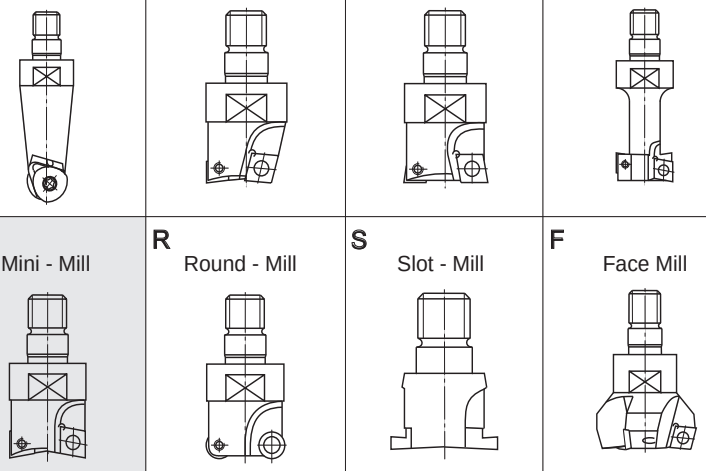
1 Werkzeugtyp / Tool type / Type d'outil

M = MicroMill

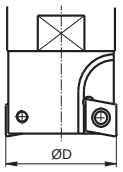


2 Werkzeugform / Tool shape / Forme d'outil

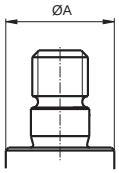
B Ball-Nose End Mill	D Drill - Mill	C Countersink - Mill	T T - Mill
M Mini - Mill	R Round - Mill	S Slot - Mill	F Face Mill



3 Fräser Ø / Cutter dia. / Ø fraise



4 Schaft Ø / Shank dia. / Ø de la tige

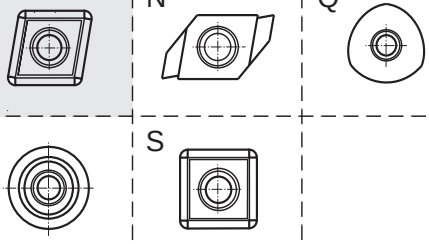


5 Schnittrichtung / Cutting direction Sens de la coupe

R= Rechts right droite

6 Plattenform / Insert shape / Façon de la plaquette

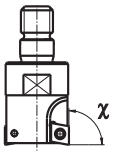
C N Q R S



7 Anstellwinkel / Rake angle Angle d'attaque χ

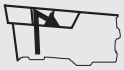
A = 90°
B = 75°
E = 60°
D = 45°
W= 30°

T = T - Cutter
X = Spez./spec.



8 Klemmsystem / Clamping system / Système de fixation

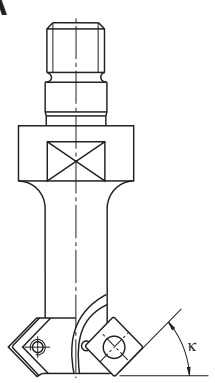
S= Schraube / screw / vis



9 Plattengrösse / Insert size / Dimension de plaquette

C	N	Q	R	S	IC
04					3.97
05					5.56
		08			6.2
06				06	6.35
		10			7.5
					7.938
			08		8
09		12		09	9.525
		16		12	12.7
	0				
	1				
	2				

FA



Wichtig:

Der MicroMill Fräser mit der Bezeichnung "FA" ist ein Fasen-Fräser mit Anstellwinkel 45°!

Note:

The MicroMill milling tool with the designation "FA" is a chamfer mill with a lead angle of 45°!

Important:

L'outil de fraisage MicroMill avec la désignation "FA" est une fraise à chanfreiner avec un angle d'attaque de 45°!

10 Angaben nach Wahl des Herstellers / Special indications of the manufacturer / Indications supplémentaires du fournisseur

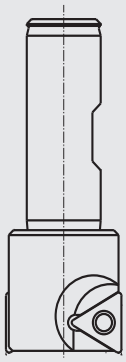
Designation Code - Fräsen / Milling / Fraisage

Fräser / MillingCutters / Outils de fraisage (ohne / w/o / sans MicroMill)

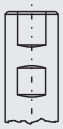
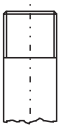
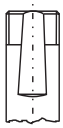
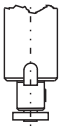
F	W	25	12	R	T	A	S	-	16		
1	2	3	4	5	6	7	8		9		10

1 Werkzeugtyp / Tool type / Type d'outils

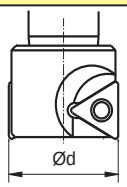
F = Fräser / Milling cutter / Fraise



2 Schaftform / Shank type / Type de tige

W	G	M
Weldon	Clarkson	Morsekegel / Morse taper shank / Cône morse
		
N	**A**	**Z**
Whistle Notch	Für Spanndorn / For clamping shank / Pour l'épine de tension	Zylinderschaft / Cylindrical shank / Tige cilindrique
		

3 Fräser Ø / Cutter dia. / Ø fraise



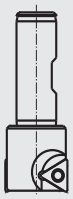
4 Schaft Ø / Shank dia. / Ø de la tige

Spez./spec.

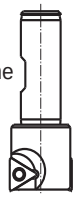
X

5 Schnittrichtung / Cutting direction / Sens de la coupe

R= Rechts / right / droite



L= Links / left / gauche



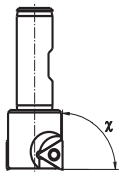
6 Plattenform / Insert shape / Façon de la plaquette

C	D	E	N	Q
R	**S**	**T**	**V**	**W**

7 Anstellwinkel / Rake angle / Angle d'attaque χ

A = 90°
B = 75°
E = 60°
D = 45°
W= 30°

T = T-Cutter
X = Spez./spec.



8 Klemmsystem / Clamping system / Système de fixation

C= Pratze / claw / étrier

S= Schraube / screw / vis

9 Plattengrösse / Insert size / Dimension de plaquette

C	D	E	N	Q	R	S	T	V	W	IC
04								07	02	3.97
05		05								5.56
				08						6.2
06	07					06	11			6.35
				10						7.5
								13		7.938
					08					8
09	11			12		09	16			9.525
				16		12				12.7
			0							
			1							
			2							

10 Angaben nach Wahl des Herstellers / Special indications of the manufacturer / Indications supplémentaires du fournisseur

SICHERHEITSHINWEISE:

- Schneidwerkzeuge können im Einsatz splittern oder brechen. Zum Schutz vor weggeschleuderten Bruchstücken niemals ohne Schutzbrille und Schutzkleidung arbeiten sowie die maschinenseitigen Schutzvorrichtungen unbedingt verwenden.
- Allgemeine Sicherheitsbestimmungen sowie Vorschriften der Maschinenhersteller unbedingt beachten!
- Es ist generell verboten Sicherheitsvorrichtungen an Maschinen und Einrichtungen zu demontieren, zu deaktivieren oder zu überbrücken.
- Die Überschreitung von empfohlenen Schnittdaten kann zu vorzeitigem Ausfall infolge übermässigem Verschleiss und/oder Bruch von Schneidplatte oder Trägerwerkzeug führen.
- Unbedingt vor jeder Inbetriebnahme den korrekten Sitz der Schneidplatte im Plattensitz des Trägerwerzeuges kontrollieren.
- Es dürfen ausschliesslich die zum jeweiligen Plattentyp vorgeschriebenen Denitool® Befestigungsschrauben verwendet werden.
- Unbedingt vor jeder Inbetriebnahme überprüfen, dass Plattenschrauben und Befestigungen der Werkzeughalter vorschriftgemäss festgezogen sind.
- Abänderung der Werkzeughalter kann zu vorzeitigem Ausfall infolge übermässigem Verschleiss und/oder Bruch von Schneidplatte oder Trägerwerkzeug führen.
- Beim Schleifen von Hartmetall Produkten entstehender Schleifstaub kann Ihre Gesundheit gefährden. Um Gesundheitsschäden zu vermeiden unbedingt vorgängig Material Sicherheitsblatt lesen. Nicht ohne Absaugung und Atemschutz schleifen und auf ausreichende Belüftung achten.
- Die Verwendung von Fremdprodukt Wendeschneidplatten auf Denitool® Trägern kann zu Leistungseinbussen und/oder vorzeitigem Ausfall wegen nicht der Denitool® Qualitätsnorm entsprechender Toleranzen der Wendeplatten führen.

SAFETY WARNING:

- Cutting tools may chip or fragment in use. Wear safety glasses, use machine guards and protective clothes to prevent injury from flying fragments.
- General safety regulations and directions of machine manufacturers must be observed at any time!
- Never bypass protective door interlocks or other safety devices on the machine that is using Denitool® products.
- Feed and speeds used beyond those recommended may cause premature failure and/or breakage of the insert cutting edge and/or the tool holder.
- Check to make sure that inserts are setting properly in the tool holder pocket.
- Always use the designated Denitool® insert locking screw.
- Check to make sure that all insert and tool holder mounting screws are tight.
- Modification of the tool holder may cause premature failure and/or breakage of the insert cutting edge and/or the tool holder.
- Grinding of carbide products produces grinding dust that can be hazardous. To avoid adverse health effects, use adequate ventilation and read material safety data sheet first.
- The use of competitive manufacturers' inserts in Denitool® holders may cause premature insert failure due to incompatible insert seating.

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CONSIGNES DE SECURITE:

- Les outils de coupe peuvent se casser, voir voler en éclats. Il est donc toujours nécessaire de porter des lunettes et des vêtements de protection.
  De même, il faut toujours utiliser les protections installées sur la machine.
- Respectez à tout moment les prescriptions de sécurité du fabricant de la machine!
- Il est interdit à l'utilisateur d'outils Denitool® de démonter ou de mettre hors service les dispositifs de sécurité installés sur la machine.
- Le dépassement des paramètres de coupe indiqués peut occasionner une usure supplémentaire pouvant conduire à la rupture de la plaquette ou du porte-outil.
- Avant chaque utilisation, il est important de contrôler le positionnement correct de la plaquette dans son logement.
- N'utilisez que les vis Denitool® prescrites pour la fixation des différents types de plaquettes.
- Avant chaque utilisation, il est nécessaire de s'assurer que les vis de fixation de la plaquette et du porte-outil soient serrées selon les prescriptions.
- Toute modification apportée au porte-outil peut engendrer une usure prématurée, respectivement la rupture de la plaquette de coupe et/ou du porte-outil.
- Les poussières engendrées par le meulage du carbure métallique peuvent attaquer votre santé. Lisez la notice de sécurité. Ne pas rectifier sans aspiration ni masque de protection et s'assurer d'une bonne aération.
- L'utilisation de plaquettes d'autres fabricants sur les porte-outils Denitool® peut causer une réduction de performance et/ou conduire au remplacement prématuré de la plaquette en raison d'incompatibilité des tolérances avec la norme de qualité élevée Denitool®.

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