UTILIS

multidec®

swiss type tools

TECHNISCHE DOKUMENTATION
DOCUMENTATION TECHNIQUE
TECHNICAL DOCUMENTATION

Edition 07/2008

UTILIS®

Tooling for High Technology

UTILIS, DIE SPEZIALISTEN FÜR DIE SPANABHEBENDE PRODUKTION
UTILIS, LES SPÉCIALISTES POUR L'ENLÈVEMENT DE COPEAUX
UTILIS, EXPERTS FOR THE METAL CUTTING MANUFACTURING

Die Utilis AG ist ein Schweizer Unternehmen, das sich auf Werkzeuge der spanabhebenden Fertigungsprozesse spezialisiert hat. Dabei ist die Produkte-Qualität ein strategischer Erfolgsfaktor für uns. Bei unseren Eigenprodukten ist deshalb die Einhaltung des ISO-zertifizierten Qualitäts-Managements Pflicht, ständige Innovation aber die Kür. Das ist unser Beitrag zum guten Ruf des Labels «Made in Switzerland». Klar, dass Handelsprodukte nur von den Herstellern verwendet werden, die vergleichbare Qualitätsansprüche erfüllen.
Kundenorientierung ist für Utilis kein leerer Begriff, sondern Tagesgeschäft. Der intensive Kontakt mit unseren Kunden ermöglicht einen regen Gedankenaustausch, was uns hilft, Bedürfnisse frühzeitig zu erkennen und uns mit entsprechenden Produkten darauf einzustellen.

Utilis SA est une société qui s'est spécialisée dans l'outillage destiné à l'industrie de l'enlèvement de copeaux. Pour cette raison et pour le succès de ceux-ci, la qualité de nos produits est un facteur stratégique de notre part. Nos produits sont fabriqués en conformité à l'exigence de la certification ISO. Le développement et l'innovation sont des défis quotidiens et ils nous permettent d'arborer le slogan «Swissmade». C'est également avec cette philosophie que les produits de revente choisis, ont été intégrés dans notre programme. La relation très étroite avec notre clientèle nous permet d'être, non seulement à l'écoute de celle-ci, mais également de répondre aux besoins du moment et à venir.

UTILIS is a Swiss company, specializing in tools for the metal cutting production process. The product quality is a significant part of our successful strategy. Fulfilling the Certificate ISO 9001:2000 requirements are extremely important to UTILIS, and constantly innovating new products is our voluntary exercise. With this philosophy we uphold the excellent reputation of «Made in Switzerland». It´s obvious that the products we deal with are used by customers, who look to the same quality demands as UTILIS does. Looking after our clients is not just talking in platitudes for UTILIS, it is our daily business. Being in close contact with our customers allows an intensive exchange of ideas, which gives us the chance to recognize the demands of our customers early and gives us the focus to develop our product line for the future.

ALLGEMEINE TECHNISCHE INFORMATIONEN
INFORMATIONS TECHNIQUES GÉNÉRALES
GENERAL TECHNICAL INFORMATION 5

MULTIDEC®-CUT 25

MULTIDEC®-ISO
MULTIDEC®-TOP 71

Multidec®-ISO: *73* Multidec®-Top: *112*

MULTIDEC®-BORE 122

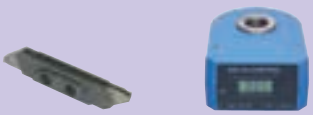
Multidec®-Bore Micro: *125* Multidec®-Easy Bore: *149* Multidec®-Superbore: *183*

MULTIDEC®-DRILL 197

TOOLING SYSTEMS 226

Multidec®-Whirling: *229* Multidec®-Endfix: *245* Multidec®-Backtools: *253* Multidec®-Moduline: *271* Multidec®-HSK C32: *292*

SPECIAL/SERVICE 293



UTILIS-Special®: *295* Delta Control: *296*

Allgemeine Formeln
Formules de base
General formulas 7

Kennzeichnungen
Indications
Marking 7

Halter-Ausführung
Exécution des porte-outils
Holder execution 7

Oberflächengüte
Qualité de surface
Surface quality 8

Rautiefe
Rugosité
Surface roughness 9

Schleppschneide
Petit rayon
Drag-cut 9

Werkstoffe
Matières
Materials 10

Schneidstoffsorten
Matériaux de coupe
Cutting grade 16

Beschichtungen
Revêtements
Coatings 17

Verschleiss
Usure
Wear 19

Bearbeitungssituationen/Bestellhilfen
Situations d'usinage/Assistance de commande
Working situations/Order assistance 22

ISO-Bezeichnungssystem für Wendeplatten
Système de dénomination pour plaquettes amovibles
ISO designation system for indexable inserts 24

NOTIZEN
NOTES
NOTES

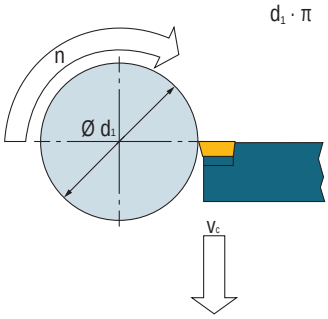
ALLGEMEINE FORMELN ZUR SPANABHEBENDEN BEARBEITUNG
FORMULES DE BASE DE L'ENLÈVEMENT DE COPEAUX
GENERAL FORMULAS ABOUT CUTTING

Schnittgeschwindigkeit (v_c)
Vitesse de coupe (v_c)
Cutting speed (v_c)

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

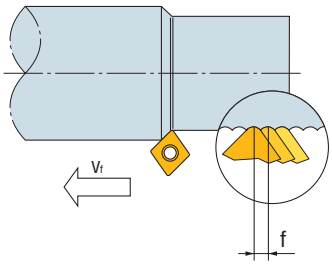
Umdrehungen pro Minute (n)
Tours par minute (n)
Revolutions per minute (n)

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



Vorschubgeschwindigkeit (v_f)
Avance (v_f)
Feedrate (v_f)

$$v_f = f \cdot n \text{ [mm/min]}$$



KENNZEICHNUNGEN
INDICATIONS
MARKING

Verschiedene Informationen zum Einsatz von Utilis-Multidec-Werkzeugen beziehen sich auf bestimmte Bearbeitungsarten. Zur besseren Übersicht sind diese dabei wie folgt gekennzeichnet:

Il existe plusieurs manières d'indiquer la qualité d'usinage ou qualité de surface. Ci-dessous, vous trouverez de manière la plus explicite possible, celle utilisée dans le catalogue Multidec®.

Different information about application refer to certain machining methods. For better overview these kinds are marked as follows:

▼ Schruppen | Ebauche | Roughing
▼▼ Schlichten | Finition | Finishing
▼▼▼ Feinschlichten | Super finition | Micro finishing

■ Standard | Standard | Standard
□ Semi Standard | Semi Standard | Semi Standard

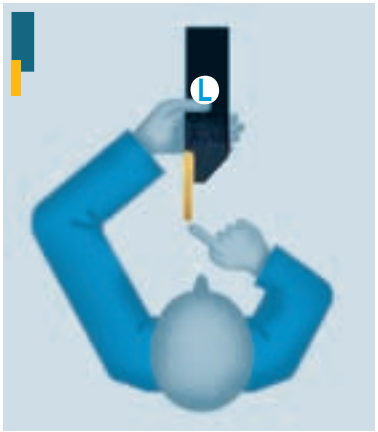
● Bevorzugter Einsatz | Emploi préféré | Preferred application
○ Möglicher Einsatz | Emploi possible | Possible application
— Einsatz nicht empfohlen | Emploi pas recommandé | Application not recommended

HALTER-AUSFÜHRUNG
EXÉCUTION DES PORTE-OUTILS
HOLDER EXECUTION

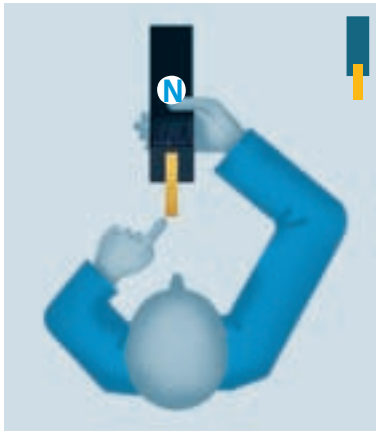
Definition der Halterrichtung (rechts oder links)
Ob ein Halter als «links» oder «rechts» definiert ist, bestimmt die Seite an der die Wendeschneidplatte sitzt. Dabei ist der Halter mit der Schneide zur Person hin zu halten.

Reconnaissance des outillages (à droite ou à gauche)
La reconnaissance des outillages se pratique de la manière indiquée sur le dessin ci-dessous, c'est-à-dire l'outil vu de dessus, la plaquette contre soi.

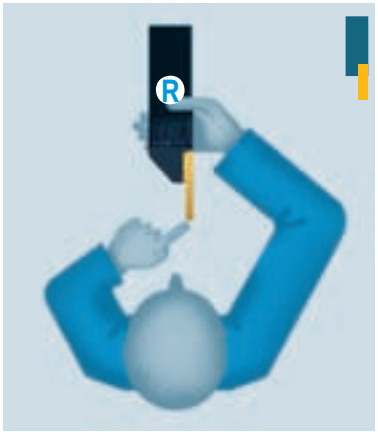
Definition of the holder design (left or right)
The side on which the insert is located defines if it is a left or right hand holder.
While doing so the holder with the insert has to be pointed towards the person.



Linkes Werkzeug | Outil à gauche | Left hand tool



Neutrales Werkzeug | Outil neutre | Neutral hand tool



Rechtes Werkzeug | Outil à droite | Right hand tool

OBERFLÄCHENGÜTE
QUALITÉ DE SURFACE
SURFACE QUALITY

Für die Bestimmung der Oberflächengüten sind Messgrössen nach DIN-ISO definiert. Im Einzelnen sind das:

· Einzelrautiefe Z_1 ... Z_5
Das ist der senkrechte Abstand zwischen höchstem und tiefstem Punkt des Rauheitsprofils R innerhalb einer Einzelmessstrecke l_e.

· Gemittelte Rautiefe R_z (DIN 4768)
Das ist der Mittelwert aus den Einzelrautiefen von 5 aufeinander folgenden Einzelmessstrecken l_e.

· Mittenrauwert R_a (DIN 4768)
Das ist der arithmetische Mittelwert aller Beträge des Rauheitsprofils R innerhalb der Gesamtmessstrecke l_m.

· Maximale Rautiefe R_t (DIN 4768/1)
Das ist der Abstand zwischen der Linie der grössten Erhebung und der Linie der grössten Vertiefung innerhalb der Messstrecke eines nach DIN 4768, Blatt 1 gefilterten Profils.

Pour la définition de l'état surface les dimensions sont définies par la norme DIN-ISO. En particulier c'est:

· Profondeur de la rugosité individuelle Z_1 ... Z_5
C'est l'écart vertical entre le point le plus élevé et le point le plus bas du profil de rugosité R à l'intérieur de la longueur de référence individuelle l_e.

· Profondeur moyenne de la rugosité R_z (DIN 4768)
C'est la moyenne arithmétique des différentes profondeurs de la rugosité de 5 longueurs de référence adjacentes l_e.

· Rugosité moyenne arithmétique R_a (DIN 4768)
C'est la moyenne arithmétique des valeurs absolues des écarts du profil de rugosité R par rapport à la ligne moyenne, à l'intérieur de la longueur de référence l_m.

· Profondeur de la rugosité maximale R_t (DIN 4768/1)
C'est l'écart entre la ligne de la bosse et la ligne du creux à l'intérieur de la longueur de référence d'un profil filtré selon DIN 4768, feuille 1.

For the definition of surface roughness measured values are defined by DIN-ISO. In particular it means:

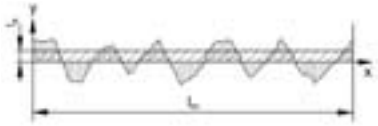
· Single surface roughness depth Z_1 ... Z_5
This is the vertical distance between the highest and the lowest point of the roughness profile R within a single measured length l_e.

· Average roughness depth R_z (DIN 4768)
This is defined as the average value resulting from the single roughness depths of five successive single measured lengths l_e.

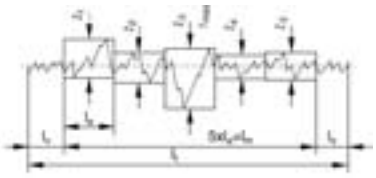
· Average roughness value R_a (DIN 4768)
This is defined as the arithmetical mean of the absolute sums of the roughness profile R within the entire measured length l_m.

· Maximum surface roughness depth R_t (DIN 4768/1)
This is the distance between the elevation and depression of the line within the measured length (reference distance) of profile filtered according to DIN 4768 sheet 1.

«Mittenrauwert R_a»
Rugosité moyenne arithmétique R_a
Average roughness value R_a



«Einzelrautiefe Z»
Rugosité individuelle Z
Single surface roughness depth Z



«Maximale Rautiefe R_t»
Rugosité maximale R_t
Maximum surface roughness R_t

Oberflächengüten nach Bearbeitungsarten

Rugosité de surface obtenue, en fonction de l'usinage

Surface roughness by machining method

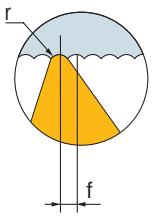
Oberflächengüten | Rugosité | Surface roughness												
Oberflächenzeichen nach ISO 1302 Symboles de surface selon ISO 1302 Surface symbol according to ISO 1302	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50
Rauheitskennzahlen (früher) Indices de rugosité Roughness index (former)	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12
Mittenrauwert R_a (µm) Rugosité moyenne arithmétique R_a (µm) Average roughness value R_a (µm)	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50
Gemittelte Rautiefe R_z (µm) Profondeur de la rugosité R_z (µm) Surface roughness depth R_z (µm)	0.025	0.63	1	1.6	2.5	4–6.3	10	16–25	40	63	100	160
Bearbeitungsarten | Type d'usinage | Machining method												
Längsdrehen/Plandrehen Tournage/Dressage Turning					▼▼▼	▼▼▼	▼▼▼	▼▼	▼▼	▼▼	▼	▼
Rund-Längsschleifen/Rund-Planschleifen Rectification Grinding				▼▼▼	▼▼▼	▼▼	▼▼	▼				

THEORETISCHE RAUTIEFE
RUGOSITÉ THÉORIQUE
THEORETICAL SURFACE ROUGHNESS

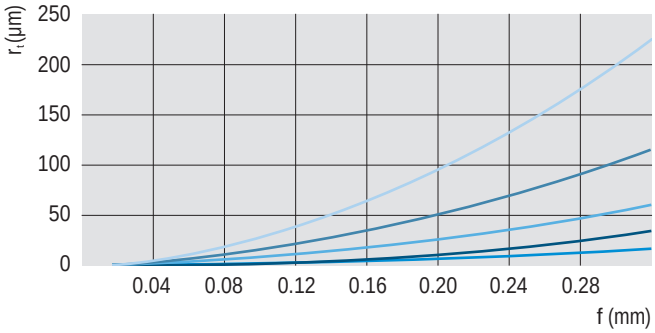
r = Eckenradius (mm)
Rayon de pointe (mm)
Corner radius (mm)

r_t = Theoretische Rautiefe (µm)
Rugosité théorique (µm)
Theoretical surface roughness (µm)

f = Vorschub (mm)
Avance (mm)
Feed (mm)



Standardform
Forme standard
Standard design



– r = 0.05 mm – r = 0.10 mm – r = 0.20 mm – r = 0.40 mm – r = 0.80 mm

MULTIDEC®-TOP – VORSCHUBERHÖHUNG DURCH SCHLEPPSCHNEIDE
MULTIDEC®-TOP – AUGMENTATION DE L'AVANCE, MÊME AVEC UN PETIT RAYON
MULTIDEC®-TOP – IMPROVEMENT OF FEED RATE BY DRAG-CUT

Durch den Einsatz des Multidec®-Top-Systems mit Schleppschneide und der 93°-Halter kann der Vorschub bis zum 2-fachen erhöht werden. Somit können die Bearbeitungszeiten bei gleicher Qualität erheblich verringert oder bei gleicher Bearbeitungszeit bessere Oberflächen erzielt werden.

Im folgenden Beispiel wird das Prinzip genau erklärt.

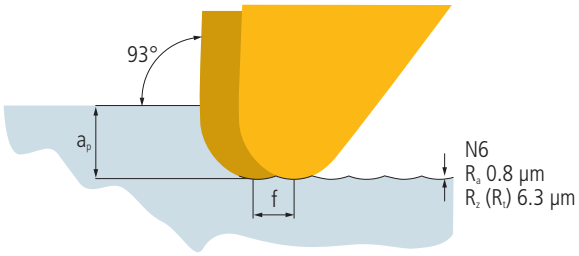
Avec l'utilisation de la plaquette Multidec®-Top et sa faible dépouille sur le diamètre, montée sur un porte-outil à 93°, l'avance peut être augmentée jusqu'à 2 fois la valeur actuelle. Ainsi le temps d'usinage peut être diminué, tout en conservant la même qualité de surface.

Dans l'exemple suivant vous voyez le principe.

By using the Multidec®-Top system with drag-cut and holder 93° the feed rate can be increased up to 2 times. This way the machining time can be decreased significantly by keeping the same quality. On the other hand within the same machining time the surface roughness can be improved clearly.

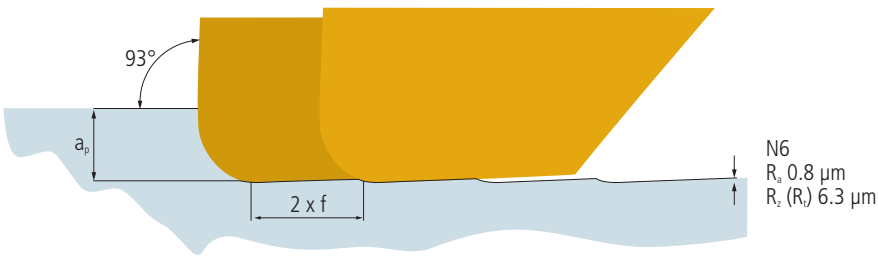
The following example illustrates the principle exactly.

Halter/Porte-outil/Holder 93°
Eckenradius/Rayon/Corner radius 0.8 mm



Halter/Porte-outil/Holder 93°
Eckenradius/Rayon/Corner radius 0.8 mm

Multidec®-Top-Schneide/Plaquette Multidec®-Top/Multidec®-Top insert



KATEGORISIERUNG DER ZU BEARBEITENDEN WERKSTOFFE
CATÉGORIES DES MATIÈRES USINÉES
CATEGORIZATION OF MATERIALS TO BE MACHINED

Verschiedene Informationen zum Einsatz von Utilis-Multidec-Werkzeugen beziehen sich auf bestimmte Werkstoffe. Zur besseren Übersicht sind dabei die zu bearbeitenden Werkstoffe im gesamten Katalog farblich gleich kategorisiert:

- Stähle (unlegierte, niedrig legierte und hoch legierte) sind blau dargestellt.
- Rostfreier Stahl ist gelb dargestellt.
- Titan und Titanlegierungen sind orange dargestellt.
- NE-Metalle (Gold, Aluminium, Messing) sind grün dargestellt.

Informations importantes sur l'utilisation des outillages de coupe en fonction des matières à usiner. Pour une compréhension plus aisée, il existe une définition des matières à usiner par une couleur appropriée.

- Aciers (non alliés, faiblement alliés, fortement alliés) sont symbolisés en bleu.
- Aciers inoxydables sont symbolisés en jaune.
- Le Titane et alliages de titane sont symbolisés en orange.
- Les non ferreux (or, aluminium et laiton) sont symbolisés en vert.

Different information about application refer to certain materials. For better overview through the whole catalogue each group of material is defined by one color.

- Steel (non-alloyed, low alloyed and high alloyed) is represented blue.
- Stainless steel is represented yellow.
- Titanium and Ti-alloys are represented orange.
- Non ferrous metals (Gold, Aluminium and Brass) are represented green.

VERGLEICH DER STANDARD-HÄRTEWERTE
TABLEAU DE COMPARAISONS ENTRE LA RÉSISTANCE À LA TRACTION ET LA DURETÉ
COMPARISON OF DEFAULT HARDNESS VALUES

Zugfestigkeit N/mm² Résistance à la traction N/mm² Tensile strength N/mm²	700	740	770	810	840	880	910	950	980	1020	1050	1090	1120	1150	1190
Vickers HV	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340
Brinell HB	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340
Rockwell HRC	–	–	–	19.2	21.2	23.0	24.7	26.1	27.6	29.0	30.3	31.5	32.9	33.8	34.9
Shore C	28	29	30	31	33	34	35	36	37	39	40	41	42	43	44

Zugfestigkeit N/mm² Résistance à la traction N/mm² Tensile strength N/mm²	1230	1260	1300	1330	1370	1400	1440	1470	1510	1540	1580	1610	1650	1680	1720
Vickers HV	350	360	370	380	390	400	410	420	430	440	450	460	470	480	490
Brinell HB	350	359	368	373	385	393	400	407	416	423	429	435	441	450	457
Rockwell HRC	36.0	37.0	38.0	38.9	39.8	40.7	41.5	42.3	43.2	44.0	44.8	45.5	46.3	47.0	47.7
Shore C	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59

Zugfestigkeit N/mm² Résistance à la traction N/mm² Tensile strength N/mm²	1750	1790	1820	1860	1890	1930	1960	2000	2030	2070	2100	2140	2170	2210	2240
Vickers HV	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640
Brinell HB	465	474	482	489	496	503	511	520	527	533	533	543	549	555	561
Rockwell HRC	48.3	49.0	49.6	50.3	50.9	51.5	52.1	52.7	53.3	53.8	54.4	54.9	55.4	55.9	56.4
Shore C	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74

Zugfestigkeit N/mm² Résistance à la traction N/mm² Tensile strength N/mm²	2280	2310	2350	2380	2410	2450	2480	2520	2550	2590	2630	2660	2700	2730	2770
Vickers HV	650	660	670	680	690	700	710	720	730	740	750	760	770	780	790
Brinell HB	568	574	581	588	595	602	609	616	622	627	633	639	644	650	656
Rockwell HRC	56.9	57.4	57.9	58.7	58.9	59.3	59.8	60.2	60.7	61.1	61.5	61.9	62.3	62.7	63.1
Shore C	75	75	76	77	78	79	80	81	82	83	83	84	85	86	86

Zugfestigkeit N/mm² Résistance à la traction N/mm² Tensile strength N/mm²	2800	2840	2870	2910	2940	2980	3010	3050	3080	3120	3150	3190	3220	3260	3290
Vickers HV	800	810	820	830	840	850	860	870	880	890	900	910	920	930	940
Brinell HB	661	666	670	677	682	–	–	–	–	–	–	–	–	–	–
Rockwell HRC	63.5	63.9	64.3	64.6	65.0	65.3	65.7	66.0	66.3	66.6	66.9	67.2	67.5	67.7	68.0
Shore C	87	87	88	89	89	90	90	91	91	92	92	–	–	–	–

KATEGORISIERUNG DER WERKSTOFFE
CLASSIFICATION DES MATÉRIAUX
CATEGORIZATION OF MATERIALS

Werkstoff-Nr. Numeró du matériau Material number	Normen Normes Specifications					Härte (HB) Dureté (HB) Hardness (HB)	Kategorie Catégorie Category
Stähle Aciers Steel	DIN	ISO	AFNOR	AISI/SAE/ASTM	JIS		
1.0401	C 15		C18; AF3 7 C 12; XC 18	1015, 1016, 11017	S 15 C	98–178	I
1.0402	C 22		AF 42 C 20, 1 C 22, XC 25	1020, 1023	S 20 C, S 33 C	–	I
1.0501	C 35		C 35, 1 C 35, AF 55 C35, XC 38	1035	S 35 C, S 35 CM	–	I
1.0503	C 45		C 45, 1 C 45, AF 65 C 45	1045, 1043	S 45 C, S 45 CM	–	I
1.0535	C 55		C 54, 1 C 55, AF 70 C 55	1055	S 55 C, 1 C 55	–255	I
1.0601	C 60		C 60, 1 C 60, AF 70 C 55	1060	S 58 C	–255	I
1.0715	11 SMn 30, 9 SMn 28	11 SMn 28	S 250	1213	SUM 22	107–169	I
1.0718	11 SMn 30, 9 SMnPb 28	11 SMnPb 28	S 250 Pb	12 L 13	SUM 22 L SUM 23 L SUM 24 L	–	I
1.0722	10 SPb 20		10 PbF 2	11 L 08	–	–	I
1.0726	35 S 20		35 MF 6	1140	–	–	I
1.0736	11 SMn 37, 9 SMn 36		S 300	1215	SUM 25	–	I
1.0737	11 SMnPb 37, 9 SMnPb 36	11 SMnPb 35	S 300 Pb	12 L 14	–	–	I
1.0904	55 Si 7		–	9255	–	235–290	II
1.0961	60 SiCr 7		–	9262	–	245–310	II
1.1141	C 15 E, Ck 15		XC 12, XC 15; XC 18	1015	S 15, S 15 CK	135–143	I
1.1157	40 Mn 4		35 M 5, 40 M 5	1039	–	–	I
1.1167	36 Mn 5		35 M 5, 40 M 5	1335, 1541	SMn 438, SCMn 3	–217	I
1.1170	28 Mn 6		20 M 5, 28 Mn 6	1330	SCMn 1	223–255	I
1.1183	Cf 35		XC 38 H 1 TS	1035	S 35 C, S 35 CM	–	I
1.1191	C 45 E, Ck 45		C 45, 2 C 45, XC 42 H1, XC 45	1042, 1045	S 45 C, S 45 CM	207–255	I
1.1203	C 55 E, Ck 55		2 C 55, XC 55 H1, XC 54	1055	S 55 C, S 55 CM	229–255	I
1.1213	Cf 53		XC 48 H 1 TS	1050, 1055	S 50 C, S 50 CM	–	I
1.1221	Ck 60		C 60, 2 C 60, XC 60	1064	S 58 C, S 60 CM, S 65 CM	241–255	I
1.1274	C 100 S, Ck 101		C 100, XC 100	1095	SUP 4, SK 4 CSP	–	I
1.1545	C 105 U, C 105 W 1		Y1 105	W 110	SK 3	190	I
1.1663	C 125 W		Y2 120	W 112	–	–	I
1.2067	102 Cr 6, 100 Cr 6		Y 100 C 6	L 3	SUJ 2	–	II
1.2080	X 210 Cr 12		Z 200 C 12	D 3	SKD 1	–225	III
1.2210	115 CrV 3		–	L 2	–	–250	III
1.2344	X 40 CrMoV 5–1		Z 40 CDV 5	H 13	SKD 61	–229	III
1.2363	X 100 CrMoV 5–1		Z 100 CDV 5	A 2	SKD 12	–241	III
1.2419	105 WCr 6		105 WCr 5, 105 Wc 13	–	SKS 2, SKS 3, SKS31	–	II
1.2436	X 210 CrW 12		Z 210 CW 12–01	–	–	–250	III
1.2516	120 WvV 4		–	F 1	–	–	III
1.2542	45 WCrV 7		45 WCrV 8, 45 WCV 20	S 1	–	–	II
1.2581	X 30 WCrV 9–3		Z 30 WCV 9	H 21	SKD 5	–	III
1.2601	X 165 CrMoV 12		–	H 12	–	–	III
1.2713	55 NiCrMoV 6		55 NiCrMoV 7, 55 NCDV 7	L 6	SKT 4	–	II
1.3243	HS 6–5–2–5		Z 85 WDKCV 06–05–05–04–02	–	SKH 55	–269	II
1.3255	HS 18–1–2–5		Z 80 WKCV 18–05–04–01	T 4	SKH 3	–265	II
1.3343	HS 6–5–2		Z 85 WDCV 06–05–04–02	M 2	SKH 51	–280	II
1.3348	HS 2–9–2		Z 100 DCWV 09–04–02–02	M 7	–	–	II
1.3355	HS 18–0–1		Z 80 WCV 18–04–01	T 1	SKH 2	–269	II
1.3505	100 Cr 6		–	52100	SUJ 2, SUJ 4	–207	III
1.4718	G-X 45 CrSi 9 3		Z 45 CS 9	HNV 3	–	–250	III
1.5120	38 MnSi 4		–	–	–	–	I; II
1.5415	16 Mo 3, 15 Mo 3		15 D 3	A 204 Gr. A	STBA 12 STFA 12 STPA 12	–	II
1.5423	16 Mo 5		–	4419, 4520	SB 450 M, SB 480 M	–	II
1.5622	14 Ni 6		16 N 6	A 203	–	–	II
1.5680	X 12 Ni 5, 12 Ni 19		Z 18 N 5, 5 Ni, Z 10 N 05	2515, 2517	SL 5 N 590	–	III
1.5710	36 NiCr 6		–	3135	–	–	I; II
1.5732	14 NiCr 10		15 NC 11, 16 NC 11	3415	SNC 415	–	II
1.5752	15 NiCr 13, 14 NiCr 14		12 NC 15, 14 NC 12, 13 NiCr 14	3310; 3312, 3316	SNC 815	–255	II
1.6511	36 CrNiMo 4		35 NCD 5, 40 NCD 3	9840	–	–250	II
1.6523	20 NiCrMo 2–2, 21 NiCrMo 2		20 NCD 2, 22 NCD 2	8615, 8617, 8620	SNCM 220	–212	II
1.6546	40 NiCrMo 2–2		40 NCD 2	8640, 8740	SNCM 240	–	II
1.6582	34 CrNiMo 6		35 NCD 6	4337, 4340	SNCM 447	–248	II
1.6587	18 CrNiMo7–6, 17 CrNiMo 6		18 NCD 6	–	–	159–207	II
1.6657	14 NiCrMo 13–4		16 NCD 13	9310	–	–	II
1.7015	15 Cr 3		12 C 3, 15 Cr 2, 18 C 3	5015	SCr 415	–174	II
1.7033	34 Cr 4		32 C 4, 34 Cr 4	5132	SCr 430	–255	II

KATEGORISIERUNG DER WERKSTOFFE
CLASSIFICATION DES MATÉRIAUX
CATEGORIZATION OF MATERIALS

Werkstoff-Nr. Numeró du matériau Material number	Normen Normes Specifications					Härte (HB) Dureté (HB) Hardness (HB)	Kategorie Catégorie Category
Stähle Aciers Steel	DIN	ISO	AFNOR	AISI/SAE/ASTM	JIS		
1.7035	41 Cr 4		41 Cr 4, 42 C 4	5140	SCr 440	–255	II
1.7045	42 Cr 4		42 C 4 TS	5140	SCr 440	–255	II
1.7103	67 SiCr 5		67 SiCr 5	9254	–	–	II
1.7131	16 MnCr 5		16 MC 5, 16 MnCr 5	5115	–	–207	II
1.7139	16 MnCrS 5		16 MnCrS 5	5115	–	–207	II
1.7176	55 Cr 3		55 C 3	5155	SUP 9	–280	II
1.7218	25 CrMo 4		25 CD 4	4130	SCM 420, SCM 430	–255	II
1.7220	34 CrMo 4		34 CD 4	4130, 4135; 4137	SCM 432, SCM 435 H, SCCrM 3	–255	II
1.7223	41 CrMo 4		42 CD 4 TS	4142	SNB 22, SCM 440	–	II
1.7225	42 CrMo 4		42 CD 4	4140, 4142	SCM 440, SNB 7	–255	II
1.7262	15 CrMo 5		12 CD 4	–	SCM 415	–	II
1.7335	13 CrMo 4-5, 13 CrMo 4-4		15 CD 4.05	A 182–F11; F12	SFVA F 12 STBA 20 STBA 22	–	II
1.7361	32 CrMo 12		30 CD 12	–	–	–	II
1.7380	12 CrMo 9–10		12 CD 9–10, 10 CD 9.10	A 182–F22	SFVA F 22 A; B SCMV 4 SCPH 32-CF	–	II
1.7715	14 MoV 6-3		14 Mo 6	K11591	–	–	II
1.8159	50 CrV 4		51 CV 4, 50 CV 4, 51 CrV 4	6150	SUP 10	–248	II
1.8161	58 CrV 4		–	–	–	–255	II
1.8509	41 CrAlMo 7–10		40 CAD 6.12	E 7140	SACM 1, SACM 645	–255	II
1.8523	40 CrMoV 13–9, 39 CrMoV 13 9		–	–	–	–	II

KATEGORISIERUNG DER WERKSTOFFE
CLASSIFICATION DES MATÉRIAUX
CATEGORIZATION OF MATERIALS

Werkstoff-Nr. Numeró du matériau Material number	Normen Normes Specifications					Härte (HB) Dureté (HB) Hardness (HB)	Kategorie Catégorie Category
Rostfreie Stähle Aciers inoxydables Stainless steel	DIN	ISO	AFNOR	AISI/SAE/ASTM	JIS		
1.4000	X 6 Cr 13		Z 8 C 12	403	SUS 403	–200	V
1.4001	X 7 Cr 14		Z 8 C 13 FF	410 S	SUS 410 S	130–180	V
1.4005	X 12 CrS 13		X 12 CrS 13	416	SUS 416	–220	V
1.4006	X 12 Cr 13		Z 10 C 13	410; CA–15	SUS 410	–220	V
1.4016	X 6 Cr 17		Z 8 C 17	430	SUS 430	240	VI
1.4027	GX 20 Cr 14		Z 20 C 13 M	–	SCS 2	170–240	V, VI
1.4034	X 46 Cr 13		Z 44 C 14	420	SUS 420	–245	VI
1.4057	X 17 CrNi 16–2		Z 15 CN 16–02	431	SUS 431	–295	VI
1.4104	X 12 CrMoS 17		Z 10 CF 17	430 F	SUS 430 F	–220	V
1.4105	X 6 CrMoS 17		Z 8 CF 17	430 FR	–	–200	V
1.4112	X 90 CrMoV 18		X 90 CrMoV 18	440 B	SUS 44 B	–255	V
1.4113	X 6 CrMo 17–1		Z 8 CD 17–01	434	SUS 434	–200	V
1.4125	X 105 CrMo 17		Z 100 CD 17	440 C	SUS 440 C	–255	V
1.4301	X 5 CrNi 18–10		Z 6 CN 18–10	304; 304 H	SUS 304	–215	V
1.4305	X 8 CrNiS 18–9	X 10 CrNiS 18–9	Z 8 CNF 18–09	303	SUS 303	–230	V
1.4306	X 2 CrNi 19–11	X 2 CrNi 19–11	Z 3 CN 19–11	304 L	SUS 304 L; SCS 19	–215	V
1.4308	X 6 CrNi 18–9		Z 6 CN 18.10 M	CF–8	SCS 13	130–200	V
1.4310	X 10 CrNi 18–8 X 12 CrNi 17–7	X 10 CrNi 19–8	Z 11 CN 18–08 Z 12 CN 18–09	301, 302	SUS 301	–230	V
1.4311	X 2 CrNiN 18–10		Z 3 CN 18–10 Az	304 LN	SUS 304 LN	–230	V
1.4313	X 3 CrNi 13–4		Z 4 CND 13.4; Z 6 CN 13–4	CA 6–NM	SCS 5	–320	VI
1.4317	GX 4 CrNi 13–4		Z 8 CD 17–1	CA 6–NM	SCS 6	230–350	VI
1.4401	X 5 CrNiMo 18–10		Z 6 CND 17–11	316	SUS 316	–215	V
1.4404	X 2 CrNiMo 17–12–2 + S + Cu		Z3CND17–11–02 Z3CND 17–12–02	316 L	SUS 316 F	–215	V
1.4408	X 6 CrNiMo 18–10		–	CF–8M	SCS 14	130–200	V
1.4427			–	316 L	SUS 316 F	–	V
1.4429	X 2 CrNiMoN 17–13–3		Z 2 CND 17–13 Az	316 LN	SUS 316 LN	–250	VI
1.4435	X 2 CrNiMo 18–14–3		Z 3 CND 18–14–03	316L	SUS 316 L; SCS 16	–215	V
1.4436	X 5 CrNiMo 17–13–3		Z 6 CND 18–12–03	316	SUS 316	–215	V
1.4438	X 2 CrNiMo 18–15–4		Z 2 CND 19–15–04 Z 2 CND 19–15–04	317L	SUS 317L	–215	V
1.4441	X 2 CrNiMo 18 15 3	5832–1	–	316 LVM, F 138	SUS 316	–	V
1.4452	X 13 CrMnMoN 18–14–3		–	–	–	–	V
1.4460	X 3 CrNiMo 27–5–2		Z 5 CND 27–05 Az	329	SUS 329 J 1 SCS 11; SCH 11	–260	VI
1.4539	X 1 NiCrMoCu 25–20–5		Z 2 NCDU 25–20	904 L	–	–230	VI
1.4541	X 6 CrNiTi 18–10		Z 6 CNT 18–10	321	SUS 321	–215	VI
1.4542	X 5 CrNiCuNb 16–4		X 5 CrNiCuNb 16–4	630 17-4 PH	SCS 24 SUS 630	–360	VI
1.4550	X 6 CrNiNb 18–10		Z 6 CNNb 18–10	347; 348	SUS 347	–230	V, VI
1.4571	X 6 CrNiMoTi 17–12–2		Z 6 CNDT 17–12	316 Ti	SUS 316 Ti	–215	V
1.4581	GX 5 CrNiMoNb 19–11–2		Z 4 CNDNb 18.12 M	–	SCS 22	130–200	V
1.4583	X 10 CrNiMoNb 18–12		–	318	–	130–220	V
1.4718	X 45 CrSi 9–3		Z 45 CS 9	HNV 3	SUH 1	–	
1.4724	X 10 CrAl 13		Z 13 C 13	405	SUS 405	–192	V
1.4742	X 10 CrAl 18		Z 12 CAS 18	430	SUH 21; SUS 430	–212	V
1.4757	X 80 CrNiSi 20		–	HNV6	SUH 4	–	
1.4762	X 10 CrAl 24		Z 12 CAS 25	446	SUH 446	–	
1.4828	X 15 CrNiSi 20–12		Z 9 CN 24–13 Z17 CNS 20–12	309	SUH 309	–223 –	V
1.4845	X 8 CrNi 25–21 X 12 CrNi 25–21		Z 8 CN 25–20 Z 12 CN 25–20	310 S	SUH 310 SUS 310 S	–	VI
1.4864	X 12 NiCrSi 35–16 X 12 NiCrSi 36–16		Z 20 NCS 33–16	330	SUH 330	–	VI
1.4865	GX 40 NiCrSi 38–19 GX 40 NiCrSi 38–18		–	–	SCH 15 SCH 16	–	VI
1.4871	X 53 CrMnNiN 21–9		Z 52 CMN 21–09 Az	EV 8	SUH 35, SUH 36	–	V
1.4878	X 12 CrNiTi 18–9		Z 6 CNT 18–10	321	SUS 321	215	V

KATEGORISIERUNG DER WERKSTOFFE
CLASSIFICATION DES MATÉRIAUX
CATEGORIZATION OF MATERIALS

Werkstoff-Nr. Numeró du matériau Material number	Normen Normes Specifications					Härte (HB) Dureté (HB) Hardness (HB)	Kategorie Catégorie Category
Aluminium Aluminium Aluminium	DIN	ISO	AFNOR	AISI/SAE/ASTM	JIS		
2.1871	G-AlCu 4 TiMg						VII
3.0205	AL99						VII
3.0255	Al99.5			1000			VII
3.1325	AlCuMg1						VII
3.1655	AlCuSiPb						VII
3.1754	G-AlCu5Ni1.5						VII
3.2163	G-AlSi9Cu3						VII
3.2315	AlMgSi1						VII
3.2371	G-AlSi 7 Mg			4218 B			VII
3.2373	G-AlSi 9 Mg						VII
3.2381	G-AlSi 10 Mg						VII
3.2382	GD-AlSi 10 Mg						VII
3.2383	GK-AlSi 10 Mg (Cu)			A 360.2			VII
3.2581	G-AlSi 12			A 413.2			VII
3.2582	GD-AlSi 12			A 413.0			VII
3.2583	G-AlSi 12 (Cu)			A 413.1			VII
3.3315	AlMg1						VII
3.3561	G-AlMg 5						VII
3.4345	AlZnMgCu 0.5			7050			VII
3.5101	G-MgZn 4 SE 1 Zr 1			ZE 41			VII
3.5103	MgSE3Zn 2 Zr 1			EZ 33			VII
3.5106	G-MgAg 3 SE 2 Zr 1			QE 22			VII
3.5812	G-MgAl 8 Zn 1			AZ 81			VII
3.5912	G-MgAl 9 Zn 1			AZ 91			VII
Messing Laiton Brass							
2.0220	CuZn 5					65–110	VIII
2.0230	CuZn 10					75–130	VIII
2.0240	CuZn 15					65–145	VIII
2.0250	CuZn 20					65–150	VIII
2.0265	CuZn 30					70–165	VIII
2.0321	CuZn 37					70–180	VIII
2.0360	CuZn 40					95–120	VIII
2.0371	CuZn 38 Pb 2					80–160	VIII
2.0375	CuZn 36 Pb 3					80–155	VIII
2.0380	CuZn 39 Pb 2					95–150	VIII
2.0401	CuZn 39 Pb 3			C 38500	C3603	80–145	VIII
2.0402	CuZn 40 Pb 2					80–145	VIII
	CuZn 40 Pb 3						VIII
2.0410	CuZn 44 Pb 2						VIII
2.0490	CuZn 31 Si					<180	VIII
2.0540	CuZn 35 Ni						VIII
2.0550	CuZn 40 Al 2						VIII
2.0572	CuZn 40 Mn 2 Fe 1						VIII
2.0771	CuNi 7 Zn 39 Mn 5 Pb 3					130–200	VIII

KATEGORISIERUNG DER WERKSTOFFE
CLASSIFICATION DES MATÉRIAUX
CATEGORIZATION OF MATERIALS

Werkstoff-Nr. Numeró du matériau Material number	Normen Normes Specifications					Härte (HB) Dureté (HB) Hardness (HB)	Kategorie Catégorie Category
Titan Titane Titanium	DIN	ISO	AFNOR	AISI/SAE/ASTM	JIS		
3.7025	Ti (Grade 1)	5832-2	T35	B 348, F67	KS-40	~120	IV
3.7035	Ti 2 (Grade 2)	5832-2	T40	B 348 / 265, F 67	KS-50	~150	IV
3.7055	Ti 3 (Grade 3)	5832-2	T50	F67	KS-70	~170	IV
3.7065	Ti 4 (Grade 4)	5832-2	T60	B 348 / 265, F 67	KS-85	~200	IV
3.7115	Ti Al 2.5 5n (Grade 6)			B 348 / TA 5E	KS-115 AS		IV
3.7134	TiCu 2			B 348, F 67		<260	IV
3.7164	TiAl8Mo1V1						IV
3.7165	Ti Al 6 V 4 (Grade 5)	5832-3	T-A 6 V	B 348	KS-130 AV	~310	IV
3.7235	Ti 2 Pd (Grade 7)			B 348 / F 67		~150	IV
3.7194	Ti 3 Al 2.5V (Grade 9)			B 348	KS-50 Pd		IV
3.7225	Ti 7 (Grade 7)					~150	IV
3.7235	Ti 1 Pd	5832-11		F1295		~120	IV
	TiAl 6 Nb 7 (Ti 6 Al 7Nb)						IV

ANWENDUNGSBEREICHE DER SCHNEIDSTOFFSORTEN
DOMAINES D'APPLICATIONS DES MATÉRIAUX DE COUPE
APPLICATION RANGE OF CUTTING GRADES

Schneidstoffsorte Matériaux de coupe Cutting grade	Normbezeichnung Norme Norm	Zähigkeit des Schneidstoffs Tenacité du matériau de coupe Toughness of cutting grades	Werkstoffe Matières Materials							
		01 05 10 15 20 25 30 35 40 45 50	Stahl unlegiert | Acier non allié | Steel non-alloyed	Stahl niedrig legiert | Acier faibl. allié | Steel low alloyed	Stahl hochlegiert | Acier fortem. allié | Steel high alloyed	Titan | Titane | Titanium	Rostfreier Stahl | Acier inoxydable | Stainless steel	Rostfreier Stahl | Acier inoxydable | Stainless steel	Aluminium | Aluminium | Aluminium	Messing | Laiton | Brass
Kategorie Catégorie Category			I	II	III	IV	V	VI	VII	VIII
Härte (HB) Dureté (HB) Hardness value (HB)			125 – 300	180 – 250	200 – 350		180 – 220	220 – 330	60 – 130	
Hartmetall Carbure Carbide										
UHM 10	K 10/M 10		–	–	–	○	–	–	●	●
UHM 10 SX	K 10/M 10		–	–	–	–	○	○	○	○
UHM 10 MZ	P 10/K 15		●	●	●	–	–	–	–	–
UHM 10 HX	K 10/M 10		○	○	○	●	●	●	○	–
UHM 20	K 20/M 20		●	●	●	○	○	○	●	●
UHM 20 SX	K 20/M 20		●	●	●	–	○	○	○	–
UHM 20 MZ	P 25		●	●	●	–	–	–	–	–
UHM 20 HX	K 20/M 20		●	●	●	●	●	●	○	–
UHM 20 RZ	P 25/K 20		●	●	●	–	○	○	–	–
UHM 20 HZ	P 30/K 20		●	●	●	–	○	○	–	–
UHM 20 HPX	P 20–P 40/M 20–M 40		●	●	●	●	●	●	–	○
UHM 30	K 30/M 20		●	○	○	○	○	○	●	●
UHM 30 SX	K 30/M 20		●	●	●	–	○	○	○	○
UHM 30 MZ	P 35/M 35		●	●	●	–	●	●	–	–
UHM 30 HX	K 20/M 20		●	●	●	●	●	●	○	–
Cermet Cermet Cermet										
UCM 10	P 15/K 10/M 10		●	●	●	–	●	●	–	–
UCM 10 MZ	P 10/K 05/M 10		●	●	●	–	○	○	–	–
UCM 10 HX	P 15/K 10/M 10		●	●	●	–	●	●	–	–
HSS Acier rapide High speed steel										
HSS	HSS		●	○	○	–	○	○	●	●
HSS SX	HSS		●	●	●	–	●	●	○	○
HSS MZ	HSS		●	●	●	–	●	●	○	○
Diamant Diamant Diamond										
UPCD 15			○	○	○	○	○	–	●	●

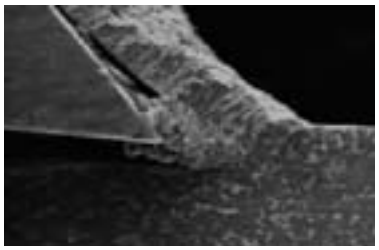
● Bevorzugter Einsatz | emploi préféré | preferred application
○ Möglicher Einsatz | emploi possible | possible application
– Einsatz nicht empfohlen | emploi pas recommandé | application not recommended

EIGENSCHAFTEN UND ANWENDUNGSBEREICHE DER BESCHICHTUNGSTYPEN
CARACTÉRISTIQUES ET UTILISATIONS DES DIFFÉRENTS REVÊTEMENTS
PROPERTIES AND APPLICATION RANGE OF DIFFERENT COATINGS

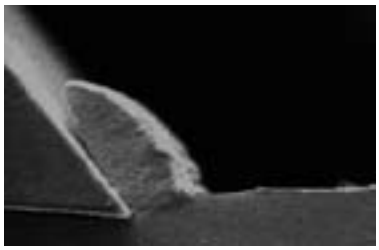
Durch die Veredlung von Schneiden mit einer zusätzlichen Hartstoffschicht wird die Verschleissbildung entscheidend reduziert. Sowohl Reibung und Erwärmung, aber auch Oxidation sowie Diffusion vermindern sich signifikant.

Les revêtements contribuent considérablement à la durée de vie des outils, grâce à leur grande dureté, leur résistance à la chaleur et leur faible coefficient de frottement.

With the refinement of cutting tools with an additional coating the wear becomes decisive reduced. Rubbing, warming up, diffusion and oxidation decreases significantly.



Zerspanungsprozess mit unbeschichteter Schneide
Usinage avec outil non revêtu
Cutting process without coated tool



Zerspanungsprozess mit beschichteter Schneide
Usinage avec outil revêtu
Cutting process with coated tool

Eigenschaften der Hartstoffbeschichtungen

Caractéristiques des revêtements

Properties of coatings

	Beschichtungstyp/Type de revêtement/Type of coating						
	Hartmetall, unbeschichtet Carbures non revêtus Carbide uncoated	SX	MZ	HX	RZ	HZ	HPX
Beschichtung Revêtement Coating	–	TiN	TiN	TiAlN	TiAlN	$TiNAl_2O_3$ Ti (C, N) Ti (C, N)	TiAlN
Schichtdicke (µm) Épaisseur de revêtement (µm) Thickness of coating (µm)	–	1–4	12–18	1–3	–12	–12	2–3
Härte (HV 0.05) Dureté (HV 0.05) Hardness value (HV 0.05)	1500	2300	2300	3000	3000	3000	3300
Max. Anwendungstemperatur (°C) Température maximale d'utilisation (°C) Max. application temperature (°C)	500–600	600	400	800	800	1000	950
Schichtfarbe Couleur de la couche Coating colour	silber-grau argent-gris silver-grey	gold-gelb or-jaune gold-yellow	gold-gelb or-jaune gold-yellow	violett-blau violet-bleu violet-blue	schwarz noir black	silber-grau argent-gris silver-grey	silber-grau
Beschichtungsverfahren Procédé de revêtement Coating process	–	PVD	CVD	PVD	CVD	CVD	PVD

Kantenverrundung bei beschichteten Schneiden

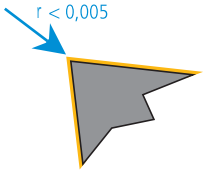
Jede Veredelung von Hartmetallschneiden mit einer Hartstoffschicht hat eine Kantenverrundung zur Folge. Je kleiner der Werkstoffdurchmesser ist, desto bedeutsamer wirkt sich dieser Effekt in der Zerspanung aus. Dabei hängt der Grad der Kantenverrundung von der Dicke der Beschichtung ab: Je dicker die Schicht, desto grösser die Kantenverrundung.

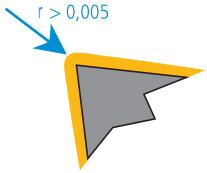
Diminution de l'acuité d'arête de coupe

Chaque revêtement provoque une diminution de l'acuité de l'arête. Celle-ci se traduit par un arrondissement de l'arête. Plus le diamètre à usiner est petit, plus l'arête doit être franche. Tous nos revêtements appliqués sur les plaquettes affûtées, sont de type PVD, couche mince.

Rounded edges among coated inserts

Every coating of a carbide insert results in a rounded cutting edge. The smaller the diameter of the material to be cut, the more significant are the consequences in the cutting performance. Therefore the rounding off of the cutting edge depends on the thickness of the coated layer. As thicker the coating, as greater is the radius created along the cutting edge.





EIGENSCHAFTEN UND ANWENDUNGSBEREICHE DER BESCHICHTUNGSTYPEN
CARACTÉRISTIQUES ET UTILISATIONS DES DIVERS REVÊTEMENTS
PROPERTIES AND APPLICATION RANGE OF DIFFERENT COATINGS

		Werkstoffe | Matières | Materials							
		Stahl unlegiert Acier non allié Steel non-alloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
Kategorie | Catégorie | Category		I	II	III	IV	V	VI	VII	VIII
Hartmetall ohne Beschichtung Carbure sans revêtement Carbide uncoated	HM	—	—	—	●	—	—	●	●
Standardbeschichtung für normale Belastungen – vielseitig anwendbar Revêtement standard pour utilisation globale – multifonctionnelle Standard coating for regular load – multifunctional	SX	●	●	○	—	○	○	○	●
	MZ	●	●	●	—	●	●	—	—
Beschichtung für hohe thermische Belastungen – warmhart Résistance à la chaleur et aux chocs thermiques Coating for high thermal load – warm-hard	HX	●	●	●	●	●	●	●	●
	RZ	○	○	●	—	—	—	—	—
	HZ	●	●	●	—	○	○	—	—
	HPX	●	●	●	●	●	●	—	○

● Bevorzugter Einsatz/emploi préféré/preferred application
○ Möglicher Einsatz/emploi possible/possible application
— Einsatz nicht empfohlen/emploi pas recommandé/application not recommended

INFORMATIONEN ZU PROBLEMEN UND ABHILFEN BEI VERSCHLEISSMERKMALEN
INFORMATIONS SUR LES PROBLÈMES ET REMÈDES EN CAS D'USURE
INFORMATION ABOUT PROBLEMS AND THEIR REMEDIES IN DIFFERENT CASES (REGARDING OF THE TYPE OF WEAR)

Problem / Problème / Problem — Abhilfe/Massnahme / Remèdes/Mesures / Remedy/Measure	Schnittgeschwindigkeit / Vitesse de coupe / Cutting speed	Vorschub / Avance / Feed	HM-Zähigkeit / Ténacité du métal dur / Insert toughness	HM-Verschleissfestigkeit / Résistance à l'usure du métal dur / Insert Hardness	Anstellwinkel / Angle de direction / Clearance angle	Spanwinkel / Angle de coupe / Rake angle	Stabilität / Stabilité / Stability	Schneidkantenverrundung / Arête de coupe arrondie / Rounded edge condition	Kühlung / Refroidissement / Coolant
A* Übermässiger Freiflächenverschleiss / Usure anormale de la face de dépouille / Excessive flank wear	↓	↑		↑				↑	
B* Schneidkantenausbröckelung / Ecaillage sur l'arête de coupe / Chipping of cutting edge	↑	↓	↑			✓			
C* Übermässiger Kolkverschleiss / Cratérisation anormale / Excessive cratering	↓	↓		↑					↑
D* Schneidkantendeformation / Déformation de l'arête de coupe / Plastic deformation	↓	↓		↑					
E* Aufbauschneidenbildung / Formation l'arête rapportée / Built up edge	↑	↑			✓	✓			↑
F* Schneidkantenausbrüche, WSP-Bruch / Cassures de l'arête ou de la plaquette / Insert breakage		↓	↑			✓	↑		
Schlechte Werkstückoberfläche / Mauvais état de surface de la pièce / Poor surface finish	↑	↓					↑	↓	✓
Schlechter Spanbruch / Mauvaise maîtrise du copeau / Bad chip forming	↑	↑			✓	✓		✓	
Vibration / Vibration / Vibration	↓	↓			↓	↑	↑	↓	

↑ erhöhen, vergrössern / augmenter / higher, increase

↓ vermindern, verkleinern / réduire / lower, reduce

✓ kontrollieren, optimieren / contrôler, optimiser / watch, optimize

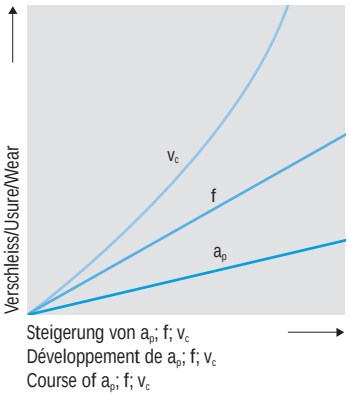
*= Näheres siehe Seite 10–11 / Plus d'informations voir page 10–11 / Further information see page 10–11

INFORMATIONEN ZU VERSCHLEISSURSACHEN
INFORMATIONS TECHNIQUES SUR LES CAUSES DE L'USURE
INFORMATION ABOUT CAUSES OF WEAR

Die Schnitttemperatur bzw. der Verschleiss hängt entscheidend von den Zerspanungsbedingungen (v_c, f, a_p) ab. Dabei nehmen die thermisch bedingten Verschleissursachen, Oxidation und Diffusion, überproportional zu.

La température de coupe, respectivement l'usure, dépend des conditions de coupe (v_c, f, a_p). Cependant, les dégradations en raison de la température de coupe, de l'oxydation et de la diffusion, augmentent surproportionnellement.

The cutting temperature particularly the wear depends significantly on the cutting conditions (v_c, f, a_p). Thermal causes of wear like oxidation and diffusion increase disproportionately.



v_c = Schnittgeschwindigkeit / Vitesse de coupe / Cutting speed

f = Vorschub / Avance / Feed

a_p = Schnitttiefe / Profondeur de passe / Depth of cut

URSACHEN UND ABHILFEN UNTERSCHIEDLICHER VERSCHLEISSARTEN
CAUSES ET REMÈDES DES DIFFÉRENTES USURES
CAUSES AND REMEDIES OF WEAR

A Freiflächenverschleiss

Ursachen:
- zu hohe Schnittgeschwindigkeit
- Hartmetallsorte mit zu geringer Verschleissfestigkeit
- nicht angepasster Vorschub

Abhilfen:
- Schnittgeschwindigkeit senken
- härtere Beschichtung wählen
- Vorschub in richtiges Verhältnis zu Schnittgeschwindigkeit und Schnitttiefe setzen

A Usure en dépouille

Causes :
- Vitesse de coupe trop élevée
- Nuance de carbure à résistance à l'usure trop faible
- Avance non adaptée

Remèdes:
- Réduction de la vitesse de coupe
- Nuance de carbure plus résistante à l'usure
- Avance correspondante à la vitesse de coupe et à la profondeur de passe (augmentation de l'avance)

A Flank wear

Reasons:
- Cutting speed too high
- Carbide grade with too low wear resistance
- Feed rate not adapted

Remedies:
- Reduce cutting speed
- Select more wear resistant carbide grade
- Adapt feed rate to cutting speed and cutting depth (increase feed rate)

Abrieb an der Freifläche. Normaler Verschleiss nach einer gewissen Eingriffszeit.
L'abrasion au niveau de la face de dépouille représente une usure courante après un certain temps d'utilisation.
Abrasion on flank, normal wear after a certain machining time.

B Ausbröckelung

Ursachen:
- zu verschleissfeste Sorte
- Vibrationen
- zu hoher Vorschub, bzw. zu hohe Schnitttiefe
- unterbrochener Schnitt
- Spanschlag

Abhilfen:
- zähere Sorte verwenden
- negative Schneidgeometrie mit Spanleitstufe verwenden
- Stabilität verbessern (Werkstück, Werkzeug)

B Écaillage

Causes:
- Nuance trop résistante à l'usure
- Vibrations
- Avance ou profondeur de passe trop importante
- Coupe interrompue
- «Martèlement» des copeaux

Remèdes:
- Nuance plus tenace
- Géométrie de coupe négative avec brise-copeaux
- Amélioration de la stabilité (outil, pièce)

B Edge chipping

Reasons:
- Grade with too high wear resistance
- Vibrations
- Feed rate too high or excessive cutting depth
- Interrupted cut
- Swarf damage

Remedies:
- Use tougher grade
- Use negative cutting edge geometry with chip groove
- Increase stability (tool, work piece)

Durch überhöhte mechanische Beanspruchung der Schneidkante können HM-Partikel ausbrechen.
Dû à la surcharge mécanique de l'arête de coupe, des particules de carbure peuvent se détacher.
Through excessive mechanical stress at the cutting edge fracture and chipping can take place.

C Kolkverschleiss

Ursachen:
- zu hohe Schnittgeschwindigkeit, Vorschub oder beides
- zu geringer Spanwinkel
- Sorte mit zu geringer Verschleissfestigkeit
- falsch zugeführte Kühlung

Abhilfen:
- Schnittgeschwindigkeit und/oder Vorschub herabsetzen
- härtere Beschichtung wählen oder Anzahl der Schichten erhöhen (CVD)
- Kühlmittelmenge und/oder Druck erhöhen, Zuführung kontrollieren

C Usure en cratère

Causes:
- Vitesse de coupe trop élevée et/ou avance trop importante
- Angle de coupe trop faible
- Nuance de carbure à résistance à l'usure trop faible
- Mauvaise lubrification

Remèdes:
- Réduction de la vitesse de coupe et/ou de l'avance
- Nuance de carbure plus résistante à l'usure
- Augmentation du débit et/ou de la pression du liquide de coupe, contrôle du jet
- Nuance plus résistante à l'usure en cratère

C Cratering

Reasons:
- Too high cutting speed and/or feed rate
- Rake angle too shallow
- Grade with low wear resistance
- Insufficient coolant supply

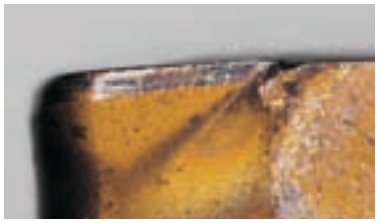
Remedies:
- Reduce cutting speed and/or feed rate
- Increase coolant quantity and/or pressure, optimize coolant supply
- Use grade which is more resistant to cratering

Der ablaufende heisse Span verursacht eine Auskolkung der Schneidplatte an der Spanfläche.
L'écoulement du copeau chaud provoque une cratérisation de la plaquette sur la face de coupe.
The hot chip which is being evacuated causes cratering at the rake face of the cutting edge.

D Plastische Verformung
Ursachen:
– zu hohe Arbeitstemperatur, daher Erweichung des Grundmaterials
– Beschädigung der Beschichtung
– zu enge Spanleitstufe
Abhilfen:
– Schnittgeschwindigkeit herabsetzen
– verschleissfestere HM-Sorte wählen
– Kühlung vorsehen

D Déformation plastique
Causes:
– Température de travail trop élevée, d'où un affaissement du substrat
– Endommagement du revêtement
Remèdes:
– Réduction de la vitesse de coupe
– Nuance de carbure plus résistante à l'usure
– Amélioration de la lubrification

D Plastic deformation
Reasons:
– Too high machining temperature, resulting in softening of substrate
– Damaged coatings
Remedies:
– Reduce cutting speed
– Choose carbide grade with higher wear resistance
– Provide cooling



Hohe Zerspanungstemperatur bei gleichzeitiger mechanischer Beanspruchung kann zu plastischer Verformung führen.
La combinaison d'une température d'usinage élevée et d'une charge mécanique peut provoquer une déformation plastique.
High machining temperature and simultaneous mechanical stress can lead to plastic deformation.

E Aufbauschneidenbildung
Ursachen:
– zu geringe Schnittgeschwindigkeit
– zu kleiner Spanwinkel
– falscher Schneidstoff
– fehlende Kühlung/Schmierung
Abhilfen:
– Schnittgeschwindigkeit erhöhen
– Spanwinkel erhöhen
– verschleissfestere Beschichtung oder polierte Spanfläche einsetzen
– fettere Emulsion verwenden

E Arête rapportée
Causes:
– Vitesse de coupe trop faible
– Angle de coupe trop petit
– Matériaux de coupe inadaptés
– Absence de lubrification
Remèdes:
– Augmentation de la vitesse de coupe
– Angle de coupe plus important
– Revêtement TiN
– Vérification du dosage de l'émulsion

E Built-up edges
Reasons:
– Too low cutting speed
– Too small rake angle
– Wrong cutting material
– Lack of cooling/lubrication
Remedies:
– Increase cutting speed
– Enlarge rake angle
– Apply TiN-coating
– Use emulsion with higher concentration

Materialaufschweissungen an der Schneidkante treten auf, wenn der Span infolge zu niedriger Schnitttemperatur nicht richtig abfliesst.
Lorsqu'une température de coupe trop faible empêche l'écoulement du copeau, de la matière se colle à l'arête de coupe.
Built-up material/edges occur when the chip is not evacuated properly due to a too low cutting temperature.

F Plattenbruch
Ursachen:
– Überlastung des Schneidstoffes
– Stabilitätsmangel
– Keilwinkel zu klein
– übermässiger Kerbverschleiss
Abhilfen:
– zäheren Schneidstoff verwenden
– Kantenschutzfase verwenden
– Schneidkantenverrundung vergrössern
– stabilere Geometrie einsetzen

F Rupture de plaquette
Causes:
– Surcharge du matériau de coupe
– Manque de stabilité
– Angle de tranchant inadapté
Remèdes:
– Matériau plus tenace
– Arête chanfreinée
– Honing plus important
– Géométrie mieux adaptée

F Insert breakage
Reasons:
– Excessive stress of cutting material
– Lack of stability
– Corner angle too small
– Excessive notching
Remedies:
– Use tougher cutting material
– Use protective edge chamfer
– Increase honing of edge
– Use more stable geometry

Bei einer Überlastung der Schneidplatte kann es zum Plattenbruch kommen.
Une surcharge sur la plaquette peut entraîner sa rupture.
Excessive stress of the insert causes breakage.

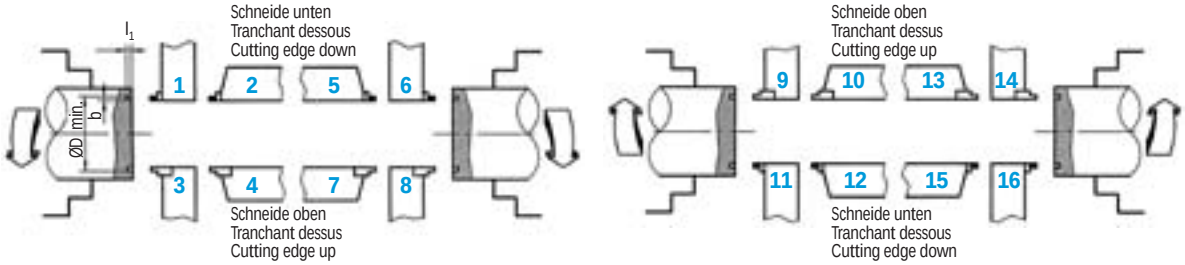
BEARBEITUNGS-SITUATIONEN
SITUATIONS D'USINAGE
WORKING SITUATIONS

Anhand des untenstehenden Schemas sind alle unterschiedlichen Bearbeitungs-Situationen dargestellt. Bestimmen Sie Ihre Bearbeitungs-Situation, tragen die Werte dazu in die Tabelle ein und faxen Sie uns das Ergebnis zu. Utilis gibt Ihnen dann die passende Werkzeug-Empfehlung.

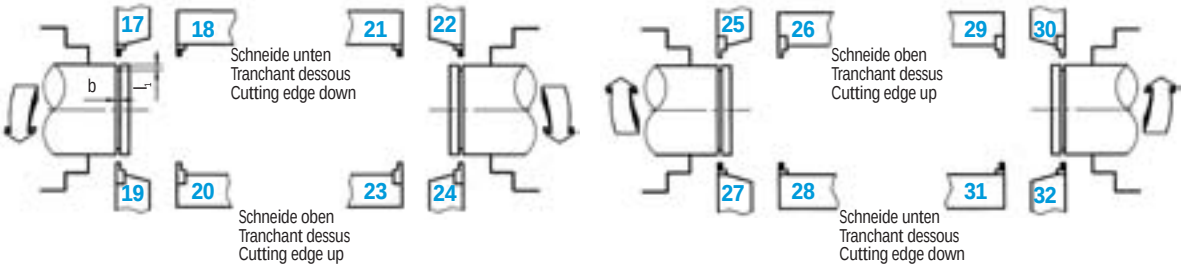
Il est possible de représenter les différentes situations d'usinage selon le schéma que vous trouverez en bas de la page. Déterminez votre situation d'usinage et remplissez la feuille avec les valeurs nécessaires, que vous faxerez chez Utilis. Nous vous ferons une offre avec les préconisations d'outillage correspondantes.

With the illustration below it is possible to achieve up different tooling situations. Choose yours and fill out the following list. Please send back this sheet and we will recommend you the right holder and the suitable insert.

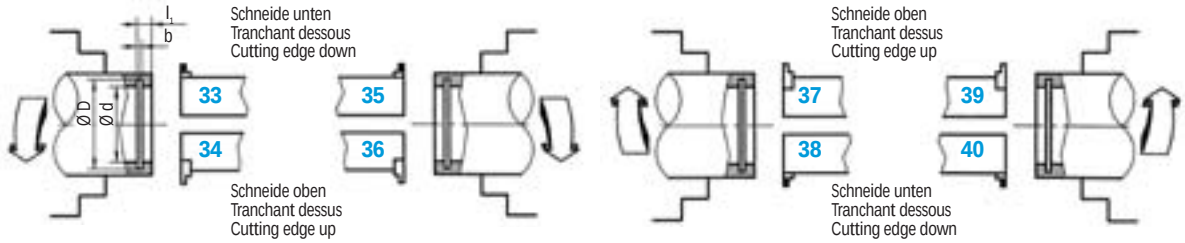
Drehen axial
Tournage axial
Turning axial



Drehen radial aussen
Tournage radial extérieur
Turning radial outside



Drehen radial innen
Tournage radial intérieur
Turning radial inside



BESTELLHILFEN
ASSISTANCE DE COMMANDE
ORDER ASSISTANCE

Situation Situation Situation	l_1	b	øD	ød	Toleranz Lolérance Tolerance	Halter Porte-Outil Holder	y x	ø	Platte Plaquette Insert
	mm	mm	mm	mm			x	y	ø	
1						R				L
2						L				L
3						R				L
4						L				L
5						R				R
6						L				R
7						R				R
8						L				R
9						L				R
10						R				R
11						L				R
12						R				R
13						L				L
14						R				L
15						L				L
16						R				L
17						R				R
18						L				R
19						R				R
20						L				R
21						R				L
22						L				L
23						R				L
24						L				L
25						L				L
26						R				L
27						L				L
28						R				L
29						L				R
30						R				R
31						L				R
32						R				R
33						R				L
34						R				L
35						L				R
36						L				R
37						L				R
38						L				R
39						R				L
40						R				L

R = rechts | droite | right L = links | gauche | left

ISO-BEZEICHNUNGSSYSTEM FÜR WENDEPLATTEN
SYSTÈME DE DÉNOMINATION POUR PLAQUETTES AMOVIBLES
ISO DESIGNATION SYSTEM FOR INDEXABLE INSERTS

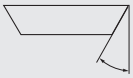
D

Plattenform
Forme de plaquette
Form of insert

35° **V**
55° **D**
80° **C**

C

Freiwinkel
Angle de dépouille
Clearance angle



7° **C**
0° **N**
11° **P**

G

Toleranzen
Tolérance
Tolerance

s ±	d ±	
0,025	0,025	**E**
0,13	0,025	**G**
0,13	0,05–0,15 *	**M**
0,10	0,04	**X**

* Von der Plattengrösse abhängig
Dépendant de la dimension de la plaquette
Dependent on dimension of insert

T

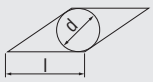
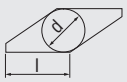
Merkmal
Marque distinctive
Distinctive mark

W/B
T/H
U

Sonderausführung **X/Z**
Exécution spéciale
Special shape

11

Schneidenlänge
Longueur de l'arête coupante
Edge length

	Kennzahl Numéro indicatif Index	L (mm)	d (mm)
	**06**	6.40	6.35
	09	9.70	9.53
	12	12.90	12.70
	**07**	7.75	6.35
	11	11.60	9.53
	**11**	11.10	6.35
	16	16.60	9.59
	**10**	10.00	6.35

T3

Plattenstärke
Epaisseur de plaquette
Tip thickness

mm	Kennzahl Numéro indicatif Index
2.38	**02**
3.18	**03**
3.97	**T3**
4.76	**04**

04

Eckenradius
Rayon de pointe
Corner radius

Platten mit Eckenradien
Plaquettes avec rayons de pointe
Tips with corner radius

0.0	**00/ZZ**
0.03	**003**
0,06	**006**
0.08	**008**
0.1	**01**
0.15	**015**
0.2	**02**
0.35	**035**
0.4	**04**
0.75	**075**
0.8	**08**

F

Schneidkanten
Arête de coupe
Edge condition

Scharf **F**
Arête de coupe vive
Sharp

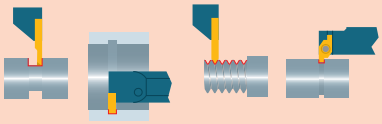
Gerundet **E**
Arête de coupe arrondie
Rounded

N

Schneidrichtung
Direction de coupe
Cutting direction

MULTIDEC®-CUT

Kurzbeschreibung und Anwendungsübersicht
Gamme de produits et applications
Product line and application 27

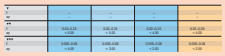


Schneiden
Plaquettes
Inserts 31

Halter
Porte-outils
Holders 60

Ersatzteile
Pièces de rechange
Spare parts 67

Schnittdaten
Données de coupe
Cutting specification 68



Multidec®-Cut wird primär zum Aussendrehen, aber auch zum Innendrehen eingesetzt. Es gibt zwei Schneidensysteme, die sich in den Stechtiefen unterscheiden (lange Ausführung der Serie 3000 und die kurze, kostengünstige Alternative der Serie 1600). Alle Wendeschneidplatten verfügen über zwei Schneiden, sind leicht auswechselbar und zeichnen sich durch eine sehr hohe Wiederholgenauigkeit aus. Für die Bearbeitung aller gängigen Werkstoffe stehen ideal abgestimmte Hartmetallsorten aus Feinkornsubstraten (K10–K40), beschichtet und unbeschichtet, zur Verfügung.
Eine Weiterentwicklung ist Multidec®-Cut, Serie 3000, das sich durch die exakte Positionierung der Wendeschneidplatte auszeichnet. Dadurch werden die Schnittkräfte direkt von der Wendeschneidplatte auf den Halter übertragen, sodass keine Abscherkräfte auf die Schrauben wirken. Damit eignet sich Multidec®-Cut, Serie 3000 besonders für hohe Anforderungen und schwierige Werkstoffe.

Conçu comme outillage de décolletage pour des opérations de tournage extérieur, mais également pour le tournage intérieur, deux grandeurs de plaquettes aux capacités de 32 mm au diamètre, pour la série 3000 et avec une alternative à la capacité de 10 mm pour la série 1600 font partie intégrale du programme. Ces outillages à deux arêtes de coupe par plaquette, sont facilement interchangeables, tout en gardant une haute précision dans la répétitivité. Pour l'usinage de matériaux difficile, différentes nuances de carbures, en partant du K10 au K40, ont été choisies, tout comme les revêtements de type PVD couche mince.
Une évolution logique du programme Multidec®-Cut, donnait naissance à la série Cut 3000. Grâce au nouveau système de montage, Utilis présent une plaquette où les deux arêtes de coupe sont utilisables à 100 %. Rendement pour des exigences élevées.

Above all Multidec®-Cut is most commonly used in OD-turning or alternatively in ID-turning. There are two insert systems which differ in cutting depth (long design of series 3000 and the short and reasonable alternative series 1600). All inserts consist of two cutting edges, are replaceable very easy and known for its great repeat accuracy. For cutting of all common materials we offer ideal adjusted carbides grades (K10-P40 coated and uncoated).
Multidec®-Cut series 3000 is an advanced type which distinguishes itself by the highest precision of the insert clamping position. That's how the cutting force becomes directly passed forward to the holder and does not affect the screws. With this feature Multidec®-Cut 3000 is suitable for demanding jobs and difficult materials.




Vorteile
- Alle gängigen Formen = Standard
- Sonderformen rasch und kostengünstig erhältlich
- Wendeschneidplatten mit 2 Schneiden (ausser Serie 500)
- Alle Schneiden nachschleifbar
- Alle Schneiden leicht auswechselbar
- Wiederholgenauigkeit ± 0.01 mm
- Je Bearbeitung gut abgestimmte
  · Hartmetallsorten (K10–K40),
  · beschichtet und unbeschichtet

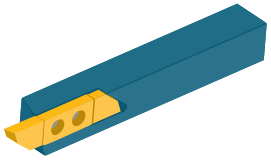
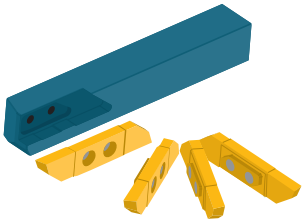
Avantages
- Toutes les géométries connues sont standard
- Exécutions de formes spéciales vite réalisées et à un prix avantageux
- Plaquettes avec 2 arêtes de coupe (sauf la série 500)
- Toutes les plaquettes sont réaffûtables
- Toutes les plaquettes sont interchangeables
- Répétitivité de l'arête ± 0.01 mm
- Pour chaque usinage une nuance optimale
  · nuances en carbure (K10–K40)
  · revêtues et non revêtues

Advantages
- Most popular cutting forms available from our standard program
- Special form inserts can easily and at reasonable cost be made from blanks
- Inserts with two cutting edges (except serie 500)
- Each insert can be reground
- Each insert easy to replace
- Cutting edge repeatability to ± 0.01 mm
- Different coatings are available

Besonderheiten der Serie 3000
- Exakte Positionierung durch 2 Schrauben und grosse Auflagefläche
- realer Anschlag für axiale Ausrichtung
- garantiert senkrechte Ausrichtung
- 2. Schneide auch nach Bruch einsetzbar
- Keine Abscherkräfte wirken auf Schrauben
- System völlig geschützt vor Spänen

Particularités de la série 3000
- Positionnement exacte grâce à deux vis de fixation et grande face d'appui
- butée réelle de positionnement axiale
- perpendicularité garantie
- 2ème arête de coupe utilisable, même si la première manque
- Les vis ne sont pas soumises à une contrainte au cisaillement
- Système entièrement à l'abri des copeaux

Specific features of serie 3000
- Perpendicularity guaranteed by two fixing screws and large support face
- genuine limit stop for axial positioning
- perpendicularity guaranteed
- 2nd edge still useable after crash of the first one
- Screws are not affected by shear stress
- System entirely shielded from chips

ANWENDUNGS-ÜBERSICHT AUSSENDREHEN
APPLICATIONS POUR LE TOURNAGE EXTÉRIEUR
APPLICATION OD TURNING

Schneiden siehe Seite 31…
Halter siehe Seite 60…

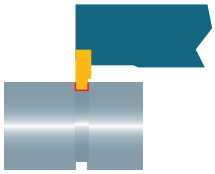
Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung auch lieferbar.

Abstechen
Tronçonnage
Cut off

Vornedrehen
Tournage avant
Front turning

Einstechen und Längsdrehen
Rainurage et tournage
Grooving and Turning

Einstechen (radial)
Rainurage (radial)
Grooving (radial)



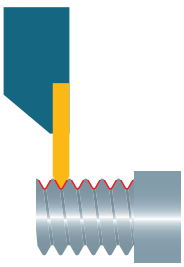
Plaquettes voir page 31…
Porte-outils voir page 60…

Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

Abstechen
Tronçonnage
Cut off

Kopierdrehen (vorne – hinten)
Tournage par copiage (avant – arrière)
Copy turning (front – back)

Gewindedrehen
Filetage
Threading



Einstechen (radial)
Rainurage (radial)
Grooving (radial)

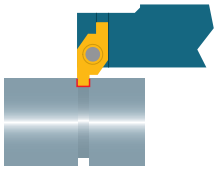
Inserts see page 31…
Holders see page 60…

All illustrations show right hand design. Left hand design is also available.

Einstechen (radial)
Rainurage (radial)
Grooving (radial)

Hintendrehen
Tournage arrière
Back turning

Einstechen (radial)
Rainurage (radial)
Grooving (radial)



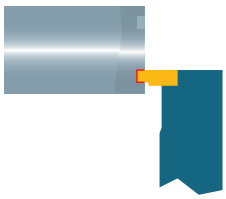
ANWENDUNGS-ÜBERSICHT AUSSENDREHEN
APPLICATIONS POUR LE TOURNAGE EXTÉRIEUR
APPLICATION OD TURNING

MULTIDEC®-CUT

Schneiden siehe Seite 31…
Halter siehe Seite 60…

Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung auch lieferbar.

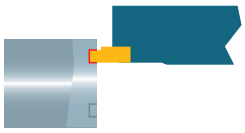
Einstechen (axial)
Rainurage (axial)
Grooving (axial)



Plaquettes voir page 31…
Porte-outils voir page 60…

Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

Einstechen (axial)
Rainurage (axial)
Grooving (axial)



Inserts see page 31…
Holders see page 60…

All illustrations show right hand design. Left hand design is also available.

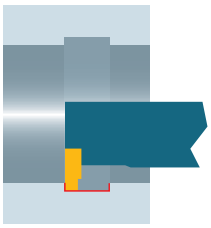
ANWENDUNGS-ÜBERSICHT INNENDREHEN
APPLICATIONS POUR LE TOURNAGE INTÉRIEUR
APPLICATION ID TURNING

MULTIDEC®-CUT

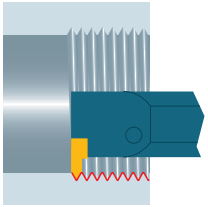
Schneiden siehe Seite 31…
Halter siehe Seite 60…

Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung auch lieferbar.

Einstechen und Längsdrehen
Rainurage et tournage
Grooving and Turning



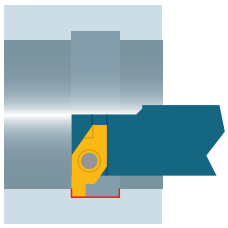
Gewindedrehen
Filetage
Threading



Plaquettes voir page 31…
Porte-outils voir page 60…

Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

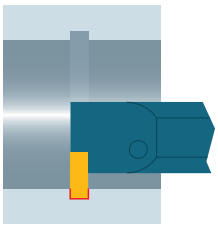
Einstechen und Längsdrehen
Rainurage et tournage
Grooving and Turning



Inserts see page 31…
Holders see page 60…

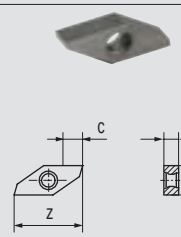
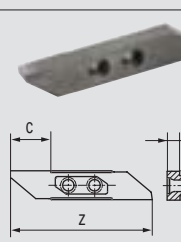
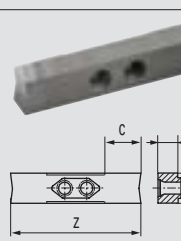
All illustrations show right hand design. Left hand design is also available.

Einstechen
Rainurage
Grooving



Rohling | Ebauche | Blank

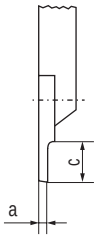
Typ 01

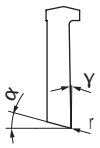
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Abbildung techn. Zeichnung Illustration et dessin Illustration drawing	Schneidsorten* Matériaux de coupe* Insert grade*										Halter Porte-outil Holder
					○ ○ ○ ●	● ○ — ○	● ● ● ○	○ ○ ○ ●	● ○ — ○	● ● ● ○					60…
L	N	R			UHM 10	UHM 10 SX	UHM 10 HX	UHM 30	UHM 30 SX	UHM 30 HX	a	c	x	z	
			501-2-6 N		■	■	■				2.0	8.5	6.0	17.8	500…
			501-2-6 N P		■	■	■				2.0	8.5	6.0	17.8	500…
			1601-3-4 N					■	□	□	3.0	4.0	6.0	14.0	1600…
			1601-3-5 N					■	□	□	3.0	5.0	6.0	16.0	1600…
			1601-4-4 N					■	□	□	4.0	4.0	6.0	14.0	1600…
			1601-6-5 N					■	□	□	6.0	5.0	6.0	16.0	1600…
			1601-8-5 N					■	□	□	8.0	5.0	6.0	16.0	1600…
			3001-3.5-10 L					■	□	□	3.5	11.0	8.0	40.5	3000…
			3001-3.6-17 L					■	□	□	3.6	17.0	8.0	51.5	3000…
			3001-3.5-10 R					■	□	□	3.5	11.0	8.0	40.5	3000…
			3001-3.6-17 R					■	□	□	3.6	17.0	8.0	51.5	3000…
			3601-6-10 N					■	□	□	6.0	11.0	8.0	40.5	3600…

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Abstechen | Tronçonnage | Cut off





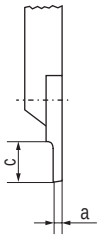
Typ 02

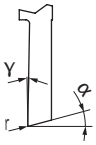
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○										60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p		
■			1602-0.8-5 L	■	□	■	0.8		5.0	15°		1°	0.00			1600…
			1602-1.0-5 L	■	□	■	1.0		5.0	15°		1°	0.00			1600…
			1602-1.2-5 L	■	□	■	1.2		5.0	15°		1°	0.00			1600…
			1602-1.5-5 L	■	□	■	1.5		5.0	15°		1°	0.00			1600…
■			3002-0.8-6 L	■	□	■	0.8		6.0	15°		1°	0.00			3000…
			3002-1.0-6 L	■	□	■	1.0		6.0	15°		1°	0.00			3000…
			3002-1.2-6 L	■	□	■	1.2		6.0	15°		1°	0.00			3000…
			3002-1.5-8 L	■	□	■	1.5		8.0	15°		1°	0.00			3000…
			3002-1.8-8 L	■	□	■	1.8		8.0	15°		1°	0.00			3000…
			3002-2.0-10 L	■	□	■	2.0		10.0	15°		1°	0.00			3000…
			3002-2.5-13 L	■	□	■	2.5		13.0	15°		1°	0.00			3000…
			3002-3.0-16 L	■	□	■	3.0		16.0	15°		1°	0.00			3000…

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Abstechen | Tronçonnage | Cut off





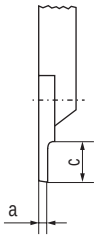
Typ 02

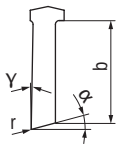
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○										60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p		
			1602-0.8-5 R	■	□	■	0.8		5.0	15°		1°	0.00			1600…
			1602-1.0-5 R	■	□	■	1.0		5.0	15°		1°	0.00			1600…
			1602-1.2-5 R	■	□	■	1.2		5.0	15°		1°	0.00			1600…
			1602-1.5-5 R	■	□	■	1.5		5.0	15°		1°	0.00			1600…
			3002-0.8-6 R	■	□	■	0.8		6.0	15°		1°	0.00			3000…
			3002-1.0-6 R	■	□	■	1.0		6.0	15°		1°	0.00			3000…
			3002-1.2-6 R	■	□	■	1.2		6.0	15°		1°	0.00			3000…
			3002-1.5-8 R	■	□	■	1.5		8.0	15°		1°	0.00			3000…
			3002-1.8-8 R	■	□	■	1.8		8.0	15°		1°	0.00			3000…
			3002-2.0-10 R	■	□	■	2.0		10.0	15°		1°	0.00			3000…
			3002-2.5-13 R	■	□	■	2.5		13.0	15°		1°	0.00			3000…
			3002-3.0-16 R	■	□	■	3.0		16.0	15°		1°	0.00			3000…

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Abstechen | Tronçonnage | Cut off





Typ 02…V

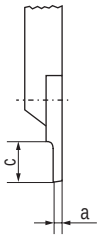
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○										60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p		
			3002-0.8-6 LV	■	□	■	0.8	6.0	6.2	15°		1°	0.00			3000…
			3002-1.0-6 LV	■	□	■	1.0	6.0	6.3	15°		1°	0.00			3000…
			3002-1.2-6 LV	■	□	■	1.2	6.0	6.4	15°		1°	0.00			3000…
			3002-1.5-8 LV	■	□	■	1.5	8.0	8.4	15°		1°	0.00			3000…
			3002-1.8-8 LV	■	□	■	1.8	8.0	8.5	15°		1°	0.00			3000…
			3002-2.0-10 LV	■	□	■	2.0	10.0	10.6	15°		1°	0.00			3000…
			3002.2.5-13 LV	■	□	■	2.5	13.0	13.7	15°		1°	0.00			3000…
			3002-3.0-10 LV	■	□	■	3.0	10.0	10.8	15°		1°	0.00			3000…
			3002.3.0-16 LV	■	□	■	3.0	15.2	16.0	15°		1°	0.00			3000…

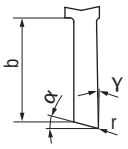
LV = links versetzt/gauche déportée/left offset

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Abstechen | Tronçonnage | Cut off





Typ 02…V

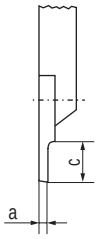
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p	
			3002-0.8-6 RV	■	□	■	0.8	6.0	6.2	15°		1°	0.00		3000…
			3002-1.0-6 RV	■	□	■	1.0	6.0	6.3	15°		1°	0.00		3000…
			3002-1.2-6 RV	■	□	■	1.2	6.0	6.4	15°		1°	0.00		3000…
			3002-1.5-8 RV	■	□	■	1.5	8.0	8.4	15°		1°	0.00		3000…
			3002-1.8-8 RV	■	□	■	1.8	8.0	8.5	15°		1°	0.00		3000…
			3002-2.0-10 RV	■	□	■	2.0	10.0	10.6	15°		1°	0.00		3000…
			3002-2.5-13 RV	■	□	■	2.5	13.0	13.7	15°		1°	0.00		3000…
			3002-3.0-10 RV	■	□	■	3.0	10.0	10.8	15°		1°	0.00		3000…
			3002-3.0-16 RV	■	□	■	3.0	15.2	16.0	15°		1°	0.00		3000…

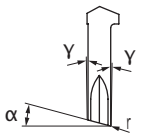
RV = rechts versetzt/droite déportée/right offset

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

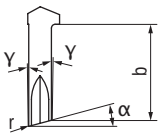
Abstechen | Tronçonnage | Cut off





Typ 02…SC

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○										60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p		
■			3002-1.5-8 L SC	■	□	■	1.5		8.0	15°		0.5°	0.00			3000…
			3002-2.0-10 L SC	■	□	■	2.0		10.0	15°		0.5°	0.00			3000…
			3002-2.5-13 L SC	■	□	■	2.5		13.0	15°		0.5°	0.00			3000…
			3002-3.0-16 L SC	■	□	■	3.0		16.0	15°		0.5°	0.00			3000…



Typ 02…V SC

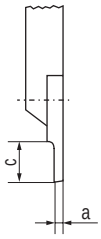
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○										60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p		
■			3002-1.5-8 LV SC	■	□	■	1.5	8.0	8.4	15°		0.5°	0.00			3000…
			3002-2.0-10 LV SC	■	□	■	2.0	10.0	10.6	15°		0.5°	0.00			3000…
			3002-2.5-13 LV SC	■	□	■	2.5	13.0	13.7	15°		0.5°	0.00			3000…
			3002-3.0-16 LV SC	■	□	■	3.0	15.2	16.0	15°		0.5°	0.00			3000…

LV = links versetzt/gauche déportée/left offset

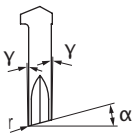
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Abstechen | Tronçonnage | Cut off

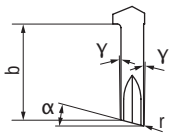


Typ 02...SC



Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60...
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p	
			3002-1.5-8 R SC	■	□	■	1.5		8.0	15°		0.5°	0.00		3000...
			3002-2.0-10 R SC	■	□	■	2.0		10.0	15°		0.5°	0.00		3000...
			3002-2.5-13 R SC	■	□	■	2.5		13.0	15°		0.5°	0.00		3000...
			3002-3.0-16 R SC	■	□	■	3.0		16.0	15°		0.5°	0.00		3000...

Typ 02...V SC



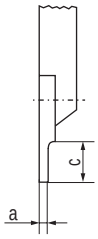
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60...
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p	
			3002-1.5-8 RV SC	■	□	■	1.5	8.0	8.4	15°		0.5°	0.00		3000...
			3002-2.0-10 RV SC	■	□	■	2.0	10.0	10.6	15°		0.5°	0.00		3000...
			3002-2.5-13 RV SC	■	□	■	2.5	13.0	13.7	15°		0.5°	0.00		3000...
			3002-3.0-16 RV SC	■	□	■	3.0	15.2	16.0	15°		0.5°	0.00		3000...

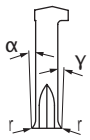
RV = rechts versetzt/droite déportée/right offset

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Abstechen | Tronçonnage | Cut off





Typ 02…N SC

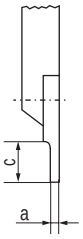
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○										60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	$a_{-0.03}^{-0.01}$	b	c	α	Ø $D_{min.}$	γ	r	p		
■			3002-1.5-10 LN SC	■	□	■	1.5		10.0	3°		3°	0.08			3000…
■			3002-2.0-10 LN SC	■	□	■	2.0		10.0	3°		3°	0.08			3000…
■			3002-2.5-13 LN SC	■	□	■	2.5		13.0	3°		3°	0.08			3000…
■			3002-3.0-16 LN SC	■	□	■	3.0		16.0	3°		3°	0.08			3000…

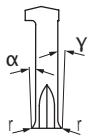
LN = links neutral/gauche neutre/left neutral

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Abstechen | Tronçonnage | Cut off





Typ 02…N SC

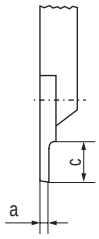
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○										60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	$a^{-0.01}_{-0.03}$	b	c	α	Ø $D_{min.}$	γ	r	p		
			3002-1.5-10 RN SC	■	□	■	1.5		10.0	3°		3°	0.08			3000…
			3002-2.0-10 RN SC	■	□	■	2.0		10.0	3°		3°	0.08			3000…
			3002-2.5-13 RN SC	■	□	■	2.5		13.0	3°		3°	0.08			3000…
			3002-3.0-16 RN SC	■	□	■	3.0		16.0	3°		3°	0.08			3000…

RN = rechts neutral/droite neutre/right neutral

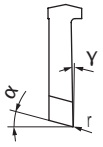
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

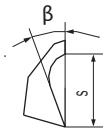
■ Standard
□ Semi Standard

Abstechen | Tronçonnage | Cut off



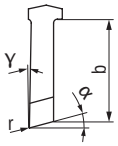
Typ 02...SPT

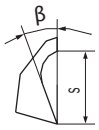




Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○	●	●									60...
				○	○	●									
				○	–	●									
				●	○	○									
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	s	γ	r	β	
■			3002-1.5-8 L SPT	■	□	■	1.5		8.0	15°	2	1°	0.00	20°	3000...
			3002-2.0-10 L SPT	■	□	■	2.0		10.0	15°	2	1°	0.00	20°	3000...
			3002-2.5-13 L SPT	□	□	□	2.5		13.0	15°	2	1°	0.00	20°	3000...
			3002-3.0-16 L SPT	□	□	□	3.0		16.0	15°	2	1°	0.00	20°	3000...

Typ 02...V SPT





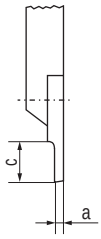
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○	●	●									60...
				○	○	●									
				○	–	●									
				●	○	○									
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	s	γ	r	β	
■			3002-1.5-8 LV SPT	■	□	■	1.5	8.0	8.4	15°	2	1°	0.00	20°	3000...
			3002-2.0-10 LV SPT	■	□	■	2.0	10.0	10.6	15°	2	1°	0.00	20°	3000...

LV = links versetzt/gauche déportée/left offset

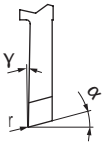
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

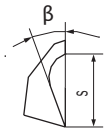
■ Standard
□ Semi Standard

Abstechen | Tronçonnage | Cut off



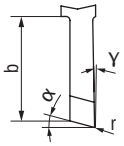
Typ 02…SPT

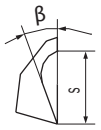




Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○	●	●										60…
				○	○	●										
				○	–	●										
				●	○	○										
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	s	γ	r	β		
		■	3002-1.5-8 R SPT	■	□	■	1.5		8.0	15°	2	1°	0.00	20°		3000…
		■	3002-2.0-10 R SPT	■	□	■	2.0		10.0	15°	2	1°	0.00	20°		3000…
		■	3002-2.5-13 R SPT	□	□	□	2.5		13.0	15°	2	1°	0.00	20°		3000…
		■	3002-3.0-16 R SPT	□	□	□	3.0		16.0	15°	2	1°	0.00	20°		3000…

Typ 02…V SPT





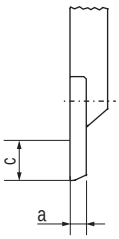
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○	●	●										60…
				○	○	●										
				○	–	●										
				●	○	○										
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	s	γ	r	β		
		■	3002-1.5-8 RV SPT	■	□	■	1.5	8.0	8.4	15°	2	1°	0.00	20°		3000…
		■	3002-2.0-10 RV SPT	■	□	■	2.0	10.0	10.6	15°	2	1°	0.00	20°		3000…

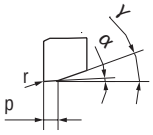
RV = rechts versetzt/droite déportée/right offset

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Vornedrehen | Tournage avant | Front turning

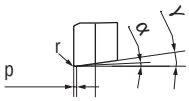


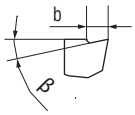


Typ 03

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p	
■			1603-3.0-4 L	■	□	■	3.0		4.0	3°		20°	0.00	1.0	1600…
■			3003-3.4-8 L	■	□	■	3.4		8.0	3°		20°	0.00	1.0	3000…

Typ 03…SP



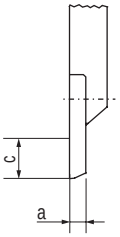


Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○										60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	p		
■			3003-3.4-8 L SP U	■	□	■	3.4	1.2	8.0	1°	12°	8°	0.00	0.2		3000…

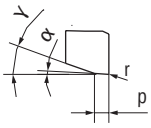
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Vornedrehen | Tournage avant | Front turning

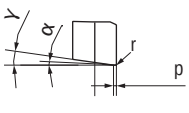


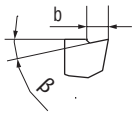
Typ 03



Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p	
			1603-3.0-4 R	■	□	■	3.0		4.0	3°		20°	0.00	1.0	1600…
			3003-3.4-8 R	■	□	■	3.4		8.0	3°		20°	0.00	1.0	3000…

Typ 03…SP



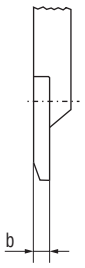


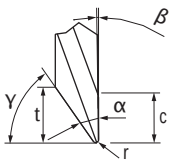
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	p	
			3003-3.4-8 R SP U	■	□	■	3.4	1.2	8.0	1°	12°	8°	0.0	0.2	3000…

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

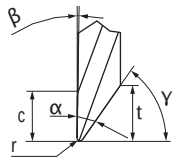
Kopierdrehen (vorne – hinten) | Tournage par copiage (avant – arrière) | Copy turning (front – back)



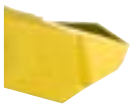


Typ 04…SP

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	t	
■			3004-3.2-6 L SP29008	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.08	5.0	3000…
			3004-3.2-6 L SP29015	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.15	5.0	3000…
			3004-3.2-6 L SP29035	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.35	5.0	3000…
			3004-3.2-6 L SP29075	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.75	5.0	3000…
			3004-3.2-5 L SP35015	■	□	■		3.2	5.0	35°	1.5°	53.5°	0.15	4.0	3000…
			3004-3.2-5 L SP35035	■	□	■		3.2	5.0	35°	1.5°	53.5°	0.35	4.0	3000…



Typ 04…V SP



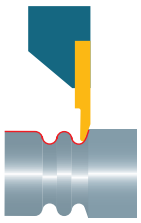
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	t	
■			3004-3.2-6 LV SP29008	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.08	5.0	3000…
			3004-3.2-6 LV SP29015	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.15	5.0	3000…
			3004-3.2-6 LV SP29035	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.35	5.0	3000…
			3004-3.2-6 LV SP29075	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.75	5.0	3000…

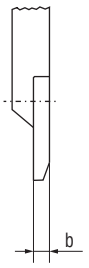
LV = links versetzt | gauche déportée | left offset

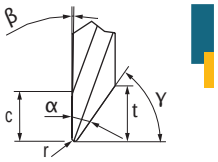
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Kopierdrehen (vorne – hinten) | Tournage par copiage (avant – arrière) | Copy turning (front – back)

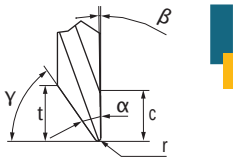






Typ 04…SP

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	t	
			3004-3.2-6 R SP29008	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.08	5.0	3000…
			3004-3.2-6 R SP29015	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.15	5.0	3000…
			3004-3.2-6 R SP29035	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.35	5.0	3000…
			3004-3.2-6 R SP29075	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.75	5.0	3000…
			3004-3.2-5 R SP35015	■	□	■		3.2	5.0	35°	1.5°	53.5°	0.15	4.0	3000…
			3004-3.2-5 R SP35035	■	□	■		3.2	5.0	35°	1.5°	53.5°	0.35	4.0	3000…



Typ 04…V SP

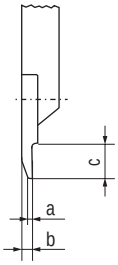
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	t	
			3004-3.2-6 RV SP29008	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.08	5.0	3000…
			3004-3.2-6 RV SP29015	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.15	5.0	3000…
			3004-3.2-6 RV SP29035	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.35	5.0	3000…
			3004-3.2-6 RV SP29075	■	□	■		3.2	6.0	29°	1.5°	59.5°	0.75	5.0	3000…

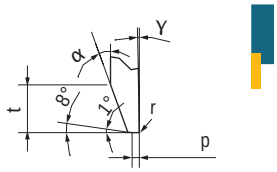
RV = rechts versetzt | droite déportée | right offset

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Hintendrehen | Tournage arrière | Back turning





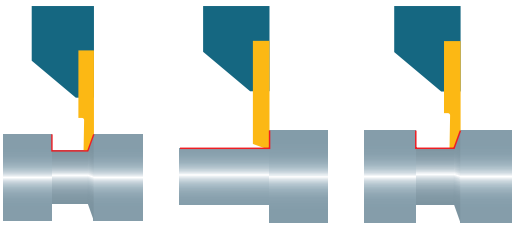
Typ 04

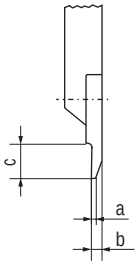
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ — ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	p	γ	r	t	
			1604-0.4-4 L	■	□	■	0.4	1.6	4.0	20°	0.1	0°	0.08	3	1600…
			1604-0.8-4 L	■	□	■	0.8	2.0	4.0	20°	0.1	0°	0.08	3	1600…
			1604-1.2-4 L	□	□	□	1.2	2.4	4.0	20°	0.5	1°	0.00	3	1600…
			3004-0.8-6 L	■	□	■	0.8	2.0	6.0	20°	0.5	1°	0.00	3	3000…
			3004-1.0-6 L	■	□	■	1.0	2.2	6.0	20°	0.5	1°	0.00	3	3000…
			3004-1.2-8 L	■	□	■	1.2	2.4	8.0	20°	0.5	1°	0.00	3	3000…
			3004-1.5-8 L	■	□	■	1.5	2.7	8.0	20°	0.5	1°	0.00	3	3000…
			3004-1.8-8 L	■	□	■	1.8	3.0	8.0	20°	0.5	1°	0.00	3	3000…

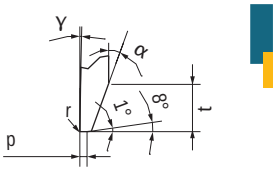
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Hintendrehen | Tournage arrière | Back turning







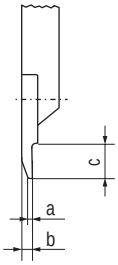
Typ 04

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	p	γ	r	t	
			1604-0.4-4 R	■	□	■	0.4	1.6	4.0	20°	0.1	0°	0.08	3	1600…
			1604-0.8-4 R	■	□	■	0.8	2.0	4.0	20°	0.1	0°	0.08	3	1600…
			1604-1.2-4 R	□	□	□	1.2	2.4	4.0	20°	0.5	1°	0.00	3	1600…
			3004-0.8-6 R	■	□	■	0.8	2.0	6.0	20°	0.5	1°	0.00	3	3000…
			3004-1.0-6 R	■	□	■	1.0	2.2	6.0	20°	0.5	1°	0.00	3	3000…
			3004-1.2-8 R	■	□	■	1.2	2.4	8.0	20°	0.5	1°	0.00	3	3000…
			3004-1.5-8 R	■	□	■	1.5	2.7	8.0	20°	0.5	1°	0.00	3	3000…
			3004-1.8-8 R	■	□	■	1.8	3.0	8.0	20°	0.5	1°	0.00	3	3000…

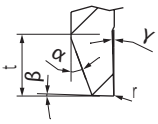
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Hintendrehen | Tournage arrière | Back turning



Typ 04…CP

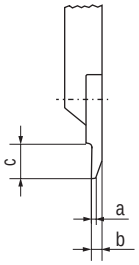


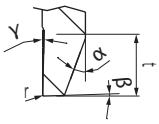
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	t	
			3004-0.8-4 L CP	■	□	■	0.8	3.2	4.7	20°	2°	1°	0.00	4.0	3000…

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Hintendrehen | Tournage arrière | Back turning





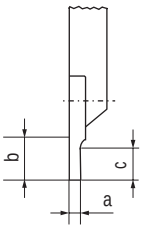
Typ 04…CP

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	t	
			3004-0.8-4 R CP	■	□	■	0.8	3.2	4.7	20°	2°	1°	0.00	4.0	3000…

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

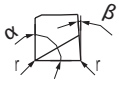
Einstechen und Längsdrehen | Rainurage et tournage | Grooving and Turning

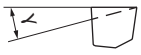


Typ 05

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○	●	●									60…
				○	○	●									
				○	—	●									
				●	○	○									
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	p	
■			3005-1.5-3 L	■	□	■	1.5	8.0	3.0	90°	1°		0.05		3000…
			3005-2.0-4 L	■	□	■	2.0	8.0	4.0	90°	1°		0.05		3000…
			3005-2.5-5 L	■	□	■	2.5	8.0	5.0	90°	1°		0.05		3000…

Typ 05…CP



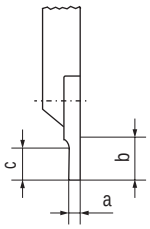


Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○	●	●									60…
				○	○	●									
				○	—	●									
				●	○	○									
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	p	
■			1605-0.8-3.5 L CP	■		■	0.8	3.5	3.5	90°	1°	15°	0.00		1600…
			1605-1.0-3.5 L CP	■	□	■	1.0	3.5	3.5	90°	1°	15°	0.00		1600…
			1605-1.5-3.5 L CP	■	□	■	1.5	3.5	3.5	90°	1°	15°	0.00		1600…
			1605-2.0-3.5 L CP	■	□	■	2.0	3.5	3.5	90°	1°	15°	0.00		1600…
			1605-2.5-3.5 L CP	■	□	■	2.5	3.5	3.5	90°	1°	15°	0.00		1600…
■			3005-1.5-6 L CP	■	□	■	1.5	6.0	4.0	90°	1°	15°	0.00		3000…
			3005-2.0-6 L CP	■	□	■	2.0	6.0	5.0	90°	1°	15°	0.00		3000…
			3005-2.5-8 L CP	■	□	■	2.5	8.0	6.0	90°	1°	15°	0.00		3000…
			3005-3.0-8 L CP	■	□	■	3.0	8.0	6.0	90°	1°	15°	0.00		3000…
■			3605-4.0-10 L CP	■	□	■	4.0	10.0	11.0	90°	1°	15°	0.00		3600…

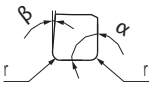
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Einstechen und Längsdrehen | Rainurage et tournage | Grooving and Turning

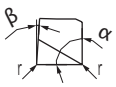


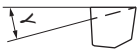
Typ 05



Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	p	
			3005-1.5-3 R	■	□	■	1.5	8.0	3.0	90°	1°		0.05		3000…
			3005-2.0-4 R	■	□	■	2.0	8.0	4.0	90°	1°		0.05		3000…
			3005-2.5-5 R	■	□	■	2.5	8.0	5.0	90°	1°		0.05		3000…

Typ 05…CP



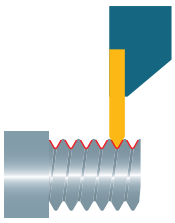


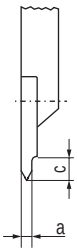
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	β	γ	r	p	
			1605-0.8-3.5 R CP	■		■	0.8	3.5	3.5	90°	1°	15°	0.00		1600…
			1605-1.0-3.5 R CP	■	□	■	1.0	3.5	3.5	90°	1°	15°	0.00		1600…
			1605-1.5-3.5 R CP	■	□	■	1.5	3.5	3.5	90°	1°	15°	0.00		1600…
			1605-2.0-3.5 R CP	■	□	■	2.0	3.5	3.5	90°	1°	15°	0.00		1600…
			1605-2.5-3.5 R CP	■	□	■	2.5	3.5	3.5	90°	1°	15°	0.00		1600…
			3005-1.5-6 R CP	■	□	■	1.5	6.0	4.0	90°	1°	15°	0.00		3000…
			3005-2.0-6 R CP	■	□	■	2.0	6.0	5.0	90°	1°	15°	0.00		3000…
			3005-2.5-8 R CP	■	□	■	2.5	8.0	6.0	90°	1°	15°	0.00		3000…
			3005-3.0-8 R CP	■	□	■	3.0	8.0	6.0	90°	1°	15°	0.00		3000…
			3605-4.0-10 R CP	■	□	■	4.0	10.0	11.0	90°	1°	15°	0.00		3600…

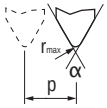
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Gewindedrehen (Teilprofil) | Filetage (profil partiel) | Threading (partial profile)







Typ 06

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r_{max}	p	
			1606-2-4-60 L	■	□	■	2.0		4.0	60°			0.036	0.25-2.0	1600…
			1606-2-4-55 L	■	□	■	2.0		4.0	55°			0.036	0.25-2.0	1600…
			3006-2-6-60 L	■	□	■	2.0		6.0	60°			0.036	0.25-2.0	3000…
			3006-3-10-60 L	■	□	■	3.0		10.0	60°			0.036	0.25-2.0	3000…

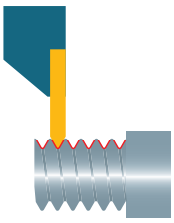
Anwendungsempfehlungen für Anzahl Durchgänge beim Gewindeschneiden
Recommandations indicatives sur le nombre de passes pour la réalisation d'un filetage
Application recommendation for number of passes at threading

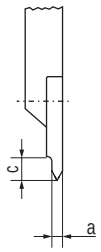
Steigung | Pas | Pitch	0.2–0.35	0.40	0.45	0.50	0.75	0.80	1.00	1.25	1.50	1.75	2.00
Stahl | Acier | Steel	3–5	3–6	3–7	5–10	7–11	7–12	8–15	10–18	11–22	12–24	15–28
Rostfreier Stahl | Acier inoxydable | Stainless steel	4–7	5–8	6–9	8–10	9–12	10–15	11–17	13–20	18–22	20–26	25–30
Titan | Titane | Titanium	4–7	5–8	6–9	8–10	9–12	10–15	11–17	13–20	18–22	20–26	25–30
NE-Metall | Métaux non ferreux | Non-ferrous metal	3–5	3–6	3–7	3–8	4–9	5–10	6–11	7–14	8–16	8–16	17–22

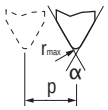
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Gewindedrehen (Teilprofil) | Filetage (profil partiel) | Threading (partial profile)







Typ 06

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○										60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r_{max}	p		
			1606-2-4-60 R	■	□	■	2.0		4.0	60°			0.036	0.25-2.0		1600…
			1606-2-4-55 R	■	□	■	2.0		4.0	55°			0.036	0.25-2.0		1600…
			3006-2-6-60 R	■	□	■	2.0		6.0	60°			0.036	0.25-2.0		3000…
			3006-3-10-60 R	■	□	■	3.0		10.0	60°			0.036	0.25-2.0		3000…

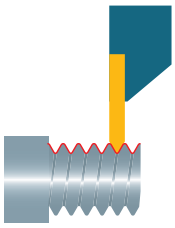
Anwendungsempfehlungen für Anzahl Durchgänge beim Gewindeschneiden
Recommandations indicatives sur le nombre de passes pour la réalisation d'un filetage
Application recommendation for number of passes at threading

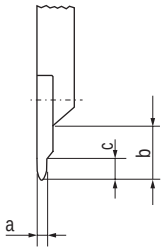
Steigung | Pas | Pitch	0.2–0.35	0.40	0.45	0.50	0.75	0.80	1.00	1.25	1.50	1.75	2.00
Stahl | Acier | Steel	3–5	3–6	3–7	5–10	7–11	7–12	8–15	10–18	11–22	12–24	15–28
Rostfreier Stahl | Acier inoxydable | Stainless steel	4–7	5–8	6–9	8–10	9–12	10–15	11–17	13–20	18–22	20–26	25–30
Titan | Titane | Titanium	4–7	5–8	6–9	8–10	9–12	10–15	11–17	13–20	18–22	20–26	25–30
NE-Metall | Métaux non ferreux | Non-ferrous metal	3–5	3–6	3–7	3–8	4–9	5–10	6–11	7–14	8–16	8–16	17–22

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

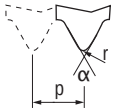
■ Standard
□ Semi Standard

Gewindedrehen (Vollprofil) | Filetage (profil complet) | Threading (full profile)





Typ 06…VP



Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○										60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p	M	
			3006-0.15-10-60 VP L	□	□	□	_	10	_	60°			_	_	0.6	3000…
			3006-0.175-10-60 VP L	□	□	□	_	10	_	60°			_	_	0.7	3000…
			3006-0.2-10-60 VP L	□	□	□	0.24	10	–	60°			0.015	0.20	0.8	3000…
			3006-0.225-10-60 VP L	□	□	□	0.30	10	–	60°			0.030	0.225	0.9	3000…
			3006-0.25-10-60 VP L	■	□	■	0.36	10	–	60°			0.031	0.25	1-1.2	3000…
			3006-0.3-10-60 VP L	■	□	■	0.32	10	–	60°			0.025	0.30	1.4	3000…
			3006-0.35-10-60 VP L	■	□	■	0.50	10	–	60°			0.040	0.35	1.6-1.8	3000…
			3006-0.4-10-60 VP L	■	□	■	0.60	10	–	60°			0.040	0.40	2	3000…
			3006-0.45-10-60 VP L	■	□	■	0.64	10	–	60°			0.050	0.45	2.2-2.6	3000…
			3006-0.5-10-60 VP L	■	□	■	0.70	10	1.4	60°			0.053	0.50	3	3000…
			3006-0.6-10-60 VP L	■	□	■	0.80	10	1.4	60°			0.040	0.60	3.5	3000…
			3006-0.7-10-60 VP L	■	□	■	0.90	10	1.8	60°			0.076	0.70	4	3000…
			3006-0.75-10-60 VP L	■	□	■	0.95	10	1.9	60°			0.083	0.75	4.5	3000…
			3006-0.8-10-60 VP L	■	□	■	1.00	10	2.0	60°			0.090	0.80	5	3000…
			3006-1.0-10-60 VP L	■	□	■	1.20	10	2.4	60°			0.115	1.00	6-7	3000…
			3006-1.25-10-60 VP L	■	□	■	1.45	10	2.9	60°			0.146	1.25	8	3000…
			3006-1.5-10-60 VP L	■	□	■	1.74	10	3.5	60°			0.178	1.50	10-11	3000…
			3006-1.75-10-60 VP L	■	□	■	1.95	10	3.9	60°			0.219	1.75	12	3000…

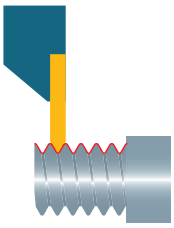
Anwendungsempfehlungen für Anzahl Durchgänge beim Gewindeschneiden
Recommandations indicatives sur le nombre de passes pour la réalisation d'un filetage
Application recommendation for number of passes at threading

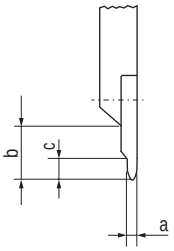
Steigung | Pas | Pitch	0.2–0.35	0.40	0.45	0.50	0.75	0.80	1.00	1.25	1.50	1.75	2.00
Stahl | Acier | Steel	3–5	3–6	3–7	5–10	7–11	7–12	8–15	10–18	11–22	12–24	15–28
Rostfreier Stahl | Acier inoxydable | Stainless steel	4–7	5–8	6–9	8–10	9–12	10–15	11–17	13–20	18–22	20–26	25–30
Titan | Titane | Titanium	4–7	5–8	6–9	8–10	9–12	10–15	11–17	13–20	18–22	20–26	25–30
NE-Metall | Métaux non ferreux | Non-ferrous metal	3–5	3–6	3–7	3–8	4–9	5–10	6–11	7–14	8–16	8–16	17–22

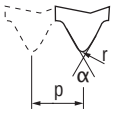
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Gewindedrehen (Vollprofil) | Filetage (profil complet) | Threading (full profile)







Typ 06…VP

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○										60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	b	c	α	Ø $D_{min.}$	γ	r	p	M	
		■	3006-0.15-10-60 VP R	□	□	□	_	10	_	60°			_	_	0.6	3000…
			3006-0.175-10-60 VP R	□	□	□	_	10	_	60°			_	_	0.7	3000…
			3006-0.2-10-60 VP R	□	□	□	0.24	10	–	60°			0.015	0.20	0.8	3000…
			3006-0.225-10-60 VP R	□	□	□	0.30	10	–	60°			0.030	0.225	0.9	3000…
			3006-0.25-10-60 VP R	■	□	■	0.36	10	–	60°			0.031	0.25	1-1.2	3000…
			3006-0.3-10-60 VP R	■	□	■	0.32	10	–	60°			0.025	0.30	1.4	3000…
			3006-0.35-10-60 VP R	■	□	■	0.50	10	–	60°			0.040	0.35	1.6-1.8	3000…
			3006-0.4-10-60 VP R	■	□	■	0.60	10	–	60°			0.040	0.40	2	3000…
			3006-0.45-10-60 VP R	■	□	■	0.64	10	–	60°			0.050	0.45	2.2-2.6	3000…
			3006-0.5-10-60 VP R	■	□	■	0.70	10	1.4	60°			0.053	0.50	3	3000…
			3006-0.6-10-60 VP R	■	□	■	0.80	10	1.4	60°			0.040	0.60	3.5	3000…
			3006-0.7-10-60 VP R	■	□	■	0.90	10	1.8	60°			0.076	0.70	4	3000…
			3006-0.75-10-60 VP R	■	□	■	0.95	10	1.9	60°			0.083	0.75	4.5	3000…
			3006-0.8-10-60 VP R	■	□	■	1.00	10	2.0	60°			0.090	0.80	5	3000…
			3006-1.0-10-60 VP R	■	□	■	1.20	10	2.4	60°			0.115	1.00	6-7	3000…
			3006-1.25-10-60 VP R	■	□	■	1.45	10	2.9	60°			0.146	1.25	8	3000…
			3006-1.5-10-60 VP R	■	□	■	1.74	10	3.5	60°			0.178	1.50	10-11	3000…
			3006-1.75-10-60 VP R	■	□	■	1.95	10	3.9	60°			0.219	1.75	12	3000…

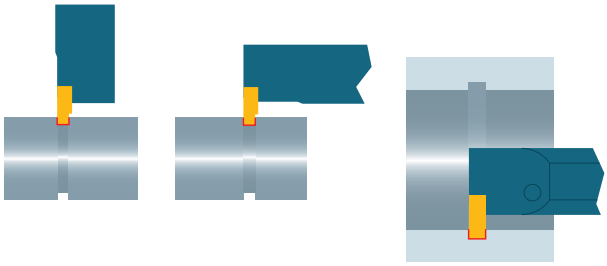
Anwendungsempfehlungen für Anzahl Durchgänge beim Gewindeschneiden
Recommandations indicatives sur le nombre de passes pour la réalisation d'un filetage
Application recommendation for number of passes at threading

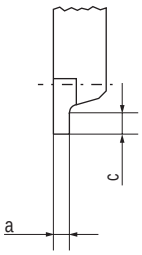
Steigung | Pas | Pitch	0.2–0.35	0.40	0.45	0.50	0.75	0.80	1.00	1.25	1.50	1.75	2.00
Stahl | Acier | Steel	3–5	3–6	3–7	5–10	7–11	7–12	8–15	10–18	11–22	12–24	15–28
Rostfreier Stahl | Acier inoxydable | Stainless steel	4–7	5–8	6–9	8–10	9–12	10–15	11–17	13–20	18–22	20–26	25–30
Titan | Titane | Titanium	4–7	5–8	6–9	8–10	9–12	10–15	11–17	13–20	18–22	20–26	25–30
NE-Metall | Métaux non ferreux | Non-ferrous metal	3–5	3–6	3–7	3–8	4–9	5–10	6–11	7–14	8–16	8–16	17–22

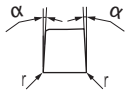
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Einstechen (radial) | Rainurage (radial) | Grooving (radial)







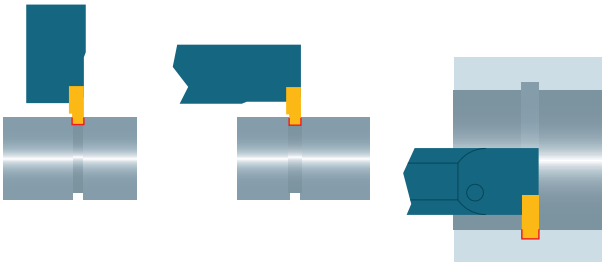
Typ 10

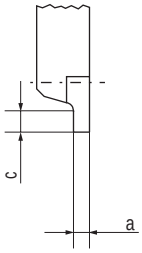
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ — ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	Tol.	c	α	Ø $D_{min.}$	γ	r	DIN	
■			1610-0.05-0.1 L	■	□	■	0.05	_	0.10	2°			0.00	_	1600…
			1610-0.1-0.2 L	■	□	■	0.10	_	0.20	2°			0.00	_	1600…
			1610-0.15-0.3 L	■	□	■	0.15	_	0.30	2°			0.00	_	1600…
			1610-0.24-0.5 L	■	□	■	0.24	+ 0.04/–0	0.50	2°			0.00	6799	1600…
			1610-0.3-0.6 L	□	□	□	0.30	_	0.60	2°			0.00	_	1600…
			1610-0.34-0.6 L	■	□	■	0.34	+ 0.04/–0	0.60	2°			0.00	6799	1600…
			1610-0.4-0.8 L	□	□	□	0.40	_	0.80	2°			0.00	_	1600…
			1610-0.44-0.8 L	■	□	■	0.44	+ 0.04/–0	0.80	2°			0.00	6799	1600…
			1610-0.5-1.0 L	□	□	□	0.50	_	1.00	2°			0.00	_	1600…
			1610-0.54-0.8 L	■	□	■	0.54	+ 0.05/–0	0.80	2°			0.00	6799	1600…
			1610-0.6-1.2 L	□	□	□	0.60	_	1.20	2°			0.00	_	1600…
			1610-0.64-1.2 L	■	□	■	0.64	+ 0.05/–0	1.20	2°			0.00	6799	1600…
			1610-0.65-0.7 L	■	□	■	0.65	± 0.02	0.70	2°			0.00	471	1600…
			1610-0.7-1.4 L	□	□	□	0.70	_	1.40	2°			0.00	_	1600…
			1610-0.74-1.8 L	■	□	■	0.74	+ 0.05/–0	1.80	2°			0.00	6799	1600…
			1610-0.85-0.9 L	■	□	■	0.85	± 0.02	0.90	2°			0.00	471	1600…
			1610-0.94-2.3 L	■	□	■	0.94	+ 0.05/–0	2.30	2°			0.00	6799	1600…
			1610-0.95-1.0 L	■	□	■	0.95	± 0.02	1.00	2°			0.00	471	1600…
			1610-1.0-1.14 L	■	□	■	1.00	± 0.02	1.14	2°			0.00	471	1600…
			1610-1.05-2.3 L	■	□	■	1.05	+ 0.08/–0	2.30	2°			0.00	6799	1600…
			1610-1.15-2.8 L	■	□	■	1.15	+ 0.08/–0	2.80	2°			0.00	6799	1600…
			1610-1.2-1.34 L	■	□	■	1.20	± 0.02	1.34	2°			0.00	471	1600…
			1610-1.25-2.8 L	■	□	■	1.25	+ 0.08/–0	2.80	2°			0.00	6799	1600…
			1610-1.35-3.3 L	■	□	■	1.35	+ 0.08/–0	3.30	2°			0.00	6799	1600…
			1610-1.4-1.53 L	■	□	■	1.40	± 0.02	1.53	2°			0.00	471	1600…
			1610-1.55-3.8 L	■	□	■	1.55	+ 0.08/–0	3.80	2°			0.00	6799	1600…
			1610-1.7-1.82 L	■	□	■	1.70	± 0.02	1.82	2°			0.00	471	1600…
			1610-1.95-2.0 L	■	□	■	1.95	± 0.02	2.00	2°			0.00	471	1600…
			1610-2.25-2.0 L	■	□	■	2.25	± 0.02	2.00	2°			0.00	471	1600…
			1610-2.75-2.0 L	■	□	■	2.75	± 0.02	2.00	2°			0.00	471	1600…

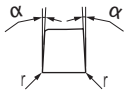
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Einstechen (radial) | Rainurage (radial) | Grooving (radial)







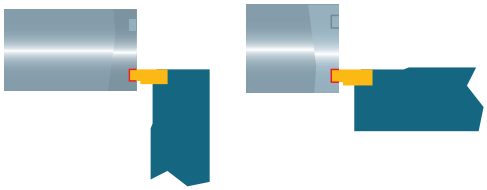
Typ 10

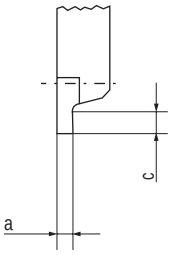
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	Tol.	c	α	Ø $D_{min.}$	γ	r	DIN	
		■	1610-0.05-0.1 R	■	□	■	0.05	_	0.10	2°			0.00	_	1600…
			1610-0.1-0.2 R	■	□	■	0.10	_	0.20	2°			0.00	_	1600…
			1610-0.15-0.3 R	■	□	■	0.15	_	0.30	2°			0.00	_	1600…
			1610-0.24-0.5 R	■	□	■	0.24	+ 0.04/–0	0.50	2°			0.00	6799	1600…
			1610-0.3-0.6 R	□	□	□	0.30	_	0.60	2°			0.00	_	1600…
			1610-0.34-0.6 R	■	□	■	0.34	+ 0.04/–0	0.60	2°			0.00	6799	1600…
			1610-0.4-0.8 R	□	□	□	0.40	_	0.80	2°			0.00	_	1600…
			1610-0.44-0.8 R	■	□	■	0.44	+ 0.04/–0	0.80	2°			0.00	6799	1600…
			1610-0.5-1.0 R	□	□	□	0.50	_	1.00	2°			0.00	_	1600…
			1610-0.54-0.8 R	■	□	■	0.54	+ 0.05/–0	0.80	2°			0.00	6799	1600…
			1610-0.6-1.2 R	□	□	□	0.60	_	1.20	2°			0.00	_	1600…
			1610-0.64-1.2 R	■	□	■	0.64	+ 0.05/–0	1.20	2°			0.00	6799	1600…
			1610-0.65-0.7 R	■	□	■	0.65	± 0.02	0.70	2°			0.00	471	1600…
			1610-0.7-1.4 R	□	□	□	0.70	_	1.40	2°			0.00	_	1600…
			1610-0.74-1.8 R	■	□	■	0.74	+ 0.05/–0	1.80	2°			0.00	6799	1600…
			1610-0.85-0.9 R	■	□	■	0.85	± 0.02	0.90	2°			0.00	471	1600…
			1610-0.94-2.3 R	■	□	■	0.94	+ 0.05/–0	2.30	2°			0.00	6799	1600…
			1610-0.95-1.0 R	■	□	■	0.95	± 0.02	1.00	2°			0.00	471	1600…
			1610-1.0-1.14 R	■	□	■	1.00	± 0.02	1.14	2°			0.00	471	1600…
			1610-1.05-2.3 R	■	□	■	1.05	+ 0.08/–0	2.30	2°			0.00	6799	1600…
			1610-1.15-2.8 R	■	□	■	1.15	+ 0.08/–0	2.80	2°			0.00	6799	1600…
			1610-1.2-1.34 R	■	□	■	1.20	± 0.02	1.34	2°			0.00	471	1600…
			1610-1.25-2.8 R	■	□	■	1.25	+ 0.08/–0	2.80	2°			0.00	6799	1600…
			1610-1.35-3.3 R	■	□	■	1.35	+ 0.08/–0	3.30	2°			0.00	6799	1600…
			1610-1.4-1.53 R	■	□	■	1.40	± 0.02	1.53	2°			0.00	471	1600…
			1610-1.55-3.8 R	■	□	■	1.55	+ 0.08/–0	3.80	2°			0.00	6799	1600…
			1610-1.7-1.82 R	■	□	■	1.70	± 0.02	1.82	2°			0.00	471	1600…
			1610-1.95-2.0 R	■	□	■	1.95	± 0.02	2.00	2°			0.00	471	1600…
			1610-2.25-2.0 R	■	□	■	2.25	± 0.02	2.00	2°			0.00	471	1600…
			1610-2.75-2.0 R	■	□	■	2.75	± 0.02	2.00	2°			0.00	471	1600…

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

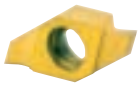
■ Standard
□ Semi Standard

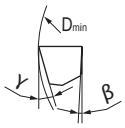
Einstechen (axial) | Rainurage (axial) | Grooving (axial)

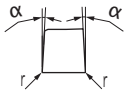




Typ 11





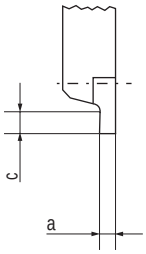


Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				○	●	●										60…
				○	○	●										
				○	–	●										
				●	○	○										
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	Tol.	c	α	Ø $D_{min.}$	γ	r	β		
■			1611-0.5-1 L	■	□	■	0.50	± 0.02	1.0	1°	8.0	9.80	0.05	3°		1600…
			1611-0.8-1.5 L	■	□	■	0.80	± 0.02	1.5	1°	9.0	11.27	0.05	3°		1600…
			1611-1.0-2 L	■	□	■	1.00	± 0.02	2.0	1°	10.0	13.70	0.05	3°		1600…
			1611-1.5-2.5 L	■	□	■	1.50	± 0.02	2.5	1°	20.0	11.80	0.05	3°		1600…
			1611-2.0-3 L	■	□	■	2.00	± 0.02	3.0	1°	30.0	10.00	0.05	3°		1600…
			1611-2.5-3.5 L	■	□	■	2.50	± 0.02	3.5	1°	30.0	10.00	0.05	3°		1600…

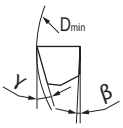
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

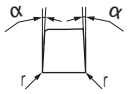
■ Standard
□ Semi Standard

Einstechen (axial) | Rainurage (axial) | Grooving (axial)



Typ 11

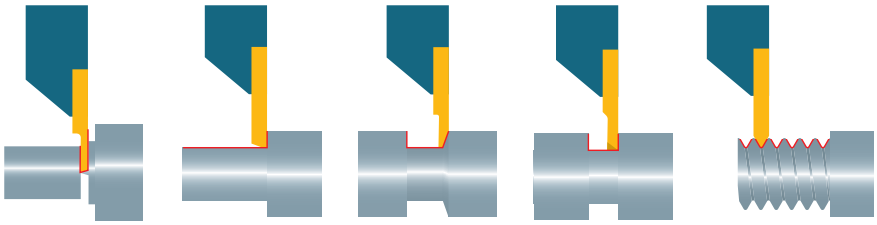




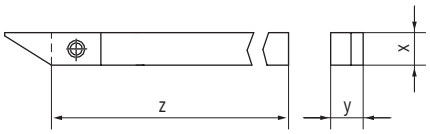
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● ● ○									60…
L	N	R		UHM 30	UHM 30 SX	UHM 30 HX	a	Tol.	c	α	Ø $D_{min.}$	γ	r	β	
			1611-0.5-1 R	■	□	■	0.50	± 0.02	1.0	1°	8.0	9.80	0.05	3°	1600…
			1611-0.8-1.5 R	■	□	■	0.80	± 0.02	1.5	1°	9.0	11.27	0.05	3°	1600…
			1611-1.0-2 R	■	□	■	1.00	± 0.02	2.0	1°	10.0	13.70	0.05	3°	1600…
			1611-1.5-2.5 R	■	□	■	1.50	± 0.02	2.5	1°	20.0	11.80	0.05	3°	1600…
			1611-2.0-3 R	■	□	■	2.00	± 0.02	3.0	1°	30.0	10.00	0.05	3°	1600…
			1611-2.5-3.5 R	■	□	■	2.50	± 0.02	3.5	1°	30.0	10.00	0.05	3°	1600…

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

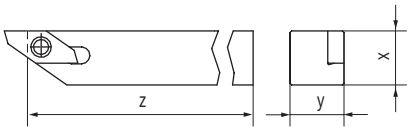


500...



Ausführung Exécution Execution			Bezeichnung Désignation Designation								Schneiden Plaquettes Inserts
L	N	R		x	y	z	v	w	h-Max.	Ø D-Min.	31...
			500-06x130 N ■	6	6	130					5..
			500-08x130 R ■	8	8	130					5..
			500-10x130 R ■	10	10	130					5..
			500-07x130 L ■	7	7	130					5..
			500-08x130 L ■	8	8	130					5..
			500-10x130 L □	10	10	130					5..

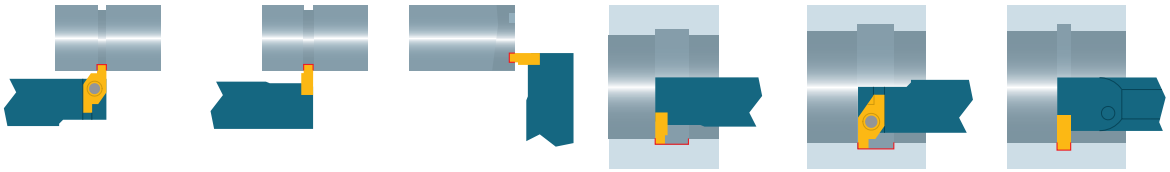
■ Standard
□ Semi Standard



1600...

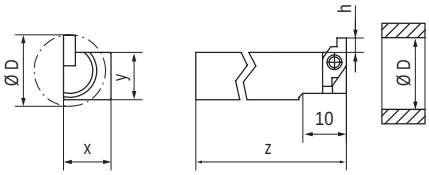
Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R			x	y	z	v	w	h-Max.	Ø D-Min.	31...
			1600-07x100 R	■	7	7	100					16..
			1600-07x150 R	□	7	7	150					16..
			1600-08x100 R	■	8	8	100					16..
			1600-08x150 R	□	8	8	150					16..
			1600-10x100 R	■	10	10	100					16..
			1600-10x150 R	□	10	10	150					16..
			1600-12x100 R	■	12	12	100					16..
			1600-12x150 R	□	12	12	150					16..
			1600-16x125 R	■	16	16	125					16..
			1600-16x150 R	□	16	16	150					16..
			1600-20x125 R	■	20	20	125					16..
			1600-20x150 R	□	20	20	150					16..
			1600-07x100 L	■	7	7	100					16..
			1600-07x150 L	□	7	7	150					16..
			1600-08x100 L	■	8	8	100					16..
			1600-08x150 L	□	8	8	150					16..
			1600-10x100 L	■	10	10	100					16..
			1600-10x150 L	□	10	10	150					16..
			1600-12x100 L	■	12	12	100					16..
			1600-12x150 L	□	12	12	150					16..
			1600-16x125 L	■	16	16	125					16..
			1600-16x150 L	□	16	16	150					16..
			1600-20x125 L	■	20	20	125					16..
			1600-20x150 L	□	20	20	150					16..

■ Standard
□ Semi Standard



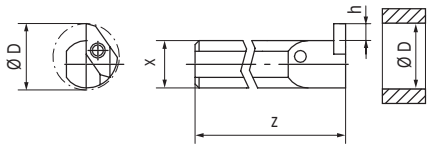
Achtung | Attention | Attention
Rechter Halter benötigt linke Schneide!
Outil à droite avec plaquette à gauche!
Right hand holder needs left hand insert!

1600… 90°



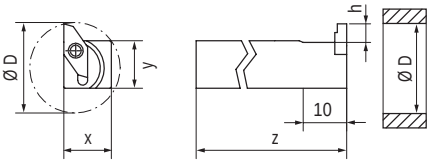
Ausführung Exécution Execution			Bezeichnung Désignation Designation		x	y	z	v	w	h-Max.	Ø D-Min.	Schneiden Plaquettes Inserts
L	N	R										31…
			1600-10x80 90 R	■	10	10	80			4	17	1699… L
			1600-12x80 90 R	■	12	12	80			4	17	1699… L
			1600-10x80 90 L	■	10	10	80			4	17	1699… R
			1600-12x80 90 L	■	12	12	80			4	17	1699… R

1600… 90° RD

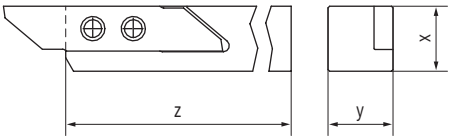


Ausführung Exécution Execution			Bezeichnung Désignation Designation		x	y	z	v	w	h-Max.	Ø D-Min.	Schneiden Plaquettes Inserts
L	N	R										31…
			1600-12x150 RD R	■	12		150			2.6	16.8	16.. L
			1600-16x150 RD R	■	16		150			2.8	20.8	16.. L
			1600-20x200 RD R	■	20		200			4	24.8	16.. L
			1600-12x150 RD L	■	12		150			2.6	16.8	16.. R
			1600-16x150 RD L	■	16		150			2.8	20.8	16.. R
			1600-20x200 RD L	■	20		200			4	24.8	16.. R

1600… 90° ST



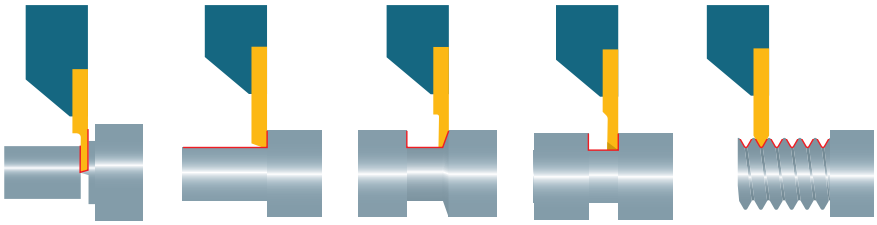
Ausführung Exécution Execution			Bezeichnung Désignation Designation		x	y	z	v	w	h-Max.	Ø D-Min.	Schneiden Plaquettes Inserts
L	N	R										31…
			1600-10x80 90 ST R	■	10	10	80			4	20	16.. L
			1600-12x80 90 ST R	■	12	12	80			4	20	16.. L
			1600-10x80 90 ST L	■	10	10	80			4	20	16.. R
			1600-12x80 90 ST L	■	12	12	80			4	20	16.. R



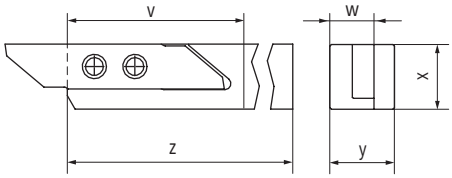
3000…

Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R			x	y	z	v	w	h-Max.	Ø D-Min.	31…
			3000-08x100 R	■	8	8	100					30..
			3000-08x150 R	□	8	8	150					30..
			3000-3/8"x100 R	□	9.525	9.525	100					30..
			3000-10x100 R	■	10	10	100					30..
			3000-10x150 R	□	10	10	150					30..
			3000-12x100 R	■	12	12	100					30..
			3000-12x150 R	□	12	12	150					30..
			3000-1/2"x100 R	□	12.7	12.7	100					30..
			3000-16x125 R	■	16	16	125					30..
			3000-16x150 R	□	16	16	150					30..
			3000-20x125 R	■	20	20	125					30..
			3000-20x150 R	□	20	20	150					30..
			3600-10x100 R	□	10	10	100					36..
			3600-12x100 R	■	12	12	100					36..
			3600-16x125 R	□	16	16	125					36..
			3600-20x125 R	■	20	20	125					36..
			3600-25x150 R	□	25	25	150					36..
			3000-08x100 L	■	8	8	100					30..
			3000-08x150 L	□	8	8	150					30..
			3000-3/8"x100 L	□	9.525	9.525	100					30..
			3000-10x100 L	■	10	10	100					30..
			3000-10x150 L	□	10	10	150					30..
			3000-12x100 L	■	12	12	100					30..
			3000-12x150 L	□	12	12	150					30..
			3000-1/2"x100 L	□	12.7	12.7	100					30..
			3000-16x125 L	■	16	16	125					30..
			3000-16x150 L	□	16	16	150					30..
			3000-20x125 L	■	20	20	125					30..
			3000-20x150 L	□	20	20	150					30..
			3600-10x100 L	□	10	10	100					36..
			3600-12x100 L	■	12	12	100					36..
			3600-16x125 L	□	16	16	125					36..
			3600-20x125 L	■	20	20	125					36..
			3600-25x150 L	□	25	25	150					36..

■ Standard
□ Semi Standard



RA



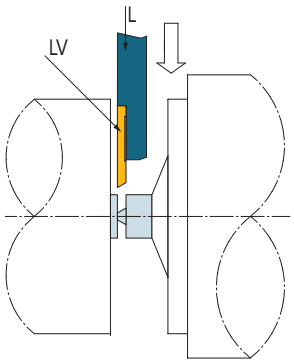
3000… A

Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R			x	y	z	v	w	h-Max.	Ø D-Min.	31…
			3000-10x100 RA	■	10	10	100	37	8			30…
			3000-10x150 RA	□	10	10	150	37	8			30…
			3000-3/8"x100 RA	□	9.525	9.525	100	37	8			30…
			3000-12x100 RA	■	12	12	100	37	8			30…
			3000-12x150 RA	□	12	12	150	37	8			30…
			3000-1/2"x100 RA	□	12.7	12.7	100	37	8			30…
			3000-16x125 RA	■	16	16	125	37	8			30…
			3000-16x150 RA	□	16	16	150	37	8			30…
			3000-10x100 LA	■	10	10	100	37	8			30…
			3000-10x150 LA	□	10	10	150	37	8			30…
			3000-3/8"x100 LA	□	9.525	9.525	100	37	8			30…
			3000-12x100 LA	■	12	12	100	37	8			30…
			3000-12x150 LA	□	12	12	150	37	8			30…
			3000-1/2"x100 LA	□	12.7	12.7	100	37	8			30…
			3000-16x125 LA	■	16	16	125	37	8			30…
			3000-16x150 LA	□	16	16	150	37	8			30…

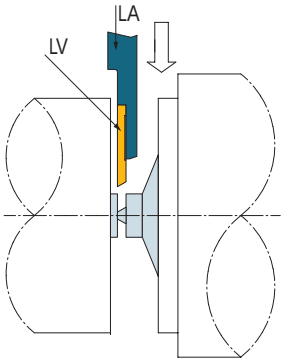
Bearbeitungsmöglichkeiten
Durch eine andere Kombination von Halter und Wendeschneidplatte kann die Bearbeitung eines Werkstückes auch in schwierigen Bearbeitungssituationen fortgesetzt werden.

Variante d'usinage
Il est possible de conserver la géométrie définie, tout en changeant de côté la plaquette, pour optimiser la coupe dans une situation difficile.

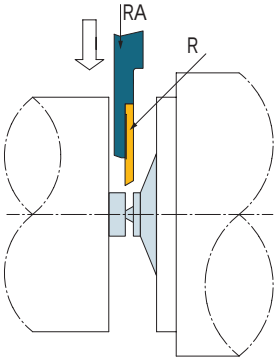
Machining methods
A different combination of holder and insert allows cutting even in difficult situations.



Abstechen mit Gegenspindel, kurze Bauteile
Tronçonnage de courtes pièces avec contre broche
Cut off with opposing spindle of short pieces

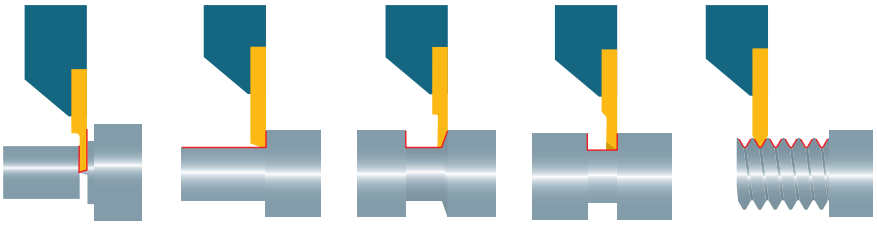


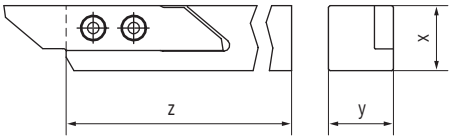
Abstechen mit Gegenspindel, kurze Bauteile
Tronçonnage de courtes pièces avec contre broche
Cut off with opposing spindle of short pieces



Abstechen mit Gegenspindel, lange Bauteile
Tronçonnage de longues pièces avec contre broche
Cut off with opposing spindle of long pieces

■ Standard
□ Semi Standard





3000… C

Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R			x	y	z	v	w	h-Max.	Ø D-Min.	31…
			3000-08x100 RC	■	8	8	100					30… C
			3000-08x150 RC	□	8	8	150					30… C
			3000-10x100 RC	■	10	10	100					30… C
			3000-10x150 RC	□	10	10	150					30… C
			3000-12x100 RC	■	12	12	100					30… C
			3000-12x150 RC	□	12	12	150					30… C
			3000-16x125 RC	■	16	16	125					30… C
			3000-16x150 RC	□	16	16	150					30… C
			3000-20x125 RC	■	20	20	125					30… C
			3000-20x150 RC	□	20	20	150					30… C
			3000-08x100 LC	■	8	8	100					30… C
			3000-08x150 LC	□	8	8	150					30… C
			3000-10x100 LC	■	10	10	100					30… C
			3000-10x150 LC	□	10	10	150					30… C
			3000-12x100 LC	■	12	12	100					30… C
			3000-12x150 LC	□	12	12	150					30… C
			3000-16x125 LC	■	16	16	125					30… C
			3000-16x150 LC	□	16	16	150					30… C
			3000-20x125 LC	■	20	20	125					30… C
			3000-20x150 LC	□	20	20	150					30… C

Spannen der Schneiden
Bei Cut 3000 werden die Schrauben von der Plattenseite her befestigt. Bei der Serie 3000 C mit Combi-Spannung werden die Schrauben mittels Büchsen von der Halterseite her befestigt.

Ein- und Auspressen
Um Beschädigungen zu vermeiden, sollte beim Ein- und Auspressen der Gewindebüchsen keine Gewalt angewendet werden.

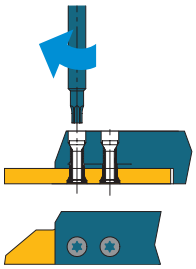
Montage des plaquettes
Par défaut, les vis de serrage de la plaquette, sont introduites par le même côté que la plaquette. En utilisant la gamme Cut 3000 C avec le serrage combi, les vis sont montées par le côté opposé à la plaquette, grâce à l'insertion de douilles filetées.

Insertion et extraction des douilles
Pour qu'elles soient ré-utilisables, il est nécessaire d'introduire et d'extraire les douilles avec doigté.

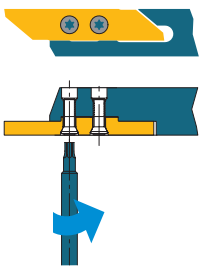
Clamping of the insert
The regular tool holder Cut 3000 uses the insert fixing screws from the side of the insert. The tool holder Cut 3000 «combi» allows in addition the insert fixing screws to be mounted from the opposite side using tapped bushings.

Handling of the tapped bushing
To avoid damage don't use excessive force while inserting and removing the tapped bushing.

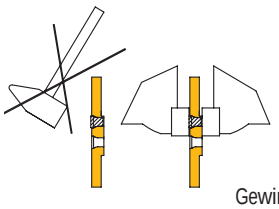
Combi



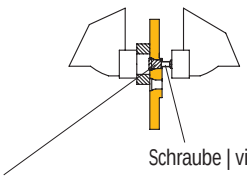
Standard



Einpressen | Insérer | Press in



Auspressen | Extraire | Press out



■ Standard
□ Semi Standard

Serie 500

	Bezeichnung Désignation Designation	Beschreibung Description Description	Dimension
	MSP 25060 T08	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP TX08	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX08 D	Drehmoment-Torxschlüssel (1.2 Nm) Tournevis torx à serrage contrôlé (1.2 Nm) Torx torquedriver (1.2 Nm)	T08

Serie 1600

	Bezeichnung Désignation Designation	Beschreibung Description Description	Dimension
	MSP 25060 T08	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP TX08	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX08 D	Drehmoment-Torxschlüssel (1.2 Nm) Tournevis torx à serrage contrôlé (1.2 Nm) Torx torquedriver (1.2 Nm)	T08

Serie 3000/3600

	Bezeichnung Désignation Designation	Beschreibung Description Description	Dimension	Nur gültig für Seulement valable pour Only valid for
	MSP 25090 T08	Torxschraube/vis torx/torx screw	M2.5x9 T08	Halter/porte-outil/holder 3000…C
	MSP 30073 T08	Torxschraube/vis torx/torx screw	M3x7.3 T08	Halter/porte-outil/holder 3000-08 Halter/porte-outil/holder 3000…A
	MSP 30090 T08	Torxschraube/vis torx/torx screw	M3x9 T08	Halter/porte-outil/holder 3000…
	MSP 30110 TP09	Torxschraube/vis torx/torx screw	M3x11 TP09	Halter/porte-outil/holder 3600…
	MSP TX08	Torxschlüssel/tournevis torx/torx screwdriver	T08	
	MSP TXP09	Torxschlüssel/tournevis torx/torx screwdriver	TP09	Torx Plus
	MSP TX08 D	Drehmoment-Torxschlüssel (1.2 Nm) Tournevis torx à serrage contrôlé (1.2 Nm) Torx torquedriver (1.2 Nm)	T08	
	MSP 25040 GB	Gewinde-Büchse/douilles filetées/tapped bushing	M2.5x4	

	Werkstoffe | Matières | Materials			
	Stahl unlegiert Acier non allié Steel unalloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium
Härte (HB) Dureté (HB) Hardness value (HB)	125–300	180–250	200–350	–
Kategorie Catégrie Category	I	II	III	IV

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm **Avances (f) en mm/tr et profondeurs de passes (ap) en mm** **Feed (f) in mm/rev and depths of cut (ap) in mm**

▼				
f	–	–	–	–
ap	–	–	–	–
▼▼				
f	0.02–0.15	0.02–0.15	0.02–0.15	0.02–0.08
ap	< 6.00	< 5.00	< 4.00	< 4.00
▼▼▼				
f	0.005–0.08	0.005–0.08	0.005–0.08	0.005–0.06
ap	< 4.00	< 3.00	< 2.00	< 2.00

Schnittgeschwindigkeiten (v_c) in m/min **Vitesses de coupe (v_c) en m/min** **Cutting speed (v_c) in m/min**

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	50–80	50–100	–	40–80	40–90	–	30–70	30–80	–	25–60	30–70
UHM 30 SX	–	50–180	50–200	–	50–140	50–180	–	50–120	50–160	–	30–80	30–100
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	50–180	50–220	–	50–160	50–200	–	50–140	50–180	–	40–100	40–120
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	–	–	–	–	–	–	–	–	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

	Werkstoffe | Matières | Materials			
	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
Härte (HB) Dureté (HB) Hardness value (HB)	180–220	220–330	60–130	–
Kategorie Catégrie Category	V	VI	VII	VIII

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm **Avances (f) en mm/tr et profondeurs de passes (ap) en mm** **Feed (f) in mm/rev and depths of cut (ap) in mm**

▼				
f	–	–	–	–
ap	–	–	–	–
▼▼				
f	0.01–0.12	0.01–0.12	0.02–0.25	0.02–0.15
ap	< 4.00	< 4.00	< 8.00	< 8.00
▼▼▼				
f	0.005–0.08	0.005–0.08	0.005–0.20	0.005–0.10
ap	< 2.00	< 2.00	< 6.00	< 6.00

Schnittgeschwindigkeiten (v_c) in m/min **Vitesses de coupe (v_c) en m/min** **Cutting speed (v_c) in m/min**

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	30–70	30–80	–	20–40	20–40	–	50–1000	80–1500	–	50–140	50–160
UHM 30 SX	–	40–120	40–160	–	30–60	30–80	–	80–2000	100–3000	–	50–180	50–200
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	40–140	40–180	–	40–70	40–90	–	80–2000	100–3000	–	50–180	50–200
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	–	–	–	–	–	–	–	–	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

MULTIDEC®-ISO

Kurzbeschreibung und Anwendungsübersicht
Gamme de produits et applications
Product line and application 73

Schneiden
Plaquettes
Inserts 77

Halter (Klemmhalter)
Porte-outils (Porte-outil)
Holders (Tool holder) 88

Halter (Bohrstangen)
Porte-outils (Barre d'alésage)
Holders (Boring bar) 100

Ersatzteile
Pièces de rechange
Spare parts 107

Schnittdaten
Données de coupe
Cutting specification 110

MULTIDEC®-TOP

Kurzbeschreibung und Anwendungsübersicht
Gamme de produits et applications
Product line and product line 112

Schneiden
Plaquettes
Inserts 114

Halter
Porte-outils
Holders 115

Ersatzteile
Pièces de rechange
Spare parts 119

Schnittdaten
Données de coupe
Cutting specification 120

Multidec®-ISO bietet ein breites Programm ISO-genormter Wendeschneidplatten für das Automaten- und Präzisionsdrehen. Alle Wendeschneidplatten verfügen über mehrere Schneiden und sind leicht auswechselbar. Zugleich bietet Multidec®-ISO dem Automatendreher eine stabile scharfe Schneidenecke mit Radien von 0.00 bis 0.8 mm. Für die Bearbeitung von Werkstoffen, die schwierig zu zerspanen sind, wurden raffinierte Lösungen aus beschichteten oder unbeschichteten Hartmetallsorten (K10–P40), Cermet sowie PKD-Bestückungen entwickelt. Ausserdem gibt es eine grosse Auswahl an gesinterten und geschliffenen Spanleitstufen für alle Schlicht-, Fein- und Feinstbearbeitungen. Ein breites Programm von hochvergüteten und geschliffenen Haltern für konventionelle und speziell für Langdrehautomaten mit Schaftquerschnitten von 8 bis 25 mm rundet Multidec®-ISO ab.

Multidec®-ISO, un programme standard destiné à la poupée mobile, avec une palette de choix de géométries de coupe, spécifique à l'usinage des matériaux difficiles et aux faibles avances. Multidec®-ISO propose à l'utilisateur des arêtes de coupe vives avec de petits rayons de 0.00 à 0.8 mm. Pour les matières difficiles à usiner, nous avons développés des géométries fortement positives, avec des nuances carbure (K–0–P40), revêtues ou non, en Cermet et aussi avec inserts PCD. De plus il existe un grand choix de brise copeaux polis et affûtés pour des travaux de finition et super finition, ou alors uniquement frittés pour des travaux d'ébauche. Une vaste gamme de porte plaquette spécifique à la poupée mobile ou poupée fixe en carré de 8 x 8 à 25 x 25 mm est également disponible en standard dans le programme.

Multidec®-ISO provides a very wide range of ISO standardized inserts for automatic-lathe machining and precision turning. All inserts consist of two edges and are easily indexed or changed. At the same time Multidec®-ISO provides a very stable and sharp cutting edge with a maximum radius between 0.00 and 0.8 mm. Innovative solutions involving coated and uncoated inserts made of carbide (K10–P40), Cermets and PCD-tips have been designed for cutting of very difficult materials. For all mechanical cutting conditions a large choice of sintered and ground inserts with a large variety of chip grooves are available. Even for the holders a wide range of tempered and ground possibilities with holder sizes between 8 mm and 25 mm are available. For CNC Swiss-type automatic lathes special holders have been designed and complete the wide range of choices.

Vorteile
- Breites ISO-Programm an genormten Wendeschneidplatten
- Alle Schneiden leicht auswechselbar
- Wiederholgenauigkeit siehe Toleranzklasse
- Scharfe Schneiden mit 7° und 11° Freiwinkel
- Kleine Eckenradien (0.00–0.80 mm)
- Je nach Bearbeitung gut abgestimmte
  - Hartmetallsorten (K10–P40)
  - beschichtet und unbeschichtet
  - sowie Cermet und PKD
- Spezielle Halter für Langdrehautomaten erhältlich (Querschnitte 8 x 8–25 x 25 mm)

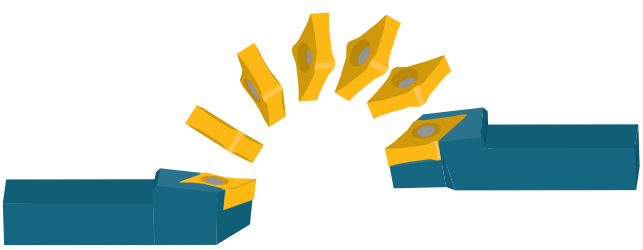
Avantages
- Grande gamme des plaquettes selon norme ISO
- Toutes les plaquettes sont facilement interchangeables
- Répétitivité voir norme ISO
- Arêtes de coupe vives avec 7° et 11° angle de dépouille
- Petits rayons de pointe (0.00–0.80 mm)
- Grand choix de nuances
  - nuances en carbure (K10–P40)
  - revêtues et non revêtues
  - Cermet et PCD
- Porte plaquette spécifique à la poupée mobile (carré de 8 x 8–25 x 25 mm)

Advantages
- Large range of inserts out of standard ISO range
- Each insert easy to replace
- Repeat accuracy see ISO norm
- Sharp edges with 7° or 11° clearance angle
- Small corner radius (0.00–0.80 mm)
- Big choice of grades
  - carbide (K10–P40)
  - with or without coating
  - Cermet and Diamond
- Especially designed holders for CNC Swiss-type automatic lathes (holder sizes 8 x 8–25 x 25 mm)

Besonderheiten der Schneiden DNGU
- Negativer Halter mit Schraubenbefestigung
- 4 Schneiden je Wendeschneidplatte
- Scharfe Schneiden mit 7° Freiwinkel
- Kleine Eckenradien (0.08 und 0.15)
- Hartmetall aus Feinstkornsorte
- Auch auf Halter mit Kniehebelspannung verwendbar

Particularités de la plaquette DNGU
- Porte-outils négatifs avec montage par vis
- 4 arêtes de coupe par plaquette
- Arêtes de coupe vives avec 7° angle de dépouille
- Petits rayons de pointe (0.08 et 0.15)
- Nuance super micro grain
- Plaquette DNGU aussi utilisable sur les porte-outils avec bride de montage

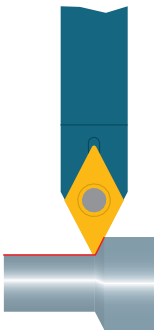
Specific features of insert DNGU
- Negative holder fixed with screw
- 4 cutting edges per insert
- Small corner radius (0.08 and 0.15)
- Sharp edges with 7° clearance angle
- Fine grain grade
- Insert DNGU also usable on holders with toggle setting device



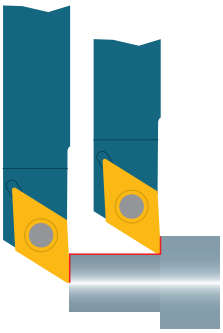
Schneiden siehe Seite 77…
Halter siehe Seite 88…

Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung auch lieferbar.

Längsdrehen
Tournage
Turning



Längs- und Plandrehen
Tournage et dressage
Turning and facing

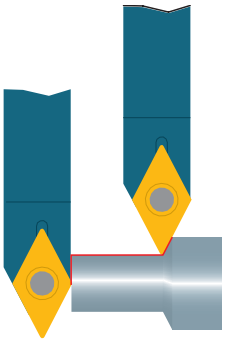


Längsdrehen
Tournage
Turning

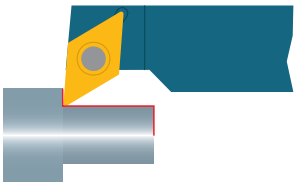
Plaquettes voir page 77…
Porte-outils voir page 88…

Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

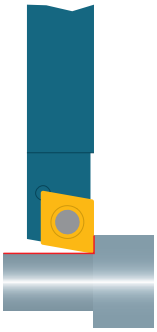
Längs- und Plandrehen
Tournage et dressage
Turning and facing



Längs- und Plandrehen
Tournage et dressage
Turning and facing



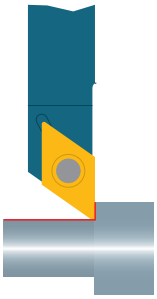
Vornedrehen
Tournage avant
Front turning



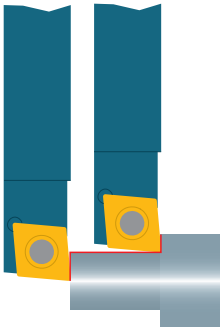
Inserts see page 77…
Holders see page 88…

All illustrations show right hand design. Left hand design are also available.

Vornedrehen
Tournage avant
Front turning



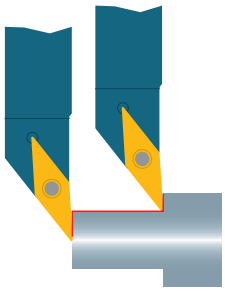
Längs- und Plandrehen
Tournage et dressage
Turning and facing



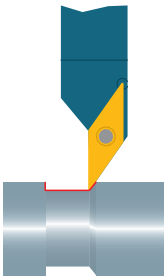
Schneiden siehe Seite 77…
Halter siehe Seite 88…

Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung auch lieferbar.

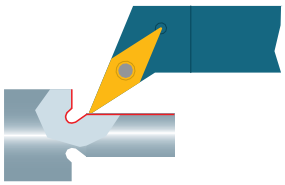
Längs- und Plandrehen
Tournage et dressage
Turning and facing



Hintendrehen
Tournage arrière
Back turning



Längsdrehen und Freistechen
Tournage et plongée
Turning and undercutting

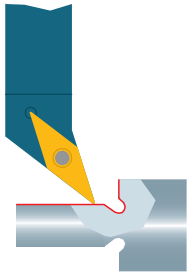


Plaquettes voir page 77…
Porte-outils voir page 88…

Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

Längsdrehen
Tournage
Turning

Längsdrehen und Freistechen
Tournage et plongée
Turning and undercutting

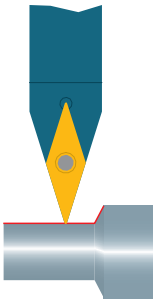


Vornedrehen
Tournage avant
Front turning

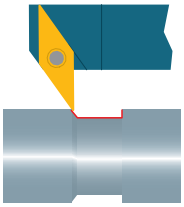
Inserts see page 77…
Holders see page 88…

All illustrations show right hand design. Left hand design are also available.

Längsdrehen
Tournage
Turning



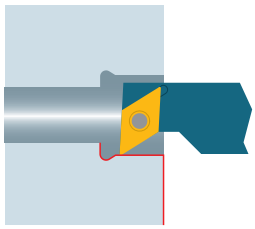
Hintendrehen
Tournage arrière
Back turning



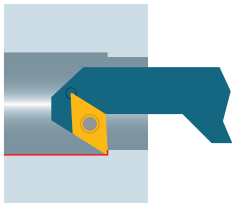
Schneiden siehe Seite 77…
Halter siehe Seite 88…

Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung lieferbar.

Längs- und Plandrehen
Tournage et dressage
Turning and facing



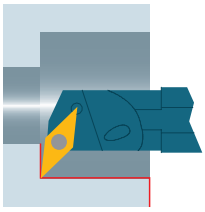
Hintendrehen
Tournage arrière
Back turning



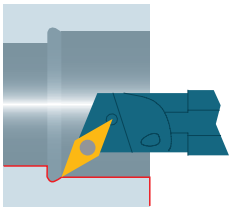
Plaquettes voir page 77…
Porte-outils voir page 88…

Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

Längs- und Plandrehen
Tournage et dressage
Turning and facing



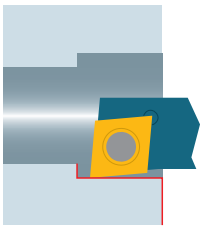
Längsdrehen und Freistechen
Tournage et plongée
Turning and undercutting

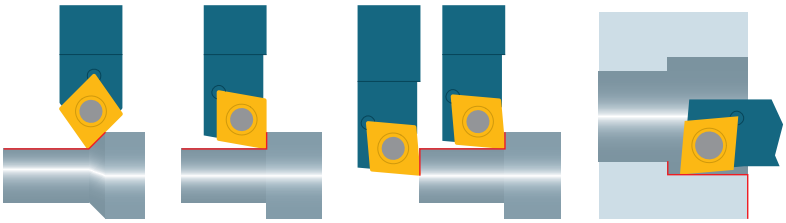


Inserts see page 77…
Holders see page 88…

All illustrations show right hand design. Left hand design is also available.

Längs- und Plandrehen
Tournage et dressage
Turning and facing





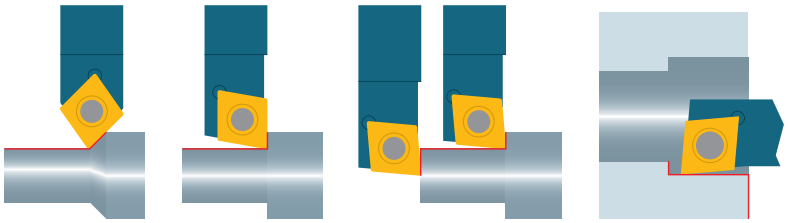
-U

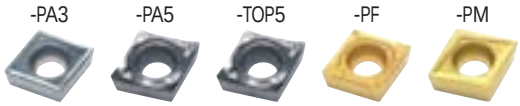
CCE...

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*														Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				—	—	○	●	●	—	●	●	●	●	●	●	●	—					88...
				—	○	●	○	○	—	●	●	●	○	●	○	●	—					
				○	—	●	—	—	○	—	—	●	—	—	—	—	—					
				●	○	○	—	—	●	○	—	○	—	—	—	○	●					
L	N	R		UHM 10	UHM 10 SX	UHM 10 HX	UHM 20 HZ	UHM 20 MZ	UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UCM 10 HX	UCM 10 MZ	HSS MZ	UPCD 15	▼	▼▼	▼▼▼	r	
			CCET 060200 FL -U	□	□	□														●	0.00	SC...06
			CCET 0602003 FL -U	□	□	□							□	□						●	0.03	SC...06
			CCET 060201 FL -U	□	□	□							□	□						●	0.10	SC...06
			CCET 060202 FL -U	□	□	□							□	□						●	0.20	SC...06
			CCET 09T300 FL -U	□	□	□														●	0.00	SC...09
			CCET 09T3003 FL -U	□	□	□							□	□						●	0.03	SC...09
			CCET 09T301 FL -U	□	□	□							□	□						●	0.10	SC...09
			CCET 09T302 FL -U	□	□	□							□	□						●	0.20	SC...09
			CCET 060200 FR -U	□	□	□														●	0.00	SC...06
			CCET 0602003 FR -U	□	□	□							□	□						●	0.03	SC...06
			CCET 060201 FR -U	□	□	□							□	□						●	0.10	SC...06
			CCET 060202 FR -U	□	□	□							□	□						●	0.20	SC...06
			CCET 09T300 FR -U	□	□	□														●	0.00	SC...09
			CCET 09T3003 FR -U	□	□	□							□	□						●	0.03	SC...09
			CCET 09T301 FR -U	□	□	□							□	□						●	0.10	SC...09
			CCET 09T302 FR -U	□	□	□							□	□						●	0.20	SC...09

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard



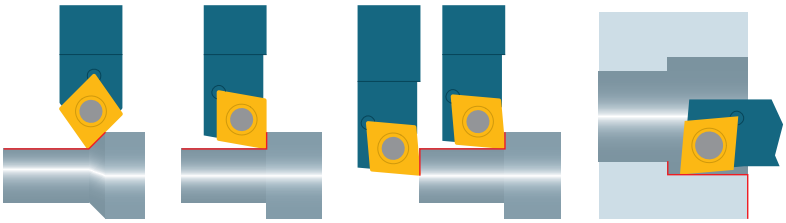


CCG...

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*														Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				— — ○ ● ● — ● ● ● ● ● ● ● —																		
				— ○ ● ○ ○ — ● ● ● ○ ● ○ ● —																		
				○ — ● — — ○ — — ● — — — — —																		
				● ○ ○ — — ● ○ — ○ — — — ○ ●																		
L	N	R		UHM 10	UHM 10 SX	UHM 10 HX	UHM 20 HZ	UHM 20 MZ	UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UCM 10 HX	UCM 10 MZ	HSS MZ	UPCD 15	▼	▼▼	▼▼▼	r	88...
			CCGT 060202 EN -PF					■			■		■	■					●	●	0.20	SC...06
			CCGT 060204 EN -PF										■	■	■				●	●	0.40	SC...06
			CCGT 09T302 EN -PF										■	■	■				●	●	0.20	SC...09
			CCGT 09T304 EN -PF										■	■	■				●	●	0.40	SC...09
			CCGT 09T308 EN -PF										■	■					●	●	0.80	SC...09
			CCGT 120404 EN -PF										■	■					●	●	0.40	SC...12
			CCGT 060202 EN -PM					■			■							●			0.20	SC...06
			CCGT 060201 FN -PA3													■			●	●	0.10	SC...06
			CCGT 060202 FN -PA3	■	■	■										■			●	●	0.20	SC...06
			CCGT 060204 FN -PA3	■	■	■										■			●	●	0.40	SC...06
			CCGT 09T301 FN -PA3													■			●	●	0.10	SC...09
			CCGT 09T302 FN -PA3													■			●	●	0.20	SC...09
			CCGT 09T304 FN -PA3	■	■	■										■			●	●	0.40	SC...09
			CCGT 09T308 FN -PA3	■	■	■										■			●	●	0.80	SC...09
			CCGT 120404 FN -PA3													■			●	●	0.40	SC...12
			CCGT 120408 FN -PA3													■			●	●	0.80	SC...12
			CCGT 060202 FN -PA5	■	■	■													●	●	0.20	SC...06
			CCGT 060204 FN -PA5	■	■	■													●	●	0.40	SC...06
			CCGT 09T304 FN -PA5	■	■	■													●	●	0.40	SC...09
			CCGT 120404 FN -PA5	■	■	■													●	●	0.40	SC...12
			CCGT 120408 FN -PA5	■	■	■													●	●	0.80	SC...12
			CCGT 060204 FN -TOP5	■	■	■														●	0.40	SC...06
			CCGT 09T304 FN -TOP5	■	■	■														●	0.40	SC...09
			CCGT 09T308 FN -TOP5	■	■	■														●	0.80	SC...09
			CCGT 120404 FN -TOP5	■	■	■														●	0.40	SC...12
			CCGT 120408 FN -TOP5	■	■	■														●	0.80	SC...12

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

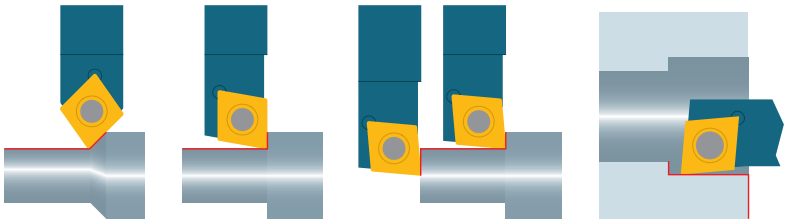


CCG...

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*														Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				—	—	○	●	●	—	●	●	●	●	●	●	●	—					88...
				—	○	●	○	○	—	●	●	●	○	●	○	●	—					
				○	—	●	—	—	○	—	—	●	—	—	—	—	—					
				●	○	○	—	—	●	○	—	○	—	—	—	○	●					
L	N	R		UHM 10	UHM 10 SX	UHM 10 HX	UHM 20 HZ	UHM 20 MZ	UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UCM 10 HX	UCM 10 MZ	HSS MZ	UPCD 15	▼	▼▼	▼▼▼	r	
			CCGT 060202 FN -PA7	■	■	■													●	●	0.20	SC...06
			CCGT 060204 FN -PA7	■	■	■													●	●	0.40	SC...06
			CCGT 09T302 FN -PA7	■	■	■													●	●	0.20	SC...09
			CCGT 09T304 FN -PA7	■	■	■													●	●	0.40	SC...09
			CCGT 09T308 FN -PA7	■	■	■													●	●	0.80	SC...09
			CCGT 120402 FN -PA7	■	■	■													●	●	0.20	SC...12
			CCGT 120404 FN -PA7	■	■	■													●	●	0.40	SC...12
			CCGT 120408 FN -PA7	■	■	■													●	●	0.80	SC...12
			CCGT 0602003 FN -PF23									■							●	●	0.03	SC...06
			CCGT 060201 FN -PF23						■			■							●	●	0.10	SC...06
			CCGT 09T3003 FN -PF23									■							●	●	0.03	SC...09
			CCGT 09T301 FN -PF23									■							●	●	0.10	SC...09
			CCGW 060202 FN						■	■		■								●	0.20	SC...06
			CCGW 060204 FN						■	■		■								●	0.40	SC...06
			CCGW 09T301 FN						■	■		■								●	0.10	SC...09
			CCGW 09T302 FN						■	■		■								●	0.20	SC...09
			CCGW 09T304 FN						■	■		■								●	0.40	SC...09
			CCGW 09T308 FN						■	■		■								●	0.80	SC...09

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

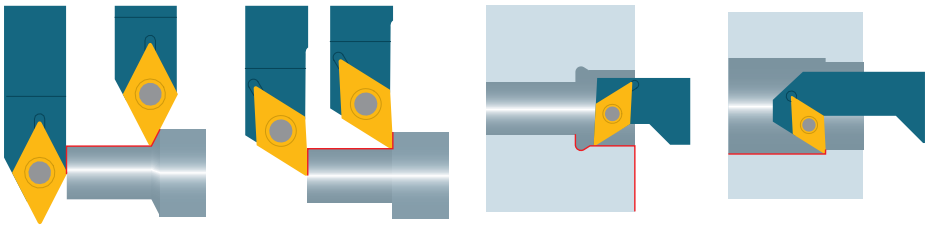


CCM…

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*														Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				— — ○ ● ● ○ — ● ● ● ● ● ● —																		
				— ○ ● ○ ○ ○ — ● ● ○ ● ○ ● —																		
				○ — ● — — ○ — — ● — — — — —																		
				● ○ ○ — — ● ○ — ○ — — — ○ ●																		
L	N	R		UHM 10	UHM 10 SX	UHM 10 HX	UHM 20 HZ	UHM 20 MZ	UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UCM 10 HX	UCM 10 MZ	HSS MZ	UPCD 15	▼	▼▼	▼▼▼	r	
			CCMT 060204 EN -PF				■	■			■								●	●	0.40	SC…06
			CCMT 09T304 EN -PF				■	■			■								●	●	0.40	SC…09
			CCMT 09T308 EN -PF				■	■											●	●	0.80	SC…09
			CCMT 120404 EN -PF					■											●	●	0.40	SC…12
			CCMT 120408 EN -PF					■											●	●	0.80	SC…12
			CCMT 060202 EN -PF43								■								●	●	0.20	SC…06
			CCMT 060204 EN -PF43								■								●	●	0.40	SC…06
			CCMT 09T302 EN -PF43								■								●	●	0.20	SC…09
			CCMT 09T304 EN -PF43								■								●	●	0.40	SC…09
			CCMT 09T308 EN -PF43								■								●	●	0.80	SC…09
			CCMT 060204 EN -PM				■	■	■		■							●			0.40	SC…06
			CCMT 060208 EN -PM								■							●			0.80	SC…06
			CCMT 09T304 EN -PM				■	■			■							●			0.40	SC…09
			CCMT 09T308 EN -PM				■	■			■							●			0.80	SC…09
			CCMT 120404 EN -PM				■	■			■							●			0.40	SC…12
			CCMT 120408 EN -PM				■	■			■							●			0.80	SC…12
			CCMT 060204 EN -PMF					■			■		■		■			●	●		0.40	SC…06
			CCMT 060208 EN -PMF					■										●	●		0.80	SC…06
			CCMT 09T304 EN -PMF					■			■		■		■			●	●		0.40	SC…09
			CCMT 09T308 EN -PMF					■										●	●		0.80	SC…09
			CCMT 120404 EN -PMF					■					■		■			●	●		0.40	SC…12
			CCMT 120408 EN -PMF								■							●	●		0.80	SC…12
			CCMW 0602005 FN														□			●	0.05	SC…06
			CCMW 060202 FN														■			●	0.20	SC…06
			CCMW 060204 FN														■			●	0.40	SC…06
			CCMW 060208 FN														■			●	0.80	SC…06
			CCMW 09T302 FN														■			●	0.20	SC…09
			CCMW 09T308 FN														■			●	0.80	SC…09
			CCMW 09T304 FN														■			●	0.40	SC…09
			CCMW 120404 FN														■			●	0.40	SC…12
			CCMW 120408 FN														■			●	0.80	SC…12

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard



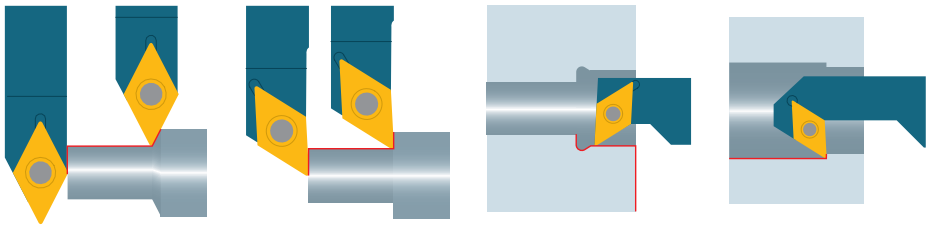
-U -US

DCE...

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*														Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				—	—	○	●	●	—	●	●	●	●	●	●	●	—					88...
				—	○	●	○	○	—	●	●	●	○	●	○	●	—					
				○	—	●	—	—	○	—	—	●	—	—	—	—	—					
				●	○	○	—	—	●	○	—	○	—	—	—	○	●					
L	N	R		UHM 10	UHM 10 SX	UHM 10 HX	UHM 20 HZ	UHM 20 MZ	UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UCM 10 HX	UCM 10 MZ	HSS MZ	UPCD 15	▼	▼▼	▼▼▼	r	
			DCET 070200 FL -U																	●	0.00	SD...07
			DCET 0702003 FL -U	□	□	□							□	□						●	0.03	SD...07
			DCET 070201 FL -U	□	□	□							□	□						●	0.10	SD...07
			DCET 070202 FL -U	□	□	□							□	□						●	0.20	SD...07
			DCET 070204 FL -U	□	□	□														●	0.40	SD...07
			DCET 11T300 FL -U	□	□	□							□	□						●	0.00	SD...11
			DCET 11T3003 FL -U										□	□						●	0.03	SD...11
			DCET 11T301 FL -U	□	□	□							□	□						●	0.10	SD...11
			DCET 11T302 FL -U	□	□	□							□	□						●	0.20	SD...11
			DCET 11T304 FL -U	□	□	□														●	0.40	SD...11
			DCET 070200 FR -U																	●	0.00	SD...07
			DCET 0702003 FR -U	□	□	□							□	□						●	0.03	SD...07
			DCET 070201 FR -U	□	□	□							□	□						●	0.10	SD...07
			DCET 070202 FR -U	□	□	□							□	□						●	0.20	SD...07
			DCET 070204 FR -U	□	□	□														●	0.40	SD...07
			DCET 11T300 FR -U	□	□	□							□	□						●	0.00	SD...11
			DCET 11T3003 FR -U	□	□	□							□	□						●	0.03	SD...11
			DCET 11T301 FR -U	□	□	□							□	□						●	0.10	SD...11
			DCET 11T302 FR -U	□	□	□							□	□						●	0.20	SD...11
			DCET 11T304 FR -U	□	□	□														●	0.40	SD...11
			DCET 070201 FL -US	□	□	□														●	0.10	SD...07
			DCET 070202 FL -US	□	□	□							□	□						●	0.20	SD...07
			DCET 0702003 FR -US	□	□	□														●	0.03	SD...07
			DCET 070201 FR -US	□	□	□														●	0.10	SD...07
			DCET 070202 FR -US	□	□	□							□	□						●	0.20	SD...07

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard



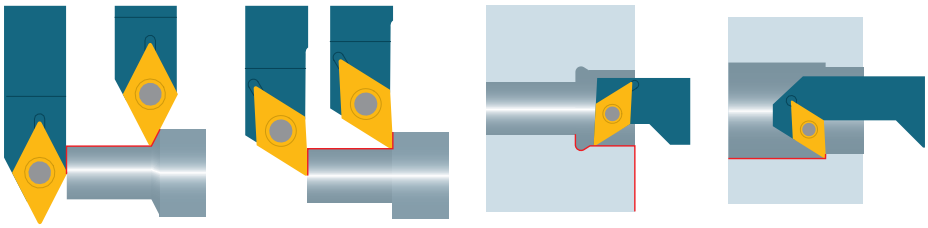
-A3 -PA3 -PA5 -PF -PM

DCG...

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*														Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				—	—	○	●	●	—	●	●	●	●	●	●	●	—					88...
				—	○	●	○	○	—	●	●	●	○	●	○	●	—					
				○	—	●	—	—	○	—	—	●	—	—	—	—	—					
				●	○	○	—	—	●	○	—	○	—	—	—	○	●					
L	N	R		UHM 10	UHM 10 SX	UHM 10 HX	UHM 20 HZ	UHM 20 MZ	UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UCM 10 HX	UCM 10 MZ	HSS MZ	UPCD 15	▼	▼▼	▼▼▼	r	
			DCGT 070201 EN -PF										■	□					●	●	0.10	SD...07
			DCGT 070202 EN -PF					■			■		■	■	■				●	●	0.20	SD...07
			DCGT 070204 EN -PF										■	■	■				●	●	0.40	SD...07
			DCGT 11T302 EN -PF										■	■	■				●	●	0.20	SD...11
			DCGT 11T304 EN -PF										■	■	■				●	●	0.40	SD...11
			DCGT 11T308 EN -PF										■	■	■				●	●	0.80	SD...11
			DCGT 070202 EN -PM					■			■							●			0.20	SD...07
			DCGT 0702006 FN -A3	■	■	■													●	●	0.06	SD...07
			DCGT 0702015 FN -A3	■	■	■													●	●	0.15	SD...07
			DCGT 0702035 FN -A3	■	■	■													●	●	0.35	SD...07
			DCGT 11T3008 FN -A3	■	■	■													●	●	0.08	SD...11
			DCGT 11T3015 FN -A3	■	■	■													●	●	0.15	SD...11
			DCGT 11T3035 FN -A3	■	■	■													●	●	0.35	SD...11
			DCGT 070201 FN -PA3													■			●	●	0.10	SD...07
			DCGT 070202 FN -PA3													■			●	●	0.20	SD...07
			DCGT 070204 FN -PA3	■	■	■										■			●	●	0.40	SD...07
			DCGT 11T302 FN -PA3													■			●	●	0.20	SD...11
			DCGT 11T304 FN -PA3	■	■	■										■			●	●	0.40	SD...11
			DCGT 11T308 FN -PA3	■	■	■										■			●	●	0.80	SD...11
			DCGT 070202 FN -PA5	■	■	■													●	●	0.20	SD...07
			DCGT 070204 FN -PA5	■	■	■													●	●	0.40	SD...07
			DCGT 11T302 FN -PA5	■	■	■													●	●	0.20	SD...11
			DCGT 11T304 FN -PA5	■	■	■													●	●	0.40	SD...11
			DCGT 11T308 FN -PA5	■	■	■													●	●	0.80	SD...11

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard



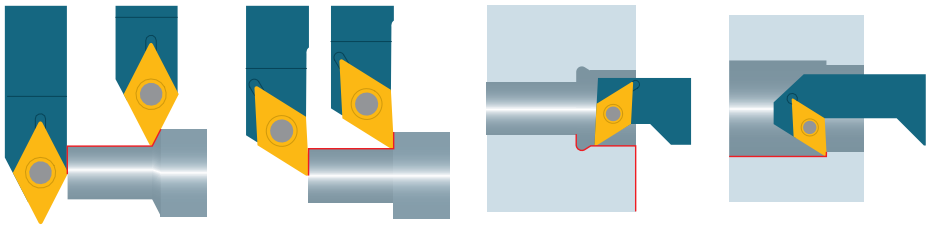
-FN -TOP5 -PA7 -PF -PF23

DCG…

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*														Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				–	–	○	●	●	–	●	●	●	●	●	●	●	–					88…
				–	○	●	○	○	–	●	●	●	○	●	○	●	–					
				○	–	●	–	–	○	–	–	●	–	–	–	–	–					
				●	○	○	–	–	●	○	–	○	–	–	–	○	●					
L	N	R		UHM 10	UHM 10 SX	UHM 10 HX	UHM 20 HZ	UHM 20 MZ	UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UCM 10 HX	UCM 10 MZ	HSS MZ	UPCD 15	▼	▼▼	▼▼▼	r	
			DCGT 11T304 FL -TOP5	■	■	■														●	0.40	SD…11
			DCGT 11T308 FL -TOP5	■	■	■														●	0.80	SD…11
			DCGT 11T304 FN -TOP5	■	■	■														●	0.40	SD…11
			DCGT 11T308 FN -TOP5	■	■	■														●	0.80	SD…11
			DCGT 11T304 FR -TOP5	■	■	■														●	0.40	SD…11
			DCGT 11T308 FR -TOP5	■	■	■														●	0.80	SD…11
			DCGT 070202 FN -PA7	■	■	■													●	●	0.20	SD…07
			DCGT 070204 FN -PA7	■	■	■													●	●	0.40	SD…07
			DCGT 11T302 FN -PA7	■	■	■													●	●	0.20	SD…11
			DCGT 11T304 FN -PA7	■	■	■													●	●	0.40	SD…11
			DCGT 11T308 FN -PA7	■	■	■													●	●	0.80	SD…11
			DCGT 070201 FN -PF						■	■		■							●	●	0.10	SD…07
			DCGT 070202 FN -PF						■	■		■							●	●	0.20	SD…07
			DCGT 11T302 FN -PF						■	■		■							●	●	0.20	SD…11
			DCGT 11T304 FN -PF						■	■		■							●	●	0.40	SD…11
			DCGT 0702003 FN -PF23									■							●	●	0.03	SD…07
			DCGT 070201 FN -PF23						■	□		■							●	●	0.10	SD…07
			DCGT 070202 FN -PF23						■	□		■							●	●	0.20	SD…07
			DCGT 11T3003 FN -PF23									■							●	●	0.03	SD…11
			DCGT 11T301 FN -PF23						■			■							●	●	0.10	SD…11
			DCGT 11T302 FN -PF23						■	□		■							●	●	0.20	SD…11
			DCGW 070201 FN						■	■		■								●	0.10	SD…07
			DCGW 070202 FN						■	■		■								●	0.20	SD…07
			DCGW 070204 FN						■	■		■								●	0.40	SD…07
			DCGW 11T301 FN						■	■		■								●	0.10	SD…11
			DCGW 11T302 FN						■	■		■								●	0.20	SD…11
			DCGW 11T304 FN						■	■		■								●	0.40	SD…11
			DCGW 11T308 FN						■	■		■								●	0.80	SD…11

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard



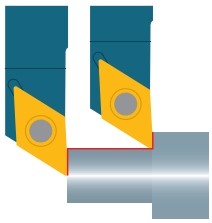
-FN -PF -PF43 -PM -PMF

DCM…

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*													Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				—	—	○	●	●	—	●	●	●	●	●	●	—				88…
				—	○	●	○	○	—	●	●	●	○	●	○	●	—				
				○	—	●	—	—	○	—	—	●	—	—	—	—	—				
				●	○	○	—	—	●	○	—	○	—	—	—	○	●				
L	N	R		UHM 10	UHM 10 SX	UHM 10 HX	UHM 20 HZ	UHM 20 MZ	UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UCM 10 HX	UCM 10 MZ	HSS MZ	UPCD 15	▼	▼▼	▼▼▼	r	
			DCMT 070204 EN -PF				■	■			■								●	●	0.40	SD…07
			DCMT 11T304 EN -PF				■	■			■								●	●	0.40	SD…11
			DCMT 11T308 EN -PF				■	■			■								●	●	0.80	SD…11
			DCMT 070202 EN -PF43								■								●	●	0.20	SD…07
			DCMT 070204 EN -PF43								■								●	●	0.40	SD…07
			DCMT 11T302 EN -PF43								■								●	●	0.20	SD…11
			DCMT 11T304 EN -PF43								■								●	●	0.40	SD…11
			DCMT 11T308 EN -PF43								■								●	●	0.80	SD…11
			DCMT 070204 EN -PM				■	■	■		■							●			0.40	SD…07
			DCMT 070208 EN -PM					■			■							●			0.80	SD…07
			DCMT 11T304 EN -PM				■	■	■		■							●			0.40	SD…11
			DCMT 11T308 EN -PM				■	■			■							●			0.80	SD…11
			DCMT 070204 EN -PMF					■			■							●	●		0.40	SD…07
			DCMT 11T304 EN -PMF					■			■		■					●	●		0.40	SD…11
			DCMT 11T308 EN -PMF					■			■		■					●	●		0.80	SD…11
			DCMW 070202 FN														■			●	0.20	SD…07
			DCMW 070204 FN														■			●	0.40	SD…07
			DCMW 070208 FN														■			●	0.80	SD…07
			DCMW 11T302 FN														■			●	0.20	SD…11
			DCMW 11T304 FN														■			●	0.40	SD…11
			DCMW 11T308 FN														■			●	0.80	SD…11

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard



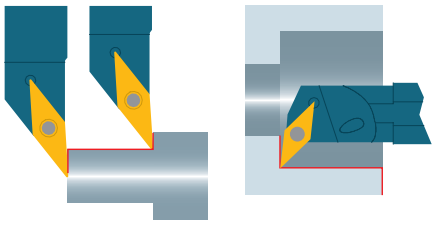
-A4

DNG…

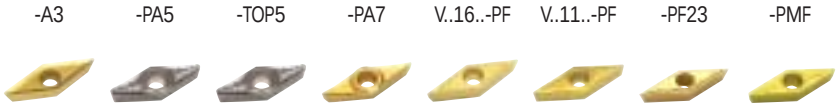
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*														Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				–	–	○	●	●	–	●	●	●	●	●	●	●	–					88…
				–	○	●	○	○	–	●	●	●	○	●	○	●	–					
				○	–	●	–	–	○	–	–	●	–	–	–	–	–					
				●	○	○	–	–	●	○	–	○	–	–	–	○	●					
L	N	R		UHM 10	UHM 10 SX	UHM 10 HX	UHM 20 HZ	UHM 20 MZ	UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UCM 10 HX	UCM 10 MZ	HSS MZ	UPCD 15	▼	▼▼	▼▼▼	r	
			DNGU 1104008 FN A4						■	■		■								●	0.08	SDJN…11
			DNGU 1104015 FN A4						■	■		■								●	0.15	SDJN…11

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard



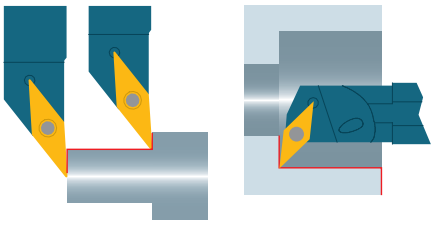
VCG…



Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*													Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				— — ○ ● ● — ● ● ● ● ● ● ● — — ○ ● ○ ○ — ● ● ● ○ ● ○ ● — ○ — ● — — ○ — — ● — — — — — ● ○ ○ — — ● ○ — ○ — — — ○ ●																88…
L	N	R		UHM 10	UHM 10 SX	UHM 10 HX	UHM 20 HZ	UHM 20 MZ	UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UCM 10 HX	UCM 10 MZ	HSS MZ	UPCD 15	▼	▼▼	▼▼▼	r	
			VCGT 110302 EN -PF				■	■			■		■	■	■				●	●	0.20	SV…11
			VCGT 110304 EN -PF				■	■			■		■	■	■				●	●	0.40	SV…11
			VCGT 110308 EN -PF				■	■			■								●	●	0.80	SV…11
			VCGT 160404 EN -PF										■	■	■				●	●	0.40	SV…16
			VCGT 160408 EN -PF										■	■	■				●	●	0.80	SV…16
			VCGT 110302 EN -PMF								■							●	●		0.20	SV…11
			VCGT 1103003 FN -PF23									■							●	●	0.03	SV…11
			VCGT 110301 FN -PF23						■	□		■							●	●	0.10	SV…11
			VCGT 110302 FN -PF23						■	□		■							●	●	0.20	SV…11
			VCGT 1604003 FN -PF23									■							●	●	0.03	SV…16
			VCGT 160401 FN -PF23									■							●	●	0.10	SV…16
			VCGT 160402 FN -PF23						□	□		□							●	●	0.20	SV…16
			VCGT 1103008 FN -A3	■	■	■													●	●	0.08	SV…11
			VCGT 1103015 FN -A3	■	■	■													●	●	0.15	SV…11
			VCGT 1103035 FN -A3	■	■	■													●	●	0.35	SV…11
			VCGT 1303015 FN -A3	■	■	■													●	●	0.15	SV…13
			VCGT 1303035 FN -A3	■	■	■													●	●	0.35	SV…13
			VCGT 1303075 FN -A3	■	■	■													●	●	0.75	SV…13
			VCGT 110302 FN -PA5	■	■	■													●	●	0.20	SV…11
			VCGT 110304 FN -PA5	■	■	■													●	●	0.20	SV…11
			VCGT 160404 FN -PA5	■	■	■													●	●	0.40	SV…16
			VCGT 160408 FN -PA5	■	■	■													●	●	0.80	SV…16
			VCGT 110304 FL -TOP5	■	■	■														●	0.40	SV…11
			VCGT 110304 FR -TOP5	■	■	■														●	0.40	SV…11
			VCGT 110302 FN -PA7	■	■	■													●	●	0.20	SV…11
			VCGT 110304 FN -PA7	■	■	■													●	●	0.40	SV…11
			VCGT 110308 FN -PA7	■	■	■													●	●	0.80	SV…11
			VCGT 160404 FN -PA7	■	■	■													●	●	0.40	SV…16
			VCGT 160408 FN -PA7	■	■	■													●	●	0.80	SV…16

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard



-FN -PF -PF43 -PM -PMF

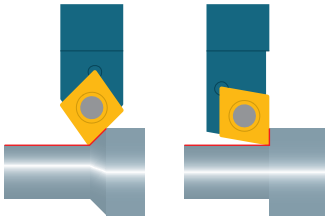
VCM...

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*														Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				— — ○ ● ● — ● ● ● ● ● ● ● —																	
				— ○ ● ○ ○ — ● ● ● ○ ● ○ ● —																	
				○ — ● — — ○ — — ● — — — — —																	
				● ○ ○ — — ● ○ — ○ — — — ○ ●																	
				UHM 10	UHM 10 SX	UHM 10 HX	UHM 20 HZ	UHM 20 MZ	UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UCM 10 HX	UCM 10 MZ	HSS MZ	UPCD 15	▼	▼▼	▼▼▼	r	
L	N	R																				
			VCMT 160404 EN -PF				■	■			■								●	●	0.40	SV...16
			VCMT 160408 EN -PF				■	■											●	●	0.80	SV...16
			VCMT 110302 EN -PF43								■								●	●	0.20	SV...11
			VCMT 110304 EN -PF43								■								●	●	0.40	SV...11
			VCMT 160404 EN -PF43								■								●	●	0.40	SV...16
			VCMT 160408 EN -PF43								■								●	●	0.80	SV...16
			VCMT 160404 EN -PM					■			■							●			0.40	SV...16
			VCMT 160408 EN -PM				■	■			■							●			0.80	SV...16
			VCMT 110304 EN -PMF					■			■		■					●	●		0.40	SV...11
			VCMT 160404 EN -PMF					■			■		■		■			●	●		0.40	SV...16
			VCMT 160408 EN -PMF					■			■		■					●	●		0.80	SV...16
			VCMW 110302 FN														■			●	0.20	SV...11
			VCMW 110304 FN														■			●	0.40	SV...11
			VCMW 110404 FN														■			●	0.40	SV...11
			VCMW 110408 FN														■			●	0.80	SV...11

87

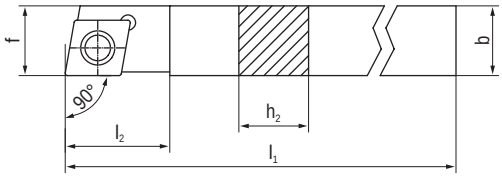
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard



SCAC… (90°)

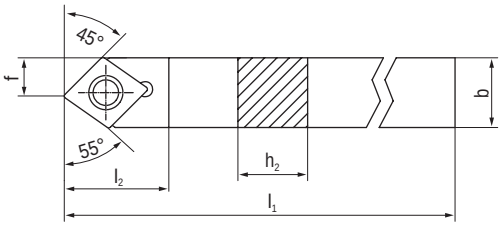
für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



Ausführung Exécution Execution			Bezeichnung Désignation Designation		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	Schneiden Plaquettes Inserts
L	N	R												77…
			SCACL 0808 K06 U	■		8	8	125	9			8		CC..0602..
			SCACL 1010 M06 U	■		10	10	150	9			10		CC..0602..
			SCACL 1212 M09 U	■		12	12	150	13			12		CC..09T3..
			SCACL 1616 H09 U	■		16	16	100	13			16		CC..09T3..
			SCACL 2020 K12 U	■		20	20	125	17			20		CC..1204..
			SCACR 0808 K06 U	■		8	8	125	9			8		CC..0602..
			SCACR 1010 M06 U	■		10	10	150	9			10		CC..0602..
			SCACR 1212 M09 U	■		12	12	150	13			12		CC..09T3..
			SCACR 1616 H09 U	■		16	16	100	13			16		CC..09T3..
			SCACR 2020 K12 U	■		20	20	125	17			20		CC..1204..

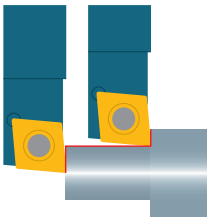
SCDC… (45°)

für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



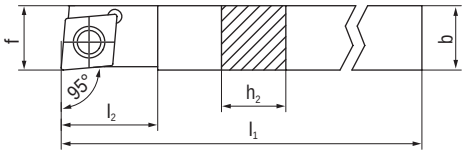
Ausführung Exécution Execution			Bezeichnung Désignation Designation		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	Schneiden Plaquettes Inserts
L	N	R												77…
			SCDCL 0808 K06 U	■		8	8	125	13			4		CC..0602..
			SCDCL 1010 M06 U	■		10	10	150	13			5		CC..0602..
			SCDCL 1212 M09 U	■		12	12	150	18			6		CC..09T3..

■ Standard
□ Semi Standard

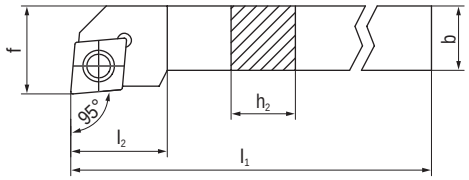


SCLC… (95°)

für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



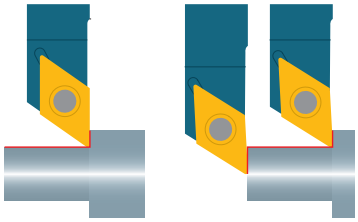
Ausführung Exécution Execution			Bezeichnung Désignation Designation												Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D			77…
			SCLCL 0808 H06 U	■		8	8	100	10			8			CC..0602..
			SCLCL 1010 H06 U	■		10	10	100	10			10			CC..0602..
			SCLCL 1212 H09 U	■		12	12	100	16			12			CC..09T3..
			SCLCR 0808 H06 U	■		8	8	100	10			8			CC..0602..
			SCLCR 1010 H06 U	■		10	10	100	10			10			CC..0602..
			SCLCR 1212 H09 U	■		12	12	100	16			12			CC..09T3..



SCLC… (95°)

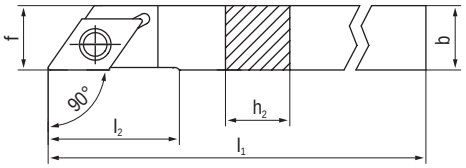
Ausführung Exécution Execution			Bezeichnung Désignation Designation												Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D			77…
			SCLCL 0808 D06	■		8	8	60	10			10			CC..0602..
			SCLCL 1010 E06	■		10	10	70	10			12			CC..0602..
			SCLCL 1212 F09	■		12	12	80	16			16			CC..09T3..
			SCLCL 1616 H09	■		16	16	100	17			20			CC..09T3..
			SCLCL 2020 K09	■		20	20	125	17			25			CC..09T3..
			SCLCL 1616 H12	■		16	16	100	20			20			CC..1204..
			SCLCL 2020 K12	■		20	20	125	20			25			CC..1204..
			SCLCL 2525 M12	■		25	25	150	20			32			CC..1204..
			SCLCR 0808 D06	■		8	8	60	10			10			CC..0602..
			SCLCR 1010 E06	■		10	10	70	10			12			CC..0602..
			SCLCR 1212 F09	■		12	12	80	16			16			CC..09T3..
			SCLCR 1616 H09	■		16	16	100	17			20			CC..09T3..
			SCLCR 2020 K09	■		20	20	125	17			25			CC..09T3..
			SCLCR 1616 H12	■		16	16	100	20			20			CC..1204..
			SCLCR 2020 K12	■		20	20	125	20			25			CC..1204..
			SCLCR 2525 M12	■		25	25	150	20			32			CC..1204..

■ Standard
□ Semi Standard



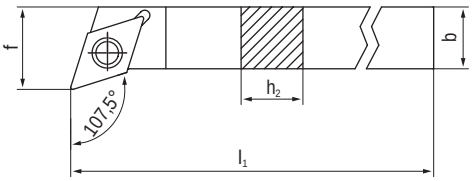
SDAC… (90°)

für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



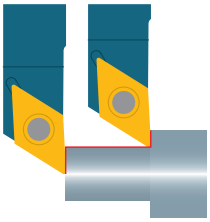
Ausführung Exécution Execution			Bezeichnung Désignation Designation	h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	Schneiden Plaquettes Inserts
L	N	R											77…
			SDACL 0808 K07 U ■		8	8	125	14			8		DC..0702..
			SDACL 1010 M07 U ■		10	10	150	14			10		DC..0702..
			SDACL 1212 M07 U ■		12	12	150	14			12		DC..0702..
			SDACL 1212 M11 U ■		12	12	100	21			12		DC..11T3..
			SDACL 1616 K11 U ■		16	16	125	33			16		DC..11T3..
			SDACR 0808 K07 U ■		8	8	125	14			8		DC..0702..
			SDACR 1010 M07 U ■		10	10	150	14			10		DC..0702..
			SDACR 1212 M07 U ■		12	12	150	14			12		DC..0702..
			SDACR 1212 M11 U ■		12	12	100	21			12		DC..11T3..
			SDACR 1616 K11 U ■		16	16	125	33			16		DC..11T3..

SDHC… (107.5°)



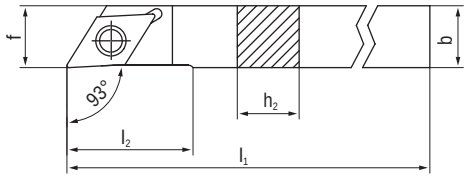
Ausführung Exécution Execution			Bezeichnung Désignation Designation	h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	Schneiden Plaquettes Inserts
L	N	R											77…
			SDHCL 1010 E07 ■		10	10	70				12		DC..0702..
			SDHCL 1212 F07 ■		12	12	80				16		DC..0702..
			SDHCL 1616 H11 ■		16	16	100				20		DC..11T3..
			SDHCL 2020 K11 ■		20	20	125				25		DC..11T3..
			SDHCL 2525 M11 ■		25	25	150				32		DC..11T3..
			SDHCR 1010 E07 ■		10	10	70				12		DC..0702..
			SDHCR 1212 F07 ■		12	12	80				16		DC..0702..
			SDHCR 1616 H11 ■		16	16	100				20		DC..11T3..
			SDHCR 2020 K11 ■		20	20	125				25		DC..11T3..
			SDHCR 2525 M11 ■		25	25	150				32		DC..11T3..

■ Standard
□ Semi Standard



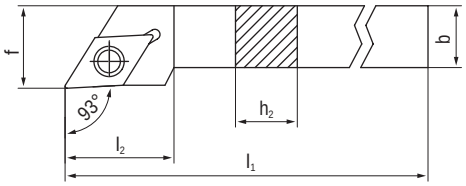
SDJC… (93°)

für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



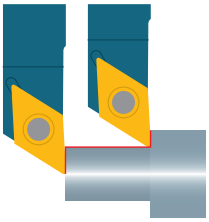
Ausführung Exécution Execution			Bezeichnung Désignation Designation		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	Schneiden Plaquettes Inserts
L	N	R												77…
■			SDJCL 0808 H07 U	■		8	8	100	13			8		DC..0702..
			SDJCL 1010 H07 U	■		10	10	100	13			10		DC..0702..
			SDJCL 1212 H07 U	■		12	12	100	14.5			12		DC..0702..
			SDJCL 1616 K07 U	■		16	16	125	33			16		DC..0702..
			SDJCL 1212 H11 U	■		12	12	100	22			12		DC..11T3..
			SDJCL 1616 K11 U	■		16	16	125	33			16		DC..11T3..
		■	SDJCR 0808 H07 U	■		8	8	100	13			8		DC..0702..
			SDJCR 1010 H07 U	■		10	10	100	13			10		DC..0702..
			SDJCR 1212 H07 U	■		12	12	100	14.5			12		DC..0702..
			SDJCR 1616 K07 U	■		16	16	125	33			16		DC..0702..
			SDJCR 1212 H11 U	■		12	12	100	22			12		DC..11T3..
			SDJCR 1616 K11 U	■		16	16	125	33			16		DC..11T3..
			SDJCR 3/8” H07	□		9.525	9.525	100	22			9.525		DC..0702..
			SDJCR 3/8” H11	□		9.525	9.525	100	22			9.525		DC..11T3..
			SDJCR 1/2” H07	□		12.7	12.7	100	22			12.7		DC..0702..
			SDJCR 1/2” H11	□		12.7	12.7	100	22			12.7		DC..11T3..

SDJC… (93°)



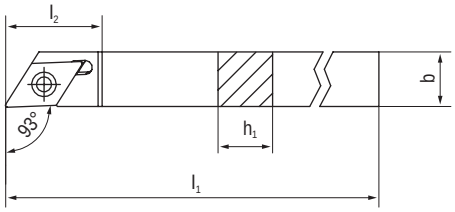
Ausführung Exécution Execution			Bezeichnung Désignation Designation		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	Schneiden Plaquettes Inserts
L	N	R												77…
■			SDJCL 0808 D07	■		8	8	60	13			10		DC..0702..
			SDJCL 1010 E07	■		10	10	70	13			12		DC..0702..
			SDJCL 1212 F07	■		12	12	80	14.5			16		DC..0702..
			SDJCL 1616 H11	■		16	16	100	20			20		DC..11T3..
			SDJCL 2020 K11	■		20	20	125	20.5			25		DC..11T3..
			SDJCL 2525 M11	■		25	25	150	21.5			32		DC..11T3..
		■	SDJCR 0808 D07	■		8	8	60	13			10		DC..0702..
			SDJCR 1010 E07	■		10	10	70	13			12		DC..0702..
			SDJCR 1212 F07	■		12	12	80	14.5			16		DC..0702..
			SDJCR 1616 H11	■		16	16	100	20			20		DC..11T3..
			SDJCR 2020 K11	■		20	20	125	20.5			25		DC..11T3..
			SDJCR 2525 M11	■		25	25	150	21.5			32		DC..11T3..

■ Standard
□ Semi Standard



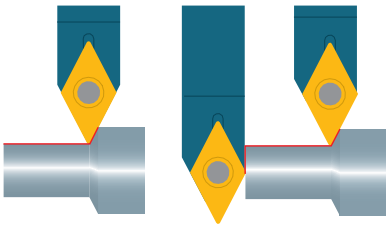
SDJN… (93°)

für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



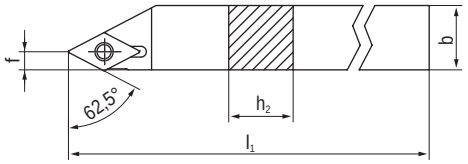
Ausführung Exécution Execution			Bezeichnung Désignation Designation												Schneiden Plaquettes Inserts
L	N	R			h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77…
			SDJNL 0808 F11	□	8		8	80	21.3						DN… 11…
			SDJNL 1012 H11	■	10		12	100	21.3						DN… 11…
			SDJNL 1212 H11	■	12		12	100	21.3						DN… 11…
			SDJNL 1616 K11	■	16		16	125	21.3						DN… 11…
			SDJNL 2020 K11	■	20		20	125	21.3						DN… 11…
			SDJNL 2525 M11	□	25		25	150	21.3						DN… 11…
			SDJNR 0808 F11	□	8		8	80	21.3						DN… 11…
			SDJNR 1012 H11	■	10		12	100	21.3						DN… 11…
			SDJNR 1212 H11	■	12		12	100	21.3						DN… 11…
			SDJNR 1616 K11	■	16		16	125	21.3						DN… 11…
			SDJNR 2020 K11	■	20		20	125	21.3						DN… 11…
			SDJNR 2525 M11	□	25		25	150	21.3						DN… 11…

■ Standard
□ Semi Standard



SDNC… (62.5°)

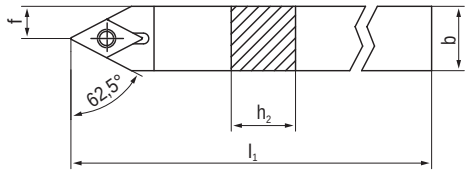
für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77…
			SDNCL 1010 H07 U ■		10	10	100				3.38			DC..0702..
			SDNCL 1212 H07 U ■		12	12	100				3.38			DC..0702..
			SDNCL 1616 K11 U ■		16	16	125				5.37			DC..11T3..
			SDNCL 2020 K11 U ■		20	20	125				5.37			DC..11T3..
			SDNCR 1010 H07 U ■		10	10	100				3.38			DC..0702..
			SDNCR 1212 H07 U ■		12	12	100				3.38			DC..0702..
			SDNCR 1616 K11 U ■		16	16	125				5.37			DC..11T3..
			SDNCR 2020 K11 U ■		20	20	125				5.37			DC..11T3..

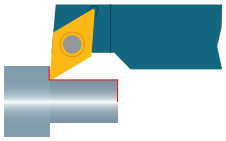
SDNC… (62.5°)

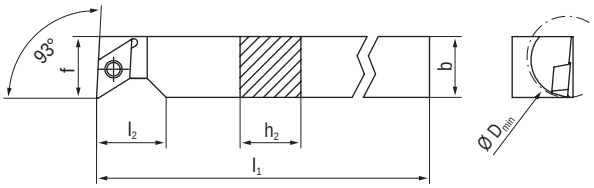
für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77…
			SDNCN 0808 K07 U ■		8	8	125				4			DC..0702..
			SDNCN 1010 E07 U ■		10	10	70				5			DC..0702..
			SDNCN 1010 M07 U ■		10	10	150				5			DC..0702..
			SDNCN 1212 F07 U ■		12	12	80				6			DC..0702..
			SDNCN 1212 M07 U ■		12	12	150				6			DC..0702..
			SDNCN 1212 M11 U ■		12	12	150				6			DC..11T3..
			SDNCN 1616 H11 U ■		16	16	100				8			DC..11T3..
			SDNCN 2020 K11 U ■		20	20	125				10			DC..11T3..
			SDNCN 2525 M11 U ■		25	25	150				12.5			DC..11T3..

■ Standard
□ Semi Standard

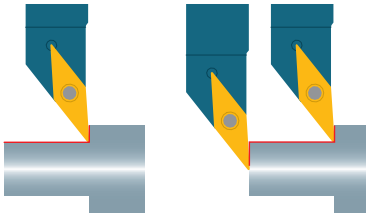




SDUC… (93°)

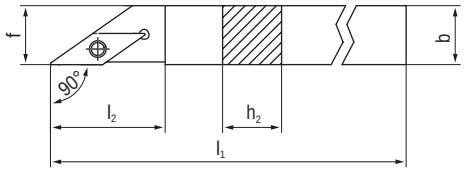
Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D_{min}		77…
			SDUCL 1212 XF07 ■		12	12	80	12			12.2	16		DC..0702..
			SDUCL 1616 XH07 ■		16	16	100	12			16.2	16		DC..0702..
			SDUCR 1212 XF07 ■		12	12	80	12			12.2	16		DC..0702..
			SDUCR 1616 XH07 ■		16	16	100	12			16.2	16		DC..0702..

■ Standard
□ Semi Standard



SVAC… (90°)

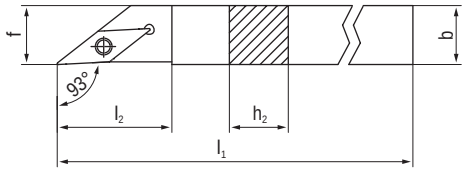
für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



Ausführung Exécution Execution			Bezeichnung Désignation Designation		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	Schneiden Plaquettes Inserts
L	N	R												77…
			SVACL 0808 H11 U	■		8	8	100	17			8		VC..1103..
			SVACL 1010 H11 U	■		10	10	100	22			10		VC..1103..
			SVACL 1212 H11 U	■		12	12	100	22			12		VC..1103..
			SVACR 0808 H11 U	■		8	8	100	17			8		VC..1103..
			SVACR 1010 H11 U	■		10	10	100	22			10		VC..1103..
			SVACR 1212 H11 U	■		12	12	100	22			12		VC..1103..

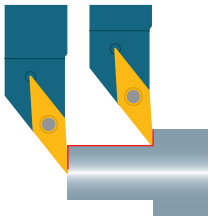
SVJC… (93°)

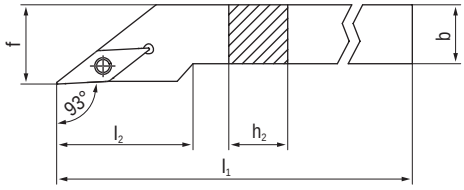
für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



Ausführung Exécution Execution			Bezeichnung Désignation Designation		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	Schneiden Plaquettes Inserts
L	N	R												77…
			SVJCL 0808 H11 U	■		8	8	100	17			8		VC..1103..
			SVJCL 1010 H11 U	■		10	10	100	22			10		VC..1103..
			SVJCL 1212 H11 U	■		12	12	100	22			12		VC..1103..
			SVJCL 1616 K11 U	■		16	16	125	33			16		VC..1103..
			SVJCL 2020 K11 U	■		20	20	125	33			20		VC..1103..
			SVJCL 1616 K16 U	■		16	16	125	33			16		VC..1604..
			SVJCR 0808 H11 U	■		8	8	100	17			8		VC..1103..
			SVJCR 1010 H11 U	■		10	10	100	22			10		VC..1103..
			SVJCR 1212 H11 U	■		12	12	100	22			12		VC..1103..
			SVJCR 1616 K11 U	■		16	16	125	33			16		VC..1103..
			SVJCR 2020 K11 U	■		20	20	125	33			20		VC..1103..
			SVJCR 1616 K16 U	■		16	16	125	33			16		VC..1604..
			SVJCR 3/8" H11	□		9.525	9.525	100	22			9.525		VC..1103..
			SVJCR 1/2" H11	□		12.7	12.7	100	22			12.7		VC..1103..
			SVJCR 3/4" K16	□		19.05	19.05	125	33			19.05		VC..1604..

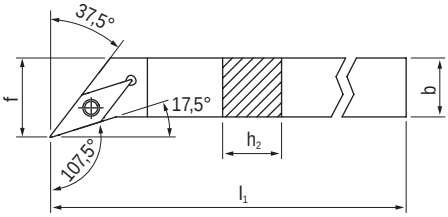
■ Standard
□ Semi Standard





SVJC... (93°)

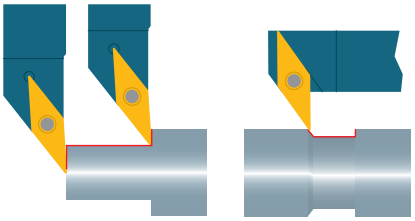
Ausführung Exécution Execution			Bezeichnung Désignation Designation												Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	
			SVJCL 1212 F11 ■		12	12	80	21.5			16		VC..1103..
			SVJCL 1616 H11 ■		16	16	100	21.5			20		VC..1103..
			SVJCL 2020 K11 ■		20	20	125	23			25		VC..1103..
			SVJCL 2525 M11 ■		25	25	150	25.5			32		VC..1103..
			SVJCL 2020 K16 ■		20	20	125	29.5			25		VC..1604..
			SVJCL 2525 M16 ■		25	25	150	32.5			32		VC..1604..
			SVJCR 1212 F11 ■		12	12	80	21.5			16		VC..1103..
			SVJCR 1616 H11 ■		16	16	100	21.5			20		VC..1103..
			SVJCR 2020 K11 ■		20	20	125	23			25		VC..1103..
			SVJCR 2525 M11 ■		25	25	150	25.5			32		VC..1103..
			SVJCR 2020 K16 ■		20	20	125	29.5			25		VC..1604..
			SVJCR 2525 M16 ■		25	25	150	32.5			32		VC..1604..

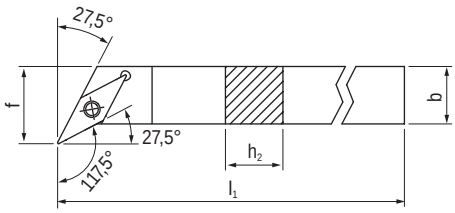


SVHC... (107.5°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation												Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	
			SVHCL 1212 F11 ■		12	12	80				16		VC..1103..
			SVHCL 1616 H11 ■		16	16	100				20		VC..1103..
			SVHCL 2020 K11 ■		20	20	125				25		VC..1103..
			SVHCL 2525 M11 ■		25	25	150				32		VC..1103..
			SVHCL 2020 K16 ■		20	20	125				25		VC..1604..
			SVHCL 2525 M16 ■		25	25	150				32		VC..1604..
			SVHCR 1212 F11 ■		12	12	80				16		VC..1103..
			SVHCR 1616 H11 ■		16	16	100				20		VC..1103..
			SVHCR 2020 K11 ■		20	20	125				25		VC..1103..
			SVHCR 2525 M11 ■		25	25	150				32		VC..1103..
			SVHCR 2020 K16 ■		20	20	125				25		VC..1604..
			SVHCR 2525 M16 ■		25	25	150				32		VC..1604..

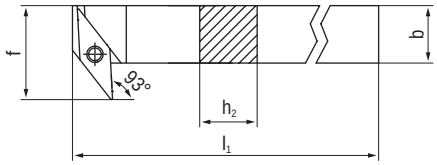
■ Standard
□ Semi Standard





SVOC... (117.5°)

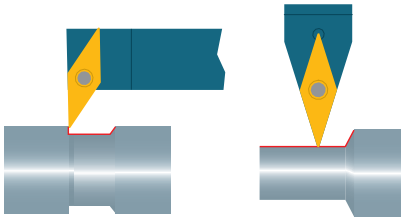
Ausführung Exécution Execution			Bezeichnung Désignation Designation												Schneiden Plaquettes Inserts
L	N	R			h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77...
			SVOCL 1212 H11	■		12	12	100				16			VC..1103..
			SVOCL 1616 K11	■		16	16	125				20			VC..1103..
			SVOCL 2020 K11	■		20	20	125				24			VC..1103..
			SVOCR 1212 H11	■		12	12	100				16			VC..1103..
			SVOCR 1616 K11	■		16	16	125				20			VC..1103..
			SVOCR 2020 K11	■		20	20	125				24			VC..1103..

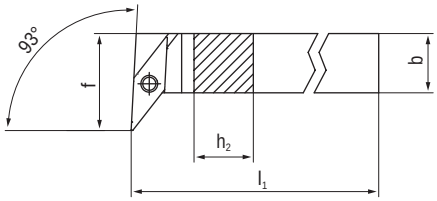


SVQC... (93°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation												Schneiden Plaquettes Inserts
L	N	R			h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77...
			SVQCL 1212 H11	■		12	12	100				20			VC..1103..
			SVQCL 1616 K11	■		16	16	125				24			VC..1103..
			SVQCR 1212 H11	■		12	12	100				20			VC..1103..
			SVQCR 1616 K11	■		16	16	125				24			VC..1103..

■ Standard
□ Semi Standard



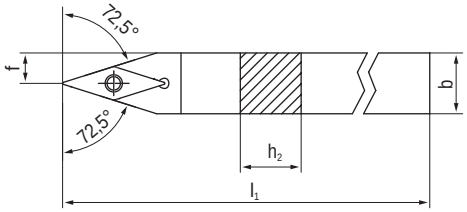


SVUC... (93°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	Schneiden Plaquettes Inserts
L	N	R												77...
			SVUCL 1212 H11	■		12	12	100				20		VC..1103..
			SVUCL 1616 K11	■		16	16	125				24		VC..1103..
			SVUCR 1212 H11	■		12	12	100				20		VC..1103..
			SVUCR 1616 K11	■		16	16	125				24		VC..1103..

SVVC... (72.5°)

für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



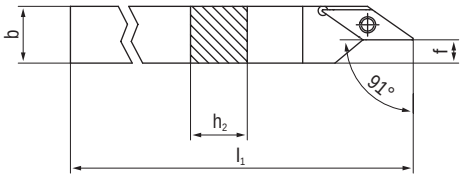
Ausführung Exécution Execution			Bezeichnung Désignation Designation		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	Schneiden Plaquettes Inserts
L	N	R												77...
			SVVCN 0808 H11 U	■		8	8	100				4		VC..1103..
			SVVCN 1010 H11 U	■		10	10	100				5		VC..1103..
			SVVCN 1212 F11 U	■		12	12	80				6		VC..1103..
			SVVCN 1212 H11 U	■		12	12	100				6		VC..1103..
			SVVCN 1616 H11 U	■		16	16	100				8		VC..1103..
			SVVCN 2020 K11 U	■		20	20	125				10		VC..1103..
			SVVCN 2525 M11 U	■		25	25	150				12.5		VC..1103..
			SVVCN 2020 K16 U	■		20	20	125				10		VC..1604..
			SVVCN 2525 M16 U	■		25	25	150				12.5		VC..1604..

■ Standard
□ Semi Standard

Achtung | Attention | Attention
Abbildungen linke Version.
Les illustrations à gauche.
Illustrations left version.

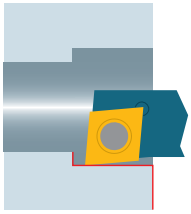
SVXC... (91°)

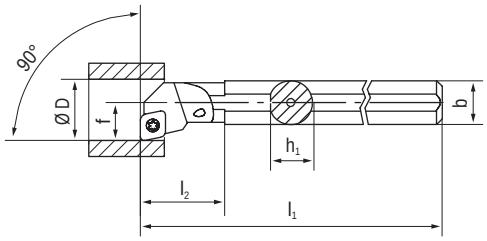
für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77...
			SVXCL 1010 H11 U ■		10	10	100				3.4			VC..1103..
			SVXCL 1212 H11 U ■		12	12	100				5.4			VC..1103..
			SVXCL 1616 K11 U ■		16	16	125				8.9			VC..1103..
			SVXCL 2020 K16 U ■		20	20	125				10.4			VC..1604..
			SVXCR 1010 H11 U ■		10	10	100				3.4			VC..1103..
			SVXCR 1212 H11 U ■		12	12	100				5.4			VC..1103..
			SVXCR 1616 K11 U ■		16	16	125				8.9			VC..1103..
			SVXCR 2020 K16 U ■		20	20	125				10.4			VC..1604..

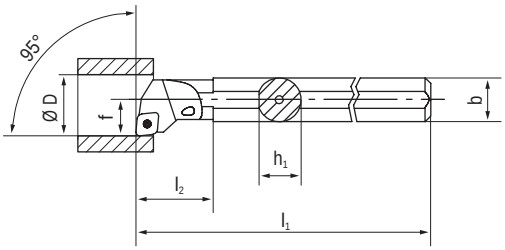
■ Standard
□ Semi Standard





SCFC… (90°)

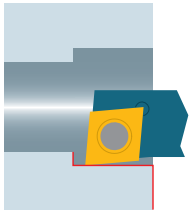
Ausführung Exécution Execution			Bezeichnung Désignation Designation												Schneiden Plaquettes Inserts
L	N	R			h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77…
■			A08F SCFCL 06	■	7.6		8	80	17			5	11		CC..0602..
			A10H SCFCL 06	■	9.5		10	100	19			7	13		CC..0602..
			A12K SCFCL 06	■	11.5		12	125	22			9	16		CC..0602..
		■	A08F SCFCR 06	■	7.6		8	80	17			5	11		CC..0602..
			A10H SCFCR 06	■	9.5		10	100	19			7	13		CC..0602..
			A12K SCFCR 06	■	11.5		12	125	22			9	16		CC..0602..

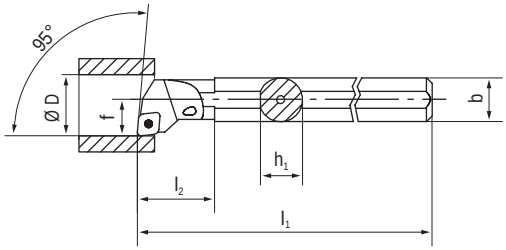


SCLC… (95°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation												Schneiden Plaquettes Inserts
L	N	R			h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77…
■			A08F SCLCL 06	■	7.6		8	80	17			5	11		CC..0602..
			A10H SCLCL 06	■	9.5		10	100	19			7	13		CC..0602..
			A12K SCLCL 06	■	11.5		12	125	22			9	16		CC..0602..
			A16M SCLCL 09	■	15		16	150	29			11	20		CC..09T3..
			A20Q SCLCL 09	■	18.5		20	180	32			13	25		CC..09T3..
			A25R SCLCL 09	■	23		25	200	36			17	32		CC..09T3..
		■	A08F SCLCR 06	■	7.6		8	80	17			5	11		CC..0602..
			A10H SCLCR 06	■	9.5		10	100	19			7	13		CC..0602..
			A12K SCLCR 06	■	11.5		12	125	22			9	16		CC..0602..
			A16M SCLCR 09	■	15		16	150	29			11	20		CC..09T3..
			A20Q SCLCR 09	■	18.5		20	180	32			13	25		CC..09T3..
			A25R SCLCR 09	■	23		25	200	36			17	32		CC..09T3..

■ Standard
□ Semi Standard



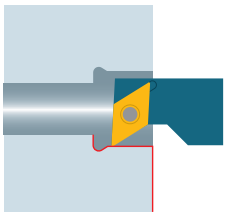


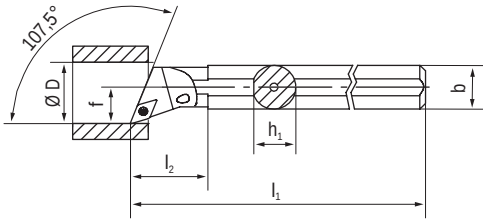
SCLC… (95°)*

Ausführung Exécution Execution			Bezeichnung Désignation Designation												Schneiden Plaquettes Inserts
L	N	R			h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77…
			E08H SCLCL 06	■	7.6		8	100	–			6	11		CC..0602..
			E10K SCLCL 06	■	9		10	125	10			7	13		CC..0602..
			E12Q SCLCL 06	■	11.5		12	180	10			9	16		CC..0602..
			E16R SCLCL 09	■	15		16	200	16			11	20		CC..09T3..
			E20S SCLCL 09	■	18.5		20	250	16			13	25		CC..09T3..
			E25T SCLCL 09	■	23		25	300	16			17	32		CC..09T3..
			E08H SCLCR 06	■	7.6		8	100	–			6	11		CC..0602..
			E10K SCLCR 06	■	9		10	125	10			7	13		CC..0602..
			E12Q SCLCR 06	■	11.5		12	180	10			9	16		CC..0602..
			E16R SCLCR 09	■	15		16	200	16			11	20		CC..09T3..
			E20S SCLCR 09	■	18.5		20	250	16			13	25		CC..09T3..
			E25T SCLCR 09	■	23		25	300	16			17	32		CC..09T3..

* mit Vollhartmetallschaft
avec queue en carbure
with carbide shank

■ Standard
□ Semi Standard

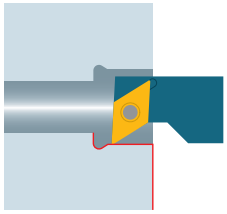




SDQC... (107.5°)

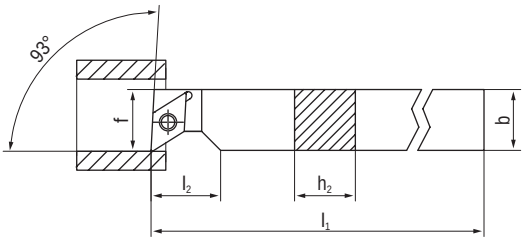
Ausführung Exécution Execution			Bezeichnung Désignation Designation		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	Schneiden Plaquettes Inserts
L	N	R												77...
			A12K SDQCL 07	■	11.5		12	125	22			9	16	DC..0702..
			A16M SDQCL 07	■	15		16	150	29			11	20	DC..0702..
			A20Q SDQCL 07	■	18.5		20	180	32			13	25	DC..0702..
			A25R SDQCL 11	■	23		25	200	36			17	32	DC..11T3..
			A12K SDQCR 07	■	11.5		12	125	22			9	16	DC..0702..
			A16M SDQCR 07	■	15		16	150	29			11	20	DC..0702..
			A20Q SDQCR 07	■	18.5		20	180	32			13	25	DC..0702..
			A25R SDQCR 11	■	23		25	200	36			17	32	DC..11T3..

■ Standard
□ Semi Standard

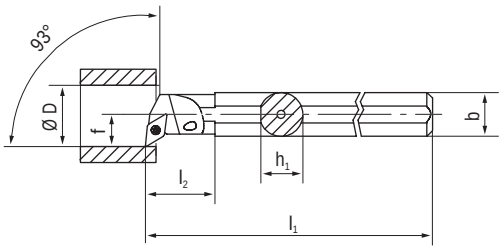


SDUC... (93°)

für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



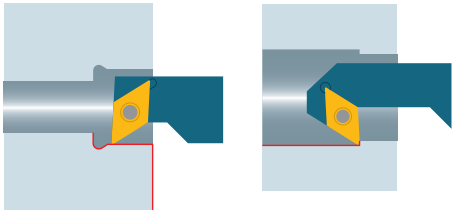
Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D_{min}		77...
			SDUCL 1212 XF07 ■		12	12	80	12			12.2	16		DC..0702..
			SDUCL 1616 XH07 ■		16	16	100	12			16.2	16		DC..0702..
			SDUCR 1212 XF07 ■		12	12	80	12			12.2	16		DC..0702..
			SDUCR 1616 XH07 ■		16	16	100	12			16.2	16		DC..0702..

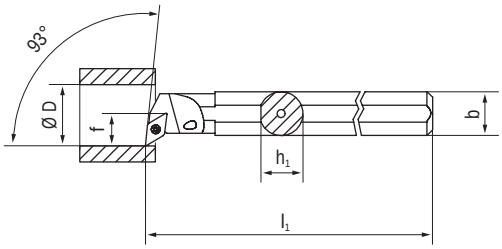


SDUC... (93°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77...
			A12K SDUCL 07 ■	11.5		12	125	22			9	16		DC..0702..
			A16M SDUCL 07 ■	15		16	150	29			11	20		DC..0702..
			A20Q SDUCL 07 ■	18.5		20	180	32			13	25		DC..0702..
			A20Q SDUCL 11 ■	18.5		20	180	32			13	25		DC..11T3..
			A25R SDUCL 11 ■	23		25	200	36			17	32		DC..11T3..
			A12K SDUCR 07 ■	11.5		12	125	22			9	16		DC..0702..
			A16M SDUCR 07 ■	15		16	150	29			11	20		DC..0702..
			A20Q SDUCR 07 ■	18.5		20	180	32			13	25		DC..0702..
			A20Q SDUCR 11 ■	18.5		20	180	32			13	25		DC..11T3..
			A25R SDUCR 11 ■	23		25	200	36			17	32		DC..11T3..

■ Standard
□ Semi Standard

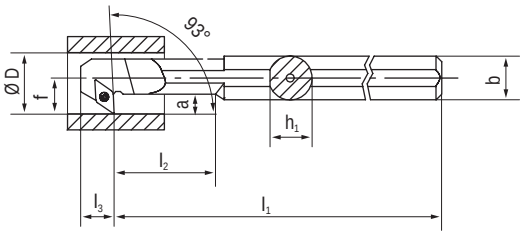




SDUC… (93°)*

Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R			h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	77…
			E12Q SDUCL 07	■	11.5		12	180				9	16	DC..0702..
			E16R SDUCL 07	■	15		16	200				11	20	DC..0702..
			E20S SDUCL 11	■	18.5		20	250				13	25	DC..1103..
			E25T SDUCL 11	■	23		25	300				17	32	DC..1103..
			E12Q SDUCR 07	■	11.5		12	180				9	16	DC..0702..
			E16R SDUCR 07	■	15		16	200				11	20	DC..0702..
			E20S SDUCR 11	■	18.5		20	250				13	25	DC..1103..
			E25T SDUCR 11	■	23		25	300				17	32	DC..1103..

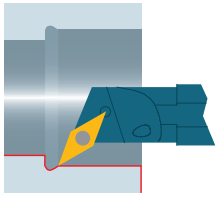
* mit Vollhartmetallschaft
avec queue en carbure
with carbide shank

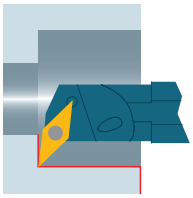


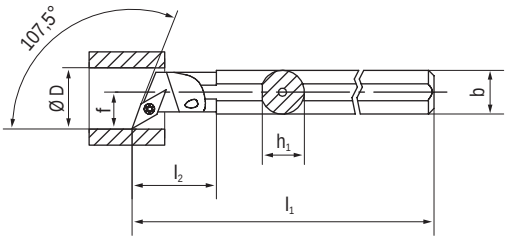
SDXC… (93°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R			h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	77…
			A12K SDXCL 07	■	11.5		12	125	24	12	4	9	16	DC..0702..
			A16M SDXCL 07	■	15		16	150	36	12	4	11	20	DC..0702..
			A20Q SDXCL 11	■	18.5		20	180	40	16.5	6.2	13	25	DC..11T3..
			A25R SDXCL 11	■	23		25	200	50	16.8	9.2	17	32	DC..11T3..
			A12K SDXCR 07	■	11.5		12	125	24	12	4	9	16	DC..0702..
			A16M SDXCR 07	■	15		16	150	36	12	4	11	20	DC..0702..
			A20Q SDXCR 11	■	18.5		20	180	40	16.5	6.2	13	25	DC..11T3..
			A25R SDXCR 11	■	23		25	200	50	16.8	9.2	17	32	DC..11T3..

■ Standard
□ Semi Standard



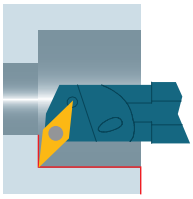


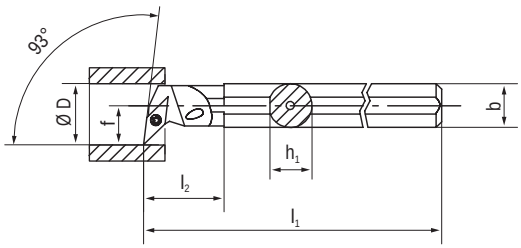


SVQC… (107.5°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77…
			A16M SVQCL 11 ■	15		16	150	29			11	20		VC..1103..
			A20Q SVQCL 11 ■	18.5		20	180	32			13	25		VC..1103..
			A25R SVQCL 11 ■	23		25	200	36			17	32		VC..1103..
			A16M SVQCR 11 ■	15		16	150	29			11	20		VC..1103..
			A20Q SVQCR 11 ■	18.5		20	180	32			13	25		VC..1103..
			A25R SVQCR 11 ■	23		25	200	36			17	32		VC..1103..

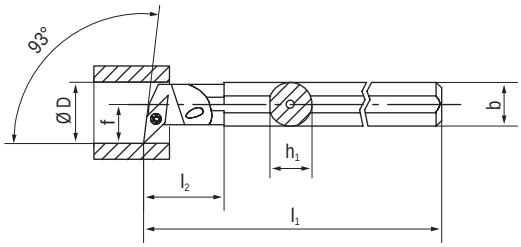
■ Standard
□ Semi Standard





SVUC... (93°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R			h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	77...
			A16M SVUCL 11	■	15		16	150	29			11	20	VC..1103..
			A20Q SVUCL 11	■	18.5		20	180	32			13	25	VC..1103..
			A25R SVUCL 11	■	23		25	200	36			17	32	VC..1103..
			A16M SVUCR 11	■	15		16	150	29			11	20	VC..1103..
			A20Q SVUCR 11	■	18.5		20	180	32			13	25	VC..1103..
			A25R SVUCR 11	■	23		25	200	36			17	32	VC..1103..



SVUC... (93°)*

Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R			h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D	77...
			E16R SVUCL 11	■	15		16	200	16.5			11	20	VC..1103..
			E20S SVUCL 11	■	18.5		20	250	20.5			13	25	VC..1103..
			E25T SVUCL 11	■	23		25	300	25.5			17	32	VC..1103..
			E16R SVUCR 11	■	15		16	200	16.5			11	20	VC..1103..
			E20S SVUCR 11	■	18.5		20	250	20.5			13	25	VC..1103..
			E25T SVUCR 11	■	23		25	300	25.5			17	32	VC..1103..

* mit Vollhartmetallschaft
avec queue en carbure
with carbide shank

■ Standard
□ Semi Standard

SC… (Klemmhalter | porte-outils | tool holders)

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 25060 T08	SC... 06	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 35110 T15	SC... 09	Torxschraube/vis torx/torx screw	M3.5x11 T15
	MSP 45120 T15	SC... 12	Torxschraube/vis torx/torx screw	M4.5x12 T15
	MSP TX08	SC... 06	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX15	SC... 09	Torxschlüssel/tournevis torx/torx screwdriver	T15
	MSP TX15	SC... 12	Torxschlüssel/tournevis torx /torx screwdriver	T15
	MSP TX08 D	SC... 06	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX15 D	SC... 09	Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T15
	MSP TX15 D	SC... 12	Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T15

… SC… (Bohrstangen | barre d'alésage | boring bar)

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 25050 T08	A08F SCFC... 06	Torxschraube/vis torx/torx screw	M2.5x5 T08
	MSP 25050 T08	A08F SCLC... 06	Torxschraube/vis torx/torx screw	M2.5x5 T08
	MSP 25050 T08	A10H SCFC... 06	Torxschraube/vis torx/torx screw	M2.5x5 T08
	MSP 25050 T08	A10H SCLC... 06	Torxschraube/vis torx/torx screw	M2.5x5 T08
	MSP 25050 T08	A12K SCFC... 06	Torxschraube/vis torx/torx screw	M2.5x5 T08
	MSP 25050 T08	A12K SCLC... 06	Torxschraube/vis torx/torx screw	M2.5x5 T08
	MSP 35072 T15	A16M SCLC... 09	Torxschraube/vis torx/torx screw	M3.5x7.2 T15
	MSP 35086 T15	A20Q SCLC... 09	Torxschraube/vis torx/torx screw	M3.5x8.6 T15
	MSP 35086 T15	A25R SCLC... 09	Torxschraube/vis torx/torx screw	M3.5x8.6 T15
	MSP 25050 T08	E08H SCLC... 06	Torxschraube/vis torx/torx screw	M2.5x5 T08
	MSP 25050 T08	E10K SCLC... 06	Torxschraube/vis torx/torx screw	M2.5x5 T08
	MSP 25050 T08	E12Q SCLC... 06	Torxschraube/vis torx/torx screw	M2.5x5 T08
	MSP 35072 T15	E16R SCLC... 09	Torxschraube/vis torx/torx screw	M3.5x7.2 T15
	MSP 35086 T15	E20S SCLC... 09	Torxschraube/vis torx/torx screw	M3.5x8.6 T15
	MSP 35110 T15	E25T SCLC... 09	Torxschraube/vis torx/torx screw	M3.5x11 T15
	MSP TX08	A... SCFC... 06	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX08	A... SCLC... 06	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX15	A... SCLC... 09	Torxschlüssel/tournevis torx/torx screwdriver	T15
	MSP TX08	E... SCLC... 06	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX15	E... SCLC... 09	Torxschlüssel/tournevis torx/torx screwdriver	T15
	MSP TX08 D	A... SCFC... 06	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX08 D	A... SCLC... 06	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX15 D	A... SCLC... 09	Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T15
	MSP TX08 D	E... SCLC... 06	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX15 D	E... SCLC... 09	Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T15

SD… (Klemmhalter | porte-outils | tool holders)

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 25060 T08	SD... 07	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 40110 TP15	SDJN... 11	Torxschraube/vis torx/torx screw TORX PLUS®	M4x11 TP15
	MSP 35110 T15	SD... 11	Torxschraube/vis torx/torx screw	M3.5x11 T15
	MSP TX08	SD... 07	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX15	SD... 11	Torxschlüssel/tournevis torx/torx screwdriver	T15
	MSP TXP15	SDJN... 11	Torxschlüssel/tournevis torx/torx screwdriver TORX PLUS®	TP15
	MSP TX08 D	SD... 07	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX15 D	SD... 11	Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T15

… SD… (Bohrstangen | barre d'alésage | boring bar)

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 25060 T08	A12K SDQC... 07	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 25060 T08	A12K SDUC... 07	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 25060 T08	A12K SDXC... 07	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 25060 T08	A16M SDQC... 07	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 25060 T08	A16M SDUC... 07	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 25060 T08	A16M SDXC... 07	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 25060 T08	A20Q SDQC... 07	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 25060 T08	A20Q SDUC... 07	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 35086 T15	A20Q SDUC... 11	Torxschraube/vis torx/torx screw	M3.5x8.6 T15
	MSP 35086 T15	A20Q SDXC... 11	Torxschraube/vis torx/torx screw	M3.5x8.6 T15
	MSP 35086 T15	A25R SDQC... 11	Torxschraube/vis torx/torx screw	M3.5x8.6 T15
	MSP 35086 T15	A25R SDUC... 11	Torxschraube/vis torx/torx screw	M3.5x8.6 T15
	MSP 35086 T15	A25R SDXC... 11	Torxschraube/vis torx/torx screw	M3.5x8.6 T15
	MSP 25060 T08	E12Q SDUC... 07	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 25060 T08	E16R SDUC... 07	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 35086 T15	E20S SDUC... 11	Torxschraube/vis torx/torx screw	M3.5x8.6 T15
	MSP 35110 T15	E25T SDUC... 11	Torxschraube/vis torx/torx screw	M3.5x11 T15
	MSP TX08	A... SD... 07	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX15	A... SD... 11	Torxschlüssel/tournevis torx/torx screwdriver	T15
	MSP TX08	E... SD... 07	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX15	E... SD... 11	Torxschlüssel/tournevis torx/torx screwdriver	T15
	MSP TX08 D	A... SD... 07	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX15 D	A... SD... 11	Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T15
	MSP TX08 D	E... SD... 07	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX15 D	E... SD... 11	Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T15

SV… (Klemmhalter | porte-outils | tool holders)

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 25060 T08	SV... 11	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 35110 T15	SV... 16	Torxschraube/vis torx/torx screw	M3.5x11 T15
	MSP TX08	SV... 11	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX15	SV... 16	Torxschlüssel/tournevis torx/torx screwdriver	T15
	MSP TX08 D	SV... 11	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX15 D	SV... 16	Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T15

… SV… (Bohrstangen | barre d'alésage | boring bar)

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 25060 T08	A... SVQC... 11	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 35110 T15	A... SVQC... 16	Torxschraube/vis torx/torx screw	M3.5x11 T15
	MSP 25060 T08	A... SVUC... 11	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP 25060 T08	E... SVUC... 11	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP TX08	A... SV... 11	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX08	E... SV... 11	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX15	A... SV... 16	Torxschlüssel/tournevis torx/torx screwdriver	T15
	MSP TX08 D	A... SV... 11	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX08 D	E... SV... 11	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX15 D	A... SV... 16	Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T15

	Werkstoffe | Matières | Materials			
	Stahl unlegiert Acier non allié Steel unalloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium
Härte (HB) Dureté (HB) Hardness value (HB)	125–300	180–250	200–350	–
Kategorie Catégrie Category	I	II	III	IV

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm **Avances (f) en mm/tr et profondeurs de passes (ap) en mm** **Feed (f) in mm/rev and depths of cut (ap) in mm**

▼				
f	0.15–0.3	0.15–0.3	0.15–0.3	0.15–0.3
ap	2.0–4.0	2.0–4.0	2.0–4.0	2.0–4.0
▼▼				
f	0.05–0.2	0.05–0.2	0.05–0.2	0.05–0.2
ap	1.0–2.0	1.0–2.0	1.0–2.0	1.0–2.0
▼▼▼				
f	0.01–0.1	0.01–0.1	0.01–0.1	0.01–0.1
ap	0.05–1.0	0.05–1.0	0.05–1.0	0.05–1.0

Schnittgeschwindigkeiten (v_c) in m/min **Vitesses de coupe (v_c) en m/min** **Cutting speed (v_c) in m/min**

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	40–60	50–70	60–80
UHM 10 SX	–	80–160	100–180	–	70–130	90–150	–	70–110	90–130	–	40–60	50–70
UHM 10 MZ	180–220	220–330	250–450	150–220	170–280	250–360	120–250	150–250	120–200	–	–	–
UHM 10 HX	–	80–160	100–180	–	70–130	90–150	–	60–100	90–110	–	40–60	50–70
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	80–150	100–170	–	70–120	80–140	–	50–90	80–100	–	40–50	50–60
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	120–180	180–230	200–270	110–150	120–190	180–250	90–130	100–160	140–200	–	–	–
UHM 20 HZ	–	130–200	190–240	–	80–160	160–200	–	80–130	130–170	–	–	–
UHM 30	–	–	–	–	–	–	–	–	–	40–50	50–60	60–70
UHM 30 SX	140–180	180–220	200–260	110–160	120–180	150–220	90–130	110–160	130–180	–	–	–
UHM 30 MZ	120–160	150–200	170–240	90–140	100–160	120–200	60–130	90–140	110–160	–	–	–
UHM 30 HX	–	70–150	80–180	–	60–120	80–140	–	50–90	80–100	–	40–50	50–70
UHM 30 HPX	–	150–200	180–260	–	80–150	120–220	–	80–120	120–180	–	–	–
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	180–300	220–350	–	140–250	180–300	–	140–180	160–200	–	–	–
UCM 10 MZ	–	300–400	350–500	–	250–350	240–300	–	250–320	270–350	–	–	–
UCM 10 HX	–	250–350	300–450	–	200–300	220–380	–	240–300	260–350	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	50–60	60–75	–	40–50	50–60	–	30–40	40–50	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

	Werkstoffe | Matières | Materials			
	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
Härte (HB) Dureté (HB) Hardness value (HB)	180–220	220–330	60–130	–
Kategorie Catégrie Category	V	VI	VII	VIII

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm **Avances (f) en mm/tr et profondeurs de passes (ap) en mm** **Feed (f) in mm/rev and depths of cut (ap) in mm**

▼				
f	0.15–0.3	0.15–0.3	0.15–0.3	0.15–0.3
ap	2.0–4.0	2.0–4.0	2.0–4.0	2.0–4.0
▼▼				
f	0.05–0.2	0.05–0.2	0.05–0.2	0.05–0.2
ap	1.0–2.0	1.0–2.0	1.0–2.0	1.0–2.0
▼▼▼				
f	0.01–0.1	0.01–0.1	0.01–0.1	0.01–0.1
ap	0.05–1.0	0.05–1.0	0.05–1.0	0.05–1.0

Schnittgeschwindigkeiten (v_c) in m/min **Vitesses de coupe (v_c) en m/min** **Cutting speed (v_c) in m/min**

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	200–1500	250–2000	300–2500	200–300	250–400	300–500
UHM 10 SX	–	–	80–140	–	–	40–70	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	80–120	90–140	–	40–60	50–70	–	–	–	–	–	–
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	70–140	80–150	–	40–70	40–80	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	100–140	140–180	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	200–1000	250–1200	300–1500	180–250	220–350	250–400
UHM 30 SX	–	100–150	130–170	–	50–70	60–80	–	–	–	–	–	–
UHM 30 MZ	80–130	100–140	110–160	40–60	50–70	50–80	–	–	–	–	–	–
UHM 30 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HPX	–	80–180	105–200	–	50–120	70–150	–	–	–	–	–	–
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	140–180	150–220	–	70–90	70–110	–	–	–	–	–	–
UCM 10 MZ	–	180–250	250–320	–	90–120	120–160	–	–	–	–	–	–
UCM 10 HX	–	170–230	220–280	–	80–110	110–140	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	30–50	40–60	–	15–25	20–30	–	120–200	150–200	–	80–150	100–180
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	300–2000	300–3000	–	250–1000	300–1500

Multidec®-Top, eine Weiterentwicklung von «ISO», ist das optimale System zum Automaten- und Präzisionsdrehen. Alle Wendeschneidplatten verfügen über zwei Schneiden und sind leicht auswechselbar. Zugleich bietet Multidec®-Top dem Automatendreher eine stabile scharfe Schneidenecke mit einem maximalen Radius von 0.00, 0.08 bzw 0.2 mm. Für die Bearbeitung von Werkstoffen, die schwierig zu zerspanen sind, stehen beschichtete und unbeschichtete Hartmetallsorten aus Feinkornsubstraten und Cermet zur Verfügung. Die Form der gesinterten Spanleitstufe erlaubt eine ideale Spanbeherrschung beim Längs-, Plan- und Rückwärtsdrehen. Ein breites Programm von hochvergüteten und geschliffenen Haltern für konventionelle und speziell für Langdrehauto maten mit Schaftquerschnitten von 8 bis 20 mm rundet Multidec®-Top ab.

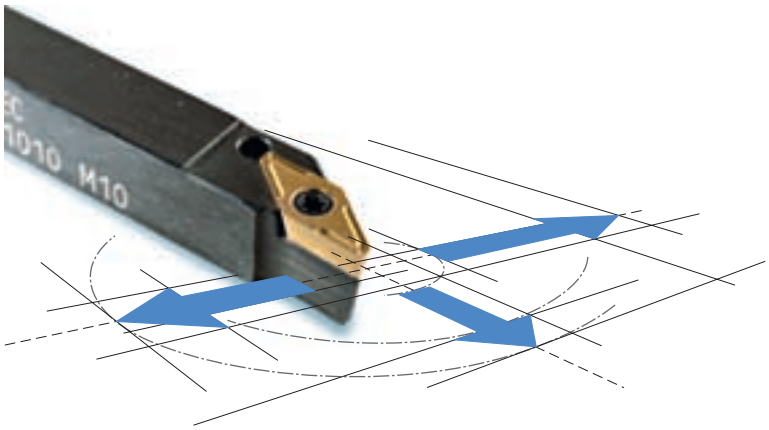
Multidec®-Top, est la continuité de la gamme «ISO». Une plaquette optimale pour le décolletage et la petite mécanique. Toutes les plaquettes ont deux arêtes de coupe vives et sont facilement interchangeables. De plus ce programme propose à son utilisateur des rayons de 0.00, 0.08 et 0.2 mm. Pour des matériaux difficiles à usiner nous proposons différents revêtements de types PVD pour nos différents carbures et cermets. La forme du brise copeaux fritté permet de maîtriser parfaitement le copeau dans les différentes opérations de tournage.
Une vaste gamme de porte-outils pour la poupée mobile ou alors pour les petits tours d'atelier, sont disponibles en grandeur 8 x 8 à 20 x 20 mm.

Multidec®-Top is a derivative of Multidec®-ISO and is ideal for automatic lathe-machining and precision-turning.
All inserts consist of two cutting edges and are easily indexed or changed. At the same time Multidec®-Top provides a very stable and sharp cutting edge with a radius of 0.00, 0.08 and 0.2 mm. Innovative solutions of coated and uncoated inserts made of carbide (K10–P40) and cermets have been designed for cutting of very difficult materials. A large choice of sintered and ground inserts with a large variety of sintered chip grooves are available for all mechanical cutting conditions. A large range of tempered, and ground precision holders are available with shank sizes between 8mm and 20mm. Specialized holders for use with CNC Swiss Type automatic lathes complete the wide range of choices.

Vorteile
– Weiterentwicklung des ISO-Programms
– Drehen in 3 Richtungen
– Alle Schneiden leicht auswechselbar
– Scharfe positive Schneiden mit 11° Freiwinkel
– Kleine Eckenradien (0, 0.08 und 0.20 mm)
– Je nach Bearbeitung gut abgestimmte
  · Hartmetallsorten (Feinstkornsubstrate)
  · beschichtet und unbeschichtet
– Ideale Spanbeherrschung
– Spezielle Halter für Langdrehautomaten
  (Querschnitte 8 × 8 bis 20 × 20 mm)

Avantages
– Continuité de la gamme «ISO»
– Tournage dans trois directions
– Toutes les plaquettes sont facilement interchangeables
– Arêtes de coupe vives avec 11° angle de dépouille
– Petits rayons de pointe (0, 0.08 et 0.20 mm)
– Grand choix de nuances
  · nuances en carbure (micro grains)
  · revêtues et non revêtues
– Parfaite maîtrise du coupeau
– Spécifique pour machines à poupée mobile
  (porte-outils 8 × 8 à 20 × 20 mm)

Advantages
– Derivative of Multidec®-ISO
– Turning into three directions
– Each insert easy to replace
– Sharp positive cutting edges with 11° clearance angle
– Small corner radius (0, 0.08 and 0.20 mm)
– Big choice of grades
  · carbide (fine grain grade)
  · with or without coating
– Good chip breaking
– Especially designed holders for CNC
– Swiss-type automatic lathes
  (holder sizes 8 × 8 to 20 × 20 mm)



ANWENDUNGS-ÜBERSICHT AUSSENDREHEN
APPLICATIONS POUR LE TOURNAGE EXTÉRIEUR
APPLICATION OD TURNING

Multidec®-TOP

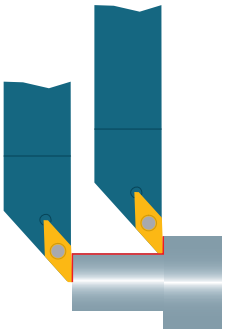
Schneiden siehe Seite 114… Halter siehe Seite 115…	Plaquettes voir page 114… Porte-outils voir page 115…	Inserts see page 114… Holders see page 115…

Alle Abbildungen sind in rechter Ausführung dargestellt ausser SVXP…

Toutes les illustrations représentent des exécutions à droite sans SVXP…

All illustrations show right hand design except the SVXP…

Längs- und Plandrehen
Tournage et dressage
Turning and facing



Vornedrehen
Tournage avant
Front turning

Hintendrehen
Tournage arrière
Back turning

ANWENDUNGS-ÜBERSICHT INNENDREHEN
APPLICATIONS POUR LE TOURNAGE INTÉRIEUR
APPLICATION ID TURNING

Multidec®-TOP

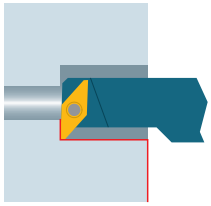
Schneiden siehe Seite 114… Halter siehe Seite 115…	Plaquettes voir page 114… Porte-outils voir page 115…	Inserts see page 114… Holders see page 115…

Alle Abbildungen sind in rechter Ausführung dargestellt.

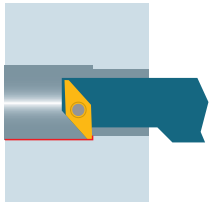
Toutes les illustrations représentent des exécutions à droite.

All illustrations show right hand design.

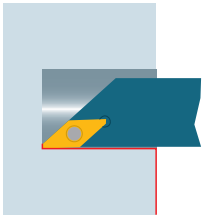
Längs- und Plandrehen
Tournage et dressage
Turning and facing

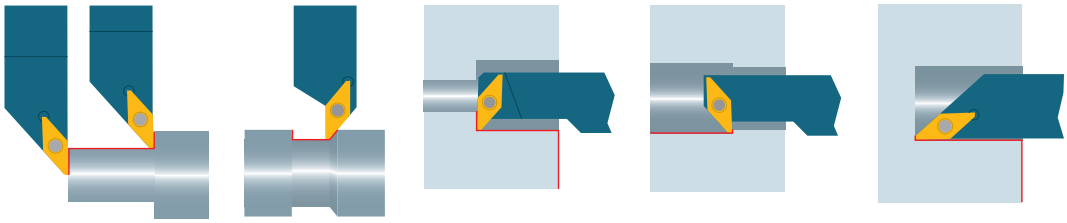


Hintendrehen
Tournage arrière
Back turning



Längsdrehen
Tournage
Turning





-TOP

VPGT...

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● – –	● ● ● ○	● ● – –	● ● ● –					115...
L	N	R		UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UHM 20 HPX	▼	▼▼	▼▼▼	r	
			VPGT 1003008 EL TOP	■	□		■					●	0.08	SV... ...
			VPGT 100302 EL TOP			■						●	0.20	SV... ...
			VPGT 1003ZZ FL TOP	■	□		■					●	0.00	SV... ...
			VPGT 1003008 FL TOP	■	□		■					●	0.08	SV... ...
			VPGT 100302 FL TOP	■	□		■					●	0.20	SV... ...
			VPGT 1003008 ER TOP	■	□		■					●	0.08	SV... ...
			VPGT 100302 ER TOP			■						●	0.20	SV... ...
			VPGT 1003003 FR TOP	■			■					●	0.03	SV... ...
			VPGT 1003ZZ FR TOP	■	□		■					●	0.00	SV... ...
			VPGT 1003008 FR TOP	■	□		■					●	0.08	SV... ...
			VPGT 100302 FR TOP	■	□		■					●	0.20	SV... ...

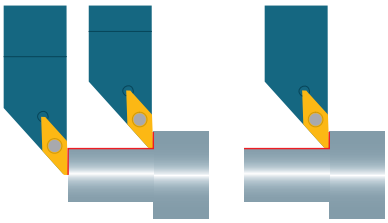
-TOP

VPET...

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						Bearbeitungsart Etat de surface désiré Machining method				Halter Porte-outil Holder
				○ ○ ○ ●	● ○ – ○	● ● – –	● ● ● ○	● ● – –	● ● ● –					115...
L	N	R		UHM 30	UHM 30 SX	UHM 30 MZ	UHM 30 HX	UCM 10	UHM 20 HPX	▼	▼▼	▼▼▼	r	
			VPET 1003ZZ FL TOP	■	□		■					●	0.00	SV... ...
			VPET 1003008 FL TOP	■	□		■					●	0.08	SV... ...
			VPET 100302 FL TOP	■	□		■					●	0.20	SV... ...
			VPET 1003003 FR TOP	■			■					●	0.03	SV... ...
			VPET 1003ZZ FR TOP	■	□		■					●	0.00	SV... ...
			VPET 1003008 FR TOP	■	□		■					●	0.08	SV... ...
			VPET 100302 FR TOP	■	□		■					●	0.20	SV... ...

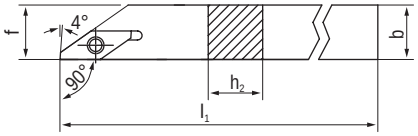
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard



SVAP… (90°)

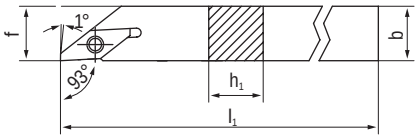
für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



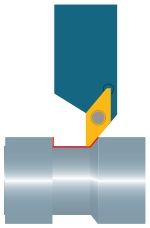
Ausführung Exécution Execution			Bezeichnung Désignation Designation		b	h_2	l_2	f	Schneiden Plaquettes Inserts
L	N	R							114…
			SVAPL 0707 H10	□	7	7	100	8	VP..1003..
			SVAPL 0807 H10	□	8	7	100	8	VP..1003..
			SVAPL 0808 H10	■	8	8	100	8	VP..1003..
			SVAPL 1010 H10	■	10	10	100	10	VP..1003..
			SVAPL 1212 H10	■	12	12	100	12	VP..1003..
			SVAPR 0707 H10	□	7	7	100	8	VP..1003..
			SVAPR 0807 H10	□	8	7	100	8	VP..1003..
			SVAPR 0808 H10	■	8	8	100	8	VP..1003..
			SVAPR 1010 H10	■	10	10	100	10	VP..1003..
			SVAPR 1212 H10	■	12	12	100	12	VP..1003..
			SVAPR 3/8" H10	□	9.525	9.525	100	9.525	VP..1003..
			SVAPR 1/2" H10	□	12.7	12.7	100	12.7	VP..1003..

SVJP… (93°)

für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes



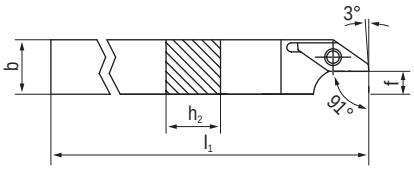
Ausführung Exécution Execution			Bezeichnung Désignation Designation		b	h_2	l_2	f	Schneiden Plaquettes Inserts
L	N	R							114…
			SVJPL 0707 H10	□	7	7	100	7	VP..1003..
			SVJPL 0807 H10	□	8	7	100	8	VP..1003..
			SVJPL 0808 H10	■	8	8	100	10	VP..1003..
			SVJPL 1010 H10	■	10	10	100	10	VP..1003..
			SVJPL 1212 H10	■	12	12	100	12	VP..1003..
			SVJPL 1616 K10	■	16	16	125	16	VP..1003..
			SVJPL 2020 K10	■	20	20	125	20	VP..1003..
			SVJPR 0707 H10	□	7	7	100	7	VP..1003..
			SVJPR 0807 H10	□	8	7	100	8	VP..1003..
			SVJPR 0808 H10	■	8	8	100	10	VP..1003..
			SVJPR 1010 H10	■	10	10	100	10	VP..1003..
			SVJPR 1212 H10	■	12	12	100	12	VP..1003..
			SVJPR 1616 K10	■	16	16	125	16	VP..1003..
			SVJPR 2020 K10	■	20	20	125	20	VP..1003..
			SVJPR 3/8" H10	□	9.525	9.525	100	9.525	VP..1003..
			SVJPR 1/2" H10	□	12.7	12.7	100	12.7	VP..1003..



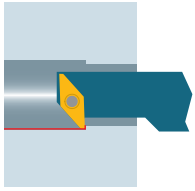
Achtung | Attention | Attention
Abbildungen linke Version.
Les illustrations à gauche.
Illustrations left version.

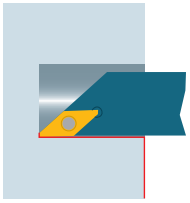
SVXP... (91°)

für Langdrehautomaten
pour machines à poupée mobile
for Swiss-Type automatic lathes

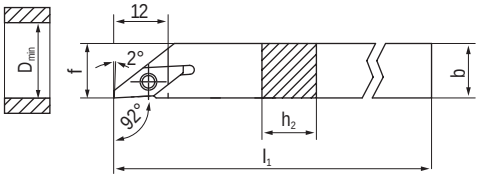


Ausführung Exécution Execution			Bezeichnung Désignation Designation		b	h_2	l_2	f	Schneiden Plaquettes Inserts
L	N	R							114...
			SVXPL 0808 H10	■	08	08	100	1	VP..1003..
			SVXPL 1010 H10	■	10	10	100	3	VP..1003..
			SVXPL 1212 H10	■	12	12	100	5	VP..1003..
			SVXPL 1616 K10	■	16	16	125	9	VP..1003..
			SVXPL 2020 K10	■	20	20	125	13	VP..1003..
			SVXPR 0808 H10	■	08	08	100	1	VP..1003..
			SVXPR 1010 H10	■	10	10	100	3	VP..1003..
			SVXPR 1212 H10	■	12	12	100	5	VP..1003..
			SVXPR 1616 K10	■	16	16	125	9	VP..1003..
			SVXPR 2020 K10	■	20	20	125	13	VP..1003..



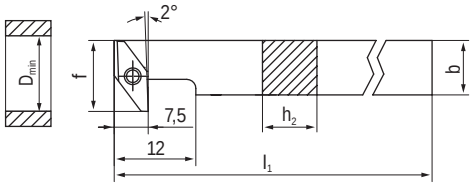


SVJP... (92°)

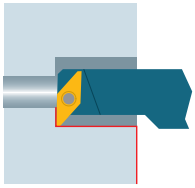


Ausführung Exécution Execution			Bezeichnung Désignation Designation							Schneiden Plaquettes Inserts
L	N	R			D_{min}	b	h_2	l_2	f	114...
			SVJPL 1212 XF10	■	16	12	12	80	12.2	VP..1003..
			SVJPL 1616 XH10	■	16	16	16	100	16.2	VP..1003..
			SVJPR 1212 XF10	■	16	12	12	80	12.2	VP..1003..
			SVJPR 1616 XH10	■	16	16	16	100	16.2	VP..1003..

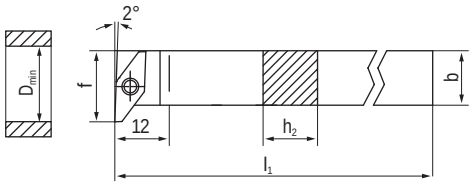
SVQP... (92°)



Ausführung Exécution Execution			Bezeichnung Désignation Designation							Schneiden Plaquettes Inserts
L	N	R			D_{min}	b	h_2	l_2	f	114...
			SVQPL 1212 XF10	■	16	12	12	80	15.7	VP..1003..
			SVQPL 1616 XH10	■	16	16	16	100	15.7	VP..1003..
			SVQPR 1212 XF10	■	16	12	12	80	15.7	VP..1003..
			SVQPR 1616 XH10	■	16	16	16	100	15.7	VP..1003..



Achtung | Attention | Attention
Rechter Halter benötigt linke Schneide!
Outil à droite avec plaquette à gauche!
Right hand holder needs left hand insert!



SVUP… (92°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation							Schneiden Plaquettes Inserts
L	N	R			D_{min}	b	h_2	l_2	f	114…
			SVUPL 1212 XF10	■	16	12	12	80	15.7	VP..1003.. R
			SVUPL 1616 XH10	■	16	16	16	100	15.7	VP..1003.. R
			SVUPR 1212 XF10	■	16	12	12	80	15.7	VP..1003.. L
			SVUPR 1616 XH10	■	16	16	16	100	15.7	VP..1003.. L

SV… (Klemmhalter | porte-outils | tool holders)

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 25060 T08	SV... 10	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP TX08	SV... 10	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX08 D	SV... 10	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08

	Werkstoffe | Matières | Materials			
	Stahl unlegiert Acier non allié Steel unalloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium
Härte (HB) Dureté (HB) Hardness value (HB)	125–300	180–250	200–350	–
Kategorie Catégrie Category	I	II	III	IV

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm **Avances (f) en mm/tr et profondeurs de passes (ap) en mm** **Feed (f) in mm/rev and depths of cut (ap) in mm**

▼				
f	0.15–0.3	0.15–0.3	0.15–0.3	0.15–0.3
ap	2.0–4.0	2.0–4.0	2.0–4.0	2.0–4.0
▼▼				
f	0.05–0.2	0.05–0.2	0.05–0.2	0.05–0.2
ap	1.0–2.0	1.0–2.0	1.0–2.0	1.0–2.0
▼▼▼				
f	0.01–0.1	0.01–0.1	0.01–0.1	0.01–0.1
ap	0.05–1.0	0.05–1.0	0.05–1.0	0.05–1.0

Schnittgeschwindigkeiten (v_c) in m/min **Vitesses de coupe (v_c) en m/min** **Cutting speed (v_c) in m/min**

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	40–60	50–70	60–80
UHM 10 SX	–	80–160	100–180	–	70–130	90–150	–	70–110	90–130	–	40–60	50–70
UHM 10 MZ	180–220	220–330	250–450	150–220	170–280	250–360	120–250	150–250	120–200	–	–	–
UHM 10 HX	–	80–160	100–180	–	70–130	90–150	–	60–100	90–110	–	40–60	50–70
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	80–150	100–170	–	70–120	80–140	–	50–90	80–100	–	40–50	50–60
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	120–180	180–230	200–270	110–150	120–190	180–250	90–130	100–160	140–200	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	–	–	–	40–50	50–60	60–70
UHM 30 SX	140–180	180–220	200–260	110–160	120–180	150–220	90–130	110–160	130–180	–	–	–
UHM 30 MZ	120–160	150–200	170–240	90–140	100–160	120–200	60–130	90–140	110–160	–	–	–
UHM 30 HX	–	70–150	80–180	–	60–120	80–140	–	50–90	80–100	–	40–50	50–70
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	180–300	220–350	–	140–250	180–300	–	140–180	160–200	–	–	–
UCM 10 MZ	–	300–400	350–500	–	250–350	240–300	–	250–320	270–350	–	–	–
UCM 10 HX	–	250–350	300–450	–	200–300	220–380	–	240–300	260–350	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	50–60	60–75	–	40–50	50–60	–	30–40	40–50	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

	Werkstoffe | Matières | Materials			
	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
Härte (HB) Dureté (HB) Hardness value (HB)	180–220	220–330	60–130	–
Kategorie Catégrie Category	V	VI	VII	VIII

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm **Avances (f) en mm/tr et profondeurs de passes (ap) en mm** **Feed (f) in mm/rev and depths of cut (ap) in mm**

▼				
f	0.15–0.3	0.15–0.3	0.15–0.3	0.15–0.3
ap	2.0–4.0	2.0–4.0	2.0–4.0	2.0–4.0
▼▼				
f	0.05–0.2	0.05–0.2	0.05–0.2	0.05–0.2
ap	1.0–2.0	1.0–2.0	1.0–2.0	1.0–2.0
▼▼▼				
f	0.01–0.1	0.01–0.1	0.01–0.1	0.01–0.1
ap	0.05–1.0	0.05–1.0	0.05–1.0	0.05–1.0

Schnittgeschwindigkeiten (v_c) in m/min **Vitesses de coupe (v_c) en m/min** **Cutting speed (v_c) in m/min**

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	200–1500	250–2000	300–2500	200–300	250–400	300–500
UHM 10 SX	–	–	80–140	–	–	40–70	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	80–120	90–140	–	40–60	50–70	–	–	–	–	–	–
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	70–140	80–150	–	40–70	40–80	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	200–1000	250–1200	300–1500	180–250	220–350	250–400
UHM 30 SX	–	100–150	130–170	–	20–40	30–50	–	–	–	–	–	–
UHM 30 MZ	80–130	100–140	110–160	40–60	20–30	30–50	–	–	–	–	–	–
UHM 30 HX	–	70–180	90–200	–	20–30	20–57	–	–	–	–	–	–
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	140–180	150–220	–	70–90	70–110	–	–	–	–	–	–
UCM 10 MZ	–	180–250	250–320	–	90–120	120–160	–	–	–	–	–	–
UCM 10 HX	–	170–230	220–280	–	80–110	110–140	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	30–50	40–60	–	15–25	20–30	–	120–200	150–200	–	80–150	100–180
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	300–2000	300–3000	–	250–1000	300–1500

MULTIDEC®-BORE

MULTIDEC®-BORE MICRO

Kurzbeschreibung und Anwendungsübersicht
Gamme de produits et applications
Product line and application 125

Schneiden
Grains
Inserts 129

Halter
Porte-outils
Holders 142

Ersatzteile
Pièces de rechange
Spare parts 144

Schnittdaten
Données de coupe
Cutting specification 146

MULTIDEC®-EASY BORE

Kurzbeschreibung und Anwendungsübersicht
Gamme de produits et applications
Product line and application 149

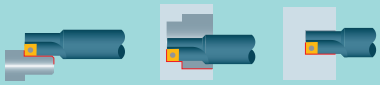
Schneiden
Plaquettes
Inserts 152

Halter
Porte-outils
Holders 178

Ersatzteile
Pièces de rechange
Spare parts 179

Schnittdaten
Données de coupe
Cutting specification 180

MULTIDEC®-SUPERBORE

Kurzbeschreibung und Anwendungsübersicht
Gamme de produits et applications
Product line and application

183

Schneiden
Plaquettes
Inserts

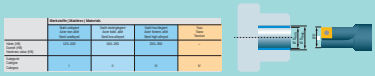
185

Halter
Porte-outils
Holders

187

Ersatzteile
Pièces de rechange
Spare parts

189

Schnittdaten und Anwendungsempfehlungen
Données de coupe et recommandations
Cutting specification and application recommendation

190

Multidec®-Bore Micro bietet ein breites Programm an Standardschneiden für die Innenbearbeitung im Miniaturbereich (Durchmesser 1.00 bis 8.00 mm). Scharfe Schneiden, kleine Eckenradien und geschliffene Spanleitstufen garantieren optimales Schnittverhalten. Für die Bearbeitung aller gängigen Werkstoffe, auch solcher, die schwierig zu zerspanen sind, stehen verschleissfeste und zugleich zähe Hartmetallsorten (K20F), beschichtet und unbeschichtet, zur Verfügung. Der Werkzeughalter aus hochvergütetem Stahl kann in handelsübliche Spannmittel eingebaut werden. Der Schneidenwechsel erfolgt von Hand und meist auch ohne erneutes Einmessen der axialen und radialen Lage. Für eine noch höhere Stabilität und somit geringere Vibrationen kann eine Powermutter eingesetzt werden, mit der eine noch bessere Fixierung erreicht wird.

Multidec®-Bore Micro, ce qui ce fait de mieux pour l'usinage intérieur pour les diamètres de 1.00 à 8.00 mm. Un très vaste choix de géométries font de cet outillage une référence dans le domaine de la pièce décolletée. Arêtes de coupe vive, petits rayons et brise copeaux affûté garantissent une fonctionnement optimale de la coupe. Pour l'usinage de matières difficiles, la nuance choisie est un carbure super micro grain (K20F), disponible revêtu et non revêtu.
Le porte-outil peut être fixé directement sur la machine et aligné avec les plats de positionnement, ou alors monté en pince de type ER et aligné avec l'outil de réglage spécifique.

Multidec®-Bore Micro provides a wide range of inserts for miniaturized ID-turning (diameter between 1.00 and 8.00 mm). Sharp edges, small radii and ground surfaces guarantee accurate cutting. Multidec-Bore Micro is excellent for machining of common materials as well as exotic alloys.
Bore Micro carbide tools are available with wear resistant coatings as well as uncoated.
The heat-treated tool-holder can be fixed in a usual chuck or ID tool station. The inserts can be replaced by hand without any measuring or adjusting of axial and radial position. The unique clamping nut ensures accurate location of the boring tool and prevents vibration .

Vorteile
- Für die Innenbearbeitung im Miniaturbereich:
  - mit sehr hoher Positioniergenauigkeit
  - interner Kühlmittelzufuhr und
  - kleinstem Innendurchmesser 1 mm
- Wiederholgenauigkeit ±10 µm
- Scharfe Schneiden
- Je nach Bearbeitung verschleissfeste
  - zugleich zähe Hartmetallsorten (K20F)
  - beschichtet und unbeschichtet
- Universalhalter für alle Formen gleicher Baugrösse
- Einmaliges Einrichten des Halters
  - Schneidenwechsel von Hand und
  - ohne erneutes Einrichten

Avantages
- Pour l'usinage intérieur avec des diamètres minimaux:
  - avec une grande précision de positionnement
  - arrosage central et
  - diamètre minimal de 1 mm
- Grande précision de répétitivité (±10 µm)
- Arêtes de coupe vives
- Pour chaque usinage une nuance optimale
  - nuance en carbure (K20F)
  - revêtues et non revêtues
- Porte grain universel pour toutes les géométries de coupe disponible dans la même grandeur
- Etalonnage de l'outil une seule fois
  - changement des outils à la main et
  - sans ré-étalonnage

Advantages
- For internal machining methods with small diameters:
  - high precision of positioning
  - internal cooling system and
  - smallest internal diameter of 1 mm
- High repeat accuracy (±10 µm)
- Sharp cutting edges
- Different coatings are available
- Universal holder for every tool form at the same size
- Set up of holder once
  - changing of inserts by hand and
  - without new set up

Schneiden siehe Seite 129…
Halter siehe Seite 142…

Grains voir page 129…
Porte-outils voir page 142…

Inserts see page 129…
Holders see page 142…

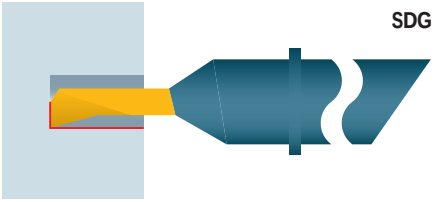
Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung auch lieferbar.

Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

All illustrations show right hand design. Left hand design is also available.

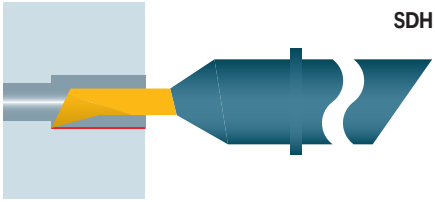
Bohren und Längsdrehen
Perçage et Tournage
Drilling and Turning

SDG



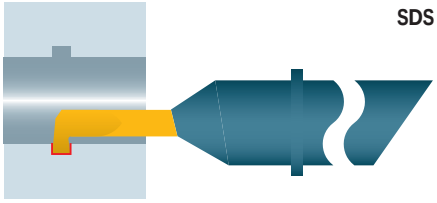
Vornedrehen
Tournage avant
Front turning

SDH



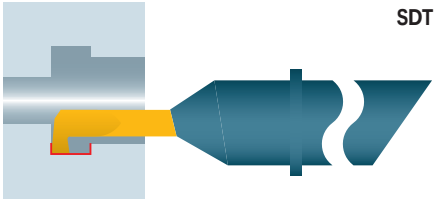
Einstechen
Rainurage
Grooving

SDS



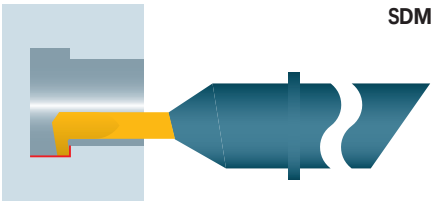
Einstechen und Längsdrehen
Fonçage et Tournage
Grooving and Turning

SDT



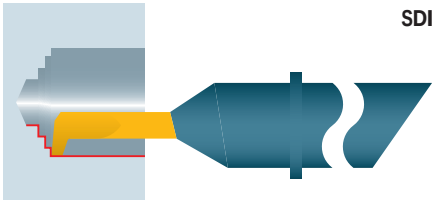
Hintendrehen
Tournage arrière
Back turning

SDM



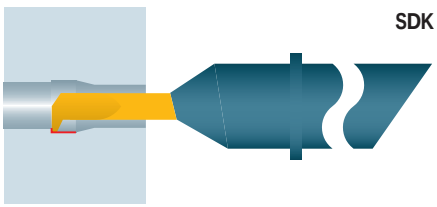
Längs- und Plandrehen
Tournage et dressage
Turning and facing

SDI



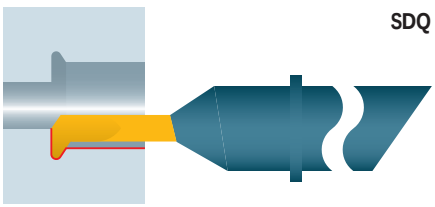
Längs- und Vornedrehen
Tournage et tournage avant
Turning and front turning

SDK



Längsdrehen
Tournage
Turning

SDQ



ANWENDUNGS-ÜBERSICHT INNENDREHEN
APPLICATIONS POUR LE TOURNAGE INTÉRIEUR
APPLICATION ID TURNING

MULTIDEC®-BORE MICRO

Schneiden siehe Seite 129… Halter siehe Seite 142…	Grains voir page 129… Porte-outils voir page 142…	Inserts see page 129… Holders see page 142…

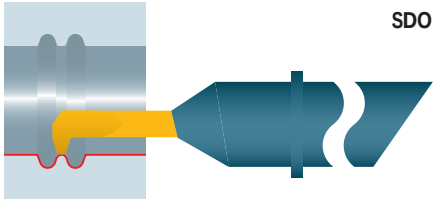
Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung auch lieferbar.

Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

All illustrations show right hand design. Left hand design is also available.

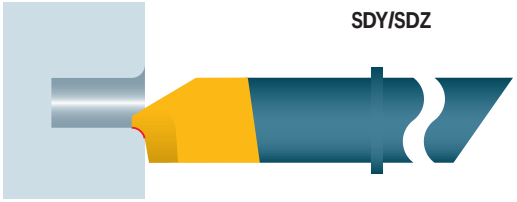
Längsdrehen
Tournage
Turning

SDO



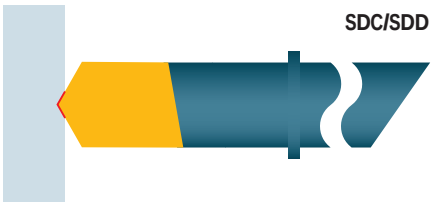
Fasen
Chanfreinage
Chamfering

SDY/SDZ



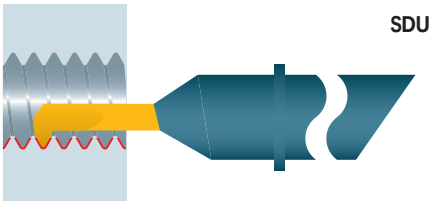
Anbohren
Centrage
Centering

SDC/SDD



Gewindedrehen, Teilprofil
Filetage, profil partiel
Threading, partial profile

SDU

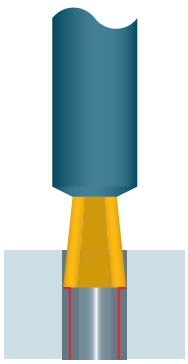


ANWENDUNGS-ÜBERSICHT SPEZIELLE BEARBEITUNGSFORMEN
APPLICATIONS POUR LES OPÉRATIONS SPÉCIALES
APPLICATION SPECIAL OPERATIONS

MULTIDEC®-BORE MICRO

Halter siehe Seite 142…	Porte-outils voir page 142…	Holders see page 142…

Mehrkantstossen
Étampage
Broaching



Schneiden werden nach Wunsch (tech. Zeichnung) gefertigt.	Grains selon votre dessin	Inserts will be manufactured by drawing

Schneiden siehe Seite 129…
Halter siehe Seite 142…

Grains voir page 129…
Porte-outils voir page 142…

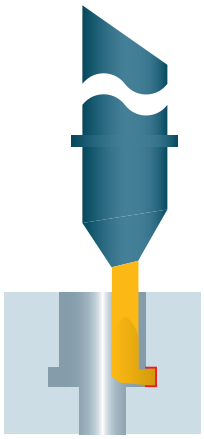
Inserts see page 129…
Holders see page 142…

Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung auch lieferbar.

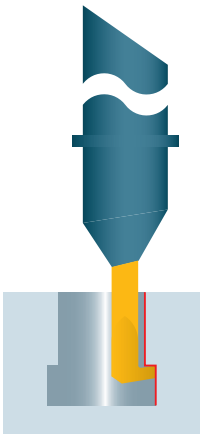
Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

All illustrations show right hand design. Left hand design is also available.

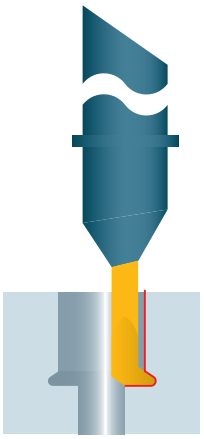
Zirkularfräsen/Einstechen
Interpolation hélicoïdale/Fonçage
Circular milling/Grooving



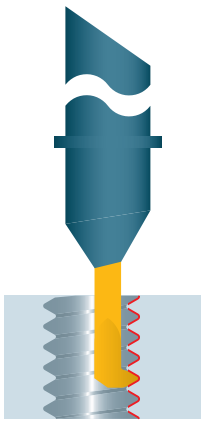
Zirkularfräsen/Hintenstechen
Interpolation hélicoïdale/Plongée arrière
Circular milling/Back grooving



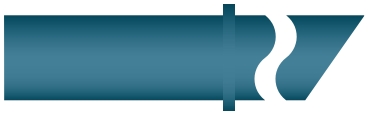
Zirkularfräsen/Freistechen
Interpolation hélicoïdale/Plongée
Circular milling/Undercutting

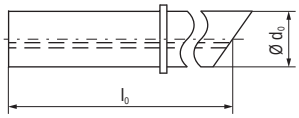


Gewindefräsen (Teilprofil)
Tourbillonnage (profil partiel)
Thread milling (partial profile)



Rohling | Ebauche | Blank





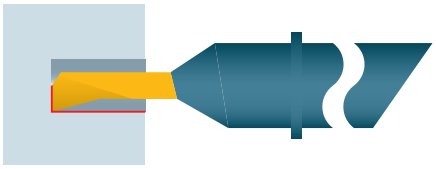
SD…

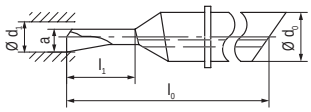
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				●											142…
				○											
				○											
				●											
L	N	R		UHM 20	Ø D	Ø d_0	Ø d_1	a	h	t	l_0	l_1	l_2	r	
			SD 448 R	■		4					48				SDA 4…
			SD 668 R	■		6					68				SDA 6…
			SD 882 R	■		8					82				SDA 8…

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

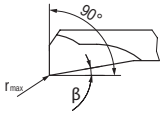
■ Standard
□ Semi Standard

Bohren und Längsdrehen | Perçage et Tournage | Drilling and Turning





SDG…



Winkel Angle Angle	
α	
β	2.5°
γ	
δ	

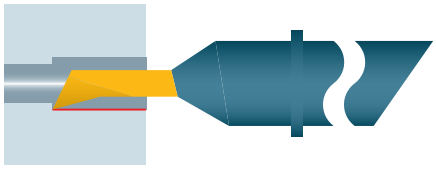
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				●	●							142…
				○	●							
				○	●							
				●	○							
L	N	R		UHM 20	UHM 20 HX	Ø D_{min}	Ø d_0	Ø d_1	a	l_0	l_1	r_{max}	
			SDG 435 042 R	■	■	0.5	4	0.42	0.38	35	1.5	0.01	SDA 4…
			SDG 435 092 R	■	■	1.0	4	0.92	0.83	35	3.0	0.02	SDA 4…
			SDG 440 092 R	■	■	1.0	4	0.92	0.83	40	3.0	0.03	SDA 4…
			SDG 448 092 R	■	■	1.0	4	0.92	0.83	48	5.0	0.03	SDA 4…
			SDG 435 142 R	■	■	1.5	4	1.42	1.28	35	4.5	0.02	SDA 4…
			SDG 440 142 R	■	■	1.5	4	1.42	1.28	40	4.5	0.04	SDA 4…
			SDG 448 142 R	■	■	1.5	4	1.42	1.28	48	7.5	0.04	SDA 4…
			SDG 435 192 R	■	■	2.0	4	1.92	1.73	35	6.0	0.03	SDA 4…
			SDG 440 192 R	■	■	2.0	4	1.92	1.73	40	6.0	0.04	SDA 4…
			SDG 448 192 R	■	■	2.0	4	1.92	1.73	48	10.0	0.04	SDA 4…
			SDG 435 242 R	■	■	2.5	4	2.42	2.18	35	7.5	0.03	SDA 4…
			SDG 440 242 R	■	■	2.5	4	2.42	2.18	40	7.5	0.05	SDA 4…
			SDG 448 242 R	■	■	2.5	4	2.42	2.18	48	12.5	0.05	SDA 4…
			SDG 440 292 R	■	■	3.0	4	2.92	2.63	40	9.0	0.05	SDA 4…
			SDG 448 292 R	■	■	3.0	4	2.92	2.63	48	15.0	0.05	SDA 4…
			SDG 440 342 R	■	■	3.5	4	3.42	3.08	40	10.5	0.06	SDA 4…
			SDG 448 342 R	■	■	3.5	4	3.42	3.08	48	17.5	0.06	SDA 4…
			SDG 440 392 R	■	■	4.0	4	3.92	3.53	40	12.0	0.06	SDA 4…
			SDG 448 392 R	■	■	4.0	4	3.92	3.53	48	20.0	0.06	SDA 4…
			SDG 644 442 R	■	■	4.5	6	4.42	3.98	44	9.0	0.07	SDA 6…
			SDG 656 442 R	■	■	4.5	6	4.42	3.98	56	18.0	0.07	SDA 6…
			SDG 668 442 R	■	■	4.5	6	4.42	3.98	68	27.0	0.07	SDA 6…
			SDG 644 492 R	■	■	5.0	6	4.92	4.43	44	10.0	0.07	SDA 6…
			SDG 656 492 R	■	■	5.0	6	4.92	4.43	56	20.0	0.07	SDA 6…
			SDG 668 492 R	■	■	5.0	6	4.92	4.43	68	30.0	0.07	SDA 6…
			SDG 644 542 R	■	■	5.5	6	5.42	4.88	44	11.0	0.08	SDA 6…
			SDG 656 542 R	■	■	5.5	6	5.42	4.88	56	22.0	0.08	SDA 6…
			SDG 668 542 R	■	■	5.5	6	5.42	4.88	68	33.0	0.08	SDA 6…
			SDG 644 592 R	■	■	6.0	6	5.92	5.33	44	12.0	0.08	SDA 6…
			SDG 656 592 R	■	■	6.0	6	5.92	5.33	56	24.0	0.08	SDA 6…
			SDG 668 592 R	■	■	6.0	6	5.92	5.33	68	36.0	0.08	SDA 6…
			SDG 850 692 R	■	■	7.0	8	6.92	6.23	50	14.0	0.09	SDA 8…
			SDG 866 692 R	■	■	7.0	8	6.92	6.23	66	28.0	0.09	SDA 8…
			SDG 882 692 R	■	■	7.0	8	6.92	6.23	82	42.0	0.09	SDA 8…
			SDG 850 792 R	■	■	8.0	8	7.92	7.13	50	16.0	0.10	SDA 8…
			SDG 866 792 R	■	■	8.0	8	7.92	7.13	66	32.0	0.10	SDA 8…
			SDG 882 792 R	■	■	8.0	8	7.92	7.13	82	48.0	0.10	SDA 8…

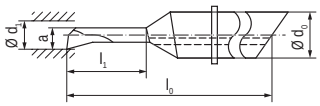
Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

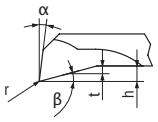
■ Standard
□ Semi Standard

Vornedrehen | Tournage avant | Front turning





SDH…



Winkel Angle Angle	
α	7.5°
β	22.5°
γ	
δ	

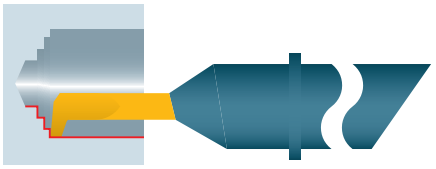
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				●	●										142…
				○	●										
				○	●										
				●	○										
L	N	R		UHM 20	UHM 20 HX	Ø D_{min}	Ø d_0	Ø d_1	a	h	t	l_0	l_1	l_2	r	
			SDH 435 042 R	■	■	0.5	4	0.42	0.38	0.09	0.07	35	1.5		0.05	SDA 4…
			SDH 435 092 R	■	■	1.0	4	0.92	0.83	0.19	0.15	35	3.0		0.05	SDA 4…
			SDH 440 092 R	■	■	1.0	4	0.92	0.83	0.21	0.16	40	3.0		0.05	SDA 4…
			SDH 448 092 R	■	■	1.0	4	0.92	0.83	0.21	0.16	48	5.0		0.05	SDA 4…
			SDH 435 142 R	■	■	1.5	4	1.42	1.28	0.30	0.23	35	4.5		0.05	SDA 4…
			SDH 440 142 R	■	■	1.5	4	1.42	1.28	0.31	0.23	40	4.5		0.05	SDA 4…
			SDH 448 142 R	■	■	1.5	4	1.42	1.28	0.31	0.23	48	7.5		0.05	SDA 4…
			SDH 435 192 R	■	■	2.0	4	1.92	1.73	0.40	0.31	35	6.0		0.05	SDA 4…
			SDH 440 192 R	■	■	2.0	4	1.92	1.73	0.41	0.31	40	6.0		0.05	SDA 4…
			SDH 448 192 R	■	■	2.0	4	1.92	1.73	0.41	0.31	48	10.0		0.05	SDA 4…
			SDH 435 242 R	■	■	2.5	4	2.42	2.18	0.51	0.39	35	7.5		0.05	SDA 4…
			SDH 440 242 R	■	■	2.5	4	2.42	2.18	0.52	0.39	40	7.5		0.05	SDA 4…
			SDH 448 242 R	■	■	2.5	4	2.42	2.18	0.52	0.39	48	12.5		0.05	SDA 4…
			SDH 440 292 R	■	■	3.0	4	2.92	2.63	0.62	0.47	40	9.0		0.05	SDA 4…
			SDH 448 292 R	■	■	3.0	4	2.92	2.63	0.62	0.47	48	15.0		0.05	SDA 4…
			SDH 440 342 R	■	■	3.5	4	3.42	3.08	0.72	0.54	40	10.5		0.05	SDA 4…
			SDH 448 342 R	■	■	3.5	4	3.42	3.08	0.72	0.54	48	17.5		0.05	SDA 4…
			SDH 440 392 R	■	■	4.0	4	3.92	3.53	0.83	0.62	40	12.0		0.05	SDA 4…
			SDH 448 392 R	■	■	4.0	4	3.92	3.53	0.83	0.62	48	20.0		0.05	SDA 4…
			SDH 644 442 R	■	■	4.5	6	4.42	3.98	0.93	0.7	44	9.0		0.05	SDA 6…
			SDH 656 442 R	■	■	4.5	6	4.42	3.98	0.93	0.7	56	18.0		0.05	SDA 6…
			SDH 668 442 R	■	■	4.5	6	4.42	3.98	0.93	0.7	68	27.0		0.05	SDA 6…
			SDH 644 492 R	■	■	5.0	6	4.92	4.43	1.04	0.78	44	10.0		0.05	SDA 6…
			SDH 656 492 R	■	■	5.0	6	4.92	4.43	1.04	0.78	56	20.0		0.05	SDA 6…
			SDH 668 492 R	■	■	5.0	6	4.92	4.43	1.04	0.78	68	30.0		0.05	SDA 6…
			SDH 644 542 R	■	■	5.5	6	5.42	4.88	1.14	0.85	44	11.0		0.05	SDA 6…
			SDH 656 542 R	■	■	5.5	6	5.42	4.88	1.14	0.85	56	22.0		0.05	SDA 6…
			SDH 668 542 R	■	■	5.5	6	5.42	4.88	1.14	0.85	68	33.0		0.05	SDA 6…
			SDH 644 592 R	■	■	6.0	6	5.92	5.33	1.24	0.93	44	12.0		0.05	SDA 6…
			SDH 656 592 R	■	■	6.0	6	5.92	5.33	1.24	0.93	56	24.0		0.05	SDA 6…
			SDH 668 592 R	■	■	6.0	6	5.92	5.33	1.24	0.93	68	36.0		0.05	SDA 6…
			SDH 850 692 R	■	■	7.0	8	6.92	6.23	1.45	1.09	50	14.0		0.05	SDA 8…
			SDH 866 692 R	■	■	7.0	8	6.92	6.23	1.45	1.09	66	28.0		0.05	SDA 8…
			SDH 882 692 R	■	■	7.0	8	6.92	6.23	1.45	1.09	82	42.0		0.05	SDA 8…
			SDH 850 792 R	■	■	8.0	8	7.92	7.13	1.66	1.24	50	16.0		0.05	SDA 8…
			SDH 866 792 R	■	■	8.0	8	7.92	7.13	1.66	1.24	66	32.0		0.05	SDA 8…
			SDH 882 792 R	■	■	8.0	8	7.92	7.13	1.66	1.24	82	48.0		0.05	SDA 8…

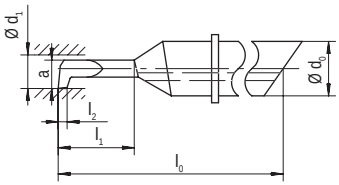
Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

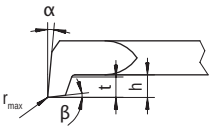
■ Standard
□ Semi Standard

Längs- und Plandrehen | Tournage et dressage | Turning and facing





SDI…



Winkel Angle Angle	
α	0.5°
β	2.5°
γ	
δ	

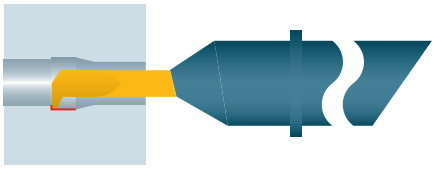
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				●	●										142…
				○	●										
				○	●										
				●	○										
L	N	R		UHM 20	UHM 20 HX	Ø D_{min}	Ø d_0	Ø d_1	a	h	t	l_0	l_1	l_2	r_{max}	
			SDI 435 042 R	■	■	0.5	4	0.42	0.38	0.11	0.07	35	1.5	0.5	0.01	SDA 4…
			SDI 435 092 R	■	■	1.0	4	0.92	0.83	0.23	0.15	35	3.0	1.0	0.02	SDA 4…
			SDI 440 092 R	■	■	1.0	4	0.92	0.83	0.23	0.1	40	3.0	1.0	0.02	SDA 4…
			SDI 448 092 R	■	■	1.0	4	0.92	0.83	0.23	0.1	48	5.0	1.0	0.02	SDA 4…
			SDI 435 142 R	■	■	1.5	4	1.42	1.28	0.36	0.23	35	4.5	1.5	0.02	SDA 4…
			SDI 440 142 R	■	■	1.5	4	1.42	1.28	0.36	0.2	40	4.5	1.5	0.02	SDA 4…
			SDI 448 142 R	■	■	1.5	4	1.42	1.28	0.36	0.2	48	7.5	1.5	0.02	SDA 4…
			SDI 435 192 R	■	■	2.0	4	1.92	1.73	0.48	0.32	35	6.0	2.0	0.03	SDA 4…
			SDI 440 192 R	■	■	2.0	4	1.92	1.73	0.48	0.3	40	6.0	2.0	0.02	SDA 4…
			SDI 448 192 R	■	■	2.0	4	1.92	1.73	0.48	0.3	48	10.0	2.0	0.02	SDA 4…
			SDI 435 242 R	■	■	2.5	4	2.42	2.18	0.61	0.40	35	7.5	2.5	0.03	SDA 4…
			SDI 440 242 R	■	■	2.5	4	2.42	2.18	0.61	0.4	40	7.5	2.5	0.02	SDA 4…
			SDI 448 242 R	■	■	2.5	4	2.42	2.18	0.61	0.4	48	12.5	2.5	0.02	SDA 4…
			SDI 448 292 R	■	■	3.0	4	2.92	2.63	0.73	0.5	40	9.0	3.0	0.02	SDA 4…
			SDI 440 292 R	■	■	3.0	4	2.92	2.63	0.73	0.5	48	15.0	3.0	0.02	SDA 4…
			SDI 440 342 R	■	■	3.5	4	3.42	3.08	0.86	0.6	40	10.5	3.5	0.02	SDA 4…
			SDI 448 342 R	■	■	3.5	4	3.42	3.08	0.86	0.6	48	17.5	3.5	0.02	SDA 4…
			SDI 440 392 R	■	■	4.0	4	3.92	3.53	0.98	0.7	40	12.0	4.0	0.02	SDA 4…
			SDI 440 392 R	■	■	4.0	4	3.92	3.53	0.98	0.7	48	20.0	4.0	0.02	SDA 4…
			SDI 644 442 R	■	■	4.5	6	4.42	3.98	1.11	0.7	44	9.0	4.5	0.02	SDA 6…
			SDI 656 442 R	■	■	4.5	6	4.42	3.98	1.11	0.7	56	18.0	4.5	0.02	SDA 6…
			SDI 668 442 R	■	■	4.5	6	4.42	3.98	1.11	0.7	68	27.0	4.5	0.02	SDA 6…
			SDI 644 492 R	■	■	5.0	6	4.92	4.43	1.23	0.8	44	10.0	5.0	0.02	SDA 6…
			SDI 656 492 R	■	■	5.0	6	4.92	4.43	1.23	0.8	56	20.0	5.0	0.02	SDA 6…
			SDI 668 492 R	■	■	5.0	6	4.92	4.43	1.23	0.8	68	30.0	5.0	0.02	SDA 6…
			SDI 644 542 R	■	■	5.5	6	5.42	4.88	1.36	0.9	44	11.0	5.5	0.02	SDA 6…
			SDI 656 542 R	■	■	5.5	6	5.42	4.88	1.36	0.9	56	22.0	5.5	0.02	SDA 6…
			SDI 668 542 R	■	■	5.5	6	5.42	4.88	1.36	0.9	68	33.0	5.5	0.02	SDA 6…
			SDI 644 592 R	■	■	6.0	6	5.92	5.33	1.48	1.0	44	12.0	6.0	0.02	SDA 6…
			SDI 656 592 R	■	■	6.0	6	5.92	5.33	1.48	1.0	56	24.0	6.0	0.02	SDA 6…
			SDI 668 592 R	■	■	6.0	6	5.92	5.33	1.48	1.0	68	36.0	6.0	0.02	SDA 6…
			SDI 850 692 R	■	■	7.0	8	6.92	6.23	1.73	1.2	50	14.0	7.0	0.02	SDA 8…
			SDI 866 692 R	■	■	7.0	8	6.92	6.23	1.73	1.2	66	28.0	7.0	0.02	SDA 8…
			SDI 882 692 R	■	■	7.0	8	6.92	6.23	1.73	1.2	82	42.0	7.0	0.02	SDA 8…
			SDI 850 792 R	■	■	8.0	8	7.92	7.13	1.98	1.3	50	16.0	8.0	0.02	SDA 8…
			SDI 866 792 R	■	■	8.0	8	7.92	7.13	1.98	1.3	66	32.0	8.0	0.02	SDA 8…
			SDI 882 792 R	■	■	8.0	8	7.92	7.13	1.98	1.3	82	48.0	8.0	0.02	SDA 8…

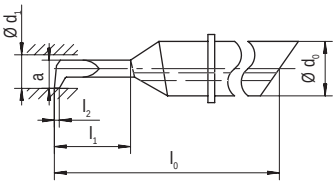
Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

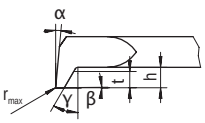
■ Standard
□ Semi Standard

Längs- und Vornedrehen | Tournage et tournage avant | Turning and front turning





SDK…



Winkel Angle Angle	
α	0.5°
β	0.5°
γ	30°
δ	

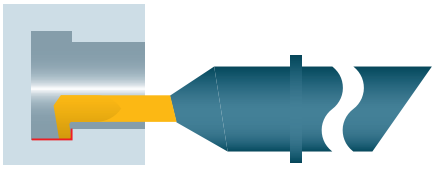
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				●	●										
				○	●										142…
				○	●										
				●	○										
L	N	R		UHM 20	UHM 20 HX	Ø D_{min}	Ø d_0	Ø d_1	a	h	t	l_0	l_1	l_2	r_{max}	
			SDK 435 092 R	■	■	1.0	4	0.92	0.83	0.23	0.15	35	1.5	0.50	0.02	SDA 4…
			SDK 440 092 R	■	■	1.0	4	0.92	0.83	0.23	0.1	40	3.0	0.50	0.02	SDA 4…
			SDK 448 092 R	■	■	1.0	4	0.92	0.83	0.23	0.1	48	5.0	0.50	0.02	SDA 4…
			SDK 435 142 R	■	■	1.5	4	1.42	1.28	0.36	0.23	35	4.5	0.75	0.02	SDA 4…
			SDK 440 142 R	■	■	1.5	4	1.42	1.28	0.36	0.2	40	4.5	0.75	0.02	SDA 4…
			SDK 448 142 R	■	■	1.5	4	1.42	1.28	0.36	0.2	48	7.5	0.75	0.02	SDA 4…
			SDK 435 192 R	■	■	2.0	4	1.92	1.73	0.48	0.32	35	6.0	1.00	0.03	SDA 4…
			SDK 440 192 R	■	■	2.0	4	1.92	1.73	0.48	0.3	40	6.0	1.00	0.02	SDA 4…
			SDK 448 192 R	■	■	2.0	4	1.92	1.73	0.48	0.3	48	10.0	1.00	0.02	SDA 4…
			SDK 435 242 R	■	■	2.5	4	2.42	2.18	0.61	0.40	35	7.5	1.25	0.03	SDA 4…
			SDK 440 242 R	■	■	2.5	4	2.42	2.18	0.61	0.4	40	7.5	1.25	0.02	SDA 4…
			SDK 448 242 R	■	■	2.5	4	2.42	2.18	0.61	0.4	48	12.5	1.25	0.02	SDA 4…
			SDK 440 292 R	■	■	3.0	4	2.92	2.63	0.73	0.5	40	9.0	1.50	0.02	SDA 4…
			SDK 448 292 R	■	■	3.0	4	2.92	2.63	0.73	0.5	48	15.0	1.50	0.02	SDA 4…
			SDK 440 342 R	■	■	3.5	4	3.42	3.08	0.86	0.6	40	10.5	1.75	0.02	SDA 4…
			SDK 448 342 R	■	■	3.5	4	3.42	3.08	0.86	0.6	48	17.5	1.75	0.02	SDA 4…
			SDK 440 392 R	■	■	4.0	4	3.92	3.53	0.98	0.7	40	12.0	2.00	0.02	SDA 4…
			SDK 448 392 R	■	■	4.0	4	3.92	3.53	0.98	0.7	48	20.0	2.00	0.02	SDA 4…
			SDK 644 442 R	■	■	4.5	6	4.42	3.98	1.11	0.7	44	9.0	2.25	0.02	SDA 6…
			SDK 656 442 R	■	■	4.5	6	4.42	3.98	1.11	0.7	56	18.0	2.25	0.02	SDA 6…
			SDK 668 442 R	■	■	4.5	6	4.42	3.98	1.11	0.7	68	27.0	2.25	0.02	SDA 6…
			SDK 644 492 R	■	■	5.0	6	4.92	4.43	1.23	0.8	44	10.0	2.50	0.02	SDA 6…
			SDK 656 492 R	■	■	5.0	6	4.92	4.43	1.23	0.8	56	20.0	2.50	0.02	SDA 6…
			SDK 668 492 R	■	■	5.0	6	4.92	4.43	1.23	0.8	68	30.0	2.50	0.02	SDA 6…
			SDK 644 542 R	■	■	5.5	6	5.42	4.88	1.36	0.9	44	11.0	2.75	0.02	SDA 6…
			SDK 656 542 R	■	■	5.5	6	5.42	4.88	1.36	0.9	56	22.0	2.75	0.02	SDA 6…
			SDK 668 542 R	■	■	5.5	6	5.42	4.88	1.36	0.9	68	33.0	2.75	0.02	SDA 6…
			SDK 644 592 R	■	■	6.0	6	5.92	5.33	1.48	1.0	44	12.0	3.00	0.02	SDA 6…
			SDK 656 592 R	■	■	6.0	6	5.92	5.33	1.48	1.0	56	24.0	3.00	0.02	SDA 6…
			SDK 668 592 R	■	■	6.0	6	5.92	5.33	1.48	1.0	68	36.0	3.00	0.02	SDA 6…
			SDK 850 692 R	■	■	7.0	8	6.92	6.23	1.73	1.2	50	14.0	3.50	0.02	SDA 8…
			SDK 866 692 R	■	■	7.0	8	6.92	6.23	1.73	1.2	66	28.0	3.50	0.02	SDA 8…
			SDK 882 692 R	■	■	7.0	8	6.92	6.23	1.73	1.2	82	42.0	3.50	0.02	SDA 8…
			SDK 850 792 R	■	■	8.0	8	7.92	7.13	1.98	1.3	50	16.0	4.00	0.02	SDA 8…
			SDK 866 792 R	■	■	8.0	8	7.92	7.13	1.98	1.3	66	32.0	4.00	0.02	SDA 8…
			SDK 882 792 R	■	■	8.0	8	7.92	7.13	1.98	1.3	82	48.0	4.00	0.02	SDA 8…

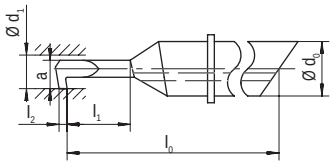
Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

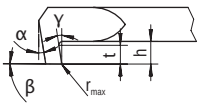
■ Standard
□ Semi Standard

Hintendrehen | Tournage arrière | Back turning





SDM…



Winkel Angle Angle	
α	30°
β	0.5°
γ	0.5°
δ	

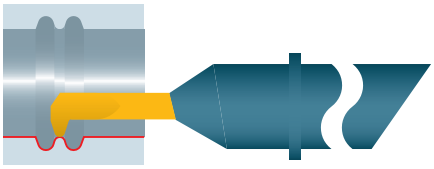
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				●	●										142…
				○	●										
				○	●										
				●	○										
L	N	R		UHM 20	UHM 20 HX	Ø D_{min}	Ø d_0	Ø d_1	a	h	t	l_0	l_1	l_2	r_{max}	
		■	SDM 435 092 R	■	■	1.0	4	0.92	0.83	0.23	0.15	35	1.5	0.50	0.02	SDA 4…
			SDM 440 092 R	■	■	1.0	4	0.92	0.83	0.23	0.1	40	3.0	0.50	0.02	SDA 4…
			SDM 448 092 R	■	■	1.0	4	0.92	0.83	0.23	0.1	48	5.0	0.50	0.02	SDA 4…
			SDM 435 142 R	■	■	1.5	4	1.42	1.28	0.36	0.23	35	4.5	0.75	0.02	SDA 4…
			SDM 440 142 R	■	■	1.5	4	1.42	1.28	0.36	0.2	40	4.5	0.75	0.02	SDA 4…
			SDM 448 142 R	■	■	1.5	4	1.42	1.28	0.36	0.2	48	7.5	0.75	0.02	SDA 4…
			SDM 435 192 R	■	■	2.0	4	1.92	1.73	0.48	0.32	35	6.0	1.00	0.03	SDA 4…
			SDM 440 192 R	■	■	2.0	4	1.92	1.73	0.48	0.3	40	6.0	1.00	0.02	SDA 4…
			SDM 448 192 R	■	■	2.0	4	1.92	1.73	0.48	0.3	48	10.0	1.00	0.02	SDA 4…
			SDM 435 242 R	■	■	2.5	4	2.42	2.18	0.61	0.40	35	7.5	1.25	0.03	SDA 4…
			SDM 440 242 R	■	■	2.5	4	2.42	2.18	0.61	0.4	40	7.5	1.25	0.02	SDA 4…
			SDM 448 242 R	■	■	2.5	4	2.42	2.18	0.61	0.4	48	12.5	1.25	0.02	SDA 4…
			SDM 440 292 R	■	■	3.0	4	2.92	2.63	0.73	0.5	40	9.0	1.50	0.02	SDA 4…
			SDM 448 292 R	■	■	3.0	4	2.92	2.63	0.73	0.5	48	15.0	1.50	0.02	SDA 4…
			SDM 440 342 R	■	■	3.5	4	3.42	3.08	0.86	0.6	40	10.5	1.75	0.02	SDA 4…
			SDM 448 342 R	■	■	3.5	4	3.42	3.08	0.86	0.6	48	17.5	1.75	0.02	SDA 4…
			SDM 440 392 R	■	■	4.0	4	3.92	3.53	0.98	0.7	40	12.0	2.00	0.02	SDA 4…
			SDM 448 392 R	■	■	4.0	4	3.92	3.53	0.98	0.7	48	20.0	2.00	0.02	SDA 4…
			SDM 644 442 R	■	■	4.5	6	4.42	3.98	1.11	0.7	44	9.0	2.25	0.02	SDA 6…
			SDM 656 442 R	■	■	4.5	6	4.42	3.98	1.11	0.7	56	18.0	2.25	0.02	SDA 6…
			SDM 668 442 R	■	■	4.5	6	4.42	3.98	1.11	0.7	68	27.0	2.25	0.02	SDA 6…
			SDM 644 492 R	■	■	5.0	6	4.92	4.43	1.23	0.8	44	10.0	2.50	0.02	SDA 6…
			SDM 656 492 R	■	■	5.0	6	4.92	4.43	1.23	0.8	56	20.0	2.50	0.02	SDA 6…
			SDM 668 492 R	■	■	5.0	6	4.92	4.43	1.23	0.8	68	30.0	2.50	0.02	SDA 6…
			SDM 644 542 R	■	■	5.5	6	5.42	4.88	1.36	0.9	44	11.0	2.75	0.02	SDA 6…
			SDM 656 542 R	■	■	5.5	6	5.42	4.88	1.36	0.9	56	22.0	2.75	0.02	SDA 6…
			SDM 668 542 R	■	■	5.5	6	5.42	4.88	1.36	0.9	68	33.0	2.75	0.02	SDA 6…
			SDM 644 592 R	■	■	6.0	6	5.92	5.33	1.48	1.0	44	12.0	3.00	0.02	SDA 6…
			SDM 656 592 R	■	■	6.0	6	5.92	5.33	1.48	1.0	56	24.0	3.00	0.02	SDA 6…
			SDM 668 592 R	■	■	6.0	6	5.92	5.33	1.48	1.0	68	36.0	3.00	0.02	SDA 6…
			SDM 850 692 R	■	■	7.0	8	6.92	6.23	1.73	1.2	50	14.0	3.50	0.02	SDA 8…
			SDM 866 692 R	■	■	7.0	8	6.92	6.23	1.73	1.2	66	28.0	3.50	0.02	SDA 8…
			SDM 882 692 R	■	■	7.0	8	6.92	6.23	1.73	1.2	82	42.0	3.50	0.02	SDA 8…
			SDM 850 792 R	■	■	8.0	8	7.92	7.13	1.98	1.3	50	16.0	4.00	0.02	SDA 8…
			SDM 866 792 R	■	■	8.0	8	7.92	7.13	1.98	1.3	66	32.0	4.00	0.02	SDA 8…
			SDM 882 792 R	■	■	8.0	8	7.92	7.13	1.98	1.3	82	48.0	4.00	0.02	SDA 8…

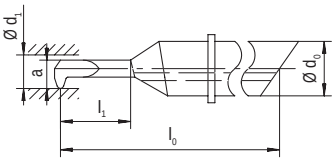
Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

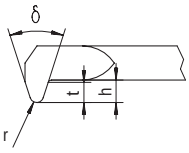
■ Standard
□ Semi Standard

Längsdrehen | Tournage | Turning





SDO…



Winkel Angle Angle	
α	
β	
γ	
δ	59°

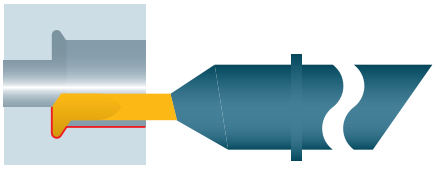
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				●	●										
				○	●										142…
				○	●										
				●	○										
L	N	R		UHM 20	UHM 20 HX	Ø D_{min}	Ø d_0	Ø d_1	a	h	t	l_0	l_1	l_2	r	
			SDO 435 092 R	■	■	1.0	4	0.92	0.83	0.31	0.23	35	1.5		0.02	SDA 4…
			SDO 440 092 R	■	■	1.0	4	0.92	0.83	0.31	0.2	40	3.0		0.05	SDA 4…
			SDO 448 092 R	■	■	1.0	4	0.92	0.83	0.31	0.2	48	5.0		0.05	SDA 4…
			SDO 435 142 R	■	■	1.5	4	1.42	1.28	0.47	0.36	35	4.5		0.02	SDA 4…
			SDO 440 142 R	■	■	1.5	4	1.42	1.28	0.47	0.4	40	4.5		0.08	SDA 4…
			SDO 448 142 R	■	■	1.5	4	1.42	1.28	0.47	0.4	48	7.5		0.08	SDA 4…
			SDO 435 192 R	■	■	2.0	4	1.92	1.73	0.64	0.48	35	6.0		0.03	SDA 4…
			SDO 440 192 R	■	■	2.0	4	1.92	1.73	0.64	0.5	40	6.0		0.10	SDA 4…
			SDO 448 192 R	■	■	2.0	4	1.92	1.73	0.64	0.5	48	10.0		0.10	SDA 4…
			SDO 435 242 R	■	■	2.5	4	2.42	2.18	0.81	0.61	35	7.5		0.03	SDA 4…
			SDO 440 242 R	■	■	2.5	4	2.42	2.18	0.81	0.6	40	7.5		0.13	SDA 4…
			SDO 448 242 R	■	■	2.5	4	2.42	2.18	0.81	0.6	48	12.5		0.13	SDA 4…
			SDO 440 292 R	■	■	3.0	4	2.92	2.63	0.97	0.7	40	9.0		0.15	SDA 4…
			SDO 448 292 R	■	■	3.0	4	2.92	2.63	0.97	0.7	48	15.0		0.15	SDA 4…
			SDO 440 342 R	■	■	3.5	4	3.42	3.08	1.14	0.9	40	10.5		0.18	SDA 4…
			SDO 448 342 R	■	■	3.5	4	3.42	3.08	1.14	0.9	48	17.5		0.18	SDA 4…
			SDO 440 392 R	■	■	4.0	4	3.92	3.53	1.31	1.0	40	12.0		0.20	SDA 4…
			SDO 448 392 R	■	■	4.0	4	3.92	3.53	1.31	1.0	48	20.0		0.20	SDA 4…
			SDO 644 442 R	■	■	4.5	6	4.42	3.98	1.47	1.1	44	9.0		0.23	SDA 6…
			SDO 656 442 R	■	■	4.5	6	4.42	3.98	1.47	1.1	56	18.0		0.23	SDA 6…
			SDO 668 442 R	■	■	4.5	6	4.42	3.98	1.47	1.1	68	27.0		0.23	SDA 6…
			SDO 644 492 R	■	■	5.0	6	4.92	4.43	1.64	1.2	44	10.0		0.25	SDA 6…
			SDO 656 492 R	■	■	5.0	6	4.92	4.43	1.64	1.2	56	20.0		0.25	SDA 6…
			SDO 668 492 R	■	■	5.0	6	4.92	4.43	1.64	1.2	68	30.0		0.25	SDA 6…
			SDO 644 542 R	■	■	5.5	6	5.42	4.88	1.80	1.4	44	11.0		0.28	SDA 6…
			SDO 656 542 R	■	■	5.5	6	5.42	4.88	1.80	1.4	56	22.0		0.28	SDA 6…
			SDO 668 542 R	■	■	5.5	6	5.42	4.88	1.80	1.4	68	33.0		0.28	SDA 6…
			SDO 644 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	44	12.0		0.30	SDA 6…
			SDO 656 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	56	24.0		0.30	SDA 6…
			SDO 668 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	68	36.0		0.30	SDA 6…
			SDO 850 692 R	■	■	7.0	8	6.92	6.23	2.30	1.7	50	14.0		0.35	SDA 8…
			SDO 866 692 R	■	■	7.0	8	6.92	6.23	2.30	1.7	66	28.0		0.35	SDA 8…
			SDO 882 692 R	■	■	7.0	8	6.92	6.23	2.30	1.7	82	42.0		0.35	SDA 8…
			SDO 850 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	50	16.0		0.40	SDA 8…
			SDO 866 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	66	32.0		0.40	SDA 8…
			SDO 882 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	82	48.0		0.40	SDA 8…

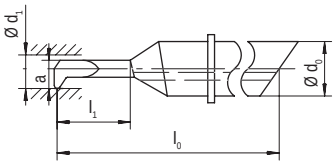
Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

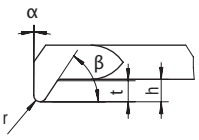
■ Standard
□ Semi Standard

Längsdrehen | Tournage | Turning





SDQ…



Winkel Angle Angle	
α	0.5°
β	30.5°
γ	
δ	

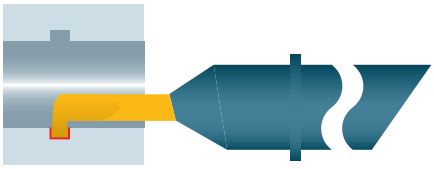
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				●	●										
				○	●										142…
				○	●										
				●	○										
L	N	R		UHM 20	UHM 20 HX	Ø D_{min}	Ø d_0	Ø d_1	a	h	t	l_0	l_1	l_2	r	
			SDQ 435 092 R	■	■	1.0	4	0.92	0.83	0.31	0.23	35	1.5		0.02	SDA 4…
			SDQ 440 092 R	■	■	1.0	4	0.92	0.83	0.31	0.2	40	3.0		0.05	SDA 4…
			SDQ 448 092 R	■	■	1.0	4	0.92	0.83	0.31	0.2	48	5.0		0.05	SDA 4…
			SDQ 435 142 R	■	■	1.5	4	1.42	1.28	0.47	0.36	35	4.5		0.02	SDA 4…
			SDQ 440 142 R	■	■	1.5	4	1.42	1.28	0.47	0.4	40	4.5		0.08	SDA 4…
			SDQ 448 142 R	■	■	1.5	4	1.42	1.28	0.47	0.4	48	7.5		0.08	SDA 4…
			SDQ 435 192 R	■	■	2.0	4	1.92	1.73	0.64	0.48	35	6.0		0.03	SDA 4…
			SDQ 440 192 R	■	■	2.0	4	1.92	1.73	0.64	0.5	40	6.0		0.10	SDA 4…
			SDQ 448 192 R	■	■	2.0	4	1.92	1.73	0.64	0.5	48	10.0		0.10	SDA 4…
			SDQ 435 242 R	■	■	2.5	4	2.42	2.18	0.81	0.61	35	7.5		0.03	SDA 4…
			SDQ 440 242 R	■	■	2.5	4	2.42	2.18	0.81	0.6	40	7.5		0.13	SDA 4…
			SDQ 448 242 R	■	■	2.5	4	2.42	2.18	0.81	0.6	48	12.5		0.13	SDA 4…
			SDQ 440 292 R	■	■	3.0	4	2.92	2.63	0.97	0.7	40	9.0		0.15	SDA 4…
			SDQ 448 292 R	■	■	3.0	4	2.92	2.63	0.97	0.7	48	15.0		0.15	SDA 4…
			SDQ 440 342 R	■	■	3.5	4	3.42	3.08	1.14	0.9	40	10.5		0.18	SDA 4…
			SDQ 448 342 R	■	■	3.5	4	3.42	3.08	1.14	0.9	48	17.5		0.18	SDA 4…
			SDQ 440 392 R	■	■	4.0	4	3.92	3.53	1.31	1.0	40	12.0		0.20	SDA 4…
			SDQ 448 392 R	■	■	4.0	4	3.92	3.53	1.31	1.0	48	20.0		0.20	SDA 4…
			SDQ 644 442 R	■	■	4.5	6	4.42	3.98	1.47	1.1	44	9.0		0.23	SDA 6…
			SDQ 656 442 R	■	■	4.5	6	4.42	3.98	1.47	1.1	56	18.0		0.23	SDA 6…
			SDQ 668 442 R	■	■	4.5	6	4.42	3.98	1.47	1.1	68	27.0		0.23	SDA 6…
			SDQ 644 492 R	■	■	5.0	6	4.92	4.43	1.64	1.2	44	10.0		0.25	SDA 6…
			SDQ 656 492 R	■	■	5.0	6	4.92	4.43	1.64	1.2	56	20.0		0.25	SDA 6…
			SDQ 668 492 R	■	■	5.0	6	4.92	4.43	1.64	1.2	68	30.0		0.25	SDA 6…
			SDQ 644 542 R	■	■	5.5	6	5.42	4.88	1.80	1.4	44	11.0		0.28	SDA 6…
			SDQ 656 542 R	■	■	5.5	6	5.42	4.88	1.80	1.4	56	22.0		0.28	SDA 6…
			SDQ 668 542 R	■	■	5.5	6	5.42	4.88	1.80	1.4	68	33.0		0.28	SDA 6…
			SDQ 644 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	44	12.0		0.30	SDA 6…
			SDQ 656 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	56	24.0		0.30	SDA 6…
			SDQ 668 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	68	36.0		0.30	SDA 6…
			SDQ 850 692 R	■	■	7.0	8	6.92	6.23	2.30	1.7	50	14.0		0.35	SDA 8…
			SDQ 866 692 R	■	■	7.0	8	6.92	6.23	2.30	1.7	66	28.0		0.35	SDA 8…
			SDQ 882 692 R	■	■	7.0	8	6.92	6.23	2.30	1.7	82	42.0		0.35	SDA 8…
			SDQ 850 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	50	16.0		0.40	SDA 8…
			SDQ 866 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	66	32.0		0.40	SDA 8…
			SDQ 882 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	82	48.0		0.40	SDA 8…

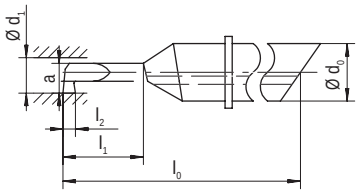
Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

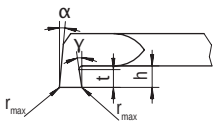
■ Standard
□ Semi Standard

Einstechen | Rainurage | Grooving





SDS…



Winkel Angle Angle	
α	2°
β	
γ	2°
δ	

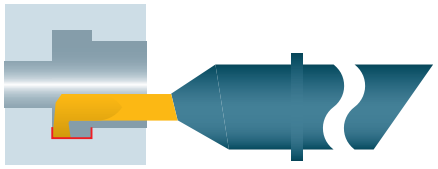
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				●	●										
				○	●										142…
				○	●										
				●	○										
L	N	R		UHM 20	UHM 20 HX	Ø D_{min}	Ø d_0	Ø d_1	a	h	t	l_0	l_1	l_2	r_{max}	
		■	SDS 435 092 R	■	■	1.0	4	0.92	0.83	0.31	0.23	35	1.5	0.20	0.02	SDA 4…
			SDS 440 092 R	■	■	1.0	4	0.92	0.83	0.31	0.2	40	3.0	0.20	0.02	SDA 4…
			SDS 448 092 R	■	■	1.0	4	0.92	0.83	0.31	0.2	48	5.0	0.20	0.02	SDA 4…
			SDS 435 142 R	■	■	1.5	4	1.42	1.28	0.47	0.36	35	4.5	0.25	0.02	SDA 4…
			SDS 440 142 R	■	■	1.5	4	1.42	1.28	0.47	0.4	40	4.5	0.25	0.02	SDA 4…
			SDS 448 142 R	■	■	1.5	4	1.42	1.28	0.47	0.4	48	7.5	0.25	0.02	SDA 4…
			SDS 435 192 R	■	■	2.0	4	1.92	1.73	0.64	0.48	35	6.0	0.30	0.02	SDA 4…
			SDS 440 192 R	■	■	2.0	4	1.92	1.73	0.64	0.5	40	6.0	0.30	0.02	SDA 4…
			SDS 448 192 R	■	■	2.0	4	1.92	1.73	0.64	0.5	48	10.0	0.30	0.02	SDA 4…
			SDS 435 242 R	■	■	2.5	4	2.42	2.18	0.81	0.61	35	7.5	0.35	0.02	SDA 4…
			SDS 440 242 R	■	■	2.5	4	2.42	2.18	0.81	0.6	40	7.5	0.35	0.02	SDA 4…
			SDS 448 242 R	■	■	2.5	4	2.42	2.18	0.81	0.6	48	12.5	0.35	0.02	SDA 4…
			SDS 440 292 R	■	■	3.0	4	2.92	2.63	0.97	0.7	40	9.0	0.40	0.02	SDA 4…
			SDS 448 292 R	■	■	3.0	4	2.92	2.63	0.97	0.7	48	15.0	0.40	0.02	SDA 4…
			SDS 440 342 R	■	■	3.5	4	3.42	3.08	1.14	0.9	40	10.5	0.45	0.02	SDA 4…
			SDS 448 342 R	■	■	3.5	4	3.42	3.08	1.14	0.9	48	17.5	0.45	0.02	SDA 4…
			SDS 440 392 R	■	■	4.0	4	3.92	3.53	1.31	1.0	40	12.0	0.50	0.02	SDA 4…
			SDS 448 392 R	■	■	4.0	4	3.92	3.53	1.31	1.0	48	20.0	0.50	0.02	SDA 4…
			SDS 644 442 R	■	■	4.5	6	4.42	3.98	1.47	1.1	44	9.0	1.00	0.02	SDA 6…
			SDS 656 442 R	■	■	4.5	6	4.42	3.98	1.47	1.1	56	18.0	1.00	0.02	SDA 6…
			SDS 668 442 R	■	■	4.5	6	4.42	3.98	1.47	1.1	68	27.0	1.00	0.02	SDA 6…
			SDS 644 492 R	■	■	5.0	6	4.92	4.43	1.64	1.2	44	10.0	1.50	0.02	SDA 6…
			SDS 656 492 R	■	■	5.0	6	4.92	4.43	1.64	1.2	56	20.0	1.50	0.02	SDA 6…
			SDS 668 492 R	■	■	5.0	6	4.92	4.43	1.64	1.2	68	30.0	1.50	0.02	SDA 6…
			SDS 644 542 R	■	■	5.5	6	5.42	4.88	1.80	1.4	44	11.0	1.00	0.02	SDA 6…
			SDS 656 542 R	■	■	5.5	6	5.42	4.88	1.80	1.4	56	22.0	1.00	0.02	SDA 6…
			SDS 668 542 R	■	■	5.5	6	5.42	4.88	1.80	1.4	68	33.0	1.00	0.02	SDA 6…
			SDS 644 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	44	12.0	1.50	0.02	SDA 6…
			SDS 656 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	56	24.0	1.50	0.02	SDA 6…
			SDS 668 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	68	36.0	1.50	0.02	SDA 6…
			SDS 850 692 R	■	■	7.0	8	6.92	6.23	2.30	1.7	50	14.0	1.50	0.02	SDA 8…
			SDS 866 692 R	■	■	7.0	8	6.92	6.23	2.30	1.7	66	28.0	1.50	0.02	SDA 8…
			SDS 882 692 R	■	■	7.0	8	6.92	6.23	2.30	1.7	82	42.0	1.50	0.02	SDA 8…
			SDS 850 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	50	16.0	2.00	0.02	SDA 8…
			SDS 866 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	66	32.0	2.00	0.02	SDA 8…
			SDS 882 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	82	48.0	2.00	0.02	SDA 8…

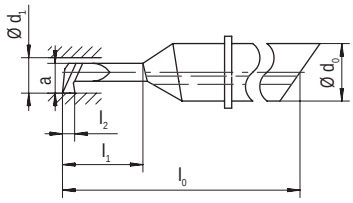
Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

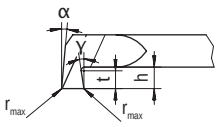
■ Standard
□ Semi Standard

Einstechen und Längsdrehen | Fonçage et tournage | Grooving and turning





SDT…



Winkel Angle Angle	
α	0°
β	
γ	1.5°
δ	

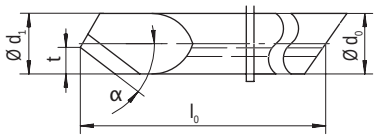
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				●	●										142…
				○	●										
				○	●										
				●	○										
L	N	R		UHM 20	UHM 20 HX	Ø D_{min}	Ø d_0	Ø d_1	a	h	t	l_0	l_1	l_2	r_{max}	
			SDT 440 392 R	■	■	4.0	4	3.92	3.53	1.31	1.0	40	12	1.00	0.02	SDA 4…
			SDT 448 392 R	■	■	4.0	4	3.92	3.53	1.31	1.0	48	20	1.00	0.02	SDA 4…
			SDT 644 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	44	12	1.25	0.02	SDA 6…
			SDT 656 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	56	24	1.25	0.02	SDA 6…
			SDT 668 592 R	■	■	6.0	6	5.92	5.33	1.97	1.5	68	36	1.25	0.02	SDA 6…
			SDT 850 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	50	16	1.50	0.02	SDA 8…
			SDT 866 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	66	32	1.50	0.02	SDA 8…
			SDT 882 792 R	■	■	8.0	8	7.92	7.13	2.64	2.0	82	48	1.50	0.02	SDA 8…

Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Fasen | Chanfreinage | Chamfering



Winkel Angle Angle
α
β
γ
δ

SDY…

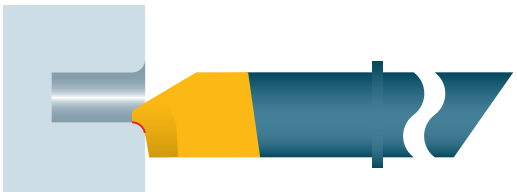
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				●	●											142…
				○	●											
				○	●											
				●	○											
L	N	R		UHM 20	UHM 20 HX	Ø d_0	Ø d_1	a	h	t	l_0	l_1	l_2	r	α	
			SDY 440 400-30 R	■	■	4	4			1.75	40				30°	SDA 4…
			SDY 440 400-45 R	■	■	4	4			1.75	40				45°	SDA 4…
			SDY 440 400-60 R	■	■	4	4			1.75	40				60°	SDA 4…
			SDY 644 600-30 R	■	■	6	6			2.75	44				30°	SDA 6…
			SDY 644 600-45 R	■	■	6	6			2.75	44				45°	SDA 6…
			SDY 644 600-60 R	■	■	6	6			2.75	44				60°	SDA 6…

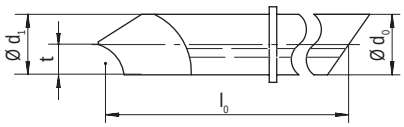
Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

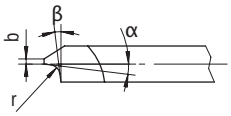
■ Standard
□ Semi Standard

Fasen | Chanfreinage | Chamfering





SDZ…



Winkel Angle Angle	
α	7°
β	7°
γ	
δ	

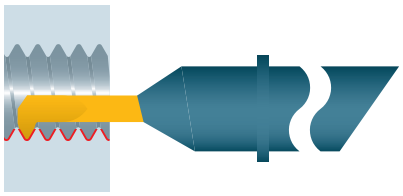
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				●	●											142…
				○	●											
				○	●											
				●	○											
L	N	R		UHM 20	UHM 20 HX	Ø D_{min}	Ø d_0	Ø d_1	a	b	c	d	t	l_0	r	
			SDZ 440 400-03 R	■	■	_	4	4		0.4			1.75	40	0.30	SDA 4…
			SDZ 440 400-05 R	■	■	_	4	4		0.4			1.75	40	0.50	SDA 4…
			SDZ 440 400-10 R	■	■	_	4	4		0.4			1.75	40	1.00	SDA 4…
			SDZ 644 600-05 R	■	■	_	6	6		0.6			2.75	44	0.50	SDA 6…
			SDZ 644 600-10 R	■	■	_	6	6		0.6			2.75	44	1.00	SDA 6…
			SDZ 644 600-15 R	■	■	_	6	6		0.6			2.75	44	1.50	SDA 6…

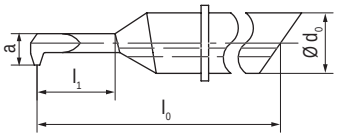
Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

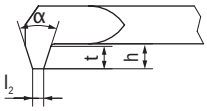
■ Standard
□ Semi Standard

Gewindedrehen, Teilprofil | Filetage, profil partiel | Threading, partial profile





SDU…

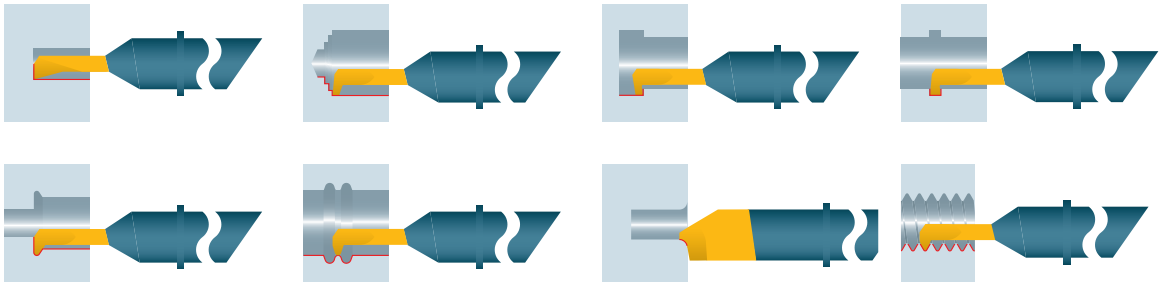


Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*												Halter Porte-outil Holder
				●	●											142…
				○	●											
				○	●											
				●	○											
L	N	R		UHM 20	UHM 20 HX	Ø D_{mm}	Ø d_0	a	h	t	l_0	l_1	l_2	Bereich Gamme Range	Steigung Pas Pitch	
			SDU 435 160 R	■	■	1.6	4	1.1	0.50	0.35	35	3.0	0.02	M1.6 - M2	0.35 - 0.40	SDA 4…
			SDU 440 160 R	■	■	1.6	4	1.1	0.50	0.35	40	4.8	0.02	M1.6 - M2	0.35 - 0.40	SDA 4…
			SDU 435 200 R	■	■	2.0	4	1.3	0.60	0.45	35	4.5	0.03	M2 - M3	0.40 - 0.50	SDA 4…
			SDU 440 200 R	■	■	2.0	4	1.3	0.60	0.45	40	6.0	0.03	M2 - M3	0.40 - 0.50	SDA 4…
			SDU 435 300 R	■	■	3.0	4	2.0	0.90	0.60	35	6.0	0.04	M3 - M4	0.50 - 0.70	SDA 4…
			SDU 440 300 R	■	■	3.0	4	2.0	0.90	0.60	40	9.0	0.04	M3 - M4	0.50 - 0.70	SDA 4…
			SDU 435 400 R	■	■	4.0	4	2.7	1.20	0.80	35	7.5	0.05	M4 - M5	0.70 - 0.80	SDA 4…
			SDU 440 400 R	■	■	4.0	4	2.7	1.20	0.80	40	12.0	0.05	M4 - M5	0.70 - 0.80	SDA 4…
			SDU 656 500 R	■	■	4.1	6	3.8	1.20	0.9	56	15.0	0.06	M5 - M6	0.80 - 1.00	SDA 6…
			SDU 656 600 R	■	■	4.9	6	4.6	1.20	0.9	56	18.0	0.07	M6 - M7	1.00	SDA 6…
			SDU 656 700 R	■	■	5.9	6	5.6	1.40	1.1	56	21.0	0.08	M7 - M8	1.00 - 1.25	SDA 6…

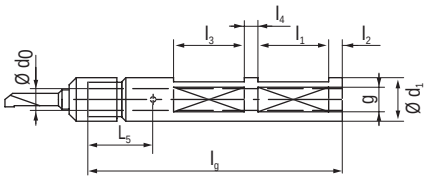
Linke Ausführung (…L) und andere Beschichtungen auf Anfrage
Exécution gauche (…L) et autres revêtements sur demande
Left execution (…L) and other coatings on demand

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

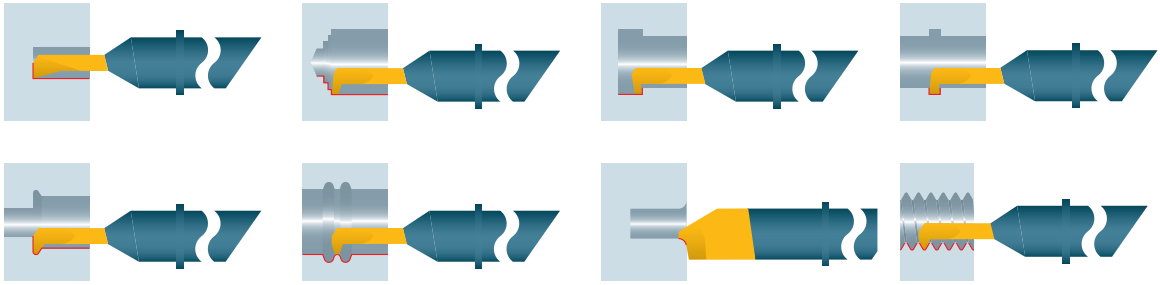
■ Standard
□ Semi Standard



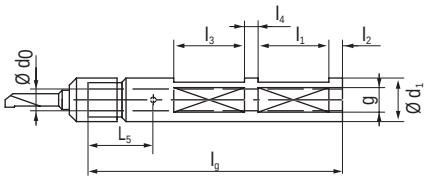
SDA...



Ausführung Exécution Execution			Bezeichnung Désignation Designation										Schneiden Plaquettes Inserts
L	N	R		Ø d_0	Ø d_1	g	l_g	l_1	l_2	l_3	l_4	L_5	129...
			SDA 4 060 07 ■	4.00	7.00	M5	60	–	–	–	–	21	SD.4.. ...
			SDA 4 060 08 ■	4.00	8.00	M5	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 10 ■	4.00	10.00	M5	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 12 ■	4.00	12.00	R 1/8"	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 12.7 ■	4.00	12.70	R 1/8"	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 14 □	4.00	14.00	R 1/8"	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 16 ■	4.00	16.00	R 1/8"	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 18 □	4.00	18.00	R 1/8"	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 19.05 ■	4.00	19.05	R 1/8"	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 20 ■	4.00	20.00	R 1/8"	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 22 ■	4.00	22.00	R 1/8"	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 25 ■	4.00	25.00	R 1/8"	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 25,40 ■	4.00	25.40	R 1/8"	60	27	5	–	–	21	SD.4.. ...
			SDA 4 060 28 ■	4.00	28.00	R 1/8"	60	27	5	–	–	21	SD.4.. ...
			SDA 4 100 08 □	4.00	8.00	R 1/8"	100	27	5	–	–	21	SD.4.. ...
			SDA 4 100 10 □	4.00	10.00	R 1/8"	100	27	5	–	–	21	SD.4.. ...
			SDA 4 120 12 ■	4.00	12.00	R 1/8"	120	27	5	27	5	21	SD.4.. ...
			SDA 4 120 12,7 □	4.00	12.70	R 1/8"	120	27	5	27	5	21	SD.4.. ...
			SDA 4 120 14 □	4.00	14.00	R 1/8"	120	27	5	27	5	21	SD.4.. ...
			SDA 4 120 16 ■	4.00	16.00	R 1/8"	120	27	5	27	5	21	SD.4.. ...
			SDA 4 120 18 □	4.00	18.00	R 1/8"	120	27	5	27	5	21	SD.4.. ...
			SDA 4 120 19.05 ■	4.00	19.05	R 1/8"	120	27	5	27	5	21	SD.4.. ...
			SDA 4 120 20 ■	4.00	20.00	R 1/8"	120	27	5	27	5	21	SD.4.. ...
			SDA 4 175 20 □	4.00	20.00	R 1/8"	175	27	5	27	5	21	SD.4.. ...
			SDA 4 120 22 ■	4.00	22.00	R 1/8"	120	27	5	27	5	21	SD.4.. ...
			SDA 4 120 25 ■	4.00	25.00	R 1/8"	120	27	5	27	5	21	SD.4.. ...
			SDA 4 120 25.4 ■	4.00	25.40	R 1/8"	120	27	5	27	5	21	SD.4.. ...
			SDA 4 120 28 ■	4.00	28.00	R 1/8"	120	27	5	27	5	21	SD.4.. ...
			SDA 6 065 12 ■	6.00	12.00	R 1/8"	65	27	5	–	–	24	SD.6.. ...
			SDA 6 065 12.7 □	6.00	12.70	R 1/8"	65	27	5	–	–	24	SD.6.. ...
			SDA 6 065 14 □	6.00	14.00	R 1/8"	65	27	5	–	–	24	SD.6.. ...
			SDA 6 065 16 ■	6.00	16.00	R 1/8"	65	27	5	–	–	24	SD.6.. ...
			SDA 6 065 18 □	6.00	18.00	R 1/8"	65	27	5	–	–	24	SD.6.. ...
			SDA 6 065 19.05 ■	6.00	19.05	R 1/8"	65	27	5	–	–	24	SD.6.. ...
			SDA 6 065 20 ■	6.00	20.00	R 1/8"	65	27	5	–	–	24	SD.6.. ...
			SDA 6 065 22 ■	6.00	22.00	R 1/8"	65	27	5	–	–	24	SD.6.. ...
			SDA 6 065 25 ■	6.00	25.00	R 1/8"	65	27	5	–	–	24	SD.6.. ...
			SDA 6 065 25,4 ■	6.00	25.40	R 1/8"	65	27	5	–	–	24	SD.6.. ...
			SDA 6 065 28 ■	6.00	28.00	R 1/8"	65	27	5	–	–	24	SD.6.. ...
			SDA 6 100 12 ■	6.00	12.00	R 1/8"	100	27	5	–	–	24	SD.6.. ...
			SDA 6 120 12,7 □	6.00	12.70	R 1/8"	120	27	5	27	5	24	SD.6.. ...
			SDA 6 120 14 □	6.00	14.00	R 1/8"	120	27	5	27	5	24	SD.6.. ...
			SDA 6 120 16 ■	6.00	16.00	R 1/8"	120	27	5	27	5	24	SD.6.. ...
			SDA 6 120 18 □	6.00	18.00	R 1/8"	120	27	5	27	5	24	SD.6.. ...
			SDA 6 120 19.05 ■	6.00	19.05	R 1/8"	120	27	5	27	5	24	SD.6.. ...
			SDA 6 120 20 ■	6.00	20.00	R 1/8"	120	27	5	27	5	24	SD.6.. ...
			SDA 6 120 22 ■	6.00	22.00	R 1/8"	120	27	5	27	5	24	SD.6.. ...
			SDA 6 120 25 ■	6.00	25.00	R 1/8"	120	27	5	27	5	24	SD.6.. ...
			SDA 6 120 25.40 ■	6.00	25.40	R 1/8"	120	27	5	27	5	24	SD.6.. ...
			SDA 6 120 28 ■	6.00	28.00	R 1/8"	120	27	5	27	5	24	SD.6.. ...

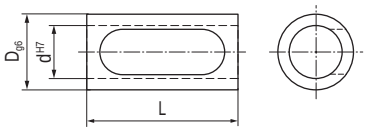


SDA...

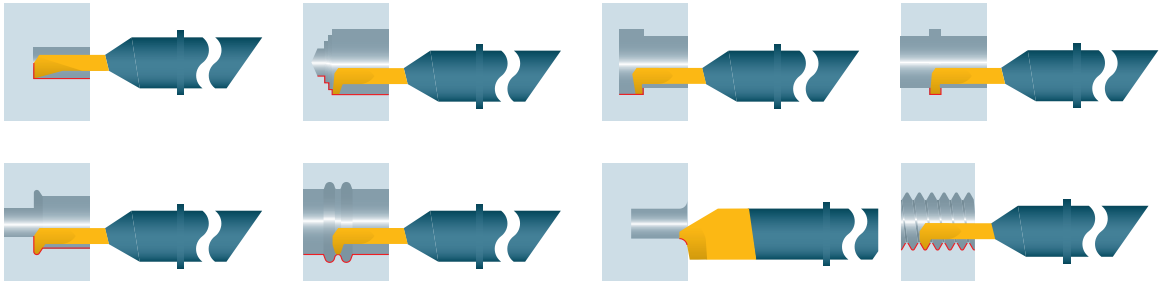


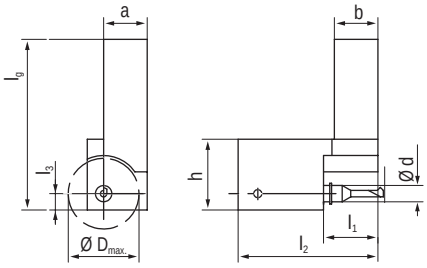
Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R			Ø d_0	Ø d_1	g	l_g	l_1	l_2	l_3	l_4	L_5	129...
			SDA 8 070 14	■	8.00	14.00	R 1/8"	70	27	5	–	–	26	SD.8.. ...
			SDA 8 070 16	■	8.00	16.00	R 1/8"	70	27	5	–	–	26	SD.8.. ...
			SDA 8 070 19.05	■	8.00	19.05	R 1/8"	70	27	5	–	–	26	SD.8.. ...
			SDA 8 070 20	■	8.00	20.00	R 1/8"	70	27	5	–	–	26	SD.8.. ...
			SDA 8 070 22	■	8.00	22.00	R 1/8"	70	27	5	–	–	26	SD.8.. ...
			SDA 8 070 25	■	8.00	25.00	R 1/8"	70	27	5	–	–	26	SD.8.. ...
			SDA 8 070 25,4	■	8.00	25.40	R 1/8"	70	27	5	–	–	26	SD.8.. ...
			SDA 8 070 28	□	8.00	28.00	R 1/8"	70	27	5	–	–	26	SD.8.. ...
			SDA 8 100 14	□	8.00	14.00	R 1/8"	100	27	5	–	–	26	SD.8.. ...
			SDA 8 120 16	■	8.00	16.00	R 1/8"	120	27	5	27	5	26	SD.8.. ...
			SDA 8 120 18	□	8.00	18.00	R 1/8"	120	27	5	27	5	26	SD.8.. ...
			SDA 8 120 19.05	■	8.00	19.05	R 1/8"	120	27	5	27	5	26	SD.8.. ...
			SDA 8 120 20	■	8.00	20.00	R 1/8"	120	27	5	27	5	26	SD.8.. ...
			SDA 8 120 22	■	8.00	22.00	R 1/8"	120	27	5	27	5	26	SD.8.. ...
			SDA 8 120 25	■	8.00	25.00	R 1/8"	120	27	5	27	5	26	SD.8.. ...
			SDA 8 120 25,40	■	8.00	25.40	R 1/8"	120	27	5	27	5	26	SD.8.. ...
			SDA 8 120 28	■	8.00	28.00	R 1/8"	120	27	5	27	5	26	SD.8.. ...

MRH...



Bezeichnung Désignation Designation			
	d_{H7}	D_{g6}	L
MRH 1600 1230	12	16.00	30
MRH 1905 1240	12	19.05	40
MRH 2200 1240	12	22.00	40
MRH 2540 1240	12	25.40	40
MRH 1905 1640	16	19.05	40
MRH 2200 1640	16	22.00	40
MRH 2540 1640	16	25.40	40





AKR...

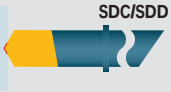
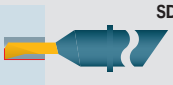
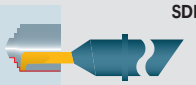
Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R			a	b	Ø $D_{max.}$	h	Ø d	l_g	l_1	l_2	l_3	129…
			AKR 0808x96 D04	■	8.00	8.00	26.00	26	4.00	96.00	20	50	6	SD.4.. …
			AKR 1010x96 D04	■	10.00	10.00	26.00	26	4.00	96.00	20	50	6	SD.4.. …
			AKR 1212x96 D04	■	12.00	12.00	26.00	26	4.00	96.00	20	50	6	SD.4.. …
			AKR 1/2"x96 D04	□	12.7	12.7	26.00	26	4.00	96.00	20	50	6	SD.4.. …
			AKR 1616x96 D04	■	16.00	16.00	26.00	26	4.00	96.00	20	50	6	SD.4.. …
			AKR 1010x96 D06	■	10.00	10.00	26.00	26	6.00	96.00	20	52	6	SD.6.. …
			AKR 1212x96 D06	■	12.00	12.00	26.00	26	6.00	96.00	20	52	6	SD.6.. …
			AKR 1/2"x96 D04	□	12.7	12.7	26.00	26	6.00	96.00	20	52	6	SD.6.. …
			AKR 1616x96 D06	■	16.00	16.00	28.00	26	6.00	96.00	20	52	6	SD.6.. …
			AKR 1212x97 D08	■	12.00	12.00	26.00	27	8.00	97.20	24.5	60	7.2	SD.8.. …
			AKR 1616x97 D08	■	16.00	16.00	28.00	27	8.00	97.20	24.5	60	7.2	SD.8.. …

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	D_0	D_1	M	L_1	L_2
	MSP SDA 4M	SDA 4…	Überwurfmutter | écrou fileté | nut		9.80	M8x0.50	12	3
	MSP SDA 6M	SDA 6…	Überwurfmutter | écrou fileté | nut		14.80	M12x0.60	16	4
	MSP SDA 8M	SDA 8…	Überwurfmutter | écrou fileté | nut		17.80	M14x0.75	18	5
	MSP SDA 4S	SDA 4…	Sicherungsringe | circlips | retaining ring	4				
	MSP SDA 6S	SDA 6…	Sicherungsringe | circlips | retaining ring	6				
	MSP SDA 8S	SDA 8…	Sicherungsringe | circlips | retaining ring	8				
	SDA 4X	SDA 4…	Ausrichthilfe | outil d'ajustage | aligning device	4				
	SDA 6X	SDA 6…	Ausrichthilfe | outil d'ajustage | aligning device	6				
	SDA 8X	SDA 8…	Ausrichthilfe | outil d'ajustage | aligning device	8				

Vorschübe (f) (mm/U)
Schnitttiefen (ap) (mm)

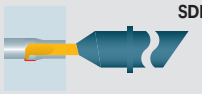
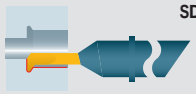
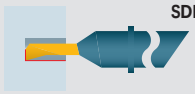
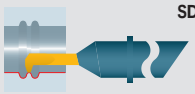
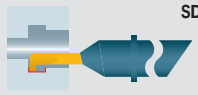
Avances (f) (mm/tr)
Profondeurs de passes (ap) (mm)

Feed (f) (mm/rev.)
Depths of cut (ap) (mm)

SDC/SDD  SDY  SDZ  SDG  SDI 

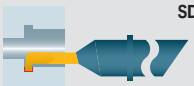
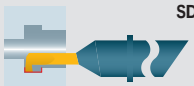
Werkstoffe | Matières | Materials

	Stahl unlegiert Acier non allié Steel unalloyed		Stahl niedrig legiert Acier faibl. allié Steel low alloyed		Stahl hochlegiert Acier fortem. allié Steel high alloyed		Rostfreier Stahl Acier inoxydable Stainless steel		Titan Titane Titanium		Gold Or Gold		Aluminium Aluminium Aluminium		Messing Laiton Brass	
Ø	f	ap	f	ap	f	ap	f	ap	f	ap	f	ap	f	ap	f	ap
1	0.010	0.10	0.010	0.10	0.007	0.07	0.007	0.07	0.006	0.06	0.010	0.10	0.010	0.10	0.010	0.10
	–0.020	–0.20	–0.017	–0.17	–0.017	–0.17	–0.017	–0.17	–0.020	–0.20	–0.015	–0.15	–0.025	–0.25	–0.025	–0.25
2	0.012	0.12	0.012	0.12	0.008	0.08	0.008	0.08	0.008	0.08	0.015	0.15	0.015	0.15	0.015	0.15
	–0.022	–0.22	–0.020	–0.20	–0.018	–0.18	–0.018	–0.18	–0.020	–0.20	–0.020	–0.20	–0.030	–0.30	–0.030	–0.30
3	0.015	0.15	0.014	0.14	0.009	0.09	0.009	0.09	0.010	0.10	0.015	0.15	0.015	0.15	0.015	0.15
	–0.025	–0.25	–0.024	–0.24	–0.019	–0.19	–0.019	–0.19	–0.020	–0.20	–0.025	–0.25	–0.035	–0.35	–0.035	–0.35
4	0.015	0.15	0.015	0.15	0.010	0.10	0.010	0.10	0.010	0.10	0.015	0.15	0.015	0.15	0.015	0.15
	–0.027	–0.27	–0.025	–0.25	–0.020	–0.20	–0.020	–0.20	–0.020	–0.20	–0.030	–0.30	–0.035	–0.35	–0.035	–0.35
6	–0.015	–0.15	0.015	0.15	0.010	0.10	0.010	0.10	0.010	0.10	0.015	0.15	0.015	0.15	0.015	0.15
	0.030	0.30	–0.025	–0.25	–0.020	–0.20	–0.020	–0.20	–0.025	–0.25	–0.030	–0.30	–0.040	–0.40	–0.040	–0.40
8	–0.015	–0.15	0.015	0.15	0.010	0.10	0.010	0.10	0.010	0.10	0.015	0.15	0.015	0.15	0.015	0.15
	0.030	0.30	–0.025	–0.25	–0.020	–0.20	–0.020	–0.20	–0.025	–0.25	–0.030	–0.30	–0.050	–0.50	–0.040	–0.40

SDK  SDQ  SDM  SDO  SDT 

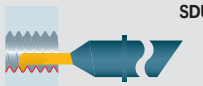
Werkstoffe | Matières | Materials

	Stahl unlegiert Acier non allié Steel unalloyed		Stahl niedrig legiert Acier faibl. allié Steel low alloyed		Stahl hochlegiert Acier fortem. allié Steel high alloyed		Rostfreier Stahl Acier inoxydable Stainless steel		Titan Titane Titanium		Gold Or Gold		Aluminium Aluminium Aluminium		Messing Laiton Brass	
Ø	f	ap	f	ap	f	ap	f	ap	f	ap	f	ap	f	ap	f	ap
1	0.010	0.10	0.010	0.10	0.007	0.07	0.007	0.07	0.006	0.06	0.010	0.10	0.007	0.07	0.007	0.07
	–0.020	–0.20	–0.017	–0.17	–0.015	–0.15	–0.015	–0.15	–0.012	–0.12	–0.020	–0.20	–0.012	–0.12	–0.012	–0.12
2	0.010	0.10	0.010	0.10	0.008	0.08	0.008	0.08	0.008	0.08	0.010	0.10	0.010	0.10	0.010	0.10
	–0.022	–0.22	–0.020	–0.20	–0.017	–0.17	–0.017	–0.17	–0.015	–0.15	–0.022	–0.22	–0.015	–0.15	–0.015	–0.15
3	0.010	0.10	0.010	0.10	0.009	0.09	0.009	0.09	0.008	0.08	0.010	0.10	0.010	0.10	0.010	0.10
	–0.025	–0.25	–0.022	–0.22	–0.020	–0.20	–0.020	–0.20	–0.017	–0.17	–0.025	–0.25	–0.020	–0.20	–0.020	–0.20
4	0.010	0.10	0.010	0.10	0.010	0.10	0.010	0.10	0.008	0.08	0.010	0.10	0.010	0.10	0.010	0.10
	–0.025	–0.25	–0.025	–0.25	–0.022	–0.22	–0.022	–0.22	–0.020	–0.20	–0.025	–0.25	–0.025	–0.25	–0.025	–0.25
5	0.010	0.10	0.010	0.10	0.010	0.10	0.010	0.10	0.008	0.08	0.010	0.10	0.010	0.10	0.010	0.10
	–0.025	–0.25	–0.025	–0.25	–0.025	–0.25	–0.025	–0.25	–0.020	–0.20	–0.025	–0.25	–0.030	–0.30	–0.030	–0.30
6	0.010	0.10	0.010	0.10	0.010	0.10	0.010	0.10	0.008	0.08	0.010	0.10	0.010	0.10	0.010	0.10
	–0.025	–0.25	–0.025	–0.25	–0.025	–0.25	–0.025	–0.25	–0.020	–0.20	–0.025	–0.25	–0.035	–0.35	–0.030	–0.30

SDS  SDT 

Werkstoffe | Matières | Materials

Stahl unlegiert Acier non allié Steel unalloyed		Stahl niedrig legiert Acier faibl. allié Steel low alloyed		Stahl hochlegiert Acier fortem. allié Steel high alloyed		Rostfreier Stahl Acier inoxydable Stainless steel		Titan Titane Titanium		Gold Or Gold		Aluminium Aluminium Aluminium		Messing Laiton Brass	
f	ap	f	ap	f	ap	f	ap	f	ap	f	ap	f	ap	f	ap
0.007	0.07	0.005	0.05	0.005	0.05	0.005	0.05	0.005	0.05	0.007	0.07	0.007	0.07	0.007	0.07
–0.020	–0.20	–0.015	–0.15	–0.015	–0.15	–0.015	–0.15	–0.015	–0.15	–0.020	–0.20	–0.020	–0.20	–0.020	–0.20

SDU 

Werkstoffe | Matières | Materials

Stahl unlegiert Acier non allié Steel unalloyed		Stahl niedrig legiert Acier faibl. allié Steel low alloyed		Stahl hochlegiert Acier fortem. allié Steel high alloyed		Rostfreier Stahl Acier inoxydable Stainless steel		Titan Titane Titanium		Gold Or Gold		Aluminium Aluminium Aluminium		Messing Laiton Brass	
f	ap	f	ap	f	ap	f	ap	f	ap	f	ap	f	ap	f	ap
0.007	0.07	0.005	0.05	0.005	0.05	0.005	0.05	0.005	0.05	0.007	0.07	0.007	0.07	0.007	0.07
–0.020	–0.20	–0.015	–0.15	–0.015	–0.15	–0.015	–0.15	–0.015	–0.15	–0.020	–0.20	–0.020	–0.20	–0.020	–0.20

	Werkstoffe | Matières | Materials			
	Stahl unlegiert Acier non allié Steel unalloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium
Härte (HB) Dureté (HB) Hardness value (HB)	125–300	180–250	200–350	–
Kategorie Catégrie Category	I	II	III	IV

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm

Avances (f) en mm/tr et profondeurs de passes (ap) en mm

Feed (f) in mm/rev and depths of cut (ap) in mm

Vorschübe (f) und Schnitttiefen (ap) siehe Seite 145
Avances (f) et profondeurs de passes (ap) voir page 145
Feed (f) and depths of cut (ap) see page 145

Schnittgeschwindigkeiten (v_c) in m/min

Vitesses de coupe (v_c) en m/min

Cutting speed (v_c) in m/min

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20	–	–	20–140	–	–	15–100	–	–	15–90	–	–	15–120
UHM 20 SX	–	–	20–140	–	–	15–100	–	–	15–90	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	20–140	–	–	15–100	–	–	15–90	–	–	15–120
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	–	–	–	–	–	–	–	–	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

	Werkstoffe | Matières | Materials			
	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
Härte (HB) Dureté (HB) Hardness value (HB)	180–220	220–330	60–130	–
Kategorie Catégrie Category	V	VI	VII	VIII

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm

Avances (f) en mm/tr et profondeurs de passes (ap) en mm

Feed (f) in mm/rev and depths of cut (ap) in mm

Vorschübe (f) und Schnitttiefen (ap) siehe Seite 145
Avances (f) et profondeurs de passes (ap) voir page 145
Feed (f) and depths of cut (ap) see page 145

Schnittgeschwindigkeiten (v_c) in m/min

Vitesses de coupe (v_c) en m/min

Cutting speed (v_c) in m/min

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20	–	–	40–90	–	–	15–40	–	–	25–220	–	–	25–220
UHM 20 SX	–	–	40–90	–	–	15–40	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	40–90	–	–	15–40	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	–	–	–	–	–	–	–	–	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

Multidec®-Easy Bore ist ein einschneidiges Drehwerkzeug im Bereich ab 7.8 mm Durchmesser, das durch seine hohe Austauschbarkeit besticht.
Für eine bessere Leistung sind die HM-Schneideinsätze mit einer TiAlN-Beschichtung (HX) erhältlich. Sie werden stirnseitig mit dem Schaft verschraubt. Für eine einfachste Handhabung wird dazu eine bewährte 3-Rippenverzahnung verwendet. Die Klemmhalter können sowohl mit schwingungsarmem HM-Schaft als auch mit Stahlhaltern geliefert werden. Bis zu einer Auskraglänge von 80 mm besitzen sie eine innere Kühlmittelzufuhr.

Multidec®-Easy Bore est un outil de tournage intérieur au diamètre de travail minimal de 7.8 mm, interchangeable avec plusieurs géométries de coupe.
Pour une augmentation de la durée de vie de l'outil, les pastilles carbure sont également disponibles avec un revêtement TiAlN (HX). Interchangeabilité aisée grâce à l'autocentrage des pastilles carbure sur le porte pastille et ceux-ci sont livrables en carbure ou en acier. Pour les longueurs utiles jusqu'à 80 mm, l'arrosage central est intégré.

Multidec®-Easy Bore is a one-edged cutting tool with the application range beginning from diameter 7.8 mm and impresses by his exchangeability.
high performance TiAln (HX) coated inserts are available.
Highly qualified inserts affix the end of the holder and can be changed by use of a simple screwdriver. Three positive ribs on the carbide insert ensure accurate locating within the holder. The holders are available with low vibration carbide or steel shank. All holders under 80mm in length feature internal coolant delivery.

Vorteile
- Drehen ab Ø 7.8 mm
- Hohe Flexibilität durch Austauschbarkeit
- Einfache Handhabung durch Schnittstelle mit 3-Rippenverzahnung
- Innenkühlung bis Auskraglänge von 80 mm

Avantages
- Usinage intérieur dès Ø 7.8 mm
- Grande flexibilité et interchangeabilité
- Positionnement garanti par autocentrage de l'appui
- Arrosage central pour les longueurs utiles jusqu'à 80 mm

Advantages
- Turning from Ø 7.8 mm
- Great flexibility by exchangeability
- Easy handling by 3-rip notching
- Internal cooling system until length of 80 mm

Schneiden siehe Seite 152…
Halter siehe Seite 178…

Plaquettes voir page 152…
Porte-outils voir page 178…

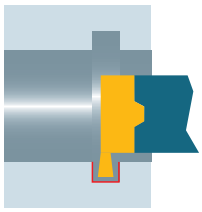
Inserts see page 152…
Holders see page 178…

Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung auch lieferbar.

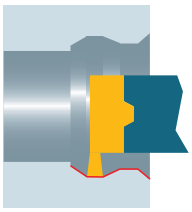
Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

All illustrations show right hand design. Left hand design is also available.

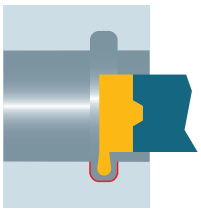
Einstechen (radial)
Rainurage (radial)
Grooving (radial)



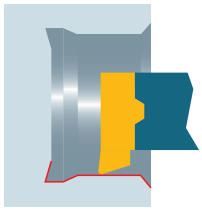
Vornedrehen
Tournage avant
Front turning



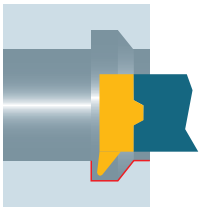
Einstechen und Längsdrehen (Vollradius)
Rainurage et rayonnage (Rayon complet)
Grooving and turning (Full nose radius)



Vornedrehen
Tournage avant
Front turning

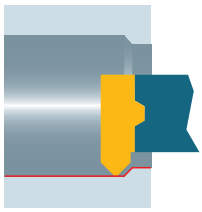


Vornedrehen (Innenfreistich)
Tournage avant (Dégagement)
Front turning (Profiling under cuts)

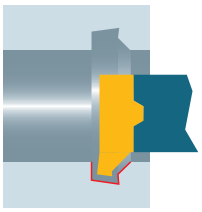


Hintendrehen
Tournage arrière
Back turning

Ausdrehen und Fasen
Chanfreinage et tournage
Chamfering and turning



Vorstechen und Fasen
Amorçe de tronçonnage et chanfreinage
Pregrooving and chamfering



Schneiden siehe Seite 152…
Halter siehe Seite 178…

Plaquettes voir page 152…
Porte-outils voir page 178…

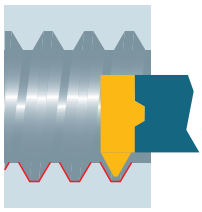
Inserts see page 152…
Holders see page 178…

Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung auch lieferbar.

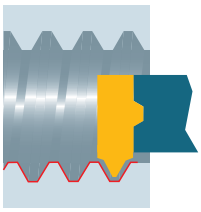
Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

All illustrations show right hand design. Left hand design is also available.

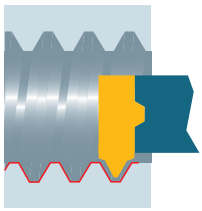
Gewindedrehen ISO (Teilprofil)
Filetage ISO (profil partiel)
Threading ISO (partial profile)



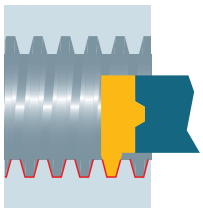
Gewindedrehen ISO (Vollprofil)
Filetage ISO (profil complet)
Threading ISO (full profile)



Gewindedrehen, Withworth (Vollprofil)
Filetage, Withworth (profil complet)
Threading, Withworth (full profile)

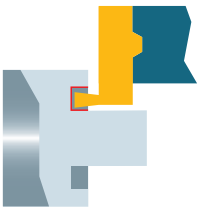


Gewindedrehen, Trapez
Filetage, trapézoïdal
Threading, trapezoid

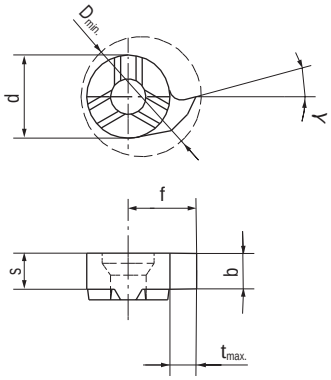


Einstechen (axial)
Rainurage (axial)
Grooving (axial)

Einstechen (axial)
Rainurage (axial)
Grooving (axial)



Rohling | Ebanche | Blank



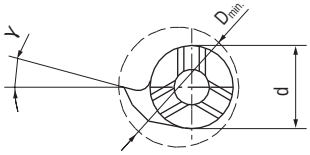
Typ 01

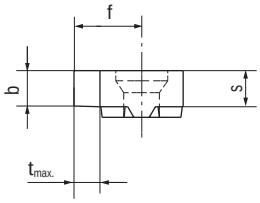
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				● ● ● ○								178…
L	N	R		UHM 30	$D_{min.}$	d	f	γ	s	$t_{max.}$	b+0.1	
			MEB 01 08 L	■	8.0	6.0	5.20	5°	3.3	2.2	3.5	MEB 00 08 …
			MEB 01 11 L	■	11.0	8.0	7.30	5°	4.2	3.3	4.2	MEB 00 11 …
			MEB 01 14 L	■	14.0	9.0	9.55	5°	5.3	5.0	5.3	MEB 00 14 …
			MEB 01 14 LA-18	■	14.0	9.0		5°	5.3	3.5	5.3	MEB 00 14 …
			MEB 01 14 LA-19	■	14.0	9.0		5°	5.3	3.5	5.3	MEB 00 14 …
			MEB 01 16 L	■	16.0	11.0	10.80	5°	5.4	5.4	5.4	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Rohling | Ebanche | Blank





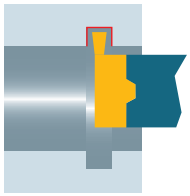
Typ 01

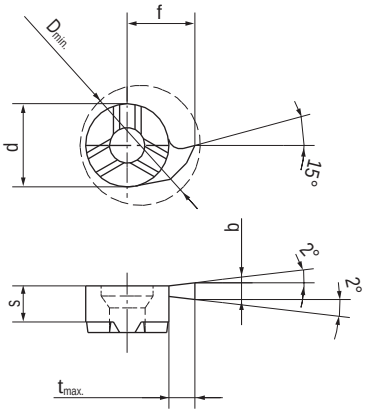
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				● ● ● ○								178…
L	N	R		UHM 30	$D_{min.}$	d	f	γ	s	$t_{max.}$	b+0.1	
			MEB 01 08 R	■	8.0	6.0	5.20	5°	3.3	2.2	3.5	MEB 00 08 …
			MEB 01 11 R	■	11.0	8.0	7.30	5°	4.2	3.3	4.2	MEB 00 11 …
			MEB 01 14 R	■	14.0	9.0	9.55	5°	5.3	5.0	5.3	MEB 00 14 …
			MEB 01 14 RA-18	■	14.0	9.0		5°	5.3	3.5	5.3	MEB 00 14 …
			MEB 01 14 RA-19	■	14.0	9.0		5°	5.3	3.5	5.3	MEB 00 14 …
			MEB 01 16 R	■	16.0	11.0	10.80	5°	5.4	5.4	5.4	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Einstechen | Rainurage | Grooving





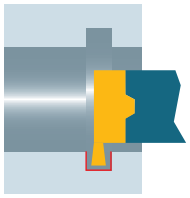
Typ 02

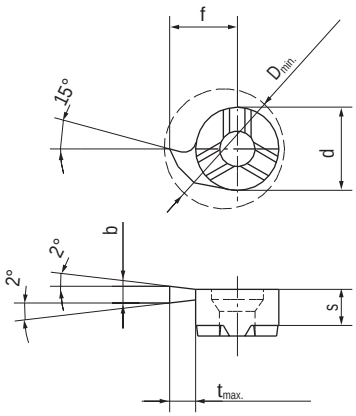
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*							Halter Porte-outil Holder
				● ● ● ○							178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	b+0.03	
			MEB 02 08 10010 L	■	8.0	6.0	4.8	3.3	1.0	1.0	MEB 00 08 …
			MEB 02 08 15010 L	■	8.0	6.0	4.8	3.3	1.0	1.5	MEB 00 08 …
			MEB 02 08 20010 L	■	8.0	6.0	4.8	3.3	1.0	2.0	MEB 00 08 …
			MEB 02 11 10023 L	■	11.0	8.0	6.7	4.2	2.3	1.0	MEB 00 11 …
			MEB 02 11 15023 L	■	11.0	8.0	6.7	4.2	2.3	1.5	MEB 00 11 …
			MEB 02 11 20023 L	■	11.0	8.0	6.7	4.2	2.3	2.0	MEB 00 11 …
			MEB 02 11 25023 L	■	11.0	8.0	6.7	4.2	2.3	2.5	MEB 00 11 …
			MEB 02 11 30023 L	■	11.0	8.0	6.7	4.2	2.3	3.0	MEB 00 11 …
			MEB 02 14 15040 L	■	14.0	9.0	9.0	5.3	4.0	1.5	MEB 00 14 …
			MEB 02 14 15055 L	■	14.0	9.0	9.0	5.3	5.5	1.5	MEB 00 14 …
			MEB 02 14 15065 L	■	14.0	9.0	9.0	5.3	6.5	1.5	MEB 00 14 …
			MEB 02 14 20040 L	■	14.0	9.0	9.0	5.3	4.0	2.0	MEB 00 14 …
			MEB 02 14 20055 L	■	14.0	9.0	9.0	5.3	5.5	2.0	MEB 00 14 …
			MEB 02 14 20065 L	■	14.0	9.0	9.0	5.3	6.5	2.0	MEB 00 14 …
			MEB 02 14 25040 L	■	14.0	9.0	9.0	5.3	4.0	2.5	MEB 00 14 …
			MEB 02 14 25055 L	■	14.0	9.0	9.0	5.3	5.5	2.5	MEB 00 14 …
			MEB 02 14 25065 L	■	14.0	9.0	9.0	5.3	6.5	2.5	MEB 00 14 …
			MEB 02 14 30040 L	■	14.0	9.0	9.0	5.3	4.0	3.0	MEB 00 14 …
			MEB 02 14 30055 L	■	14.0	9.0	9.0	5.3	5.5	3.0	MEB 00 14 …
			MEB 02 14 30065 L	■	14.0	9.0	9.0	5.3	6.5	3.0	MEB 00 14 …
			MEB 02 16 15043 L	■	16.0	11.0	10.2	5.4	4.3	1.5	MEB 00 16 …
			MEB 02 16 20043 L	■	16.0	11.0	10.2	5.4	4.3	2.0	MEB 00 16 …
			MEB 02 16 25043 L	■	16.0	11.0	10.2	5.4	4.3	2.5	MEB 00 16 …
			MEB 02 16 30043 L	■	16.0	11.0	10.2	5.4	4.3	3.0	MEB 00 16 …
			MEB 02 16 35043 L	■	16.0	11.0	10.2	5.4	4.3	3.5	MEB 00 16 …
			MEB 02 16 40043 L	■	16.0	11.0	10.2	5.4	4.3	4.0	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Einstechen | Rainurage | Grooving





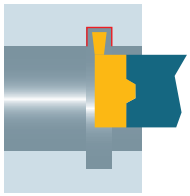
Typ 02

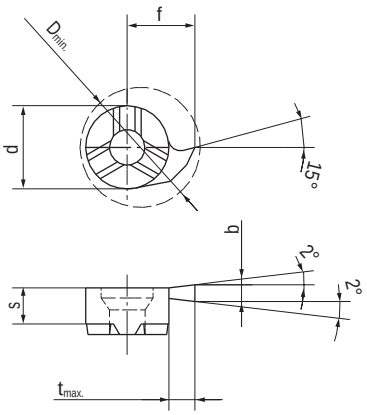
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*							Halter Porte-outil Holder
				●							178…
				●							
				●							
				○							
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	b+0.03	
			MEB 02 08 10010 R	■	8.0	6.0	4.8	3.3	1.0	1.0	MEB 00 08 …
			MEB 02 08 15010 R	■	8.0	6.0	4.8	3.3	1.0	1.5	MEB 00 08 …
			MEB 02 08 20010 R	■	8.0	6.0	4.8	3.3	1.0	2.0	MEB 00 08 …
			MEB 02 11 10023 R	■	11.0	8.0	6.7	4.2	2.3	1.0	MEB 00 11 …
			MEB 02 11 15023 R	■	11.0	8.0	6.7	4.2	2.3	1.5	MEB 00 11 …
			MEB 02 11 20023 R	■	11.0	8.0	6.7	4.2	2.3	2.0	MEB 00 11 …
			MEB 02 11 25023 R	■	11.0	8.0	6.7	4.2	2.3	2.5	MEB 00 11 …
			MEB 02 11 30023 R	■	11.0	8.0	6.7	4.2	2.3	3.0	MEB 00 11 …
			MEB 02 14 15040 R	■	14.0	9.0	9.0	5.3	4.0	1.5	MEB 00 14 …
			MEB 02 14 15055 R	■	14.0	9.0	9.0	5.3	5.5	1.5	MEB 00 14 …
			MEB 02 14 15065 R	■	14.0	9.0	9.0	5.3	6.5	1.5	MEB 00 14 …
			MEB 02 14 20040 R	■	14.0	9.0	9.0	5.3	4.0	2.0	MEB 00 14 …
			MEB 02 14 20055 R	■	14.0	9.0	9.0	5.3	5.5	2.0	MEB 00 14 …
			MEB 02 14 20065 R	■	14.0	9.0	9.0	5.3	6.5	2.0	MEB 00 14 …
			MEB 02 14 25040 R	■	14.0	9.0	9.0	5.3	4.0	2.5	MEB 00 14 …
			MEB 02 14 25055 R	■	14.0	9.0	9.0	5.3	5.5	2.5	MEB 00 14 …
			MEB 02 14 25065 R	■	14.0	9.0	9.0	5.3	6.5	2.5	MEB 00 14 …
			MEB 02 14 30040 R	■	14.0	9.0	9.0	5.3	4.0	3.0	MEB 00 14 …
			MEB 02 14 30055 R	■	14.0	9.0	9.0	5.3	5.5	3.0	MEB 00 14 …
			MEB 02 14 30065 R	■	14.0	9.0	9.0	5.3	6.5	3.0	MEB 00 14 …
			MEB 02 16 15043 R	■	16.0	11.0	10.2	5.4	4.3	1.5	MEB 00 16 …
			MEB 02 16 20043 R	■	16.0	11.0	10.2	5.4	4.3	2.0	MEB 00 16 …
			MEB 02 16 25043 R	■	16.0	11.0	10.2	5.4	4.3	2.5	MEB 00 16 …
			MEB 02 16 30043 R	■	16.0	11.0	10.2	5.4	4.3	3.0	MEB 00 16 …
			MEB 02 16 35043 R	■	16.0	11.0	10.2	5.4	4.3	3.5	MEB 00 16 …
			MEB 02 16 40043 R	■	16.0	11.0	10.2	5.4	4.3	4.0	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Einstechen (Ringnuten) | Rainurage (Rainure) | Grooving (Circlips)





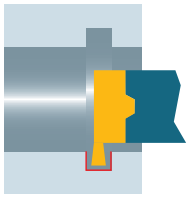
Typ 03

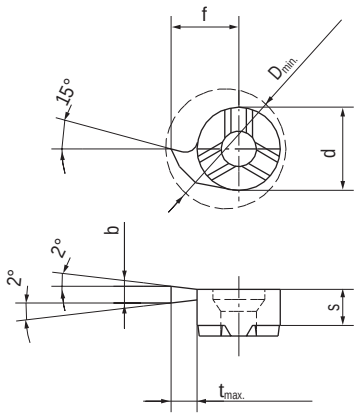
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				● ● ● ○								178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	b+0.03	Breite Seegerring Largeur de circlip Width of circlip	
			MEB 03 08 0070 L	■	8.0	6.0	4.8	3.3	1.0	0.73	0.7	MEB 00 08 …
			MEB 03 08 0080 L	■	8.0	6.0	4.8	3.3	1.0	0.83	0.8	MEB 00 08 …
			MEB 03 08 0090 L	■	8.0	6.0	4.8	3.3	1.0	0.93	0.9	MEB 00 08 …
			MEB 03 08 0110 L	■	8.0	6.0	4.8	3.3	1.0	1.20	1.1	MEB 00 08 …
			MEB 03 08 0130 L	■	8.0	6.0	4.8	3.3	1.0	1.40	1.3	MEB 00 08 …
			MEB 03 08 0160 L	■	8.0	6.0	4.8	3.3	1.0	1.70	1.6	MEB 00 08 …
			MEB 03 11 0070 L	■	11.0	8.0	6.7	4.2	1.2	0.73	0.7	MEB 00 11 …
			MEB 03 11 0080 L	■	11.0	8.0	6.7	4.2	1.3	0.83	0.8	MEB 00 11 …
			MEB 03 11 0090 L	■	11.0	8.0	6.7	4.2	1.5	0.93	0.9	MEB 00 11 …
			MEB 03 11 0110 L	■	11.0	8.0	6.7	4.2	2.3	1.20	1.1	MEB 00 11 …
			MEB 03 11 0130 L	■	11.0	8.0	6.7	4.2	2.3	1.40	1.3	MEB 00 11 …
			MEB 03 11 0160 L	■	11.0	8.0	6.7	4.2	2.3	1.70	1.6	MEB 00 11 …
			MEB 03 14 0070 L	■	14.0	9.0	9.0	5.3	1.2	0.73	0.7	MEB 00 14 …
			MEB 03 14 0080 L	■	14.0	9.0	9.0	5.3	1.3	0.83	0.8	MEB 00 14 …
			MEB 03 14 0090 L	■	14.0	9.0	9.0	5.3	1.5	0.93	0.9	MEB 00 14 …
			MEB 03 14 0110 L	■	14.0	9.0	9.0	5.3	4.0	1.20	1.1	MEB 00 14 …
			MEB 03 14 0130 L	■	14.0	9.0	9.0	5.3	4.0	1.40	1.3	MEB 00 14 …
			MEB 03 14 0160 L	■	14.0	9.0	9.0	5.3	4.0	1.70	1.6	MEB 00 14 …
			MEB 03 16 0070 L	■	16.0	11.0	10.2	5.4	1.2	0.73	0.7	MEB 00 16 …
			MEB 03 16 0080 L	■	16.0	11.0	10.2	5.4	1.3	0.83	0.8	MEB 00 16 …
			MEB 03 16 0090 L	■	16.0	11.0	10.2	5.4	1.5	0.93	0.9	MEB 00 16 …
			MEB 03 16 0110 L	■	16.0	11.0	10.2	5.4	4.3	1.20	1.1	MEB 00 16 …
			MEB 03 16 0130 L	■	16.0	11.0	10.2	5.4	4.3	1.40	1.3	MEB 00 16 …
			MEB 03 16 0160 L	■	16.0	11.0	10.2	5.4	4.3	1.70	1.6	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Einstechen (Ringnuten) | Rainurage (Rainure) | Grooving (Circlips)





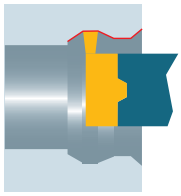
Typ 03

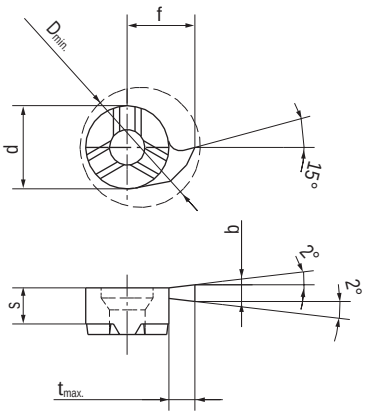
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				●								178…
				●								
				●								
				○								
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	b+0.03	Breite Seegerring Largeur de circlip Width of circlip	
			MEB 03 08 0070 R	■	8.0	6.0	4.8	3.3	1.0	0.73	0.7	MEB 00 08 …
			MEB 03 08 0080 R	■	8.0	6.0	4.8	3.3	1.0	0.83	0.8	MEB 00 08 …
			MEB 03 08 0090 R	■	8.0	6.0	4.8	3.3	1.0	0.93	0.9	MEB 00 08 …
			MEB 03 08 0110 R	■	8.0	6.0	4.8	3.3	1.0	1.20	1.1	MEB 00 08 …
			MEB 03 08 0130 R	■	8.0	6.0	4.8	3.3	1.0	1.40	1.3	MEB 00 08 …
			MEB 03 08 0160 R	■	8.0	6.0	4.8	3.3	1.0	1.70	1.6	MEB 00 08 …
			MEB 03 11 0070 R	■	11.0	8.0	6.7	4.2	1.2	0.73	0.7	MEB 00 11 …
			MEB 03 11 0080 R	■	11.0	8.0	6.7	4.2	1.3	0.83	0.8	MEB 00 11 …
			MEB 03 11 0090 R	■	11.0	8.0	6.7	4.2	1.5	0.93	0.9	MEB 00 11 …
			MEB 03 11 0110 R	■	11.0	8.0	6.7	4.2	2.3	1.20	1.1	MEB 00 11 …
			MEB 03 11 0130 R	■	11.0	8.0	6.7	4.2	2.3	1.40	1.3	MEB 00 11 …
			MEB 03 11 0160 R	■	11.0	8.0	6.7	4.2	2.3	1.70	1.6	MEB 00 11 …
			MEB 03 14 0070 R	■	14.0	9.0	9.0	5.3	1.2	0.73	0.7	MEB 00 14 …
			MEB 03 14 0080 R	■	14.0	9.0	9.0	5.3	1.3	0.83	0.8	MEB 00 14 …
			MEB 03 14 0090 R	■	14.0	9.0	9.0	5.3	1.5	0.93	0.9	MEB 00 14 …
			MEB 03 14 0110 R	■	14.0	9.0	9.0	5.3	4.0	1.20	1.1	MEB 00 14 …
			MEB 03 14 0130 R	■	14.0	9.0	9.0	5.3	4.0	1.40	1.3	MEB 00 14 …
			MEB 03 14 0160 R	■	14.0	9.0	9.0	5.3	4.0	1.70	1.6	MEB 00 14 …
			MEB 03 16 0070 R	■	16.0	11.0	10.2	5.4	1.2	0.73	0.7	MEB 00 16 …
			MEB 03 16 0080 R	■	16.0	11.0	10.2	5.4	1.3	0.83	0.8	MEB 00 16 …
			MEB 03 16 0090 R	■	16.0	11.0	10.2	5.4	1.5	0.93	0.9	MEB 00 16 …
			MEB 03 16 0110 R	■	16.0	11.0	10.2	5.4	4.3	1.20	1.1	MEB 00 16 …
			MEB 03 16 0130 R	■	16.0	11.0	10.2	5.4	4.3	1.40	1.3	MEB 00 16 …
			MEB 03 16 0160 R	■	16.0	11.0	10.2	5.4	4.3	1.70	1.6	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Vornedrehen | Tournage avant | Front turning





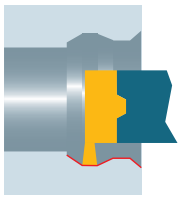
Typ 04

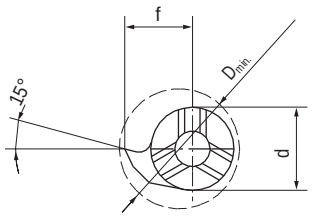
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				●								178…
				●								
				●								
				○								
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	b+0.05	r	
			MEB 04 08 15010 L	■	8.0	6.0	4.8	3.3	1.0	1.5	0.2	MEB 00 08 …
			MEB 04 08 20010 L	■	8.0	6.0	4.8	3.3	1.0	2.0	0.2	MEB 00 08 …
			MEB 04 11 15023 L	■	11.0	8.0	6.7	4.2	2.3	1.5	0.2	MEB 00 11 …
			MEB 04 11 20023 L	■	11.0	8.0	6.7	4.2	2.3	2.0	0.2	MEB 00 11 …
			MEB 04 14 15040 L	■	14.0	9.0	9.0	5.3	4.0	1.5	0.2	MEB 00 14 …
			MEB 04 14 15055 L	■	14.0	9.0	9.0	5.3	5.5	1.5	0.2	MEB 00 14 …
			MEB 04 14 15065 L	■	14.0	9.0	9.0	5.3	6.5	1.5	0.2	MEB 00 14 …
			MEB 04 14 20040 L	■	14.0	9.0	9.0	5.3	4.0	2.0	0.2	MEB 00 14 …
			MEB 04 14 20055 L	■	14.0	9.0	9.0	5.3	5.5	2.0	0.2	MEB 00 14 …
			MEB 04 14 20065 L	■	14.0	9.0	9.0	5.3	6.5	2.0	0.2	MEB 00 14 …
			MEB 04 14 25055 L	■	14.0	9.0	9.0	5.3	5.5	2.5	0.2	MEB 00 14 …
			MEB 04 14 25065 L	■	14.0	9.0	9.0	5.3	6.5	2.5	0.2	MEB 00 14 …
			MEB 04 14 30055 L	■	14.0	9.0	9.0	5.3	5.5	3.0	0.2	MEB 00 14 …
			MEB 04 14 30065 L	■	14.0	9.0	9.0	5.3	6.5	3.0	0.2	MEB 00 14 …
			MEB 04 16 20043 L	■	16.0	11.0	10.2	5.4	4.3	2.0	0.2	MEB 00 16 …

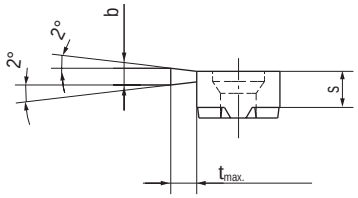
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Vornedrehen | Tournage avant | Front turning







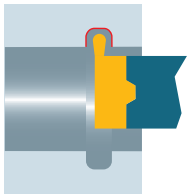
Typ 04

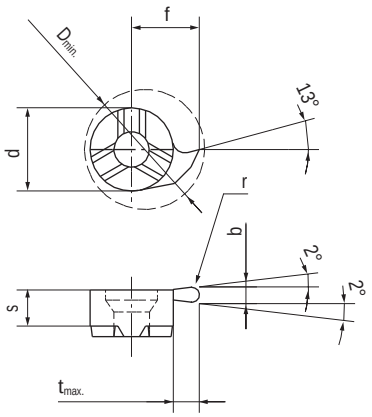
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				●								178…
				●								
				●								
				○								
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	b+0.05	r	
			MEB 04 08 15010 R	■	8.0	6.0	4.8	3.3	1.0	1.5	0.2	MEB 00 08 …
			MEB 04 08 20010 R	■	8.0	6.0	4.8	3.3	1.0	2.0	0.2	MEB 00 08 …
			MEB 04 11 15023 R	■	11.0	8.0	6.7	4.2	2.3	1.5	0.2	MEB 00 11 …
			MEB 04 11 20023 R	■	11.0	8.0	6.7	4.2	2.3	2.0	0.2	MEB 00 11 …
			MEB 04 14 15040 R	■	14.0	9.0	9.0	5.3	4.0	1.5	0.2	MEB 00 14 …
			MEB 04 14 15055 R	■	14.0	9.0	9.0	5.3	5.5	1.5	0.2	MEB 00 14 …
			MEB 04 14 15065 R	■	14.0	9.0	9.0	5.3	6.5	1.5	0.2	MEB 00 14 …
			MEB 04 14 20040 R	■	14.0	9.0	9.0	5.3	4.0	2.0	0.2	MEB 00 14 …
			MEB 04 14 20055 R	■	14.0	9.0	9.0	5.3	5.5	2.0	0.2	MEB 00 14 …
			MEB 04 14 20065 R	■	14.0	9.0	9.0	5.3	6.5	2.0	0.2	MEB 00 14 …
			MEB 04 14 25055 R	■	14.0	9.0	9.0	5.3	5.5	2.5	0.2	MEB 00 14 …
			MEB 04 14 25065 R	■	14.0	9.0	9.0	5.3	6.5	2.5	0.2	MEB 00 14 …
			MEB 04 14 30055 R	■	14.0	9.0	9.0	5.3	5.5	3.0	0.2	MEB 00 14 …
			MEB 04 14 30065 R	■	14.0	9.0	9.0	5.3	6.5	3.0	0.2	MEB 00 14 …
			MEB 04 16 20043 R	■	16.0	11.0	10.2	5.4	4.3	2.0	0.2	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Einstechen und Längsdrehen (Vollradius) | Rainurage et rayonnage (rayon complet) | Grooving and turning (full nose radius)





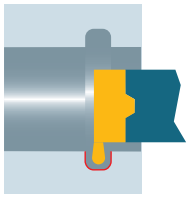
Typ 05

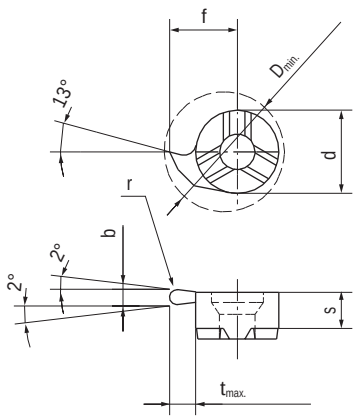
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				●								178…
				●								
				●								
				○								
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	b+0.05	r	
■			MEB 05 08 0080 L	■	8	6.0	4.8	3.3	1.0	0.8	0.4	MEB 00 08 …
			MEB 05 08 0120 L	■	8	6.0	4.8	3.3	1.0	1.2	0.6	MEB 00 08 …
			MEB 05 08 0180 L	■	8	6.0	4.8	3.3	1.0	1.8	0.9	MEB 00 08 …
			MEB 05 11 0080 L	■	11	8.0	6.7	4.2	2.3	0.8	0.4	MEB 00 11 …
			MEB 05 11 0120 L	■	11	8.0	6.7	4.2	2.3	1.2	0.6	MEB 00 11 …
			MEB 05 11 0180 L	■	11	8.0	6.7	4.2	2.3	1.8	0.9	MEB 00 11 …
			MEB 05 11 0200 L	■	11	8.0	6.7	4.2	2.3	2.0	1.0	MEB 00 11 …
			MEB 05 11 0300 L	■	11	8.0	6.7	4.2	2.3	3.0	1.5	MEB 00 11 …
			MEB 05 14 0120 L	■	14	9.0	9.0	4.0	4.0	1.2	0.6	MEB 00 14 …
			MEB 05 14 0180 L	■	14	9.0	9.0	4.0	4.0	1.8	0.9	MEB 00 14 …
			MEB 05 14 0200 L	■	14	9.0	9.0	4.0	4.0	2.0	1.0	MEB 00 14 …
			MEB 05 14 0220 L	■	14	9.0	9.0	4.0	4.0	2.2	1.1	MEB 00 14 …
			MEB 05 14 0300 L	■	14	9.0	9.0	4.0	4.0	3.0	1.5	MEB 00 14 …
			MEB 05 16 0180 L	■	16	11.0	10.2	5.4	4.3	1.8	0.9	MEB 00 16 …
			MEB 05 16 0220 L	■	16	11.0	10.2	5.4	4.3	2.2	1.1	MEB 00 16 …
			MEB 05 16 0300 L	■	16	11.0	10.2	5.4	4.3	3.0	1.5	MEB 00 16 …
			MEB 05 16 0400 L	■	16	11.0	10.2	5.4	4.3	4.0	2.0	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Einstechen und Längsdrehen (Vollradius) | Rainurage et rayonnage (rayon complet) | Grooving and turning (full nose radius)





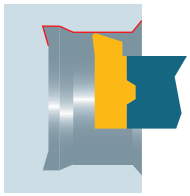
Typ 05

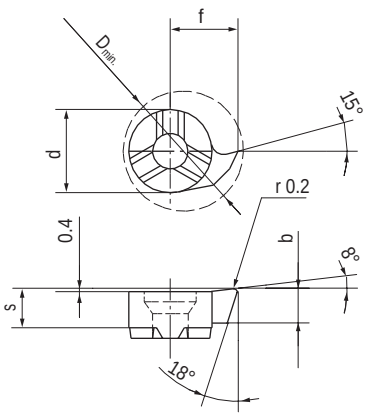
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				●								178…
				●								
				●								
				○								
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	b+0.05	r	
			MEB 05 08 0080 R	■	8	6.0	4.8	3.3	1.0	0.8	0.4	MEB 00 08 …
			MEB 05 08 0120 R	■	8	6.0	4.8	3.3	1.0	1.2	0.6	MEB 00 08 …
			MEB 05 08 0180 R	■	8	6.0	4.8	3.3	1.0	1.8	0.9	MEB 00 08 …
			MEB 05 11 0080 R	■	11	8.0	6.7	4.2	2.3	0.8	0.4	MEB 00 11 …
			MEB 05 11 0120 R	■	11	8.0	6.7	4.2	2.3	1.2	0.6	MEB 00 11 …
			MEB 05 11 0180 R	■	11	8.0	6.7	4.2	2.3	1.8	0.9	MEB 00 11 …
			MEB 05 11 0200 R	■	11	8.0	6.7	4.2	2.3	2.0	1.0	MEB 00 11 …
			MEB 05 11 0300 R	■	11	8.0	6.7	4.2	2.3	3.0	1.5	MEB 00 11 …
			MEB 05 14 0120 R	■	14	9.0	9.0	4.0	4.0	1.2	0.6	MEB 00 14 …
			MEB 05 14 0180 R	■	14	9.0	9.0	4.0	4.0	1.8	0.9	MEB 00 14 …
			MEB 05 14 0200 R	■	14	9.0	9.0	4.0	4.0	2.0	1.0	MEB 00 14 …
			MEB 05 14 0220 R	■	14	9.0	9.0	4.0	4.0	2.2	1.1	MEB 00 14 …
			MEB 05 14 0300 R	■	14	9.0	9.0	4.0	4.0	3.0	1.5	MEB 00 14 …
			MEB 05 16 0180 R	■	16	11.0	10.2	5.4	4.3	1.8	0.9	MEB 00 16 …
			MEB 05 16 0220 R	■	16	11.0	10.2	5.4	4.3	2.2	1.1	MEB 00 16 …
			MEB 05 16 0300 R	■	16	11.0	10.2	5.4	4.3	3.0	1.5	MEB 00 16 …
			MEB 05 16 0400 R	■	16	11.0	10.2	5.4	4.3	4.0	2.0	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Vornedrehen | Tournage avant | Front turning

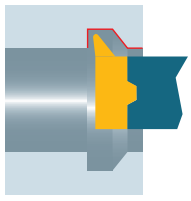


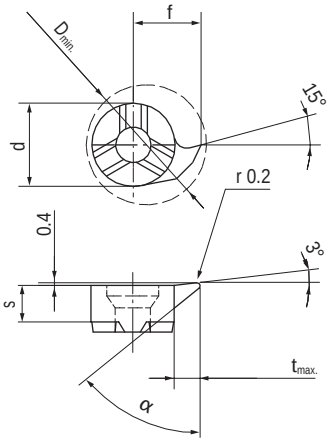


Typ 06

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*							Halter Porte-outil Holder
				● ● ● ○							178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	r	
■			MEB 06 08 0780 L	■	7.8	6.0	4.65	3.5	3.3	0.2	MEB 00 08 …
			MEB 06 11 0980 L	■	9.8	8.0	5.50	4.2	3.9	0.2	MEB 00 11 …
			MEB 06 11 1100 L	■	11.0	8.0	6.70	4.2	3.9	0.2	MEB 00 11 …
			MEB 06 14 1380 L	■	13.8	9.0	8.70	5.1	5.0	0.2	MEB 00 14 …
			MEB 06 16 1550 L	■	15.5	11.0	9.70	5.4	5.0	0.2	MEB 00 16 …

Vornedrehen (Innenfreistich) | Tournage avant (dégagement) | Front turning (profiling undercuts)





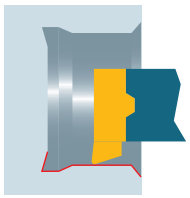
Typ 07 (DIN 509)

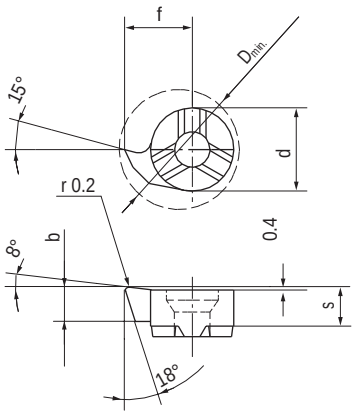
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				● ● ● ○								178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	α	r	
■			MEB 07 08 0120 L	■	7.8	6.0	4.65	3.5	1.2	47°	0.2	MEB 00 08 …
			MEB 07 11 0230 L	■	11.0	8.0	6.70	4.2	2.3	47°	0.2	MEB 00 11 …
			MEB 07 14 0300 L	■	13.7	9.0	8.70	5.3	3.0	47°	0.2	MEB 00 14 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Vornedrehen | Tournage avant | Front turning

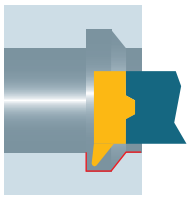


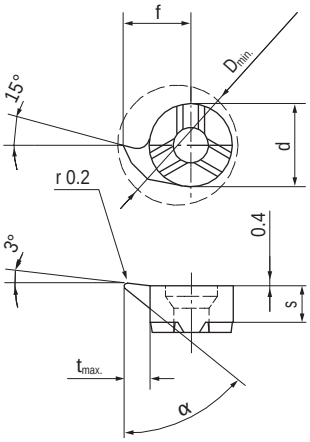


Typ 06

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*							Halter Porte-outil Holder
				● ● ● ○							178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	r	
			MEB 06 08 0780 R	■	7.8	6.0	4.65	3.5	3.3	0.2	MEB 00 08 …
			MEB 06 11 0980 R	■	9.8	8.0	5.50	4.2	3.9	0.2	MEB 00 11 …
			MEB 06 11 1100 R	■	11.0	8.0	6.70	4.2	3.9	0.2	MEB 00 11 …
			MEB 06 14 1380 R	■	13.8	9.0	8.70	5.1	5.0	0.2	MEB 00 14 …
			MEB 06 16 1550 R	■	15.5	11.0	9.70	5.4	5.0	0.2	MEB 00 16 …

Vornedrehen (Innenfreistich) | Tournage avant (dégagement) | Front turning (profiling undercuts)





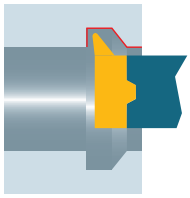
Typ 07 (DIN 509)

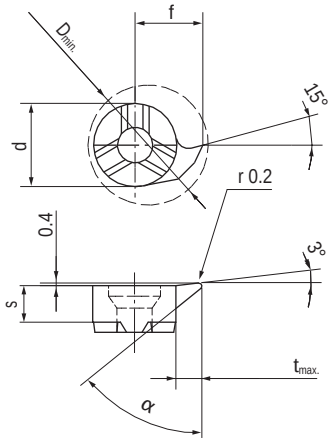
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				● ● ● ○								178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	α	r	
			MEB 07 08 0120 R	■	7.8	6.0	4.65	3.5	1.2	47°	0.2	MEB 00 08 …
			MEB 07 11 0230 R	■	11.0	8.0	6.70	4.2	2.3	47°	0.2	MEB 00 11 …
			MEB 07 14 0300 R	■	13.7	9.0	8.70	5.3	3.0	47°	0.2	MEB 00 14 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Kopieren | Copier | Copying

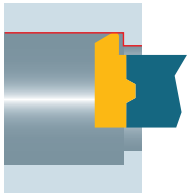


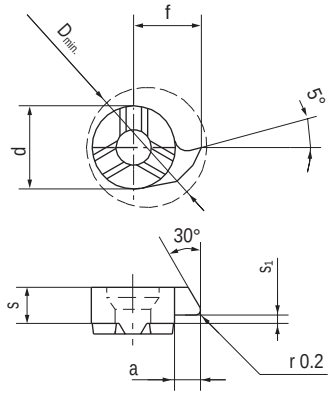


Typ 08

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder 178…
				● ● ● ○								
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	α	r	
■			MEB 08 08 0100 L	■	7.8	6.0	4.65	3.5	1.0	30°	0.2	MEB 00 08 …
			MEB 08 11 0230 L	■	11.0	8.0	6.70	4.2	2.3	30°	0.2	MEB 00 11 …
			MEB 08 14 0400 L	■	13.7	9.0	8.70	5.3	4.0	30°	0.2	MEB 00 14 …
			MEB 08 16 0430 L	■	15.8	11.0	10.20	5.4	4.3	30°	0.2	MEB 00 16 …

Hintendrehen | Tournage arrière | Back turning





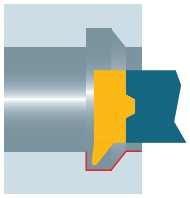
Typ 09

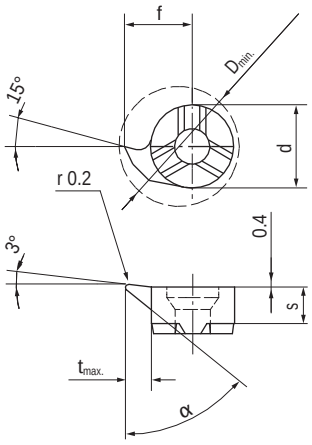
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder 178…
				● ● ● ○								
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	s_1	a	r	
■			MEB 09 08 0465 L	■	7.8	6.0	4.65	3.5	1.0	1.3	0.2	MEB 00 08 …
			MEB 09 11 0670 L	■	11.0	8.0	6.70	4.3	1.6	2.3	0.2	MEB 00 11 …
			MEB 09 14 0870 L	■	13.8	9.0	8.70	5.4	2.4	3.5	0.2	MEB 00 14 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Kopieren | Copier | Copying

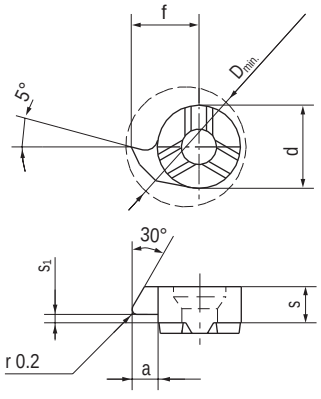




Typ 08

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*									Halter Porte-outil Holder
				● ● ● ○									178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	α	r		
			MEB 08 08 0100 R	■	7.8	6.0	4.65	3.5	1.0	30°	0.2		MEB 00 08 …
			MEB 08 11 0230 R	■	11.0	8.0	6.70	4.2	2.3	30°	0.2		MEB 00 11 …
			MEB 08 14 0400 R	■	13.7	9.0	8.70	5.3	4.0	30°	0.2		MEB 00 14 …
			MEB 08 16 0430 R	■	15.8	11.0	10.20	5.4	4.3	30°	0.2		MEB 00 16 …

Hintendrehen | Tournage arrière | Back turning



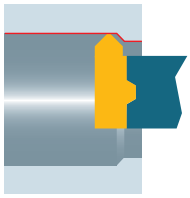
Typ 09

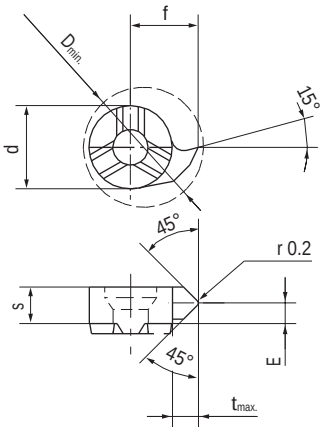
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*									Halter Porte-outil Holder
				● ● ● ○									178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	s_1	a	r		
			MEB 09 08 0465 R	■	7.8	6.0	4.65	3.5	1.0	1.3	0.2		MEB 00 08 …
			MEB 09 11 0670 R	■	11.0	8.0	6.70	4.3	1.6	2.3	0.2		MEB 00 11 …
			MEB 09 14 0870 R	■	13.8	9.0	8.70	5.4	2.4	3.5	0.2		MEB 00 14 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Ausdrehen und Fasen | Chanfreinage et tournage | Chamfering and turning

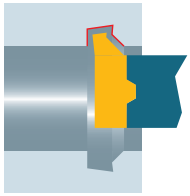


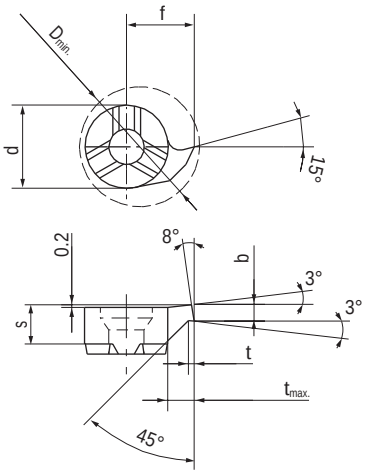


Typ 10

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				● ● ● ○								178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	E	r	
			MEB 10 08 0140 L	■	8.0	6.0	4.8	3.5	1.4	1.8	0.2	MEB 00 08 …
			MEB 10 11 0150 L	■	11.0	8.0	6.7	4.3	1.5	2.2	0.2	MEB 00 11 …
			MEB 10 14 0150 L	■	14.0	9.0	9.0	5.4	1.5	2.8	0.2	MEB 00 14 …

Vorstechen und Fasen | Amorçe de tronçonnage et chanfreinage | Pregrooving and chamfering





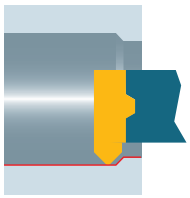
Typ 11

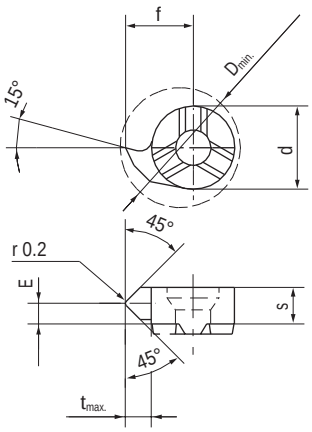
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*								Halter Porte-outil Holder
				● ● ● ○								178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	t	b	
			MEB 11 08 0810 L	■	8.0	6.0	4.8	3.3	1.0	0.2	1.0	MEB 00 08 …
			MEB 11 11 0810 L	■	11.0	8.0	6.7	4.2	1.5	0.2	1.0	MEB 00 11 …
			MEB 11 14 0810 L	■	14.0	9.0	9.0	5.3	1.5	0.2	1.0	MEB 00 14 …
			MEB 11 16 0810 L	■	16.0	11.0	10.2	5.4	1.5	0.2	1.0	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Ausdrehen und Fasen | Chanfreinage et tournage | Chamfering and turning

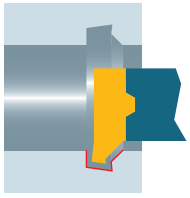


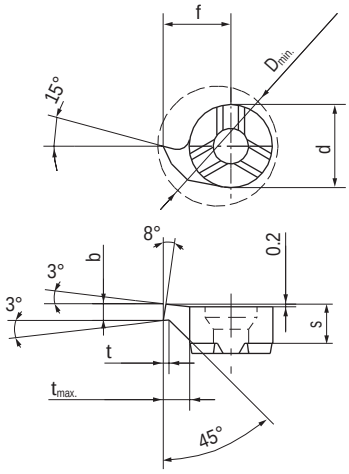


Typ 10

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*									Halter Porte-outil Holder
				● ● ● ○									178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	E	r		
			MEB 10 08 0140 R	■	8.0	6.0	4.8	3.5	1.4	1.8	0.2		MEB 00 08 …
			MEB 10 11 0150 R	■	11.0	8.0	6.7	4.3	1.5	2.2	0.2		MEB 00 11 …
			MEB 10 14 0150 R	■	14.0	9.0	9.0	5.4	1.5	2.8	0.2		MEB 00 14 …

Vorstechen und Fasen | Amorçe de tronçonnage et chanfreinage | Pregrooving and chamfering





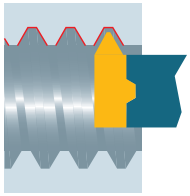
Typ 11

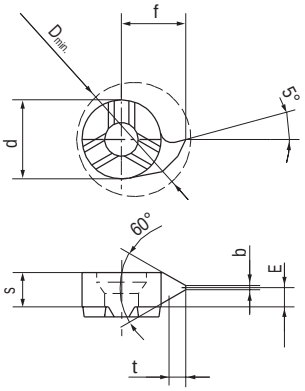
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*									Halter Porte-outil Holder
				● ● ● ○									178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	$t_{max.}$	t	b		
			MEB 11 08 0810 R	■	8.0	6.0	4.8	3.3	1.0	0.2	1.0		MEB 00 08 …
			MEB 11 11 0810 R	■	11.0	8.0	6.7	4.2	1.5	0.2	1.0		MEB 00 11 …
			MEB 11 14 0810 R	■	14.0	9.0	9.0	5.3	1.5	0.2	1.0		MEB 00 14 …
			MEB 11 16 0810 R	■	16.0	11.0	10.2	5.4	1.5	0.2	1.0		MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Gewindedrehen | Filetage | Threading





Typ 12
ISO Teilprofil
ISO Profil partiel
ISO Partial profile

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*										Halter Porte-outil Holder
				● ● ● ○										178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	t	E	Steigung Pas Pitch	Bereich Gamme Range	
			MEB 12 08 6015 L	■	8.0	6.0	4.8	3.5	0.18	0.95	2.50	1.5/1.75	M10–12	MEB 00 08 …
			MEB 12 11 6020 L	■	11.0	8.0	6.7	4.3	0.25	1.08	3.00	2.0	M14–16	MEB 00 11 …
			MEB 12 11 6025 L	■	11.0	8.0	6.7	4.3	0.31	1.35	3.00	2.5	M18–22	MEB 00 11 …
			MEB 12 14 6020 L	■	14.0	9.0	9.0	5.4	0.25	1.08	4.20	2.0	M14–16	MEB 00 14 …
			MEB 12 14 6025 L	■	14.0	9.0	9.0	5.4	0.31	1.35	4.70	2.5	M18–22	MEB 00 14 …
			MEB 12 16 6025 L	■	16.0	11.0	10.2	5.5	0.31	1.35	4.20	2.5	M18–22	MEB 00 16 …

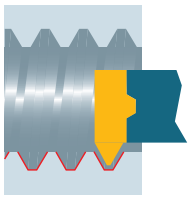
Typ 13
ISO Teilprofil (Feingewinde)
ISO Profil partiel (pas fin)
ISO Partial profile (fine thread)

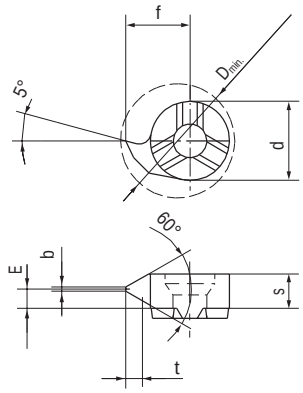
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*										Halter Porte-outil Holder
				● ● ● ○										178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	t	E	Steigung Pas Pitch	Bereich Gamme Range	
			MEB 13 08 6005 L	■	8	6	4.8	3.5	0.06	0.43	2.7	0.5/0.75	M3–4.5	MEB 00 08 …
			MEB 13 08 6010 L	■	8	6	4.8	3.5	0.12	0.70	2.7	1.0/1.25	M6–8	MEB 00 08 …
			MEB 13 11 6005 L	■	11	8	6.7	4.3	0.06	0.75	3.5	0.5/0.75	M3–4.5	MEB 00 11 …
			MEB 13 11 6010 L	■	11	8	6.7	4.3	0.12	0.55	3.5	1.0	M6–7	MEB 00 11 …
			MEB 13 11 6015 L	■	11	8	6.7	4.3	0.18	0.81	3.5	1.5	M10–11	MEB 00 11 …
			MEB 13 14 6010 L	■	14	9	9.0	5.4	0.12	0.55	4.7	1.0	M6–7	MEB 00 14 …
			MEB 13 14 6015 L	■	14	9	9.0	5.4	0.18	0.81	4.5	1.5	M10–11	MEB 00 14 …
			MEB 13 16 6010 L	■	16	11	10.2	5.5	0.12	0.55	4.7	1.0	M6–7	MEB 00 16 …
			MEB 13 16 6015 L	■	16	11	10.2	5.5	0.18	0.81	4.5	1.5	M10–11	MEB 00 16 …
			MEB 13 16 6020 L	■	16	11	10.2	5.5	0.25	1.08	4.2	2.0	M14–16	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Gewindedrehen | Filetage | Threading





Typ 12
ISO Teilprofil
ISO Profil partiel
ISO Partial profile

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*										Halter Porte-outil Holder
				● ● ● ○										178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	t	E	Steigung Pas Pitch	Bereich Gamme Range	
			MEB 12 08 6015 R	■	8.0	6.0	4.8	3.5	0.18	0.95	2.50	1.5/1.75	M10–12	MEB 00 08 …
			MEB 12 11 6020 R	■	11.0	8.0	6.7	4.3	0.25	1.08	3.00	2.0	M14–16	MEB 00 11 …
			MEB 12 11 6025 R	■	11.0	8.0	6.7	4.3	0.31	1.35	3.00	2.5	M18–22	MEB 00 11 …
			MEB 12 14 6020 R	■	14.0	9.0	9.0	5.4	0.25	1.08	4.20	2.0	M14–16	MEB 00 14 …
			MEB 12 14 6025 R	■	14.0	9.0	9.0	5.4	0.31	1.35	4.70	2.5	M18–22	MEB 00 14 …
			MEB 12 16 6025 R	■	16.0	11.0	10.2	5.5	0.31	1.35	4.20	2.5	M18–22	MEB 00 16 …

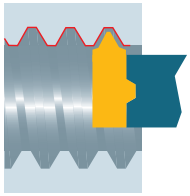
Typ 13
ISO Teilprofil (Feingewinde)
ISO Profil partiel (pas fin)
ISO Partial profile (fine thread)

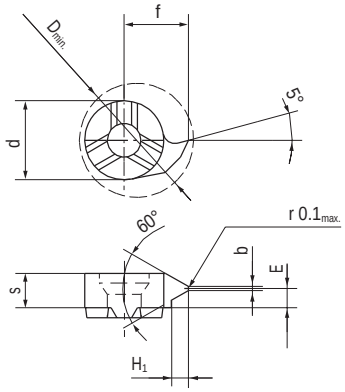
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*										Halter Porte-outil Holder
				● ● ● ○										178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	t	E	Steigung Pas Pitch	Bereich Gamme Range	
			MEB 13 08 6005 R	■	8	6	4.8	3.5	0.06	0.43	2.7	0.5/0.75	M3–4.5	MEB 00 08 …
			MEB 13 08 6010 R	■	8	6	4.8	3.5	0.12	0.70	2.7	1.0/1.25	M6–8	MEB 00 08 …
			MEB 13 11 6005 R	■	11	8	6.7	4.3	0.06	0.75	3.5	0.5/0.75	M3–4.5	MEB 00 11 …
			MEB 13 11 6010 R	■	11	8	6.7	4.3	0.12	0.55	3.5	1.0	M6–7	MEB 00 11 …
			MEB 13 11 6015 R	■	11	8	6.7	4.3	0.18	0.81	3.5	1.5	M10–11	MEB 00 11 …
			MEB 13 14 6010 R	■	14	9	9.0	5.4	0.12	0.55	4.7	1.0	M6–7	MEB 00 14 …
			MEB 13 14 6015 R	■	14	9	9.0	5.4	0.18	0.81	4.5	1.5	M10–11	MEB 00 14 …
			MEB 13 16 6010 R	■	16	11	10.2	5.5	0.12	0.55	4.7	1.0	M6–7	MEB 00 16 …
			MEB 13 16 6015 R	■	16	11	10.2	5.5	0.18	0.81	4.5	1.5	M10–11	MEB 00 16 …
			MEB 13 16 6020 R	■	16	11	10.2	5.5	0.25	1.08	4.2	2.0	M14–16	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Gewindedrehen | Filetage | Threading





Typ 14
ISO Vollprofil
ISO Profil complet
ISO Full profile

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*										Halter Porte-outil Holder
				● ● ● ○										178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	t	E	Steigung Pas Pitch	Bereich Gamme Range	
■			MEB 14 11 6020 L	■	11.0	8.0	6.7	4.3	0.25	1.08	3.2	2.0	M14–16	MEB 00 11 …
			MEB 14 11 6025 L	■	11.0	8.0	6.7	4.3	0.31	1.35	3.0	2.5	M18–22	MEB 00 11 …
			MEB 14 11 6030 L	■	11.0	8.0	6.7	4.3	0.37	1.62	2.9	3.0	M24–27	MEB 00 11 …
			MEB 14 14 6020 L	■	14.0	9.0	9.0	5.4	0.25	1.08	4.2	2.0	M14–16	MEB 00 14 …
			MEB 14 14 6025 L	■	14.0	9.0	9.0	5.4	0.31	1.35	4.7	2.5	M18–22	MEB 00 14 …
			MEB 14 16 6025 L	■	16.0	11.0	10.2	5.5	0.31	1.35	4.2	2.5	M18–22	MEB 00 16 …
			MEB 14 16 6030 L	■	16.0	11.0	10.2	5.5	0.37	1.62	4.0	3.0	M24–27	MEB 00 16 …
			MEB 14 16 6035 L	■	16.0	11.0	10.2	5.5	0.43	1.89	3.8	3.5	M30–33	MEB 00 16 …
			MEB 14 16 6040 L	■	16.0	11.0	10.2	5.5	0.50	2.16	3.6	4.0	M36–39	MEB 00 16 …

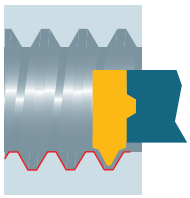
Typ 15
ISO Vollprofil (Feingewinde)
ISO Profil complet (pas fin)
ISO Full profile (fine thread)

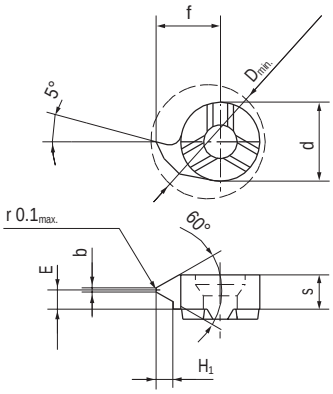
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*										Halter Porte-outil Holder
				● ● ● ○										178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	t	E	Steigung Pas Pitch	Bereich Gamme Range	
■			MEB 15 11 6010 L	■	11.0	8.0	6.7	4.3	0.12	0.54	3.5	1.0	M6–7	MEB 00 11 …
			MEB 15 11 6015 L	■	11.0	8.0	6.7	4.3	0.18	0.81	3.5	1.5	M10–11	MEB 00 11 …
			MEB 15 14 6005 L	■	14.0	9.0	9.0	5.4	0.06	0.27	0.5	0.5	M3	MEB 00 14 …
			MEB 15 14 6010 L	■	14.0	9.0	9.0	5.4	0.12	0.54	3.5	1.0	M6–7	MEB 00 14 …
			MEB 15 14 6015 L	■	14.0	9.0	9.0	5.4	0.18	0.81	3.3	1.5	M10–11	MEB 00 14 …
			MEB 15 16 6010 L	■	16.0	11.0	10.2	5.5	0.12	0.54	4.7	1.0	M6–7	MEB 00 16 …
			MEB 15 16 6015 L	■	16.0	11.0	10.2	5.5	0.18	0.81	4.5	1.5	M10–11	MEB 00 16 …
			MEB 15 16 6020 L	■	16.0	11.0	10.2	5.5	0.25	1.08	4.2	2.0	M14–16	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Gewindedrehen | Filetage | Threading





Typ 14
ISO Vollprofil
ISO Profil complet
ISO Full profile

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				● ● ● ○											178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	t	E	Steigung Pas Pitch	Bereich Gamme Range	
			MEB 14 11 6020 R	■	11.0	8.0	6.7	4.3	0.25	1.08	3.2	2.0	M14–16	MEB 00 11 …
			MEB 14 11 6025 R	■	11.0	8.0	6.7	4.3	0.31	1.35	3.0	2.5	M18–22	MEB 00 11 …
			MEB 14 11 6030 R	■	11.0	8.0	6.7	4.3	0.37	1.62	2.9	3.0	M24–27	MEB 00 11 …
			MEB 14 14 6020 R	■	14.0	9.0	9.0	5.4	0.25	1.08	4.2	2.0	M14–16	MEB 00 14 …
			MEB 14 14 6025 R	■	14.0	9.0	9.0	5.4	0.31	1.35	4.7	2.5	M18–22	MEB 00 14 …
			MEB 14 16 6025 R	■	16.0	11.0	10.2	5.5	0.31	1.35	4.2	2.5	M18–22	MEB 00 16 …
			MEB 14 16 6030 R	■	16.0	11.0	10.2	5.5	0.37	1.62	4.0	3.0	M24–27	MEB 00 16 …
			MEB 14 16 6035 R	■	16.0	11.0	10.2	5.5	0.43	1.89	3.8	3.5	M30–33	MEB 00 16 …
			MEB 14 16 6040 R	■	16.0	11.0	10.2	5.5	0.50	2.16	3.6	4.0	M36–39	MEB 00 16 …

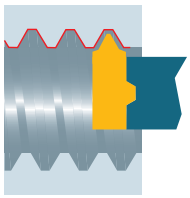
Typ 15
ISO Vollprofil (Feingewinde)
ISO Profil complet (pas fin)
ISO Full profile (fine thread)

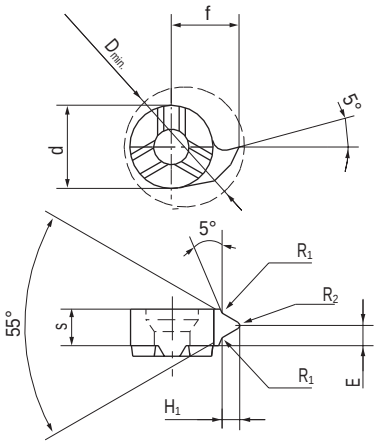
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				● ● ● ○											178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	t	E	Steigung Pas Pitch	Bereich Gamme Range	
			MEB 15 11 6010 R	■	11.0	8.0	6.7	4.3	0.12	0.54	3.5	1.0	M6–7	MEB 00 11 …
			MEB 15 11 6015 R	■	11.0	8.0	6.7	4.3	0.18	0.81	3.5	1.5	M10–11	MEB 00 11 …
			MEB 15 14 6005 R	■	14.0	9.0	9.0	5.4	0.06	0.27	0.5	0.5	M3	MEB 00 14 …
			MEB 15 14 6010 R	■	14.0	9.0	9.0	5.4	0.12	0.54	3.5	1.0	M6–7	MEB 00 14 …
			MEB 15 14 6015 R	■	14.0	9.0	9.0	5.4	0.18	0.81	3.3	1.5	M10–11	MEB 00 14 …
			MEB 15 16 6010 R	■	16.0	11.0	10.2	5.5	0.12	0.54	4.7	1.0	M6–7	MEB 00 16 …
			MEB 15 16 6015 R	■	16.0	11.0	10.2	5.5	0.18	0.81	4.5	1.5	M10–11	MEB 00 16 …
			MEB 15 16 6020 R	■	16.0	11.0	10.2	5.5	0.25	1.08	4.2	2.0	M14–16	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Gewindedrehen | Filetage | Threading





Typ 16
Withworth Vollprofil
Withworth profil complet
Withworth full profile

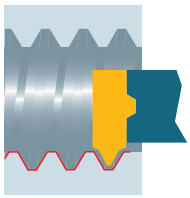
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				●											178…
				●											
				●											
				○											
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	H_1	E	G	p	R_1	R_2	
			MEB 16 11 5514 L	□	11.0	8.0	6.7	4.3	1.16	3.0	14	1.814	0.24	0.24	MEB 00 11 …
			MEB 16 11 5519 L	□	11.0	8.0	6.7	4.3	0.85	2.7	19	1.337	0.18	0.18	MEB 00 11 …
			MEB 16 14 5514 L	□	14.0	9.0	9.0	5.4	1.16	3.6	14	1.814	0.24	0.24	MEB 00 14 …
			MEB 16 14 5519 L	□	14.0	9.0	9.0	5.4	0.85	3.8	19	1.337	0.18	0.18	MEB 00 14 …
			MEB 16 16 5511 L	□	16.0	11.0	10.2	5.5	1.48	3.5	11	2.309	0.31	0.31	MEB 00 16 …
			MEB 16 16 5514 L	□	16.0	11.0	10.2	5.5	1.16	3.9	14	1.814	0.24	0.24	MEB 00 16 …

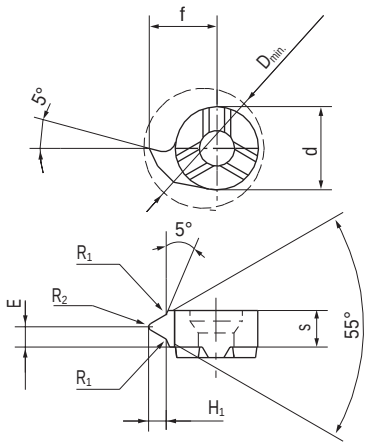
G = Gänge/Zoll | filets/pouce | thread pitches/inch

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Gewindedrehen | Filetage | Threading





Typ 16
Withworth Vollprofil
Withworth profil complet
Withworth full profile

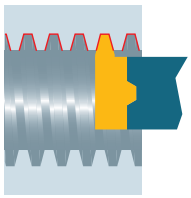
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											Halter Porte-outil Holder
				●											178…
				●											
				●											
				○											
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	H_1	E	G	p	R_1	R_2	
			MEB 16 11 5514 R	□	11.0	8.0	6.7	4.3	1.16	3.0	14	1.814	0.24	0.24	MEB 00 11 …
			MEB 16 11 5519 R	□	11.0	8.0	6.7	4.3	0.85	2.7	19	1.337	0.18	0.18	MEB 00 11 …
			MEB 16 14 5514 R	□	14.0	9.0	9.0	5.4	1.16	3.6	14	1.814	0.24	0.24	MEB 00 14 …
			MEB 16 14 5519 R	□	14.0	9.0	9.0	5.4	0.85	3.8	19	1.337	0.18	0.18	MEB 00 14 …
			MEB 16 16 5511 R	□	16.0	11.0	10.2	5.5	1.48	3.5	11	2.309	0.31	0.31	MEB 00 16 …
			MEB 16 16 5514 R	□	16.0	11.0	10.2	5.5	1.16	3.9	14	1.814	0.24	0.24	MEB 00 16 …

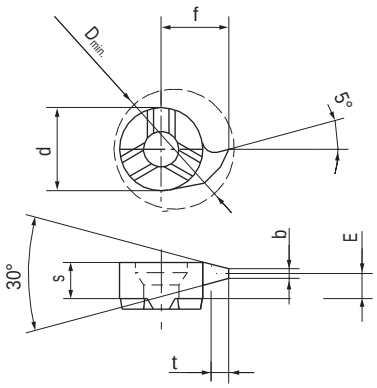
G = Gänge/Zoll | filets/pouce | thread pitches/inch

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Gewindedrehen | Filetage | Threading





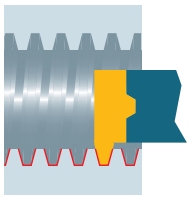
Typ 17
Trapez
Trapézoïdal
Trapezoid

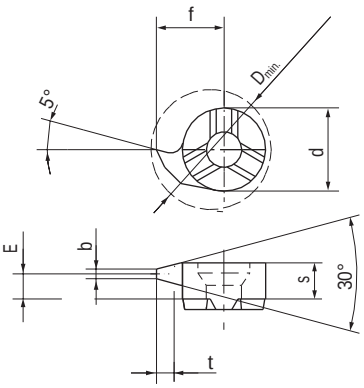
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*									Halter Porte-outil Holder
				●									178…
				●									
				●									
				○									
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	t	E	P	
			MEB 17 11 3015 L	□	11	8.0	6.7	4.3	0.47	0.90	3.7	1.5	MEB 00 11 …
			MEB 17 11 3020 L	□	11	8.0	6.7	4.3	0.60	1.25	3.5	2.0	MEB 00 11 …
			MEB 17 11 3030 L	□	11	8.0	6.7	4.3	0.96	1.75	3.2	3.0	MEB 00 11 …
			MEB 17 11 3040 L	□	11	8.0	6.7	4.3	1.33	2.25	2.6	4.0	MEB 00 11 …
			MEB 17 14 3020 L	□	14	9.0	9.0	5.4	0.60	1.25	4.3	2.0	MEB 00 14 …
			MEB 17 14 3030 L	□	14	9.0	9.0	5.4	0.96	1.75	4.0	3.0	MEB 00 14 …
			MEB 17 14 3040 L	□	14	9.0	9.0	5.4	1.33	2.25	3.6	4.0	MEB 00 14 …
			MEB 17 14 3050 L	□	14	9.0	9.0	5.4	1.69	2.75	3.3	5.0	MEB 00 14 …
			MEB 17 16 3020 L	□	16	11	10.2	5.5	0.60	1.25	4.5	2.0	MEB 00 16 …
			MEB 17 16 3030 L	□	16	11	10.2	5.5	0.96	1.75	4.3	3.0	MEB 00 16 …
			MEB 17 16 3040 L	□	16	11	10.2	5.5	1.33	2.25	4.0	4.0	MEB 00 16 …
			MEB 17 16 3050 L	□	16	11	10.2	5.5	1.69	2.75	3.55	5.0	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Gewindedrehen | Filetage | Threading





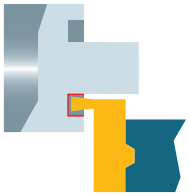
Typ 17
Trapez
Trapézoïdal
Trapezoid

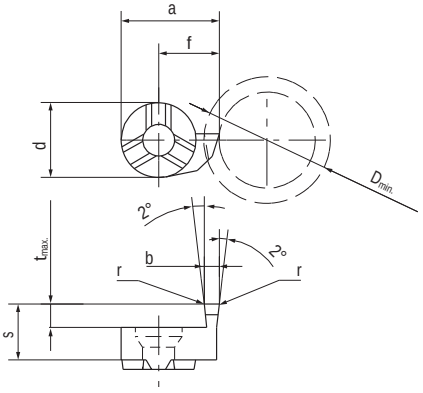
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*									Halter Porte-outil Holder
				●									178…
				●									
				●									
				○									
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b	t	E	P	
		■	MEB 17 11 3015 R	□	11	8.0	6.7	4.3	0.47	0.90	3.7	1.5	MEB 00 11 …
			MEB 17 11 3020 R	□	11	8.0	6.7	4.3	0.60	1.25	3.5	2.0	MEB 00 11 …
			MEB 17 11 3030 R	□	11	8.0	6.7	4.3	0.96	1.75	3.2	3.0	MEB 00 11 …
			MEB 17 11 3040 R	□	11	8.0	6.7	4.3	1.33	2.25	2.6	4.0	MEB 00 11 …
			MEB 17 14 3020 R	□	14	9.0	9.0	5.4	0.60	1.25	4.3	2.0	MEB 00 14 …
			MEB 17 14 3030 R	□	14	9.0	9.0	5.4	0.96	1.75	4.0	3.0	MEB 00 14 …
			MEB 17 14 3040 R	□	14	9.0	9.0	5.4	1.33	2.25	3.6	4.0	MEB 00 14 …
			MEB 17 14 3050 R	□	14	9.0	9.0	5.4	1.69	2.75	3.3	5.0	MEB 00 14 …
			MEB 17 16 3020 R	□	16	11	10.2	5.5	0.60	1.25	4.5	2.0	MEB 00 16 …
			MEB 17 16 3030 R	□	16	11	10.2	5.5	0.96	1.75	4.3	3.0	MEB 00 16 …
			MEB 17 16 3040 R	□	16	11	10.2	5.5	1.33	2.25	4.0	4.0	MEB 00 16 …
			MEB 17 16 3050 R	□	16	11	10.2	5.5	1.69	2.75	3.55	5.0	MEB 00 16 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Einstechen (axial) | Rainurage (axial) | Grooving (axial)

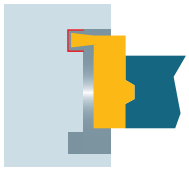


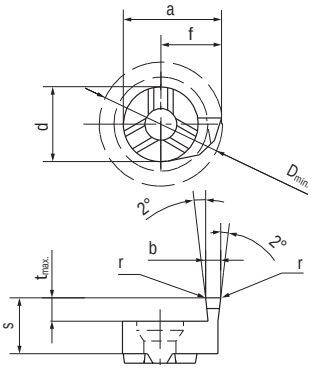


Typ 18

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*									Halter Porte-outil Holder
				●									178…
				●									
				●									
				○									
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b+0.03	$t_{max.}$	a	r	
			MEB 18 14 1015 L	■	12.0	9.0	7.0	8.3	1.0	1.5	11.5	–	MEB 00 14 …
			MEB 18 14 1525 L	■	12.0	9.0	7.5	8.3	1.5	2.5	12.0	0.2	MEB 00 14 …
			MEB 18 14 2030 L	■	12.0	9.0	8.0	8.3	2.0	3.0	12.5	0.2	MEB 00 14 …
			MEB 18 14 2530 L	■	12.0	9.0	8.5	8.3	2.5	3.0	13.0	0.2	MEB 00 14 …
			MEB 18 14 3030 L	■	12.0	9.0	9.0	8.3	3.0	3.0	13.5	0.2	MEB 00 14 …
			MEB 18 14 2050 L	■	12.0	9.0	8.0	10.3	2.0	5.0	12.5	0.2	MEB 00 14 …
			MEB 18 14 2550 L	■	12.0	9.0	8.5	10.3	2.5	5.0	13.0	0.2	MEB 00 14 …
			MEB 18 14 3050 L	■	12.0	9.0	9.0	10.3	3.0	5.0	13.5	0.2	MEB 00 14 …

Einstechen (axial) | Rainurage (axial) | Grooving (axial)





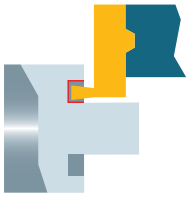
Typ 19

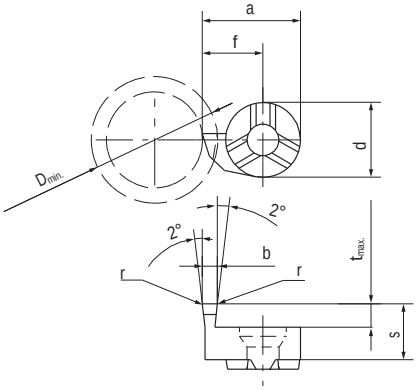
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*									Halter Porte-outil Holder
				●									178…
				●									
				●									
				○									
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b+0.03	$t_{max.}$	a	r	
			MEB 19 14 1015 L	■	14.0	9.0	9.0	8.3	1.0	1.5	13.5	–	MEB 00 14 …
			MEB 19 14 1525 L	■	14.0	9.0	9.0	8.3	1.5	2.5	13.5	0.2	MEB 00 14 …
			MEB 19 14 2030 L	■	14.0	9.0	9.0	8.3	2.0	3.0	13.5	0.2	MEB 00 14 …
			MEB 19 14 2530 L	■	14.0	9.0	9.0	8.3	2.5	3.0	13.5	0.2	MEB 00 14 …
			MEB 19 14 3030 L	■	14.0	9.0	9.0	8.3	3.0	3.0	13.5	0.2	MEB 00 14 …
			MEB 19 14 2050 L	■	14.0	9.0	9.0	10.3	2.0	5.0	13.5	0.2	MEB 00 14 …
			MEB 19 14 2550 L	■	14.0	9.0	9.0	10.3	2.5	5.0	13.5	0.2	MEB 00 14 …
			MEB 19 14 3050 L	■	14.0	9.0	9.0	10.3	3.0	5.0	13.5	0.2	MEB 00 14 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

Einstechen (axial) | Rainurage (axial) | Grooving (axial)

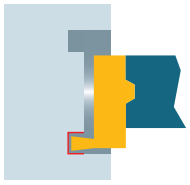


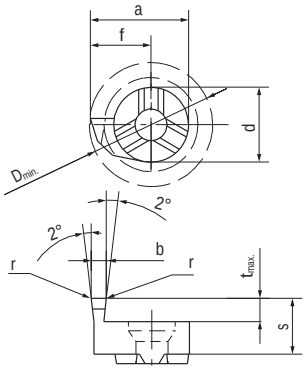


Typ 18

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*									Halter Porte-outil Holder
				● ● ● ○									178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b+0.03	$t_{max.}$	a	r	
			MEB 18 14 1015 R	■	12.0	9.0	7.0	8.3	1.0	1.5	11.5	–	MEB 00 14 …
			MEB 18 14 1525 R	■	12.0	9.0	7.5	8.3	1.5	2.5	12.0	0.2	MEB 00 14 …
			MEB 18 14 2030 R	■	12.0	9.0	8.0	8.3	2.0	3.0	12.5	0.2	MEB 00 14 …
			MEB 18 14 2530 R	■	12.0	9.0	8.5	8.3	2.5	3.0	13.0	0.2	MEB 00 14 …
			MEB 18 14 3030 R	■	12.0	9.0	9.0	8.3	3.0	3.0	13.5	0.2	MEB 00 14 …
			MEB 18 14 2050 R	■	12.0	9.0	8.0	10.3	2.0	5.0	12.5	0.2	MEB 00 14 …
			MEB 18 14 2550 R	■	12.0	9.0	8.5	10.3	2.5	5.0	13.0	0.2	MEB 00 14 …
			MEB 18 14 3050 R	■	12.0	9.0	9.0	10.3	3.0	5.0	13.5	0.2	MEB 00 14 …

Einstechen (axial) | Rainurage (axial) | Grooving (axial)





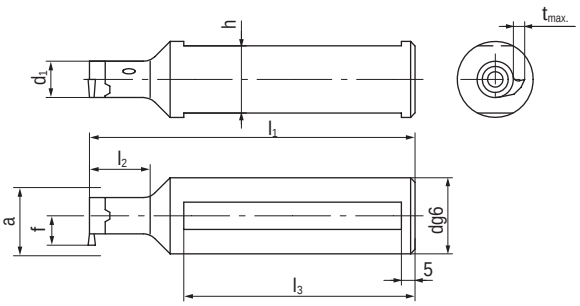
Typ 19

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*									Halter Porte-outil Holder
				● ● ● ○									178…
L	N	R		UHM 30 HX	$D_{min.}$	d	f	s	b+0.03	$t_{max.}$	a	r	
			MEB 19 14 1015 R	■	14.0	9.0	9.0	8.3	1.0	1.5	13.5	–	MEB 00 14 …
			MEB 19 14 1525 R	■	14.0	9.0	9.0	8.3	1.5	2.5	13.5	0.2	MEB 00 14 …
			MEB 19 14 2030 R	■	14.0	9.0	9.0	8.3	2.0	3.0	13.5	0.2	MEB 00 14 …
			MEB 19 14 2530 R	■	14.0	9.0	9.0	8.3	2.5	3.0	13.5	0.2	MEB 00 14 …
			MEB 19 14 3030 R	■	14.0	9.0	9.0	8.3	3.0	3.0	13.5	0.2	MEB 00 14 …
			MEB 19 14 2050 R	■	14.0	9.0	9.0	10.3	2.0	5.0	13.5	0.2	MEB 00 14 …
			MEB 19 14 2550 R	■	14.0	9.0	9.0	10.3	2.5	5.0	13.5	0.2	MEB 00 14 …
			MEB 19 14 3050 R	■	14.0	9.0	9.0	10.3	3.0	5.0	13.5	0.2	MEB 00 14 …

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

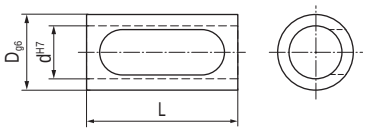
Halter | Porte-outil | Holder



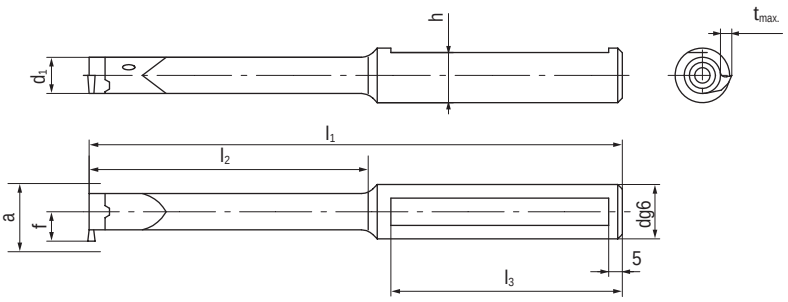
Typ 00 ...ST
Stahl
Acier
Steel

Ausführung Exécution Execution			Bezeichnung Désignation Designation										Schneiden Plaquettes Inserts
													152...
L	N	R		$D_{min.}$	dg6	d_1	l_1	l_2	l_3	f	a	h	
			MEB 00 08 08012 16 ST	8	16	6	80	12	60	4.8	7.8	15	MEB ... 08 ...
			MEB 00 08 09022 16 ST	8	16	6	90	22	60	4.8	7.8	15	MEB ... 08 ...
			MEB 00 11 09716 16 ST	11	16	8	97	16	60	6.7	10.7	15	MEB ... 11 ...
			MEB 00 11 11029 16 ST	11	16	8	110	29	60	6.7	10.7	15	MEB ... 11 ...
			MEB 00 14 10018 16 ST	14	16	9	100	18	60	9.0	13.8	15	MEB ... 14 ...
			MEB 00 14 12038 16 ST	14	16	9	120	38	60	9.0	13.8	15	MEB ... 14 ...
			MEB 00 16 10022 16 ST	16	16	11	100	22	60	10.2	15.7	15	MEB ... 16 ...
			MEB 00 16 12042 16 ST	16	16	11	120	42	60	10.2	15.7	15	MEB ... 16 ...

MRH...



Bezeichnung Désignation Designation			
	d_{H7}	D_{g6}	L
MRH 1600 1230	12	16.00	30
MRH 1905 1240	12	19.05	40
MRH 2200 1240	12	22.00	40
MRH 2540 1240	12	25.40	40
MRH 1905 1640	16	19.05	40
MRH 2200 1640	16	22.00	40
MRH 2540 1640	16	25.40	40



Typ 00 …HM
Hartmetall
Carbure
Carbide

Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R		$D_{min.}$	dg6	d_1	l_1	l_2	l_3	f	a	h	152…
■		■	MEB 00 08 08021 12 HM	8	12	6	80	21	48	4.8	7.8	11	MEB … 08 …
			MEB 00 08 09030 12 HM	8	12	6	90	30	48	4.8	7.8	11	MEB … 08 …
			MEB 00 08 10042 12 HM	8	12	6	100	42	48	4.8	7.8	11	MEB … 08 …
			MEB 00 08 11550 12 HM	8	12	6	115	50	48	4.8	7.8	11	MEB … 08 …
			MEB 00 11 09529 12 HM	11	12	8	95	29	60	6.7	10.7	11	MEB … 11 …
			MEB 00 11 11042 12 HM	11	12	8	110	42	60	6.7	10.7	11	MEB … 11 …
			MEB 00 11 12056 12 HM	11	12	8	120	56	60	6.7	10.7	11	MEB … 11 …
			MEB 00 11 13064 12 HM	11	12	8	130	64	60	6.7	10.7	11	MEB … 11 …
			MEB 00 14 10034 12 HM	14	12	9	100	34	60	9.0	13.8	11	MEB … 14 …
			MEB 00 14 11045 12 HM	14	12	9	110	45	60	9.0	13.8	11	MEB … 14 …
			MEB 00 14 13064 12 HM	14	12	9	130	64	60	9.0	13.8	11	MEB … 14 …
			MEB 00 14 10034 16 HM	14	16	9	100	34	60	9.0	13.8	15	MEB … 14 …
			MEB 00 14 11045 16 HM	14	16	9	110	45	60	9.0	13.8	15	MEB … 14 …
			MEB 00 14 13064 16 HM	14	16	9	130	64	60	9.0	13.8	15	MEB … 14 …
			MEB 00 14 14575 16 HM	14	16	9	145	75	60	9.0	13.8	15	MEB … 14 …
			MEB 00 16 13040 12 HM	16	12	11	130	40	60	10.2	15.7	11	MEB … 16 …
			MEB 00 16 13056 12 HM	16	12	11	130	56	60	10.2	15.7	11	MEB … 16 …
			MEB 00 16 15080 12 HM	16	12	11	150	80	60	10.2	15.7	11	MEB … 16 …
			MEB 00 16 13040 16 HM	16	16	11	130	40	60	10.2	15.7	15	MEB … 16 …
			MEB 00 16 13056 16 HM	16	16	11	130	56	60	10.2	15.7	15	MEB … 16 …
			MEB 00 16 15080 16 HM	16	16	11	150	80	60	10.2	15.7	15	MEB … 16 …

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 26060 T08	MEB 00 08…	Torxschraube/vis torx/torx screw	M2.6x6 T08
	MSP 35070 T10	MEB 00 11…	Torxschraube/vis torx/torx screw	M3.5x7 T10
	MSP 40090 T15	MEB 00 14…	Torxschraube/vis torx/torx screw	M4.0x9 T15
	MSP 50090 T20	MEB 00 16…	Torxschraube/vis torx/torx screw	M5.0x9 T20
	MSP TX08	MEB 00 08…	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX10	MEB 00 11…	Torxschlüssel/tournevis torx/torx screwdriver	T10
	MSP TX15	MEB 00 14…	Torxschlüssel/tournevis torx/torx screwdriver	T15
	MSP TX20	MEB 00 16…	Torxschlüssel/tournevis torx/torx screwdriver	T20

	Werkstoffe | Matières | Materials			
	Stahl unlegiert Acier non allié Steel unalloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium
Härte (HB) Dureté (HB) Hardness value (HB)	125–300	180–250	200–350	–
Kategorie Catégrie Category	I	II	III	IV

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm **Avances (f) en mm/tr et profondeurs de passes (ap) en mm** **Feed (f) in mm/rev and depths of cut (ap) in mm**

Stechdrehen Rainurage Grooving				
f	0.01–0.03	0.01–0.03	0.01–0.03	0.01–0.03
Längsdrehen Tournage Turning				
f	0.03–0.10	0.03–0.10	0.03–0.10	0.03–0.10
ap	*	*	*	*

*max. ap – abhängig von Grösse, Schneidengeometrie und Werkstoff
– dépende de la grandeur, géométrie de coupe et matériau usiné
– depending from size, insert geometry an material

Schnittgeschwindigkeiten (v_c) in m/min **Vitesses de coupe (v_c) en m/min** **Cutting speed (v_c) in m/min**

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	–	80–200	–	–	70–200	–	–	80–160	–	–	70–90
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	–	–	–	–	–	–	–	–	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

	Werkstoffe | Matières | Materials			
	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
Härte (HB) Dureté (HB) Hardness value (HB)	180–220	220–330	60–130	–
Kategorie Catégrie Category	V	VI	VII	VIII

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm **Avances (f) en mm/tr et profondeurs de passes (ap) en mm** **Feed (f) in mm/rev and depths of cut (ap) in mm**

Stechdrehen Rainurage Grooving				
f	0.01–0.03	0.01–0.03	0.01–0.03	0.01–0.03
Längsdrehen Tournage Turning				
f	0.03–0.10	0.03–0.10	0.03–0.10	0.03–0.10
ap	*	*	*	*

*max. ap – abhängig von Grösse, Schneidengeometrie und Werkstoff
– dépende de la grandeur, géométrie de coupe et matériau usiné
– depending from size, insert geometry an material

Schnittgeschwindigkeiten (v_c) in m/min **Vitesses de coupe (v_c) en m/min** **Cutting speed (v_c) in m/min**

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	–	80–160	–	–	40–80	–	–	100–800	–	–	80–700
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	–	–	–	–	–	–	–	–	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

Multidec®-Superbore ist das optimale Werkzeug bei der Innenbearbeitung (Durchmesser 8–32 mm und Bohrungstiefen bis 2.25xD).
Alle Wendeschneidplatten verfügen über zwei Schneiden und sind leicht auswechselbar. Zugleich bietet Multidec®-Superbore stabile scharfe sowie gerundete Schneidenkanten mit einem maximalen Radius von 0.2 bis 0.8 mm. Für die Bearbeitung aller gängigen Werkstoffe stehen ideal abgestimmte Hartmetallsorten (K10–P40), beschichtet und unbeschichtet, zur Verfügung. Die speziell entwickelte Spanleitstufe erlaubt eine optimale Spanbeherrschung beim Bohren sowie beim Längs- und Plandrehen.
Multidec®-Superbore, das ist ein Präzisionswerkzeug für drei Bearbeitungsverfahren und deshalb ideal bei wenigen Werkzeugplätzen in der Maschine. Da weniger Werkzeugwechsel nötig sind, können die Fertigungskosten effektiv gesenkt werden.

Multidec®-Superbore , l'outil idéal pour l'usinage intérieur des diamètres allant de 8 à 32 mm. Différentes opérations de tournage avec un seul outil. Forer avec fond plat directement dans le plein, tournage intérieur, dressage de la face et enfin tournage extérieur, sont les atouts principaux de cet outil. Ces capacités de plongée sont de 1.5xD et de 2.25xD, couvrant une grande famille de pièces de décolletage, mais également de mécanique. La géométrie du brise copeau assure une maîtrise parfaite de celui-ci et les plaquettes sont disponibles dans plusieurs grandeurs de rayons ainsi que dans de multiples nuances carbure aux revêtements CVD et PVD.
Multidec®-Superbore est un outil pour trois différentes opérations de travail. Quand il vous manquera de la place sur votre tourelle, pensez-y.

For ID-turning Multidec®-Superbore is the ideal cutting tool (diameters between 8 and 32 mm and deep holes up to 2.25 times D). All inserts have 2 cutting edges and are easily indexed and replaced. At the same time Multidec®-Superbore provides a very stable and sharp cutting edge with a maximum radius between 0.2 and 0.8 mm. For cutting of all common materials there are ideal adjusted carbides inserts (K10-P40 coated and uncoated) available. The specific designed chip breaker allows an ideal chip flow for drilling, turning and facing.
This precision tool makes it possible to cover three machining operations in one tool and is consequently ideal for machines with few tool places. Because of less tool changes the production costs can be reduced significantly.

Vorteile
- 3 Bearbeitungsverfahren mit einem Werkzeug
  - Bohren ins Volle mit ebenem Bohrungsgrund
  - Längsdrehen (aussen und innen)
  - Plandrehen (aussen und innen)
- Innenbearbeitung
  - minimaler Durchmesser 8 mm
  - Bohrungstiefe bis 2.25D
- Stabile scharfe Schneiden
- Je nach Bearbeitung gut abgestimmte
  - Hartmetallsorten (K10–P40)
  - beschichtet und unbeschichtet
- Optimale Spanbeherrschung

Avantages
- 3 procédés d'usinage avec un seul outil
  - perçage dans le plein avec fond plat
  - tournage (intérieur + extérieur)
  - dressage (intérieur + extérieur)
- Usinage intérieur
  - diamètre minimal 8 mm
  - profondeur d'alésages jusqu'à 2.25D
- Arêtes de coupe vives et stables
- Pour chaque usinage une nuance optimale
  - nuances en carbure (K10–P40)
  - revêtues et non revêtues
- Parfaite maîtrise du copeau

Advantages
- Three operations with one tool
  - drilling into solid material with flat bottom holes
  - long turning (ID- and OD turning)
  - face turning (ID- and OD turning)
- ID-turnin
  - diameter minimum 8 mm
  - deep holes up to 2.25D
- Sharp and stable cutting edges
- Different coatings are available
- Good chip breaking

ANWENDUNGS-ÜBERSICHT AUSSENDREHEN
APPLICATIONS POUR LE TOURNAGE EXTÉRIEUR
APPLICATION OD TURNING

MULTIDEC®-SUPERBORE

Schneiden siehe Seite 185…
Halter siehe Seite 187…

Plaquettes voir page 185…
Porte-outils voir page 187…

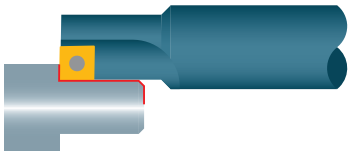
Inserts see page 185…
Holders see page 187…

Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung lieferbar.

Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

All illustrations show right hand design. Left hand design is also available.

Längs- und Plandrehen
Tournage et dressage
Turning and facing



ANWENDUNGS-ÜBERSICHT INNENDREHEN UND BOHREN
APPLICATIONS POUR LE TOURNAGE INTÉRIEUR ET PERÇAGE
APPLICATION ID TURNING AND DRILLING

MULTIDEC®-SUPERBORE

Schneiden siehe Seite 185…
Halter siehe Seite 187…

Plaquettes voir page 185…
Porte-outils voir page 187…

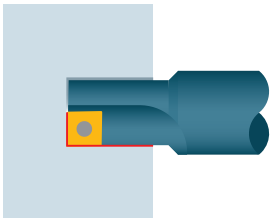
Inserts see page 185…
Holders see page 187…

Alle Abbildungen sind in rechter Ausführung dargestellt. Linke Ausführung lieferbar.

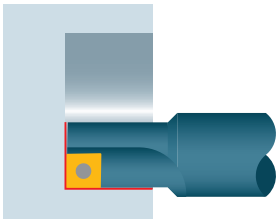
Toutes les illustrations représentent des exécutions à droite. Les exécutions à gauche sont aussi livrables.

All illustrations show right hand design. Left hand design is also available.

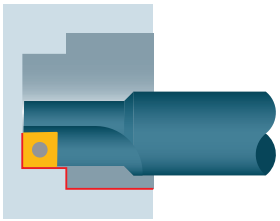
Bohren ins Volle
Perçage dans le plein
Drilling into solid

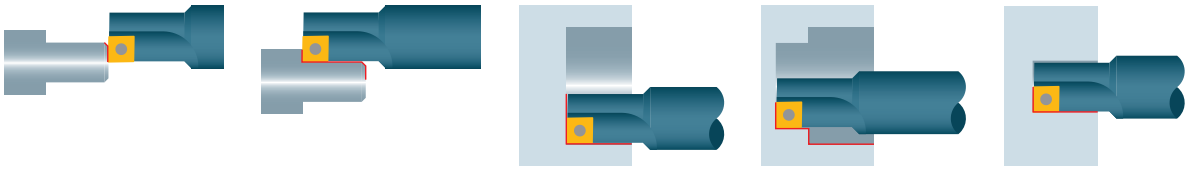


Längs- und Plandrehen
Tournage et dressage
Turning and facing



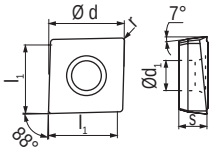
Längs- und Plandrehen
Tournage et dressage
Turning and facing





XCNT…

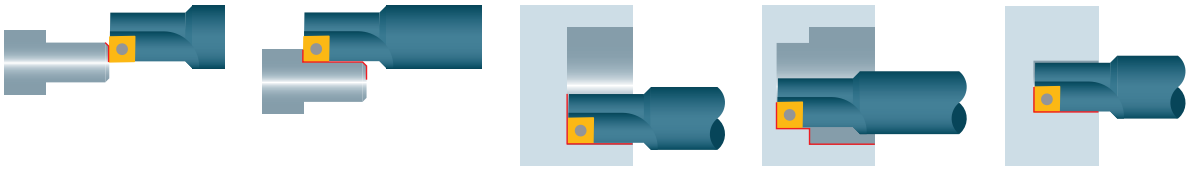
-EN/-EL/-ER -TOP5



Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*										Halter Porte-outil Holder
				–	○	●	●	●						187…
				–	●	–	●	●						
				○	●	–	–	●						
				●	○	–	–	○						
L	N	R		UHM 10	UHM 10 HX	UHM 20 MZ	UHM 30 MZ	UHM 30 HX	l_1	Ø D	s	Ø d_1	r	
■			XCNT 040102 EL			■	■	■	4.00	4.50	1.80	2.10	0.2	MSB 08 … 04
			XCNT 040104 EL			■	■	■	4.00	4.50	1.80	2.10	0.4	MSB 08 … 04
		■	XCNT 040102 ER			■	■	■	4.00	4.50	1.80	2.10	0.2	MSB 08 … 04
			XCNT 040104 ER			■	■	■	4.00	4.50	1.80	2.10	0.4	MSB 08 … 04
■		■	XCNT 050202 EN			■	■	■	5.00	5.80	2.10	2.25	0.2	MSB 10 … 05
			XCNT 050204 EN			■	■	■	5.00	5.80	2.10	2.25	0.4	MSB 10 … 05
			XCNT 060202 EN			■	■	■	6.00	6.50	2.38	2.50	0.2	MSB 12 … 06
			XCNT 060204 EN			■	■	■	6.00	6.50	2.38	2.50	0.4	MSB 12 … 06
			XCNT 070304 EN			■	■	■	7.00	7.60	3.18	2.80	0.4	MSB 14 … 07
			XCNT 080304 EN			■	■	■	8.00	8.50	3.18	3.40	0.4	MSB 16 … 08
			XCNT 09T304 EN			■	■	■	9.00	9.60	3.97	3.40	0.4	MSB 18 … 09
			XCNT 10T304 EN			■	■	■	10.00	10.60	3.97	4.40	0.4	MSB 20 … 10
			XCNT 10T308 EN			■	■	■	10.00	10.60	3.97	4.40	0.8	MSB 20 … 10
			XCNT 130404 EN			■	■	■	12.50	13.50	4.76	5.30	0.4	MSB 25 … 13
			XCNT 130408 EN			■	■	■	12.50	13.50	4.76	5.30	0.8	MSB 25 … 13
			XCNT 170508 EN			■	■	■	16.00	17.50	5.56	5.30	0.8	MSB 32 … 17
■		■	XCNT 080304 EN TOP5			■			8.00	8.50	3.18	3.40	0.4	MSB 16 … 08
			XCNT 09T304 EN TOP5			■			9.00	9.60	3.97	3.40	0.4	MSB 18 … 09
			XCNT 10T304 EN TOP5			■			10.00	10.60	3.97	4.40	0.4	MSB 20 … 10
			XCNT 10T308 EN TOP5			■			10.00	10.60	3.97	4.40	0.8	MSB 20 … 10
			XCNT 130404 EN TOP5			■			12.50	13.50	4.76	5.30	0.4	MSB 25 … 13
			XCNT 130408 EN TOP5			■			12.50	13.50	4.76	5.30	0.8	MSB 25 … 13
			XCNT 170508 EN TOP5			■			16.00	17.50	5.56	5.30	0.8	MSB 32 … 17

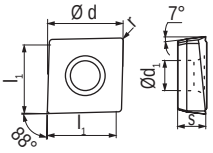
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard



-PA7 -TOP7

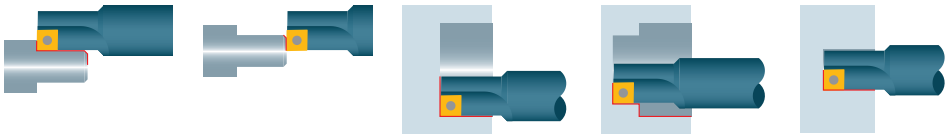
XCET…

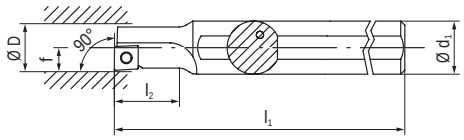


Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*										Halter Porte-outil Holder
				– ○ ● ○ ● ●										187…
				– ● – ○ ● ●										
				○ ● – ○ – ●										
				● ○ – ● – ○										
L	N	R		UHM 10	UHM 10 HX	UHM 20 MZ	UHM 30	UHM 30 MZ	UHM 30 HX	l_1	Ø D	s	Ø d_1	r	
			XCET 040102 FL PA7	■	■					4.00	4.50	1.80	2.10	0.2	MSB 08 … 04
			XCET 040102 FL TOP7	■	■					4.00	4.50	1.80	2.10	0.2	MSB 08 … 04
			XCET 040104 FL PA7	■	■					4.00	4.50	1.80	2.10	0.4	MSB 08 … 04
			XCET 040104 FL TOP7	■	■					4.00	4.50	1.80	2.10	0.4	MSB 08 … 04
			XCET 040102 FR PA7	■	■					4.00	4.50	1.80	2.10	0.2	MSB 08 … 04
			XCET 040102 FR TOP7	■	■					4.00	4.50	1.80	2.10	0.2	MSB 08 … 04
			XCET 040104 FR PA7	■	■					4.00	4.50	1.80	2.10	0.4	MSB 08 … 04
			XCET 040104 FR TOP7	■	■					4.00	4.50	1.80	2.10	0.4	MSB 08 … 04
			XCET 050202 FN PA7	■	■					5.00	5.80	2.10	2.25	0.2	MSB 10 … 05
			XCET 050204 FN PA7	■	■					5.00	5.80	2.10	2.25	0.4	MSB 10 … 05
			XCET 060202 FN PA7	■	■					6.00	6.50	2.38	2.50	0.2	MSB 12 … 06
			XCET 060204 FN PA7	■	■					6.00	6.50	2.38	2.50	0.4	MSB 12 … 06
			XCET 070304 FN PA7	■	■					7.00	7.60	3.18	2.80	0.4	MSB 14 … 07
			XCET 080304 FN PA7	■	■					8.00	8.50	3.18	3.40	0.4	MSB 16 … 08
			XCET 09T304 FN PA7	■	■					9.00	9.60	3.97	3.40	0.4	MSB 18 … 09
			XCET 10T304 FN PA7	■	■					10.00	10.60	3.97	4.40	0.4	MSB 20 … 10
			XCET 10T308 FN PA7	■	■					10.00	10.60	3.97	4.40	0.8	MSB 20 … 10
			XCET 130404 FN PA7	■	■					12.50	13.50	4.76	5.30	0.4	MSB 25 … 13
			XCET 130408 FN PA7	■	■					12.50	13.50	4.76	5.30	0.8	MSB 25 … 13
			XCET 170508 FN PA7	■	■					16.00	17.50	5.56	5.30	0.8	MSB 32 … 17
			XCET 050202 FN TOP7	■	■					5.00	5.80	2.10	2.25	0.2	MSB 10 … 05
			XCET 050204 FN TOP7	■	■					5.00	5.80	2.10	2.25	0.4	MSB 10 … 05
			XCET 060202 FN TOP7	■	■					6.00	6.50	2.38	2.50	0.2	MSB 12 … 06
			XCET 060204 FN TOP7	■	■					6.00	6.50	2.38	2.50	0.4	MSB 12 … 06
			XCET 070304 FN TOP7	■	■					7.00	7.60	3.18	2.80	0.4	MSB 14 … 07
			XCET 080304 FN TOP7	■	■					8.00	8.50	3.18	3.40	0.4	MSB 16 … 08
			XCET 09T304 FN TOP7	■	■					9.00	9.60	3.97	3.40	0.4	MSB 18 … 09
			XCET 10T304 FN TOP7	■	■					10.00	10.60	3.97	4.40	0.4	MSB 20 … 10
			XCET 10T308 FN TOP7	■	■					10.00	10.60	3.97	4.40	0.8	MSB 20 … 10
			XCET 130404 FN TOP7	■	■					12.50	13.50	4.76	5.30	0.4	MSB 25 … 13
			XCET 130408 FN TOP7	■	■					12.50	13.50	4.76	5.30	0.8	MSB 25 … 13
			XCET 170508 FN TOP7	■	■					16.00	17.50	5.56	5.30	0.8	MSB 32 … 17

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

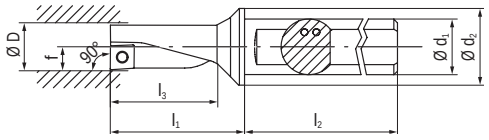
■ Standard
□ Semi Standard





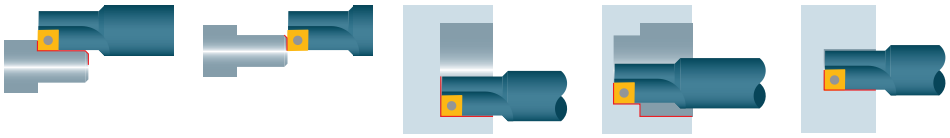
1.5D = (l_2)

Ausführung Exécution Execution			Bezeichnung Désignation Designation								Schneiden Plaquettes Inserts
L	N	R		Ø D	Ø d_1	Ø d_2	l_1	l_2	l_3	f	185…
			MSB 08 L 1.5D 04	8	12		80.0	12.0		4.0	XC..T 04….
			MSB 10 L 1.5D 05	10	12		90.0	15.0		5.0	XC..T 05….
			MSB 12 L 1.5D 06	12	16		100.0	18.0		6.0	XC..T 06….
			MSB 14 L 1.5D 07	14	16		110.0	21.0		7.0	XC..T 07….
			MSB 16 L 1.5D 08	16	20		125.0	24.0		8.0	XC..T 08….
			MSB 18 L 1.5D 09	18	25		135.0	27.0		9.0	XC..T 09….
			MSB 20 L 1.5D 10	20	25		150.0	30.0		10.0	XC..T 10….
			MSB 25 L 1.5D 13	25	32		180.0	37.5		12.5	XC..T 13….
			MSB 32 L 1.5D 17	32	40		200.0	48.0		16.0	XC..T 17….
			MSB 08 R 1.5D 04	8	12		80.0	12.0		4.0	XC..T 04….
			MSB 10 R 1.5D 05	10	12		90.0	15.0		5.0	XC..T 05….
			MSB 12 R 1.5D 06	12	16		100.0	18.0		6.0	XC..T 06….
			MSB 14 R 1.5D 07	14	16		110.0	21.0		7.0	XC..T 07….
			MSB 16 R 1.5D 08	16	20		125.0	24.0		8.0	XC..T 08….
			MSB 18 R 1.5D 09	18	25		135.0	27.0		9.0	XC..T 09….
			MSB 20 R 1.5D 10	20	25		150.0	30.0		10.0	XC..T 10….
			MSB 25 R 1.5D 13	25	32		180.0	37.5		12.5	XC..T 13….
			MSB 32 R 1.5D 17	32	40		200.0	48.0		16.0	XC..T 17….

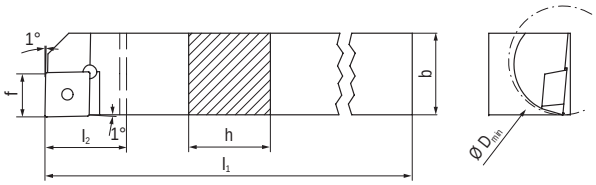


2,25D = (l_3)

Ausführung Exécution Execution			Bezeichnung Désignation Designation								Schneiden Plaquettes Inserts
L	N	R		Ø D	Ø d_1	Ø d_2	l_1	l_2	l_3	f	185…
			MSB 08 L 2.25D 04	8	10	12	22.0	38	18.0	4.0	XC..T 04….
			MSB 10 L 2.25D 05	10	12	16	27.5	42	22.5	5.0	XC..T 05….
			MSB 12 L 2.25D 06	12	16	20	33.0	45	27.0	6.0	XC..T 06….
			MSB 14 L 2.25D 07	14	16	20	38.5	45	31.5	7.0	XC..T 07….
			MSB 16 L 2.25D 08	16	20	25	44.0	50	36.0	8.0	XC..T 08….
			MSB 18 L 2.25D 09	18	25	32	53.5	56	40.5	9.0	XC..T 09….
			MSB 20 L 2.25D 10	20	25	32	55.0	56	45.0	10.0	XC..T 10….
			MSB 25 L 2.25D 13	25	32	40	69.0	60	56.5	12.5	XC..T 13….
			MSB 32 L 2.25D 17	32	40	50	88.0	70	72.0	16.0	XC..T 17….
			MSB 08 R 2.25D 04	8	10	12	22.0	38	18.0	4.0	XC..T 04….
			MSB 10 R 2.25D 05	10	12	16	27.5	42	22.5	5.0	XC..T 05….
			MSB 12 R 2.25D 06	12	16	20	33.0	45	27.0	6.0	XC..T 06….
			MSB 14 R 2.25D 07	14	16	20	38.5	45	31.5	7.0	XC..T 07….
			MSB 16 R 2.25D 08	16	20	25	44.0	50	36.0	8.0	XC..T 08….
			MSB 18 R 2.25D 09	18	25	32	53.5	56	40.5	9.0	XC..T 09….
			MSB 20 R 2.25D 10	20	25	32	55.0	56	45.5	10.0	XC..T 10….
			MSB 25 R 2.25D 13	25	32	40	69.0	60	56.5	12.5	XC..T 13….
			MSB 32 R 2.25D 17	32	40	50	88.0	70	72.0	16.0	XC..T 17….



EC...



Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R		h	b	l_1	l_2	l_3	a	f	Ø $D_{min.}$	185...
			EC L 1212 H06-20	12	12	100	10			6	16	XC..T06...
			EC L 1212 H06-15	12	12	100	10			6	16	XC..T06...
			EC R 1212 H06-20	12	12	100	10			6	16	XC..T06...
			EC R 1212 H06-15	12	12	100	10			6	16	XC..T06...

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 18034 T06	MSB 08 … 04	Torxschraube/vis torx/torx screw	M1.8x3.4 T06
	MSP 20040 T06	MSB 10 … 05	Torxschraube/vis torx/torx screw	M2.0x4.0 T06
	MSP 22050 T07	MSB 12 … 06	Torxschraube/vis torx/torx screw	M2.2x5.0 T07
	MSP 25060 T08	MSB 14 … 07	Torxschraube/vis torx/torx screw	M2.5x6.0 T08
	MSP 30073 T08	MSB 16 … 08	Torxschraube/vis torx/torx screw	M3.0x7.3 T08
	MSP 30073 T08	MSB 18 … 09	Torxschraube/vis torx/torx screw	M3.0x7.3 T08
	MSP 35086 T15	MSB 20 … 10	Torxschraube/vis torx/torx screw	M3.5x8.6 T15
	MSP 45105 T20	MSB 25 … 13	Torxschraube/vis torx/torx screw	M4.5x10.5 T20
	MSP 45105 T20	MSB 32 … 17	Torxschraube/vis torx/torx screw	M4.5x10.5 T20
	MSP TX06	MSB 08 … 04	Torxschlüssel/tournevis torx/torx screwdriver	T06
	MSP TX06	MSB 10 … 05	Torxschlüssel/tournevis torx/torx screwdriver	T06
	MSP TX07	MSB 12 … 06	Torxschlüssel/tournevis torx/torx screwdriver	T07
	MSP TX08	MSB 14 … 07	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX08	MSB 16 … 08	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX08	MSB 18 … 09	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX15	MSB 20 … 10	Torxschlüssel/tournevis torx/torx screwdriver	T15
	MSP TX20	MSB 25 … 13	Torxschlüssel/tournevis torx/torx screwdriver	T20
	MSP TX20	MSB 32 … 17	Torxschlüssel/tournevis torx/torx screwdriver	T20
	MSP TX06 D	MSB 08 … 04	Drehmoment-Torxschlüssel (0.6 Nm) tournevis torx à serrage contrôlé (0.6 Nm) torx torquedriver (0.6 Nm)	T06
	MSP TX06 D	MSB 10 … 05	Drehmoment-Torxschlüssel (0.6 Nm) tournevis torx à serrage contrôlé (0.6 Nm) torx torquedriver (0.6 Nm)	T06
	MSP TX07 D	MSB 12 … 06	Drehmoment-Torxschlüssel (0.9 Nm) tournevis torx à serrage contrôlé (0.9 Nm) torx torquedriver (0.9 Nm)	T07
	MSP TX08 D	MSB 14 … 07	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX08 D	MSB 16 … 08	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX08 D	MSB 18 … 09	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08
	MSP TX15 D	MSB 20 … 10	Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T15

	Werkstoffe | Matières | Materials			
	Stahl unlegiert Acier non allié Steel unalloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium
Härte (HB) Dureté (HB) Hardness value (HB)	125–300	180–250	200–350	–
Kategorie Catégrie Category	I	II	III	IV

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm

Avances (f) en mm/tr et profondeurs de passes (ap) en mm

Feed (f) in mm/rev and depths of cut (ap) in mm

Vorschübe (f) und Schnitttiefen (ap) siehe Seite 193
Avances (f) et profondeurs de passes (ap) voir page 193
Feed (f) and depths of cut (ap) see page 193

Schnittgeschwindigkeiten (v_c) in m/min

Vitesses de coupe (v_c) en m/min

Cutting speed (v_c) in m/min

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	30–50	30–60	40–80
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	80–160	100–180	130–260	60–120	70–140	100–180	–	60–120	90–160	40–60	50–90	60–140
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	100–180	120–200	150–280	80–140	90–160	120–200	60–120	80–140	110–180	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	–	–	–	20–40	20–50	20–50
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	80–150	100–180	140–250	70–120	80–150	100–180	60–120	80–150	100–180	–	–	–
UHM 30 HX	60–130	80–160	120–230	60–100	60–130	80–160	50–100	80–140	100–160	30–50	40–80	50–120
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	–	–	–	–	–	–	–	–	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

	Werkstoffe | Matières | Materials			
	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
Härte (HB) Dureté (HB) Hardness value (HB)	180–220	220–330	60–130	–
Kategorie Catégrie Category	V	VI	VII	VIII

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm

Avances (f) en mm/tr et profondeurs de passes (ap) en mm

Feed (f) in mm/rev and depths of cut (ap) in mm

Vorschübe (f) und Schnitttiefen (ap) siehe Seite 193
Avances (f) et profondeurs de passes (ap) voir page 193
Feed (f) and depths of cut (ap) see page 193

Schnittgeschwindigkeiten (v_c) in m/min

Vitesses de coupe (v_c) en m/min

Cutting speed (v_c) in m/min

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	100–300	100–400	100–400	100–300	100–400	100–400
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	50–90	60–140	–	30–50	30–70	100–300	100–500	100–500	100–300	100–500	100–500
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	80–200	80–300	80–300	80–200	80–300	80–300
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	60–150	80–150	100–200	30–70	40–70	50–100	–	–	–	–	–	–
UHM 30 HX	50–100	50–180	80–200	30–50	30–90	40–100	–	–	–	–	–	–
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	–	–	–	–	–	–	–	–	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

Bohren ausser Mitte

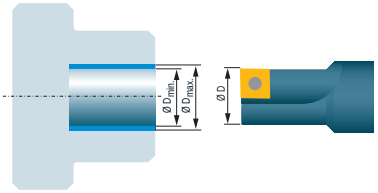
Durch die spezielle konstruktive Auslegung von Werkzeug und Wendeplatte ist es mit Multidec®-Superbore-Werkzeugen möglich, ausser Mitte zu bohren. Es können somit entsprechende Abweichungen zum Werkzeugnenndurchmesser erzielt werden, die Sie bitte untenstehender Tabelle entnehmen.

Perçage excentré

Du fait de la conception spéciale de l'outil et de la plaquette, les outils Multidec®-Superbore permettent de procéder à un perçage excentré. Ceci peut conduire à des écarts par rapport au diamètre nominal de l'outil (voir tableau ci-dessus).

Off-centered drilling

Due to the special construction of Multidec®-Superbore tools and indexable inserts off-centered drilling is possible. Thus desired deviations from the tools nominal diameter can be obtained (see table below).



Werkzeugtyp Type d'outil Type of tool	Werkzeugnenn-Ø (mm) Ø nominal d'outil Nominal tool Ø (mm)	Werkstückbohr-Ø (mm) Ø percé sur la pièce Workpiece bore diameter (mm)	
	Ø D (mm)	Ø D_{min} (mm)	Ø D_{max} (mm)
MSB 08 L/R-… 04	8	7,85	8,30
MSB 10 L/R-… 05	10	9,85	10,50
MSB 12 L/R-… 06	12	11,85	12,50
MSB 14 L/R-… 07	14	13,85	14,50
MSB 16 L/R-… 08	16	15,85	16,50
MSB 18 L/R-… 09	18	17,85	18,50
MSB 20 L/R-… 10	20	19,80	20,50
MSB 25 L/R-… 13	25	24,80	25,80
MSB 32 L/R-… 17	32	31,80	33,00

Tiefe Bohrungen bis 3xD

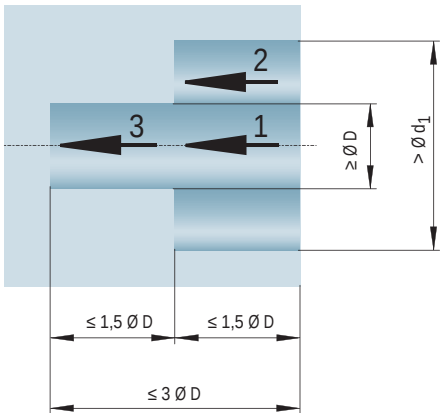
Mit Multidec®-Superbore MSB 1.5D können, bei entsprechender Werkstückkontur, Bohrungen bis zum Dreifachen des Nenndurchmessers bearbeitet werden. Operationsreihenfolge 1, 2 und 3 beachten!

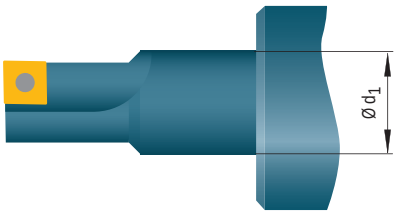
Alésages profonds jusqu'à 3xD

Lorsque le contour de la pièce s'y prête, l'outil Multidec®-Superbore MSB 1.5D permet d'usiner des alésages d'une profondeur équivalent à trois fois les diamètres nominaux maximum (voir figure). Respectez la suite des opérations 1, 2 et 3!

Deep holes up to 3 times D

With a stepped workpiece bore it is possible to achieve, with the tool MSB 1.5D, a resulting depth of up to 3 times the diameter. To reach this result the operation sequences 1, 2 and 3 need to be followed as shown!





Durchgangsbohrung

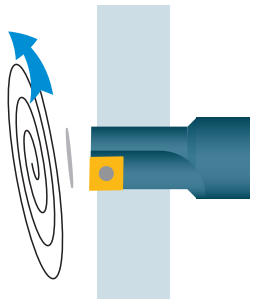
Bei Durchgangsbohrungen fällt am Ende des Bohrvorgangs eine scharfkantige Scheibe ab, die durch die Bearbeitungsbewegung weggeschleudert werden kann. Deshalb sind unbedingt Sicherheitsvorkehrungen notwendig.

Alésages débouchants

Lors des alésages débouchants, un disque tranchant sera éjecté. Prendre les mesures de sécurité nécessaires.

Through holes

With through holes a sharp-edge disk is created as tool break-out occurs. Because of possible centrifugation force safety measures are absolutely necessary.



Einbau der Wendeschneidplatte
Für Multidec®-Superbore-Werkzeuge mit Ø 8 mm werden rechte und linke Wendeschneidplatten benötigt. Von Ø 10–32 mm kommen neutrale Wendeschneidplatten zum Einsatz.

Montage de la plaquette
Les outils Ø 8 mm requièrent l'utilisation de plaquettes gauches et droites. Pour les diamètres de 10 à 32 mm, on fait appel à des plaquettes neutres.

Assembly of inserts
For tools dia. 8 mm right and left hand inserts are required (dependent upon direction of tool). From dia. 10–32 mm neutral inserts are utilized.

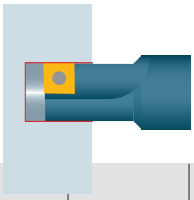
Linkes Werkzeug
Outil à gauche
Left hand tool

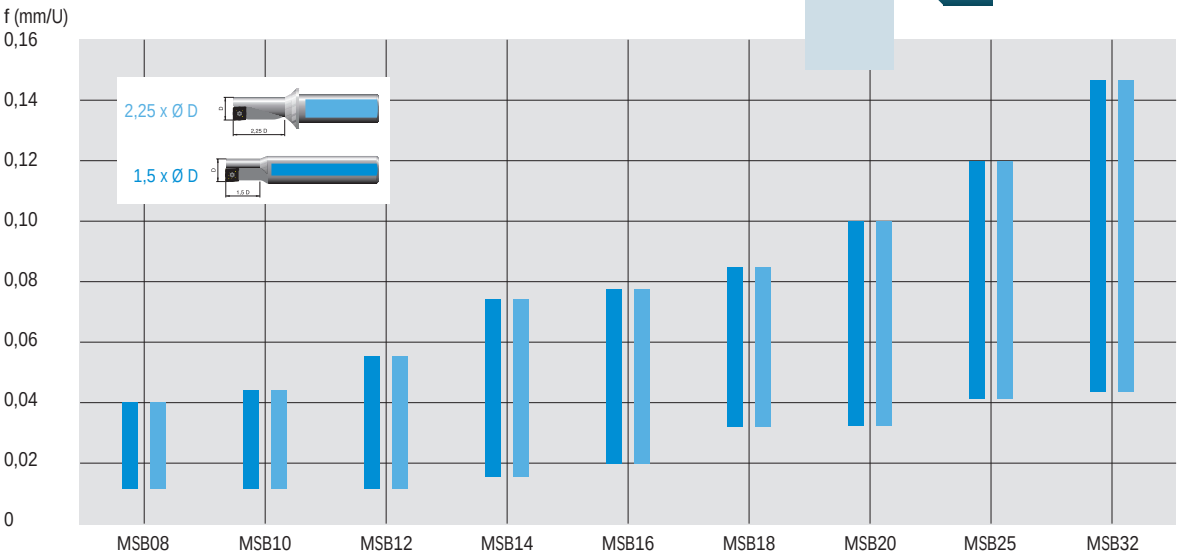
Rechtes Werkzeug
Outil à droite
Right hand tool

Vorschübe beim Bohren

Avance de perçage

Feed for drilling

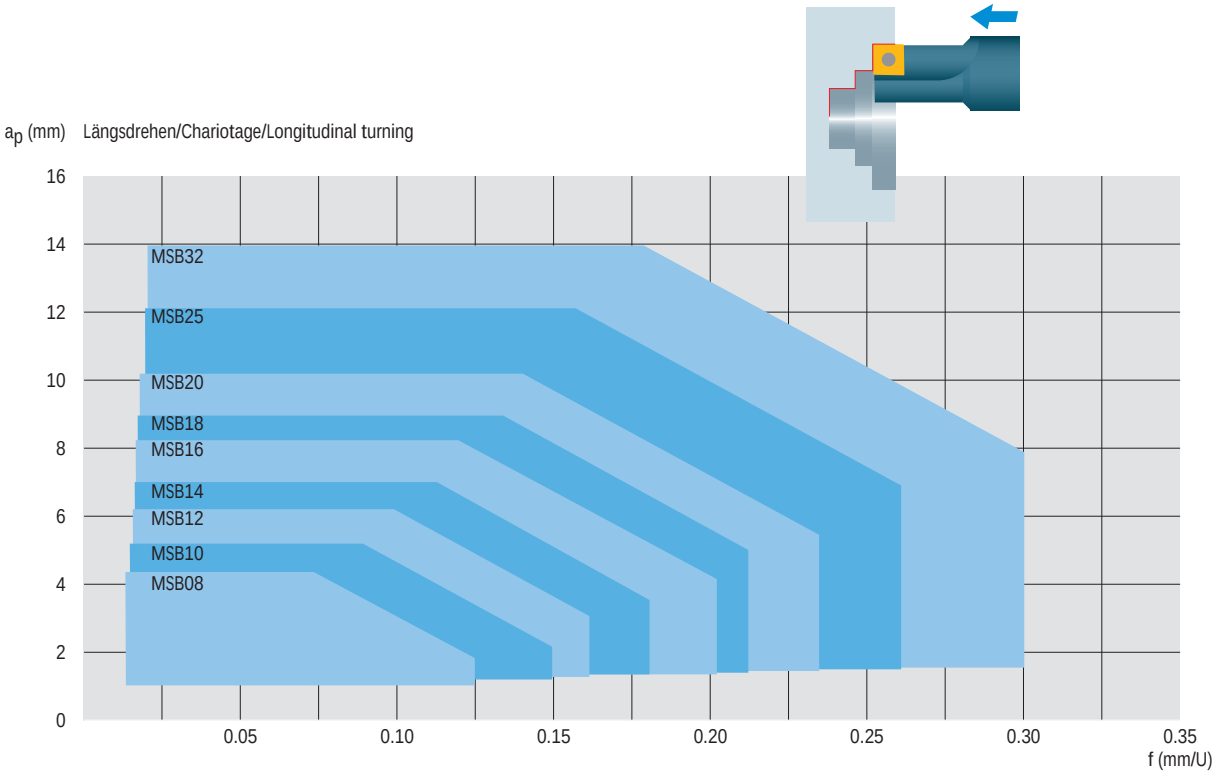


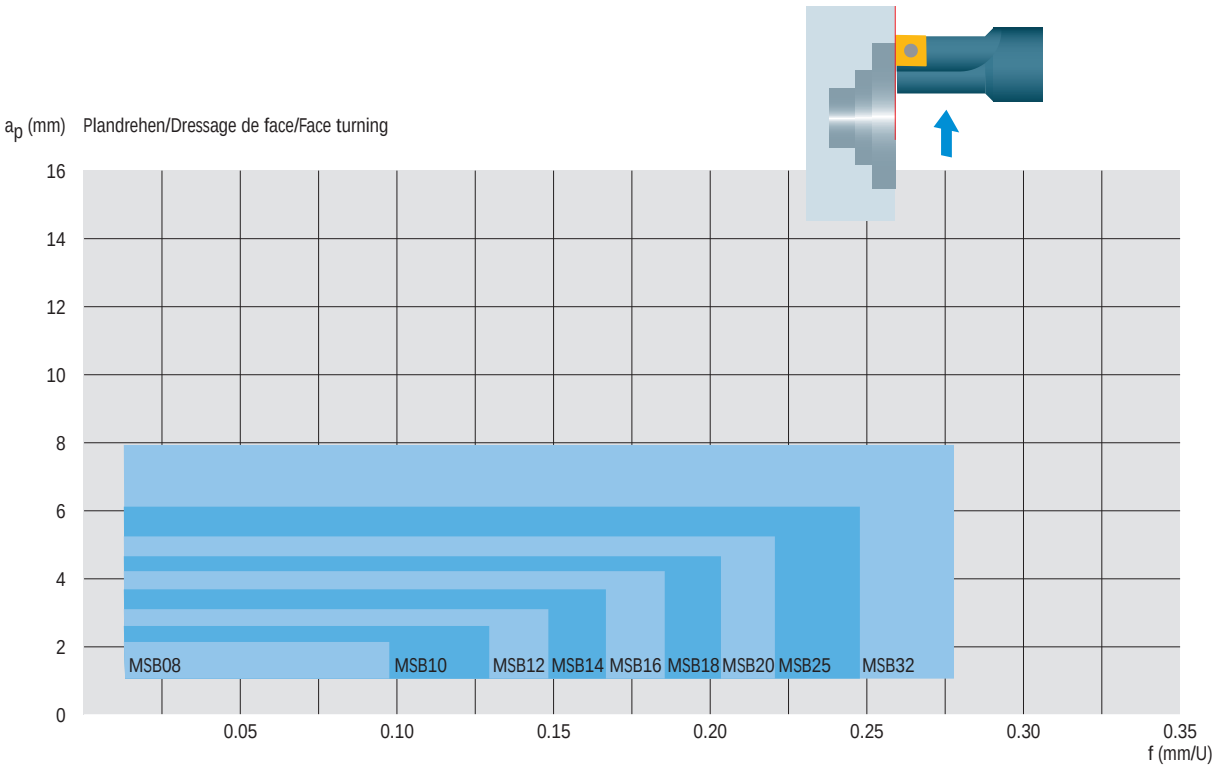


Schnitttiefen und Vorschübe beim Drehen von 1.5D

Profondeurs de passe et avances de tournage 1.5D

Cutting depth and feed for turning 1.5D

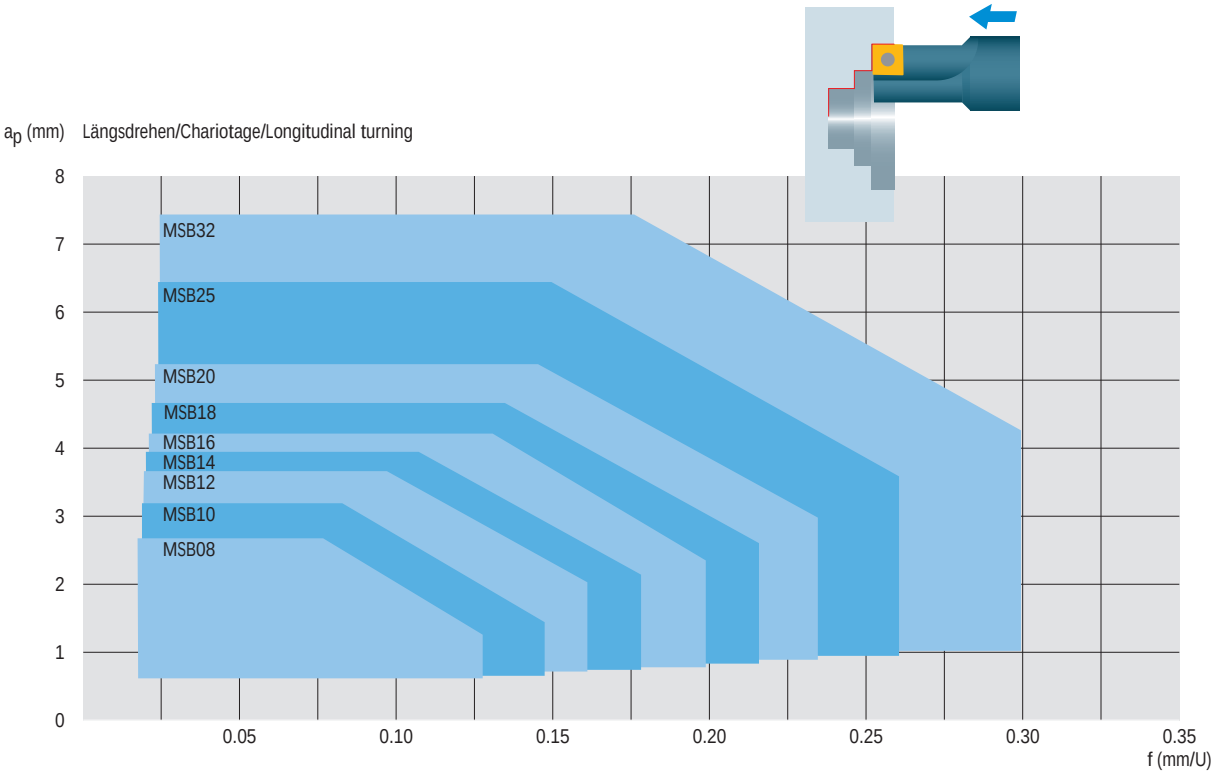


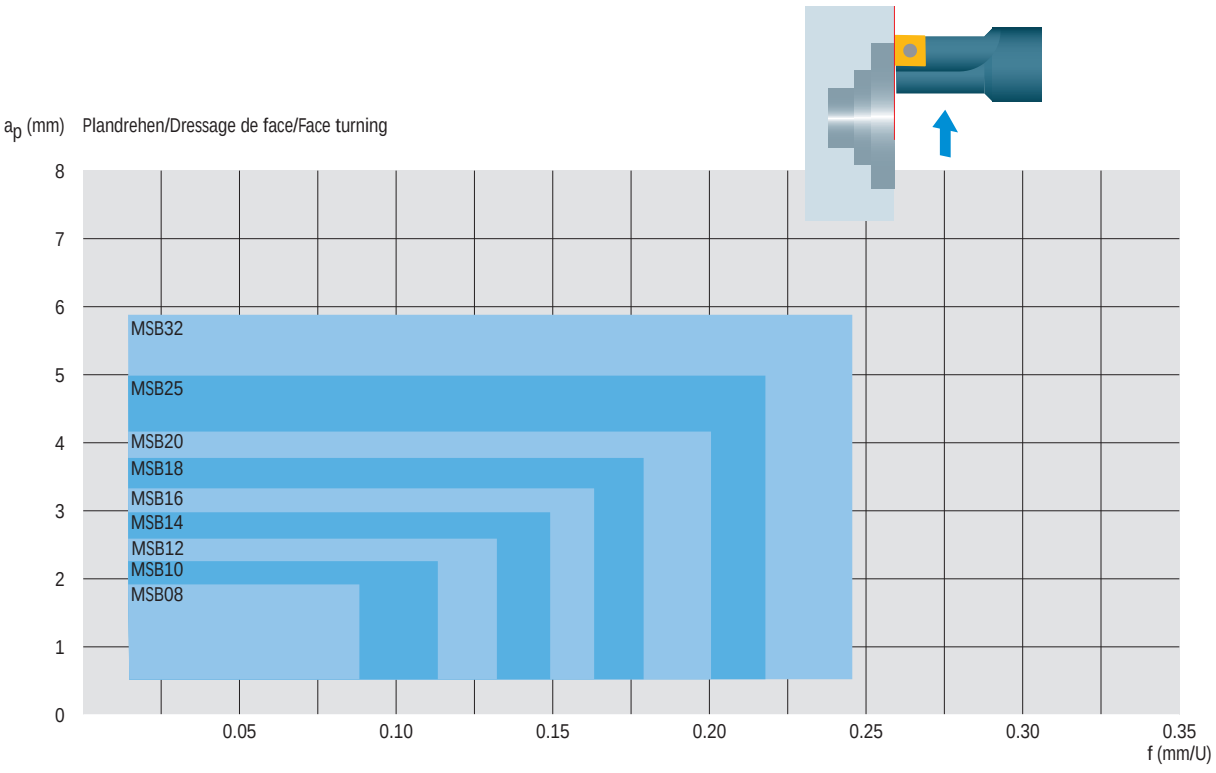


Schnitttiefen und Vorschübe beim Drehen von 2.25D

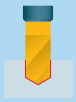
Profondeurs de passe et avances de tournage 2.25D

Cutting depth and feed for turning 2.25D



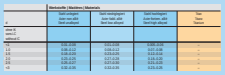


MULTIDEC®-DRILL

Kurzbeschreibung und Anwendungsübersicht
Gamme de produits et applications
Product line and application  199

Schneidstoffsorten
Matériaux de coupe
Cutting grades 200

Bohrer
Forets
Drills  201

Schnittdaten
Données de coupe
Cutting specification  220

Multidec®-Drill bietet ein breites Angebot an hochpräzisen VHM-Bohrern.
Das komplette Programm umfasst den Bereich von Ø 0.3–20 mm. Multidec®-Drill zeichnet sich durch seine hohe Stabilität und Genauigkeit aus. Die exzellente Positionierbarkeit und die Eigenschaft der Selbstzentrierung tragen massgeblich zur hohen erreichbaren Qualität bei und erleichtert die Arbeit. Das Design ermöglicht zusätzlich eine gute Spanabfuhr.
Durch die Beschichtung TiAlN (HX) wird die Standzeit erheblich verbessert. Je nach Anwendung sind ab Ø 3 mm die Spiralbohrer mit oder ohne Innenkühlung (IK) lieferbar. Die Bohrer ab Ø 3 mm sind in Werkstoffen bis zu 60 HRC problemlos einsetzbar und können auf Kundenwunsch mit Weldon- oder Whistle-Notch-Schaft geliefert sowie in Zwischenmassen angefertigt werden.

Multidec®-Drill offre un vaste programme de forets carbure de haute précision.
La plage des dimensions des forets débute de Ø 0.3 mm jusqu'à Ø 20 mm inclus. Multidec®-Drill se distingue par sa grande stabilité d'arête et sa grande précision d'usinage. Le positionnement exact et les caractéristiques d'affûtage de la pointe du foret, diminue considérablement les efforts de coupe. De plus, la forme optimale des goujures favorise une grande évacuation des copeaux.
Le revêtement TiAlN (HX) permet une durée de vie supérieure des arêtes de coupe.
En fonction de vos besoins, depuis les Ø de 3 mm, les forets sont disponibles avec ou sans lubrification central (LC). Les forets de Ø 3 mm et supérieur, sont utilisables dans les matériaux d'une dureté jusqu'à 60 HRC sans aucune préparation. Sur demande ils peuvent être livrés avec queue Weldon ou Whistle-Notch et également en diamètres intermédiaires.

Multidec®-Drill provides a very wide range of high precision solid Carbide drills.
The complete program contains the Ø 0.3–20 mm. Multidec®-Drill distinguish themselfs by high stability and high precision. The excellent positioning and self centering contribute to reach a high quality and makes it easy to work. Additional the design allows a very good chip removal.
The coating TiAlN (HX) improves the operating life considerably. Depending on the application drills beginning from Ø 3 mm are available with or without internal cooling (IC). Drills bigger than Ø 3 mm can be used for materials up to 60 HRC easily and on customers demand Weldon and Whistle-Notch shank and intermediate sizes of drilling diameter can be produced.

Vorteile
- Hohe Genauigkeit und Stabilität
- Selbstzentrierend
- Exzellente Positionierbarkeit
- Gute Spanabfuhr (kein Räumen notwendig)
- Komplettes Programm an VHM-Spiralbohrern von Ø 0.3 mm–20 mm
- Ø 0.3–3 mm in 0.01-Schritten
- Ab Ø 3 mm wahlweise mit/ohne Innenkühlung (IK) erhältlich
- Beschichtung TiAlN (HX) für höhere Standzeiten
- Ab Ø 3 mm problemlos in Werkstoffen bis zu einer Härte von 60 HRC einsetzbar
- Ab Ø 3 mm Weldon- und Whistle-Notch-Schäfte erhältlich
- Ab Ø 3 mm Zwischengrössen möglich

Avantages
- Haute précision et stabilité
- Auto centrant
- Positionnement excellente
- Èvacuation supérieure des copeaux
- Gamme complète dès Ø 0.3 mm–20 mm
- Dès Ø 0.3 mm–3 mm livrable tous les 0.01
- Dès Ø 3 mm livrable avec ou sans lubrification central (LC)
- Revêtement TiAlN (HX) pour rendement supérieur
- Dès Ø 3 mm utilisable sans autre jusqu'à la dureté de 60 HRC
- Dès Ø 3 mm livrable avec queue Weldon ou Whistle-Notch
- Dès Ø 3 mm livrable avec tous les diamètres intermédiaires

Advantages
- High precision and stability
- Self centering
- Excellent positioning
- Good chip removal (reaming not required)
- Wide range of solid carbide drill from Ø 0.3 mm–20 mm
- Ø 0.3–3 mm in 0.01-steps
- Bigger than Ø 3 mm with or without internal cooling (IC) available
- Coating TiAlN (HX) for improvement of operating life
- From Ø 3 mm materials up to 60 HRC machinable easily
- From Ø 3 mm Weldon und Whistle-Notch shanks available
- From Ø 3 mm intermediate sizes of drilling diameter possible

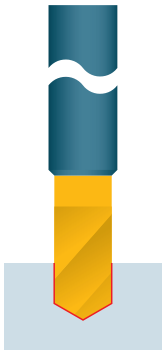
Auf Anfrage:
- Zwischenmasse
- Zylinderschaft mit Weldon oder Whistle Notch

Sur demande:
- Grandeur intermédiaire
- Queue du cylindre avec Weldon ou Whistle Notch

On request:
- Intermediate sizes
- Cylinder shank with Weldon or Whistle Notch

Bohrer siehe Seite 201…
Forets voir page 201…
Drills see page 201…

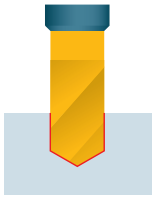
Bohren
Perçage
Drilling



ANWENDUNGSBEREICHE DER SCHNEIDSTOFFSORTEN
DOMAINES D›APPLICATIONS DES MATÉRIAUX DE COUPE
APPLICATION RANGE OF CUTTING GRADES

Schneidstoffsorte Matériaux de coupe Cutting grade	Normbezeichnung Norme Norm	Zähigkeit des Schneidstoffs Tenacité du matériau de coupe Toughness of cutting grades	Werkstoffe Matières Materials							
		01 05 10 15 20 25 30 35 40 45 50	Stahl unlegiert/Acier non allié/Steel non-alloyed	Stahl niedrig legiert/Acier faibl. allié/Steel low alloyed	Stahl hochlegiert/Acier fortem. allié/Steel high alloyed	Rostfreier Stahl/Acier inoxydable/Stainless steel	Titan/Titane/Titanium	Gold/Or/Gold	Aluminium/Aluminium/Aluminium	Messing/Laiton/Brass
Hartmetall Carbure Carbide										
UHM 10	K 10/M 10		●	●	●	●	○	●	●	●
UHM 10 HX	K 10/M 10		●	●	●	●	–	–	○	–

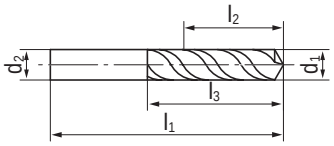
Bohren | Perçage | Drilling



Z 2

N 25°

118°



Micro ohne IK
Micro sans LC
Micro without IC

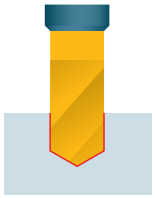
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	● ● ○ ●	● ● – ○					
	UHM 10	UHM 10 HX	d_1 h6	d_2 h6	l_1	l_2	l_3
MD 25030	■		0.30	0.30	30	3.6	4
MD 25040	■		0.40	0.40	30	4.5	5
MD 25050	■		0.50	0.50	30	5.4	6
MD 25060	■		0.60	0.60	30	5.3	6
MD 25070	■		0.70	0.70	40	11.2	12
MD 25075	■		0.75	0.75	40	11.2	12
MD 25080	■		0.80	0.80	40	11.1	12
MD 25085	■		0.85	0.85	40	11.1	12
MD 25090	■		0.90	0.90	40	11.0	12
MD 25095	■		0.95	0.95	40	11.0	12
MD 25100	■		1.00	1.00	40	13.9	15
MD 25110	■		1.10	1.10	40	13.8	15
MD 25120	■		1.20	1.20	40	13.7	15
MD 25125	■		1.25	1.25	40	13.7	15
MD 25130	■		1.30	1.30	40	14.6	16
MD 25140	■		1.40	1.40	40	14.5	16
MD 25145	■		1.45	1.45	40	14.5	16
MD 25150	■		1.50	1.50	40	14.4	16
MD 25160	■		1.60	1.60	40	16.3	18
MD 25170	■		1.70	1.70	40	16.2	18
MD 25175	■		1.75	1.75	40	16.2	18
MD 25180	■		1.80	1.80	40	16.1	18
MD 25190	■		1.90	1.90	40	16.0	18
MD 25200	■		2.00	2.00	40	15.9	18
MD 25210	■		2.10	2.10	40	17.8	20
MD 25220	■		2.20	2.20	40	17.7	20
MD 25230	■		2.30	2.30	40	17.6	20
MD 25240	■		2.40	2.40	40	17.5	20
MD 25250	■		2.50	2.50	40	17.4	20
MD 25260	■		2.60	2.60	45	17.3	20
MD 25270	■		2.70	2.70	45	17.2	20
MD 25280	■		2.80	2.80	45	17.1	20
MD 25290	■		2.90	2.90	45	17.0	20

Achtung | Attention | Attention
Lieferbar in 0.01-Schritten, Mindestbestellmenge 10 Stück
Livrable de 1/100 en 1/100, commande minimale par 10 pièces
Available in 0.01-steps, minimum order quantity 10 pieces

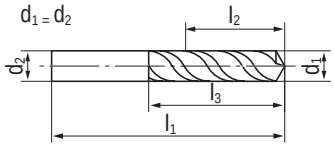
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6539 | Z 2 | N 30° | 140°



3xD ohne IK, extra kurz
3xD sans LC, extra court
3xD without IC, extra short

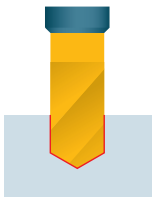
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 h7	d_2 h6	l_1	l_2	l_3
MD 404030		■	3.0	3.0	46	9.0	16
MD 404031		■	3.1	3.1	49	9.3	18
MD 404032		■	3.2	3.2	49	9.6	18
MD 404033		■	3.3	3.3	49	9.9	18
MD 404034		■	3.4	3.4	52	10.2	20
MD 404035		■	3.5	3.5	52	10.5	20
MD 404036		■	3.6	3.6	52	10.8	20
MD 404037		■	3.7	3.7	52	11.1	20
MD 404038		■	3.8	3.8	55	11.4	22
MD 404039		■	3.9	3.9	55	11.7	22
MD 404040		■	4.0	4.0	55	12.0	22
MD 404041		■	4.1	4.1	55	12.3	22
MD 404042		■	4.2	4.2	55	12.6	22
MD 404043		■	4.3	4.3	58	12.9	24
MD 404044		■	4.4	4.4	58	13.2	24
MD 404045		■	4.5	4.5	58	13.5	24
MD 404046		■	4.6	4.6	58	13.8	24
MD 404047		■	4.7	4.7	58	14.1	24
MD 404048		■	4.8	4.8	62	14.4	26
MD 404049		■	4.9	4.9	62	14.7	26
MD 404050		■	5.0	5.0	62	15.0	26
MD 404051		■	5.1	5.1	62	15.3	26
MD 404052		■	5.2	5.2	62	15.6	26
MD 404053		■	5.3	5.3	62	15.9	26
MD 404054		■	5.4	5.4	66	16.2	28
MD 404055		■	5.5	5.5	66	16.5	28
MD 404056		■	5.6	5.6	66	16.8	28
MD 404057		■	5.7	5.7	66	17.1	28
MD 404058		■	5.8	5.8	66	17.4	28
MD 404059		■	5.9	5.9	66	17.7	28

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 h7	d_2 h6	l_1	l_2	l_3
MD 404060		■	6.0	6.0	66	18.0	28
MD 404061		■	6.1	6.1	70	18.3	31
MD 404062		■	6.2	6.2	70	18.6	31
MD 404063		■	6.3	6.3	70	18.9	31
MD 404064		■	6.4	6.4	70	19.2	31
MD 404065		■	6.5	6.5	70	19.5	31
MD 404066		■	6.6	6.6	70	19.8	31
MD 404067		■	6.7	6.7	70	20.1	31
MD 404068		■	6.8	6.8	74	20.4	34
MD 404069		■	6.9	6.9	74	20.7	34
MD 404070		■	7.0	7.0	74	21.0	34
MD 404071		■	7.1	7.1	74	21.3	34
MD 404072		■	7.2	7.2	74	21.6	34
MD 404073		■	7.3	7.3	74	21.9	34
MD 404074		■	7.4	7.4	74	22.2	34
MD 404075		■	7.5	7.5	74	22.5	34
MD 404076		■	7.6	7.6	79	22.8	37
MD 404077		■	7.7	7.7	79	23.1	37
MD 404078		■	7.8	7.8	79	23.4	37
MD 404079		■	7.9	7.9	79	23.7	37
MD 404080		■	8.0	8.0	79	24.0	37
MD 404081		■	8.1	8.1	79	24.3	37
MD 404082		■	8.2	8.2	79	24.6	37
MD 404083		■	8.3	8.3	79	24.9	37
MD 404084		■	8.4	8.4	79	25.2	37
MD 404085		■	8.5	8.5	79	25.5	37
MD 404086		■	8.6	8.6	84	25.8	40
MD 404087		■	8.7	8.7	84	26.1	40
MD 404088		■	8.8	8.8	84	26.4	40
MD 404089		■	8.9	8.9	84	26.7	40

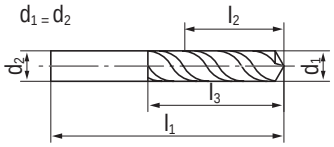
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6539 | Z 2 | N 30° | 140°



3xD ohne IK, extra kurz
3xD sans LC, extra court
3xD without IC, extra short

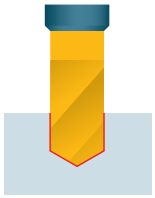
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 h7	d_2 h6	l_1	l_2	l_3
MD 404090		■	9.0	9.0	84	27.0	40
MD 404091		■	9.1	9.1	84	27.3	40
MD 404092		■	9.2	9.2	84	27.6	40
MD 404093		■	9.3	9.3	84	27.9	40
MD 404094		■	9.4	9.4	84	28.2	40
MD 404095		■	9.5	9.5	84	28.5	40
MD 404096		■	9.6	9.6	89	28.8	43
MD 404097		■	9.7	9.7	89	29.1	43
MD 404098		■	9.8	9.8	89	29.4	43
MD 404099		■	9.9	9.9	89	29.7	43
MD 404100		■	10.0	10.0	89	30.0	43
MD 404102		■	10.2	10.2	89	30.6	43
MD 404105		■	10.5	10.5	89	31.5	43
MD 404110		■	11.0	11.0	95	33.0	47
MD 404115		■	11.5	11.5	95	34.5	47
MD 404120		■	12.0	12.0	102	36.0	51
MD 404130		■	13.0	13.0	102	39.0	51
MD 404135		■	13.5	13.5	107	40.5	54

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 h7	d_2 h6	l_1	l_2	l_3
MD 404140		■	14.0	14.0	107	42.0	54
MD 404145		■	14.5	14.5	111	43.5	56
MD 404150		■	15.0	15.0	111	45.0	56
MD 404155		■	15.5	15.5	115	46.5	58
MD 404160		■	16.0	16.0	115	48.0	58
MD 404165		■	16.5	16.5	119	49.5	60
MD 404170		■	17.0	17.0	119	51.0	60
MD 404175		■	17.5	17.5	123	52.5	62
MD 404180		■	18.0	18.0	123	54.0	62
MD 404185		■	18.5	18.5	127	55.5	64
MD 404190		■	19.0	19.0	127	57.0	64
MD 404195		■	19.5	19.5	131	58.5	66
MD 404200		■	20.0	20.0	131	60.0	66

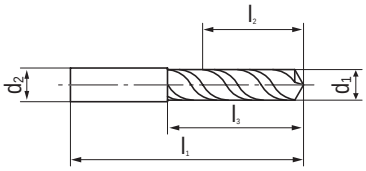
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6537 | Z 2 | N 30° | 140°



3xD ohne IK
3xD sans LC
3xD without IC

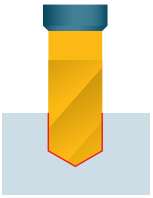
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 k6	d_2 h6	l_1	l_2	l_3
MD 2030080		■	0.8	3.0	44	2.4	4
MD 2030090		■	0.9	3.0	44	2.7	5
MD 2030100		■	1.0	3.0	44	3.0	5
MD 2030110		■	1.1	3.0	44	3.3	6
MD 2030120		■	1.2	3.0	44	3.6	6
MD 2030130		■	1.3	3.0	44	3.9	7
MD 2030140		■	1.4	3.0	47	4.2	7
MD 2030150		■	1.5	3.0	47	4.5	8
MD 2030160		■	1.6	3.0	47	4.8	8
MD 2030170		■	1.7	3.0	47	5.1	9
MD 2030180		■	1.8	3.0	47	5.4	9
MD 2030190		■	1.9	3.0	47	5.7	10
MD 2030200		■	2.0	4.0	54	6.0	10
MD 2030210		■	2.1	4.0	54	6.3	11
MD 2030220		■	2.2	4.0	54	6.6	11
MD 2030230		■	2.3	4.0	54	6.9	12
MD 2030240		■	2.4	4.0	54	7.2	12
MD 2030250		■	2.5	4.0	54	7.5	13
MD 2030260		■	2.6	4.0	56	7.8	13
MD 2030270		■	2.7	4.0	56	8.1	14
MD 2030280		■	2.8	4.0	56	8.4	14
MD 2030290		■	2.9	4.0	56	8.7	15

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 423030		■	3.0	6.0	62	9.0	20
MD 423031		■	3.1	6.0	62	9.3	20
MD 423032		■	3.2	6.0	62	9.6	20
MD 423033		■	3.3	6.0	62	9.9	20
MD 423034		■	3.4	6.0	62	10.2	20
MD 423035		■	3.5	6.0	62	10.5	20
MD 423036		■	3.6	6.0	62	10.8	20
MD 423037		■	3.7	6.0	62	11.1	20
MD 423038		■	3.8	6.0	66	11.4	24
MD 423039		■	3.9	6.0	66	11.7	24
MD 423040		■	4.0	6.0	66	12.0	24
MD 423041		■	4.1	6.0	66	12.3	24
MD 423042		■	4.2	6.0	66	12.6	24
MD 423043		■	4.3	6.0	66	12.9	24
MD 423044		■	4.4	6.0	66	13.2	24
MD 423045		■	4.5	6.0	66	13.5	24
MD 423046		■	4.6	6.0	66	13.8	24
MD 423047		■	4.7	6.0	66	14.1	24
MD 423048		■	4.8	6.0	66	14.4	28
MD 423049		■	4.9	6.0	66	14.7	28
MD 423050		■	5.0	6.0	66	15.0	28
MD 423051		■	5.1	6.0	66	15.3	28
MD 423052		■	5.2	6.0	66	15.6	28
MD 423053		■	5.3	6.0	66	15.9	28
MD 423054		■	5.4	6.0	66	16.2	28
MD 423055		■	5.5	6.0	66	16.5	28
MD 423056		■	5.6	6.0	66	16.8	28
MD 423057		■	5.7	6.0	66	17.1	28
MD 423058		■	5.8	6.0	66	17.4	28
MD 423059		■	5.9	6.0	66	17.7	28
MD 423060		■	6.0	6.0	66	18.0	28
MD 423061		■	6.1	8.0	79	18.3	34
MD 423062		■	6.2	8.0	79	18.6	34
MD 423063		■	6.3	8.0	79	18.9	34
MD 423064		■	6.4	8.0	79	19.2	34
MD 423065		■	6.5	8.0	79	19.5	34
MD 423066		■	6.6	8.0	79	19.8	34
MD 423067		■	6.7	8.0	79	20.1	34
MD 423068		■	6.8	8.0	79	20.4	34
MD 423069		■	6.9	8.0	79	20.7	34

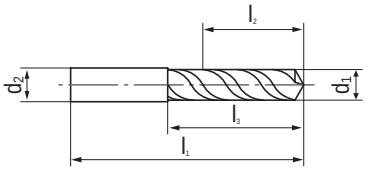
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6537 | Z 2 | N 30° | 140°



3xD ohne IK
3xD sans LC
3xD without IC

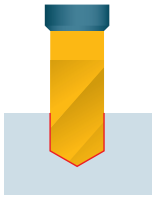
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	—					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 423070		■	7.0	8.0	79	21.0	34
MD 423071		■	7.1	8.0	79	21.3	41
MD 423072		■	7.2	8.0	79	21.6	41
MD 423073		■	7.3	8.0	79	21.9	41
MD 423074		■	7.4	8.0	79	22.2	41
MD 423075		■	7.5	8.0	79	22.5	41
MD 423076		■	7.6	8.0	79	22.8	41
MD 423077		■	7.7	8.0	79	23.1	41
MD 423078		■	7.8	8.0	79	23.4	41
MD 423079		■	7.9	8.0	79	23.7	41
MD 423080		■	8.0	8.0	79	24.0	41
MD 423081		■	8.1	10.0	89	24.3	47
MD 423082		■	8.2	10.0	89	24.6	47
MD 423083		■	8.3	10.0	89	24.9	47
MD 423084		■	8.4	10.0	89	25.2	47
MD 423085		■	8.5	10.0	89	25.5	47
MD 423086		■	8.6	10.0	89	25.8	47
MD 423087		■	8.7	10.0	89	26.1	47
MD 423088		■	8.8	10.0	89	26.4	47
MD 423089		■	8.9	10.0	89	26.7	47
MD 423090		■	9.0	10.0	89	27.0	47
MD 423091		■	9.1	10.0	89	27.3	47
MD 423092		■	9.2	10.0	89	27.6	47
MD 423093		■	9.3	10.0	89	27.9	47
MD 423094		■	9.4	10.0	89	28.2	47
MD 423095		■	9.5	10.0	89	28.5	47
MD 423096		■	9.6	10.0	89	28.8	47
MD 423097		■	9.7	10.0	89	29.1	47
MD 423098		■	9.8	10.0	89	29.4	47
MD 423099		■	9.9	10.0	89	29.7	47
MD 423100		■	10.0	10.0	89	30.0	47
MD 423101		■	10.1	12.0	102	30.3	55
MD 423102		■	10.2	12.0	102	30.6	55
MD 423103		■	10.3	12.0	102	30.9	55
MD 423104		■	10.4	12.0	102	31.2	55
MD 423105		■	10.5	12.0	102	31.5	55
MD 423106		■	10.6	12.0	102	31.8	55
MD 423107		■	10.7	12.0	102	32.1	55
MD 423108		■	10.8	12.0	102	32.4	55
MD 423109		■	10.9	12.0	102	32.7	55

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	—					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 423110		■	11.0	12.0	102	33.0	55
MD 423111		■	11.1	12.0	102	33.3	55
MD 423112		■	11.2	12.0	102	33.6	55
MD 423113		■	11.3	12.0	102	33.9	55
MD 423114		■	11.4	12.0	102	34.2	55
MD 423115		■	11.5	12.0	102	34.5	55
MD 423116		■	11.6	12.0	102	34.8	55
MD 423117		■	11.7	12.0	102	35.1	55
MD 423118		■	11.8	12.0	102	35.4	55
MD 423119		■	11.9	12.0	102	35.7	55
MD 423120		■	12.0	12.0	102	36.0	55
MD 423123		■	12.3	14.0	107	36.9	60
MD 423125		■	12.5	14.0	107	37.5	60
MD 423128		■	12.8	14.0	109	38.4	60
MD 423130		■	13.0	14.0	107	39.0	60
MD 423135		■	13.5	14.0	107	40.5	60
MD 423138		■	13.8	14.0	107	41.4	60
MD 423140		■	14.0	14.0	107	42.0	60
MD 423145		■	14.5	16.0	115	43.5	65
MD 423148		■	14.8	16.0	115	44.4	65
MD 423150		■	15.0	16.0	115	45.0	65
MD 423155		■	15.5	16.0	115	46.5	65
MD 423158		■	15.8	16.0	115	47.4	65
MD 423160		■	16.0	16.0	115	48.0	65
MD 423165		■	16.5	18.0	123	49.5	73
MD 423168		■	16.8	18.0	123	50.4	73
MD 423170		■	17.0	18.0	123	51.0	73
MD 423175		■	17.5	18.0	123	52.5	73
MD 423178		■	17.8	18.0	123	53.4	73
MD 423180		■	18.0	18.0	123	54.0	73
MD 423185		■	18.5	20.0	131	55.5	79
MD 423190		■	19.0	20.0	131	57.0	79
MD 423195		■	19.5	20.0	131	58.5	79
MD 423198		■	19.8	20.0	131	59.4	79
MD 423200		■	20.0	20.0	131	60.0	79

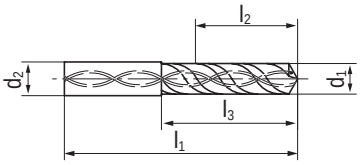
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6537 | Z 2 | N 30° | 140°



3xD mit IK
3xD avec LC
3xD with IC

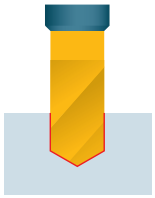
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 406030		■	3.0	6.0	62	9.0	20
MD 406031		■	3.1	6.0	62	9.3	20
MD 406032		■	3.2	6.0	62	9.6	20
MD 406033		■	3.3	6.0	62	9.9	20
MD 406034		■	3.4	6.0	62	10.2	20
MD 406035		■	3.5	6.0	62	10.5	20
MD 406036		■	3.6	6.0	62	10.8	20
MD 406037		■	3.7	6.0	62	11.1	20
MD 406038		■	3.8	6.0	66	11.4	24
MD 406039		■	3.9	6.0	66	11.7	24
MD 406040		■	4.0	6.0	66	12.0	24
MD 406041		■	4.1	6.0	66	12.3	24
MD 406042		■	4.2	6.0	66	12.6	24
MD 406043		■	4.3	6.0	66	12.9	24
MD 406044		■	4.4	6.0	66	13.2	24
MD 406045		■	4.5	6.0	66	13.5	24
MD 406046		■	4.6	6.0	66	13.8	24
MD 406047		■	4.7	6.0	66	14.1	24
MD 406048		■	4.8	6.0	66	14.4	28
MD 406049		■	4.9	6.0	66	14.7	28
MD 406050		■	5.0	6.0	66	15.0	28
MD 406051		■	5.1	6.0	66	15.3	28
MD 406052		■	5.2	6.0	66	15.6	28
MD 406053		■	5.3	6.0	66	15.9	28
MD 406054		■	5.4	6.0	66	16.2	28
MD 406055		■	5.5	6.0	66	16.5	28
MD 406056		■	5.6	6.0	66	16.8	28
MD 406057		■	5.7	6.0	66	17.1	28
MD 406058		■	5.8	6.0	66	17.4	28
MD 406059		■	5.9	6.0	66	17.7	28
MD 406060		■	6.0	6.0	66	18.0	28
MD 406061		■	6.1	8.0	79	18.3	34
MD 406062		■	6.2	8.0	79	18.6	34
MD 406063		■	6.3	8.0	79	18.9	34
MD 406064		■	6.4	8.0	79	19.2	34
MD 406065		■	6.5	8.0	79	19.5	34
MD 406066		■	6.6	8.0	79	19.8	34
MD 406067		■	6.7	8.0	79	20.1	34
MD 406068		■	6.8	8.0	79	20.4	34
MD 406069		■	6.9	8.0	79	20.7	34

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 406070		■	7.0	8.0	79	21.0	34
MD 406071		■	7.1	8.0	79	21.3	41
MD 406072		■	7.2	8.0	79	21.6	41
MD 406073		■	7.3	8.0	79	21.9	41
MD 406074		■	7.4	8.0	79	22.2	41
MD 406075		■	7.5	8.0	79	22.5	41
MD 406076		■	7.6	8.0	79	22.8	41
MD 406077		■	7.7	8.0	79	23.1	41
MD 406078		■	7.8	8.0	79	23.4	41
MD 406079		■	7.9	8.0	79	23.7	41
MD 406080		■	8.0	8.0	79	24.0	41
MD 406081		■	8.1	10.0	89	24.3	47
MD 406082		■	8.2	10.0	89	24.6	47
MD 406083		■	8.3	10.0	89	24.9	47
MD 406084		■	8.4	10.0	89	25.2	47
MD 406085		■	8.5	10.0	89	25.5	47
MD 406086		■	8.6	10.0	89	25.8	47
MD 406087		■	8.7	10.0	89	26.1	47
MD 406088		■	8.8	10.0	89	26.4	47
MD 406089		■	8.9	10.0	89	26.7	47
MD 406090		■	9.0	10.0	89	27.0	47
MD 406091		■	9.1	10.0	89	27.3	47
MD 406092		■	9.2	10.0	89	27.6	47
MD 406093		■	9.3	10.0	89	27.9	47
MD 406094		■	9.4	10.0	89	28.2	47
MD 406095		■	9.5	10.0	89	28.5	47
MD 406096		■	9.6	10.0	89	28.8	47
MD 406097		■	9.7	10.0	89	29.1	47
MD 406098		■	9.8	10.0	89	29.4	47
MD 406099		■	9.9	10.0	89	29.7	47
MD 406100		■	10.0	10.0	89	30.0	47
MD 406101		■	10.1	12.0	102	30.3	55
MD 406102		■	10.2	12.0	102	30.6	55
MD 406103		■	10.3	12.0	102	30.9	55
MD 406104		■	10.4	12.0	102	31.2	55
MD 406105		■	10.5	12.0	102	31.5	55
MD 406106		■	10.6	12.0	102	31.8	55
MD 406107		■	10.7	12.0	102	32.1	55
MD 406108		■	10.8	12.0	102	32.4	55
MD 406109		■	10.9	12.0	102	32.7	55

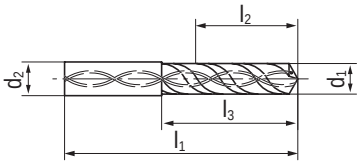
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6537 | Z 2 | N 30° | 140°



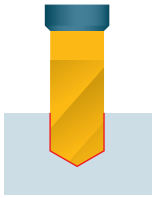
3xD mit IK
3xD avec LC
3xD with IC

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 406110		■	11.0	12.0	102	33.0	55
MD 406111		■	11.1	12.0	102	33.3	55
MD 406112		■	11.2	12.0	102	33.6	55
MD 406113		■	11.3	12.0	102	33.9	55
MD 406114		■	11.4	12.0	102	34.2	55
MD 406115		■	11.5	12.0	102	34.5	55
MD 406116		■	11.6	12.0	102	34.8	55
MD 406117		■	11.7	12.0	102	35.1	55
MD 406118		■	11.8	12.0	102	35.4	55
MD 406119		■	11.9	12.0	102	35.7	55
MD 406120		■	12.0	12.0	102	36.0	55
MD 406125		■	12.5	14.0	107	37.5	60
MD 406130		■	13.0	14.0	107	39.0	60
MD 406135		■	13.5	14.0	107	40.5	60
MD 406140		■	14.0	14.0	107	42.0	60
MD 406145		■	14.5	16.0	115	43.5	65
MD 406150		■	15.0	16.0	115	45.0	65
MD 406155		■	15.5	16.0	115	46.5	65
MD 406160		■	16.0	16.0	115	48.0	65
MD 406165		■	16.5	18.0	123	49.5	73
MD 406170		■	17.0	18.0	123	51.0	73
MD 406175		■	17.5	18.0	123	52.5	73
MD 406180		■	18.0	18.0	123	54.0	73
MD 406185		■	18.5	20.0	131	55.5	79
MD 406190		■	19.0	20.0	131	57.0	79
MD 406195		■	19.5	20.0	131	58.5	79
MD 406200		■	20.0	20.0	131	60.0	79

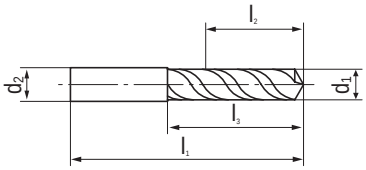
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6537 | Z 2 | N 30° | 140°



5xD ohne IK
5xD sans LC
5xD without IC

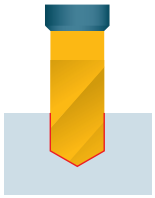
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 k6	d_2 h6	l_1	l_2	l_3
MD 2050080		■	0.8	3.0	46.0	4.0	5.6
MD 2050090		■	0.9	3.0	46.0	4.5	7.0
MD 2050100		■	1.0	3.0	46.0	5.0	7.0
MD 2050110		■	1.1	3.0	46.0	5.5	8.5
MD 2050120		■	1.2	3.0	46.0	6.0	8.5
MD 2050130		■	1.3	3.0	46.0	6.5	10.0
MD 2050140		■	1.4	3.0	50.0	7.0	10.0
MD 2050150		■	1.5	3.0	50.0	7.5	11.0
MD 2050160		■	1.6	3.0	50.0	8.0	11.0
MD 2050170		■	1.7	3.0	50.0	8.5	12.5
MD 2050180		■	1.8	3.0	50.0	9.0	12.5
MD 2050190		■	1.9	3.0	50.0	9.5	14.0
MD 2050200		■	2.0	4.0	56.0	10.0	14.0
MD 2050210		■	2.1	4.0	56.0	10.5	15.5
MD 2050220		■	2.2	4.0	56.0	11.0	15.5
MD 2050230		■	2.3	4.0	56.0	11.5	17.0
MD 2050240		■	2.4	4.0	56.0	12.0	17.0
MD 2050250		■	2.5	4.0	56.0	12.5	18.0
MD 2050260		■	2.6	4.0	59.0	13.0	18.0
MD 2050270		■	2.7	4.0	59.0	13.5	19.5
MD 2050280		■	2.8	4.0	59.0	14.0	19.5
MD 2050290		■	2.9	4.0	59.0	14.5	21.0

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 424030		■	3.0	6.0	66.0	15.0	28.0
MD 424031		■	3.1	6.0	66.0	15.5	28.0
MD 424032		■	3.2	6.0	66.0	16.0	28.0
MD 424033		■	3.3	6.0	66.0	16.5	28.0
MD 424034		■	3.4	6.0	66.0	17.0	28.0
MD 424035		■	3.5	6.0	66.0	17.5	28.0
MD 424036		■	3.6	6.0	66.0	18.0	28.0
MD 424037		■	3.7	6.0	66.0	18.5	28.0
MD 424038		■	3.8	6.0	74.0	19.0	36.0
MD 424039		■	3.9	6.0	74.0	19.5	36.0
MD 424040		■	4.0	6.0	74.0	20.0	36.0
MD 424041		■	4.1	6.0	74.0	20.5	36.0
MD 424042		■	4.2	6.0	74.0	21.0	36.0
MD 424043		■	4.3	6.0	74.0	21.5	36.0
MD 424044		■	4.4	6.0	74.0	22.0	36.0
MD 424045		■	4.5	6.0	74.0	22.5	36.0
MD 424046		■	4.6	6.0	74.0	23.0	36.0
MD 424047		■	4.7	6.0	74.0	23.5	36.0
MD 424048		■	4.8	6.0	82.0	24.0	44.0
MD 424049		■	4.9	6.0	82.0	24.5	44.0
MD 424050		■	5.0	6.0	82.0	25.0	44.0
MD 424051		■	5.1	6.0	82.0	25.5	44.0
MD 424052		■	5.2	6.0	82.0	26.0	44.0
MD 424053		■	5.3	6.0	82.0	26.5	44.0
MD 424054		■	5.4	6.0	82.0	27.0	44.0
MD 424055		■	5.5	6.0	82.0	27.5	44.0
MD 424056		■	5.6	6.0	82.0	28.0	44.0
MD 424057		■	5.7	6.0	82.0	28.5	44.0
MD 424058		■	5.8	6.0	82.0	29.0	44.0
MD 424059		■	5.9	6.0	82.0	29.5	44.0
MD 424060		■	6.0	6.0	82.0	30.0	44.0
MD 424061		■	6.1	8.0	91.0	30.5	53.0
MD 424062		■	6.2	8.0	91.0	31.0	53.0
MD 424063		■	6.3	8.0	91.0	31.5	53.0
MD 424064		■	6.4	8.0	91.0	32.0	53.0
MD 424065		■	6.5	8.0	91.0	32.5	53.0
MD 424066		■	6.6	8.0	91.0	33.0	53.0
MD 424067		■	6.7	8.0	91.0	33.5	53.0
MD 424068		■	6.8	8.0	91.0	34.0	53.0
MD 424069		■	6.9	8.0	91.0	34.5	53.0

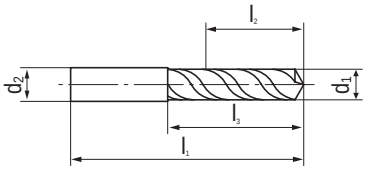
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6537 | Z 2 | N 30° | 140°



5xD ohne IK
5xD sans LC
5xD without IC

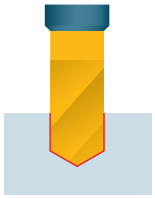
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 424070		■	7.0	8.0	91.0	35.0	53.0
MD 424071		■	7.1	8.0	91.0	35.5	53.0
MD 424072		■	7.2	8.0	91.0	36.0	53.0
MD 424073		■	7.3	8.0	91.0	36.5	53.0
MD 424074		■	7.4	8.0	91.0	37.0	53.0
MD 424075		■	7.5	8.0	91.0	37.5	53.0
MD 424076		■	7.6	8.0	91.0	38.0	53.0
MD 424077		■	7.7	8.0	91.0	38.5	53.0
MD 424078		■	7.8	8.0	91.0	39.0	53.0
MD 424079		■	7.9	8.0	91.0	39.5	53.0
MD 424080		■	8.0	8.0	91.0	40.0	53.0
MD 424081		■	8.1	10.0	103.0	40.5	61.0
MD 424082		■	8.2	10.0	103.0	41.0	61.0
MD 424083		■	8.3	10.0	103.0	41.5	61.0
MD 424084		■	8.4	10.0	103.0	42.0	61.0
MD 424085		■	8.5	10.0	103.0	42.5	61.0
MD 424086		■	8.6	10.0	103.0	43.0	61.0
MD 424087		■	8.7	10.0	103.0	43.5	61.0
MD 424088		■	8.8	10.0	103.0	44.0	61.0
MD 424089		■	8.9	10.0	103.0	44.5	61.0
MD 424090		■	9.0	10.0	103.0	45.0	61.0
MD 424091		■	9.1	10.0	103.0	45.5	61.0
MD 424092		■	9.2	10.0	103.0	46.0	61.0
MD 424093		■	9.3	10.0	103.0	46.5	61.0
MD 424094		■	9.4	10.0	103.0	47.0	61.0
MD 424095		■	9.5	10.0	103.0	47.5	61.0
MD 424096		■	9.6	10.0	103.0	48.0	61.0
MD 424097		■	9.7	10.0	103.0	48.5	61.0
MD 424098		■	9.8	10.0	103.0	49.0	61.0
MD 424099		■	9.9	10.0	103.0	49.5	61.0
MD 424100		■	10.0	10.0	103.0	50.0	61.0
MD 424101		■	10.1	12.0	118.0	50.5	71.0
MD 424102		■	10.2	12.0	118.0	51.0	71.0
MD 424103		■	10.3	12.0	118.0	51.5	71.0
MD 424104		■	10.4	12.0	118.0	52.0	71.0
MD 424105		■	10.5	12.0	118.0	52.5	71.0
MD 424106		■	10.6	12.0	118.0	53.0	71.0
MD 424107		■	10.7	12.0	118.0	53.5	71.0
MD 424108		■	10.8	12.0	118.0	54.0	71.0
MD 424109		■	10.9	12.0	118.0	54.5	71.0

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 424110		■	11.0	12.0	118.0	55.0	71.0
MD 424111		■	11.1	12.0	118.0	55.5	71.0
MD 424112		■	11.2	12.0	118.0	56.0	71.0
MD 424113		■	11.3	12.0	118.0	56.5	71.0
MD 424114		■	11.4	12.0	118.0	57.0	71.0
MD 424115		■	11.5	12.0	118.0	57.5	71.0
MD 424116		■	11.6	12.0	118.0	58.0	71.0
MD 424117		■	11.7	12.0	118.0	58.5	71.0
MD 424118		■	11.8	12.0	118.0	59.0	71.0
MD 424119		■	11.9	12.0	118.0	59.5	71.0
MD 424120		■	12.0	12.0	118.0	60.0	71.0
MD 424123		■	12.3	14.0	124.0	61.5	77.0
MD 424125		■	12.5	14.0	124.0	62.5	77.0
MD 424128		■	12.8	14.0	124.0	64.0	77.0
MD 424130		■	13.0	14.0	124.0	65.0	77.0
MD 424135		■	13.5	14.0	124.0	67.5	77.0
MD 424138		■	13.8	14.0	124.0	69.0	77.0
MD 424140		■	14.0	14.0	124.0	70.0	77.0
MD 424145		■	14.5	16.0	133.0	72.5	83.0
MD 424148		■	14.8	16.0	133.0	74.0	83.0
MD 424150		■	15.0	16.0	133.0	75.0	83.0
MD 424155		■	15.5	16.0	133.0	77.5	83.0
MD 424158		■	15.8	16.0	133.0	79.0	83.0
MD 424160		■	16.0	16.0	133.0	80.0	83.0
MD 424165		■	16.5	18.0	143.0	82.5	93.0
MD 424168		■	16.8	18.0	143.0	84.0	93.0
MD 424170		■	17.0	18.0	143.0	85.0	93.0
MD 424175		■	17.5	18.0	143.0	87.5	93.0
MD 424178		■	17.8	18.0	143.0	89.0	93.0
MD 424180		■	18.0	18.0	143.0	90.0	93.0
MD 424185		■	18.5	20.0	153.0	92.5	101.0
MD 424190		■	19.0	20.0	153.0	95.0	101.0
MD 424195		■	19.5	20.0	153.0	97.5	101.0
MD 424198		■	19.8	20.0	153.0	99.0	101.0
MD 424200		■	20.0	20.0	153.0	100.0	101.0

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

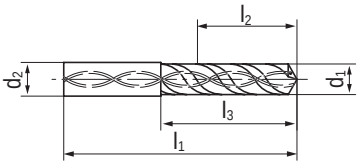
■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6537 | Z 2 | N 30° | 140°

5xD mit IK
5xD avec LC
5xD with IC



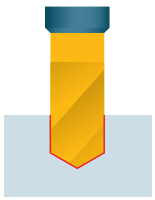
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 408030		■	3.0	6.0	66	15.0	28
MD 408031		■	3.1	6.0	66	15.5	28
MD 408032		■	3.2	6.0	66	16.0	28
MD 408033		■	3.3	6.0	66	16.5	28
MD 408034		■	3.4	6.0	66	17.0	28
MD 408035		■	3.5	6.0	66	17.5	28
MD 408036		■	3.6	6.0	66	18.0	28
MD 408037		■	3.7	6.0	66	18.5	28
MD 408038		■	3.8	6.0	74	19.0	36
MD 408039		■	3.9	6.0	74	19.5	36
MD 408040		■	4.0	6.0	74	20.0	36
MD 408041		■	4.1	6.0	74	20.5	36
MD 408042		■	4.2	6.0	74	21.0	36
MD 408043		■	4.3	6.0	74	21.5	36
MD 408044		■	4.4	6.0	74	22.0	36
MD 408045		■	4.5	6.0	74	22.5	36
MD 408046		■	4.6	6.0	74	23.0	36
MD 408047		■	4.7	6.0	74	23.5	36
MD 408048		■	4.8	6.0	82	24.0	44
MD 408049		■	4.9	6.0	82	24.5	44
MD 408050		■	5.0	6.0	82	25.0	44
MD 408051		■	5.1	6.0	82	25.5	44
MD 408052		■	5.2	6.0	82	26.0	44
MD 408053		■	5.3	6.0	82	26.5	44
MD 408054		■	5.4	6.0	82	27.0	44
MD 408055		■	5.5	6.0	82	27.5	44
MD 408056		■	5.6	6.0	82	28.0	44
MD 408057		■	5.7	6.0	82	28.5	44
MD 408058		■	5.8	6.0	82	29.0	44
MD 408059		■	5.9	6.0	82	29.5	44
MD 408060		■	6.0	6.0	82	30.0	44
MD 408061		■	6.1	8.0	91	30.5	53
MD 408062		■	6.2	8.0	91	31.0	53
MD 408063		■	6.3	8.0	91	31.5	53
MD 408064		■	6.4	8.0	91	32.0	53
MD 408065		■	6.5	8.0	91	32.5	53
MD 408066		■	6.6	8.0	91	33.0	53
MD 408067		■	6.7	8.0	91	33.5	53
MD 408068		■	6.8	8.0	91	34.0	53
MD 408069		■	6.9	8.0	91	34.5	53

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 408070		■	7.0	8.0	91	35.0	53
MD 408071		■	7.1	8.0	91	35.5	53
MD 408072		■	7.2	8.0	91	36.0	53
MD 408073		■	7.3	8.0	91	36.5	53
MD 408074		■	7.4	8.0	91	37.0	53
MD 408075		■	7.5	8.0	91	37.5	53
MD 408076		■	7.6	8.0	91	38.0	53
MD 408077		■	7.7	8.0	91	38.5	53
MD 408078		■	7.8	8.0	91	39.0	53
MD 408079		■	7.9	8.0	91	39.5	53
MD 408080		■	8.0	8.0	91	40.0	53
MD 408081		■	8.1	10.0	103	40.5	61
MD 408082		■	8.2	10.0	103	41.0	61
MD 408083		■	8.3	10.0	103	41.5	61
MD 408084		■	8.4	10.0	103	42.0	61
MD 408085		■	8.5	10.0	103	42.5	61
MD 408086		■	8.6	10.0	103	43.0	61
MD 408087		■	8.7	10.0	103	43.5	61
MD 408088		■	8.8	10.0	103	44.0	61
MD 408089		■	8.9	10.0	103	44.5	61
MD 408090		■	9.0	10.0	103	45.0	61
MD 408091		■	9.1	10.0	103	45.5	61
MD 408092		■	9.2	10.0	103	46.0	61
MD 408093		■	9.3	10.0	103	46.5	61
MD 408094		■	9.4	10.0	103	47.0	61
MD 408095		■	9.5	10.0	103	47.5	61
MD 408096		■	9.6	10.0	103	48.0	61
MD 408097		■	9.7	10.0	103	48.5	61
MD 408098		■	9.8	10.0	103	49.0	61
MD 408099		■	9.9	10.0	103	49.5	61
MD 408100		■	10.0	10.0	103	50.0	61
MD 408101		■	10.1	12.0	118	50.5	71
MD 408102		■	10.2	12.0	118	51.0	71
MD 408103		■	10.3	12.0	118	51.5	71
MD 408104		■	10.4	12.0	118	52.0	71
MD 408105		■	10.5	12.0	118	52.5	71
MD 408106		■	10.6	12.0	118	53.0	71
MD 408107		■	10.7	12.0	118	53.5	71
MD 408108		■	10.8	12.0	118	54.0	71
MD 408109		■	10.9	12.0	118	54.5	71

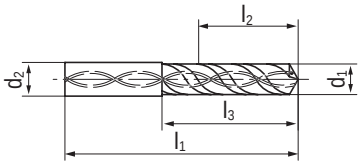
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6537 | Z 2 | N 30° | 140°



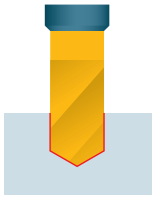
5xD mit IK
5xD avec LC
5xD with IC

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 408110		■	11.0	12.0	118	55.0	71
MD 408111		■	11.1	12.0	118	55.5	71
MD 408112		■	11.2	12.0	118	56.0	71
MD 408113		■	11.3	12.0	118	56.5	71
MD 408114		■	11.4	12.0	118	57.0	71
MD 408115		■	11.5	12.0	118	57.5	71
MD 408116		■	11.6	12.0	118	58.0	71
MD 408117		■	11.7	12.0	118	58.5	71
MD 408118		■	11.8	12.0	118	59.0	71
MD 408119		■	11.9	12.0	118	59.5	71
MD 408120		■	12.0	12.0	118	60.0	71
MD 408125		■	12.5	14.0	124	62.5	77
MD 408130		■	13.0	14.0	124	65.0	77
MD 408135		■	13.5	14.0	124	67.5	77
MD 408140		■	14.0	14.0	124	70.0	77
MD 408145		■	14.5	16.0	133	72.5	83
MD 408150		■	15.0	16.0	133	75.0	83
MD 408155		■	15.5	16.0	133	77.5	83
MD 408160		■	16.0	16.0	133	80.0	83
MD 408165		■	16.5	18.0	143	82.5	93
MD 408170		■	17.0	18.0	143	85.0	93
MD 408175		■	17.5	18.0	143	87.5	93
MD 408180		■	18.0	18.0	143	90.0	93
MD 408185		■	18.5	20.0	153	92.5	101
MD 408190		■	19.0	20.0	153	95.0	101
MD 408195		■	19.5	20.0	153	97.5	101
MD 408200		■	20.0	20.0	153	100.0	101

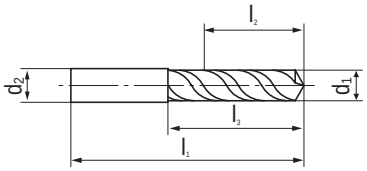
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6537 | Z 3 | N 30° | 130°



5xD ohne IK (für Aluminium)
5xD sans LC (pour Aluminium)
5xD without IC (for Aluminium)

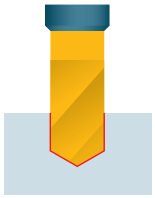
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 k6	d_2 h6	l_1	l_2	l_3
MD 3050080	■		0.8	3.0	46	4.0	5.6
MD 3050090	■		0.9	3.0	46	4.5	7.0
MD 3050100	■		1.0	3.0	46	5.0	7.0
MD 3050110	■		1.1	3.0	46	5.5	8.5
MD 3050120	■		1.2	3.0	46	6.0	8.5
MD 3050130	■		1.3	3.0	46	6.5	10.0
MD 3050140	■		1.4	3.0	50	7.0	10.0
MD 3050150	■		1.5	3.0	50	7.5	11.0
MD 3050160	■		1.6	3.0	50	8.0	11.0
MD 3050170	■		1.7	3.0	50	8.5	12.5
MD 3050180	■		1.8	3.0	50	9.0	12.5
MD 3050190	■		1.9	3.0	50	9.5	14.0
MD 3050200	■		2.0	4.0	56	10.0	14.0
MD 3050210	■		2.1	4.0	56	10.5	15.5
MD 3050220	■		2.2	4.0	56	11.0	15.5
MD 3050230	■		2.3	4.0	56	11.5	17.0
MD 3050240	■		2.4	4.0	56	12.0	17.0
MD 3050250	■		2.5	4.0	56	12.5	18.0
MD 3050260	■		2.6	4.0	59	13.0	18.0
MD 3050270	■		2.7	4.0	59	13.5	19.5
MD 3050280	■		2.8	4.0	59	14.0	19.5
MD 3050290	■		2.9	4.0	59	14.5	21.0
MD 3050300	■		3.0	4.0	59	15.0	21.0
MD 3050310	■		3.1	6.0	66	15.5	24.0
MD 3050320	■		3.2	6.0	66	16.0	24.0
MD 3050330	■		3.3	6.0	66	16.5	24.0
MD 3050340	■		3.4	6.0	66	17.0	24.0
MD 3050350	■		3.5	6.0	66	17.5	26.0
MD 3050360	■		3.6	6.0	66	18.0	26.0
MD 3050370	■		3.7	6.0	66	18.5	26.0
MD 3050380	■		3.8	6.0	74	19.0	28.0
MD 3050390	■		3.9	6.0	74	19.5	28.0

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 k6	d_2 h6	l_1	l_2	l_3
MD 3050400	■		4.0	6.0	74	20.0	28.0
MD 3050410	■		4.1	6.0	74	20.5	30.0
MD 3050420	■		4.2	6.0	74	21.0	30.0
MD 3050430	■		4.3	6.0	74	21.5	32.0
MD 3050440	■		4.4	6.0	74	22.0	32.0
MD 3050450	■		4.5	6.0	74	22.5	32.0
MD 3050460	■		4.6	6.0	74	23.0	34.0
MD 3050470	■		4.7	6.0	74	23.5	34.0
MD 3050480	■		4.8	6.0	82	24.0	34.0
MD 3050490	■		4.9	6.0	82	24.5	36.0
MD 3050500	■		5.0	6.0	82	25.0	36.0
MD 3050510	■		5.1	6.0	82	25.5	36.0
MD 3050520	■		5.2	6.0	82	26.0	38.0
MD 3050530	■		5.3	6.0	82	26.5	38.0
MD 3050540	■		5.4	6.0	82	27.0	38.0
MD 3050550	■		5.5	6.0	82	27.5	40.0
MD 3050560	■		5.6	6.0	82	28.0	40.0
MD 3050570	■		5.7	6.0	82	28.5	40.0
MD 3050580	■		5.8	6.0	82	29.0	42.0
MD 3050590	■		5.9	6.0	82	29.5	42.0
MD 3050600	■		6.0	6.0	82	30.0	42.0

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

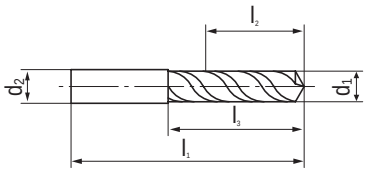
Bohren | Perçage | Drilling



Z 2

N 30°

140°



7xD ohne IK
7xD sans LC
7xD without IC

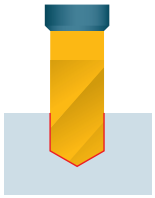
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 k6	d_2 h6	l_1	l_2	l_3
MD 2070080		■	0.8	3.0	49	5.6	7
MD 2070090		■	0.9	3.0	49	6.3	8
MD 2070100		■	1.0	3.0	49	7.0	9
MD 2070110		■	1.1	3.0	49	7.7	9
MD 2070120		■	1.2	3.0	49	8.4	12
MD 2070130		■	1.3	3.0	49	9.1	12
MD 2070140		■	1.4	3.0	53	9.8	13
MD 2070150		■	1.5	3.0	53	10.5	15
MD 2070160		■	1.6	3.0	53	11.2	15
MD 2070170		■	1.7	3.0	53	11.9	16
MD 2070180		■	1.8	3.0	53	12.6	16
MD 2070190		■	1.9	3.0	53	13.3	18
MD 2070200		■	2.0	4.0	59	14.0	18
MD 2070210		■	2.1	4.0	59	14.7	20
MD 2070220		■	2.2	4.0	59	15.4	20
MD 2070230		■	2.3	4.0	59	16.1	22
MD 2070240		■	2.4	4.0	59	16.8	22
MD 2070250		■	2.5	4.0	64	17.5	24
MD 2070260		■	2.6	4.0	64	18.2	24
MD 2070270		■	2.7	4.0	64	18.9	25
MD 2070280		■	2.8	4.0	64	19.6	25
MD 2070290		■	2.9	4.0	64	20.3	27
MD 2070300		■	3.0	4.0	64	21.0	27

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m6	d_2 h6	l_1	l_2	l_3
MD 2070310		■	3.1	6.0	72	21.7	30
MD 2070320		■	3.2	6.0	72	22.4	30
MD 2070330		■	3.3	6.0	72	23.1	30
MD 2070340		■	3.4	6.0	72	23.8	34
MD 2070350		■	3.5	6.0	72	24.5	34
MD 2070360		■	3.6	6.0	72	25.2	34
MD 2070370		■	3.7	6.0	72	25.9	34
MD 2070380		■	3.8	6.0	81	26.6	34
MD 2070390		■	3.9	6.0	81	27.3	38
MD 2070400		■	4.0	6.0	81	28.0	38
MD 2070410		■	4.1	6.0	81	28.7	38
MD 2070420		■	4.2	6.0	81	29.4	38
MD 2070430		■	4.3	6.0	81	30.1	43
MD 2070440		■	4.4	6.0	81	30.8	43
MD 2070450		■	4.5	6.0	81	31.5	43
MD 2070460		■	4.6	6.0	81	32.2	43
MD 2070470		■	4.7	6.0	81	32.9	43
MD 2070480		■	4.8	6.0	95	33.6	47
MD 2070490		■	4.9	6.0	95	34.3	47
MD 2070500		■	5.0	6.0	95	35.0	47
MD 2070510		■	5.1	6.0	95	35.7	47
MD 2070520		■	5.2	6.0	95	36.4	47
MD 2070530		■	5.3	6.0	95	37.1	47
MD 2070540		■	5.4	6.0	95	37.8	52
MD 2070550		■	5.5	6.0	95	38.5	52
MD 2070560		■	5.6	6.0	95	39.2	52
MD 2070570		■	5.7	6.0	95	39.9	52
MD 2070580		■	5.8	6.0	95	40.6	54
MD 2070590		■	5.9	6.0	95	41.3	54
MD 2070600		■	6.0	6.0	95	42.0	54

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

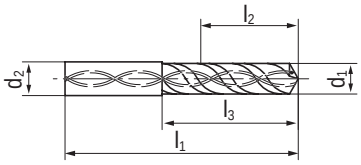
■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6537 | Z 2 | N 30° | 140°

8xD mit IK
8xD avec LC
8xD with IC



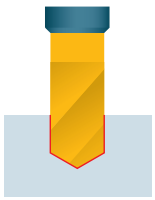
Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	—					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 421030		■	3.0	6.0	72	24.0	34
MD 421031		■	3.1	6.0	72	24.8	34
MD 421032		■	3.2	6.0	72	25.6	34
MD 421033		■	3.3	6.0	72	26.4	34
MD 421034		■	3.4	6.0	72	27.2	34
MD 421035		■	3.5	6.0	72	28.0	34
MD 421036		■	3.6	6.0	72	28.8	34
MD 421037		■	3.7	6.0	72	29.6	34
MD 421038		■	3.8	6.0	81	30.4	43
MD 421039		■	3.9	6.0	81	31.2	43
MD 421040		■	4.0	6.0	81	32.0	43
MD 421041		■	4.1	6.0	81	32.8	43
MD 421042		■	4.2	6.0	81	33.6	43
MD 421043		■	4.3	6.0	81	34.4	43
MD 421044		■	4.4	6.0	81	35.2	43
MD 421045		■	4.5	6.0	81	36.0	43
MD 421046		■	4.6	6.0	81	36.8	43
MD 421047		■	4.7	6.0	81	37.6	43
MD 421048		■	4.8	6.0	95	38.4	57
MD 421049		■	4.9	6.0	95	39.2	57
MD 421050		■	5.0	6.0	95	40.0	57
MD 421051		■	5.1	6.0	95	40.8	57
MD 421052		■	5.2	6.0	95	41.6	57
MD 421053		■	5.3	6.0	95	42.4	57
MD 421054		■	5.4	6.0	95	43.2	57
MD 421055		■	5.5	6.0	95	44.0	57
MD 421056		■	5.6	6.0	95	44.8	57
MD 421057		■	5.7	6.0	95	45.6	57
MD 421058		■	5.8	6.0	95	46.4	57
MD 421059		■	5.9	6.0	95	47.2	57
MD 421060		■	6.0	6.0	95	48.0	57
MD 421061		■	6.1	8.0	114	48.8	76
MD 421062		■	6.2	8.0	114	49.6	76
MD 421063		■	6.3	8.0	114	50.4	76
MD 421064		■	6.4	8.0	114	51.2	76
MD 421065		■	6.5	8.0	114	52.0	76
MD 421066		■	6.6	8.0	114	52.8	76
MD 421067		■	6.7	8.0	114	53.6	76
MD 421068		■	6.8	8.0	114	54.4	76
MD 421069		■	6.9	8.0	114	55.2	76

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	—					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 421070		■	7.0	8.0	114	56.0	76
MD 421071		■	7.1	8.0	114	56.8	76
MD 421072		■	7.2	8.0	114	57.6	76
MD 421073		■	7.3	8.0	114	58.4	76
MD 421074		■	7.4	8.0	114	59.2	76
MD 421075		■	7.5	8.0	114	60.0	76
MD 421076		■	7.6	8.0	114	60.8	76
MD 421077		■	7.7	8.0	114	61.6	76
MD 421078		■	7.8	8.0	114	62.4	76
MD 421079		■	7.9	8.0	114	63.2	76
MD 421080		■	8.0	8.0	114	64.0	76
MD 421081		■	8.1	10.0	142	64.8	95
MD 421082		■	8.2	10.0	142	65.6	95
MD 421083		■	8.3	10.0	142	66.4	95
MD 421084		■	8.4	10.0	142	67.2	95
MD 421085		■	8.5	10.0	142	68.0	95
MD 421086		■	8.6	10.0	142	68.8	95
MD 421087		■	8.7	10.0	142	69.6	95
MD 421088		■	8.8	10.0	142	70.4	95
MD 421089		■	8.9	10.0	142	71.2	95
MD 421090		■	9.0	10.0	142	72.0	95
MD 421091		■	9.1	10.0	142	72.8	95
MD 421092		■	9.2	10.0	142	73.6	95
MD 421093		■	9.3	10.0	142	74.4	95
MD 421094		■	9.4	10.0	142	75.2	95
MD 421095		■	9.5	10.0	142	76.0	95
MD 421096		■	9.6	10.0	142	76.8	95
MD 421097		■	9.7	10.0	142	77.6	95
MD 421098		■	9.8	10.0	142	78.4	95
MD 421099		■	9.9	10.0	142	79.2	95
MD 421100		■	10.0	10.0	142	80.0	95
MD 421101		■	10.1	12.0	162	80.8	114
MD 421102		■	10.2	12.0	162	81.6	114
MD 421103		■	10.3	12.0	162	82.4	114
MD 421104		■	10.4	12.0	162	83.2	114
MD 421105		■	10.5	12.0	162	84.0	114
MD 421106		■	10.6	12.0	162	84.8	114
MD 421107		■	10.7	12.0	162	85.6	114
MD 421108		■	10.8	12.0	162	86.4	114
MD 421109		■	10.9	12.0	162	87.2	114

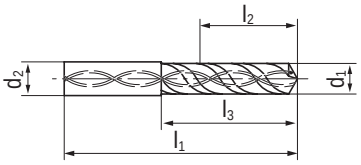
*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

Bohren | Perçage | Drilling



DIN 6537 | Z 2 | N 30° | 140°



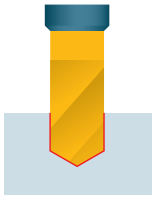
8xD mit IK
8xD avec LC
8xD with IC

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 421110		■	11.0	12.0	162	88.0	114
MD 421111		■	11.1	12.0	162	88.8	114
MD 421112		■	11.2	12.0	162	89.6	114
MD 421113		■	11.3	12.0	162	90.4	114
MD 421114		■	11.4	12.0	162	91.2	114
MD 421115		■	11.5	12.0	162	92.0	114
MD 421116		■	11.6	12.0	162	92.8	114
MD 421117		■	11.7	12.0	162	93.6	114
MD 421118		■	11.8	12.0	162	94.4	114
MD 421119		■	11.9	12.0	162	95.2	114
MD 421120		■	12.0	12.0	162	96.0	114

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

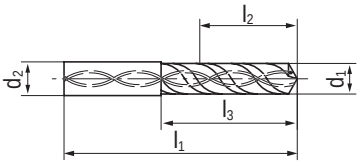
Bohren | Perçage | Drilling



Z
2

N
30°

140°



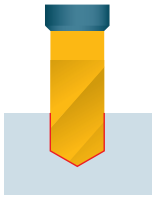
9xD mit IK
9xD avec LC
9xD with IC

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 2090100		■	1.0	3.0	55	9.0	13
MD 2090150		■	1.5	3.0	55	13.5	20
MD 2090200		■	2.0	4.0	65	18.0	26
MD 2090250		■	2.5	4.0	70	22.5	33
MD 2090300		■	3.0	4.0	80	27.0	39
MD 2090350		■	3.5	4.0	80	31.5	46
MD 2090400		■	4.0	6.0	95	36.0	52
MD 2090450		■	4.5	6.0	95	40.5	59
MD 2090500		■	5.0	6.0	102	45.0	65
MD 2090550		■	5.5	6.0	115	49.5	72
MD 2090600		■	6.0	6.0	125	54.0	78

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

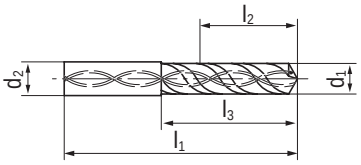
Bohren | Perçage | Drilling



Z 2

N 30°

140°



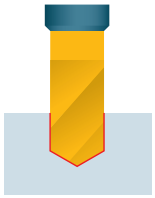
12xD mit IK
12xD avec LC
12xD with IC

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 2120100		■	1.0	3.0	55	12.0	16
MD 2120150		■	1.5	3.0	55	18.0	24
MD 2120200		■	2.0	4.0	75	24.0	32
MD 2120250		■	2.5	4.0	75	30.0	40
MD 2120300		■	3.0	4.0	90	36.0	48
MD 2120350		■	3.5	4.0	95	42.0	56
MD 2120400		■	4.0	6.0	102	48.0	64
MD 2120450		■	4.5	6.0	115	54.0	72
MD 2120500		■	5.0	6.0	125	60.0	80
MD 2120550		■	5.5	6.0	125	66.0	88
MD 2120600		■	6.0	6.0	140	72.0	96

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

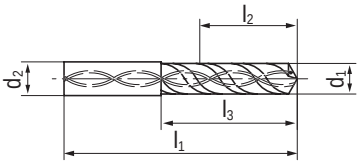
Bohren | Perçage | Drilling



Z
2

N
30°

140°



15xD mit IK
15xD avec LC
15xD with IC

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*						
	●	●					
	●	●					
	○	–					
	●	○					
	UHM 10	UHM 10 HX	d_1 m7	d_2 h6	l_1	l_2	l_3
MD 2150100		■	1.0	3.0	65	15.0	19
MD 2150150		■	1.5	3.0	65	22.5	29
MD 2150200		■	2.0	4.0	75	30.0	38
MD 2150250		■	2.5	4.0	85	37.5	47
MD 2150300		■	3.0	4.0	95	45.0	57
MD 2150350		■	3.5	4.0	105	52.5	66
MD 2150400		■	4.0	6.0	115	60.0	76
MD 2150450		■	4.5	6.0	125	67.5	86
MD 2150500		■	5.0	6.0	140	75.0	96

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 200.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 200.
*Detailed information about application ranges of cutting grades see on page 200.

■ Standard
□ Semi Standard

MD 20…
Vorschübe (s) in mm/U **Avances (s) en mm/tr** **Feed (s) in mm/rev.**

	Werkstoffe | Matières | Materials			
d	Stahl unlegiert Acier non allié Steel unalloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium
ohne IK sans LC without IC				
<1	0.01–0.08	0.01–0.08	0.005–0.06	–
1.0	0.08–0.12	0.08–0.12	0.07–0.08	–
1.5	0.18–0.20	0.23–0.25	0.12–0.14	–
2.0	0.23–0.25	0.27–0.28	0.18–0.20	–
2.5	0.25–0.27	0.27–0.30	0.21–0.23	–
<3	0.32–0.35	0.32–0.35	0.23–0.25	–

MD 25…
Vorschübe (s) in mm/U **Avances (s) en mm/tr** **Feed (s) in mm/rev.**

< 1	0.003–0.009	0.003–0.010	0.003–0.010	0.003–0.007
1.0	0.006–0.015	0.006–0.015	0.006–0.015	0.005–0.01
2.0	0.01–0.03	0.01–0.02	0.01–0.02	0.005–0.01
< 3.0	0.01–0.03	0.01–0.02	0.01–0.02	0.005–0.01

MD 30…
Vorschübe (s) in mm/U **Avances (s) en mm/tr** **Feed (s) in mm/rev.**

ohne IK sans LC without IC				
< 1	–	–	–	–
1.0	–	–	–	–
1.5	–	–	–	–
2.0	–	–	–	–
2.5	–	–	–	–
3	–	–	–	–
4	–	–	–	–
5	–	–	–	–
6	–	–	–	–

MD 20…
Vorschübe (s) in mm/U **Avances (s) en mm/tr** **Feed (s) in mm/rev.**

	Werkstoffe | Matières | Materials			
d	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
ohne IK sans LC without IC				
<1	0.006–0.07	0.006–0.07	–	–
1.0	0.08–0.11	0.08–0.11	–	–
1.5	0.18–0.20	0.18–0.20	–	–
2.0	0.23–0.25	0.23–0.25	–	–
2.5	0.25–0.28	0.25–0.28	–	–
<3	0.27–0.30	0.27–0.30	–	–

MD 25…
Vorschübe (s) in mm/U **Avances (s) en mm/tr** **Feed (s) in mm/rev.**

< 1	0.003–0.010	0.003–0.010	0.01–0.04	0.03–0.06
1.0	0.006–0.015	0.006–0.015	0.01–0.05	0.03–0.06
2.0	0.01–0.02	0.01–0.02	0.01–0.10	0.03–0.06
< 3.0	0.01–0.02	0.01–0.02	0.01–0.20	0.03–0.06

MD 30…
Vorschübe (s) in mm/U **Avances (s) en mm/tr** **Feed (s) in mm/rev.**

ohne IK sans LC without IC			Legierung Alliage Alloy	Guss Fonte Casting	
< 1	–	–	< 0.04	< 0.15	–
1.0	–	–	< 0.05	< 0.20	–
1.5	–	–	< 0.10	< 0.25	–
2.0	–	–	< 0.20	< 0.30	–
2.5	–	–	< 0.20	< 0.40	–
3	–	–	< 0.20	< 0.50	–
4	–	–	< 0.25	< 0.60	–
5	–	–	< 0.30	< 0.70	–
6	–	–	< 0.30	< 0.80	–

MD 40…/MD 42…
Vorschübe (s) in mm/U **Avances (s) en mm/tr** **Feed (s) in mm/rev.**

d	Werkstoffe | Matières | Materials			
	Stahl unlegiert Acier non allié Steel unalloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium
ohne IK sans LC without IC				
3	0.13	0.13	–	–
4	0.14	0.14	–	–
5	0.15	0.15	–	–
6	0.17	0.17	–	–
7	0.19	0.19	–	–
8	0.21	0.21	–	–
9	0.23	0.23	–	–
10	0.25	0.25	–	–
12	0.27	0.27	–	–
14	0.29	0.29	–	–
16	0.31	0.31	–	–
18	0.33	0.33	–	–
20	0.35	0.35	–	–
mit IK avec LC with IC				
3	0.16	0.16	–	–
4	0.17	0.17	–	–
5	0.18	0.18	–	–
6	0.20	0.20	–	–
7	0.22	0.22	–	–
8	0.24	0.24	–	–
9	0.27	0.27	–	–
10	0.30	0.30	–	–
12	0.33	0.33	–	–
14	0.36	0.36	–	–
16	0.39	0.39	–	–
18	0.42	0.42	–	–
20	0.45	0.45	–	–

Empfehlung: Vorschubverringerung für MD408 und MD424 15% und MD421 30%.
Recommandation: Réduction de l'avance pour MD408 et MD424 15% et MD421 30%.
Recommendation: Feed reduction for MD408 and MD424 15% and MD421 30%.

MD 40…/MD 42…
Vorschübe (s) in mm/U **Avances (s) en mm/tr** **Feed (s) in mm/rev.**

d	Werkstoffe | Matières | Materials			
	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
ohne IK sans LC without IC				
3	0.07	0.07	–	–
4	0.08	0.08	–	–
5	0.09	0.09	–	–
6	0.10	0.10	–	–
7	0.11	0.11	–	–
8	0.12	0.12	–	–
9	0.13	0.13	–	–
10	0.15	0.15	–	–
12	0.17	0.17	–	–
14	0.19	0.19	–	–
16	0.21	0.21	–	–
18	0.23	0.23	–	–
20	0.25	0.25	–	–
mit IK avec LC with IC				
3	0.10	0.10	–	–
4	0.11	0.11	–	–
5	0.13	0.13	–	–
6	0.14	0.14	–	–
7	0.15	0.15	–	–
8	0.17	0.17	–	–
9	0.18	0.18	–	–
10	0.21	0.21	–	–
12	0.24	0.24	–	–
14	0.27	0.27	–	–
16	0.29	0.29	–	–
18	0.32	0.32	–	–
20	0.35	0.35	–	–

Empfehlung: Vorschubverringerung für MD408 und MD424 15% und MD421 30%.
Recommandation: Réduction de l'avance pour MD408 et MD424 15% et MD421 30%.
Recommendation: Feed reduction for MD408 and MD424 15% and MD421 30%.

	Werkstoffe | Matières | Materials			
	Stahl unlegiert Acier non allié Steel unalloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium
Härte (HB) Dureté (HB) Hardness value (HB)	125–300	180–2500	200–3500	–
Kategorie Catégrie Category	I	II	III	IV

Schnittgeschwindigkeiten (v_c) in m/min Vitesses de coupe (v_c) en m/min Cutting speed (v_c) in m/min

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	70–120	–	–	60–80	–	–	30–50	–	–	40–60	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	80–150	–	–	60–135	–	–	40–80	–	–	–	–
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 BX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	–	–	–	–	–	–	–	–	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

	Werkstoffe | Matières | Materials			
	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
Härte (HB) Dureté (HB) Hardness value (HB)	180–220	220–330	–	–
Kategorie Catégrie Category	V	VI	VII	VIII

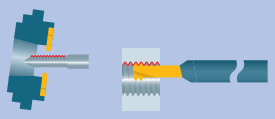
Schnittgeschwindigkeiten (v_c) in m/min Vitesses de coupe (v_c) en m/min Cutting speed (v_c) in m/min

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	25–40	–	–	10–20	–	–	50–150	–	–	60–100	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	30–60	–	–	15–30	–	–	–	–	–	–	–
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 BX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	–	–	–	–	–	–	–	–	–	–	–
HSS SX	–	–	–	–	–	–	–	–	–	–	–	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

TOOLING SYSTEMS

MULTIDEC®-WHIRLING

Kurzbeschreibung und Anwendungsübersicht
Gamme de produits et applications
Product line and application 229



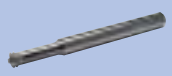
System und Aufbau Gewindewirbeln (aussen)
Système et assemblage tourbillonnage (extérieur)
System and mounting thread whirling (outside) 230

Adapter, Gewindewirbelring und Distanzscheiben
Adaptateur, anneau de tourbillonnage et rondelles intermédiaires
Adapter, whirling ring and spacer 234

Schneiden
Plaquettes
Inserts 237

Bestellvorgaben und Ersatzteile
Guide de commande et pièces de rechange
Order guideline and spare parts 238

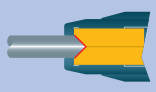
Gewindewirbler (innen)
Tourbilloneur (intérieur)
Thread whirling tool (intside) 240



Schnittdaten
Données de coupe
Cutting specification 242

MULTIDEC®-ENDFIX

Kurzbeschreibung und Anwendungsübersicht
Gamme de produits et applications
Product line and application 245

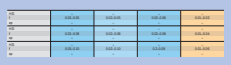


Schneiden
Jeux de couteaux
Inserts 246

Halter
Porte-outils
Holders 247

Ersatzteile
Pièces de rechange
Spare parts 248

Schnittdaten
Données de coupe
Cutting specification 250



MULTIDEC®-BACKTOOLS

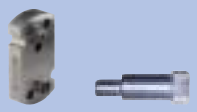
Kurzbeschreibung und Aufbau
Gamme de produits et assemblage
Product line and mounting 253

Grundhalter
Porte-outils de base
Basic tool holders 255

Schneidenhalter
Porte-plaquettes
Insert holders 256

Spannzangenhalter und Werkzeughalter
Porte-pinces et porte-outils
Collet holders and tool holders 267

Zwischenplatten und Ersatzteile
Porte-outils intermédiaires et pièces de rechange
Spacer and spare parts 268



Multidec®-MODULINE

Kurzbeschreibung
Gamme de produits
Product line 271

Werkzeugplatten
Plaque porte-outils
Tool holder plate 272

Halter
Porte-outils
Holders 278

Zubehör und Voreinstellgerät
Accessoires et banc de préréglage
Accessories and presetting device 289

Ersatzteile
Pièces de rechange
Spare parts 291

Multidec®-HSK C32

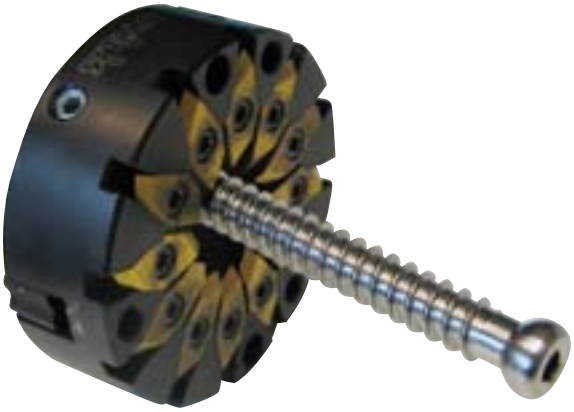
Kurzbeschreibung
Gamme de produits
Product line 292

KURZBESCHREIBUNG
GAMME DE PRODUITS
PRODUCT LINE

Multidec®-Whirling ist ein mehrschneidiges Gewindewirbel-Werkzeugsystem, welches dazu dient, die Produktivität bei der Herstellung von Gewinden signifikant zu steigern. Im Gegensatz zum Gewindedrehen mit mehreren nötigen Schneiddurchgängen, wird beim Gewindewirbeln in einem Durchgang das Gewinde fertig gestellt. Durch bis zu 12 Schneiden kann die Bearbeitungszeit erheblich verkürzt werden.

Multidec®-Whirling est un système de tourbillonnage avec plusieurs plaquettes qui permet d'augmenter significativement la production. Contrairement au peignage qui nécessite plusieurs passages, le tourbillonnage permet de réaliser en un passage le filet complet. Les 12 plaquettes réduisent le temps d'usinage notamment.

Multidec® Thread Whirling is a multiple cutter tool system to significantly improve productivity. Which is essential in today's mass production. Unlike single point threading which requires multiple passes, thread whirling usually produces a finished thread with a single pass. Improvements are realized in increased productivity and improved surface finish quality by using the 12 insert Multidec Whirling System.



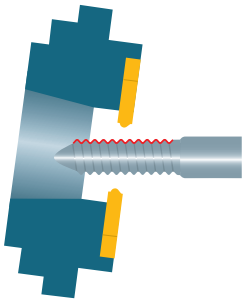
ANWENDUNGS-ÜBERSICHT
APPLICATIONS
APPLICATION

Gewindewirbeln (aussen) siehe Seite 230…
Gewindewirbeln (innen) siehe Seite 240…

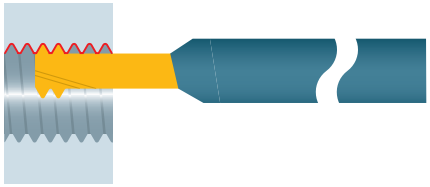
Tourbillonnage (extérieur) voir page 230…
Tourbillonnage (intérieur) voir page 240…

Threadwhirling (outside) see page 230…
Threadwhirling (inside) see page 240…

Gewindewirbeln (aussen)
Tourbillonnage (extérieur)
Threadwhirling (outside)



Gewindewirbeln, Vollprofil (innen)
Tourbillonnage, profil complet (intérieur)
Threadwhirling, full profile (inside)

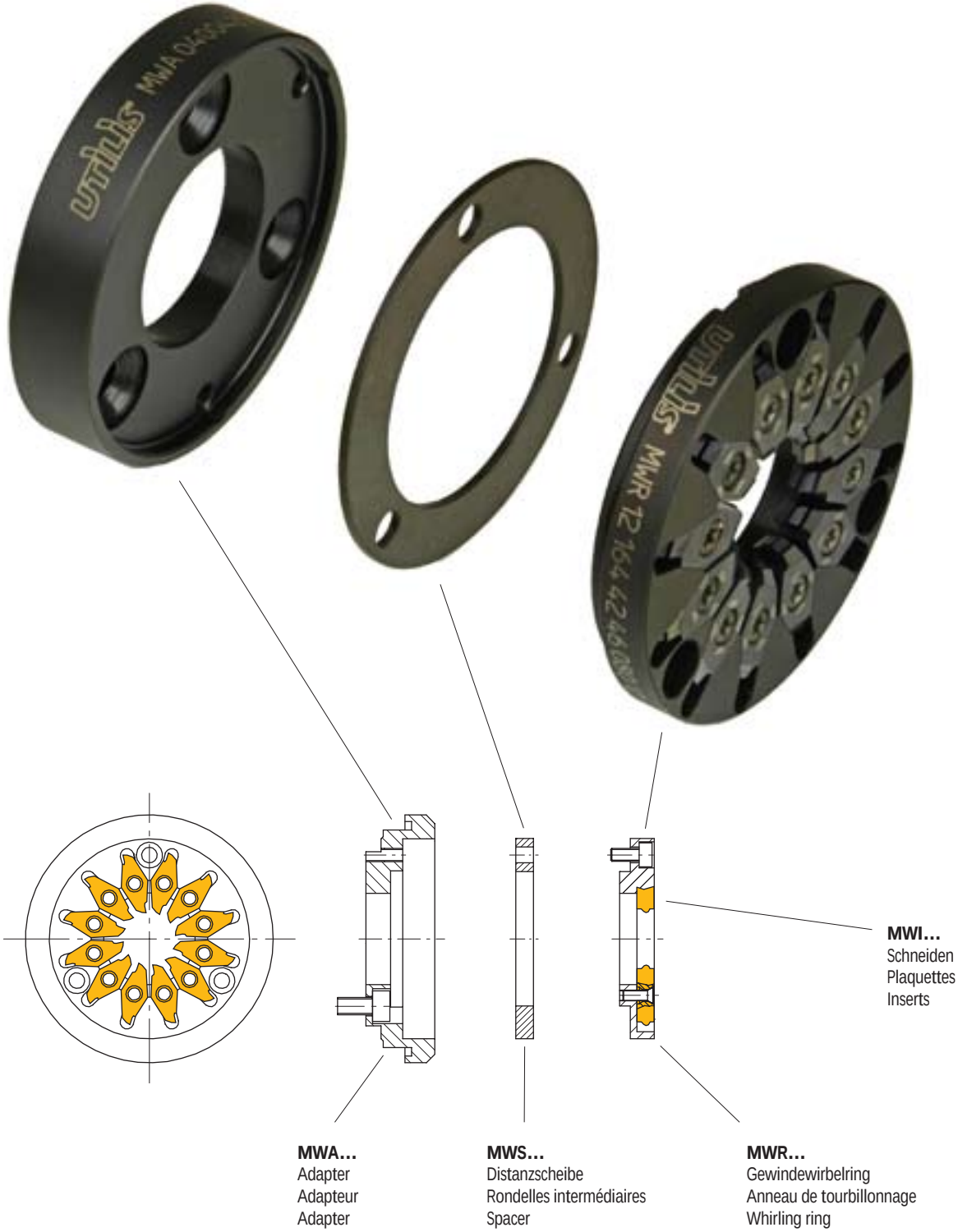


Besonderheiten und Vorteile
- bis zu 12 Wendeplatten steigern die Produktivität signifikant und reduzieren Vibrationen erheblich
- geringe Rundlauffehler und hohe Wechselgenauigkeit der Platte < ±0.005 mm garantieren hochwertige Gewinde
- schneller und problemloser Wechsel des Wirbelwerkzeugs senkt die Rüstzeit
- gratfreie Gewindeprofile vermindern Nachbehandlungen
- Verwendung von UTILIS Standard-Rohlingen ermöglicht kurze Lieferzeiten mit optimal auf das zu zerspanende Material abgestimmten Beschichtungen
- Wirbelköpfe mit verschiedenen Flugkreisen sowie für mehrgängige Gewinde erhältlich

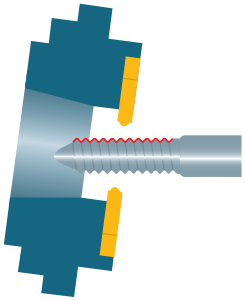
Particularités et avantages
- jusqu'à 12 couteaux, pour une augmentation de la productivité et une forte réduction des vibrations
- excellente concentricité et grande répétitivité lors du changement des plaquettes, < ±0.005 mm pour les filets de haute precision
- changement rapide de la tête à tourbillonner, baisse du temps de la mise en train
- profil du filet sans bavures, ne nécessite pas de traitements supplémentaires
- L'utilisation d'ébauches standard chez Utilis, permet d'offrir de court délais de livraisons
- optimisation des performances, grâce à la palette de revêtements couche mince
- différents diamètres de têtes et exécutions à plusieurs filets sont disponibles

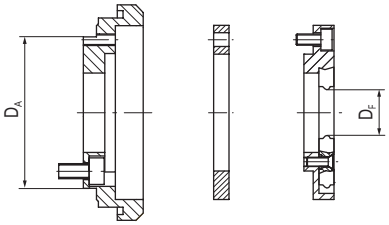
Specialities and advantage
- up to 12 inserts increase productivity and reduce vibration considerably
- little concentricity tolerance and high exchange accuracy of inserts < ±0.005 mm guarantee threads of high-quality
- quick and simple change of the Whirling tool reduces set up time
- threads without cutting ridge decrease remachining of parts
- using UTILIS standard blanks allows short delivery time and best possible coating for demanded application
- whirling tools with different flight circles and multi start threads available

MWT...


MWI...
Schneiden
Plaquettes
Inserts
MWA...
Adapter
Adapteur
Adapter
MWS...
Distanzscheibe
Rondelles intermédiaires
Spacer
MWR...
Gewindewirbelring
Anneau de tourbillonnage
Whirling ring

Gewindewirbeln (aussen) | Tourbillonnage (extérieur) | Threadwhirling (outside)

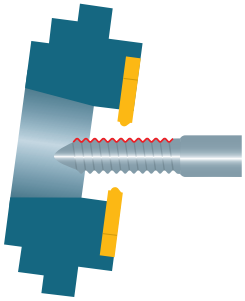


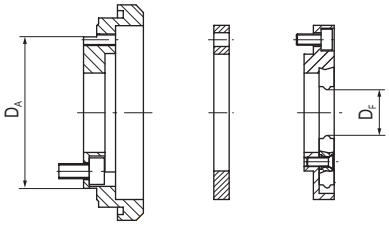


MWT…

Maschinen-Typ Types de machines Type of machine		Angetriebenes WKZ Outil entraîné Driven toolholder		Zähnezahl Nbr. de dents No. of teeth	Bezeichnung Désignations Designation			Module Modules Units
				n×MWI		D_F	D_A	
CITIZEN	L20/25/30/32 M20/32	PCM	LSW-101 LSW-215 MSW-101 KSW-101	9	MWT12 164 4046 130 09	12	40	MWA 404245 050 MWR12 164 4246 080 09
				12	MWT12 164 4046 130 12	12	40	MWA 404245 050 MWR12 164 4246 080 12
	L25/32	JARVIS	LTR 0128	9	MWT12 164 4052 121 09	12	40	MWA 404453 033 MWR12 164 4646 080 09 MWS 2146…
				12	MWT12 164 4052 121 12	12	40	MWA 404453 033 MWR12 164 4646 080 12 MWS 2146…
	C16 M12/16/20	PCM	LSW-424	9	MWT12 164 3546 169 09	12	40	MWA 354246 089 MWR12 164 4246 080 09
				12	MWT12 164 3546 169 12	12	40	MWA 354246 089 MWR12 164 4246 080 12
	M1-20, M316	JARVIS	LTR 0131	9	MWT12 164 3746 121 09	12	37	MWA 374246 041 MWR12 164 4246 080 09 MWS 2146…
				12	MWT12 164 3746 121 12	12	37	MWA 374246 041 MWR12 164 4246 080 12 MWS 2146…
MAIER	ML-26-C	WTO		12	MWT15 164 4044 170 12	15	40	
MONNIER + ZAHNER	M621	M+Z		9	MWT12 164 85128 295 09	12	85	MWA 8512846 215 MWR12 164 4646 080 09
				12	MWT12 164 85128 295 12	12	85	MWA 8512846 215 MWR12 164 4646 080 12
NEXTURN	SA20D/E, SA26D/E SA32D/E	PCM	NESA-32	9	MWT12 164 4046 172 09	12	40	

Gewindewirbeln (aussen) | Tourbillonnage (extérieur) | Threadwhirling (outside)

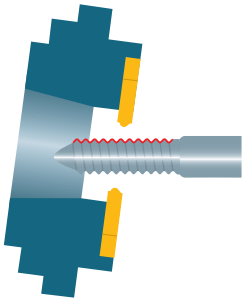


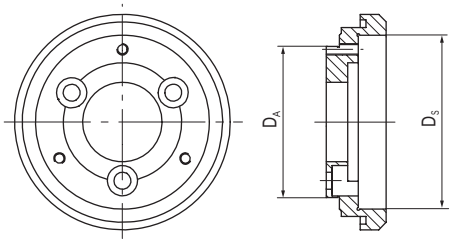


MWT…

Maschinen-Typ Types de machines Type of machine		Angetriebenes WKZ Outil entraîné Driven toolholder		Zähnezahl Nbr. de dents No. of teeth	Bezeichnung Désignations Designation			Module Modules Units
				n×MWI		D_F	D_A	
STAR	SV12–32	STAR	421-73 431-72	12	MWT12 164 4045 145 12	12	40	
	SR20 ECAS 12-20	STAR	541-78 681-72	12	MWT12 164 4044 158 12	12	40	
	SV SR ECAS	STAR	421-73 431-72	9	MWT12 164 4045 120 09	12	40	MWA 25 4040 … MWR12 164 2546 090 09
			541-78 681-72	12	MWT12 164 4045 120 12	12	40	MWA 25 4040 … MWR12 164 2546 090 12
	SR20-R ECAS 20	SU-matic	AWS 1:1	9	MWT12 164 4045 120 09	12	40	MWA 25 4040 … MWR12 164 2546 090 09
				12	MWT12 164 4045 120 12	12	40	MWA 25 4040 … MWR12 164 2546 090 12
TORNOS	DECO 13/20/26	TORNOS	TORNOS	9	MWT12 164 4057 105 09	12	40	MWA 404657 050 MWR12 164 4646 055 09 MWS 2141 …
				12	MWT12 164 4057 105 12	12	40	MWA 404657 050 MWR12 164 4646 055 12 MWS 2141 …
TRAUB	TNL12			12	MWT12 164 3776 068 12	12	37	MWS 37539 15
	TNL26K			12	MWT12 164 4158 080 12	12	41	
TSUGAMI	BS20/26			12	MWT12 164 5062 210 12	12	50	
	BU20			9	MWT12 164 5265 166 09	12	52	MWA 524665 087 MWR12 164 4646 080 09 MWS 2146 …
				12	MWT12 164 5265 166 12	12	52	MWA 524665 087 MWR12 164 4646 080 12 MWS 2146 …
	NP16	PCM	MSW-101	9	MWT12 164 4046 130 09	12	40	MWA 404245 050 MWR12 164 4246 080 09
				12	MWT12 164 4046 130 12			MWA 404245 050 MWR12 164 4246 080 12

Gewindewirbeln (aussen) | Tourbillonnage (extérieur) | Threadwhirling (outside)

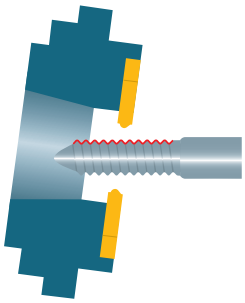


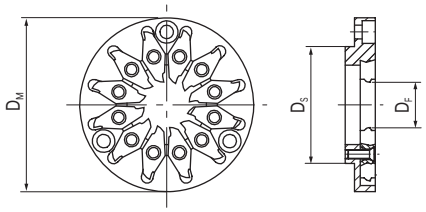


MWA...

Maschinen-Typ Types de machines Type of machine		angetriebenes WKZ Outil entraîné Driven toolholder		Bezeichnung Désignations Designation		
					D_S	D_A
CITIZEN	L20/25/30/32 M20/32	PCM	LSW-101 LSW-215 MSW-101 KSW-101	MWA 404245 050	42	40
	L20/32 JARVIS LTR 0128	–	–	–	–	–
	C16 M12/16/20	PCM	LSW-424	MWA 354246 089	42	40
	M1-20, M316	JARVIS	LTR 0131	MWA 374246 041	42	37
MONNIER + ZAHNER	M621	M+Z		MWA 8512846 215	46	85
STAR	SV... SR... ECAS...	STAR	421-73 431-72 541-78 681-72	MWA 254040 040	25	40
TORNOS	DECO 13/20			MWA 404657 050	46	40
TSUGAMI	BU20			MWA 524665 087	46	52
	NP16	PCM	MSW-101	MWA 404245 050	46	40

Gewindewirbeln (aussen) | Tourbillonnage (extérieur) | Threadwhirling (outside)

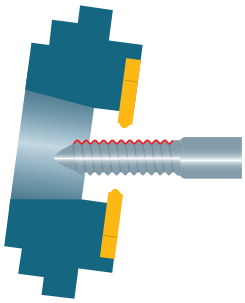


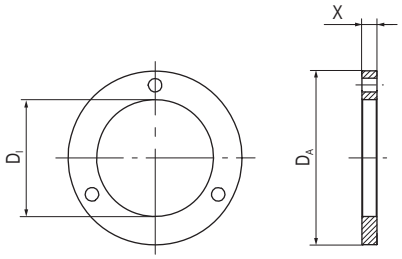


MWR...

Bezeichnung Désignation Designation			
	D_F	D_S	D_M
MWR12 164 4246 080 09	12	42	46
MWR12 164 4246 080 12	12	42	46
MWR12 164 4646 055 09	12	46	46
MWR12 164 4646 055 12	12	46	46
MWR12 164 4646 080 09	12	46	46
MWR12 164 4646 080 12	12	46	46

Gewindewirbeln (aussen) | Tourbillonnage (extérieur) | Threadwhirling (outside)

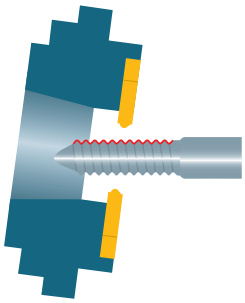


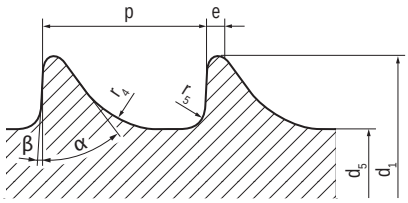


MWS...

Bezeichnung Désignation Designation				Nur gültig für... Seulement valable pour... Only valid for...
	D_I	D_A	X	
MWS 2141 10	21	41	1.0	
MWS 2141 15	21	41	1.5	
MWS 2141 40	21	41	4.0	
MWS 2146 08	21	46	0.8	
MWS 2146 10	21	46	1.0	
MWS 2146 15	21	46	1.5	
MWS 2146 40	21	46	4.0	
MWS 37539 15	37	53.9	1.5	Traub TNL12

Gewindewirbeln (aussen) | Tourbillonnage (extérieur) | Threadwhirling (outside)



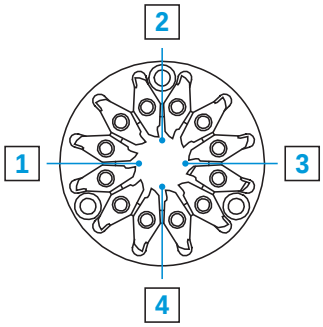


ISO 5835:1991

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*											
	●	●										
	○	●										
	○	●										
	●	○										
	UHM 30	UHM 30 HX	d_1	Tol.	d_5	Tol.	e	p	r_4	r_5	α	β
MWI12 164 HA1.5 VP	□	■	1.5	0/-0.15	1.1	0/-0.10	0.1	0.50	0.3	0.1	35°	3°
MWI12 164 HA2.0 VP	□	■	2.0	0/-0.15	1.3	0/-0.10	0.1	0.60	0.4	0.1	35°	3°
MWI12 164 HA2.7 VP	□	■	2.7	0/-0.15	1.9	0/-0.15	0.1	1.00	0.6	0.2	35°	3°
MWI12 164 HA3.5 VP	□	■	3.5	0/-0.15	2.4	0/-0.15	0.1	1.25	0.8	0.2	35°	3°
MWI12 164 HA4.0 VP	□	■	4.0	0/-0.15	2.9	0/-0.15	0.1	1.50	0.8	0.2	35°	3°
MWI12 164 HA4.5 VP	□	■	4.5	0/-0.15	3.0	0/-0.15	0.1	1.75	1.0	0.3	35°	3°
MWI12 164 HA5.0 VP	□	■	5.0	0/-0.15	3.5	0/-0.15	0.1	1.75	1.0	0.3	35°	3°
MWI12 164 HB4.0 VP	□	□	4.0	0/-0.15	1.9	0/-0.15	0.1	1.75	0.8	0.3	25°	5°
MWI12 164 HB6.5 VP	□	□	6.5	0/-0.15	3.0	0/-0.15	0.2	2.75	1.2	0.8	25°	5°

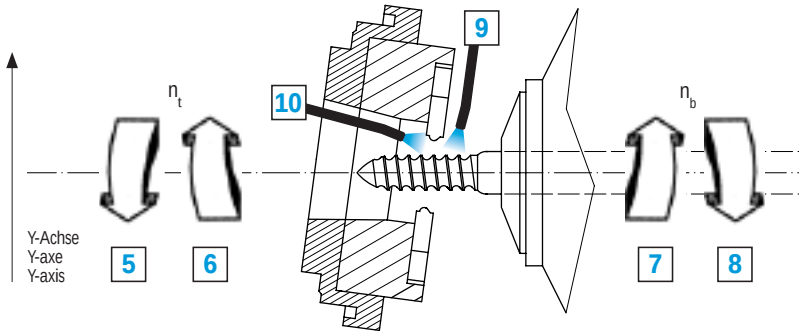
Herstellerspezifische Gewindeprofile siehe Formular Seite 238
Exécution des profils spécial voir formulaire page 238
Execution of special thread profil see form on page 238

Schnittposition
Position d'usinage
Cutting location



Drehrichtung Werkzeug
Sens de rotation de l'outil
Turning direction of whirling unit

Drehrichtung Stange
Sens de rotation de la barre
Turning direction of the bar



MWI...

Maschinendaten **Données de la machine** **Machine specifications**				
Maschinenhersteller Marque de la machine Machine manufacturer				
Maschinentyp Type de la machine Type of machine				
Hersteller angetriebenes Werkzeug Marque de l'appareil à tourbillonner Manufacturer of driven tool				
Typ angetriebenes Werkzeug Type de l'appareil à tourbillonner Type of driven tool				
Y-Achse vorhanden? Axe Y disponible? Y-axis available?	☐ Ja | Oui | Yes		☐ Nein | Non | No	
Hochdruckkühlung vorhanden? [bar] Lubrification haute pression disponible? High pressure cooling?	☐ ≤20	☐ >20	☐ Nein | Non | No	
Kühlmittelzufuhr Position de la lubrification Cooling direction	☐ 9		☐ 10	
Drehrichtung Werkzeug Sens de rotation de l'outil à tourbillonner? Turning direction of whirling unit	☐ 5		☐ 6	

Werkstoff **Matière** **Material**				
Bezeichnung (DIN) Désignation Designation				
Stangendurchmesser [d_b] Diamètre de la barre Bar diameter				
Drehrichtung Stange Sens de rotation de la barre Turning direction of the bar	☐ 7		☐ 8	
Schnittposition Position d'usinage Cutting location	☐ 1	☐ 2	☐ 3	☐ 4
Schneide **Plaquette** **Insert**				
Gewindezeichnung (Nr. | No. | No.) Dessin du filet Thread drawing				
Vollprofil Profil complet Full profile	☐ Ja | Oui | Yes		☐ Nein | Non | No	
Beschichtung Revêtement Coating	☐ Ja | Oui | Yes		☐ Nein | Non | No	

Firma | Entreprise | Company

Strasse | Rue | Road

PLZ, Ort | Code postal, Lieu | Postal code, City

Zuständiger Mitarbeiter | Personne responsable | Responsible person

Telefon | Téléphone | Phone

Telefax | Téléfax | Fax

E-Mail | E-Mail | E-Mail

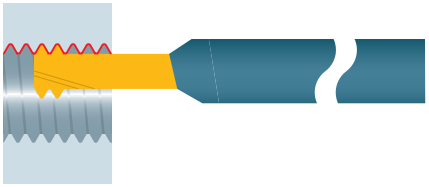
Referenz | Référence | Reference

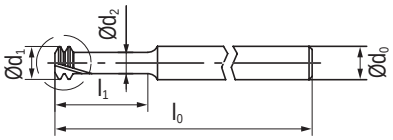
UTILIS®
Tooling for High Technology

■ *Utilis AG, Präzisionswerkzeuge*
Kreuzlingerstrasse 22, CH-8555 Müllheim
Telefon +41 52 762 62 62, Telefax +41 52 762 62 00
info@utilis.com, www.utilis.com

	Beschreibung Description Description	Bezeichnung Désignation Designation	Dimension	Nur gültig für Seulement valable pour Only valid for
	Torxschraube Vis torx Torx screw	MSP 25060 MSP 25070 MSP 30160 TP08 Torx Plus	M2.5x6 T08 M2.5x7 T08 M3x16 TP8 Torx Plus	1601-3-4 N 1601-4-4 N
	Torxschlüssel Tournevis torx Torx screwdriver	MSP TX08	T08	
	Drehmoment-Torxschlüssel (1.2 Nm) Tournevis torx à serrage contrôlé (1.2 Nm) Torx torquedriver (1.2 Nm)	MSP TX08 D	T08	
	Innensechskantschraube (Kopf D_A=6.4mm) Pans creux (tête D_A=6.4mm) Allen head screw (head D_A=6.4mm)	MSP 50200 IB4	M5x20	MWT12 163 5062 205 12
	Senkschraube Vis à tête noyée Counter sunk screw	MSP 30080 IB2.5 MSP 40120 IB2.5 MSP 40140 IB2.5	M3x8 M4x12 M4x12	
	Zylinderschraube Vis cylindrique Cylinder headscrew	MSP 30040 IB2.5 MSP 30060 IB2.5 MSP 30080 IB2.5 MSP 30100 IB2.5 MSP 40100 IB3 MSP 40120 IB3 MSP 40140 IB3	M3x4 M3x6 M3x8 M3x10 M4x10 M4x12 M4x14	
	Druckstück Pièce de serrage Thrust piece	MSP SDA DS		
	Spannschraube Vis de tension Clamp bolt	MSP 40090 IB2	M4 L/Rx0.5x9	MSP SDA DS
	Gewindestift Vis sans tête Grub screw	MSP 30003 IB1.5	M3x3	
	Innensechskantschlüssel Clé allen Allen-type wrench	MSP IB1.5 MSP IB10 MSP IB2 MSP IB2.5 MSP IB3 MSP IB4 MSP IB5 MSP IB6 MSP IB8		

Gewindewirbeln, Vollprofil (innen) | Tourbillonnage, profil complet (intérieur) | Threadwhirling, full profile (inside)



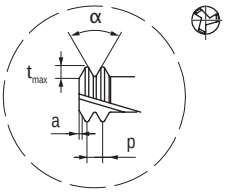


Bestimmung des Bohrungsdurchmessers
Zur Vorbereitung des Bohrens, vor dem Gewindewirbeln, ist es als erstes nötig, die Toleranzen des gewünschten Gewindes zu kennen. Um Überlastung des Werkzeugs zu vermeiden, darf der max. Durchmesser, wie die folgende Tabelle zeigt, nicht überschritten werden.
Beispiel: M 1.40 Steigung 0.30, gewünschte Gewindetoleranz 6H mit Höhe (1.11).
Bohrungsdurchmesser = 1.110 – (2x0.04) = 1.03 mm min.

Définir le diamètre de perçage
Lors de la préparation du perçage avant tourbillonnage, il est nécessaire de connaître préalablement la tolérance à inscrire au filetage. Pour éviter une surcharge sur l'outil, le diamètre ne doit pas dépasser la surépaisseur max. au D inscrite ci-dessous.
Exemple: M 1.40 pas 0.30, tolérance désirée sur le filet 6H au plus fort (1.11). Diamètre de perçage mini = 1.110 – (2x0.04) = 1.03 mm minimum.

Determine the drilling diameter
For the preparation of drilling before thread whirling, it is necessary to know at first the tolerance of the desired thread. To avoid overload of the tool the diameter must not exceed the max. diameter as mentioned in the following table.
Example: M 1.40 pitch 0.30, tolerance desired of the thread 6H on high level (1.11).
Diameter of the hole to be drilled min = 1.110 – (2x0.04) 1.03 mm min.

WHS…/WHL…



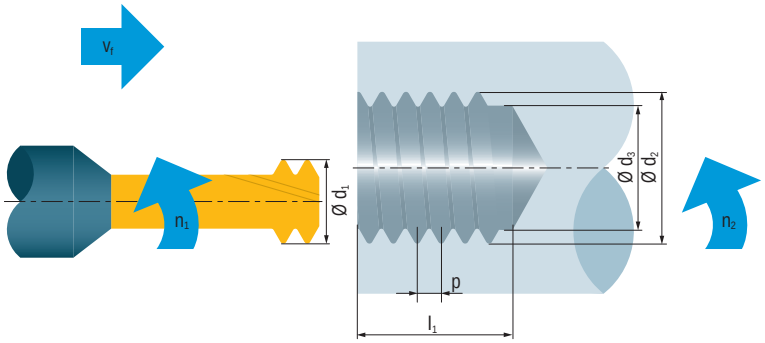
Winkel Angle Angle	
α	
β	60°
γ	
δ	

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*														
				●	●	●												
				○	●	●												
				○	—	●												
				●	○	○												
L	N	R		UHM 20	UHM 20 SX	UHM 20 HX	Ø d_0	Ø d_1	Ø d_2	a	t_{max}	l_0	l_1	Bereich Gamme Range	Steigung Pas Pitch p	Bohrungsdurchmesser Diamètre de perçage Drilling diameter Ø d_3	Tol.
			WHS 338 010 025	■	□	■	3	0.64	0.24	0.03	0.04	38	2.3	M1.0	0.25	0.69	0/+ 0.03
			WHS 338 012 025	■	□	■	3	0.84	0.44	0.03	0.04	38	2.8	M1.2	0.25	0.89	0/+ 0.03
			WHS 338 014 030	■	□	■	3	0.98	0.53	0.03	0.04	38	3.2	M1.4	0.30	1.03	0/+ 0.04
			WHS 338 016 035	■	□	■	3	1.12	0.61	0.03	0.04	38	3.7	M1.6	0.35	1.17	0/+ 0.04
			WHS 338 018 035	■	□	■	3	1.32	0.81	0.03	0.04	38	4.1	M1.8	0.35	1.37	0/+ 0.04
			WHS 338 020 040	■	□	■	3	1.46	0.90	0.03	0.04	38	4.6	M2.0	0.40	1.51	0/+ 0.05
			WHS 338 022 045	■	□	■	3	1.60	0.98	0.03	0.04	38	5.1	M2.2	0.45	1.65	0/+ 0.05
			WHS 338 023 040	■	□	■	3	1.76	1.20	0.03	0.04	38	5.2	M2.3	0.40	1.81	0/+ 0.05
			WHS 338 025 045	■	□	■	3	1.90	1.28	0.03	0.04	38	5.8	M2.5	0.45	1.95	0/+ 0.05
			WHS 338 030 050	■	□	■	3	2.34	1.67	0.03	0.04	38	6.9	M3.0	0.50	2.39	0/+ 0.05
			WHS 338 035 060	■	□	■	3	2.71	1.93	0.03	0.04	38	8.1	M3.5	0.60	2.76	0/+ 0.06
			WHS 442 040 070	■	□	■	4	3.09	2.20	0.03	0.05	42	9.2	M4.0	0.70	3.14	0/+ 0.06
			WHS 442 045 075	■	□	■	4	3.53	2.56	0.03	0.05	42	10.4	M4.5	0.75	3.58	0/+ 0.07
			WHS 442 050 080	■	□	■	4	3.97	2.95	0.03	0.05	42	11.5	M5.0	0.80	4.02	0/+ 0.07
			WHL 338 010 025	■	□	■	3	0.64	0.24	0.03	0.04	38	4.6	M1.0	0.25	0.69	0/+ 0.03
			WHL 338 012 025	■	□	■	3	0.84	0.44	0.03	0.04	38	5.5	M1.2	0.25	0.89	0/+ 0.03
			WHL 338 014 030	■	□	■	3	0.98	0.53	0.03	0.04	38	6.4	M1.4	0.30	1.03	0/+ 0.04
			WHL 338 016 035	■	□	■	3	1.12	0.61	0.03	0.04	38	7.4	M1.6	0.35	1.17	0/+ 0.04
			WHL 338 018 035	■	□	■	3	1.32	0.81	0.03	0.04	38	8.3	M1.8	0.35	1.37	0/+ 0.04
			WHL 338 020 040	■	□	■	3	1.46	0.90	0.03	0.04	38	9.2	M2.0	0.40	1.51	0/+ 0.05
			WHL 338 022 045	■	□	■	3	1.60	0.98	0.03	0.04	38	10.1	M2.2	0.45	1.65	0/+ 0.05
			WHL 338 023 040	■	□	■	3	1.76	1.20	0.03	0.04	38	10.4	M2.3	0.40	1.81	0/+ 0.05
			WHL 338 025 045	■	□	■	3	1.90	1.28	0.03	0.04	38	11.5	M2.5	0.45	1.95	0/+ 0.05
			WHL 338 030 050	■	□	■	3	2.34	1.67	0.03	0.04	38	13.8	M3.0	0.50	2.39	0/+ 0.05
			WHL 338 035 060	■	□	■	3	2.71	1.93	0.03	0.04	38	16.1	M3.5	0.60	2.76	0/+ 0.06
			WHL 442 040 070	■	□	■	4	3.09	2.20	0.03	0.05	42	18.4	M4.0	0.70	3.14	0/+ 0.06
			WHL 442 045 075	■	□	■	4	3.53	2.56	0.03	0.05	42	20.7	M4.5	0.75	3.58	0/+ 0.07
			WHL 442 050 080	■	□	■	4	3.97	2.95	0.03	0.05	42	23.0	M5.0	0.80	4.02	0/+ 0.07

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

$$v_f = z \cdot f_z \cdot n_1 \qquad n_1 = \frac{V_c \cdot 1000}{\pi \cdot Ø\, d_1} \qquad n_2 = \frac{V_f}{\pi \cdot Ø\, d_1}$$



Erklärung
- v_f = Vorschub des Werkzeuges (mm/min)
- Ø d_1 = Gewindedurchmesser Werkzeug (mm)
- n_1 = Drehzahl Werkzeug (U/min)
- Ø d_2 = Gewindedurchmesser Werkstück (mm)
- n_2 = Drehzahl Werkstück (U/min)
- v_c = Schnittgeschwindigkeit (m/min), Seite 240
- p = Steigung (mm)
- l_1 = Länge des Gewindegangs (mm)
- z = Zahl der Zähne
- Ø d_3 = Bohrungsdurchmesser (mm)
- f_z = Vorschub pro Zahn (mm)

Commentaires
- v_f = avance de l'outil (mm/min)
- Ø d_1 = diamètre de l'outil (mm)
- n_1 = tour par minute de l'outil (tr/min)
- Ø d_2 = diamètre de la pièce (mm)
- n_2 = tour par minute de la pièce (tr/min)
- v_c = vitesse de coupe (m/min) voir page 240
- p = pas (mm)
- l_1 = longueur développée du filet (mm)
- z = nombre de dents
- Ø d_3 = diamètre de perçage (mm)
- f_z = avance par dent (mm)

Explanation
- v_f = feed (mm/min)
- Ø d_1 = tool diameter (mm)
- n_1 = tool revolutions (rev./min)
- Ø d_2 = work piece diameter (mm)
- n_2 = revolutions (rev./min)
- v_c = cutting speed (m/min) see page 240
- p = pitch (mm)
- l_1 = length of one milling pass (mm)
- z = number of teeth
- Ø d_3 = drilling diameter (mm)
- f_z = feed per tooth (mm)

Vorschubbereich pro Zahn (f_z)
Avance par dent (f_z)
Feed range per tooth (f_z)

Bezeichnung Désignation Designation	fz (mm)
WHS 338 010 025	0.003 – 0.006
WHS 338 012 025	0.003 – 0.006
WHS 338 014 030	0.003 – 0.006
WHS 338 016 035	0.004 – 0.008
WHS 338 018 035	0.004 – 0.009
WHS 338 020 040	0.004 – 0.010
WHS 338 022 045	0.004 – 0.011
WHS 338 025 045	0.005 – 0.013
WHS 338 030 050	0.006 – 0.015
WHS 338 035 060	0.007 – 0.018
WHS 442 040 070	0.007 – 0.021
WHS 442 045 075	0.010 – 0.026
WHS 442 050 080	0.010 – 0.026

Bezeichnung Désignation Designation	fz (mm)
WHL 338 010 025	0.002 – 0.004
WHL 338 012 025	0.002 – 0.004
WHL 338 014 030	0.002 – 0.004
WHL 338 016 035	0.003 – 0.005
WHL 338 018 035	0.003 – 0.006
WHL 338 020 040	0.003 – 0.007
WHL 338 022 045	0.003 – 0.008
WHL 338 025 045	0.004 – 0.010
WHL 338 030 050	0.004 – 0.011
WHL 338 035 060	0.005 – 0.013
WHL 442 040 070	0.005 – 0.015
WHL 442 045 075	0.007 – 0.018
WHL 442 050 080	0.007 – 0.018

	Werkstoffe | Matières | Materials			
	Stahl unlegiert Acier non allié Steel unalloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium
Härte (HB) Dureté (HB) Hardness value (HB)	125–300	180–250	200–350	–
Kategorie Catégrie Category	I	II	III	IV

Vorschub pro Zahn (f_z) in mm und Schnitttiefen (ap) in mm

Avance par dent (f_z) en mm et profondeurs de passes (ap) en mm

Feed per tooth (f_z) in mm and depths of cut (ap) in mm

▼				
f_z	–	–	–	–
ap	–	–	–	–
▼▼				
f_z	0.02–0.15	0.02–0.15	0.02–0.15	0.02–0.08
ap	< 4.00	< 4.00	< 4.00	< 4.00
▼▼▼				
f_z	0.005–0.08	0.005–0.08	0.005–0.08	0.005–0.06
ap	< 4.00	< 4.00	< 4.00	< 4.00

Schnittgeschwindigkeiten (v_c) in m/min

Vitesses de coupe (v_c) en m/min

Cutting speed (v_c) in m/min

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	50–80	50–100	–	40–80	40–90	–	30–70	30–80	–	25–60	30–70
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	80–180	120–220	–	50–140	100–180	–	50–120	80–160	–	60–100	80–120

	Werkstoffe | Matières | Materials			
	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
Härte (HB) Dureté (HB) Hardness value (HB)	180–220	220–330	60–130	–
Kategorie Catégrie Category	V	VI	VII	VIII

Vorschub pro Zahn (f_z) in mm und Schnitttiefen (ap) in mm
Avance par dent (f_z) en mm et profondeurs de passes (ap) en mm
Feed per tooth (f_z) in mm and depths of cut (ap) in mm

▼				
f_z	–	–	–	–
ap	–	–	–	–
▼▼				
f_z	0.01–0.025	0.01–0.12	0.02–0.25	0.02–0.15
ap	< 4.00	< 4.00	< 4.00	< 4.00
▼▼▼				
f_z	0.005–0.08	0.005–0.08	0.005–0.20	0.005–0.10
ap	< 4.00	< 4.00	< 4.00	< 4.00

Schnittgeschwindigkeiten (v_c) in m/min
Vitesses de coupe (v_c) en m/min
Cutting speed (v_c) in m/min

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	30–70	30–80	–	20–40	20–40	–	50–200	100–500	–	50–140	50–160
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	50–150	100–200	–	40–70	40–90	–	–	–	–	–	–

KURZBESCHREIBUNG
GAMME DE PRODUITS
PRODUCT LINE

MULTIDEC®-ENDFIX

Multidec®-Endfix ist ein speziell für die Endenbearbeitung entwickeltes Werkzeug zum Anformen gerader und gebogener Stangen-, Draht- und Rohrenden. Die Form der im Grundkörper eingesetzten Messer kann frei (Kundenzeichnung erforderlich) oder nach dem bewährten Utilis-Standard gewählt werden. Die Messer aus unterschiedlichen Hartmetall- und HSS- Schneidstoffen werden dabei auf Wunsch bis ins Zentrum schneidend geschliffen und können nachgeschliffen werden.

Multidec®-Endfix a été développé spécialement pour le pointage des barres de décolletage ou similaires. Plusieurs types de formes de pointes, par exemple 60° ou 90°, sont disponibles en standard dans le programme. Sur demande d'autres formes peuvent êtres exécutées avec des outillages en HSS ou carbure. Le réaffûtage des couteaux est possible ce qui permet à l'outil d'être utilisé sur un long terme.

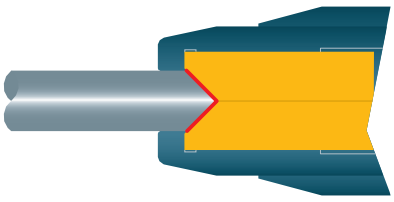
Multidec®-Endfix is made especially for end forming of straight and bent rods, wires and tubes. The design of the cutting form is produced according to UTILIS standard or to customer's specification (drawing by customer necessary). Upon request the different HSS or carbide inserts can be ground cutting to the centre.

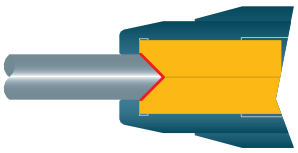
ANWENDUNGS-ÜBERSICHT SPEZIELLE BEARBEITUNGSFORMEN
APPLICATION POUR LES OPÉRATIONS SPÉCIALES
APPLICATION SPECIAL OPERATIONS

MULTIDEC®-ENDFIX

Schneiden siehe Seite 246 Halter siehe Seite 247	Jeux de couteaux voir page 246 Porte-outils voir page 247	Inserts see page 246 Holders see page 247

Endenbearbeitung
Usinage d'extrémités
End forming





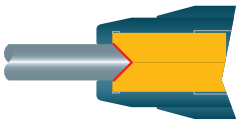
MEM

Bezeichnung Désignation Designation	Schneidsorten* Matériaux de coupe* Insert grade*			Techn. Zeichnung Dessin Drawing						Halter Porte-outil Holder 247…
	●	○	●							
	○	○	●							
	○	○	○							
	–	●	○							
	UHM 20	HSS	HSS SX		max. ØD	Ø D	l	α	r	
ME M 1 OF	■	■	■		10					Ø D ≤ 10 ME H 1
ME M 2 OF	■	■	■		20					Ø D ≤ 20 ME H 2
ME M 3 OF	■	■	■		30					Ø D ≤ 30 ME H 3
ME M 1 A**	■	■	■	Ø D 90°	10					Ø D ≤ 10 ME H 1
ME M 2 A**	■	■	■		20					Ø D ≤ 20 ME H 2
ME M 3 A**	■	■	■		30					Ø D ≤ 30 ME H 3
ME M 1 B**	■	■	■	Ø D 60°	10					Ø D ≤ 10 ME H 1
ME M 2 B**	■	■	■		20					Ø D ≤ 20 ME H 2
ME M 3 B**	■	■	■		30					Ø D ≤ 30 ME H 3
ME M 1 C**	■	■	■	Ø D 45°	8					Ø D ≤ 8 ME H 1
ME M 2 C**	■	■	■		16					Ø D ≤ 16 ME H 2
ME M 3 C**	■	■	■		21					Ø D ≤ 21 ME H 3
ME M 1 D	■	■	■	Ø D α Ø d	10	0<d<10		0<α<180		Ø D ≤ 10 ME H 1
ME M 2 D	■	■	■		20	0<d<20		0<α<180		Ø D ≤ 20 ME H 2
ME M 3 D	■	■	■		30	0<d<30		0<α<180		Ø D ≤ 30 ME H 3
ME M 1 E	■	■	■	Ø D Ø d l	10	0<d<10	max. 2/3D			Ø D ≤ 10 ME H 1
ME M 2 E	■	■	■		20	0<d<20	max. 2/3D			Ø D ≤ 20 ME H 2
ME M 3 E	■	■	■		30	0<d<30	max. 2/3D			Ø D ≤ 30 ME H 3
ME M 1 F	■	■	■	Ø D r	10				0.8 x Ø D	Ø D ≤ 10 ME H 1
ME M 2 F	■	■	■		20				0.8 x Ø D	Ø D ≤ 20 ME H 2
ME M 3 F	■	■	■		30				0.8 x Ø D	Ø D ≤ 30 ME H 3
ME M 1 G	■	■	■	Ø D r	10				r_{max} = D/2	Ø D ≤ 10 ME H 1
ME M 2 G	■	■	■		20				r_{max} = D/2	Ø D ≤ 20 ME H 2
ME M 3 G	■	■	■		30				r_{max} = D/2	Ø D ≤ 30 ME H 3
ME M 1 H	■	■	■	Ø D r α l	10		max. 9	0<α<180		Ø D ≤ 10 ME H 1
ME M 2 H	■	■	■		20		max. 16	0<α<180		Ø D ≤ 20 ME H 2
ME M 3 H	■	■	■		30		max. 20	0<α<180		Ø D ≤ 30 ME H 3
ME M 1 J	■	■	■	Ø D r l	10		max. 9			Ø D ≤ 10 ME H 1
ME M 2 J	■	■	■		20		max. 16			Ø D ≤ 20 ME H 2
ME M 3 J	■	■	■		30		max. 20			Ø D ≤ 30 ME H 3
ME M 1 K	■	■	■	Ø D α l	10		max. 9	0<α<180		Ø D ≤ 10 ME H 1
ME M 2 K	■	■	■		20		max. 16	0<α<180		Ø D ≤ 20 ME H 2
ME M 3 K	■	■	■		30		max. 20	0<α<180		Ø D ≤ 30 ME H 3
ME M 1 L	■	■	■	Ø D l	10		max. 9			Ø D ≤ 10 ME H 1
ME M 2 L	■	■	■		20		max. 16			Ø D ≤ 20 ME H 2
ME M 3 L	■	■	■		30		max. 20			Ø D ≤ 30 ME H 3
ME M 1 X	■	■	■	Sonderform nach Kundenzeichnung	10					Ø D ≤ 10 ME H 1
ME M 2 X	■	■	■	Forme spéciale selon dessin	20					Ø D ≤ 20 ME H 2
ME M 3 X	■	■	■	Special form according drawing	30					Ø D ≤ 30 ME H 3

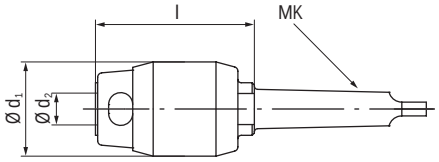
**Die Schneide mit Standard-Form A/B/C sind für den gesamten Durchmesserbereich (0-D) verwendbar.
**Les jeux de couteaux avec forme standard A/B/C sont utilisables pour tout le diamètre de travail (0-D).
**The inserts form A/B/C are usable for the complete range (0-D).

*Genauere Informationen zu den Anwendungsbereichen erhalten Sie auf Seite 16.
*Pour obtenir des informations plus précises sur les matériaux de coupe, regardez à la page 16.
*Detailed information about application ranges of cutting grades see on page 16.

■ Standard
□ Semi Standard

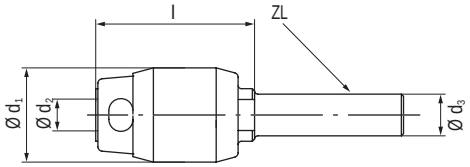


Morsekonus
Cone morse
Mors taper



Bezeichnung Désignation Designation					Schneiden Jeux de couteaux Inserts
	Ø d_1	Ø d_2	MK	l	246…
ME H 1 MK	25	Ø 1.5-10	1	52.3	Ø D ≤ 10 ME M 1
ME H 2 MK	43	Ø 10-20	2	72.5	Ø D ≤ 20 ME M 2
ME H 3 MK	62	Ø 20-30	3	92	Ø D ≤ 30 ME M 3

Zylinderschaft
Queue cylindrique
Straight shank



Bezeichnung Désignation Designation					Schneiden Jeux de couteaux Inserts
	Ø d_1	Ø d_2	Ø d_3 (h7)	l	246…
ME H 1 ZL	25	Ø 1.5-10	10	52.3	Ø D ≤ 10 ME M 1
ME H 2 ZL	43	Ø 10-20	16	72.5	Ø D ≤ 20 ME M 2

Lieferumfang | Contenu de livraison | Content of delivery
Futter komplett ohne Schneiden und ohne Zentrierscheibe
Porte-outil complet, mais sans jeu de couteaux et sans rondelle de centrage
Holder complete without insert and without guide bushing

Spannfutter | Mandrin | Chuck

	Bezeichnung Désignation Description	Halter Porte-outil Holder	Dimension
	ME SF 1 MK	ME H 1 MK	
	ME SF 1 ZL	ME H 1 ZL	
	ME SF 2 MK	ME H 2 MK	
	ME SF 2 ZL	ME H 2 ZL	
	ME SF 3 MK	ME H 3 MK	

Messerhalter | Porte-outil | Insert holder

	Bezeichnung Désignation Description	Halter Porte-outil Holder	Dimension
	ME MH 2 MK	ME H 2 MK	
	ME MH 2 ZL	ME H 2 ZL	
	ME MH 3 MK	ME H 3 MK	

Druckscheibe | Rondelle de butée | Thrust washer

	Bezeichnung Désignation Description	Halter Porte-outil Holder	Dimension
	ME DS 1 MK	ME H 1 MK	
	ME DS 1 ZL	ME H 1 ZL	
	ME DS 2 MK	ME H 2 MK	
	ME DS 2 ZL	ME H 2 ZL	
	ME DS 3 MK	ME H 3 MK	

Verdrehsicherung bombiert | Vis de sécurité | Crowned twisting locking device

	Bezeichnung Désignation Description	Halter Porte-outil Holder	Dimension
	ME VS 1 MK	ME H 1 MK	
	ME VS 1 ZL	ME H 1 ZL	
	ME VS 2 MK	ME H 2 MK	M5x5
	ME VS 2 ZL	ME H 2 ZL	M5x5
	ME VS 3 MK	ME H 3 MK	M6x6

Gewindestift | Vis sans tête | Adjusting screw

	Bezeichnung Désignation Description	Halter Porte-outil Holder	Dimension
	ME GS 2 MK	ME H 2 MK	M5x5
	ME GS 2 ZL	ME H 2 ZL	M5x5
	ME GS 3 MK	ME H 3 MK	M6x6

Einstellschraube | Vis d'ajustage | Set screw

	Bezeichnung Désignation Description	Halter Porte-outil Holder	Dimension
	ME ES 2 MK	ME H 2 MK	M5x8
	ME ES 2 ZL	ME H 2 ZL	M5x8
	ME ES 3 MK	ME H 3 MK	M6x12

Zentrierscheibe | Rondelle de centrage | Guide ring

	Bezeichnung Désignation Description	Halter Porte-outil Holder	Dimension
	ME ZS 1 D015	ME H 1 …	Ø 1.5
	ME ZS 1 D020	ME H 1 …	Ø 2.0
	ME ZS 1 D025	ME H 1 …	Ø 2.5
	ME ZS 1 D030	ME H 1 …	Ø 3.0
	ME ZS 1 D035	ME H 1 …	Ø 3.5
	ME ZS 1 D040	ME H 1 …	Ø 4.0
	ME ZS 1 D045	ME H 1 …	Ø 4.5
	ME ZS 1 D050	ME H 1 …	Ø 5.0
	ME ZS 1 D055	ME H 1 …	Ø 5.5
	ME ZS 1 D060	ME H 1 …	Ø 6.0
	ME ZS 1 D065	ME H 1 …	Ø 6.5
	ME ZS 1 D070	ME H 1 …	Ø 7.0
	ME ZS 1 D075	ME H 1 …	Ø 7.5
	ME ZS 1 D080	ME H 1 …	Ø 8.0
	ME ZS 1 D085	ME H 1 …	Ø 8.5
	ME ZS 1 D090	ME H 1 …	Ø 9.0
	ME ZS 1 D095	ME H 1 …	Ø 9.5
	ME ZS 1 D100	ME H 1 …	Ø 10.0
	ME ZS 2 D100	ME H 2 …	Ø 10.0
	ME ZS 2 D110	ME H 2 …	Ø 11.0
	ME ZS 2 D120	ME H 2 …	Ø 12.0
	ME ZS 2 D130	ME H 2 …	Ø 13.0
	ME ZS 2 D140	ME H 2 …	Ø 14.0
	ME ZS 2 D150	ME H 2 …	Ø 15.0
	ME ZS 2 D160	ME H 2 …	Ø 16.0
	ME ZS 2 D170	ME H 2 …	Ø 17.0
	ME ZS 2 D180	ME H 2 …	Ø 18.0
	ME ZS 2 D190	ME H 2 …	Ø 19.0
	ME ZS 2 D200	ME H 2 …	Ø 20.0
	ME ZS 3 D200	ME H 2 MK	Ø 20.0
	ME ZS 3 D210	ME H 2 MK	Ø 21.0
	ME ZS 3 D220	ME H 2 MK	Ø 22.0
	ME ZS 3 D230	ME H 2 MK	Ø 23.0
	ME ZS 3 D240	ME H 2 MK	Ø 24.0
	ME ZS 3 D250	ME H 2 MK	Ø 25.0
	ME ZS 3 D260	ME H 2 MK	Ø 26.0
	ME ZS 3 D270	ME H 2 MK	Ø 27.0
	ME ZS 3 D280	ME H 2 MK	Ø 28.0
	ME ZS 3 D290	ME H 2 MK	Ø 29.0
	ME ZS 3 D300	ME H 2 MK	Ø 30.0

	Werkstoffe | Matières | Materials			
	Stahl unlegiert Acier non allié Steel unalloyed	Stahl niedriglegiert Acier faibl. allié Steel low alloyed	Stahl hochlegiert Acier fortem. allié Steel high alloyed	Titan Titane Titanium
Härte (HB) Dureté (HB) Hardness value (HB)	125–300	180–250	200–350	–
Kategorie Catégrie Category	I	II	III	IV

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm **Avances (f) en mm/tr et profondeurs de passes (ap) en mm** **Feed (f) in mm/rev and depths of cut (ap) in mm**

HSS	–	–	–	–
f	0.02–0.05	0.02–0.05	0.02–0.06	0.01–0.03
ap	–	–	–	–
HSS	–	–	–	–
f	0.02–0.08	0.02–0.08	0.02–0.08	0.01–0.04
ap	–	–	–	–
HSS	–	–	–	–
f	0.03–0.10	0.02–0.10	0.2–0.08	0.01–0.06
ap	–	–	–	–

Schnittgeschwindigkeiten (v_c) in m/min **Vitesses de coupe (v_c) en m/min** **Cutting speed (v_c) in m/min**

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20	–	50–120	–	–	40–90	–	–	30–70	–	–	20–60	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	25–30	–	–	20–25	–	–	15–20	–	–	15–20	–
HSS SX	–	35–40	–	–	25–30	–	–	20–25	–	–	20–30	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

	Werkstoffe | Matières | Materials			
	Rostfreier Stahl Acier inoxydable Stainless steel	Rostfreier Stahl Acier inoxydable Stainless steel	Aluminium Aluminium Aluminium	Messing Laiton Brass
Härte (HB) Dureté (HB) Hardness value (HB)	180–220	220–330	60–130	–
Kategorie Catégrie Category	V	VI	VII	VIII

Vorschübe (f) in mm/U und Schnitttiefen (ap) in mm **Avances (f) en mm/tr et profondeurs de passes (ap) en mm** **Feed (f) in mm/rev and depths of cut (ap) in mm**

HSS	–	–	–	–
f	0.01–0.04	0.01–0.04	0.02–0.10	0.03–0.10
ap	–	–	–	–
HSS	–	–	–	–
f	0.01–0.05	0.01–0.05	0.05–0.10	0.03–0.10
ap	–	–	–	–
HSS	–	–	–	–
f	0.02–0.10	0.02–0.10	0.05–0.20	0.05–0.20
ap	–	–	–	–

Schnittgeschwindigkeiten (v_c) in m/min **Vitesses de coupe (v_c) en m/min** **Cutting speed (v_c) in m/min**

Bearbeitung Usinage Machining method	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼	▼	▼▼	▼▼▼
Schneidstoff Hartmetall Matériaux de coupe carbure Cutting material carbide												
UHM 10	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20	–	25–70	–	–	15–40	–	–	50–120	–	–	50–120	–
UHM 20 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 RZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 20 HZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 SX	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UHM 30 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Cermet Matériaux de coupe Cermet Cutting material Cermet												
UCM 10	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 MZ	–	–	–	–	–	–	–	–	–	–	–	–
UCM 10 HX	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff HSS Matériaux de coupe acier rapide Cutting material High speed steel												
HSS	–	10–18	–	–	5–10	–	–	30–60	–	–	40–80	–
HSS SX	–	15–20	–	–	7–10	–	–	40–80	–	–	50–90	–
HSS MZ	–	–	–	–	–	–	–	–	–	–	–	–
Schneidstoff Diamant Matériaux de coupe Diamant Cutting material Diamond												
PKD/PCD	–	–	–	–	–	–	–	–	–	–	–	–

Multidec®-Backtools ist ein Produkteprogramm für die Rückseitenbearbeitung bei Langdrehautomaten mit Gegenspindel. Somit ist eine komplette Bearbeitung in einem Arbeitsgang möglich.
Dieses System zeichnet sich durch seine Stabilität, Modularität und einzigartig durch seine einfache Feineinstellung der Spitzenhöhe aus.

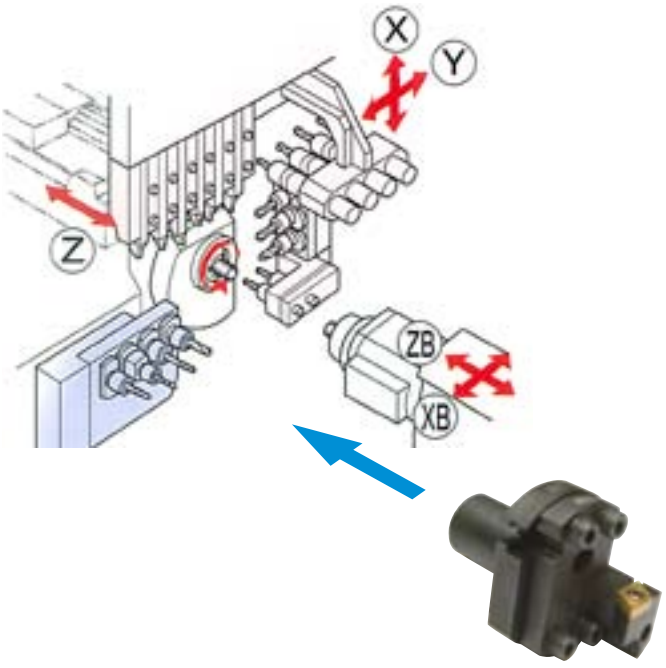
La ligne Multidec®-Backtools est destinée à l'usinage des pièces de décolletage, en contre broche. Un usinage complet de la pièce est tout à fait réalisable grâce au système Backtools.
Cet outillage se distingue par sa modularité, sa stabilité et par son réglage unique et précis du centrage de l'outil.

Multidec®-Backtools is a turning program which will be utilized for machining with counter spindle on automatic lathes. This tool makes it possible to machine a part completely within a single operation.
The special tool distinguishes by its stability, modularity and unique fixing system. Center height adjustment is made simple by employing the use of a simple eccentric adjustment screw.

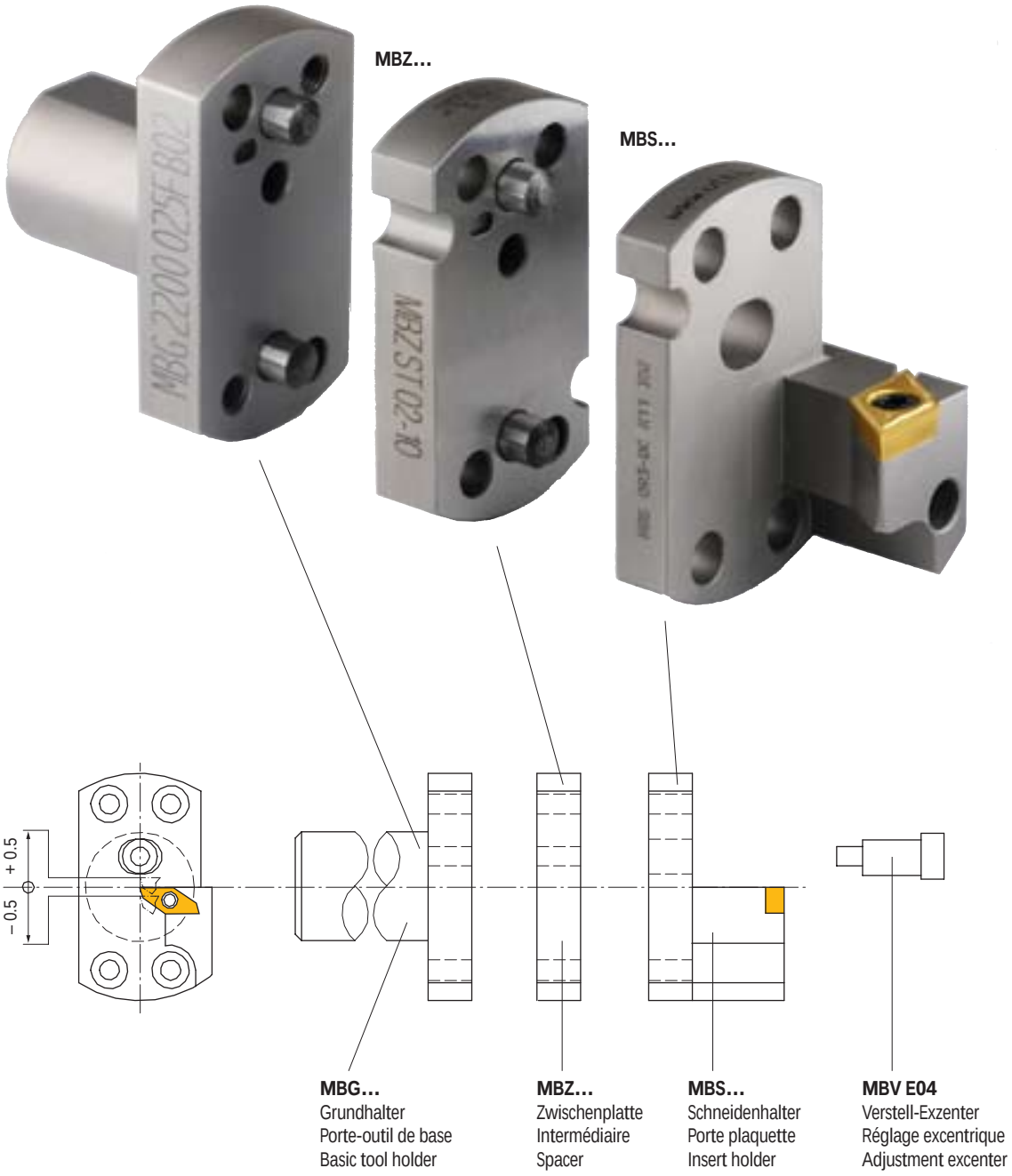
Vorteile
- Komplette Bearbeitung in einem Arbeitsgang möglich
- Hohe Stabilität
- Modularer Aufbau
  - Grundhalter
  - Zwischenplatte
  - Schneidenhalter
- Exakte und komfortable Feineinstellung der Spitzenhöhe mittels Exzenterschraube (± 0.5 mm)
- Auch mit Innenkühlung erhältlich
- Grundhalter für alle gängigen Maschinen

Avantages
- Sortie pièce de la machine, entièrement terminée.
- Grande stabilité
- Montage modulaire
  - Embase
  - Entretoise
  - Porte plaquette
- Grande facilité de réglage fin du centrage de l'arête de coupe (± 0.5 mm)
- Disponible également avec la lubrification centrale intégrée
- Embase disponible pour toutes les marques de machines

Advantages
- Complete machining in a single operation is possible
- High stability
- Modular design
  - Basic tool holder
  - Spacer
  - Insert holder
- Exact and comfortable adjustment of height of center by excenter screw (± 0.5 mm)
- Internal cooling possible
- Basic tool holder for common machines



MBG...



MBZ...

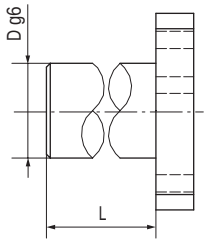
MBS...

MBG...
Grundhalter
Porte-outil de base
Basic tool holder

MBZ...
Zwischenplatte
Intermédiaire
Spacer

MBS...
Schneidenhalter
Porte plaquette
Insert holder

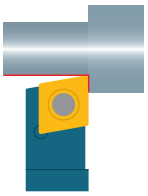
MBV E04
Verstell-Exzenter
Réglage excentrique
Adjustment excenter

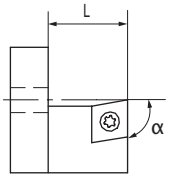


MBG...

Maschinen-Typ Types de machines Type of machine		Bezeichnung Désignation Designation		Form Forme Shape			Module Modules Units	
					D g6	L	MBZ	MBS
CITIZEN	C16, L20, M16	MBG 1905 060 B02	■		¾" (19.05)	60	MBZ ST 02- ...	MBS ... I02
	C32, L32, M32	MBG 2540 070 B02	■		1" (25.4)	70	MBZ ST 02- ...	MBS ... I02
	K16	MBG 2000 100 B02	■		20	100	MBZ ST 02- ...	MBS ... I02
Hanwha	SL12H	MBG 2200 040 B02	□		20	40	MBZ ST 02- ...	MBS ... I02
	STL32/35H und J	MBG 2500 060 B02	□		25	60	MBZ ST 02- ...	MBS ... I02
	SL26/35HPD	MBG 2800 006 B02	□		28	6	MBZ ST 02- ...	MBS ... I02
	XD20/32 H und J	MBG 3300 040 B02	■		33	40	MBZ ST 02- ...	MBS ... I02
	SL20/26/35HPII	MBG 3400 044 B02	□		34	44	MBZ ST 02- ...	MBS ... I02
Maier	ML12C, ML16C und D, ML20/26/32	MBG 3400 030 B04 IC	■		34	30	MBZ ST 02- ...	MBS ... I02
MANURHIN	Swing 7-20/7-26	MBG 2500 100 B02	■		25	100	MBZ ST 02- ...	MBS ... I02
STAR	SA16, SB16	MBG 2200 070 B02	■		22	70	MBZ ST 02- ...	MBS ... I02
	SR10J	MBG 1600 010 B05	■		16	10	MBZ ST 05- ...	MBS ... C05
	SR10J	MBG 2200 015 B06	■		22	15	MBZ ST 06- ...	MBS ... C06
	SR16, SR20	MBG 1600 021 B01	■		16	21	MBZ ST 02- ...	MBS ... I02
	SR16R/20R, ECAS12/20	MBG 2200 025 B02	■		22	25	MBZ ST 02- ...	MBS ... I02
	SR32, SR32J	MBG 2200 030 B03	■		22	30	MBZ ST 02- ...	MBS ... I02
	SR32J *	MBG 2200 025F B02	■		22	25	MBZ ST 02- ...	MBS ... I02
TORNOS	DECO (7, 10, 13, 20)	MBG 2000 100 B02	■		20	100	MBZ ST 02- ...	MBS ... I02
	DECO (7, 10, 13, 20)	MBG 2500 100 B02	■		25	100	MBZ ST 02- ...	MBS ... I02
TRAUB	TNL/C 12 TNL/C 12K	MBG 2800 078 B02	□		28	78	MBZ ST 02- ...	MBS ... I02

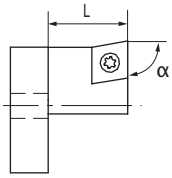
* Gültig ab Maschinennummer ...161
* Valable de no. de machine ...161
* Valid from machine number ...161





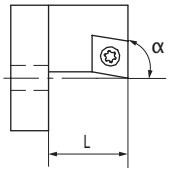
MBS...

Ausführung Exécution Execution			Bezeichnung Désignations Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 090-CC L 06 I02 ■	90°	20	CC.. 0602...	MBG ... B02	MBZ ST 02- ...
			MBS 090-CC L 09 I02 ■	90°	20	CC.. 09T3...	MBG ... B02	MBZ ST 02- ...
			MBS 093-CC L 09 I02 ■	93°	20	CC.. 09T3...	MBG ... B02	MBZ ST 02- ...



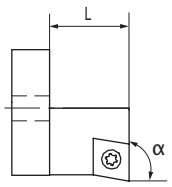
MBS...

Ausführung Exécution Execution			Bezeichnung Désignations Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 095-CC LA 09 I02 ■	95°	20	CC.. 09T3...	MBG ... B02	MBZ ST 02- ...



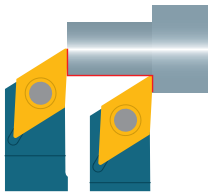
MBS...

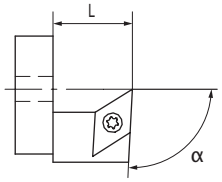
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 090-CC R 06 I02 ■	90°	20	CC.. 0602...	MBG ... B02	MBZ ST 02- ...
			MBS 090-CC R 09 I02 ■	90°	20	CC.. 09T3...	MBG ... B02	MBZ ST 02- ...
			MBS 093-CC R 09 I02 ■	93°	20	CC.. 09T3...	MBG ... B02	MBZ ST 02- ...



MBS...

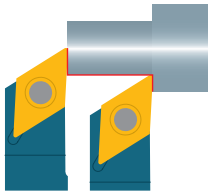
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 095-CC RA 09 I02 ■	95°	20	CC.. 09T3...	MBG ... B02	MBZ ST 02- ...

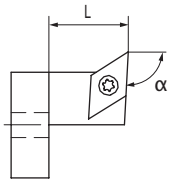




MBS...

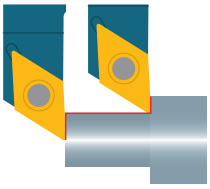
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 093-DC L 07 I02 ■ MBS 093-DC L 11 I02 ■	93° 93°	20 20	DC.. 0702... DC.. 11T3...	MBG ... B02 MBG ... B02	MBZ ST 02- ... MBZ ST 02- ...

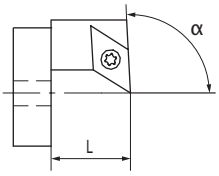




MBS...

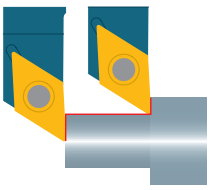
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 093-DC LA 11 I02 ■	93°	20	DC.. 11T3...	MBG ... B02	MBZ ST 02- ...

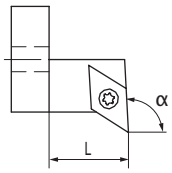




MBS…

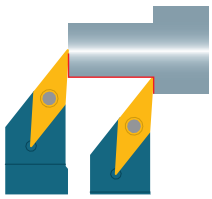
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 093-DC R 07 I02 ■ MBS 093-DC R 11 I02 ■	93° 93°	20 20	DC.. 0702… DC.. 11T3…	MBG … B02 MBG … B02	MBZ ST 02- … MBZ ST 02- …

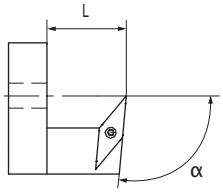




MBS…

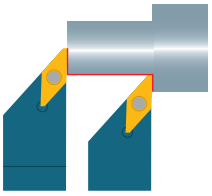
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 093-DC RA 11 I02 ■	93°	20	DC.. 11T3…	MBG … B02	MBZ ST 02- …

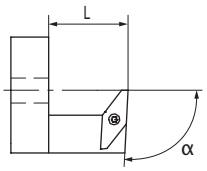




MBS...

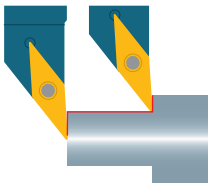
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 095-VC L 11 I02 ■ MBS 110-VC L 11 I02 ■	95° 110°	20 20	VC.. 1103… VC.. 1103…	MBG … B02 MBG … B02	MBZ ST 02- … MBZ ST 02- …

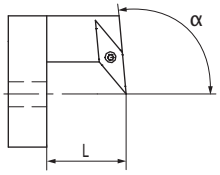




MBS...

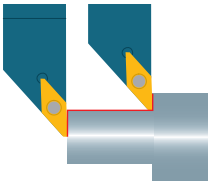
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 093-VP L 10 I02 ■	93°	20	VP..1003…	MBG … B02	MBZ ST 02- …

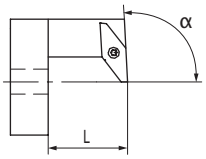




MBS...

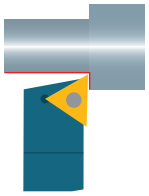
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 095-VC R 11 I02 ■ MBS 110-VC R 11 I02 ■	95° 110°	20 20	VC.. 1103... VC.. 1103...	MBG ... B02 MBG ... B02	MBZ ST 02- ... MBZ ST 02- ...

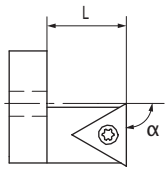




MBS...

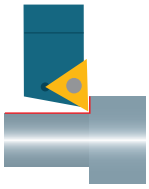
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 093-VP R 10 I02 ■	93°	20	VP..1003...	MBG ... B02	MBZ ST 02- ...

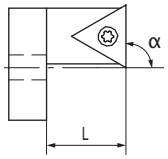




MBS...

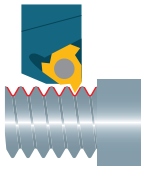
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 090-TC L 11 I02 ■	90°	20	TC.. 1102...	MBG ... B02	MBZ ST 02- ...

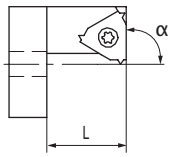




MBS…

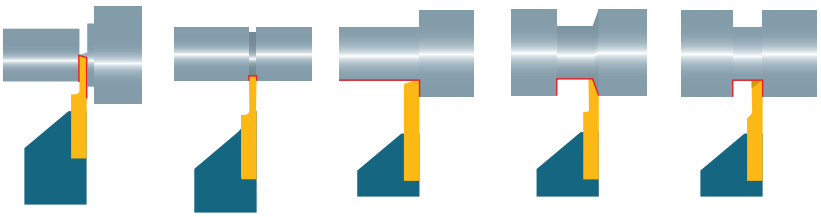
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 090-TC R 11 I02 ■	90°	20	TC.. 1102…	MBG … B02	MBZ ST 02- …

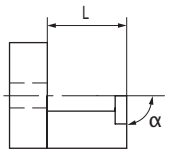




MBS…

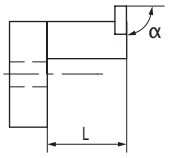
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 090-16 ER I02 ■	90°	20	16ER	MBG … B02	MBZ ST 02- …





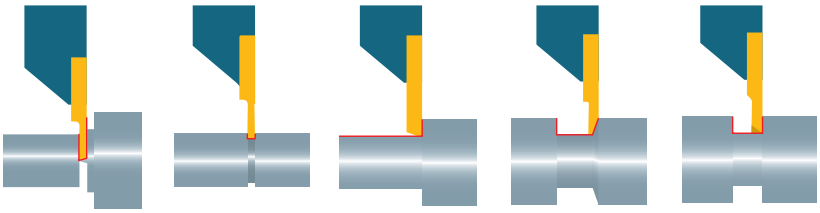
MBS...

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 090-Cut L 16 I02 ■	90°	21	16..	MBG ... B02	MBZ ST 02- ...

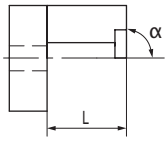


MBS...

Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 090-Cut LA 16 I02 ■	90°	21	16..	MBG ... B02	MBZ ST 02- ...

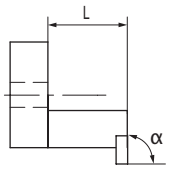


MBS...

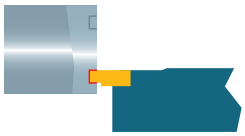


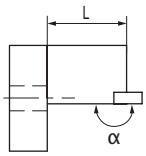
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 090-Cut R 16 I02 ■	90°	21	16..	MBG ... B02	MBZ ST 02- ...

MBS...



Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 090-Cut RA 16 I02 ■	90°	21	16..	MBG ... B02	MBZ ST 02- ...

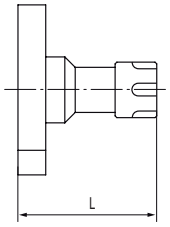




MBS...

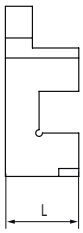
Ausführung Exécution Execution			Bezeichnung Désignation Designation	Winkel Angle Angle		Schneiden Plaquettes Inserts	Module Modules Units	
L	N	R		α	L		MBG	MBZ
			MBS 180-Cut 16 I02 ■	180°	21	16..	MBG ... B02	MBZ ST 02- ...

MBS...

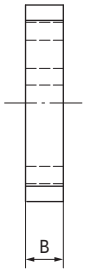


Ausführung Exécution Execution			Bezeichnung Désignation Designation		Typ Type Type	L		Module Modules Units	
L	N	R				L		MBG	MBZ
			MBS E11 043 C02	■	ER11	43		MBG ... B02	MBZ ST 02- ...
			MBS E11 043 C05	■	ER11	43		MBG ... B05	MBZ ST 05- ...
			MBS E11 043 C06	■	ER11	43		MBG ... B06	MBZ ST 06- ...
			MBS E16 043 C02	■	ER16	43		MBG ... B02	MBZ ST 02- ...
			MBS E16 043 C06	■	ER16	43		MBG ... B06	MBZ ST 06- ...
			MBS E20 043 C02	□	ER20	43		MBG ... B02	MBZ ST 02- ...

MBS...



Ausführung Exécution Execution			Bezeichnung Désignation Designation		Winkel Angle Angle	L	Halter-Typ Type de porte-outil Type of holder	Module Modules Units	
L	N	R			α	L		MBG	MBZ
			MBS 090 1212 T02	■	90°	22	12x12	MBG ... B02	MBZ ST 02- ...



MBZ...

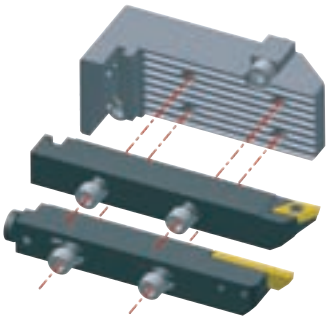
Bezeichnung Désignations Designation	Dicke Epaisseurs Thickness	Module Modules Units	
	B	MBG	MBS
MBZ ST 02-10 ■	10	MBG ... B02	MBS ... 02
MBZ ST 02-20 ■	20	MBG ... B02	MBS ... 02
MBZ ST 02-30 ■	30	MBG ... B02	MBS ... 02
MBZ ST 05-10 ■	10	MBG ... B05	MBS ... 05
MBZ ST 05-20 ■	20	MBG ... B05	MBS ... 05
MBZ ST 06-10 ■	10	MBG ... B06	MBS ... 06
MBZ ST 02-20 ■	20	MBG ... B06	MBS ... 06

Bezeichnung Désignation Designation	Beschreibung Description Description	Bemerkungen Remarques Remarks	Dimension	Schneiden Plaquettes Inserts
MBV E04	Verstell-Exzenter Réglage excentrique Adjustment excenter			
MSP A1010 T02	Einlagewinkel Equere compensatoire L-piece	für MBS 090 1212 T02 pour MBS 090 1212 T02 for MBS 090 1212 T02	10x10	MBS 090 1212 T02
MSP 25060 T08	Spannschraube Vis de serrage Clamping screw			CC06, DC07, TC11, VC11, VP10, 16..
MSP 35090 T15	Spannschraube Vis de serrage Clamping screw			CC09, DC11
MSP UNC 540120 T10	Spannschraube Vis de serrage Clamping screw			16ER
MSP UNC 540070 T10	Schraube für Unterlegplatte Vis de cale Shim screw			16ER
	Unterlegplatte Cale Anvil			16ER
MSP M516	Innensechskantschraube Pans creux Allen head screw	ohne Zwischenplatte sans intermédiaire without spacer	M5x16 DIN912	
MSP M525	Innensechskantschraube Pans creux Allen head screw	mit Zwischenplatte MBZ ST 02-10 avec intermédiaire MBZ ST 02-10 with spacer MBZ ST 02-10	M5x25 DIN912	
MSP M535	Innensechskantschraube Pans creux Allen head screw	mit Zwischenplatte MBZ ST 02-20 avec intermédiaire MBZ ST 02-20 with spacer MBZ ST 02-20	M5x35 DIN912	
MSP M545	Innensechskantschraube Pans creux Allen head screw	mit Zwischenplatte MBZ ST 02-30 avec intermédiaire MBZ ST 02-30 with spacer MBZ ST 02-30	M5x45 DIN912	
MSP US-5	Spannscheibe Rondelle élastique Elasic washer		M5/5.3/9.2/0.45	
MSP ZS612	Zylinderstift Goupille cylindrique Cylindrical pin	ohne Zwischenplatte sans intermédiaire without spacer	Ø6h6x12 DIN6325	
MSP ZS625	Zylinderstift Goupille cylindrique Cylindrical pin	mit Zwischenplatte MBZ ST 02-10 avec intermédiaire MBZ ST 02-10 with spacer MBZ ST 02-10	Ø6h6x25 DIN6325	
MSP ZS635	Zylinderstift Goupille cylindrique Cylindrical pin	mit Zwischenplatte MBZ ST 02-20 avec intermédiaire MBZ ST 02-20 with spacer MBZ ST 02-20	Ø6h6x35 DIN6325	
MSP ZS645	Zylinderstift Goupille cylindrique Cylindrical pin	mit Zwischenplatte MBZ ST 02-30 avec intermédiaire MBZ ST 02-30 with spacer MBZ ST 02-30	Ø6h6x45 DIN6325	

Multidec®-Moduline ist ein vielseitiges, individuelles Werkzeugsystem für Langdrehautomaten verschiedener Maschinenhersteller.
Die längsverzahnte Auflage gewährleistet eine hervorragende Steifigkeit und eine präzise Positionierung. Die Längspositionierung wird durch einen (festen oder verstellbaren) Anschlag bestimmt, dessen Position über eine gefederte Kugel gewährleistet ist.
Die Originalplatte kann durch eine spezifische Moduline-Werkzeugplatte ersetzt werden. Dadurch entsteht ein wesentlicher Gewinn in Bezug auf die Zuverlässigkeit und Schnelligkeit beim Werkzeugwechsel.

Multidec®-Moduline est un système d'outillage modulaire avec une large disponibilité, adaptable aux différentes machines du marché.
La base d'appui à dentures longitudinales assure une excellente rigidité, ainsi qu'un positionnement précis. Le positionnement en longueur est déterminée par une butée (fixe où réglable) dont l'appui est garanti par la pression d'un élément bille-ressort.
Une plaque porte-outil Moduline spécifique peut remplacer la plaque originale. Le gain au niveau de la fiabilité et de la rapidité de changement des outils est alors très important.

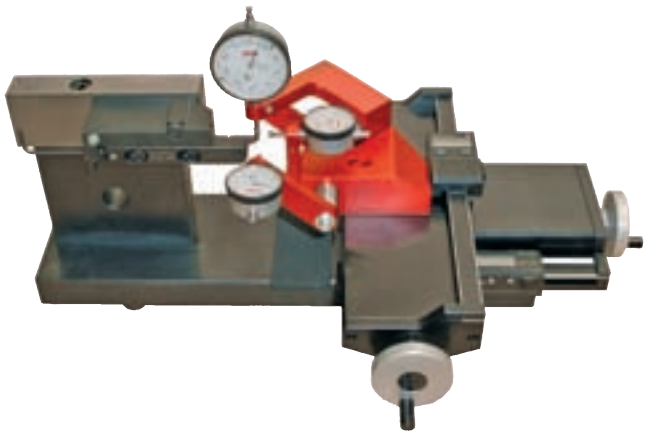
Multidec®-Moduline is a modular tooling system with an optimum availability of options adapted to meet the different machines requirements on the market.
Grooves along the length of its base ensure excellent rigidity and precise positioning. Longitudinal positioning is fixed by a peg (fixed or adjustable) which is held in place under pressure by a sprung bearing.
A specific Moduline tool holder plate can replace the original one. This way, gains in reliability and tool changeover speed are very high.



Besonderheiten & Vorteile
- höhere Anzahl Werkzeuge steigern die Produktivität signifikant
- einfacher und schneller Werkzeugwechsel, voreinstellbar auf feste oder einstellbare Länge
- stabiles und zuverlässiges Werkzeug-Spannsystem durch Längsverzahnung und grosser Halter-Querschnitt
- vielseitiges Werkzeugsystem, sehr einfacher Einsatz, Kombination mit Standard Werkzeugen und Kühlmittel-Zufuhr möglich
- grosse Auswahl von Haltern für ISO, TOP und CUT Wendeplatten
- kompatibel zu Applitec

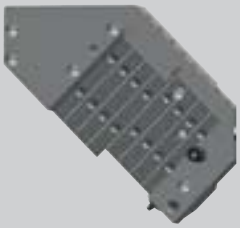
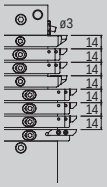
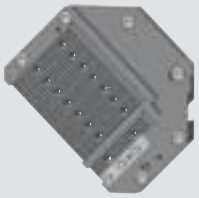
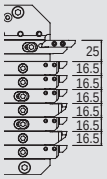
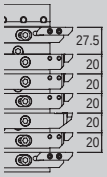
Particularités et avantages
- plus d'outils, pour une augmentation de la productivité
- changement d'outil simple et rapide, possibilité de préréglage et de réglage de la longueur des outils
- système de fixation des porte-plaquettes fiable et rigide, avec rainures longitudinales et section d'outil importante
- système d'outils modulaire, utilisation simple, combinaison possible avec des outils standards ainsi que des modules d'arrosage
- grand choix d'outils pour plaquettes ISO, TOP et CUT
- compatible avec Applitec

Specialities & Advantage
- more inserts increase productivity considerably
- easy and quick tool replacement, with presetting on fixed or adjustable length
- stable and reliable tool location system with longitudinal serrations and large square shanks
- versatile tooling system, easy to use, possible combination with standard tools and coolant supply devices
- wide range of holders for ISO, TOP and CUT inserts
- compatible to Applitec

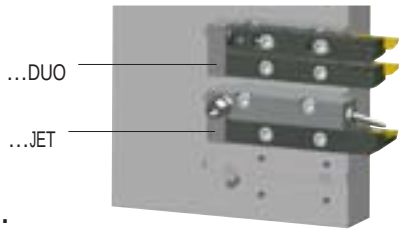


CITIZEN

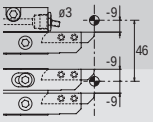
UML… CITIZEN… …JET …FIX

Maschinen-Typ Types de machines Type of machine CITIZEN	Werkzeugplatte (ohne Halter) Plaque porte-outils (sans porte-outil) Tool holder plate (without holder)		Halter (max.) Porte-outil (max.) Holder (max.) 📄278…	Zubehör Accessoires Accessoires 📄289…	
		Bezeichnung Désignation Designation		Spannelement Module de serrage Clamping unit	Kühlmittelanschluss Raccord d'arrosage Coolant connection
C12 C16		UML12 CITIZEN C16 	UML12… (8)	UML12 FIX 12/14	UML12 JET 5/16
K12 K16 (type VII)		UML16 CITIZEN K16 	UML16… (8)	UML16 FIX 16/16,5	UML12 JET 7/16
L16 (type VII/VIII) L20 (type VII/VIII)		UML16 CITIZEN L20 	UML16… (7)	UML16 FIX 16/20	UML16 JET 7/16

MANURHIN

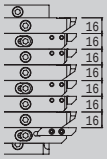
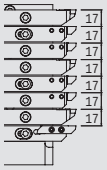
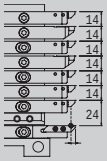
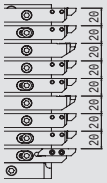
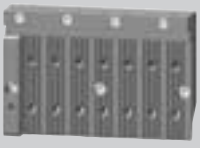
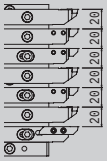


UML… MANURHIN…

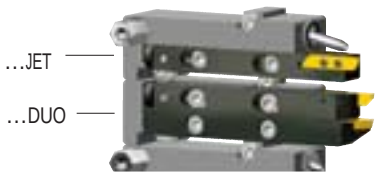
Maschinen-Typ Types de machines Type of machine MANURHIN	Grundhalter (ohne Halter) Bases porte-outils (sans porte-outil) Tool holder bases (without holder) Halter mit Kühlmittel-Zufuhr Porte-outil avec arrosage Holder with coolant supply	Doppel-Grundhalter Base porte-outil double Twin tool holder base	Bezeichnung Désignation Designation	Halter (max.) Porte-outil (max.) Holder (max.) 📄278…	Kühlmittelzubehör Accessoires d'arrosage Coolant accessoires 📄289…
KMX 426 KMX 526 KMX 626 SWING 20-26			UML16 KMX26 JET 	UML12… (1)	
			UML16 KMX26 DUO	UML12… (2)	UML 12 JET 5/16

STAR

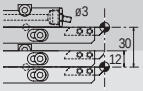
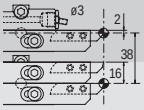
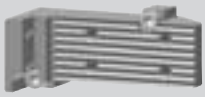
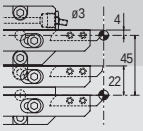
UML… STAR…

Maschinen-Typ Types de machines Type of machine STAR	Werkzeugplatte (ohne Halter) Plaque porte-outils (sans porte-outil) Tool holder plate (without holder)		Halter (max.) Porte-outil (max.) Holder (max.) 📄278…	Zubehör Accessoires Accessoires 📄289…	
		Bezeichnung Désignation Designation		Spannelement Module de serrage Clamping unit	Kühlmittelanschluss Raccord d'arrosage Coolant connection
SA-12 SA-16 SA-16R		UML16 STAR SA16 	UML16… (8)	UML16 FIX 16/16	UML16 JET 7/16
SB-16		UML16 STAR SB16 	UML16… (8)	UML16 FIX 16/17	UML16 JET 7/16
SR-10J		UML12 STAR SR10J 	UML12… (8)	UML12 FIX 12/14	UML12 JET 5/16
SR-16R SR-20R SR-20RII		UML16 STAR SR20R 	UML16… (9)	UML16 FIX 16/20	UML16 JET 7/16
SV12-20		UML16 STAR SV12-20 	UML16… (7)	UML16 FIX 16/20	UML16 JET 7/16

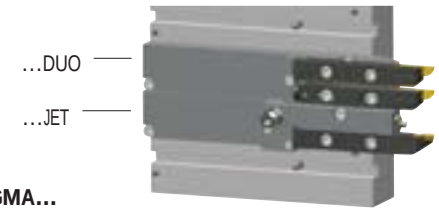
TORNOS



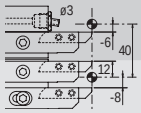
UML… DECO…

Maschinen-Typ Types de machines Type of machine TORNOS	Grundhalter (ohne Halter) Bases porte-outils (sans porte-outil) Tool holder bases (without holder) Halter mit Kühlmittel-Zufuhr Porte-outil avec arrosage Holder with coolant supply	Doppel-Grundhalter Base porte-outil double Twin tool holder base	Bezeichnung Désignation Designation	Halter (max.) Porte-outil (max.) Holder (max.) 📄278…	Kühlmittelzubehör Accessoires d'arrosage Coolant accessoires 📄289…
DECO 7 DECO 10			UML12 DECO10 JET 	UML12… (1)	
			UML12 DECO10 DUO	UML12… (2)	UML12 JET 5/16
DECO 13			UML16 DECO13 JET 	UML16… (1)	
			UML16 DECO13 DUO	UML16… (2)	UML16 JET 7/16
DECO 20 DECO 26			UML16 DECO20 JET 	UML16… (1)	
			UML16 DECO20 DUO	UML16… (2)	UML16 JET 7/16

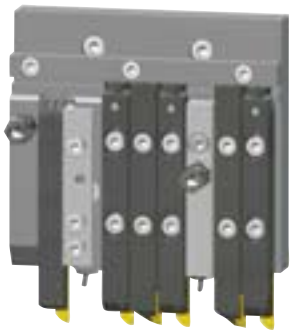
TORNOS



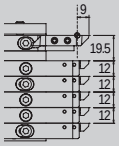
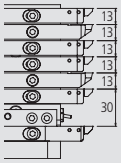
UML… DECO/SIGMA…

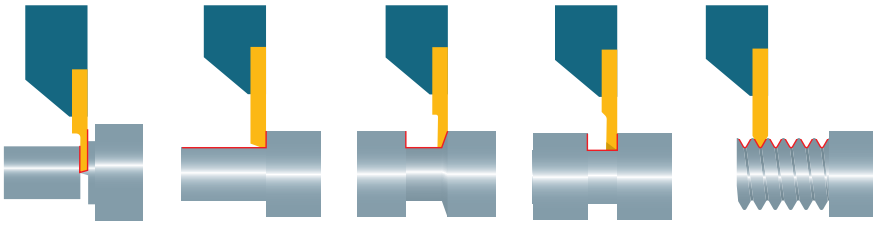
Maschinen-Typ Types de machines Type of machine TORNOS	Grundhalter (ohne Halter) Bases porte-outils (sans porte-outil) Tool holder bases (without holder) Halter mit Kühlmittel-Zufuhr Porte-outil avec arrosage Holder with coolant supply	Doppel-Grundhalter Base porte-outil double Twin tool holder base	Bezeichnung Désignation Designation	Halter (max.) Porte-outil (max.) Holder (max.) 📄278…	Kühlmittelzubehör Accessoires d'arrosage Coolant accessoires 📄289…
DECO SIGMA 20			UML16 S20 JET	UML16… (1)	
			 UML16 S20 DUO	UML16… (2)	UML16 JET 7/16

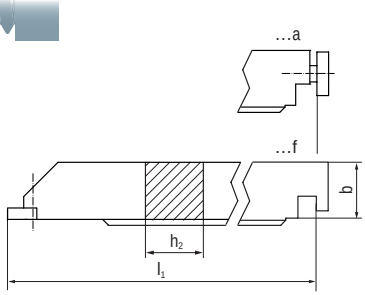
TORNOS



UML… MICRO…

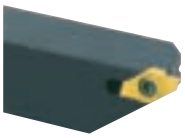
Maschinen-Typ Types de machines Type of machine	Werkzeugplatte (ohne Halter) Plaque porte-outils (sans porte-outil) Tool holder plate (without holder)		Halter (max.) Porte-outil (max.) Holder (max.) 📄278…	Zubehör Accessoires Accessoires 📄289…	
		Bezeichnung Désignation Designation		Spannelement Module de serrage Clamping unit	Kühlmittelanschluss Raccord d'arrosage Coolant connection
TORNOS					
MICRO 7		UML12 MICRO 7 	UML12… (6)		UML12 JET 5/16
MICRO 8		UML12 MICRO 8 	UML12… (7)		UML12 JET 7/16

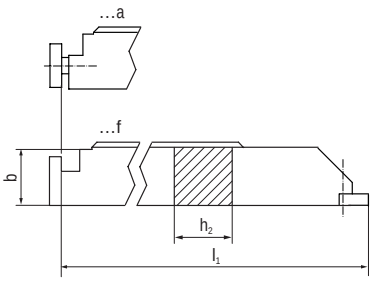




UML… 1600…

Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R		b	h_2	l_1	v	w	h-Max.	Ø D-Min.		31…
			UML12a CUT 1600 R ■	15	12	110						16..
			UML12f CUT 1600 R ■	15	12	110						16..
			UML16a CUT 1600 R ■	16	16	118						16..
			UML16f CUT 1600 R ■	16	16	118						16..

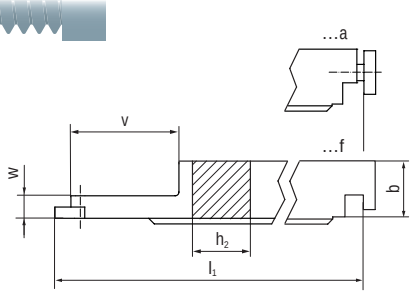




UML… 1600… V

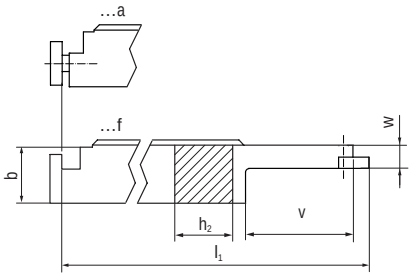
Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R		b	h_2	l_1	v	w	h-Max.	Ø D-Min.		31…
			UML12a CUT 1600 L V ■	15	12	110						16..
			UML12f CUT 1600 L V ■	15	12	110						16..
			UML16a CUT 1600 L V ■	16	16	118						16..
			UML16f CUT 1600 L V ■	16	16	118						16..

■ Standard
□ Semi Standard



UML… 1600… A

Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R		b	h_2	l_1	v	w	h-Max.	Ø D-Min.		31…
			UML12a CUT 1600 RA ■	15	12	110	34	6				16..
			UML12f CUT 1600 RA ■	15	12	110	34	6				16..
			UML16a CUT 1600 RA ■	16	16	118	34	6				16..
			UML16f CUT 1600 RA ■	16	16	118	34	6				16..



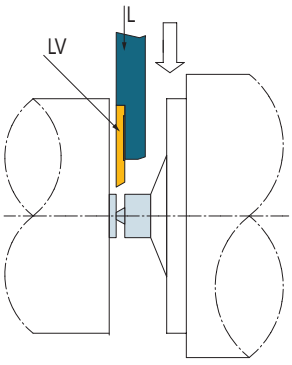
UML… 1600… A V

Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R		b	h_2	l_1	v	w	h-Max.	Ø D-Min.		31…
			UML12a CUT 1600 LA V ■	15	12	110	34	6				16..
			UML12f CUT 1600 LA V ■	15	12	110	34	6				16..
			UML16a CUT 1600 LA V ■	16	16	118	34	6				16..
			UML16f CUT 1600 LA V ■	16	16	118	34	6				16..

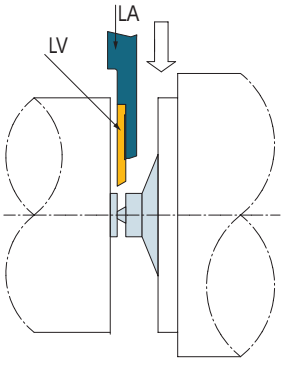
Bearbeitungsmöglichkeiten
Durch eine andere Kombination von Halter und Wendeschneidplatte kann die Bearbeitung eines Werkstückes auch in schwierigen Bearbeitungssituationen fortgesetzt werden.

Variante d'usinage
Il est possible de conserver la géométrie définie, tout en changeant de côté la plaquette, pour optimiser la coupe dans une situation difficile.

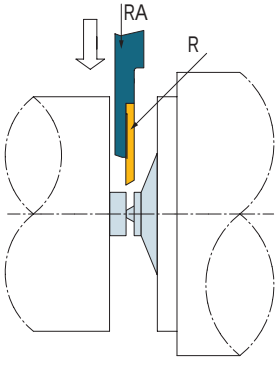
Machining methods
A different combination of holder and insert allows cutting even in difficult situations.



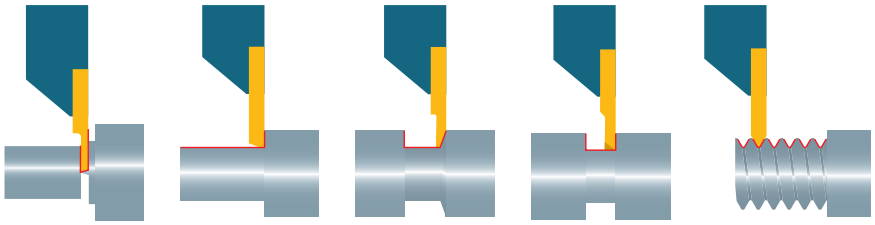
Abstechen mit Gegenspindel, kurze Bauteile
Tronçonnage de courtes pièces avec contre broche
Cut off with opposing spindle of short pieces

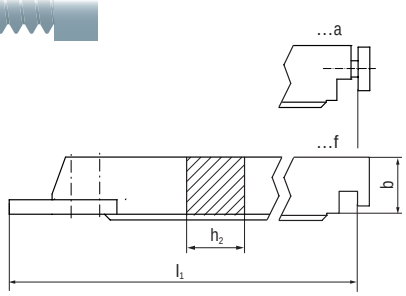


Abstechen mit Gegenspindel, kurze Bauteile
Tronçonnage de courtes pièces avec contre broche
Cut off with opposing spindle of short pieces



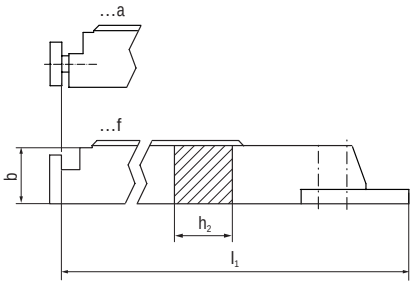
Abstechen mit Gegenspindel, lange Bauteile
Tronçonnage de longues pièces avec contre broche
Cut off with opposing spindle of long pieces





UML... 3000...

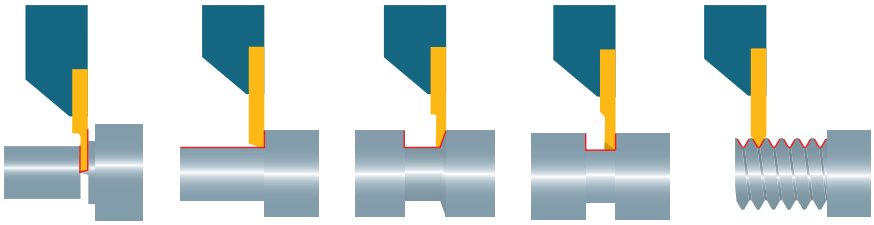
Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R		b	h_2	l_1	v	w	h-Max.	Ø D-Min.		31...
			UML12a CUT 3000 R ■	15	12	110						30..
			UML12f CUT 3000 R ■	15	12	110						30..
			UML16a CUT 3000 R ■	16	16	118						30..
			UML16f CUT 3000 R ■	16	16	118						30..

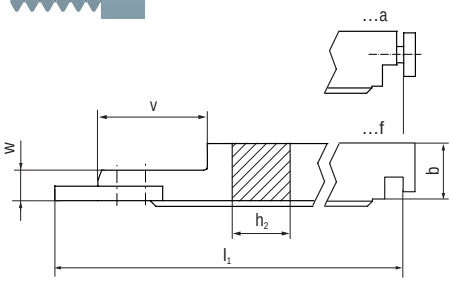


UML... 3000... V

Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R		b	h_2	l_1	v	w	h-Max.	Ø D-Min.		31...
			UML12a CUT 3000 L V ■	15	12	110						30..
			UML12f CUT 3000 L V ■	15	12	110						30..
			UML16a CUT 3000 L V ■	16	16	118						30..
			UML16f CUT 3000 L V ■	16	16	118						30..

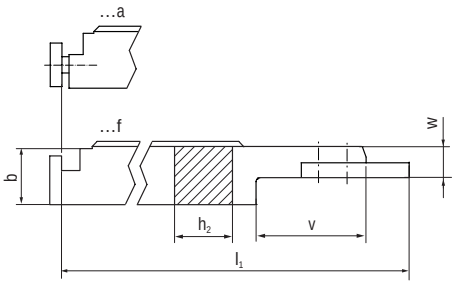
■ Standard
□ Semi Standard





UML… 3000… A

Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R		b	h_2	l_1	v	w	h-Max.	Ø D-Min.		31…
			UML12a CUT 3000 RA ■	15	12	110	28	8				30..
			UML12f CUT 3000 RA ■	15	12	110	28	8				30..
			UML16a CUT 3000 RA ■	16	16	118	28	8				30..
			UML16f CUT 3000 RA ■	16	16	118	28	8				30..



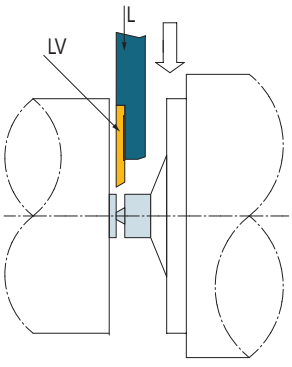
UML… 3000… A V

Ausführung Exécution Execution			Bezeichnung Désignation Designation									Schneiden Plaquettes Inserts
L	N	R		b	h_2	l_1	v	w	h-Max.	Ø D-Min.		31…
			UML12a CUT 3000 LA V ■	15	12	110	28	8				30..
			UML12f CUT 3000 LA V ■	15	12	110	28	8				30..
			UML16a CUT 3000 LA V ■	16	16	118	28	8				30..
			UML16f CUT 3000 LA V ■	16	16	118	28	8				30..

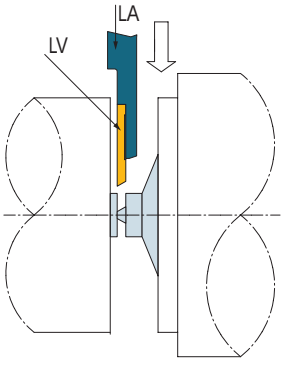
Bearbeitungsmöglichkeiten
Durch eine andere Kombination von Halter und Wendeschneidplatte kann die Bearbeitung eines Werkstückes auch in schwierigen Bearbeitungssituationen fortgesetzt werden.

Variante d'usinage
Il est possible de conserver la géométrie définie, tout en changeant de côté la plaquette, pour optimiser la coupe dans une situation difficile.

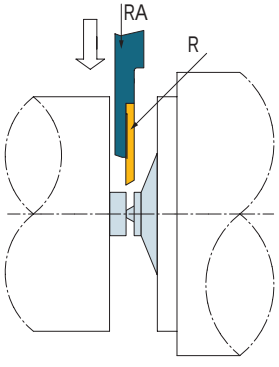
Machining methods
A different combination of holder and insert allows cutting even in difficult situations.



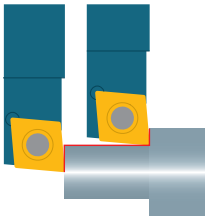
Abstechen mit Gegenspindel, kurze Bauteile
Tronçonnage de courtes pièces avec contre broche
Cut off with opposing spindle of short pieces

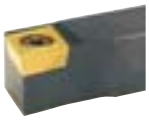


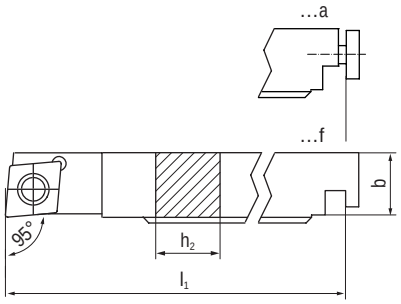
Abstechen mit Gegenspindel, kurze Bauteile
Tronçonnage de courtes pièces avec contre broche
Cut off with opposing spindle of short pieces



Abstechen mit Gegenspindel, lange Bauteile
Tronçonnage de longues pièces avec contre broche
Cut off with opposing spindle of long pieces



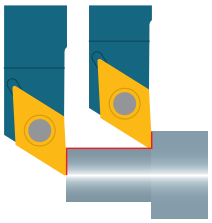


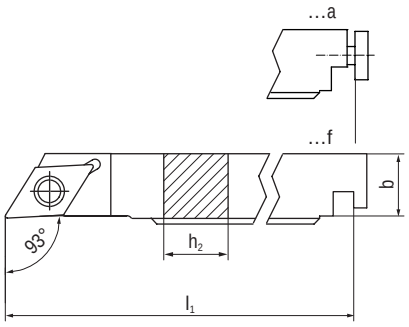


UML... SCLC... (95°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77...
			UML12a SCLCR 09 ■		12	15	110							CC..09T3..
			UML12f SCLCR 09 ■		12	15	110							CC..09T3..
			UML16a SCLCR 09 ■		16	16	118							CC..09T3..
			UML16f SCLCR 09 ■		16	16	118							CC..09T3..

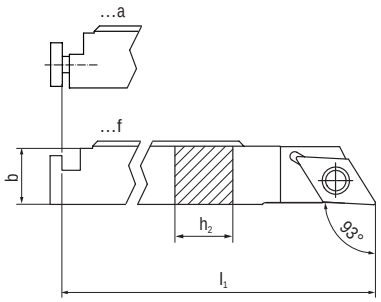
■ Standard
□ Semi Standard





UML... SDJC... (93°)

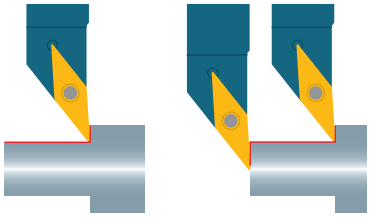
Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77...
			UML12a SDJCR 07 ■		12	15	110							DC..0702..
			UML12f SDJCR 07 ■		12	15	110							DC..0702..
			UML12a SDJCR 11 ■		12	15	110							DC..11T3..
			UML12f SDJCR 11 ■		12	15	110							DC..11T3..
			UML16a SDJCR 07 ■		16	16	118							DC..0702..
			UML16f SDJCR 07 ■		16	16	118							DC..0702..
			UML16a SDJCR 11 ■		16	16	118							DC..11T3..
			UML16f SDJCR 11 ■		16	16	118							DC..11T3..

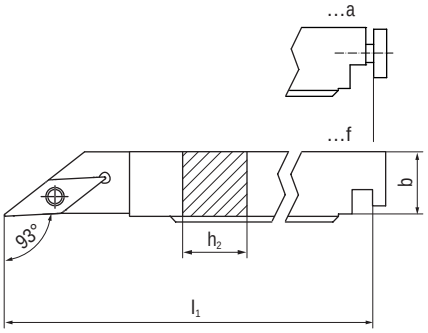


UML... SDJC... V (93°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77...
			UML12a SDJCL 11 V ■		12	15	110							DC..11T3..
			UML16a SDJCL 11 V ■		16	16	118							DC..11T3..

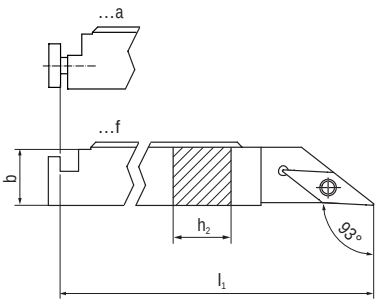
■ Standard
□ Semi Standard





UML… SVJC… (93°)

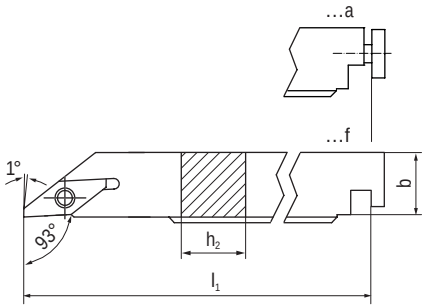
Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77…
			UML12a SVJCR 11 ■		12	15	110							VC..1103..
			UML12f SVJCR 11 ■		12	15	110							VC..1103..
			UML16a SVJCR 11 ■		16	16	118							VC..1103..
			UML16f SVJCR 11 ■		16	16	118							VC..1103..



UML… SVJC… V (93°)

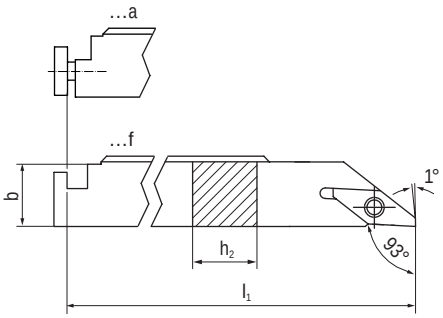
Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77…
			UML12a SVJCL 11 V ■		12	15	110							VC..1103..
			UML16a SVJCL 11 V ■		16	16	118							VC..1103..

■ Standard
□ Semi Standard



UML... SVJP... (93°)

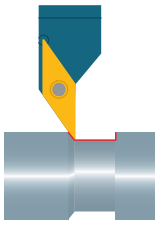
Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77...
			UML12a SVJPR 10 ■		12	15	110							VP..1003..
			UML12f SVJPR 10 ■		12	15	110							VP..1003..
			UML16a SVJPR 10 ■		16	16	118							VP..1003..
			UML16f SVJPR 10 ■		16	16	118							VP..1003..

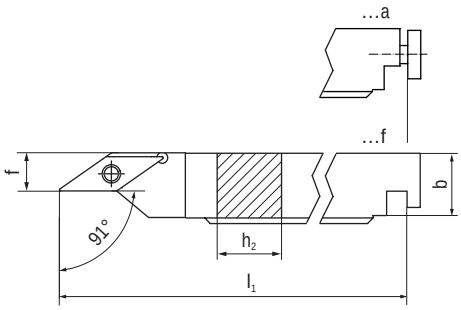


UML... SVJP... V (93°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77...
			UML12a SVJPL 10 V ■		12	15	110							VP..1003..
			UML12f SVJPL 10 V ■		12	15	110							VP..1003..
			UML16a SVJPL 10 V ■		16	16	118							VP..1003..
			UML16f SVJPL 10 V ■		16	16	118							VP..1003..

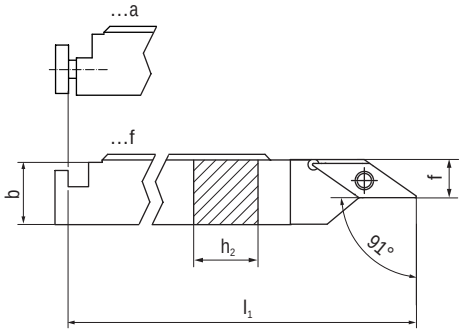
■ Standard
□ Semi Standard





UML… SVXC… (91°)

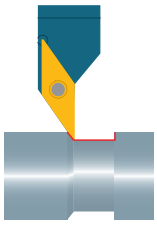
Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77…
			UML12a SVXCR 11 ■		12	15	110				5.4			VC..1103..
			UML12f SVXCR 11 ■		12	15	110				5.4			VC..1103..
			UML16a SVXCR 11 ■		16	16	118				8.9			VC..1103..
			UML16f SVXCR 11 ■		16	16	118				8.9			VC..1103..

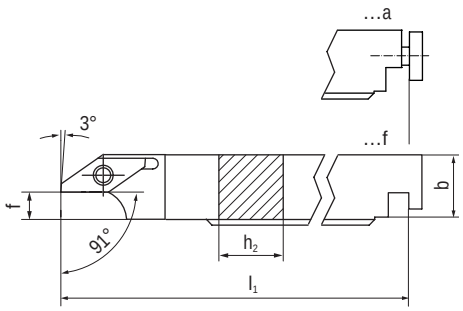


UML… SVXC… V (91°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	f	Ø D		77…
			UML12a SVXCL 11 V ■		12	15	110				5.4			VC..1103..
			UML12f SVXCL 11 V ■		12	15	110				5.4			VC..1103..
			UML16a SVXCL 11 V ■		16	16	118				8.9			VC..1103..
			UML16f SVXCL 11 V ■		16	16	118				8.9			VC..1103..

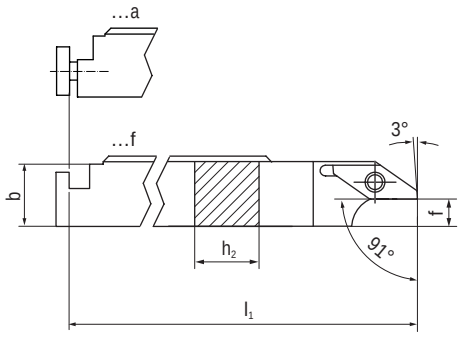
■ Standard
□ Semi Standard





UML... SVXP... (91°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation					Schneiden Plaquettes Inserts
L	N	R		b	h_2	l_1	f	114...
			UML12a SVXPR 10 ■	15	12	110	5	VP..1003..
			UML12f SVXPR 10 ■	15	12	110	5	VP..1003..
			UML16a SVXPR 10 ■	16	16	118	9	VP..1003..
			UML16f SVXPR 10 ■	16	16	118	9	VP..1003..

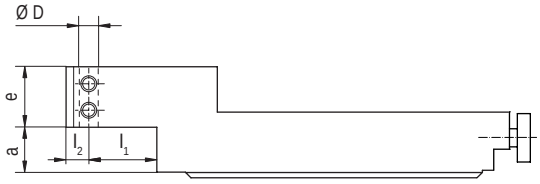


UML... SVXP... V (91°)

Ausführung Exécution Execution			Bezeichnung Désignation Designation					Schneiden Plaquettes Inserts
L	N	R		b	h_2	l_1	f	114...
			UML12a SVXPL 10 V ■	15	12	110	5	VP..1003..
			UML12f SVXPL 10 V ■	15	12	110	5	VP..1003..
			UML16a SVXPL 10 V ■	16	16	118	9	VP..1003..
			UML16f SVXPL 10 V ■	16	16	118	9	VP..1003..

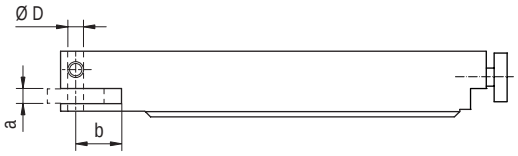
■ Standard
□ Semi Standard

UML... 2440...



Ausführung Exécution Execution			Bezeichnung Désignation Designation											Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	e	Ø D		129...
			UML12a 2440 8 3 ■				13	6		8	12	3		–
			UML12a 2440 8 4 ■				13	6		8	12	4		SD..4..
			UML12a 2440 8 5 ■				13	6		8	12	5		–
			UML12a 2440 12 6 ■				13	6		12	12	6		SD..6..
			UML16a 2440 12 3 ■				18	6		12	16	3		–
			UML16a 2440 12 4 ■				18	6		12	16	4		SD..4..
			UML16a 2440 12 5 ■				18	6		12	16	5		–
			UML16a 2440 12 6 ■				18	6		12	16	6		SD..6..
			UML16a 2440 12 8 ■				18	6		18	16	8		SD..8..

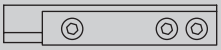
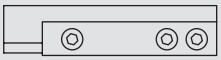
UML... 2402



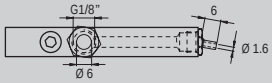
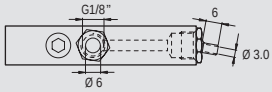
Ausführung Exécution Execution			Bezeichnung Désignation Designation										Schneiden Plaquettes Inserts
L	N	R		h_1	h_2	b	l_1	l_2	l_3	a	e	Ø D	
			UML12a 2402 44 ■			8				4		4	Rändelräder Molettes Knurling wheels
			UML16a 2402 44 ■			11				4		4	Rändelräder Molettes Knurling wheels

■ Standard
□ Semi Standard

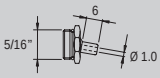
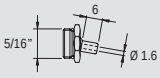
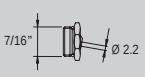
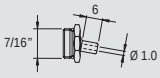
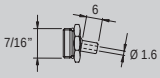
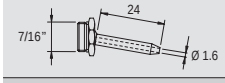
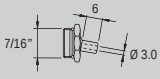
Spannelement | Module de serrage | Clamping unit

Abbildung Illustration Illustration	Bezeichnung Désignation Designation	Halter Porte-outil Holder
	UML12 FIX 12/14	12×12
	UML12 FIX 12/16	12×12
	UML16 FIX 16/16	16×16
	UML16 FIX 16/16.5	16x16
	UML16 FIX 16/17	16×16
	UML16 FIX 16/20	16×16

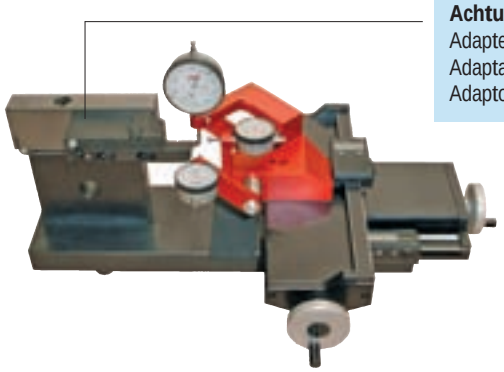
Kühlmittelanschluss | Modules d'arrosage | Coolant connection

Abbildung Illustration Illustration	Bezeichnung Désignation Designation	Kühlmittelrohr Optionen Raccords d'arrosage optionnels Coolant supply optionals
	UML12 JET 5/16	UML JET 5/16 Ø1.0x6 UML JET 5/16 Ø1.6x6
	UML16 JET 7/16	UML JET 7/16 Ø1.0x6 UML JET 7/16 Ø1.6x6 UML JET 7/16 Ø1.6x24 UML JET 7/16 Ø3.0x6

Kühlmittelrohr | Raccords d'arrosage | Coolant supply

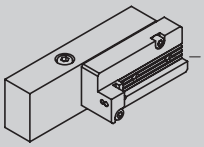
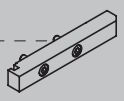
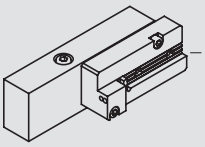
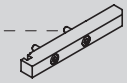
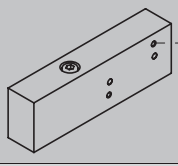
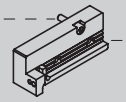
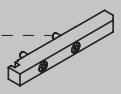
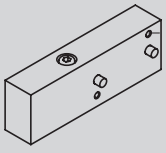
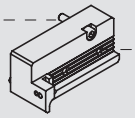
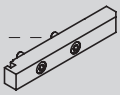
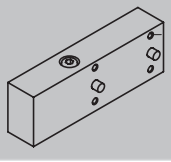
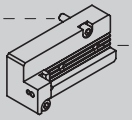
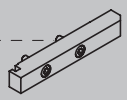
Abbildung Illustration Illustration	Bezeichnung Désignation Designation	Anschluss Raccord Connection
	UML JET 5/16 Ø1.0x6	5/16"
	UML JET 5/16 Ø1.6x6	5/16"
	UML JET 5/16 Ø2.2x0	5/16"
	UML JET 7/16 Ø1.0x6	7/16"
	UML JET 7/16 Ø1.6x6	7/16"
	UML JET 7/16 Ø1.6x24	7/16"
	UML JET 7/16 Ø3.0x6	7/16"

UML PRESET 1



Achtung | Attention | Attention
Adapter und Einstell-Lehre müssen separat bestellt werden
Adaptateur et jauge d'étalonnage à commander séparément
Adaptor and master gauge must be ordered seperately

Adapter und Einstell-Lehre | Adaptateur et jauge d'étalonnage | Adaptor and master gauge

Maschinen-Typ Types de machines Type of machine	Adapter 1 Adapteur 1 Adaptor 1	Adapter 2 Adapteur 2 Adaptor 2	Einstell-Lehre Jauge d'étalonnage Master gauge
CITIZEN MANURHIN STAR UML12…	UML12 ADAPT 		UML12 MASTER 
CITIZEN STAR UML16…	UML16 ADAPT 		UML16 MASTER 
TORNOS DECO 10 MICRO 7 MICRO 8 UML12…	UML AD1 DECO10 	UML12 AD2 DECO10 	UML12 MASTER 
TORNOS DECO 13 UML16…	UML AD1 DECO13 	UML16 AD2 DECO13 	UML16 MASTER 
TORNOS DECO 20/26 UML16…	UML AD1 DECO20 	UML16 AD2 DECO20 	UML16 MASTER 

UML... SC... (Klemmhalter | porte-outils | tool holders)

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 35110 T15	SC... 09	Torxschraube/vis torx/torx screw	M3.5x11 T15
	MSP TX15	SC... 09	Torxschlüssel/tournevis torx/torx screwdriver	T15
	MSP TX15 D	SC... 09	Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T15

UML... SD... (Klemmhalter | porte-outils | tool holders)

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 25060 T08 MSP 35110 T15	SD... 07 SD... 11	Torxschraube/vis torx/torx screw Torxschraube/vis torx/torx screw	M2.5x6 T08 M3.5x11 T15
	MSP TX08 MSP TX15	SD... 07 SD... 11	Torxschlüssel/tournevis torx/torx screwdriver Torxschlüssel/tournevis torx/torx screwdriver	T08 T15
	MSP TX08 D MSP TX15 D	SD... 07 SD... 11	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm) Drehmoment-Torxschlüssel (3.0 Nm) tournevis torx à serrage contrôlé (3.0 Nm) torx torquedriver (3.0 Nm)	T08 T15

UML... SV... (Klemmhalter | porte-outils | tool holders)

	Bezeichnung Désignation Designation	Halter Porte-outil Holder	Beschreibung Description Description	Dimension
	MSP 25060 T08	SV... 11	Torxschraube/vis torx/torx screw	M2.5x6 T08
	MSP TX08	SV... 11	Torxschlüssel/tournevis torx/torx screwdriver	T08
	MSP TX08 D	SV... 11	Drehmoment-Torxschlüssel (1.2 Nm) tournevis torx à serrage contrôlé (1.2 Nm) torx torquedriver (1.2 Nm)	T08

Multidec®-HSK C32 ist ein Drehwerkzeug für hochpräzise Anwendungen, bestehend aus Wendeschneidplatten in der bekannten Utilis-Qualität und einem Halter mit der genormten HSK-Verbindung (DIN 69 893). Mit ihr wird die Steifigkeit bei der Bearbeitung deutlich erhöht. Das vermindert Vibrationen und führt zu einer überlegen präzisen Bearbeitung. Multidec®-HSK C32 ist auf allen Drehmaschinen mit fixem Spindelstock einsetzbar.

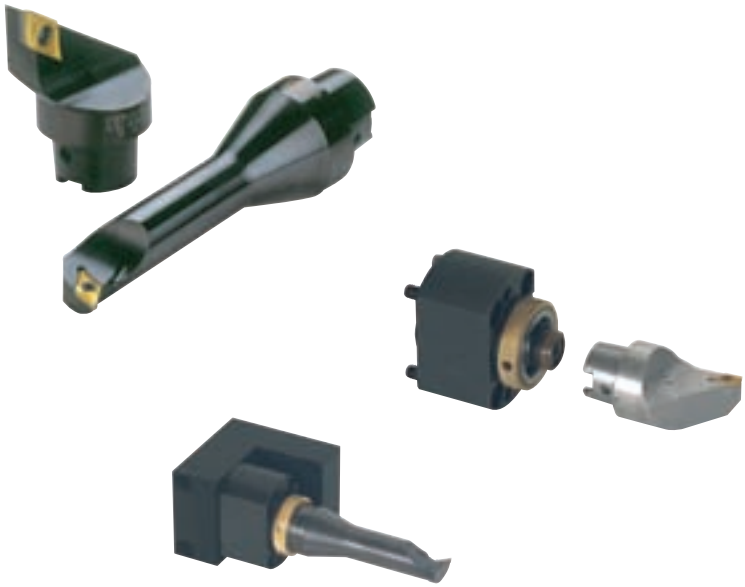
Für detailliertere Informationen bestellen Sie bitte den Utilis-Spezialprospekt Multidec®-HSK C32.

Multidec®-HSK C32 est un système d'attachement où les avantages résident essentiellement dans sa très grande rigidité et sa haute précision dans sa répétitivité. Son système cône/face au rapport 1:4 démontre ses aptitudes aux efforts de coupe transversaux. Ce programme d'outils est développé pour les centres de tournage ou un haut rendement est demandé. Cet outillage est disponible en standard dans le programme Multidec et correspond à la norme DIN 69 893.

Pour plus d'informations, n'hésitez pas à demander la documentation Multidec®-HSK C32.

The turning tool Multidec®-HSK C32 is ideal for high precision applications, consisting of the UTILIS known quality inserts and a standardized HSK connection (DIN 69 893). That's how the strength can be improved clearly. This causes a significant reduction of vibration and so cutting in superior style. Multidec®-HSK C32 is usable for all lathe machines with fixed headstock.

For detailed information please contact UTILIS and ask for the particular brochure of Multidec®-HSK C32.



SPECIAL/SERVICE

UTILIS-SPECIAL

Kurzbeschreibung
Gamme de produits
Product line

295

DELTA CONTROL

Kurzbeschreibung
Gamme de produits
Product line

296

UTILIS-SPECIAL®

Kurzbeschreibung
Entwickeln und Produzieren von Multidec®-Werkzeugen für spezielle Anforderungen.

Kundensituation
Eine besondere Bearbeitungssituation ist mit dem Multidec®-Standardprogramm nicht oder nicht so gut zu lösen. Dafür bräuchten Sie eine bestimmte Form der Schneide, eine Dimension oder Beschichtung, die es standardmässig nicht gibt.

Utilis-Lösung
Nach einer gründlichen Beratung wird speziell auf Ihre Anforderungen hin das optimale Multidec®-Werkzeug entwickelt und produziert. In der Regel geschieht das auf der Basis der vorhandenen Rohlinge, sodass die Sonderanfertigungen rasch und kostengünstig geliefert werden können, in einer Qualität, die dem Standardprogramm in nichts nachsteht.

Vorteile
- Utilis-Know-how und -Qualität auch für Sonderformen
- Durch vorhandene Rohlinge rasche und kostengünstige Lieferung
- Gezielte Neuentwicklung nach Kunden-Anforderungen möglich

Notice explicative
Développer et fabriquer des outils Multidec® pour des exigences spéciales.

Situation client
Un usinage avec des exigences spéciales qui ne trouve pas de solutions dans notre gamme Multidec®. Cela peut-être une dimension, un revêtement, une forme ou un affûtage qui n'existe pas.

Solution Utilis
Après une étude personnalisée de votre problème, nous allons élaborer l'outil optimal en fonction de vos exigences. A partir d'ébauches de produits standards nous pourrons réaliser et livrer ces outils spéciaux dans des délais raisonnables et à des prix intéressants. Ces outils présenteront la même qualité que la gamme standard Multidec®.

Avantages
- Savoir-faire et qualité Utilis pour des fabrications spéciales
- Délais raccourcis et prix favorables à partir d'ébauches
- Développement spécial selon l'exigence du client

Description
Development and production of Multidec® tools especially for your needs.

Customers situation
A special machining method makes it impossible or difficult to use tools from the standard Multidec® products. You should have a special insert, a special tool or coating which is not in our standard product range.

Utilis solution
After a thorough consultation we will especially for you develop and produce the best Multidec® solution. Normally this will be made out of standard blanks, which makes it possible to realize and deliver the special tools within a short period of time and with a price favorable. And naturally with the known Multidec® quality.

Advantages
- Utilis know-how and quality also for special tools
- With standard blanks fast delivered and with favorable price realized
- Development exactly according to your machining method

DELTA CONTROL

Delta Control ist ein modulares Messsystem zum Messen der axialen Einzugskraft von Werkzeugen in Werkzeugmaschinen. Es ermöglicht das Messen der Einzugskräfte direkt an der Werkzeugmaschine und mit dem vorhandenen Einzugsbolzen.

Für detailliertere Informationen bestellen Sie bitte den Utilis-Spezialprospekt Delta Control.

Un système de mesure et de contrôle modulaire, visant à mesurer les forces de traction axiales réelles d'une broche de fraiseuse ou d'un centre d'usinage. Cet appareil permet de contrôler à tous moments et en quelques minutes, l'état de votre broche, sans neutralisation de la machine.

Pour plus de renseignements, n'hésitez pas à demander la documentation Delta Control.

Delta Control is a modular measuring system for checking the axial clamping on machine tools. It makes possible to measure the clamping force. The system enables you to check the clamping force directly on the machine with your clamping bolts.

For detailed information please contact UTILIS and ask for the particular brochure of Delta Control.

Impressum

Konzept/Gestaltung: Ströbele AG, Romanshorn

Satz/Realisation: Utilis AG, Müllheim
Fotos: Bühler, Romanshorn und Utilis AG, Müllheim
Druck: Druckerei Flawil AG, Flawil

UTILIS®

Tooling for High Technology

■ ***Utilis AG, Präzisionswerkzeuge***
Kreuzlingerstrasse 22, CH-8555 Müllheim
Telefon +41 52 762 62 62, Telefax +41 52 762 62 00
info@utilis.com, www.utilis.com

■ ***Utilis France SARL, Outils de précision***
597, avenue du Mont Blanc, FR-74460 Marnaz
Téléphone +33 4 50 96 36 30, Téléfax +33 4 50 96 37 93
contact@utilis.com, www.utilis.com