

NEUE PRODUKTE

NEUESTE LÖSUNGEN IM BEREICH
HOCHLEISTUNGS-ZERSPANUNG





















Alle Produkte beziehbar
über Vischer & Bolli Automation
www.vb-automation.com

Mit dem Erscheinen dieses Kataloges werden alle früheren Kataloge oder Prospekte ungültig.

Baumass- oder Normenänderungen behalten wir uns vor.

Druckfehler jeder Art, auch bei technischen Daten, berechtigen nicht zu Ansprüchen.

Piktogramme

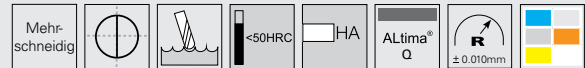
	Werkzeugmaterial		Materialhärte		Werkzeugtoleranz
	Zähnezahl		Beschichtung		Anschrittlänge
	Spiralwinkel		abgesetzter Schaft		Für Durchgangslöcher
	Zentrumschneidend		Eckradius		Für Sacklöcher
	Fräsrichtung		mit Kühlmittelzufuhr		verstärkter Schaft
	Umfangfräsen		Spitzenwinkel		Werkzeugmaterial
	Nutenfräsen		Schnittdaten		

Neue Werkzeuge Fräsen / Bohren / Gewinde

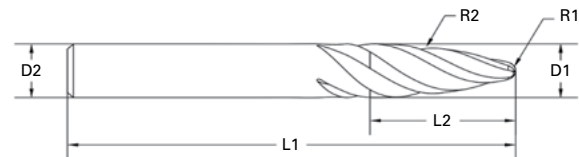
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TuffCut® 3D

3D Oberflächen



Serie XFO



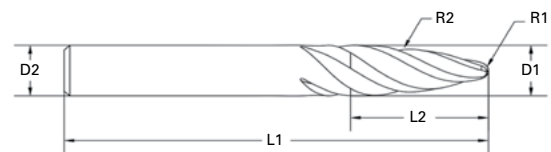
Artikelnummer	EDP	D1	D2 (h6)	L1	L2	R1	R2	Anzahl Schneiden
XFO-4M06R95AQ	19904	6.0	6.0	64.0	20.8	1.0	95.0	4
XFO-4M08R90AQ	19905	8.0	8.0	64.0	24.5	1.0	90.0	4
XFO-4M10R85AQ	19906	10.0	10.0	72.0	24.7	2.0	85.0	4
XFO-6M10R85AQ	19907	10.0	10.0	72.0	24.7	2.0	85.0	6
XFO-4M12R80AQ	19908	12.0	12.0	84.0	27.3	2.0	80.0	4
XFO-6M12R80AQ	19909	12.0	12.0	84.0	27.3	2.0	80.0	6

TuffCut® 3D

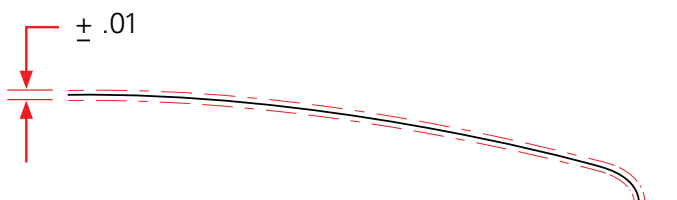
3D Oberflächen



Serie XFO-AL



Artikelnummer	EDP	D1	D2 (h6)	L1	L2	R1	R2	Anzahl Schneiden
XFO-AL3M06R95F	19900	6.0	6.0	64.0	20.8	1.0	95.0	3
XFO-AL3M08R90F	19901	8.0	8.0	64.0	24.5	1.0	90.0	3
XFO-AL4M10R85F	19902	10.0	10.0	72.0	24.7	2.0	85.0	4
XFO-AL4M12R80F	19903	12.0	12.0	84.0	27.3	2.0	80.0	4




Radius-Form-Toleranz

Die Serien XFO und XFO-AL haben eine hochpräzise Radius-Form-Toleranz von $\pm .010\text{mm}$, um eine hohe Genauigkeit beim Finish und eine hohe Oberflächenqualität beim Werkstück zu gewährleisten.

TuffCut® 3D

3D Oberflächen

Empfohlene Schnittwerte

Serie XFO						
Materialgruppe Werkstück	ISO	Schnitttiefe 			Finishing	Semi-Finishing
					0.01-0.03 x D	0.05-0.07 x D
		Kühlung			Vc - M/Min	
		Emulsion	Luft	MMS		
Stahl mit niedrigem Kohlenstoffanteil	P	●	●	●	450	350
Stahl mit mittlerem Kohlenstoffanteil		●	●	●	345	275
Verbundstähle		●	●	●	315	255
Formen- und Werkzeugstähle (≤ 45 HRC)		●	●	●	275	220
Freie Zerspanung, rostfrei	M	●	X	○	205	165
Rostfrei, austenitisch		●	X	○	160	130
Rostfrei, schwer zerspanbar		●	X	○	125	100
PH Stahl, rostfrei (≤ 45 HRC)		●	X	○	160	130
Kobalt-Chrom Legierungen		●	X	○	125	100
Duplex (22%)		●	X	○	75	60
Super Duplex (25%)	S	●	X	○	60	50
Hitzebeständige Legierungen		●	X	X	45	30
Titan-Legierungen		●	X	X	110	90

● Empfohlen ○ Möglich X Nicht möglich

Serie XFO									
Materialgruppe	ISO	Werkzeugdurchmesser (mm)							
		6		8		10		12	
		Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish
		FZ-mm/Zahn							
Stahl mit niedrigem Kohlenstoffanteil	P	0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
Stahl mit mittlerem Kohlenstoffanteil		0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
Verbundstähle		0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
Formen- und Werkzeugstähle		0.036	0.024	0.048	0.032	0.060	0.040	0.072	0.048
Freie Zerspanung, rostfrei	M	0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
Rostfrei, austenitisch		0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
Rostfrei, schwer zerspanbar		0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
PH Stahl, rostfrei		0.036	0.024	0.048	0.032	0.060	0.040	0.072	0.048
Kobalt-Chrom Legierungen		0.036	0.024	0.048	0.032	0.060	0.040	0.072	0.048
Duplex (22%)		0.036	0.024	0.048	0.032	0.060	0.040	0.072	0.048
Super Duplex (25%)	S	0.036	0.024	0.048	0.032	0.060	0.040	0.072	0.048
Hitzebeständige Legierungen		0.036	0.024	0.048	0.032	0.060	0.040	0.072	0.048
Titan-Legierungen		0.042	0.030	0.056	0.040	0.070	0.050	0.084	0.060

Hinweis:

- Die zur Verfügung gestellten Schnittwerte sollten nur als Empfehlung betrachtet werden. Je nach Anwendungen können Anpassungen notwendig sein.
- Um Probleme bei der Spanabfuhr zu vermeiden, empfehlen wir 4-schneidige Werkzeuge fürs Semi-Finish und ein mit dem Werkzeug nach Möglichkeit nicht mit der Spitze zu schneiden.
- Wenn doch über die Spitze geschnitten wird, ist es notwendig den Vorschub zu reduzieren.

TuffCut® 3D

3D Oberflächen

Empfohlene Schnittwerte

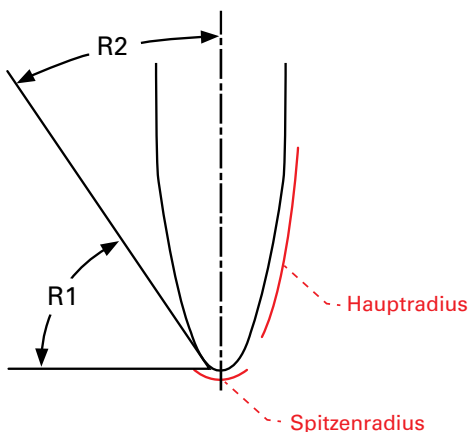
Serie XFO-AL						
Materialgruppe Werkstück	ISO	Schnitttiefe			Finishing	Semi-Finishing
					0.01-0.03 x D	0.05-0.07 x D
		Kühlung			Vc - M/Min	
Emulsion	Luft	MMS				
Aluminum Legierungen	N	●	X	○	610	580

● Empfohlen ○ Möglich X Nicht möglich

Serie XFO-AL									
Materialgruppe Werkstück	ISO	Werkzeugdurchmesser							
		6		8		10		12	
		Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish
		Fz - mm/tooth							
Aluminum Legierungen	N	0.060	0.039	0.080	0.052	0.100	0.065	0.120	0.078

Hinweis:

- Die zur Verfügung gestellten Schnittwerte sollten nur als Empfehlung betrachtet werden. Je nach Anwendungen können Anpassungen notwendig sein.
- Um Probleme bei der Spanabfuhr zu vermeiden, empfehlen wir 4-schneidige Werkzeuge fürs Semi-Finish und ein mit dem Werkzeug nach Möglichkeit nicht mit der Spitze zu schneiden.
- Wenn doch über die Spitze geschnitten wird, ist es notwendig den Vorschub zu reduzieren.



Tool Ø	Spitzenradius		Hauptradius	
	D1	R1	R2	Effektiver Winkel (Max.)
6	1	78.2°	95	11.8°
8	1	75.1°	90	14.9°
10	2	74.6°	85	15.4°
12	2	71.6°	80	18.4°

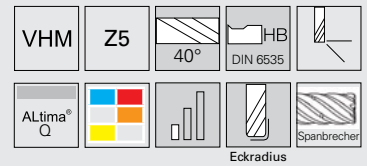
*Die obenstehenden Werte stellen Maximalwinkel dar.

Stepover nach Höckerhöhe

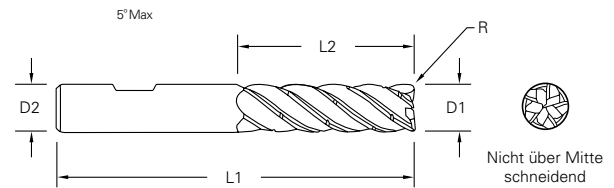
Werkzeugdurchmesser (mm)		Höckerhöhe (mm)	0.003	0.005	0.008	0.010	0.013
D1	R2						
6	95	Stepover (mm)	1.50	1.95	2.46	2.76	3.14
8	90		1.47	1.90	2.40	2.69	3.06
10	85		1.43	1.84	2.33	2.61	2.97
12	80		1.38	1.79	2.26	2.53	2.88

TuffCut® XV

Aggressives Abzeilen in Stahl und Stahllegierungen



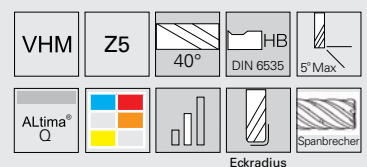
Serie XV5CB 2.5D



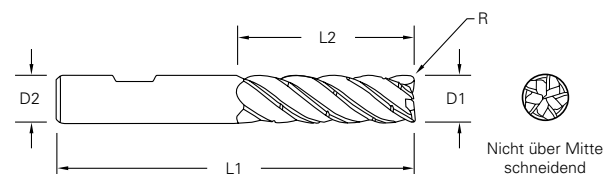
Artikelnummer	D1	D2	L1	L2	R
XV5CBM1002-R0.5AQW	10.0	10.0	74.0	27.0	0.5
XV5CBM1202-R0.5AQW	12.0	12.0	85.0	32.0	0.5
XV5CBM1602-R0.5AQW	16.0	16.0	98.0	42.0	0.5
XV5CBM2002-R0.5AQW	20.0	20.0	110.0	52.0	0.5

TuffCut® XV

Aggressives Abzeilen in Stahl und Stahllegierungen



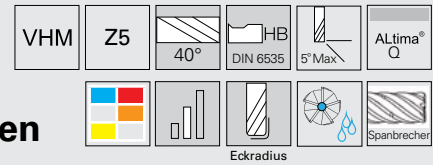
Serie XV5CB 3xD



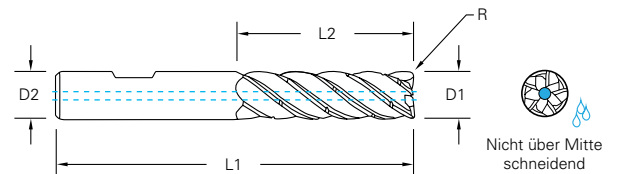
Artikelnummer	D1	D2	L1	L2	R
XV5CBM1003-R0.5AQW	10.0	10.0	80.0	33.0	0.5
XV5CBM1203-R0.5AQW	12.0	12.0	93.0	40.0	0.5
XV5CBM1603-R0.5AQW	16.0	16.0	110.0	54.0	0.5
XV5CBM2003-R0.5AQW	20.0	20.0	124.0	66.0	0.5

TuffCut® XV

Aggressives Abzeilen in Stahl und Stahllegierungen



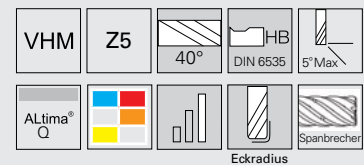
Serie XV5CB 3xD-C



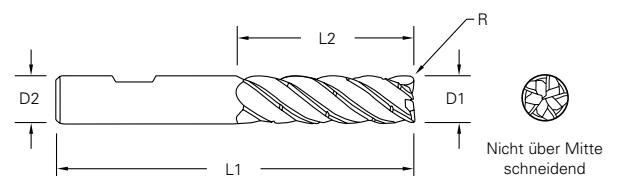
Artikelnummer	D1	D2	L1	L2	R
XV5CBM1003-R0.5AQW-C	10.0	10.0	80.0	33.0	0.5
XV5CBM1203-R0.5AQW-C	12.0	12.0	93.0	40.0	0.5
XV5CBM1603-R0.5AQW-C	16.0	16.0	110.0	54.0	0.5
XV5CBM2003-R0.5AQW-C	20.0	20.0	124.0	66.0	0.5

TuffCut® XV

Aggressives Abzeilen in Stahl und Stahllegierungen



Serie XV5CB 4xD





Artikelnummer	D1	D2	L1	L2	R
XV5CBM1004-R0.5AQW	10.0	10.0	90.0	43.0	0.5
XV5CBM1204-R0.5AQW	12.0	12.0	104.0	51.0	0.5
XV5CBM1604-R0.5AQW	16.0	16.0	123.0	67.0	0.5
XV5CBM2004-R0.5AQW	20.0	20.0	141.0	83.0	0.5

TuffCut® XV

Aggressives Abzeilen in Stahl und Stahllegierungen

Empfohlene Schnittwerte

Serie XV5CB – 2.5xD											
Artikelgruppe	ISO	Kühlung			Radial (Ae) 			Werkzeugdurchmesser (mm)			
		Emulsion	Luft	MQL	10%	15%	20%	10	12	16	20
					1.67	1.4	1.2	← Multiplizieren Sie fz mit diesem Faktor, basierend auf ae. Beim Finishing den Standard fz nach untenstehender Tabelle verwenden. Verwenden Sie diese Berechnung nur beim Schruppen oder Semi-Finish.			
					Vc – M/Min						
Stähle mit niedrigem Kohlenstoffanteil	P				350	300	250	0.060	0.072	0.096	0.120
Stähle mit mittlerem Kohlenstoffanteil					260	240	220	0.060	0.072	0.096	0.120
Verbundstähle					240	220	200	0.060	0.072	0.096	0.120
Formen- und Werkzeugstähle					220	200	180	0.060	0.072	0.096	0.120
Freie Zerspanung, rostfrei	M			○	205	180	150	0.060	0.072	0.096	0.120
Rostfrei, austenitisch			X	○	160	140	100	0.048	0.058	0.077	0.096
Rostfrei, schwer zerspanbar			X	○	110	90	70	0.040	0.048	0.064	0.080
PH Stahl, rostfrei				○	160	140	100	0.048	0.058	0.077	0.096
Titan Legierungen	S		X	X	120	100	80	0.040	0.048	0.064	0.080

Serie XV5CB – 3xD											
Materialgruppe Werkstück	ISO	Kühlung			Radial (Ae) 			Werkzeugdurchmesser (mm)			
		Emulsion	Luft	MQL	5%	10%	15%	10	12	16	20
					2.3	1.67	1.4	← Multiplizieren Sie fz mit diesem Faktor, basierend auf ae. Beim Finishing den Standard fz nach untenstehender Tabelle verwenden. Verwenden Sie diese Berechnung nur beim Schruppen oder Semi-Finish.			
					Vc – M/Min						
Stähle mit niedrigem Kohlenstoffanteil	P	●	●	●	350	300	250	0.060	0.072	0.096	0.120
Stähle mit mittlerem Kohlenstoffanteil		●	●	●	260	240	220	0.060	0.072	0.096	0.120
Verbundstähle		●	●	●	240	220	200	0.060	0.072	0.096	0.120
Formen- und Werkzeugstähle		●	●	●	220	200	180	0.060	0.072	0.096	0.120
Freie Zerspanung, rostfrei	M	●	●	○	205	180	150	0.060	0.072	0.096	0.120
Rostfrei, austenitisch		●	X	○	160	140	100	0.048	0.058	0.077	0.096
Rostfrei, schwer zerspanbar		●	X	○	110	90	70	0.040	0.048	0.064	0.080
PH Stahl, rostfrei		●	●	○	160	140	100	0.048	0.058	0.077	0.096
Titan Legierungen	S	●	X	X	120	100	80	0.040	0.048	0.064	0.080

● Empfohlen ○ Möglich X Nicht möglich

Hinweis:

Die gezeigten Schnittwerte sind nur als Empfehlung zu betrachten. Anpassungen können nötig sein, je nach Anwendung, Steifigkeit der Werkstücke, Maschine usw.


Der XV5CB sollte nur in präzisen Werkzeughaltern mit hoher Haltekraft eingesetzt werden. ER-Spannzangenhalter sind nicht zu empfehlen.

Für eine optimale Performance in ISO S Materialien: $ae = \leq 0.1 \times D$

TuffCut® XV

Aggressives Abzeilen in Stahl und Stahllegierungen

Empfohlene Schnittwerte

Serie XV5CB - 4xD											
Materialgruppe Werkstück	I S O	Kühlung			Radial (Ae) 			Werkzeugdurchmesser (mm)			
		Emulsion	Luft	MQL	5%	7%	10%	10	12	16	20
					2.3	2.0	1.67	Multiplizieren Sie fz mit diesem Faktor, basierend auf ae. Beim Finishing den Standard fz nach untenstehender Tabelle verwenden. Verwenden Sie diese Berechnung nur beim Schruppen oder Semi-Finish.			
					Vc - M/Min						
Stähle mit niedrigem Kohlenstoffanteil	P	●	●	●	300	275	250	0.040	0.048	0.064	0.080
Stähle mit mittlerem Kohlenstoffanteil		●	●	●	240	230	220	0.040	0.048	0.064	0.080
Verbundstähle		●	●	●	220	210	200	0.040	0.048	0.064	0.080
Formen- und Werkzeugstähle		●	●	●	200	190	180	0.040	0.048	0.064	0.080
Freie Zerspanung, rostfrei	M	●	●	○	180	165	150	0.040	0.048	0.064	0.080
Rostfrei, austenitisch		●	X	○	160	150	140	0.028	0.034	0.045	0.056
Rostfrei, schwer zerspanbar		●	X	○	90	80	70	0.024	0.029	0.038	0.048
PH Stahl, rostfrei		●	●	○	160	150	140	0.028	0.034	0.045	0.056
Titan Legierungen	S	●	X	X	100	90	80	0.024	0.029	0.038	0.048

● Empfohlen ○ Möglich X Nicht möglich

Hinweis:

Die gezeigten Schnittwerte sind nur als Empfehlung zu betrachten. Anpassungen können nötig sein, je nach Anwendung, Steifigkeit der Werkstücke, Maschine usw.

Der XV5CB sollte nur in präzisen Werkzeughaltern mit hoher Haltekraft eingesetzt werden. ER-Spannzangenhalter sind nicht zu empfehlen.

Für eine optimale Performance in ISO S Materialien: $ae = \leq 0.1 \times D$

TuffCut® XV

Aggressives Abzeilen in Stahl und Stahllegierungen

Serie XV5CB empfohlene Schnittwerte

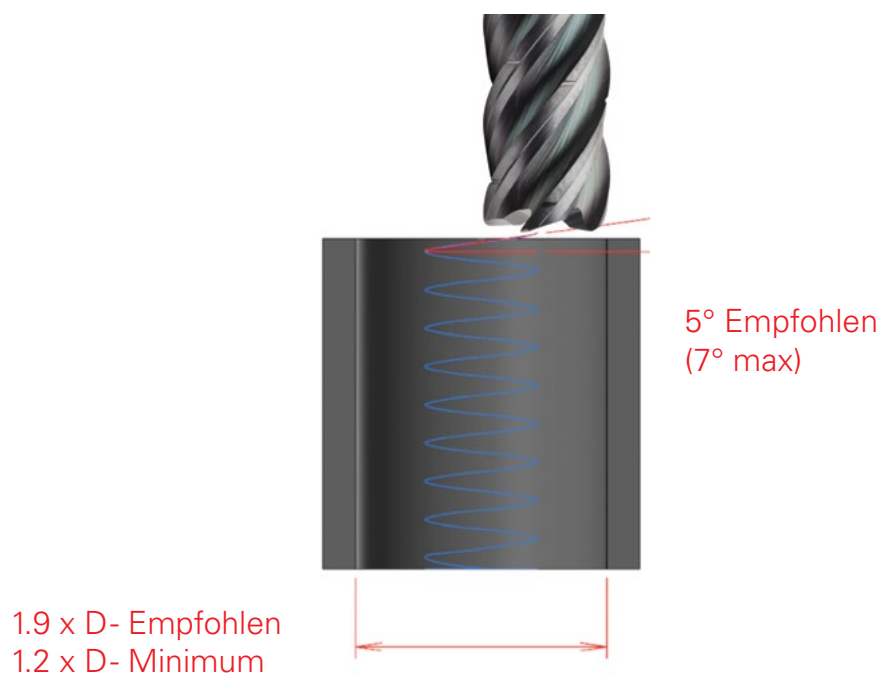
Profilfräsen mit axialer Schnitttiefe (A_p) $4 \times D$

Berechnungsempfehlung für die helikale Bearbeitung

Unter optimalen Bedingungen sind mit dem XV5CB in den meisten Materialien Rampenwinkel von bis zu 5° im Eingriffsbereich erreichbar.

Eine Reduzierung von 30-50% sowohl bei der Geschwindigkeit als auch beim Vorschub wird für die schraubenförmige Interpolation empfohlen.

Für optimale Leistung wird ein Lochdurchmesser von $1,9 \times D$ mit schraubenförmiger Interpolation empfohlen.

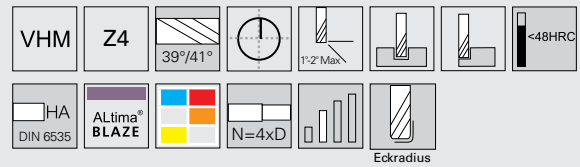


Radiale Schnittbreite (A_e)	Ausgleichsfaktor für Spandicke
5%	2.30
7%	1.96
8%	1.84
10%	1.67
15%	1.40
20%	1.20

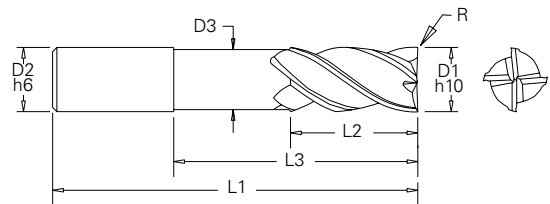
Beim Profilfräsen mit weniger als 50% des Schneidendurchmessers, ist die Spandicke geringer als die programmierte Spanlast. Die beistehende Tabelle zeigt wie die Zustellung pro Zahn erhöht werden kann, durch Relation zum schneidenden Anteil des Werkzeugs. Multiplizieren Sie den Vorschub pro Zahn um diesen prozentualen Wert, bevor Sie die Zustellung festlegen.

TuffCut® XT

Rostfrei



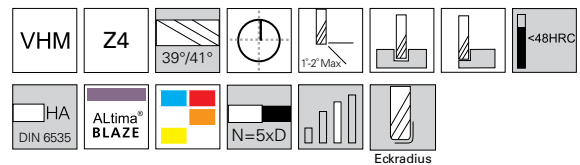
Serie 277NR-4



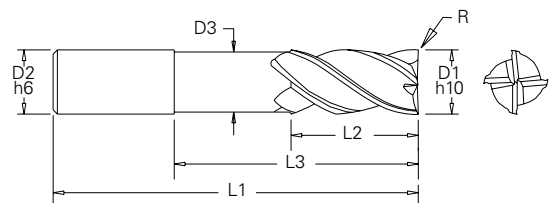
Artikelnummer	D1	D2	D3	L1	L2	L3	R
277 06N4-0.5RB	6.0	6.0	5.8	64.0	13.0	26.0	0.5
277 08N4-0.5RB	8.0	8.0	7.6	75.0	19.0	34.0	0.5
277 10N4-0.5RB	10.0	10.0	9.6	82.0	22.0	42.0	0.5
277 12N4-0.5RB	12.0	12.0	11.4	100.0	26.0	50.0	0.5
277 12N4-3.0RB	12.0	12.0	11.4	100.0	26.0	50.0	3.0
277 16N4-0.5RB	16.0	16.0	15.2	120.0	32.0	66.0	0.5
277 16N4-3.0RB	16.0	16.0	15.2	120.0	32.0	66.0	3.0

TuffCut® XT

Rostfrei



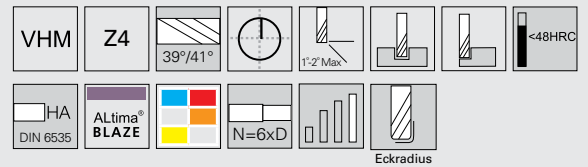
Serie 277NR-5



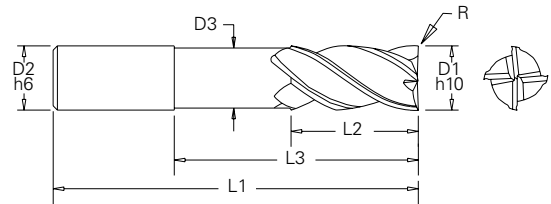
Artikelnummer	D1	D2	D3	L1	L2	L3	R
277 06N5-0.5RB	6.0	6.0	5.8	70.0	13.0	32.0	0.5
277 08N5-0.5RB	8.0	8.0	7.6	80.0	19.0	42.0	0.5
277 10N5-0.5RB	10.0	10.0	9.6	92.0	22.0	52.0	0.5
277 12N5-0.5RB	12.0	12.0	11.4	110.0	26.0	62.0	0.5
277 12N5-3.0RB	12.0	12.0	11.4	110.0	26.0	62.0	3.0
277 16N5-0.5RB	16.0	16.0	15.2	130.0	32.0	82.0	0.5
277 16N5-3.0RB	16.0	16.0	15.2	130.0	32.0	82.0	3.0

TuffCut® XT

Rostfrei



Serie 277NR-6



Artikelnummer	D1	D2	D3	L1	L2	L3	R
277 06N6-0.5RB	6.0	6.0	5.8	75.0	13.0	38.0	0.5
277 08N6-0.5RB	8.0	8.0	7.6	90.0	19.0	50.0	0.5
277 10N6-0.5RB	10.0	10.0	9.6	105.0	22.0	62.0	0.5
277 12N6-0.5RB	12.0	12.0	11.4	120.0	26.0	74.0	0.5
277 12N6-3.0RB	12.0	12.0	11.4	120.0	26.0	74.0	3.0
277 16N6-0.5RB	16.0	16.0	15.2	150.0	32.0	98.0	0.5
277 16N6-3.0RB	16.0	16.0	15.2	150.0	32.0	98.0	3.0

Empfohlene Schnittwerte

Serie 277NR - 4xD													
Materialgruppe Werkstück	ISO	Kühlung			Anwendung	Schnitttiefe		Vc-M/min	Werkzeughdurchmesser (mm)				
		Emulsion	Luft	MMS		Axial (Ap)	Radial (Ae)		6	8	10	12	16
									fz-mm / Zahn				
Stähle mit niedrigem Kohlenstoffanteil	P	●	●	●	Umsäumen	1xD	0.4xD	300	0.06	0.08	0.1	0.12	0.16
					Taschenfräsen	0.5xD	-	200	0.03	0.04	0.05	0.06	0.08
Stähle mit mittlerem Kohlenstoffanteil		●	●	●	Umsäumen	1xD	0.4xD	230	0.06	0.08	0.1	0.12	0.16
					Taschenfräsen	0.5xD	-	155	0.03	0.04	0.05	0.06	0.08
Verbundstähle		●	●	●	Umsäumen	1xD	0.4xD	205	0.06	0.08	0.1	0.12	0.16
					Taschenfräsen	0.5xD	-	135	0.03	0.04	0.05	0.06	0.08
Formen- und Werkzeugstähle		●	●	●	Umsäumen	1xD	0.4xD	170	0.06	0.08	0.1	0.12	0.16
					Taschenfräsen	0.5xD	-	115	0.03	0.04	0.05	0.06	0.08
Freie Zerspanung, rostfrei		●	X	○	Umsäumen	1xD	0.4xD	120	0.06	0.08	0.1	0.12	0.16
					Taschenfräsen	0.5xD	-	80	0.03	0.04	0.05	0.06	0.08
Duplex (22%)	●	X	○	Umsäumen	1xD	0.4xD	80	0.06	0.08	0.1	0.12	0.16	
				Taschenfräsen	0.5xD	-	55	0.03	0.04	0.05	0.06	0.08	
Supper Duplex (25%)	●	X	○	Umsäumen	1xD	0.4xD	50	0.06	0.08	0.1	0.12	0.16	
				Taschenfräsen	0.5xD	-	35	0.03	0.04	0.05	0.06	0.08	
Titan Legierungen	●	X	X	Umsäumen	1xD	0.4xD	60	0.06	0.08	0.1	0.12	0.16	
				Taschenfräsen	0.5xD	-	40	0.03	0.04	0.05	0.06	0.08	

● Empfohlen ○ Möglich X Nicht möglich

TuffCut® XT

Rostfrei

Empfohlene Schnittwerte

Serie 277NR - 5xD														
Materialgruppe Werkstück	ISO	Kühlung			Anwendung	Schnitttiefe		Vc-M/min	Werkzeugdurchmesser (mm)					
		Emulsion	Luft	MMS		Axial (Ap)	Radial (Ae)		6	8	10	12	16	
									fz-mm / Zahn					
Stähle mit niedrigem Kohlenstoffanteil	P	●	●	●	Umsäumen	1xD	0.25xD	270	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	180	0.03	0.04	0.05	0.06	0.08	
Stähle mit mittlerem Kohlenstoffanteil		●	●	●	Umsäumen	1xD	0.25xD	205	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	135	0.03	0.04	0.05	0.06	0.08	
Verbundstähle		●	●	●	Umsäumen	1xD	0.25xD	185	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	125	0.03	0.04	0.05	0.06	0.08	
Formen- und Werkzeugstähle		●	●	●	Umsäumen	1xD	0.25xD	153	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	105	0.03	0.04	0.05	0.06	0.08	
Freie Zerspanung, rostfrei		M	●	X	○	Umsäumen	1xD	0.25xD	80	0.06	0.08	0.1	0.12	0.16
						Taschenfräsen	0.3xD	-	55	0.03	0.04	0.05	0.06	0.08
Duplex (22%)	●		X	○	Umsäumen	1xD	0.25xD	70	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	45	0.03	0.04	0.05	0.06	0.08	
Supper Duplex (25%)	●		X	○	Umsäumen	1xD	0.25xD	45	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	30	0.03	0.04	0.05	0.06	0.08	
Titan Legierungen	S		●	X	X	Umsäumen	1xD	0.25xD	75	0.06	0.08	0.1	0.12	0.16
						Taschenfräsen	0.3xD	-	50	0.03	0.04	0.05	0.06	0.08

Serie 277NR - 6xD														
Materialgruppe Werkstück	ISO	Kühlung			Anwendung	Schnitttiefe		Vc-M/min	Werkzeugdurchmesser (mm)					
		Emulsion	Luft	MMS		Axial (Ap)	Radial (Ae)		6	8	10	12	16	
									fz-mm / Zahn					
Stahl mit niedrigem Kohlenstoffanteil	P	●	●	●	Umsäumen	1xD	0.25xD	240	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	160	0.03	0.04	0.05	0.06	0.08	
Stähle mit mittlerem Kohlenstoffanteil		●	●	●	Umsäumen	1xD	0.25xD	184	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	125	0.03	0.04	0.05	0.06	0.08	
Verbundstähle		●	●	●	Umsäumen	1xD	0.25xD	164	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	110	0.03	0.04	0.05	0.06	0.08	
Formen- und Werkzeugstähle		●	●	●	Umsäumen	1xD	0.25xD	136	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	90	0.03	0.04	0.05	0.06	0.08	
Freie Zerspanung, rostfrei		M	●	X	○	Umsäumen	1xD	0.25xD	75	0.06	0.08	0.1	0.12	0.16
						Taschenfräsen	0.3xD	-	50	0.03	0.04	0.05	0.06	0.08
Duplex (22%)	●		X	○	Umsäumen	1xD	0.25xD	65	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	45	0.03	0.04	0.05	0.06	0.08	
Supper Duplex (25%)	●		X	○	Umsäumen	1xD	0.25xD	35	0.06	0.08	0.1	0.12	0.16	
					Taschenfräsen	0.3xD	-	25	0.03	0.04	0.05	0.06	0.08	
Titan Legierungen	S		●	X	X	Umsäumen	1xD	0.25xD	64	0.06	0.08	0.1	0.12	0.16
						Taschenfräsen	0.3xD	-	45	0.03	0.04	0.05	0.06	0.08

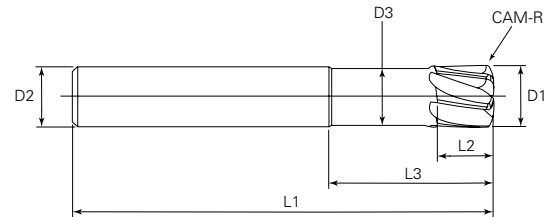
● Empfohlen ○ Möglich X Nicht möglich

TuffCut® HF

Gehärteter Stahl ab 35HRC



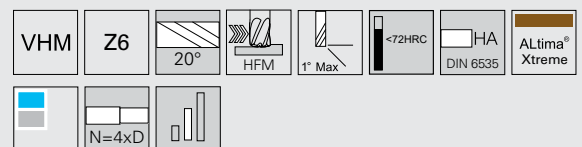
Serie FHFN-N3



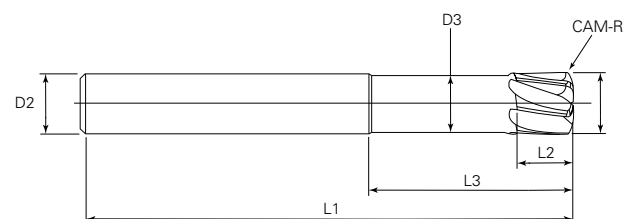
Artikelnummer	D1	D2	D3	L1	L2	L3	Anzahl Schneiden	CAM-R
FHFN 03N3-AX	3.0	6.0	2.9	60.0	3.0	9.0	4	0.25
FHFN 04N3-AX	4.0	6.0	3.9	60.0	4.0	12.0	4	0.3
FHFN 05N3-AX	5.0	6.0	4.7	60.0	5.0	15.0	4	0.35
FHFN 06N3-AX	6.0	6.0	5.5	60.0	5.0	18.0	6	0.45
FHFN 08N3-AX	8.0	8.0	7.5	75.0	7.0	24.0	6	0.6
FHFN 10N3-AX	10.0	10.0	9.5	90.0	8.0	30.0	6	0.75
FHFN 12N3-AX	12.0	12.0	11.5	100.0	10.0	36.0	6	0.9

TuffCut® HF

Gehärteter Stahl ab 35HRC



Serie FHFN-N4



Artikelnummer	D1	D2	D3	L1	L2	L3	Anzahl Schneiden	CAM-R
FHFN 06N4-AX	6.0	6.0	5.5	100.0	5.0	24.0	6	0.45
FHFN 08N4-AX	8.0	8.0	7.5	100.0	7.0	32.0	6	0.6
FHFN 10N4-AX	10.0	10.0	9.5	120.0	8.0	40.0	6	0.75
FHFN 12N4-AX	12.0	12.0	11.5	150.0	10.0	48.0	6	0.9

TuffCut® HF

Gehärteter Stahl ab 35HRC

Empfohlene Schnittwerte

Serie FHFN – 3xD																	
Materialgruppe Werkzeug	ISO	Kühlung			Vc- m/min	Werkzeugdurchmesser & CAM-R											
		Emulsion	Luft	MMS		3 mm x R0.25			4 mm x R0.3			5 mm x R0.35			6 mm x R0.45		
						Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Vorgehärtete Stähle 35-45HRC	P	○	●	●	100	0.1	1.7	0.09	0.15	2.2	0.12	0.18	2.8	0.15	0.300	3.3	0.180
Gehärtete Stähle 50-55HRC	H	X	●	○	80	0.1	1.7	0.115	0.15	2.2	0.155	0.18	2.8	0.19	0.240	3.3	0.230
Gehärtete Stähle 55-60HRC		X	●	○	60	0.07	1.7	0.075	0.095	2.2	0.1	0.115	2.8	0.12	0.140	3.3	0.145
Gehärtete Stähle 60-65HRC		X	●	○	50	0.055	1.7	0.055	0.075	2.2	0.07	0.09	2.8	0.09	0.110	3.3	0.105
Gehärtete Stähle 65-70HRC		X	●	○	40	0.04	1.5	0.04	0.055	2	0.05	0.065	2.5	0.065	0.080	3.0	0.075

Serie FHFN – 3xD														
Materialgruppe Werkzeug	ISO	Kühlung			Vc- m/min	Werkzeugdurchmesser & CAM-R								
		Emulsion	Luft	MMS		8 mm x R0.6			10 mm x R0.75			12 mm x R0.9		
						Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Vorgehärtete Stähle 35-45HRC	P	○	●	●	100	0.4	4.4	0.240	0.5	5.5	0.300	0.6	6.6	0.360
Gehärtete Stähle 50-55HRC	H	X	●	○	80	0.32	4.4	0.305	0.4	5.5	0.380	0.48	6.6	0.460
Gehärtete Stähle 55-60HRC		X	●	○	60	0.185	4.4	0.195	0.23	5.5	0.240	0.28	6.6	0.290
Gehärtete Stähle 60-65HRC		X	●	○	50	0.145	4.4	0.140	0.18	5.5	0.175	0.22	6.6	0.210
Gehärtete Stähle 65-70HRC		X	●	○	40	0.105	4.0	0.100	0.13	5.0	0.125	0.16	6.0	0.150

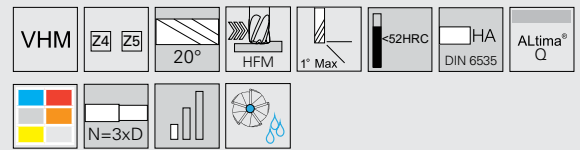
Serie FHFN – 4xD																	
Materialgruppe Werkzeug	ISO	Kühlung			Vc- m/min	Werkzeugdurchmesser & CAM-R											
		Emulsion	Luft	MMS		6 mm x R0.45			8 mm x R0.6			10 mm x R0.75			12 mm x R0.9		
						Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Vorgehärtete Stähle 35-45HRC	P	○	●	●	90	0.260	3.3	0.180	0.34	4.4	0.240	0.43	5.5	0.300	0.51	6.6	0.360
Gehärtete Stähle 50- 55HRC	H	X	●	○	75	0.200	3.3	0.230	0.27	4.4	0.305	0.34	5.5	0.380	0.41	6.6	0.460
Gehärtete Stähle 55- 60HRC		X	●	○	55	0.120	3.3	0.145	0.16	4.4	0.195	0.2	5.5	0.240	0.24	6.6	0.290
Gehärtete Stähle 60- 65HRC		X	●	○	45	0.090	3.3	0.105	0.12	4.4	0.140	0.15	5.5	0.175	0.19	6.6	0.210
Gehärtete Stähle 65- 70HRC		X	●	○	35	0.070	3.0	0.075	0.09	4.0	0.100	0.11	5.0	0.125	0.14	6.0	0.150

● Empfohlen ○ Möglich X Nicht möglich

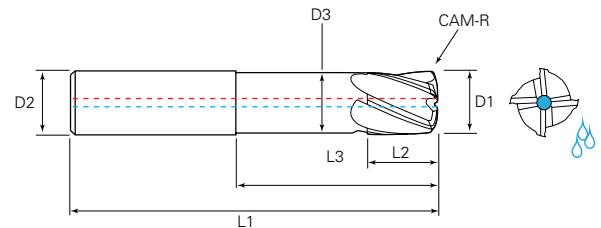
Hinweis:
Rampenwinkel 0,5° oder weniger
Für Schruppbearbeitung, Flächenbearbeitung, Taschen- und Schlitzfräsen

TuffCut® HF

Stahl, Rostfrei, Superlegierungen



Serie FHFP N3



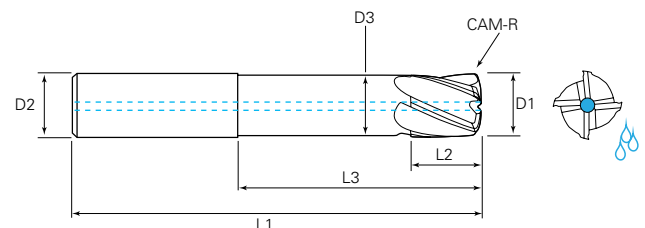
Artikelnummer	D1	D2	D3	L1	L2	L3	8	CAM-R
FHFP 06N3-CCAQ	6.0	6.0	5.8	57.0	6.0	20.0	4	0.6
FHFP 08N3-CCAQ	8.0	8.0	7.8	63.0	8.0	26.0	4	0.8
FHFP 10N3-CCAQ	10.0	10.0	9.8	72.0	10.0	32.0	4	1.0
FHFP 12N3-CCAQ	12.0	12.0	11.8	83.0	12.0	38.0	5	1.2
FHFP 16N3-CCAQ	16.0	16.0	15.8	100.0	16.0	50.0	5	1.6

TuffCut® HF

Stahl, Rostfrei, Superlegierungen



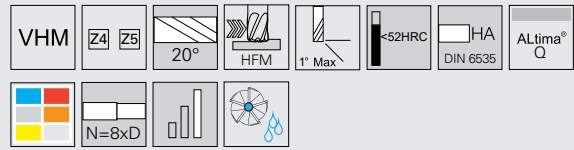
Serie FHFP N5



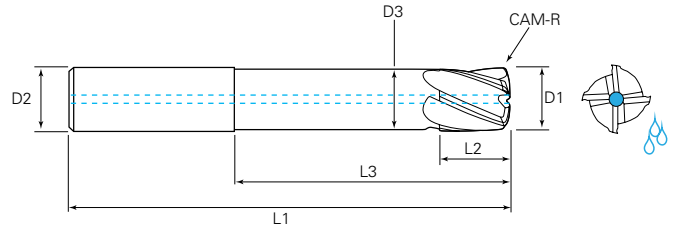
Artikelnummer	D1	D2	D3	L1	L2	L3	Anzahl Schneiden	CAM-R
FHFP 06N5-CCAQ	6.0	6.0	5.8	75.0	6.0	32.0	4	0.6
FHFP 08N5-CCAQ	8.0	8.0	7.8	83.0	8.0	42.0	4	0.8
FHFP 10N5-CCAQ	10.0	10.0	9.8	100.0	10.0	52.0	4	1.0
FHFP 12N5-CCAQ	12.0	12.0	11.8	110.0	12.0	62.0	5	1.2
FHFP 16N5-CCAQ	16.0	16.0	15.8	133.0	16.0	82.0	5	1.6

TuffCut® HF

Stahl, Rostfrei, Superlegierungen



Serie FHFP N8



Artikelnummer	D1	D2	D3	L1	L2	L3	Anzahl Schneiden	CAM-R
FHFP 06N8-CCAQ	6.0	6.0	5.8	90.0	6.0	50.0	4	0.6
FHFP 08N8-CCAQ	8.0	8.0	7.8	110.0	8.0	66.0	4	0.8
FHFP 10N8-CCAQ	10.0	10.0	9.8	130.0	10.0	82.0	4	1.0
FHFP 12N8-CCAQ	12.0	12.0	11.8	150.0	12.0	98.0	5	1.2

Empfohlene Schnittwerte

Serie FHFP – 3xD																				
Materialgruppe Werkzeuge	ISO	Kühlung			Vc- m/min	Fräserdurchmesser und CAM-R														
		Max	Luft	MMS		6mm x R0.6			8mm x R0.8			10mm x R1.0			12mm x R1.2			16mm x R1.6		
						Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Stähle mit niedrigem Kohlenstoffanteil	P	●	●	●	300	0.30	4.5	0.39	0.40	6.0	0.52	0.50	7.5	0.65	0.60	9.0	0.78	0.70	12.0	1.04
Stähle mit mittlerem Kohlenstoffanteil		●	●	●	250	0.30	4.5	0.36	0.40	6.0	0.48	0.50	7.5	0.6	0.60	9.0	0.72	0.70	12.0	0.96
Verbundstähle		●	●	●	200	0.30	4.5	0.33	0.40	6.0	0.44	0.50	7.5	0.55	0.60	9.0	0.66	0.70	12.0	0.88
Formen- und Werkzeugstahl		●	●	●	150	0.30	4.5	0.3	0.40	6.0	0.4	0.50	7.5	0.5	0.60	9.0	0.6	0.70	12.0	0.8
Rostfrei, austenitisch	M	●	X	○	120	0.24	3.6	0.24	0.32	4.8	0.32	0.40	6.0	0.4	0.48	7.2	0.48	0.56	9.6	0.64
Duplex (22%)		●	X	○	90	0.21	3.6	0.24	0.28	4.8	0.32	0.35	6.0	0.4	0.42	7.2	0.48	0.49	9.6	0.64
Super Duplex (25%)		●	X	○	75	0.18	2.4	0.24	0.24	3.2	0.32	0.30	4.0	0.4	0.36	4.8	0.48	0.42	6.4	0.64
Titan Legierungen	S	●	X	X	100	0.18	2.4	0.24	0.24	3.2	0.32	0.30	4.0	0.4	0.36	4.8	0.48	0.42	6.4	0.64
Hitzebeständige Legierungen		●	X	X	30	0.15	1.8	0.16	0.20	2.4	0.22	0.25	3.0	0.27	0.30	3.6	0.32	0.35	4.8	0.43
Gehärtete Stähle 45-50HRC	H	○	●	○	90	0.27	4.5	0.27	0.36	6.0	0.36	0.45	7.5	0.45	0.54	9.0	0.54	0.63	12.0	0.72
Gehärtete Stähle 50-55HRC		X	●	○	80	0.24	3.6	0.21	0.32	4.8	0.28	0.40	6.0	0.35	0.48	7.2	0.42	0.56	9.6	0.56

● Empfohlen ○ Möglich X Nicht möglich

TuffCut® HF

Stahl, Rostfrei, Superlegierungen

Empfohlene Schnittwerte

Serie FHFP – 5xD																				
Materialgruppe Werkzeuge	ISO	Kühlung			Vc- m/min	Fräserdurchmesser und CAM-R														
		Max	Luft	MMS		6mm x R0.6			8mm x R0.8			10mm x R1.0			12mm x R1.2			16mm x R1.6		
						Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Stähle mit niedrigem Kohlenstoffanteil	P	●	●	●	270	0.24	4.5	0.39	0.32	6.0	0.52	0.4	7.5	0.65	0.48	9.0	0.78	0.56	12.0	1.04
Stähle mit mittlerem Kohlenstoffanteil		●	●	●	225	0.24	4.5	0.36	0.32	6.0	0.48	0.4	7.5	0.6	0.48	9.0	0.72	0.56	12.0	0.96
Verbundstähle		●	●	●	180	0.24	4.5	0.33	0.32	6.0	0.44	0.4	7.5	0.55	0.48	9.0	0.66	0.56	12.0	0.88
Formen- und Werkzeugstahl		●	●	●	135	0.24	4.5	0.3	0.32	6.0	0.4	0.4	7.5	0.5	0.48	9.0	0.6	0.56	12.0	0.8
Rostfrei, austenitisch	M	●	X	○	110	0.19	3.6	0.24	0.26	4.8	0.32	0.32	6.0	0.4	0.38	7.2	0.48	0.45	9.6	0.64
Duplex (22%)		●	X	○	80	0.17	3.6	0.24	0.22	4.8	0.32	0.28	6.0	0.4	0.34	7.2	0.48	0.39	9.6	0.64
Super Duplex (25%)		●	X	○	70	0.14	2.4	0.24	0.19	3.2	0.32	0.24	4.0	0.4	0.29	4.8	0.48	0.34	6.4	0.64
Titan Legierungen	S	●	X	X	90	0.14	2.4	0.24	0.19	3.2	0.32	0.24	4.0	0.4	0.29	4.8	0.48	0.34	6.4	0.64
Hitzebeständige Legierungen		●	X	X	30	0.12	1.8	0.16	0.16	2.4	0.22	0.2	3.0	0.27	0.24	3.6	0.32	0.28	4.8	0.43
Gehärtete Stähle 45-50HRC	H	○	●	○	80	0.22	4.5	0.27	0.29	6.0	0.36	0.36	7.5	0.45	0.43	9.0	0.54	0.5	12.0	0.72
Gehärtete Stähle 50-55HRC		X	●	○	70	0.19	3.6	0.21	0.26	4.8	0.28	0.32	6.0	0.35	0.38	7.2	0.42	0.45	9.6	0.56

Serie FHFP – 8xD																				
Materialgruppe Werkzeuge	ISO	Kühlung			Vc- m/min	Fräserdurchmesser und CAM-R														
		Max	Luft	MMS		6mm x R0.6			8mm x R0.8			10mm x R1.0			12mm x R1.2			16mm x R1.6		
						Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Stähle mit niedrigem Kohlenstoffanteil	P	●	●	●	150	0.18	3.6	0.39	0.24	4.8	0.52	0.3	6.0	0.65	0.36	7.2	0.78	0.42	9.6	1.04
Stähle mit mittlerem Kohlenstoffanteil		●	●	●	120	0.18	3.6	0.36	0.24	4.8	0.48	0.3	6.0	0.6	0.36	7.2	0.72	0.42	9.6	0.96
Verbundstähle		●			100	0.18	3.6	0.33	0.24	4.8	0.44	0.3	6.0	0.55	0.36	7.2	0.66	0.42	9.6	0.88
Formen- und Werkzeugstahl					100	0.18	3.6	0.3	0.24	4.8	0.4	0.3	6.0	0.5	0.36	7.2	0.6	0.42	9.6	0.8
Rostfrei, austenitisch	M		X	○	80	0.14	3.6	0.24	0.19	4.8	0.32	0.24	6.0	0.4	0.29	7.2	0.48	0.34	9.6	0.64
Duplex (22%)			X	○	60	0.13	2.4	0.24	0.17	3.2	0.32	0.21	4.0	0.4	0.25	4.8	0.48	0.29	6.4	0.64
Super Duplex (25%)			X	○	50	0.11	2.4	0.24	0.14	3.2	0.32	0.18	4.0	0.4	0.22	4.8	0.48	0.25	6.4	0.64
Titan Legierungen	S		X	X	70	0.11	2.4	0.24	0.14	3.2	0.32	0.18	4.0	0.4	0.22	4.8	0.48	0.25	6.4	0.64
Hitzebeständige Legierungen			X	X	20	0.09	1.8	0.16	0.12	2.4	0.22	0.15	3.0	0.27	0.18	3.6	0.32	0.21	4.8	0.43
Gehärtete Stähle 45-50HRC	H	○		○	60	0.16	3.6	0.27	0.22	4.8	0.36	0.27	6.0	0.45	0.32	7.2	0.54	0.38	9.6	0.72
Gehärtete Stähle 50-55HRC		X		○	50	0.14	2.4	0.21	0.19	3.2	0.28	0.24	4.0	0.35	0.29	4.8	0.42	0.34	6.4	0.56

● Empfohlen ○ Möglich X Nicht möglich

Hinweis:

Wenn der berechnete Vorschub aufgrund von Faktoren wie Einschränkungen der Maschine, Größe der Komponenten usw. nicht realisiert werden kann, passen Sie die Drehzahl an um den angegebenen Vorschub pro Zahn (fz) zu erreichen.

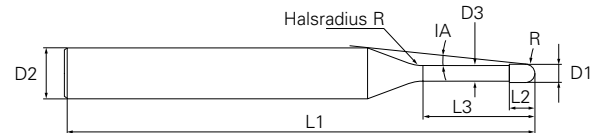
Zum Schlitzfräsen könnte eine Reduzierung beim Ap notwendig sein, um eine effektive Frässtrategie fahren zu können.

TuffCut[®] XM

Micro Rippenfräser



Serie XM2B



Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel				
											0.5°	1°	1.5°	2°	3°
XM2B-001N0.2X	FM0029	0.1	0.05	0.2	0.08	0.08	50.0	4.0	1.0	14.66°	0.20	0.21	0.22	0.24	0.26
XM2B-001N0.3X	FM0030			0.3						0.31	0.33	0.34	0.36	0.39	
XM2B-001N0.5X	FM0031			0.5						0.52	0.55	0.57	0.59	0.64	
XM2B-002N0.5X	FM0032	0.2	0.1	0.5	0.16	0.17	50.0	4.0	1.0	14.21°	0.51	0.53	0.55	0.57	0.61
XM2B-002N0.75X	FM0033			0.75						0.78	0.80	0.83	0.86	0.92	
XM2B-002N1X	FM0034			1.0						1.04	1.07	1.11	1.15	1.23	
XM2B-002N1.25X	FM0035			1.25						1.30	1.34	1.39	1.43	1.54	
XM2B-002N1.5X	FM0036			1.5						1.56	1.61	1.66	1.72	1.85	
XM2B-002N2X	FM0037			2.0						2.07	2.14	2.22	2.30	2.48	
XM2B-002N2.5X	FM0038			2.5						2.59	2.68	2.77	2.87	3.10	
XM2B-002N3X	FM0039	3.0	3.11	3.21	3.33	3.45	3.72								
XM2B-003N0.5X	FM0040	0.3	0.15	0.5	0.24	0.27	50.0	4.0	2.0	14.17°	0.52	0.55	0.57	0.60	0.66
XM2B-003N0.75X	FM0041			0.75						0.79	0.83	0.87	0.91	0.98	
XM2B-003N1X	FM0042			1.0						1.05	1.11	1.16	1.20	1.29	
XM2B-003N1.25X	FM0043			1.25						1.32	1.38	1.44	1.50	1.61	
XM2B-003N1.5X	FM0044			1.5						1.58	1.66	1.72	1.78	1.92	
XM2B-003N2X	FM0045			2.0						2.11	2.20	2.28	2.36	2.54	
XM2B-003N2.5X	FM0046			2.5						2.63	2.74	2.83	2.93	3.16	
XM2B-003N3X	FM0047	3.0	3.15	3.27	3.39	3.51	3.78								
XM2B-004N0.75X	FM0048	0.4	0.2	0.75	0.32	0.37	50.0	4.0	2.0	13.78°	0.78	0.82	0.86	0.90	0.97
XM2B-004N1X	FM0049			1.0						1.05	1.10	1.15	1.19	1.28	
XM2B-004N1.5X	FM0050			1.5						1.58	1.65	1.72	1.78	1.90	
XM2B-004N2X	FM0051			2.0						2.11	2.19	2.27	2.35	2.53	
XM2B-004N2.5X	FM0052			2.5						2.63	2.73	2.83	2.93	3.15	
XM2B-004N3X	FM0053			3.0						3.15	3.27	3.38	3.50	3.77	
XM2B-004N3.5X	FM0054			3.5						3.67	3.80	3.94	4.08	4.39	
XM2B-004N4X	FM0055	4.0	4.19	4.34	4.49	4.65	5.01								
XM2B-004N4.5X	FM0056	4.5	4.71	4.87	5.04	5.23	5.63								
XM2B-005N1X	FM0057	0.5	0.25	1.0	0.4	0.47	50.0	4.0	2.0	13.39°	1.05	1.09	1.14	1.19	1.27
XM2B-005N1.5X	FM0058			1.5						1.58	1.65	1.71	1.77	1.89	
XM2B-005N2X	FM0059			2.0						2.10	2.19	2.27	2.34	2.51	
XM2B-005N2.5X	FM0060			2.5						2.63	2.73	2.82	2.92	3.14	
XM2B-005N3X	FM0061			3.0						3.15	3.27	3.38	3.49	3.76	
XM2B-005N4X	FM0062			4.0						4.19	4.34	4.48	4.64	5.00	
XM2B-005N5X	FM0063			5.0						5.23	5.41	5.59	5.79	6.24	
XM2B-005N5.5X	FM0064			5.5						5.75	5.94	6.15	6.37	6.86	
XM2B-005N6X	FM0065	6.0	6.27	6.48	6.70	6.94	7.49								
XM2B-005N8X	FM0066	8.0	8.33	8.62	8.92	9.24	9.97								

TuffCut[®] XM

Micro Rippenfräser

Serie XM2B

Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel				
											0.5°	1°	1.5°	2°	3°
XM2B-006N1X	FM0067	0.6	0.3	1.0	0.48	0.57	50.0	4.0	4.0	13.15°	1.07	1.14	1.20	1.27	1.41
XM2B-006N2X	FM0068			2.0						11.61°	2.15	2.28	2.39	2.50	2.70
XM2B-006N2.5X	FM0069			2.5						10.96°	2.68	2.84	2.97	3.09	3.32
XM2B-006N3X	FM0070			3.0						10.38°	3.22	3.39	3.54	3.67	3.95
XM2B-006N3.5X	FM0071			3.5						9.86°	3.75	3.94	4.10	4.25	4.57
XM2B-006N4X	FM0072			4.0						9.39°	4.28	4.48	4.66	4.82	5.19
XM2B-006N4.5X	FM0073			4.5						8.97°	4.81	5.03	5.21	5.40	5.81
XM2B-006N5X	FM0074	0.6	0.3	5.0	0.48	0.57	50.0	4.0	4.0	8.57°	5.33	5.57	5.77	5.97	6.43
XM2B-006N5.5X	FM0075			5.5						8.22°	5.86	6.11	6.32	6.55	7.05
XM2B-006N6X	FM0076			6.0						7.89°	6.38	6.64	6.87	7.12	7.67
XM2B-006N7X	FM0077			7.0						7.3°	7.43	7.71	7.98	8.27	8.92
XM2B-006N8X	FM0078			8.0						6.79°	8.48	8.78	9.09	9.42	10.16
XM2B-006N9X	FM0079			9.0						6.35°	9.52	9.85	10.20	10.57	11.40
XM2B-006N10X	FM0080			10.0						5.97°	10.56	10.92	11.31	11.72	12.65
XM2B-006N12X	FM0081	12.0	5.32°	12.63	13.06	13.52	14.02	15.13							
XM2B-007N2X	FM0082	0.7	0.35	2.0	0.56	0.67	50.0	4.0	4.0	11.6°	2.14	2.27	2.39	2.49	2.69
XM2B-007N4X	FM0083			4.0						9.33°	4.27	4.48	4.65	4.81	5.18
XM2B-007N6X	FM0084			6.0						7.81°	6.38	6.64	6.87	7.11	7.66
XM2B-007N8X	FM0085			8.0						6.71°	8.47	8.78	9.09	9.41	10.15
XM2B-008N2X	FM0086	0.8	0.4	2.0	0.64	0.76	50.0	4.0	4.0	11.64°	2.12	2.24	2.35	2.45	2.63
XM2B-008N4X	FM0087			4.0						9.3°	4.25	4.44	4.61	4.77	5.12
XM2B-008N5X	FM0088			5.0						8.45°	5.30	5.53	5.72	5.92	6.36
XM2B-008N6X	FM0089			6.0						7.74°	6.35	6.60	6.83	7.07	7.61
XM2B-008N8X	FM0090			8.0						6.63°	8.44	8.74	9.04	9.37	10.09
XM2B-008N10X	FM0091			10.0						5.8°	10.52	10.88	11.26	11.67	12.58
XM2B-009N2X	FM0092	0.9	0.45	2.0	0.72	0.86	50.0	4.0	4.0	11.63°	2.12	2.23	2.34	2.44	2.62
XM2B-009N4X	FM0093			4.0						9.24°	4.25	4.44	4.60	4.76	5.11
XM2B-009N6X	FM0094			6.0						7.66°	6.35	6.60	6.82	7.06	7.60
XM2B-009N8X	FM0095			8.0						6.54°	8.44	8.74	9.04	9.36	10.08
XM2B-010N2X	FM0096	1.0	0.5	2.0	0.8	0.96	50.0	4.0	4.0	11.62°	2.12	2.23	2.33	2.43	2.61
XM2B-010N3X	FM0097			3.0						10.25°	3.18	3.34	3.48	3.60	3.85
XM2B-010N4X	FM0098			4.0						9.17°	4.24	4.43	4.60	4.75	5.10
XM2B-010N5X	FM0099			5.0						8.29°	5.30	5.52	5.71	5.90	6.34
XM2B-010N6X	FM0100			6.0						7.57°	6.35	6.59	6.81	7.05	7.58
XM2B-010N7X	FM0101			7.0						6.96°	7.39	7.66	7.92	8.20	8.83
XM2B-010N8X	FM0102			8.0						6.44°	8.44	8.73	9.03	9.35	10.07
XM2B-010N9X	FM0103			9.0			5.99°	9.48	9.80	10.14	10.50	11.31			
XM2B-010N10X	FM0104			10.0			5.6°	10.52	10.87	11.25	11.65	12.56			
XM2B-010N12X	FM0105			12.0			4.96°	12.59	13.01	13.46	13.95	15.04			
XM2B-010N13X	FM0106			13.0			4.69°	13.62	14.08	14.57	15.10	16.29			
XM2B-010N14X	FM0107			14.0			4.45°	14.66	15.15	15.68	16.25	17.53			
XM2B-010N16X	FM0108			16.0			4.03°	16.73	17.29	17.90	18.55	20.01			
XM2B-010N18X	FM0109			18.0			3.69°	18.79	19.43	20.11	20.85	22.50			
XM2B-010N20X	FM0110	20.0	3.4°	20.86	21.57	22.33	23.15	24.99							

TuffCut® XM

Micro Rippenfräser

Serie XM2B

Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel				
											0.5°	1°	1.5°	2°	3°
XM2B-011N2X	FM0111	1.1	0.55	2.0	0.88	1.06	50.0	4.0	4.0	11.61°	2.11	2.22	2.32	2.42	2.60
XM2B-011N4X	FM0112			4.0						9.09°	4.24	4.43	4.59	4.74	5.08
XM2B-011N6X	FM0113			6.0						7.47°	6.34	6.59	6.81	7.04	7.57
XM2B-011N8X	FM0114			8.0						6.34°	8.43	8.73	9.03	9.34	10.06
XM2B-011N10X	FM0115			10.0						5.5°	10.51	10.87	11.24	11.64	12.54
XM2B-012N4X	FM0116	1.2	0.6	4.0	0.96	1.15	50.0	4.0	4.0	9.05°	4.22	4.40	4.55	4.70	5.04
XM2B-012N8X	FM0117			8.0						6.25°	8.41	8.70	8.99	9.30	10.01
XM2B-012N10X	FM0118			10.0						5.41°	10.49	10.84	11.21	11.60	12.50
XM2B-012N12X	FM0119			12.0			4.77°			12.56	12.97	13.42	13.90	14.98	
XM2B-014N8X	FM0120	1.4	0.7	8.0	1.12	1.34	50.0	4.0	4.0	6.04°	8.38	8.66	8.95	9.26	9.96
XM2B-014N12X	FM0121			12.0			4.56°			12.53	12.94	13.38	13.86	14.93	
XM2B-014N16X	FM0122			16.0			3.67°			16.66	17.22	17.82	18.46	19.90	
XM2B-015N4X	FM0123	1.5	0.75	4.0	1.2	1.44	50.0	4.0	4.0	8.82°	4.20	4.36	4.51	4.65	4.97
XM2B-015N6X	FM0124			6.0						7.08°	6.29	6.52	6.73	6.95	7.46
XM2B-015N8X	FM0125			8.0						5.92°	8.38	8.66	8.95	9.25	9.94
XM2B-015N10X	FM0126			10.0						5.08°	10.46	10.80	11.16	11.55	12.43
XM2B-015N12X	FM0127			12.0						4.45°	12.53	12.94	13.38	13.85	14.92
XM2B-015N14X	FM0128			14.0			3.96°			14.60	15.08	15.60	16.15	17.40	
XM2B-015N16X	FM0129			16.0			3.57°			16.66	17.22	17.81	18.45	19.89	
XM2B-015N18X	FM0130			18.0			3.25°			18.73	19.36	20.03	20.75	22.38	
XM2B-015N20X	FM0131			20.0			2.98°			20.80	21.50	22.25	23.05	-	
XM2B-016N8X	FM0132			1.6			0.8			8.0	1.28	1.54	50.0	4.0	4.0
XM2B-016N12X	FM0133	12.0	4.34°		12.53	12.94		13.37	13.85	14.90					
XM2B-016N16X	FM0134	16.0	3.47°		16.66	17.21		17.81	18.44	19.88					
XM2B-016N20X	FM0135	20.0	2.89°		20.80	21.49		22.24	23.04	-					
XM2B-018N8X	FM0136	1.8	0.90	8.0	1.44	1.73	50.0	4.0	4.0	5.55°	8.36	8.63	8.91	9.21	9.88
XM2B-018N12X	FM0137			8.0			4.11°			12.50	12.91	13.34	13.81	14.85	
XM2B-018N16X	FM0138			16.0			3.26°			16.64	17.19	17.77	18.41	19.83	
XM2B-018N20X	FM0139			20.0			2.7°			20.77	21.46	22.21	23.01	-	
XM2B-020N3X	FM0140	2.0	1.0	3.0	1.6	1.92	50.0	4.0	4.0	9.72°	3.11	3.22	3.32	3.42	3.62
XM2B-020N4X	FM0141			4.0						8.32°	4.16	4.31	4.44	4.57	4.86
XM2B-020N6X	FM0142			6.0						6.46°	6.26	6.46	6.66	6.87	7.35
XM2B-020N8X	FM0143			8.0						5.27°	8.34	8.60	8.88	9.17	9.84
XM2B-020N10X	FM0144			10.0						4.46°	10.41	10.74	11.09	11.47	12.32
XM2B-020N12X	FM0145			12.0			3.86°			12.48	12.88	13.31	13.77	14.81	
XM2B-020N13X	FM0146			13.0			3.62°			13.51	13.95	14.42	14.92	16.05	
XM2B-020N14X	FM0147			14.0			3.4°			14.55	15.02	15.53	16.07	17.29	
XM2B-020N16X	FM0148			16.0			3.04°			16.62	17.16	17.74	18.37	19.78	
XM2B-020N18X	FM0149			18.0			2.75°			18.68	19.30	19.96	20.67	-	
XM2B-020N20X	FM0150			20.0			2.51°			20.75	21.44	22.18	22.97	-	
XM2B-020N22X	FM0151			22.0			2.31°			22.82	23.58	24.39	25.27	-	

TuffCut[®] XM

Micro Rippenfräser

Serie XM2B

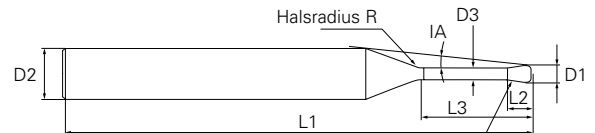
Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel				
											0.5°	1°	1.5°	2°	3°
XM2B-020N25X	FM0152	2.0	1.0	25.0	1.6	1.92	65.0	4.0	4.0	2.06°	25.92	26.79	27.72	28.72	-
XM2B-020N30X	FM0153			30.0			70.0			1.75°	31.09	32.14	33.26	-	-
XM2B-020N35X	FM0154			35.0			75.0			1.52°	36.26	37.48	38.80	-	-
XM2B-020N40X	FM0155			40.0			80.0			1.34°	41.42	42.83	-	-	-
XM2B-025N6X	FM0156	2.5	1.25	6.0	2.0	2.4	50.0	4.0	4.0	5.62°	6.22	6.41	6.60	6.80	7.25
XM2B-025N10X	FM0157			10.0			55.0			3.69°	10.37	10.69	11.03	11.40	12.23
XM2B-025N15X	FM0158			15.0			55.0			2.59°	15.54	16.04	16.58	17.15	-
XM2B-025N20X	FM0159			20.0			60.0			1.99°	20.71	21.39	22.12	-	-
XM2B-025N25X	FM0160			25.0			65.0			1.62°	25.88	26.74	27.66	-	-
XM2B-025N30X	FM0161			30.0			70.0			1.36°	31.05	32.09	-	-	-
XM2B-030N8X	FM0162	3.0	1.5	8.0	2.4	2.88	55.0	6.0	4.0	7.04°	8.27	8.51	8.77	9.04	9.65
XM2B-030N10X	FM0163			10.0			60.0			6.05°	10.34	10.65	10.98	11.34	12.14
XM2B-030N13X	FM0164			13.0			60.0			5°	13.44	13.86	14.31	14.79	15.87
XM2B-030N16X	FM0165			16.0			65.0			4.26°	16.55	17.07	17.63	18.24	19.60
XM2B-030N20X	FM0166			20.0			70.0			3.56°	20.68	21.35	22.07	22.84	24.57
XM2B-030N25X	FM0167			25.0			70.0			2.95°	25.85	26.70	27.61	28.59	-
XM2B-030N30X	FM0168			30.0			75.0			2.52°	31.02	32.05	33.15	34.34	-
XM2B-030N35X	FM0169			35.0			80.0			2.2°	36.19	37.39	38.69	40.08	-
XM2B-035N15X	FM0170	3.5	1.75	15.0	2.8	3.36	60.0	6.0	4.0	3.99°	15.49	15.96	16.48	17.03	18.27
XM2B-035N25X	FM0171			25.0			70.0			2.56°	25.82	26.66	27.56	28.53	-
XM2B-035N35X	FM0172			35.0			80.0			1.89°	36.16	37.36	38.64	-	-
XM2B-035N45X	FM0173			45.0			90.0			1.5°	46.50	48.05	-	-	-
XM2B-040N10X	FM0174	4.0	2.0	10.0	3.2	3.86	55.0	6.0	4.0	4.86°	10.31	10.60	10.91	11.24	11.99
XM2B-040N13X	FM0175			13.0			60.0			3.88°	13.41	13.81	14.23	14.69	15.72
XM2B-040N16X	FM0176			16.0			65.0			3.23°	16.51	17.02	17.56	18.14	19.45
XM2B-040N20X	FM0177			20.0			70.0			2.63°	20.65	21.30	21.99	22.74	-
XM2B-040N25X	FM0178			25.0			70.0			2.14°	25.81	26.64	27.53	28.49	-
XM2B-040N30X	FM0179			30.0			75.0			1.81°	30.98	31.99	33.08	-	-
XM2B-040N35X	FM0180	4.0	2.0	35.0	3.2	3.86	80.0	6.0	4.0	1.56°	36.15	37.34	38.62	-	-
XM2B-040N40X	FM0181			40.0			80.0			1.38°	41.32	42.69	-	-	-
XM2B-040N45X	FM0182			45.0			90.0			1.23°	46.49	48.04	-	-	-
XM2B-040N50X	FM0183			50.0			100.0			1.11°	51.66	53.39	-	-	-
XM2B-050N20X	FM0184	5.0	2.5	20.0	4.0	4.85	65.0	6.0	4.0	1.48°	20.62	21.25	-	-	-
XM2B-050N25X	FM0185			25.0			70.0			1.18°	25.79	26.60	-	-	-
XM2B-050N30X	FM0186			30.0			75.0			0.98°	30.96	-	-	-	-
XM2B-050N40X	FM0187			40.0			80.0			0.73°	41.29	-	-	-	-
XM2B-060N12X	FM0188	6.0	3.0	12.0	6.0	5.85	60.0	6.0	-	-	-	-	-	-	-
XM2B-060N20X	FM0189			20.0			65.0			-	-	-	-	-	-
XM2B-060N30X	FM0190			30.0			75.0			-	-	-	-	-	-
XM2B-060N50X	FM0191			50.0			100.0			-	-	-	-	-	-

TuffCut® XM

Micro Rippenfräser



Serie XM2R



1 ~ 5° verjüngter Hals auf der peripheren Kante

Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel				
											0.5°	1°	1.5°	2°	3°
XM2R-002N0.5-0.02RX	FM0333	0.2	0.02	0.5	0.16	0.17	50.0	4.0	1.0	14.07°	0.52	0.54	0.56	0.58	0.63
XM2R-002N1-0.02RX	FM0334			1.0						13.23°	1.04	1.08	1.12	1.16	1.25
XM2R-002N2-0.02RX	FM0335			2.0						11.82°	2.08	2.15	2.23	2.31	2.50
XM2R-002N0.5-0.05RX	FM0336		0.05	0.5						14.12°	0.52	0.54	0.56	0.58	0.62
XM2R-002N1-0.05RX	FM0337			1.0						13.28°	1.04	1.08	1.11	1.15	1.24
XM2R-002N1.5-0.05RX	FM0338			1.5						12.53°	1.56	1.61	1.67	1.73	1.87
XM2R-002N2-0.05RX	FM0339	2.0	11.85°	2.08	2.15	2.22	2.30	2.49							
XM2R-003N1-0.02RX	FM0340	0.3	0.02	1.0	0.24	0.27	50.0	4.0	2.0	13.09°	1.06	1.12	1.17	1.23	1.33
XM2R-003N2-0.02RX	FM0341			2.0						11.67°	2.11	2.21	2.29	2.38	2.57
XM2R-003N3-0.02RX	FM0342			3.0						10.53°	3.16	3.28	3.40	3.53	3.81
XM2R-003N1-0.05RX	FM0343		0.05	1.0						13.14°	1.06	1.12	1.17	1.22	1.32
XM2R-003N1.5-0.05RX	FM0344			1.5						12.38°	1.59	1.66	1.73	1.80	1.94
XM2R-003N2-0.05RX	FM0345			2.0						11.71°	2.11	2.21	2.29	2.37	2.56
XM2R-003N2.5-0.05RX	FM0346	2.5	11.11°	2.64	2.75	2.84	2.95	3.18							
XM2R-003N3-0.05RX	FM0347	3.0	10.56°	3.16	3.28	3.40	3.52	3.81							
XM2R-004N1-0.02RX	FM0348	0.4	0.02	1.0	0.32	0.37	50.0	4.0	2.0	13.04°	1.06	1.12	1.17	1.23	1.33
XM2R-004N2-0.02RX	FM0349			2.0						11.6°	2.11	2.21	2.29	2.38	2.57
XM2R-004N3-0.02RX	FM0350			3.0						10.44°	3.16	3.28	3.40	3.53	3.81
XM2R-004N4-0.02RX	FM0351		4.0	9.49°						4.20	4.35	4.51	4.68	5.06	
XM2R-004N1-0.05RX	FM0352		0.05	1.0						13.09°	1.06	1.12	1.17	1.22	1.32
XM2R-004N1.5-0.05RX	FM0353			1.5						12.32°	1.59	1.66	1.73	1.80	1.94
XM2R-004N2-0.05RX	FM0354	2.0		11.64°	2.11	2.21	2.29	2.37	2.56						
XM2R-004N2.5-0.05RX	FM0355	0.1	2.5	11.03°	2.64	2.75	2.84	2.95	3.18						
XM2R-004N3-0.05RX	FM0356		3.0	10.47°	3.16	3.28	3.40	3.52	3.81						
XM2R-004N3.5-0.05RX	FM0357		3.5	9.97°	3.68	3.82	3.95	4.10	4.43						
XM2R-004N4-0.05RX	FM0358	4.0	9.52°	4.20	4.35	4.51	4.67	5.05							
XM2R-004N1-0.1RX	FM0359	0.1	1.0	13.17°	1.06	1.11	1.16	1.21	1.31						
XM2R-004N2-0.1RX	FM0360		2.0	11.7°	2.11	2.20	2.28	2.37	2.55						
XM2R-004N3-0.1RX	FM0361		3.0	10.53°	3.16	3.28	3.39	3.52	3.79						
XM2R-004N4-0.1RX	FM0362		4.0	9.56°	4.20	4.35	4.50	4.67	5.04						

TuffCut® XM

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Serie XM2R

Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel										
											0.5°	1°	1.5°	2°	3°						
XM2R-005N1-0.02RX	FM0363	0.5	0.02	1.0	0.4	0.47	50.0	4.0	2.0	13°	1.06	1.12	1.17	1.23	1.33						
XM2R-005N2-0.02RX	FM0364			11.53°						2.11	2.21	2.29	2.38	2.57							
XM2R-005N3-0.02RX	FM0365			10.35°						3.16	3.28	3.40	3.53	3.81							
XM2R-005N4-0.02RX	FM0366			9.39°						4.20	4.35	4.51	4.68	5.06							
XM2R-005N6-0.02RX	FM0367			7.92°						6.27	6.49	6.73	6.98	7.54							
XM2R-005N1-0.05RX	FM0368			0.05						1.0	13.05°	1.06	1.12	1.17	1.22	1.32					
XM2R-005N2-0.05RX	FM0369		2.0							11.56°	2.11	2.21	2.29	2.37	2.56						
XM2R-005N3-0.05RX	FM0370		3.0							10.38°	3.16	3.28	3.40	3.52	3.81						
XM2R-005N4-0.05RX	FM0371		4.0							9.42°	4.20	4.35	4.51	4.67	5.05						
XM2R-005N5-0.05RX	FM0372		5.0							8.62°	5.24	5.42	5.61	5.82	6.29						
XM2R-005N6-0.05RX	FM0373		6.0							7.94°	6.27	6.49	6.72	6.97	7.53						
XM2R-005N1-0.1RX	FM0374		0.1	1.0						13.13°	1.06	1.11	1.16	1.21	1.31						
XM2R-005N2-0.1RX	FM0375			2.0						11.63°	2.11	2.20	2.28	2.37	2.55						
XM2R-005N3-0.1RX	FM0376			3.0						10.44°	3.16	3.28	3.39	3.52	3.79						
XM2R-005N4-0.1RX	FM0377			4.0						9.46°	4.20	4.35	4.50	4.67	5.04						
XM2R-005N5-0.1RX	FM0378			5.0						8.65°	5.24	5.42	5.61	5.82	6.28						
XM2R-005N6-0.1RX	FM0379			6.0						7.97°	6.27	6.49	6.72	6.97	7.52						
XM2R-006N2-0.02RX	FM0380		0.6	0.02						2.0	0.48	0.57	50.0	4.0	4.0	11.24°	2.17	2.31	2.44	2.55	2.77
XM2R-006N4-0.02RX	FM0381	4.0			9.15°	4.29	4.51	4.69	4.86	5.26											
XM2R-006N6-0.02RX	FM0382	6.0			7.71°	6.40	6.66	6.90	7.16	7.74											
XM2R-006N2-0.05RX	FM0383	0.05			2.0	11.27°	2.17	2.31	2.43	2.55						2.76					
XM2R-006N4-0.05RX	FM0384				4.0	9.18°	4.29	4.51	4.68	4.86						5.25					
XM2R-006N6-0.05RX	FM0385				6.0	7.73°	6.40	6.66	6.90	7.16						7.74					
XM2R-006N8-0.05RX	FM0386			8.0	6.68°	8.49	8.80	9.12	9.46	10.22											
XM2R-006N10-0.05RX	FM0387			10.0	5.88°	10.57	10.94	11.33	11.76	12.71											
XM2R-006N2-0.1RX	FM0388			0.1	2.0	11.34°	2.16	2.30	2.43	2.54						2.75					
XM2R-006N4-0.1RX	FM0389	4.0			9.22°	4.29	4.50	4.68	4.85	5.24											
XM2R-006N6-0.1RX	FM0390	6.0			7.76°	6.39	6.66	6.90	7.15	7.72											
XM2R-006N8-0.1RX	FM0391	8.0			6.7°	8.48	8.80	9.11	9.45	10.21											
XM2R-006N10-0.1RX	FM0392	10.0			5.89°	10.57	10.94	11.33	11.75	12.70											
XM2R-007N4-0.05RX	FM0393	0.7			0.05	4.0	0.56	0.67	50.0	4.0						4.0	9.07°	4.29	4.51	4.68	4.86
XM2R-007N6-0.05RX	FM0394			6.0		7.62°											6.40	6.66	6.90	7.16	7.74
XM2R-007N4-0.1RX	FM0395			0.1	4.0	9.11°											4.29	4.50	4.68	4.85	5.24
XM2R-007N6-0.1RX	FM0396				6.0	7.65°											6.39	6.66	6.90	7.15	7.72
XM2R-008N4-0.02RX	FM0397	0.8		0.02	4.0	0.64	0.76	50.0	4.0	4.0						8.96°	4.27	4.47	4.65	4.82	5.21
XM2R-008N6-0.02RX	FM0398		6.0		7.51°						6.37	6.63	6.87	7.12	7.70						
XM2R-008N4-0.05RX	FM0399		0.05		4.0						8.99°	4.27	4.47	4.65	4.82	5.21					
XM2R-008N6-0.05RX	FM0400				6.0						7.52°	6.37	6.63	6.86	7.12	7.69					
XM2R-008N8-0.05RX	FM0401				8.0						6.47°	8.45	8.76	9.08	9.42	10.18					
XM2R-008N12-0.05RX	FM0402				12.0						5.05°	12.61	13.04	13.51	14.02	15.15					
XM2R-008N4-0.1RX	FM0403			0.1	4.0			9.03°			4.26	4.47	4.64	4.81	5.19						
XM2R-008N6-0.1RX	FM0404				6.0			7.55°			6.37	6.62	6.86	7.11	7.68						
XM2R-008N8-0.1RX	FM0405		8.0		6.49°			8.45			8.76	9.07	9.41	10.17							
XM2R-008N12-0.1RX	FM0406		12.0		5.06°			12.60			13.04	13.51	14.01	15.14							
XM2R-008N4-0.2RX	FM0407		0.2		4.0			9.12°			4.26	4.46	4.63	4.80	5.17						
XM2R-008N6-0.2RX	FM0408				6.0			7.62°			6.36	6.61	6.85	7.10	7.66						
XM2R-008N8-0.2RX	FM0409			8.0	6.54°			8.45			8.75	9.06	9.40	10.14							
XM2R-008N12-0.2RX	FM0410			12.0	5.09°			12.60			13.03	13.50	14.00	15.11							

TuffCut[®] XM

Micro Rippenfräser

Serie XM2R

Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel												
											0.5°	1°	1.5°	2°	3°								
XM2R-010N2-0.02RX	FM0411	1.0	0.02	2.0	0.80	0.96	50.0	4.0	4.0	10.92°	2.15	2.28	2.40	2.52	2.73								
XM2R-010N4-0.02RX	FM0412			4.0						8.72°	4.27	4.47	4.65	4.82	5.21								
XM2R-010N6-0.02RX	FM0413			6.0						7.26°	6.37	6.63	6.87	7.12	7.70								
XM2R-010N8-0.02RX	FM0414			8.0						6.22°	8.46	8.77	9.08	9.42	10.19								
XM2R-010N10-0.02RX	FM0415			10.0						5.44°	10.53	10.91	11.30	11.72	12.67								
XM2R-010N12-0.02RX	FM0416			12.0						4.83°	12.61	13.05	13.52	14.02	15.16								
XM2R-010N2-0.05RX	FM0417		0.05	0.1			2.0			50.0	4.0	4.0	10.96°	2.15	2.28	2.40	2.51	2.72					
XM2R-010N3-0.05RX	FM0418						3.0						9.73°	3.21	3.38	3.53	3.67	3.96					
XM2R-010N4-0.05RX	FM0419						4.0						8.75°	4.27	4.47	4.65	4.82	5.21					
XM2R-010N5-0.05RX	FM0420						5.0						7.95°	5.32	5.55	5.75	5.97	6.45					
XM2R-010N6-0.05RX	FM0421						6.0						7.28°	6.37	6.63	6.86	7.12	7.69					
XM2R-010N8-0.05RX	FM0422						8.0						6.23°	8.45	8.76	9.08	9.42	10.18					
XM2R-010N10-0.05RX	FM0423						10.0						5.45°	10.53	10.90	11.30	11.72	12.67					
XM2R-010N12-0.05RX	FM0424						12.0						4.84°	12.61	13.04	13.51	14.02	15.15					
XM2R-010N16-0.05RX	FM0425						16.0						3.95°	16.74	17.32	17.95	18.62	20.12					
XM2R-010N20-0.05RX	FM0426						20.0						3.34°	20.88	21.60	22.38	23.22	25.10					
XM2R-010N2-0.1RX	FM0427						0.1						0.1	2.0	50.0	4.0	4.0	11.03°	2.14	2.27	2.39	2.50	2.71
XM2R-010N3-0.1RX	FM0428													3.0				9.79°	3.21	3.38	3.53	3.66	3.95
XM2R-010N4-0.1RX	FM0429													4.0				8.8°	4.26	4.47	4.64	4.81	5.19
XM2R-010N5-0.1RX	FM0430													5.0				7.99°	5.32	5.55	5.75	5.96	6.44
XM2R-010N6-0.1RX	FM0431													6.0				7.31°	6.37	6.62	6.86	7.11	7.68
XM2R-010N8-0.1RX	FM0432													8.0				6.25°	8.45	8.76	9.07	9.41	10.17
XM2R-010N10-0.1RX	FM0433													10.0				5.46°	10.53	10.90	11.29	11.71	12.65
XM2R-010N12-0.1RX	FM0434													12.0				4.85°	12.60	13.04	13.51	14.01	15.14
XM2R-010N16-0.1RX	FM0435		16.0	3.96°						16.74	17.32	17.94		18.61				20.11					
XM2R-010N20-0.1RX	FM0436		20.0	3.35°						20.87	21.60	22.37		23.21				25.08					
XM2R-010N2-0.2RX	FM0437		0.2	0.1						2.0	50.0	4.0		4.0				11.17°	2.14	2.26	2.38	2.48	2.68
XM2R-010N3-0.2RX	FM0438									3.0								9.9°	3.20	3.37	3.51	3.65	3.93
XM2R-010N4-0.2RX	FM0439						4.0			8.89°			4.26		4.46	4.63	4.80	5.17					
XM2R-010N5-0.2RX	FM0440						5.0			8.06°			5.31		5.54	5.74	5.95	6.41					
XM2R-010N6-0.2RX	FM0441	6.0			7.37°	6.36	6.61	6.85	7.10	7.66													
XM2R-010N8-0.2RX	FM0442	8.0			6.3°	8.45	8.75	9.06	9.40	10.14													
XM2R-010N10-0.2RX	FM0443	10.0			5.5°	10.53	10.89	11.28	11.70	12.63													
XM2R-010N12-0.2RX	FM0444	12.0			4.88°	12.60	13.03	13.50	14.00	15.11													
XM2R-010N16-0.2RX	FM0445	16.0			3.98°	16.74	17.31	17.93	18.59	20.09													
XM2R-010N20-0.2RX	FM0446	20.0			3.36°	20.87	21.59	22.36	23.19	25.06													
XM2R-010N2-0.3RX	FM0447	0.3			0.1	2.0	50.0	4.0	4.0	11.32°			2.13		2.25	2.36	2.47	2.66					
XM2R-010N3-0.3RX	FM0448					3.0				10.01°			3.20		3.36	3.50	3.63	3.90					
XM2R-010N4-0.3RX	FM0449		4.0	8.98°		4.25				4.45	4.62	4.78	5.15										
XM2R-010N5-0.3RX	FM0450		5.0	8.14°		5.31				5.53	5.73	5.93	6.39										
XM2R-010N6-0.3RX	FM0451		6.0	7.44°		6.36				6.61	6.84	7.08	7.63										
XM2R-010N8-0.3RX	FM0452		8.0	6.35°		8.44				8.75	9.05	9.38	10.12										
XM2R-010N10-0.3RX	FM0453		10.0	5.53°		10.52				10.89	11.27	11.68	12.60										
XM2R-010N12-0.3RX	FM0454		12.0	4.9°		12.60				13.03	13.49	13.98	15.09										
XM2R-010N16-0.3RX	FM0455		16.0	4°		16.73				17.30	17.92	18.58	20.06										
XM2R-010N20-0.3RX	FM0456		20.0	3.37°		20.87				21.58	22.35	23.18	25.04										

TuffCut® XM

Micro Rippenfräser

Serie XM2R

Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel				
											0.5°	1°	1.5°	2°	3°
XM2R-0125N5-0.1RX	FM0457	1.25	0.1	5.0	1.0	1.2	50.0	4.0	4.0	7.68°	5.30	5.52	5.72	5.93	6.40
XM2R-0125N10-0.1RX	FM0458			10.0			5.17°			10.50	10.87	11.26	11.68	12.62	
XM2R-0125N15-0.1RX	FM0459			15.0			3.9°			15.68	16.22	16.80	17.43	18.83	
XM2R-0125N20-0.1RX	FM0460			20.0			3.13°			20.84	21.57	22.34	23.18	25.05	
XM2R-0125N5-0.2RX	FM0461		0.2	5.0			7.75°			5.29	5.51	5.71	5.91	6.38	
XM2R-0125N10-0.2RX	FM0462			10.0			5.21°			10.50	10.86	11.25	11.66	12.59	
XM2R-0125N15-0.2RX	FM0463			15.0			3.92°			15.67	16.21	16.79	17.41	18.81	
XM2R-0125N20-0.2RX	FM0464			20.0			3.14°			20.84	21.56	22.33	23.16	25.02	
XM2R-0125N5-0.3RX	FM0465		0.3	5.0			7.83°			5.29	5.50	5.70	5.90	6.35	
XM2R-0125N10-0.3RX	FM0466			10.0			5.24°			10.50	10.86	11.24	11.65	12.57	
XM2R-0125N15-0.3RX	FM0467			15.0			3.94°			15.67	16.20	16.78	17.40	18.78	
XM2R-0125N20-0.3RX	FM0468			20.0			3.15°			20.84	21.55	22.32	23.15	25.00	
XM2R-015N4-0.1RX	FM0469	1.5	0.1	4.0	1.2	1.44	50.0	4.0	4.0	8.17°	4.23	4.42	4.58	4.75	5.13
XM2R-015N6-0.1RX	FM0470			6.0			6.66°			6.32	6.57	6.80	7.05	7.62	
XM2R-015N8-0.1RX	FM0471			8.0			5.62°			8.41	8.71	9.02	9.35	10.10	
XM2R-015N12-0.1RX	FM0472			12.0			4.28°			12.55	12.98	13.45	13.95	15.07	
XM2R-015N15-0.1RX	FM0473			15.0			3.63°			15.65	16.19	16.77	17.40	18.80	
XM2R-015N20-0.1RX	FM0474			20.0			2.9°			20.82	21.54	22.32	23.15	-	
XM2R-015N4-0.2RX	FM0475		0.2	4.0			8.26°			4.23	4.41	4.57	4.74	5.10	
XM2R-015N6-0.2RX	FM0476			6.0			6.72°			6.32	6.56	6.79	7.04	7.59	
XM2R-015N8-0.2RX	FM0477			8.0			5.66°			8.40	8.70	9.01	9.34	10.08	
XM2R-015N12-0.2RX	FM0478			12.0			4.31°			12.55	12.98	13.44	13.94	15.05	
XM2R-015N15-0.2RX	FM0479			15.0			3.65°			15.65	16.19	16.76	17.38	18.78	
XM2R-015N20-0.2RX	FM0480			20.0			2.91°			20.82	21.53	22.31	23.13	-	
XM2R-015N4-0.3RX	FM0481		0.3	4.0			8.36°			4.22	4.40	4.56	4.72	5.08	
XM2R-015N6-0.3RX	FM0482			6.0			6.78°			6.31	6.55	6.78	7.02	7.57	
XM2R-015N8-0.3RX	FM0483			8.0			5.71°			8.40	8.69	8.99	9.32	10.05	
XM2R-015N12-0.3RX	FM0484			12.0			4.33°			12.54	12.97	13.43	13.92	15.03	
XM2R-015N15-0.3RX	FM0485			15.0			3.67°			15.64	16.18	16.75	17.37	18.76	
XM2R-015N20-0.3RX	FM0486			20.0			2.92°			20.81	21.53	22.29	23.12	-	
XM2R-015N4-0.5RX	FM0487		0.5	4.0			8.55°			4.21	4.39	4.54	4.69	5.03	
XM2R-015N6-0.5RX	FM0488			6.0			6.91°			6.31	6.54	6.76	6.99	7.52	
XM2R-015N8-0.5RX	FM0489			8.0			5.8°			8.39	8.68	8.97	9.29	10.00	
XM2R-015N12-0.5RX	FM0490			12.0			4.39°			12.54	12.96	13.41	13.89	14.98	
XM2R-015N15-0.5RX	FM0491			15.0			3.71°			15.64	16.17	16.73	17.34	18.71	
XM2R-015N20-0.5RX	FM0492			20.0			2.95°			20.81	21.51	22.27	23.09	-	

TuffCut[®] XM

Micro Rippenfräser

Serie XM2R

Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel																										
											0.5°	1°	1.5°	2°	3°																						
XM2R-0175N5-0.1RX	FM0493	1.75	0.1	5.0	1.4	1.68	50.0	4.0	4.0	6.96°	5.26	5.47	5.67	5.88	6.35																						
XM2R-0175N10-0.1RX	FM0494			10.0						4.53°	10.46	10.82	11.21	11.63	12.56																						
XM2R-0175N15-0.1RX	FM0495			15.0						3.35°	15.63	16.17	16.75	17.38	18.78																						
XM2R-0175N20-0.1RX	FM0496			20.0						2.66°	20.80	21.52	22.29	23.13	-																						
XM2R-0175N5-0.2RX	FM0497		1.75	0.2			5.0			1.4	1.68	50.0	4.0	4.0	7.03°	5.26	5.47	5.66	5.86	6.32																	
XM2R-0175N10-0.2RX	FM0498						10.0								4.56°	10.46	10.82	11.20	11.61	12.54																	
XM2R-0175N15-0.2RX	FM0499						15.0								3.37°	15.63	16.16	16.74	17.36	18.75																	
XM2R-0175N20-0.2RX	FM0500						20.0								2.67°	20.80	21.51	22.28	23.11	-																	
XM2R-0175N5-0.3RX	FM0501			1.75			0.3					5.0			1.4	1.68	50.0	4.0	4.0	7.11°	5.25	5.46	5.65	5.85	6.30												
XM2R-0175N10-0.3RX	FM0502											10.0								4.59°	10.45	10.81	11.19	11.60	12.51												
XM2R-0175N15-0.3RX	FM0503											15.0								3.39°	15.62	16.16	16.73	17.35	18.73												
XM2R-0175N20-0.3RX	FM0504											20.0								2.69°	20.79	21.51	22.27	23.10	-												
XM2R-020N4-0.1RX	FM0505	2.0			0.1	4.0	1.60	1.92	50.0			4.0					4.0			7.36°	4.21	4.38	4.54	4.71	5.08												
XM2R-020N6-0.1RX	FM0506					6.0														5.86°	6.29	6.53	6.76	7.01	7.57												
XM2R-020N8-0.1RX	FM0507					8.0														4.87°	8.37	8.66	8.97	9.31	10.05												
XM2R-020N12-0.1RX	FM0508					12.0														3.64°	12.51	12.94	13.41	13.91	15.03												
XM2R-020N16-0.1RX	FM0509		16.0			2.9°				16.65	17.22		17.84	18.51						-																	
XM2R-020N20-0.1RX	FM0510		20.0			2.42°				20.78	21.50		22.27	23.11						-																	
XM2R-020N25-0.1RX	FM0511		25.0			2°				25.95	26.85		27.82	-						-																	
XM2R-020N30-0.1RX	FM0512		30.0			1.7°				31.12	32.20		33.36	-						-																	
XM2R-020N4-0.2RX	FM0513		2.0	0.2		4.0				1.60	1.92		50.0	4.0	4.0	7.46°		4.20	4.37	4.53	4.69	5.06															
XM2R-020N6-0.2RX	FM0514					6.0										5.93°		6.29	6.52	6.75	6.99	7.54															
XM2R-020N8-0.2RX	FM0515					8.0										4.91°		8.37	8.66	8.96	9.29	10.03															
XM2R-020N12-0.2RX	FM0516					12.0										3.66°		12.51	12.94	13.40	13.89	15.00															
XM2R-020N16-0.2RX	FM0517				16.0	2.92°			16.64							17.22		17.83	18.49	-																	
XM2R-020N20-0.2RX	FM0518				20.0	2.43°			20.78							21.49		22.26	23.09	-																	
XM2R-020N25-0.2RX	FM0519				25.0	2°			25.95							26.84		27.80	-	-																	
XM2R-020N30-0.2RX	FM0520				30.0	1.71°			31.11							32.19		33.35	-	-																	
XM2R-020N4-0.3RX	FM0521				2.0	0.3			4.0							1.60		1.92	50.0	4.0	4.0	7.56°	4.20	4.37	4.52	4.68	5.03										
XM2R-020N6-0.3RX	FM0522								6.0													5.99°	6.28	6.51	6.74	6.98	7.52										
XM2R-020N8-0.3RX	FM0523								8.0													4.96°	8.36	8.65	8.95	9.28	10.01										
XM2R-020N12-0.3RX	FM0524								12.0													3.69°	12.50	12.93	13.39	13.88	14.98										
XM2R-020N16-0.3RX	FM0525			16.0					2.93°				16.64									17.21	17.82	18.48	-												
XM2R-020N20-0.3RX	FM0526			20.0					2.44°				20.77									21.49	22.25	23.08	-												
XM2R-020N25-0.3RX	FM0527			25.0					2.01°				25.94									26.84	27.79	28.82	-												
XM2R-020N30-0.3RX	FM0528			30.0					1.71°				31.11									32.18	33.34	-	-												
XM2R-020N6-0.5RX	FM0529			2.0					0.5				6.0									1.60	1.92	50.0	4.0	4.0	6.11°	6.28	6.50	6.71	6.95	7.47					
XM2R-020N8-0.5RX	FM0530												8.0														5.04°	8.36	8.64	8.93	9.25	9.96					
XM2R-020N12-0.5RX	FM0531												12.0														3.73°	12.50	12.92	13.36	13.85	14.93					
XM2R-020N16-0.5RX	FM0532												16.0														2.96°	16.63	17.19	17.80	18.45	-					
XM2R-020N20-0.5RX	FM0533					20.0							2.46°						20.77								21.47	22.23	23.05	-							
XM2R-020N25-0.5RX	FM0534					25.0							2.03°						25.94								26.82	27.77	28.79	-							
XM2R-020N30-0.5RX	FM0535					30.0							1.72°						31.10								32.17	33.31	-	-							
XM2R-020N6-0.8RX	FM0536					2.0							0.8						6.0								1.60	1.92	50.0	4.0	4.0	6.31°	6.26	6.48	6.68	6.90	7.40
XM2R-020N8-0.8RX	FM0537																		8.0													5.18°	8.35	8.62	8.90	9.20	9.88
XM2R-020N12-0.8RX	FM0538																		12.0													3.81°	12.49	12.89	13.33	13.80	14.86
XM2R-020N16-0.8RX	FM0539																		16.0													3.01°	16.62	17.17	17.77	18.40	19.83
XM2R-020N20-0.8RX	FM0540																		20.0													2.49°	20.76	21.45	22.20	23.00	-
XM2R-020N25-0.8RX	FM0541	25.0					2.05°	25.93	26.80			27.74					28.75		-																		
XM2R-020N30-0.8RX	FM0542	30.0					1.74°	31.09	32.15			33.28					-		-																		

TuffCut[®] XM

Micro Rippenfräser

Serie XM2R

Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel					
											0.5°	1°	1.5°	2°	3°	
XM2R-025N10-0.1RX	FM0543	2.5	0.1	10.0	2.0	2.4	50.0	4.0	4.0	3.36°	10.41	10.77	11.16	11.57	12.50	
XM2R-025N20-0.1RX	FM0544			20.0			60.0			1.89°	20.75	21.47	22.24	-	-	
XM2R-025N30-0.1RX	FM0545			30.0			70.0			1.32°	31.09	32.17	-	-	-	
XM2R-025N10-0.2RX	FM0546		0.2	10.0			50.0			3.39°	10.41	10.77	11.15	11.56	12.48	
XM2R-025N20-0.2RX	FM0547			20.0			60.0			1.9°	20.75	21.46	22.23	-	-	
XM2R-025N30-0.2RX	FM0548			30.0			70.0			1.32°	31.08	32.16	-	-	-	
XM2R-025N10-0.3RX	FM0549	2.5	0.3	10.0	2.0	2.40	50.0	4.0	4.0	3.42°	10.41	10.76	11.14	11.54	12.46	
XM2R-025N20-0.3RX	FM0550			20.0			60.0			1.91°	20.74	21.46	22.22	-	-	
XM2R-025N30-0.3RX	FM0551			30.0			70.0			1.32°	31.08	32.15	-	-	-	
XM2R-025N10-0.5RX	FM0552		0.5	10.0			50.0			3.47°	10.40	10.75	11.12	11.51	12.41	
XM2R-025N20-0.5RX	FM0553			20.0			60.0			1.92°	20.74	21.44	22.20	-	-	
XM2R-025N30-0.5RX	FM0554			30.0			70.0			1.33°	31.07	32.14	-	-	-	
XM2R-030N6-0.1RX	FM0555	3.0	0.1	6.0	2.4	2.88	50.0	6.0	4.0	7.4°	6.25	6.47	6.70	6.95	7.50	
XM2R-030N8-0.1RX	FM0556			8.0			55.0			6.32°	8.32	8.61	8.92	9.25	9.99	
XM2R-030N12-0.1RX	FM0557			12.0			60.0			4.89°	12.46	12.89	13.35	13.85	14.96	
XM2R-030N16-0.1RX	FM0558			16.0			65.0			3.99°	16.59	17.17	17.78	18.45	19.94	
XM2R-030N18-0.1RX	FM0559			18.0			75.0			3.65°	18.66	19.31	20.00	20.75	22.42	
XM2R-030N20-0.1RX	FM0560			20.0			80.0			3.36°	20.73	21.45	22.22	23.05	24.91	
XM2R-030N30-0.1RX	FM0561			30.0			80.0			2.42°	31.06	32.14	33.30	34.55	-	
XM2R-030N35-0.1RX	FM0562			35.0			80.0			2.12°	36.23	37.49	38.84	40.29	-	
XM2R-030N6-0.2RX	FM0563			0.2			6.0			50.0	7.46°	6.25	6.46	6.69	6.93	7.48
XM2R-030N8-0.2RX	FM0564						8.0			55.0	6.36°	8.32	8.60	8.91	9.23	9.97
XM2R-030N12-0.2RX	FM0565		12.0				60.0			4.92°	12.45	12.88	13.34	13.83	14.94	
XM2R-030N16-0.2RX	FM0566		16.0				65.0			4°	16.59	17.16	17.77	18.43	19.91	
XM2R-030N18-0.2RX	FM0567		18.0				75.0			3.66°	18.66	19.30	19.99	20.73	22.40	
XM2R-030N20-0.2RX	FM0568		20.0				80.0			3.38°	20.72	21.44	22.21	23.03	24.88	
XM2R-030N30-0.2RX	FM0569		30.0				75.0			2.43°	31.06	32.14	33.29	34.53	-	
XM2R-030N35-0.2RX	FM0570		35.0				80.0			2.13°	36.23	37.48	38.83	40.28	-	
XM2R-030N6-0.3RX	FM0571		0.3				6.0			50.0	7.53°	6.24	6.46	6.68	6.92	7.46
XM2R-030N8-0.3RX	FM0572						8.0			55.0	6.41°	8.32	8.60	8.90	9.22	9.94
XM2R-030N12-0.3RX	FM0573			12.0			60.0			4.94°	12.45	12.87	13.33	13.82	14.91	
XM2R-030N16-0.3RX	FM0574			16.0			65.0			4.02°	16.59	17.15	17.76	18.42	19.89	
XM2R-030N18-0.3RX	FM0575			18.0			75.0			3.68°	18.65	19.29	19.98	20.72	22.37	
XM2R-030N20-0.3RX	FM0576			20.0			80.0			3.39°	20.72	21.43	22.20	23.02	24.86	
XM2R-030N30-0.3RX	FM0577			30.0			75.0			2.43°	31.06	32.13	33.28	34.52	-	
XM2R-030N35-0.3RX	FM0578			35.0			80.0			2.13°	36.23	37.48	38.82	40.26	-	
XM2R-030N8-0.5RX	FM0579			0.5			8.0			55.0	6.51°	8.31	8.58	8.87	9.19	9.89
XM2R-030N12-0.5RX	FM0580						12.0			60.0	5°	12.44	12.86	13.31	13.79	14.87
XM2R-030N16-0.5RX	FM0581		16.0				65.0			4.06°	16.58	17.14	17.74	18.39	19.84	
XM2R-030N18-0.5RX	FM0582		18.0				75.0			3.71°	18.65	19.28	19.96	20.69	22.33	
XM2R-030N20-0.5RX	FM0583		20.0				80.0			3.42°	20.71	21.42	22.17	22.99	24.81	
XM2R-030N30-0.5RX	FM0584		30.0				75.0			2.45°	31.05	32.12	33.26	34.49	-	
XM2R-030N35-0.5RX	FM0585	35.0	80.0		2.14°	36.22	37.46	38.80	40.23	-						
XM2R-030N8-1.0RX	FM0586	1.0	8.0		55.0	6.76°	8.29	8.55	8.82	9.11	9.77					
XM2R-030N12-1.0RX	FM0587		12.0		60.0	5.15°	12.43	12.83	13.25	13.71	14.74					
XM2R-030N16-1.0RX	FM0588		16.0		65.0	4.16°	16.56	17.10	17.69	18.31	19.72					
XM2R-030N18-1.0RX	FM0589		18.0	75.0	3.79°	18.63	19.24	19.90	20.61	22.20						
XM2R-030N20-1.0RX	FM0590		20.0	80.0	3.49°	20.70	21.38	22.12	22.91	24.69						
XM2R-030N30-1.0RX	FM0591		30.0	75.0	2.48°	31.03	32.08	33.20	34.41	-						
XM2R-030N35-1.0RX	FM0592		35.0	80.0	2.17°	36.20	37.43	38.74	40.16	-						

TuffCut® XM

Micro Rippenfräser

Serie XM2R

Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel						
											0.5°	1°	1.5°	2°	3°		
XM2R-040N8-0.1RX	FM0593	4.0	0.1	8.0	3.2	3.86	55.0	6.0	4.0	4.9°	8.31	8.59	8.90	9.23	9.97		
XM2R-040N12-0.1RX	FM0594			12.0			60.0			3.66°	12.44	12.87	13.33	13.83	14.94		
XM2R-040N16-0.1RX	FM0595			16.0			65.0			2.91°	16.57	17.15	17.76	18.43	-		
XM2R-040N20-0.1RX	FM0596			20.0			75.0			2.42°	20.71	21.43	22.20	23.03	-		
XM2R-040N30-0.1RX	FM0597			30.0			80.0			1.71°	31.05	32.12	33.28	-	-		
XM2R-040N35-0.1RX	FM0598			35.0			90.0			1.49°	36.21	37.47	-	-	-		
XM2R-040N45-0.1RX	FM0599			45.0			55.0			1.18°	46.55	48.17	-	-	-		
XM2R-040N8-0.2RX	FM0600			0.2			8.0			55.0	4.94°	8.30	8.58	8.89	9.21	9.94	
XM2R-040N12-0.2RX	FM0601						12.0			60.0	3.68°	12.44	12.86	13.32	13.81	14.92	
XM2R-040N16-0.2RX	FM0602						16.0			65.0	2.93°	16.57	17.14	17.75	18.41	-	
XM2R-040N20-0.2RX	FM0603						20.0			75.0	2.43°	20.71	21.42	22.19	23.01	-	
XM2R-040N30-0.2RX	FM0604						30.0			80.0	1.71°	31.04	32.12	33.27	-	-	
XM2R-040N35-0.2RX	FM0605		35.0		90.0	1.49°	36.21	37.47	-	-	-						
XM2R-040N45-0.2RX	FM0606		45.0		55.0	1.18°	46.55	48.16	-	-	-						
XM2R-040N8-0.3RX	FM0607		0.3		8.0	55.0	4.99°	8.30	8.58	8.88	9.20	9.92					
XM2R-040N12-0.3RX	FM0608				12.0	60.0	3.7°	12.43	12.86	13.31	13.80	14.89					
XM2R-040N16-0.3RX	FM0609				16.0	65.0	2.94°	16.57	17.13	17.74	18.40	-					
XM2R-040N20-0.3RX	FM0610				20.0	75.0	2.44°	20.70	21.41	22.18	23.00	-					
XM2R-040N30-0.3RX	FM0611				30.0	80.0	1.72°	31.04	32.11	33.26	-	-					
XM2R-040N35-0.3RX	FM0612			35.0	90.0	1.49°	36.21	37.46	-	-	-						
XM2R-040N45-0.3RX	FM0613			45.0	55.0	1.19°	46.54	48.16	-	-	-						
XM2R-040N12-0.5RX	FM0614			0.5	12.0	60.0	3.75°	12.43	12.84	13.29	13.77	14.84					
XM2R-040N16-0.5RX	FM0615				16.0	65.0	2.97°	16.56	17.12	17.72	18.37	-					
XM2R-040N20-0.5RX	FM0616				20.0	75.0	2.47°	20.70	21.40	22.15	22.97	-					
XM2R-040N30-0.5RX	FM0617	30.0			80.0	1.73°	31.03	32.10	33.24	-	-						
XM2R-040N35-0.5RX	FM0618	35.0			90.0	1.5°	36.20	37.44	-	-	-						
XM2R-040N45-0.5RX	FM0619	45.0	55.0		1.19°	46.54	48.14	-	-	-							
XM2R-040N12-1.0RX	FM0620	1.0	12.0		60.0	3.88°	12.41	12.81	13.23	13.69	14.72						
XM2R-040N16-1.0RX	FM0621		16.0		65.0	3.05°	16.54	17.09	17.67	18.29	19.70						
XM2R-040N20-1.0RX	FM0622		20.0		75.0	2.52°	20.68	21.36	22.10	22.89	-						
XM2R-040N30-1.0RX	FM0623		30.0		80.0	1.75°	31.02	32.06	33.18	-	-						
XM2R-040N35-1.0RX	FM0624		35.0		90.0	1.52°	36.18	37.41	38.73	-	-						
XM2R-040N45-1.0RX	FM0625		45.0		55.0	1.2°	46.52	48.11	-	-	-						
XM2R-050N20-0.1RX	FM0626		5.0	0.1	20.0	4.0	4.85	65.0	6.0	4.0	1.32°	20.7	21.42	-	-	-	
XM2R-050N40-0.1RX	FM0627				40.0			85.0			0.69°	41.38	-	-	-	-	
XM2R-050N20-0.2RX	FM0628				20.0			65.0			1.32°	20.7	21.41	-	-	-	
XM2R-050N40-0.2RX	FM0629				40.0			85.0			0.69°	41.37	-	-	-	-	
XM2R-050N20-0.3RX	FM0630				0.3			20.0			65.0	1.33°	20.69	21.41	-	-	-
XM2R-050N40-0.3RX	FM0631							40.0			85.0	0.69°	41.37	-	-	-	-
XM2R-050N20-0.5RX	FM0632	0.5		20.0				65.0			1.34°	20.69	21.39	-	-	-	
XM2R-050N40-0.5RX	FM0633			40.0				85.0			0.7°	41.36	-	-	-	-	
XM2R-050N20-1.0RX	FM0634			1.0				20.0			65.0	1.38°	20.67	21.36	-	-	-
XM2R-050N40-1.0RX	FM0635							40.0			85.0	0.71°	41.35	-	-	-	-

TuffCut® XM

Micro Rippenfräser

Serie XM2R

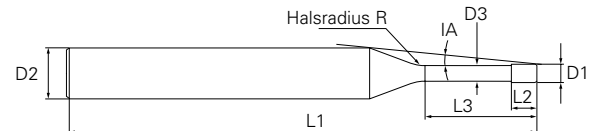
Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel						
											0.5°	1°	1.5°	2°	3°		
XM2R-060N12-0.1RX	FM0636	6.0	0.1	12.0	4.8	5.85	50.0	6.0	-	-	-	-	-	-			
XM2R-060N18-0.1RX	FM0637			18.0			60.0			-	-	-	-				
XM2R-060N24-0.1RX	FM0638			24.0			70.0			-	-	-	-				
XM2R-060N35-0.1RX	FM0639			35.0			80.0			-	-	-	-				
XM2R-060N55-0.1RX	FM0640			55.0			100.0			-	-	-	-				
XM2R-060N12-0.2RX	FM0641		0.2	12.0	4.8	5.85	50.0	6.0		-	-	-	-	-	-		
XM2R-060N18-0.2RX	FM0642			18.0			60.0				-	-	-	-			
XM2R-060N24-0.2RX	FM0643			24.0			70.0				-	-	-	-			
XM2R-060N35-0.2RX	FM0644			35.0			80.0				-	-	-	-			
XM2R-060N55-0.2RX	FM0645			55.0			100.0				-	-	-	-			
XM2R-060N12-0.3RX	FM0646		0.3	12.0	4.8	5.85	50.0	6.0			-	-	-	-	-	-	
XM2R-060N18-0.3RX	FM0647			18.0			60.0					-	-	-	-		
XM2R-060N24-0.3RX	FM0648			24.0			70.0					-	-	-	-		
XM2R-060N35-0.3RX	FM0649			35.0			80.0					-	-	-	-		
XM2R-060N55-0.3RX	FM0650			55.0			100.0					-	-	-	-		
XM2R-060N18-0.5RX	FM0651		0.5	18.0	4.8	5.85	60.0	6.0				-	-	-	-	-	-
XM2R-060N24-0.5RX	FM0652			24.0			70.0						-	-	-	-	
XM2R-060N35-0.5RX	FM0653			35.0			80.0						-	-	-	-	
XM2R-060N55-0.5RX	FM0654			55.0			100.0						-	-	-	-	
XM2R-060N18-1.0RX	FM0655		1.0	18.0	4.8	5.85	60.0	6.0					-	-	-	-	-
XM2R-060N24-1.0RX	FM0656	24.0		70.0			-		-					-	-		
XM2R-060N35-1.0RX	FM0657	35.0		80.0			-		-					-	-		
XM2R-060N55-1.0RX	FM0658	55.0		100.0			-		-					-	-		

TuffCut[®] XM

Micro Rippenfräser



Serie XM4R



Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel					
											0.5°	1°	1.5°	2°	3°	
XM4R-010N4-0.05RX	FM0659	1.0	0.05	4.0	0.8	0.96	50.0	4.0	4.0	8.75°	4.27	4.47	4.65	4.82	5.21	
XM4R-010N6-0.05RX	FM0660			6.0						7.28°	6.37	6.63	6.86	7.12	7.69	
XM4R-010N8-0.05RX	FM0661			8.0						6.23°	8.45	8.76	9.08	9.42	10.18	
XM4R-010N10-0.05RX	FM0662			10.0			5.45°			10.53	10.90	11.30	11.72	12.67		
XM4R-010N12-0.05RX	FM0663			12.0			4.84°			12.61	13.04	13.51	14.02	15.15		
XM4R-010N16-0.05RX	FM0664			16.0			3.95°			16.74	17.32	17.95	18.62	20.12		
XM4R-010N20-0.05RX	FM0665		20.0	3.34°	20.88	21.60	22.38	23.22	25.10							
XM4R-010N4-0.1RX	FM0666		0.1	0.1	4.0	0.8	0.96	50.0	4.0	4.0	8.8°	4.26	4.47	4.64	4.81	5.19
XM4R-010N6-0.1RX	FM0667				6.0						7.31°	6.37	6.62	6.86	7.11	7.68
XM4R-010N8-0.1RX	FM0668				8.0						6.25°	8.45	8.76	9.07	9.41	10.17
XM4R-010N10-0.1RX	FM0669				10.0			5.46°			10.53	10.90	11.29	11.71	12.65	
XM4R-010N12-0.1RX	FM0670				12.0			4.85°			12.60	13.04	13.51	14.01	15.14	
XM4R-010N16-0.1RX	FM0671	16.0			3.96°			16.74			17.32	17.94	18.61	20.11		
XM4R-010N20-0.1RX	FM0672	20.0	3.35°	20.87	21.60	22.37	23.21	25.08								
XM4R-015N4-0.05RX	FM0673	1.5	0.05	4.0	1.2	1.44	50.0	4.0	4.0	8.12°	4.23	4.42	4.59	4.76	5.14	
XM4R-015N8-0.05RX	FM0674			8.0						5.6°	8.41	8.71	9.02	9.36	10.11	
XM4R-015N12-0.05RX	FM0675			12.0						4.27°	12.55	12.99	13.46	13.96	15.09	
XM4R-015N15-0.05RX	FM0676			15.0			3.62°			15.65	16.20	16.78	17.41	18.82		
XM4R-015N20-0.05RX	FM0677			20.0			2.89°			20.82	21.55	22.32	23.16	-		
XM4R-015N4-0.1RX	FM0678			0.1			0.1			4.0	1.2	1.44	50.0	4.0	4.0	8.17°
XM4R-015N8-0.1RX	FM0679		8.0		5.62°	8.41		8.71	9.02	9.35						10.10
XM4R-015N12-0.1RX	FM0680		12.0		4.28°	12.55		12.98	13.45	13.95						15.07
XM4R-015N15-0.1RX	FM0681		15.0		3.63°	15.65		16.19	16.77	17.40			18.80			
XM4R-015N20-0.1RX	FM0682		20.0		2.9°	20.82		21.54	22.32	23.15			-			

TuffCut® XM

Micro Rippenfräser

Serie XM4R

Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Hals- radius R	Eingriffs- winkel IA	Effektive Halslänge (L3) nach Anstellwinkel																									
											0.5°	1°	1.5°	2°	3°																					
XM4R-020N4-0.05RX	FM0683	2.0	0.05	4.0	1.6	1.92	50.0	4.0	4.0	8.75°	4.27	4.47	4.65	4.82	5.21																					
XM4R-020N6-0.05RX	FM0684			6.0						7.28°	6.37	6.63	6.86	7.12	7.69																					
XM4R-020N8-0.05RX	FM0685			8.0						6.23°	8.45	8.76	9.08	9.42	10.18																					
XM4R-020N12-0.05RX	FM0686			12.0			5.45°			10.53	10.90	11.30	11.72	12.67																						
XM4R-020N16-0.05RX	FM0687			16.0			4.84°			12.61	13.04	13.51	14.02	15.15																						
XM4R-020N20-0.05RX	FM0688			20.0			3.95°			16.74	17.32	17.95	18.62	20.12																						
XM4R-020N4-0.1RX	FM0689		0.1	4.0			50.0			1.6	1.92	50.0	4.0	4.0	3.34°	20.88	21.60	22.38	23.22	25.10																
XM4R-020N6-0.1RX	FM0690			6.0											8.8°	4.26	4.47	4.64	4.81	5.19																
XM4R-020N8-0.1RX	FM0691			8.0											7.31°	6.37	6.62	6.86	7.11	7.68																
XM4R-020N12-0.1RX	FM0692			12.0			6.25°					8.45			8.76	9.07	9.41	10.17																		
XM4R-020N16-0.1RX	FM0693			16.0			5.46°					10.53			10.90	11.29	11.71	12.65																		
XM4R-020N20-0.1RX	FM0694			20.0			4.85°					12.60			13.04	13.51	14.01	15.14																		
XM4R-020N4-0.2RX	FM0695		0.2	4.0			50.0					1.6			1.92	50.0	4.0	4.0	3.96°	16.74	17.32	17.94	18.61	20.11												
XM4R-020N6-0.2RX	FM0696			6.0															3.35°	20.87	21.60	22.37	23.21	25.08												
XM4R-020N8-0.2RX	FM0697			8.0															8.12°	4.23	4.42	4.59	4.76	5.14												
XM4R-020N12-0.2RX	FM0698			12.0			5.6°									8.41			8.71	9.02	9.36	10.11														
XM4R-020N16-0.2RX	FM0699			16.0			4.27°									12.55			12.99	13.46	13.96	15.09														
XM4R-020N20-0.2RX	FM0700			20.0			3.62°									15.65			16.20	16.78	17.41	18.82														
XM4R-020N25-0.2RX	FM0701		0.3	25.0			70.0									1.6			1.92	70.0	4.0	4.0	2.89°	20.82	21.55	22.32	23.16	-								
XM4R-020N30-0.2RX	FM0702			30.0																			8.17°	4.23	4.42	4.58	4.75	5.13								
XM4R-020N4-0.3RX	FM0703			4.0																			5.62°	8.41	8.71	9.02	9.35	10.10								
XM4R-020N8-0.3RX	FM0704			8.0			4.28°													12.55			12.98	13.45	13.95	15.07										
XM4R-020N12-0.3RX	FM0705			12.0			3.63°													15.65			16.19	16.77	17.40	18.80										
XM4R-020N16-0.3RX	FM0706			16.0			2.9°													20.82			21.54	22.32	23.15	-										
XM4R-020N20-0.3RX	FM0707		20.0	2.44°			20.77													21.49			22.25	23.08	-											
XM4R-020N4-0.5RX	FM0708		0.5	4.0			50.0													1.6			1.92	50.0	4.0	4.0	7.76°	4.19	4.35	4.50	4.65	4.98				
XM4R-020N6-0.5RX	FM0709			6.0																							6.11°	6.28	6.50	6.71	6.95	7.47				
XM4R-020N8-0.5RX	FM0710			8.0																							5.04°	8.36	8.64	8.93	9.25	9.96				
XM4R-020N12-0.5RX	FM0711			12.0			3.73°																	12.50			12.92	13.36	13.85	14.93						
XM4R-020N16-0.5RX	FM0712			16.0			2.96°																	16.63			17.19	17.80	18.45	-						
XM4R-020N20-0.5RX	FM0713	20.0		2.46°	20.77	21.47	22.23	23.05	-																											
XM4R-020N25-0.5RX	FM0714	2.50	25.0	50.0	1.6	1.92	50.0	4.0	4.0															2.03°			25.94	26.82	27.77	28.79	-					
XM4R-020N30-0.5RX	FM0715		30.0																					1.72°			31.10	32.17	33.31	-	-					
XM4R-025N8-0.1RX	FM0716		0.1																					8.0			50.0	1.6	1.92	50.0	4.0	4.0	3.98°	8.34	8.63	8.94
XM4R-025N16-0.1RX	FM0717			16.0			2.29°																	16.62									17.19	17.81	18.47	-
XM4R-025N20-0.1RX	FM0718			20.0			1.89°																	20.75									21.47	22.24	-	-
XM4R-025N8-0.2RX	FM0719			8.0			4.02°			8.34	8.63		8.93	9.26										9.99												
XM4R-025N16-0.2RX	FM0720	16.0		2.3°			16.61			17.18	17.80		18.46	-																						
XM4R-025N20-0.2RX	FM0721	20.0		1.9°			20.75			21.46	22.23		-	-																						
XM4R-025N12-0.3RX	FM0722	0.3	12.0	50.0			1.6			1.92	50.0		4.0	4.0										2.95°			12.47			12.90			13.35	13.84	-	
XM4R-025N20-0.3RX	FM0723		20.0																					1.91°			20.74			21.46			22.22	-	-	
XM4R-025N12-0.5RX	FM0724		12.0																					2.99°			12.47			12.88			13.33	13.81	-	
XM4R-025N20-0.5RX	FM0725		20.0	1.92°							20.74	21.44			22.20		-	-																		

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Serie XM4R

Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel																									
											0.5°	1°	1.5°	2°	3°																					
XM4R-030N8-0.1RX	FM0726	3.0	0.1	8.0	2.44	2.88	50.0	6.0	4.0	6.32°	8.32	8.61	8.92	9.25	9.99																					
XM4R-030N16-0.1RX	FM0727			16.0						3.99°	16.59	17.17	17.78	18.45	19.94																					
XM4R-030N25-0.1RX	FM0728			25.0						2.82°	25.90	26.79	27.76	28.80	-																					
XM4R-030N30-0.1RX	FM0729			30.0						2.42°	31.06	32.14	33.30	34.55	-																					
XM4R-030N8-0.2RX	FM0730		0.2	8.0			2.44			2.88	50.0	6.0	4.0	6.36°	8.32	8.60	8.91	9.23	9.97																	
XM4R-030N12-0.2RX	FM0731			12.0										4.92°	12.45	12.88	13.34	13.83	14.94																	
XM4R-030N16-0.2RX	FM0732			16.0										4°	16.59	17.16	17.77	18.43	19.91																	
XM4R-030N20-0.2RX	FM0733			20.0										3.38°	20.72	21.44	22.21	23.03	24.88																	
XM4R-030N25-0.2RX	FM0734			25.0							2.82°			25.89	26.79	27.75	28.78	-																		
XM4R-030N30-0.2RX	FM0735			30.0							2.43°			31.06	32.14	33.29	34.53	-																		
XM4R-030N8-0.3RX	FM0736			0.3							8.0			2.44	2.88	60.0	6.0	4.0	6.41°	8.32	8.60	8.90	9.22	9.94												
XM4R-030N16-0.3RX	FM0737										16.0								4.02°	16.59	17.15	17.76	18.42	19.89												
XM4R-030N20-0.3RX	FM0738		20.0				3.39°			20.72	21.43	22.20	23.02						24.86																	
XM4R-030N25-0.3RX	FM0739		25.0				2.83°			25.89	26.78	27.74	28.77						-																	
XM4R-030N30-0.3RX	FM0740		0.5	30.0			2.44			2.88	60.0	6.0	4.0	2.43°	31.06	32.13	33.28	34.52	-																	
XM4R-030N8-0.5RX	FM0741			8.0										6.51°	8.31	8.58	8.87	9.19	9.89																	
XM4R-030N12-0.5RX	FM0742			12.0										5°	12.44	12.86	13.31	13.79	14.87																	
XM4R-030N16-0.5RX	FM0743			16.0										4.06°	16.58	17.14	17.74	18.39	19.84																	
XM4R-030N20-0.5RX	FM0744			20.0							3.42°			20.71	21.42	22.17	22.99	24.81																		
XM4R-030N25-0.5RX	FM0745			25.0							2.85°			25.88	26.77	27.72	28.74	-																		
XM4R-030N30-0.5RX	FM0746			30.0							2.45°			31.05	32.12	33.26	34.49	-																		
XM4R-030N35-0.5RX	FM0747			35.0							2.14°			36.22	37.46	38.80	40.23	-																		
XM4R-040N12-0.1RX	FM0748		4.0	0.1			12.0			3.2	3.86	60.0	6.0	4.0	3.66°	12.44	12.87	13.33	13.83	14.94																
XM4R-040N20-0.1RX	FM0749						20.0								2.42°	20.71	21.43	22.20	23.03	-																
XM4R-040N30-0.1RX	FM0750						30.0								1.71°	31.05	32.12	33.28	-	-																
XM4R-040N40-0.1RX	FM0751						40.0								1.32°	41.38	42.82	-	-	-																
XM4R-040N12-0.2RX	FM0752			0.2			12.0					3.2			3.86	60.0	6.0	4.0	3.68°	12.44	12.86	13.32	13.81	14.92												
XM4R-040N20-0.2RX	FM0753						20.0												2.43°	20.71	21.42	22.19	23.01	-												
XM4R-040N30-0.2RX	FM0754	30.0			1.71°	31.04	32.12	33.27	-										-																	
XM4R-040N40-0.2RX	FM0755	40.0			1.32°	41.38	42.81	-	-										-																	
XM4R-040N12-0.3RX	FM0756	0.3			12.0	3.2	3.86	60.0	6.0							4.0			3.7°	12.43	12.86	13.31	13.80	14.89												
XM4R-040N20-0.3RX	FM0757				20.0														2.44°	20.70	21.41	22.18	23.00	-												
XM4R-040N30-0.3RX	FM0758				30.0														1.72°	31.04	32.11	33.26	-	-												
XM4R-040N40-0.3RX	FM0759				40.0														1.32°	41.38	42.81	-	-	-												
XM4R-040N12-0.5RX	FM0760	0.5		12.0	3.2	3.86	60.0	6.0	4.0			3.75°			12.43	12.84	13.29	13.77	14.84																	
XM4R-040N20-0.5RX	FM0761			20.0								2.47°			20.70	21.40	22.15	22.97	-																	
XM4R-040N30-0.5RX	FM0762			30.0								1.73°			31.03	32.10	33.24	-	-																	
XM4R-040N40-0.5RX	FM0763			40.0								1.33°			41.37	42.79	-	-	-																	
XM4R-050N20-0.1RX	FM0764			5.0			0.1					20.0			4.0	4.85	70.0	6.0	4.0	1.32°	20.70	21.42	-	-	-											
XM4R-050N40-0.1RX	FM0765											40.0					90.0			0.69°	41.38	-	-	-	-											
XM4R-050N20-0.2RX	FM0766						0.2					20.0					4.0			4.85	70.0	6.0	4.0	1.32°	20.70	21.41	-	-	-							
XM4R-050N40-0.2RX	FM0767											40.0									90.0			0.69°	41.37	-	-	-	-							
XM4R-050N20-0.3RX	FM0768	0.3			20.0	4.0	4.85	70.0	6.0			4.0									1.33°			20.69	21.41	-	-	-								
XM4R-050N40-0.3RX	FM0769				40.0			90.0													0.69°			41.37	-	-	-	-								
XM4R-050N20-0.5RX	FM0770				0.5			20.0													4.0			4.85	70.0	6.0	4.0	1.34°	20.69	21.39	-	-	-			
XM4R-050N40-0.5RX	FM0771							40.0																	90.0			0.7°	41.36	-	-	-	-			
XM4R-050N20-1.0RX	FM0772	1.0			20.0			4.0																	4.85			70.0	6.0	4.0	1.38°	20.67	21.36	-	-	-
XM4R-050N40-1.0RX	FM0773				40.0																							90.0			0.71°	41.34	-	-	-	-

TuffCut[®] XM

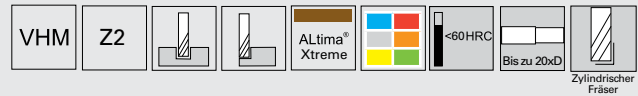
Micro Rippenfräser

Serie XM4R

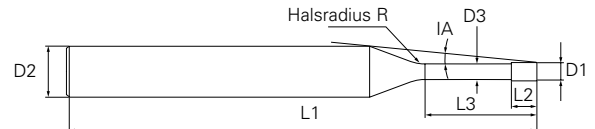
Artikelnummer	EDP	D1	R	L3	L2	D3	L1	D2	Hals- radius R	Eingriffs- winkel IA	Effektive Halslänge (L3) nach Anstellwinkel				
											0.5°	1°	1.5°	2°	3°
XM4R-060N30-0.2RX	FM0774	6.0	0.2	30.0	4.8	5.85	80.0	6.0	4.0	-	-	-	-	-	
XM4R-060N54-0.2RX	FM0775			54.0			100.0			-	-	-	-		
XM4R-060N72-0.2RX	FM0776			72.0			120.0			-	-	-	-		
XM4R-060N30-0.3RX	FM0777		0.3	30.0			80.0			-	-	-	-		
XM4R-060N54-0.3RX	FM0778			54.0			100.0			-	-	-	-		
XM4R-060N72-0.3RX	FM0779			72.0			120.0			-	-	-	-		
XM4R-060N30-0.5RX	FM0780		0.5	30.0			80.0			-	-	-	-		
XM4R-060N54-0.5RX	FM0781			54.0			100.0			-	-	-	-		
XM4R-060N72-0.5RX	FM0782			72.0			120.0			-	-	-	-		
XM4R-060N30-1.0RX	FM0783		1.0	30.0			80.0			-	-	-	-		
XM4R-060N54-1.0RX	FM0784			54.0			100.0			-	-	-	-		
XM4R-060N72-1.0RX	FM0785			72.0			120.0			-	-	-	-		

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Micro Rippenfräser



Serie XM2S



Artikelnummer	EDP	D1	L3	L2	D3	L1	D2	Halsradius R	Eingriffswinkel IA	Effektive Halslänge (L3) nach Anstellwinkel				
										0.5°	1°	1.5°	2°	3°
XM2S-001N0.3X	FM0192	0.1	0.3	0.15	0.08	50.0	4.0	1.0	14.39°	0.31	0.33	0.35	0.37	0.40
XM2S-001N0.5X	FM0193		0.5						14.03°	0.52	0.55	0.58	0.60	0.65
XM2S-001N1X	FM0194		1.0						13.22°	1.05	1.09	1.13	1.18	1.27
XM2S-002N0.5X	FM0195	0.2	0.5	0.3	0.17	50.0	4.0	1.0	14.03°	0.52	0.54	0.57	0.59	0.64
XM2S-002N1X	FM0196		1.0						13.2°	1.04	1.08	1.12	1.16	1.26
XM2S-002N1.5X	FM0197		1.5						12.45°	1.56	1.62	1.67	1.74	1.88
XM2S-002N2X	FM0198		2.0						11.79°	2.08	2.15	2.23	2.31	2.50
XM2S-002N3X	FM0199		3.0						10.65°	3.11	3.22	3.34	3.46	3.74
XM2S-003N1X	FM0200		0.3						1.0	0.45	0.27	50.0	4.0	2.0
XM2S-003N1.5X	FM0201	1.5		12.31°	1.59	1.67	1.74	1.81	1.95					
XM2S-003N2X	FM0202	2.0		11.65°	2.12	2.21	2.29	2.38	2.57					
XM2S-003N2.5X	FM0203	2.5		11.05°	2.64	2.75	2.85	2.96	3.20					
XM2S-003N3X	FM0204	3.0		10.51°	3.16	3.28	3.40	3.53	3.82					
XM2S-004N1X	FM0205	0.4	1.0	0.6	0.37	50.0	4.0	2.0	13.01°	1.06	1.12	1.18	1.23	1.33
XM2S-004N1.5X	FM0206		1.5						12.25°	1.59	1.67	1.74	1.81	1.95
XM2S-004N2X	FM0207		2.0						11.57°	2.12	2.21	2.29	2.38	2.57
XM2S-004N2.5X	FM0208		2.5						10.97°	2.64	2.75	2.85	2.96	3.20
XM2S-004N3X	FM0209		3.0						10.42°	3.16	3.28	3.40	3.53	3.82
XM2S-004N3.5X	FM0210		3.5						9.92°	3.68	3.82	3.96	4.11	4.44
XM2S-004N4X	FM0211		4.0						9.47°	4.20	4.35	4.51	4.68	5.06
XM2S-004N5X	FM0212		5.0						8.68°	5.24	5.42	5.62	5.83	6.30
XM2S-004N6X	FM0213		6.0						8.01°	6.27	6.49	6.73	6.98	7.55
XM2S-004N8X	FM0214		8.0						6.94°	8.34	8.63	8.94	9.28	10.03
XM2S-004N10X	FM0215	10.0	6.12°	10.41	10.77	11.16	11.58	12.52						
XM2S-005N1X	FM0216	0.5	1.0	0.75	0.47	50.0	4.0	2.0	12.96°	1.06	1.12	1.18	1.23	1.33
XM2S-005N1.5X	FM0217		1.5						12.19°	1.59	1.67	1.74	1.81	1.95
XM2S-005N2X	FM0218		2.0						11.5°	2.12	2.21	2.29	2.38	2.57
XM2S-005N2.5X	FM0219		2.5						10.88°	2.64	2.75	2.85	2.96	3.20
XM2S-005N3X	FM0220		3.0						10.33°	3.16	3.28	3.40	3.53	3.82
XM2S-005N4X	FM0221		4.0						9.37°	4.20	4.35	4.51	4.68	5.06
XM2S-005N5X	FM0222		5.0						8.58°	5.24	5.42	5.62	5.83	6.30
XM2S-005N6X	FM0223		6.0						7.91°	6.27	6.49	6.73	6.98	7.55
XM2S-005N8X	FM0224		8.0						6.84°	8.34	8.63	8.94	9.28	10.03
XM2S-005N10X	FM0225		10.0						6.02°	10.41	10.77	11.16	11.58	12.52

TuffCut[®] XM

Micro Rippenfräser

Serie XM2S

Artikelnummer	EDP	D1	L3	L2	D3	L1	D2	Hals- radius R	Eingriffs- winkel IA	Effektive Halslänge (L3) nach Anstellwinkel									
										0.5°	1°	1.5°	2°	3°					
XM2S-006N2X	FM0226	0.6	2.0	0.9	0.57	50.0	4.0	4.0	11.21°	2.17	2.31	2.44	2.56	2.78					
XM2S-006N3X	FM0227		3.0						10.07°	3.24	3.42	3.58	3.72	4.02					
XM2S-006N4X	FM0228		4.0						9.13°	4.30	4.51	4.69	4.87	5.26					
XM2S-006N5X	FM0229		5.0						8.36°	5.35	5.59	5.80	6.02	6.50					
XM2S-006N6X	FM0230		6.0						14.39°	0.31	0.33	0.35	0.37	0.40					
XM2S-006N7X	FM0231		7.0						14.03°	0.52	0.55	0.58	0.60	0.65					
XM2S-006N8X	FM0232		8.0						13.22°	1.05	1.09	1.13	1.18	1.27					
XM2S-006N9X	FM0233		9.0						14.03°	0.52	0.54	0.57	0.59	0.64					
XM2S-006N10X	FM0234		10.0						13.2°	1.04	1.08	1.12	1.16	1.26					
XM2S-007N2X	FM0235		0.7						2.0	1.05	0.67	50.0	4.0	4.0	12.45°	1.56	1.62	1.67	1.74
XM2S-007N4X	FM0236	4.0		11.79°	2.08	2.15	2.23	2.31	2.50										
XM2S-007N6X	FM0237	6.0		10.65°	3.11	3.22	3.34	3.46	3.74										
XM2S-007N8X	FM0238	8.0		13.06°	1.06	1.12	1.18	1.23	1.33										
XM2S-007N10X	FM0239	10.0		12.31°	1.59	1.67	1.74	1.81	1.95										
XM2S-008N4X	FM0240	0.8	4.0	1.20	0.76	50.0	4.0	4.0	11.65°	2.12	2.21	2.29	2.38	2.57					
XM2S-008N6X	FM0241		6.0						11.05°	2.64	2.75	2.85	2.96	3.20					
XM2S-008N8X	FM0242		8.0						10.51°	3.16	3.28	3.40	3.53	3.82					
XM2S-008N10X	FM0243		10.0						13.01°	1.06	1.12	1.18	1.23	1.33					
XM2S-008N12X	FM0244		12.0						12.25°	1.59	1.67	1.74	1.81	1.95					
XM2S-009N6X	FM0245	0.9	6.0	1.35	0.86	50.0	4.0	4.0	11.57°	2.12	2.21	2.29	2.38	2.57					
XM2S-009N8X	FM0246		8.0						10.97°	2.64	2.75	2.85	2.96	3.20					
XM2S-009N10X	FM0247		10.0						10.42°	3.16	3.28	3.40	3.53	3.82					
XM2S-009N12X	FM0248		12.0						9.92°	3.68	3.82	3.96	4.11	4.44					
XM2S-010N2X	FM0249		2.0						9.47°	4.20	4.35	4.51	4.68	5.06					
XM2S-010N3X	FM0250	3.0	8.68°	5.24	5.42	5.62	5.83	6.30											
XM2S-010N4X	FM0251	4.0	8.01°	6.27	6.49	6.73	6.98	7.55											
XM2S-010N5X	FM0252	5.0	6.94°	8.34	8.63	8.94	9.28	10.03											
XM2S-010N6X	FM0253	6.0	6.12°	10.41	10.77	11.16	11.58	12.52											
XM2S-010N7X	FM0254	7.0	12.96°	1.06	1.12	1.18	1.23	1.33											
XM2S-010N8X	FM0255	1.0	8.0	1.5	0.96	50.0	4.0	4.0	12.19°	1.59	1.67	1.74	1.81	1.95					
XM2S-010N9X	FM0256		9.0						11.5°	2.12	2.21	2.29	2.38	2.57					
XM2S-010N10X	FM0257		10.0						10.88°	2.64	2.75	2.85	2.96	3.20					
XM2S-010N12X	FM0258		12.0						10.33°	3.16	3.28	3.40	3.53	3.82					
XM2S-010N14X	FM0259		14.0						9.37°	4.20	4.35	4.51	4.68	5.06					
XM2S-010N16X	FM0260		16.0			8.58°			5.24	5.42	5.62	5.83	6.30						
XM2S-010N20X	FM0261		20.0			7.91°			6.27	6.49	6.73	6.98	7.55						
XM2S-010N25X	FM0262		25.0			-			8.34	8.63	8.94	9.28	10.03						
XM2S-012N6X	FM0263		1.2			6.0			1.8	1.15	50.0	4.0	4.0	14.39°	0.31	0.33	0.35	0.37	0.40
XM2S-012N8X	FM0264					8.0					14.03°			0.52	0.55	0.58	0.60	0.65	
XM2S-012N10X	FM0265	10.0		13.22°	1.05	1.09	1.13	1.18			1.27								
XM2S-012N12X	FM0266	12.0		14.03°	0.52	0.54	0.57	0.59			0.64								
XM2S-012N16X	FM0267	16.0		13.2°	1.04	1.08	1.12	1.16			1.26								
XM2S-014N6X	FM0268	1.4		6.0	2.1	1.34	50.0	4.0			4.0			12.45°	1.56	1.62	1.67	1.74	1.88
XM2S-014N12X	FM0269			12.0			11.79°							2.08	2.15	2.23	2.31	2.50	

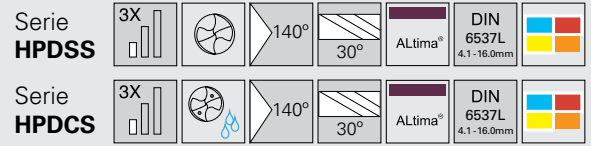
TuffCut[®] XM

Micro Rippenfräser

Serie XM2S

Artikelnummer	EDP	D1	L3	L2	D3	L1	D2	Hals- radius R	Eingriffs- winkel IA	Effektive Halslänge (L3) nach Anstellwinkel				
										0.5°	1°	1.5°	2°	3°
XM2S-015N4X	FM0270	1.5	4.0	2.25	1.44	50.0	4.0	4.0	10.65°	3.11	3.22	3.34	3.46	3.74
XM2S-015N6X	FM0271		6.0						13.06°	1.06	1.12	1.18	1.23	1.33
XM2S-015N8X	FM0272		8.0						12.31°	1.59	1.67	1.74	1.81	1.95
XM2S-015N10X	FM0273		10.0						11.65°	2.12	2.21	2.29	2.38	2.57
XM2S-015N12X	FM0274		12.0			11.05°			2.64	2.75	2.85	2.96	3.20	
XM2S-015N14X	FM0275		14.0			10.51°			3.16	3.28	3.40	3.53	3.82	
XM2S-015N16X	FM0276		16.0			13.01°			1.06	1.12	1.18	1.23	1.33	
XM2S-015N18X	FM0277		18.0			4°			4.00	1.67	1.74	1.81	1.95	
XM2S-015N20X	FM0278		20.0			11.57°			2.12	2.21	2.29	2.38	2.57	
XM2S-015N25X	FM0279		25.0			10.97°			2.64	2.75	2.85	2.96	3.20	
XM2S-015N30X	FM0280		30.0			10.42°			3.16	3.28	3.40	3.53	3.82	
XM2S-015N35X	FM0281		35.0			9.92°			3.68	3.82	3.96	4.11	4.44	
XM2S-015N40X	FM0282		40.0			9.47°			4.20	4.35	4.51	4.68	5.06	
XM2S-016N6X	FM0283		1.6			6.0			2.4	1.54	50.0	4.0	4.0	8.68°
XM2S-016N8X	FM0284	8.0		8.01°	6.27	6.49	6.73	6.98						7.55
XM2S-018N6X	FM0285	1.8	6.0	2.7	1.73	50.0	4.0	4.0	6.94°	8.34	8.63	8.94	9.28	10.03
XM2S-018N8X	FM0286		8.0						6.12°	10.41	10.77	11.16	11.58	12.52
XM2S-020N4X	FM0287	2.0	4.0	3.0	1.92	50.0	4.0	4.0	12.96°	1.06	1.12	1.18	1.23	1.33
XM2S-020N6X	FM0288		6.0						12.19°	1.59	1.67	1.74	1.81	1.95
XM2S-020N8X	FM0289		8.0						11.5°	2.12	2.21	2.29	2.38	2.57
XM2S-020N10X	FM0290		10.0						10.88°	2.64	2.75	2.85	2.96	3.20
XM2S-020N12X	FM0291		12.0			10.33°			3.16	3.28	3.40	3.53	3.82	
XM2S-020N14X	FM0292		14.0			9.37°			4.20	4.35	4.51	4.68	5.06	
XM2S-020N16X	FM0293		16.0			8.58°			5.24	5.42	5.62	5.83	6.30	

Twister® HPD PERFORMANCE DRILL Universalbohrer



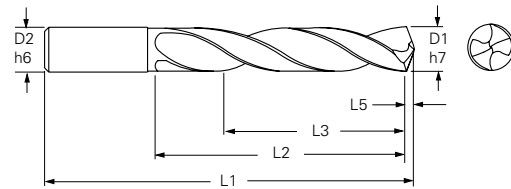
Serie HPDSS & HPDCS 3xD

Eigenschaften

- Zentrierspitze
- Toleranz h7
- Schafttoleranz h6
- Für eine breite Materialrange
- Wirtschaftliche Wahl

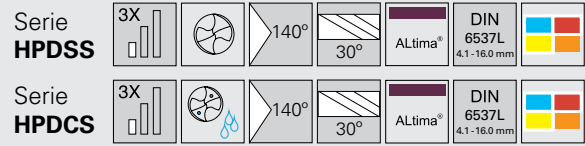
Vorteile

- Keine Pilotbohrung nötig
- Präzise Bohrungen
- Für Schrumpfanwendungen geeignet
- Für Stahl, Rostfrei, Gusseisen, Titan- und hitzebeständige Legierungen geeignet.
- Perfekt für Lohnfertigung, kleine Losgrößen und Anwendungen die einen Hochleistungsbohrer erfordern.

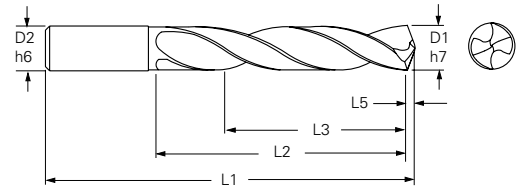


Artikelnummer		Werkzeugabmessungen					
HPDSS	HPDCS	Ø D1 (h7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
HPDSS 0300A	HPDCS 0300A	3.0	3.0	62.0	20.0	14.0	0.46
HPDSS 0310A	HPDCS 0310A	3.1	4.0	62.0	20.0	14.0	0.48
HPDSS 0320A	HPDCS 0320A	3.2	4.0	62.0	20.0	14.0	0.49
HPDSS 0330A	HPDCS 0330A	3.3	4.0	62.0	20.0	14.0	0.51
HPDSS 0340A	HPDCS 0340A	3.4	4.0	62.0	20.0	14.0	0.52
HPDSS 0350A	HPDCS 0350A	3.5	4.0	62.0	20.0	14.0	0.54
HPDSS 0360A	HPDCS 0360A	3.6	4.0	62.0	20.0	14.0	0.55
HPDSS 0370A	HPDCS 0370A	3.7	4.0	62.0	20.0	14.0	0.57
HPDSS 0380A	HPDCS 0380A	3.8	4.0	66.0	24.0	17.0	0.58
HPDSS 0390A	HPDCS 0390A	3.9	4.0	66.0	24.0	17.0	0.60
HPDSS 0400A	HPDCS 0400A	4.0	4.0	66.0	24.0	17.0	0.61
HPDSS 0410A	HPDCS 0410A	4.1	6.0	66.0	24.0	17.0	0.64
HPDSS 0420A	HPDCS 0420A	4.2	6.0	66.0	24.0	17.0	0.64
HPDSS 0430A	HPDCS 0430A	4.3	6.0	66.0	24.0	17.0	0.66
HPDSS 0440A	HPDCS 0440A	4.4	6.0	66.0	24.0	17.0	0.67
HPDSS 0450A	HPDCS 0450A	4.5	6.0	66.0	24.0	17.0	0.69
HPDSS 0460A	HPDCS 0460A	4.6	6.0	66.0	24.0	17.0	0.71
HPDSS 0470A	HPDCS 0470A	4.7	6.0	66.0	24.0	17.0	0.72
HPDSS 0480A	HPDCS 0480A	4.8	6.0	66.0	28.0	20.0	0.74
HPDSS 0490A	HPDCS 0490A	4.9	6.0	66.0	28.0	20.0	0.75
HPDSS 0500A	HPDCS 0500A	5.0	6.0	66.0	28.0	20.0	0.77
HPDSS 0510A	HPDCS 0510A	5.1	6.0	66.0	28.0	20.0	0.78
HPDSS 0520A	HPDCS 0520A	5.2	6.0	66.0	28.0	20.0	0.80
HPDSS 0530A	HPDCS 0530A	5.3	6.0	66.0	28.0	20.0	0.81
HPDSS 0540A	HPDCS 0540A	5.4	6.0	66.0	28.0	20.0	0.83
HPDSS 0550A	HPDCS 0550A	5.5	6.0	66.0	28.0	20.0	0.84
HPDSS 0560A	HPDCS 0560A	5.6	6.0	66.0	28.0	20.0	0.86
HPDSS 0570A	HPDCS 0570A	5.7	6.0	66.0	28.0	20.0	0.87

Twister® HPD ECOLINE PERFORMANCE DRILL Universalbohrer



Serie HPDSS & HPDCS 3xD

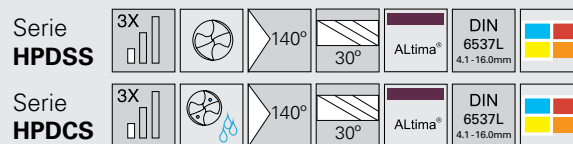


Artikelnummer		Werkzeugabmessungen					
HPDSS	HPDCS	Ø D1 (h7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
HPDSS 0580A	HPDCS 0580A	5.8	6.0	66.0	28.0	20.0	0.89
HPDSS 0590A	HPDCS 0590A	5.9	6.0	66.0	28.0	20.0	0.90
HPDSS 0600A	HPDCS 0600A	6.0	6.0	66.0	28.0	20.0	0.92
HPDSS 0610A	HPDCS 0610A	6.1	8.0	79.0	34.0	24.0	0.94
HPDSS 0620A	HPDCS 0620A	6.2	8.0	79.0	34.0	24.0	0.95
HPDSS 0630A	HPDCS 0630A	6.3	8.0	79.0	34.0	24.0	0.97
HPDSS 0640A	HPDCS 0640A	6.4	8.0	79.0	34.0	24.0	0.98
HPDSS 0650A	HPDCS 0650A	6.5	8.0	79.0	34.0	24.0	1.00
HPDSS 0660A	HPDCS 0660A	6.6	8.0	79.0	34.0	24.0	1.01
HPDSS 0670A	HPDCS 0670A	6.7	8.0	79.0	34.0	24.0	1.03
HPDSS 0680A	HPDCS 0680A	6.8	8.0	79.0	34.0	24.0	1.04
HPDSS 0690A	HPDCS 0690A	6.9	8.0	79.0	34.0	24.0	1.06
HPDSS 0700A	HPDCS 0700A	7.0	8.0	79.0	34.0	24.0	1.07
HPDSS 0710A	HPDCS 0710A	7.1	8.0	79.0	41.0	29.0	1.09
HPDSS 0720A	HPDCS 0720A	7.2	8.0	79.0	41.0	29.0	1.10
HPDSS 0730A	HPDCS 0730A	7.3	8.0	79.0	41.0	29.0	1.12
HPDSS 0740A	HPDCS 0740A	7.4	8.0	79.0	41.0	29.0	1.13
HPDSS 0750A	HPDCS 0750A	7.5	8.0	79.0	41.0	29.0	1.15
HPDSS 0760A	HPDCS 0760A	7.6	8.0	79.0	41.0	29.0	1.17
HPDSS 0770A	HPDCS 0770A	7.7	8.0	79.0	41.0	29.0	1.18
HPDSS 0780A	HPDCS 0780A	7.8	8.0	79.0	41.0	29.0	1.20
HPDSS 0790A	HPDCS 0790A	7.9	8.0	79.0	41.0	29.0	1.21
HPDSS 0800A	HPDCS 0800A	8.0	8.0	79.0	41.0	29.0	1.23
HPDSS 0810A	HPDCS 0810A	8.1	10.0	89.0	47.0	35.0	1.24
HPDSS 0820A	HPDCS 0820A	8.2	10.0	89.0	47.0	35.0	1.26
HPDSS 0830A	HPDCS 0830A	8.3	10.0	89.0	47.0	35.0	1.27
HPDSS 0840A	HPDCS 0840A	8.4	10.0	89.0	47.0	35.0	1.29
HPDSS 0850A	HPDCS 0850A	8.5	10.0	89.0	47.0	35.0	1.30
HPDSS 0860A	HPDCS 0860A	8.6	10.0	89.0	47.0	35.0	1.32
HPDSS 0870A	HPDCS 0870A	8.7	10.0	89.0	47.0	35.0	1.33
HPDSS 0880A	HPDCS 0880A	8.8	10.0	89.0	47.0	35.0	1.35
HPDSS 0890A	HPDCS 0890A	8.9	10.0	89.0	47.0	35.0	1.36
HPDSS 0900A	HPDCS 0900A	9.0	10.0	89.0	47.0	35.0	1.38
HPDSS 0910A	HPDCS 0910A	9.1	10.0	89.0	47.0	35.0	1.40
HPDSS 0920A	HPDCS 0920A	9.2	10.0	89.0	47.0	35.0	1.41
HPDSS 0930A	HPDCS 0930A	9.3	10.0	89.0	47.0	35.0	1.43
HPDSS 0940A	HPDCS 0940A	9.4	10.0	89.0	47.0	35.0	1.44
HPDSS 0950A	HPDCS 0950A	9.5	10.0	89.0	47.0	35.0	1.46
HPDSS 0960A	HPDCS 0960A	9.6	10.0	89.0	47.0	35.0	1.47

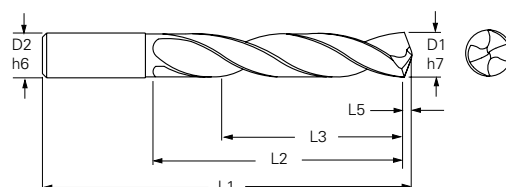
Twister® HPD

ECOLINE PERFORMANCE DRILL

Universalbohrer

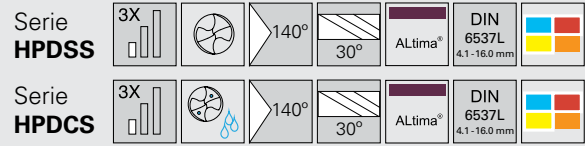


Serie HPDSS & HPDCS 3xD

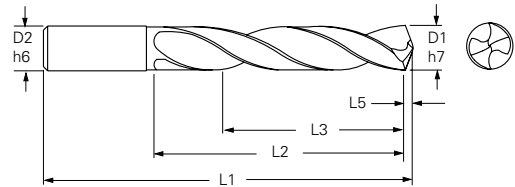


Artikelnummer		Werkzeugabmessungen					
HPDSS	HPDCS	Ø D1 (h7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
HPDSS 0970A	HPDCS 0970A	9.7	10.0	89.0	47.0	35.0	1.49
HPDSS 0980A	HPDCS 0980A	9.8	10.0	89.0	47.0	35.0	1.50
HPDSS 0990A	HPDCS 0990A	9.9	10.0	89.0	47.0	35.0	1.52
HPDSS 1000A	HPDCS 1000A	10.0	10.0	89.0	47.0	35.0	1.53
HPDSS 1010A	HPDCS 1010A	10.1	12.0	102.0	55.0	40.0	1.55
HPDSS 1020A	HPDCS 1020A	10.2	12.0	102.0	55.0	40.0	1.56
HPDSS 1030A	HPDCS 1030A	10.3	12.0	102.0	55.0	40.0	1.58
HPDSS 1040A	HPDCS 1040A	10.4	12.0	102.0	55.0	40.0	1.59
HPDSS 1050A	HPDCS 1050A	10.5	12.0	102.0	55.0	40.0	1.61
HPDSS 1060A	HPDCS 1060A	10.6	12.0	102.0	55.0	40.0	1.63
HPDSS 1070A	HPDCS 1070A	10.7	12.0	102.0	55.0	40.0	1.64
HPDSS 1080A	HPDCS 1080A	10.8	12.0	102.0	55.0	40.0	1.66
HPDSS 1090A	HPDCS 1090A	10.9	12.0	102.0	55.0	40.0	1.67
HPDSS 1100A	HPDCS 1100A	11.0	12.0	102.0	55.0	40.0	1.69
HPDSS 1110A	HPDCS 1110A	11.1	12.0	102.0	55.0	40.0	1.70
HPDSS 1120A	HPDCS 1120A	11.2	12.0	102.0	55.0	40.0	1.72
HPDSS 1130A	HPDCS 1130A	11.3	12.0	102.0	55.0	40.0	1.73
HPDSS 1140A	HPDCS 1140A	11.4	12.0	102.0	55.0	40.0	1.75
HPDSS 1150A	HPDCS 1150A	11.5	12.0	102.0	55.0	40.0	1.76
HPDSS 1160A	HPDCS 1160A	11.6	12.0	102.0	55.0	40.0	1.78
HPDSS 1170A	HPDCS 1170A	11.7	12.0	102.0	55.0	40.0	1.79
HPDSS 1180A	HPDCS 1180A	11.8	12.0	102.0	55.0	40.0	1.81
HPDSS 1190A	HPDCS 1190A	11.9	12.0	102.0	55.0	40.0	1.82
HPDSS 1200A	HPDCS 1200A	12.0	12.0	102.0	55.0	40.0	1.84
HPDSS 1210A	HPDCS 1210A	12.1	14.0	107.0	60.0	43.0	1.86
HPDSS 1220A	HPDCS 1220A	12.2	14.0	107.0	60.0	43.0	1.87
HPDSS 1230A	HPDCS 1230A	12.3	14.0	107.0	60.0	43.0	1.89
HPDSS 1240A	HPDCS 1240A	12.4	14.0	107.0	60.0	43.0	1.90
HPDSS 1250A	HPDCS 1250A	12.5	14.0	107.0	60.0	43.0	1.92
HPDSS 1260A	HPDCS 1260A	12.6	14.0	107.0	60.0	43.0	1.93
HPDSS 1270A	HPDCS 1270A	12.7	14.0	107.0	60.0	43.0	1.95
HPDSS 1280A	HPDCS 1280A	12.8	14.0	107.0	60.0	43.0	1.96
HPDSS 1290A	HPDCS 1290A	12.9	14.0	107.0	60.0	43.0	1.99
HPDSS 1300A	HPDCS 1300A	13.0	14.0	107.0	60.0	43.0	1.98
HPDSS 1310A	HPDCS 1310A	13.1	14.0	107.0	60.0	43.0	2.01
HPDSS 1320A	HPDCS 1320A	13.2	14.0	107.0	60.0	43.0	2.02
HPDSS 1330A	HPDCS 1330A	13.3	14.0	107.0	60.0	43.0	2.04
HPDSS 1340A	HPDCS 1340A	13.4	14.0	107.0	60.0	43.0	2.05
HPDSS 1350A	HPDCS 1350A	13.5	14.0	107.0	60.0	43.0	2.07

Twister® HPD ECOLINE PERFORMANCE DRILL Universalbohrer



Serie HPDSS & HPDCS 3xD

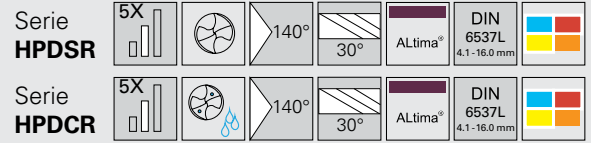


Artikelnummer		Werkzeugabmessungen					
HPDSS	HPDCS	Ø D1 (h7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
HPDSS 1360A	HPDCS 1360A	13.6	14.0	107.0	60.0	43.0	2.09
HPDSS 1370A	HPDCS 1370A	13.7	14.0	107.0	60.0	43.0	2.10
HPDSS 1380A	HPDCS 1380A	13.8	14.0	107.0	60.0	43.0	2.12
HPDSS 1390A	HPDCS 1390A	13.9	14.0	107.0	60.0	43.0	2.13
HPDSS 1400A	HPDCS 1400A	14.0	14.0	107.0	60.0	43.0	2.15
HPDSS 1410A	HPDCS 1410A	14.1	16.0	115.0	65.0	45.0	2.16
HPDSS 1420A	HPDCS 1420A	14.2	16.0	115.0	65.0	45.0	2.18
HPDSS 1430A	HPDCS 1430A	14.3	16.0	115.0	65.0	45.0	2.19
HPDSS 1440A	HPDCS 1440A	14.4	16.0	115.0	65.0	45.0	2.21
HPDSS 1450A	HPDCS 1450A	14.5	16.0	115.0	65.0	45.0	2.22
HPDSS 1460A	HPDCS 1460A	14.6	16.0	115.0	65.0	45.0	2.24
HPDSS 1470A	HPDCS 1470A	14.7	16.0	115.0	65.0	45.0	2.25
HPDSS 1480A	HPDCS 1480A	14.8	16.0	115.0	65.0	45.0	2.27
HPDSS 1490A	HPDCS 1490A	14.9	16.0	115.0	65.0	45.0	2.28
HPDSS 1500A	HPDCS 1500A	15.0	16.0	115.0	65.0	45.0	2.30
HPDSS 1510A	HPDCS 1510A	15.1	16.0	115.0	65.0	45.0	2.32
HPDSS 1520A	HPDCS 1520A	15.2	16.0	115.0	65.0	45.0	2.33
HPDSS 1530A	HPDCS 1530A	15.3	16.0	115.0	65.0	45.0	2.35
HPDSS 1540A	HPDCS 1540A	15.4	16.0	115.0	65.0	45.0	2.36
HPDSS 1550A	HPDCS 1550A	15.5	16.0	115.0	65.0	45.0	2.38
HPDSS 1560A	HPDCS 1560A	15.6	16.0	115.0	65.0	45.0	2.39
HPDSS 1570A	HPDCS 1570A	15.7	16.0	115.0	65.0	45.0	2.41
HPDSS 1580A	HPDCS 1580A	15.8	16.0	115.0	65.0	45.0	2.42
HPDSS 1590A	HPDCS 1590A	15.9	16.0	115.0	65.0	45.0	2.44
HPDSS 1600A	HPDCS 1600A	16.0	16.0	115.0	65.0	45.0	2.45

Twister® HPD

ECOLINE PERFORMANCE DRILL

Universalbohrer



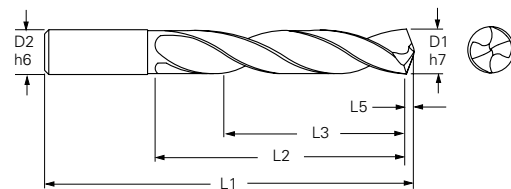
Serie HPDSR & HPDCR 5xD

Eigenschaften

- Zentrierspitze
- h7 Toleranz
- h6 Schafttoleranz
- Breites Anwendungsgebiet
- Wirtschaftliche Wahl

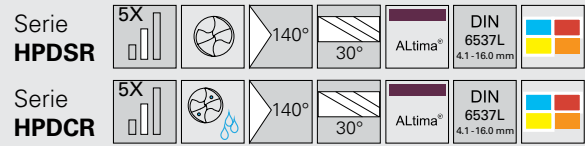
Vorteile

- Keine Pilotbohrung nötig
- Präzise Bohrungen
- Für Schrumpfanwendungen geeignet
- Für Stahl, Rostfrei, Gusseisen, Titan- und hitzebeständige Legierungen geeignet.
- Perfekt für Lohnfertigung, kleine Losgrößen und Anwendungen die einen Hochleistungsbohrer erfordern.

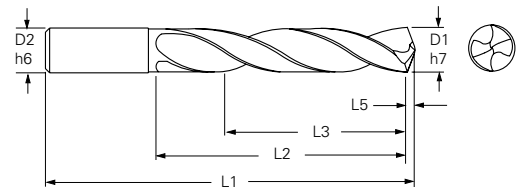


Artikelnummer		Werkzeugabmessungen					
HPDSR	HPDCR	Ø D1 (h7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
HPDSR 0300A	HPDCR 0300A	3.0	3.0	66.0	28.0	23.0	0.46
HPDSR 0310A	HPDCR 0310A	3.1	4.0	66.0	28.0	23.0	0.48
HPDSR 0320A	HPDCR 0320A	3.2	4.0	66.0	28.0	23.0	0.49
HPDSR 0330A	HPDCR 0330A	3.3	4.0	66.0	28.0	23.0	0.51
HPDSR 0340A	HPDCR 0340A	3.4	4.0	66.0	28.0	23.0	0.52
HPDSR 0350A	HPDCR 0350A	3.5	4.0	66.0	28.0	23.0	0.54
HPDSR 0360A	HPDCR 0360A	3.6	4.0	66.0	28.0	23.0	0.55
HPDSR 0370A	HPDCR 0370A	3.7	4.0	66.0	28.0	23.0	0.57
HPDSR 0380A	HPDCR 0380A	3.8	4.0	74.0	36.0	29.0	0.58
HPDSR 0390A	HPDCR 0390A	3.9	4.0	74.0	36.0	29.0	0.60
HPDSR 0400A	HPDCR 0400A	4.0	4.0	74.0	36.0	29.0	0.61
HPDSR 0410A	HPDCR 0410A	4.1	6.0	74.0	36.0	29.0	0.64
HPDSR 0420A	HPDCR 0420A	4.2	6.0	74.0	36.0	29.0	0.64
HPDSR 0430A	HPDCR 0430A	4.3	6.0	74.0	36.0	29.0	0.66
HPDSR 0440A	HPDCR 0440A	4.4	6.0	74.0	36.0	29.0	0.67
HPDSR 0450A	HPDCR 0450A	4.5	6.0	74.0	36.0	29.0	0.69
HPDSR 0460A	HPDCR 0460A	4.6	6.0	74.0	36.0	29.0	0.71
HPDSR 0470A	HPDCR 0470A	4.7	6.0	74.0	36.0	29.0	0.72
HPDSR 0480A	HPDCR 0480A	4.8	6.0	82.0	44.0	35.0	0.74
HPDSR 0490A	HPDCR 0490A	4.9	6.0	82.0	44.0	35.0	0.75
HPDSR 0500A	HPDCR 0500A	5.0	6.0	82.0	44.0	35.0	0.77
HPDSR 0510A	HPDCR 0510A	5.1	6.0	82.0	44.0	35.0	0.78
HPDSR 0520A	HPDCR 0520A	5.2	6.0	82.0	44.0	35.0	0.80
HPDSR 0530A	HPDCR 0530A	5.3	6.0	82.0	44.0	35.0	0.81
HPDSR 0540A	HPDCR 0540A	5.4	6.0	82.0	44.0	35.0	0.83
HPDSR 0550A	HPDCR 0550A	5.5	6.0	82.0	44.0	35.0	0.84
HPDSR 0560A	HPDCR 0560A	5.6	6.0	82.0	44.0	35.0	0.86
HPDSR 0570A	HPDCR 0570A	5.7	6.0	82.0	44.0	35.0	0.87

Twister® HPD ECOLINE PERFORMANCE DRILL Universalbohrer

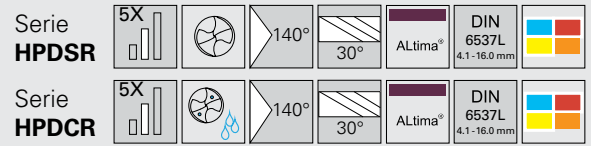


Serie HPDSR & HPDCR 5xD

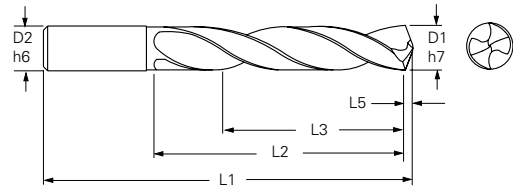


Artikelnummer		Werkzeugabmessungen					
HPDSR	HPDCR	Ø D1 (h7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
HPDSR 0580A	HPDCR 0580A	5.8	6.0	82.0	44.0	35.0	0.89
HPDSR 0590A	HPDCR 0590A	5.9	6.0	82.0	44.0	35.0	0.90
HPDSR 0600A	HPDCR 0600A	6.0	6.0	82.0	44.0	35.0	0.92
HPDSR 0610A	HPDCR 0610A	6.1	8.0	91.0	53.0	43.0	0.94
HPDSR 0620A	HPDCR 0620A	6.2	8.0	91.0	53.0	43.0	0.95
HPDSR 0630A	HPDCR 0630A	6.3	8.0	91.0	53.0	43.0	0.97
HPDSR 0640A	HPDCR 0640A	6.4	8.0	91.0	53.0	43.0	0.98
HPDSR 0650A	HPDCR 0650A	6.5	8.0	91.0	53.0	43.0	1.00
HPDSR 0660A	HPDCR 0660A	6.6	8.0	91.0	53.0	43.0	1.01
HPDSR 0670A	HPDCR 0670A	6.7	8.0	91.0	53.0	43.0	1.03
HPDSR 0680A	HPDCR 0680A	6.8	8.0	91.0	53.0	43.0	1.04
HPDSR 0690A	HPDCR 0690A	6.9	8.0	91.0	53.0	43.0	1.06
HPDSR 0700A	HPDCR 0700A	7.0	8.0	91.0	53.0	43.0	1.07
HPDSR 0710A	HPDCR 0710A	7.1	8.0	91.0	53.0	43.0	1.09
HPDSR 0720A	HPDCR 0720A	7.2	8.0	91.0	53.0	43.0	1.10
HPDSR 0730A	HPDCR 0730A	7.3	8.0	91.0	53.0	43.0	1.12
HPDSR 0740A	HPDCR 0740A	7.4	8.0	91.0	53.0	43.0	1.13
HPDSR 0750A	HPDCR 0750A	7.5	8.0	91.0	53.0	43.0	1.15
HPDSR 0760A	HPDCR 0760A	7.6	8.0	91.0	53.0	43.0	1.17
HPDSR 0770A	HPDCR 0770A	7.7	8.0	91.0	53.0	43.0	1.18
HPDSR 0780A	HPDCR 0780A	7.8	8.0	91.0	53.0	43.0	1.20
HPDSR 0790A	HPDCR 0790A	7.9	8.0	91.0	53.0	43.0	1.21
HPDSR 0800A	HPDCR 0800A	8.0	8.0	91.0	53.0	43.0	1.23
HPDSR 0810A	HPDCR 0810A	8.1	10.0	103.0	61.0	49.0	1.24
HPDSR 0820A	HPDCR 0820A	8.2	10.0	103.0	61.0	49.0	1.26
HPDSR 0830A	HPDCR 0830A	8.3	10.0	103.0	61.0	49.0	1.27
HPDSR 0840A	HPDCR 0840A	8.4	10.0	103.0	61.0	49.0	1.29
HPDSR 0850A	HPDCR 0850A	8.5	10.0	103.0	61.0	49.0	1.30
HPDSR 0860A	HPDCR 0860A	8.6	10.0	103.0	61.0	49.0	1.32
HPDSR 0870A	HPDCR 0870A	8.7	10.0	103.0	61.0	49.0	1.33
HPDSR 0880A	HPDCR 0880A	8.8	10.0	103.0	61.0	49.0	1.35
HPDSR 0890A	HPDCR 0890A	8.9	10.0	103.0	61.0	49.0	1.36
HPDSR 0900A	HPDCR 0900A	9.0	10.0	103.0	61.0	49.0	1.38
HPDSR 0910A	HPDCR 0910A	9.1	10.0	103.0	61.0	49.0	1.40
HPDSR 0920A	HPDCR 0920A	9.2	10.0	103.0	61.0	49.0	1.41
HPDSR 0930A	HPDCR 0930A	9.3	10.0	103.0	61.0	49.0	1.43
HPDSR 0940A	HPDCR 0940A	9.4	10.0	103.0	61.0	49.0	1.44
HPDSR 0950A	HPDCR 0950A	9.5	10.0	103.0	61.0	49.0	1.46
HPDSR 0960A	HPDCR 0960A	9.6	10.0	103.0	61.0	49.0	1.47

Twister® HPD ECOLINE PERFORMANCE DRILL Universalbohrer



Serie HPDSR & HPDCR 5xD

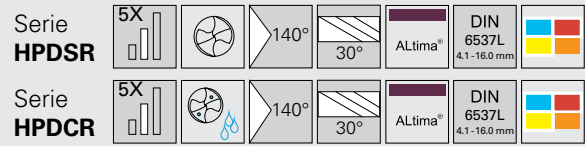


Artikelnummer		Werkzeugabmessungen					
HPDSR	HPDCR	Ø D1 (h7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
HPDSR 0970A	HPDCR 0970A	9.7	10.0	103.0	61.0	49.0	1.49
HPDSR 0980A	HPDCR 0980A	9.8	10.0	103.0	61.0	49.0	1.50
HPDSR 0990A	HPDCR 0990A	9.9	10.0	103.0	61.0	49.0	1.52
HPDSR 1000A	HPDCR 1000A	10.0	10.0	103.0	61.0	49.0	1.53
HPDSR 1010A	HPDCR 1010A	10.1	12.0	118.0	71.0	56.0	1.55
HPDSR 1020A	HPDCR 1020A	10.2	12.0	118.0	71.0	56.0	1.56
HPDSR 1030A	HPDCR 1030A	10.3	12.0	118.0	71.0	56.0	1.58
HPDSR 1040A	HPDCR 1040A	10.4	12.0	118.0	71.0	56.0	1.59
HPDSR 1050A	HPDCR 1050A	10.5	12.0	118.0	71.0	56.0	1.61
HPDSR 1060A	HPDCR 1060A	10.6	12.0	118.0	71.0	56.0	1.63
HPDSR 1070A	HPDCR 1070A	10.7	12.0	118.0	71.0	56.0	1.64
HPDSR 1080A	HPDCR 1080A	10.8	12.0	118.0	71.0	56.0	1.66
HPDSR 1090A	HPDCR 1090A	10.9	12.0	118.0	71.0	56.0	1.67
HPDSR 1100A	HPDCR 1100A	11.0	12.0	118.0	71.0	56.0	1.69
HPDSR 1110A	HPDCR 1110A	11.1	12.0	118.0	71.0	56.0	1.70
HPDSR 1120A	HPDCR 1120A	11.2	12.0	118.0	71.0	56.0	1.72
HPDSR 1130A	HPDCR 1130A	11.3	12.0	118.0	71.0	56.0	1.73
HPDSR 1140A	HPDCR 1140A	11.4	12.0	118.0	71.0	56.0	1.75
HPDSR 1150A	HPDCR 1150A	11.5	12.0	118.0	71.0	56.0	1.76
HPDSR 1160A	HPDCR 1160A	11.6	12.0	118.0	71.0	56.0	1.78
HPDSR 1170A	HPDCR 1170A	11.7	12.0	118.0	71.0	56.0	1.79
HPDSR 1180A	HPDCR 1180A	11.8	12.0	118.0	71.0	56.0	1.81
HPDSR 1190A	HPDCR 1190A	11.9	12.0	118.0	71.0	56.0	1.82
HPDSR 1200A	HPDCR 1200A	12.0	12.0	118.0	71.0	56.0	1.84
HPDSR 1210A	HPDCR 1210A	12.1	14.0	124.0	77.0	60.0	1.86
HPDSR 1220A	HPDCR 1220A	12.2	14.0	124.0	77.0	60.0	1.87
HPDSR 1230A	HPDCR 1230A	12.3	14.0	124.0	77.0	60.0	1.89
HPDSR 1240A	HPDCR 1240A	12.4	14.0	124.0	77.0	60.0	1.90
HPDSR 1250A	HPDCR 1250A	12.5	14.0	124.0	77.0	60.0	1.92
HPDSR 1260A	HPDCR 1260A	12.6	14.0	124.0	77.0	60.0	1.93
HPDSR 1270A	HPDCR 1270A	12.7	14.0	124.0	77.0	60.0	1.95
HPDSR 1280A	HPDCR 1280A	12.8	14.0	124.0	77.0	60.0	1.96
HPDSR 1290A	HPDCR 1290A	12.9	14.0	124.0	77.0	60.0	1.99
HPDSR 1300A	HPDCR 1300A	13.0	14.0	124.0	77.0	60.0	1.98
HPDSR 1310A	HPDCR 1310A	13.1	14.0	124.0	77.0	60.0	2.01
HPDSR 1320A	HPDCR 1320A	13.2	14.0	124.0	77.0	60.0	2.02
HPDSR 1330A	HPDCR 1330A	13.3	14.0	124.0	77.0	60.0	2.04
HPDSR 1340A	HPDCR 1340A	13.4	14.0	124.0	77.0	60.0	2.05
HPDSR 1350A	HPDCR 1350A	13.5	14.0	124.0	77.0	60.0	2.07

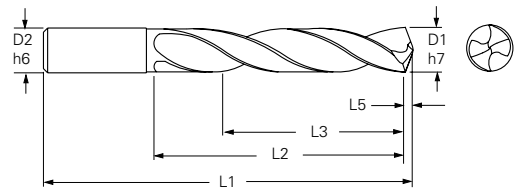
Twister® HPD

ECOLINE PERFORMANCE DRILL

Universalbohrer



Serie HPDSS & HPDCS 3xD



Artikelnummer		Werkzeugabmessungen					
HPDSR	HPDCR	Ø D1 (h7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
HPDSR 1360A	HPDCR 1360A	13.6	14.0	124.0	77.0	60.0	2.09
HPDSR 1370A	HPDCR 1370A	13.7	14.0	124.0	77.0	60.0	2.10
HPDSR 1380A	HPDCR 1380A	13.8	14.0	124.0	77.0	60.0	2.12
HPDSR 1390A	HPDCR 1390A	13.9	14.0	124.0	77.0	60.0	2.13
HPDSR 1400A	HPDCR 1400A	14.0	14.0	124.0	77.0	60.0	2.15
HPDSR 1410A	HPDCR 1410A	14.1	16.0	133.0	83.0	63.0	2.16
HPDSR 1420A	HPDCR 1420A	14.2	16.0	133.0	83.0	63.0	2.18
HPDSR 1430A	HPDCR 1430A	14.3	16.0	133.0	83.0	63.0	2.19
HPDSR 1440A	HPDCR 1440A	14.4	16.0	133.0	83.0	63.0	2.21
HPDSR 1450A	HPDCR 1450A	14.5	16.0	133.0	83.0	63.0	2.22
HPDSR 1460A	HPDCR 1460A	14.6	16.0	133.0	83.0	63.0	2.24
HPDSR 1470A	HPDCR 1470A	14.7	16.0	133.0	83.0	63.0	2.25
HPDSR 1480A	HPDCR 1480A	14.8	16.0	133.0	83.0	63.0	2.27
HPDSR 1490A	HPDCR 1490A	14.9	16.0	133.0	83.0	63.0	2.28
HPDSR 1500A	HPDCR 1500A	15.0	16.0	133.0	83.0	63.0	2.30
HPDSR 1510A	HPDCR 1510A	15.1	16.0	133.0	83.0	63.0	2.32
HPDSR 1520A	HPDCR 1520A	15.2	16.0	133.0	83.0	63.0	2.33
HPDSR 1530A	HPDCR 1530A	15.3	16.0	133.0	83.0	63.0	2.35
HPDSR 1540A	HPDCR 1540A	15.4	16.0	133.0	83.0	63.0	2.36
HPDSR 1550A	HPDCR 1550A	15.5	16.0	133.0	83.0	63.0	2.38
HPDSR 1560A	HPDCR 1560A	15.6	16.0	133.0	83.0	63.0	2.39
HPDSR 1570A	HPDCR 1570A	15.7	16.0	133.0	83.0	63.0	2.41
HPDSR 1580A	HPDCR 1580A	15.8	16.0	133.0	83.0	63.0	2.42
HPDSR 1590A	HPDCR 1590A	15.9	16.0	133.0	83.0	63.0	2.44
HPDSR 1600A	HPDCR 1600A	16.0	16.0	133.0	83.0	63.0	2.45

Twister® HPD

ECOLINE PERFORMANCE DRILL

Universalbohrer

Serie HPDSS & HPDCS 3xD, Serie HPDSR & HPDCR 5xD

Empfohlene Schnittwerte

Materialgruppe Werkstück	Materialtyp	HPDSS			HPDCS			
		3xD			3xD – innengekühlt			
		Niedrig	Mittel	Hoch	Niedrig	Mittel	Hoch	
		Vc-m/min			Vc-m/min			
Stahl	P	Stähle mit niedrigem Kohlenstoffanteil $\geq 180\text{HB}$	140	160	180	170	190	210
		Stähle mit mittlerem Kohlenstoffanteil 180 – 350HB	80	90	100	90	110	130
		Vorgehärtete Stähle 35 – 45 HRC	40	50	60	60	70	80
Rostfrei	M	Rostfrei martensitisch – Serie 400	90	100	110	100	120	140
		Rostfrei austenitisch – Serie 300	40	50	60	60	70	80
Gusseisen	K	Grauguss	100	120	140	130	150	170
		Duktiles Gusseisen	50	60	70	70	80	90

Formel für Drehzahl (bei metrischen Bohrern): $U/\text{min} = (Vc \times 318) / \text{Bohrer } \varnothing D1$

Materialgruppe Werkstück	Materialtyp	HPDSS			HPDCS			
		5xD			5xD – innengekühlt			
		Niedrig	Mittel	Hoch	Niedrig	Mittel	Hoch	
		Vc-m/min			Vc-m/min			
Stahl	P	Stähle mit niedrigem Kohlenstoffanteil $\geq 180\text{HB}$	130	150	170	160	180	200
		Stähle mit mittlerem Kohlenstoffanteil 180 – 350HB	70	80	90	90	100	110
		Vorgehärtete Stähle 35 – 45 HRC	40	50	60	50	60	70
Rostfrei	M	Rostfrei martensitisch – Serie 400	80	90	100	90	110	130
		Rostfrei austenitisch – Serie 300	40	50	60	50	60	70
Gusseisen	K	Grauguss	90	110	130	120	140	160
		Duktiles Gusseisen	50	50	60	60	70	80

Formel für Drehzahl (bei metrischen Bohrern): $U/\text{min} = (Vc \times 318) / \text{Bohrer } \varnothing D1$

Materialgruppe Werkstück	Materialtyp	Bohrdurchmesser (mm)								
		3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	
		Vorschub (mm/rev)								
Stahl	P	Stähle mit niedrigem Kohlenstoffanteil $\geq 180\text{HB}$								
		Stähle mit mittlerem Kohlenstoffanteil 180-350HB	0.145	0.181	0.181	0.226	0.285	0.362	0.3632	0.453
		Vorgehärtete Stähle 35-45 HRC								
Rostfrei	M	Rostfrei martensitisch – Serie 400	0.07	0.09	0.09	0.11	0.14	0.18	0.18	0.225
		Rostfrei austenitisch – Serie 300								
Gusseisen	K	Grauguss	0.155	0.193	0.217	0.305	0.305	0.386	0.435	0.532
		Duktiles Gusseisen								

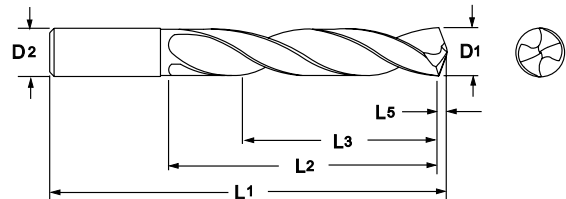
Formel für Vorschub (bei metrischen Bohrern): $\text{Vorschub} = U/\text{min} \times \text{mm/Rev}$

CYCLONE CXD

Hochleistungsbohrer

Serie CXDSS							Metric/ >5mm DIN 6537K
Serie CXDCS							Metric/ >5mm DIN 6537K

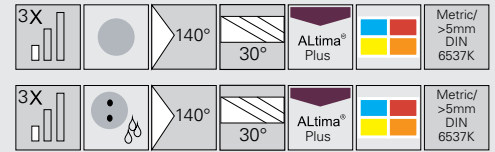
3xD Serie CXDSS & CXDCS



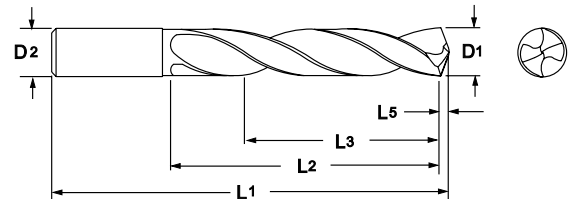
Artikelnummer		Bohrerabmessungen (mm)					
CXDSS	CXDCS	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSS 0300AP	CXDCS 0300AP	3.0	3.0	62.0	20.0	14.0	0.46
CXDSS 0310AP	CXDCS 0310AP	3.1	4.0	62.0	20.0	14.0	0.48
CXDSS 0320AP	CXDCS 0320AP	3.2	4.0	62.0	20.0	14.0	0.5
CXDSS 0330AP	CXDCS 0330AP	3.3	4.0	62.0	20.0	14.0	0.51
CXDSS 0340AP	CXDCS 0340AP	3.4	4.0	62.0	20.0	14.0	0.53
CXDSS 0350AP	CXDCS 0350AP	3.5	4.0	62.0	20.0	14.0	0.54
CXDSS 0360AP	CXDCS 0360AP	3.6	4.0	62.0	20.0	14.0	0.56
CXDSS 0370AP	CXDCS 0370AP	3.7	4.0	62.0	20.0	14.0	0.57
CXDSS 0380AP	CXDCS 0380AP	3.8	4.0	66.0	24.0	17.0	0.59
CXDSS 0390AP	CXDCS 0390AP	3.9	4.0	66.0	24.0	17.0	0.6
CXDSS 0400AP	CXDCS 0400AP	4.0	4.0	66.0	24.0	17.0	0.62
CXDSS 0410AP	CXDCS 0410AP	4.1	5.0	66.0	24.0	17.0	0.64
CXDSS 0420AP	CXDCS 0420AP	4.2	5.0	66.0	24.0	17.0	0.65
CXDSS 0430AP	CXDCS 0430AP	4.3	5.0	66.0	24.0	17.0	0.67
CXDSS 0440AP	CXDCS 0440AP	4.4	5.0	66.0	24.0	17.0	0.68
CXDSS 0450AP	CXDCS 0450AP	4.5	5.0	66.0	24.0	17.0	0.7
CXDSS 0460AP	CXDCS 0460AP	4.6	5.0	66.0	24.0	17.0	0.71
CXDSS 0470AP	CXDCS 0470AP	4.7	5.0	66.0	24.0	17.0	0.73

CYCLONE CXD

Hochleistungsbohrer



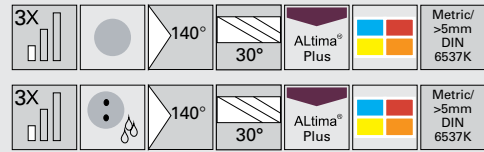
3xD Serie CXDSS & CXDCS



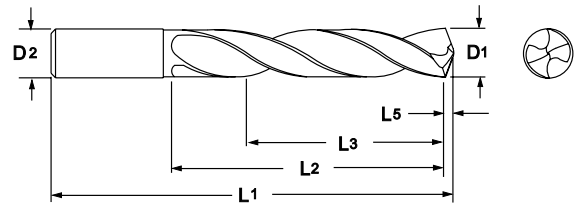
Artikelnummer		Bohrerabmessungen (mm)					
CXDSS	CXDCS	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSS 0480AP	CXDCS 0480AP	4.8	5.0	66.0	28.0	20.0	0.74
CXDSS 0490AP	CXDCS 0490AP	4.9	5.0	66.0	28.0	20.0	0.76
CXDSS 0500AP	CXDCS 0500AP	5.0	5.0	66.0	28.0	20.0	0.77
CXDSS 0510AP	CXDCS 0510AP	5.1	6.0	66.0	28.0	20.0	0.79
CXDSS 0520AP	CXDCS 0520AP	5.2	6.0	66.0	28.0	20.0	0.81
CXDSS 0530AP	CXDCS 0530AP	5.3	6.0	66.0	28.0	20.0	0.82
CXDSS 0540AP	CXDCS 0540AP	5.4	6.0	66.0	28.0	20.0	0.84
CXDSS 0550AP	CXDCS 0550AP	5.5	6.0	66.0	28.0	20.0	0.85
CXDSS 0560AP	CXDCS 0560AP	5.6	6.0	66.0	28.0	20.0	0.86
CXDSS 0570AP	CXDCS 0570AP	5.7	6.0	66.0	28.0	20.0	0.88
CXDSS 0580AP	CXDCS 0580AP	5.8	6.0	66.0	28.0	20.0	0.9
CXDSS 0590AP	CXDCS 0590AP	5.9	6.0	66.0	28.0	20.0	0.91
CXDSS 0600AP	CXDCS 0600AP	6.0	6.0	66.0	28.0	20.0	0.93
CXDSS 0610AP	CXDCS 0610AP	6.1	8.0	79.0	34.0	24.0	0.95
CXDSS 0620AP	CXDCS 0620AP	6.2	8.0	79.0	34.0	24.0	0.96
CXDSS 0630AP	CXDCS 0630AP	6.3	8.0	79.0	34.0	24.0	0.98
CXDSS 0640AP	CXDCS 0640AP	6.4	8.0	79.0	34.0	24.0	0.99
CXDSS 0650AP	CXDCS 0650AP	6.5	8.0	79.0	34.0	24.0	1.01
CXDSS 0660AP	CXDCS 0660AP	6.6	8.0	79.0	34.0	24.0	1.03
CXDSS 0670AP	CXDCS 0670AP	6.7	8.0	79.0	34.0	24.0	1.04
CXDSS 0680AP	CXDCS 0680AP	6.8	8.0	79.0	34.0	24.0	1.05
CXDSS 0690AP	CXDCS 0690AP	6.9	8.0	79.0	34.0	24.0	1.07
CXDSS 0700AP	CXDCS 0700AP	7.0	8.0	79.0	34.0	24.0	1.08
CXDSS 0710AP	CXDCS 0710AP	7.1	8.0	79.0	41.0	29.0	1.1
CXDSS 0720AP	CXDCS 0720AP	7.2	8.0	79.0	41.0	29.0	1.12
CXDSS 0730AP	CXDCS 0730AP	7.3	8.0	79.0	41.0	29.0	1.13
CXDSS 0740AP	CXDCS 0740AP	7.4	8.0	79.0	41.0	29.0	1.15
CXDSS 0750AP	CXDCS 0750AP	7.5	8.0	79.0	41.0	29.0	1.16
CXDSS 0760AP	CXDCS 0760AP	7.6	8.0	79.0	41.0	29.0	1.18
CXDSS 0770AP	CXDCS 0770AP	7.7	8.0	79.0	41.0	29.0	1.19
CXDSS 0780AP	CXDCS 0780AP	7.8	8.0	79.0	41.0	29.0	1.21
CXDSS 0790AP	CXDCS 0790AP	7.9	8.0	79.0	41.0	29.0	1.22
CXDSS 0800AP	CXDCS 0800AP	8.0	8.0	79.0	41.0	29.0	1.24
CXDSS 0810AP	CXDCS 0810AP	8.1	10.0	89.0	47.0	35.0	1.26
CXDSS 0820AP	CXDCS 0820AP	8.2	10.0	89.0	47.0	35.0	1.27
CXDSS 0830AP	CXDCS 0830AP	8.3	10.0	89.0	47.0	35.0	1.29
CXDSS 0840AP	CXDCS 0840AP	8.4	10.0	89.0	47.0	35.0	1.31
CXDSS 0850AP	CXDCS 0850AP	8.5	10.0	89.0	47.0	35.0	1.32
CXDSS 0860AP	CXDCS 0860AP	8.6	10.0	89.0	47.0	35.0	1.33
CXDSS 0870AP	CXDCS 0870AP	8.7	10.0	89.0	47.0	35.0	1.35
CXDSS 0880AP	CXDCS 0880AP	8.8	10.0	89.0	47.0	35.0	1.36

CYCLONE CXD

Hochleistungsbohrer



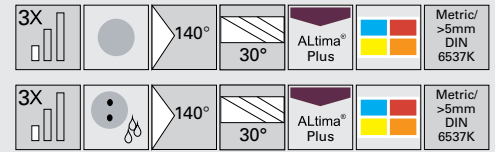
3xD Serie CXDSS & CXDCS



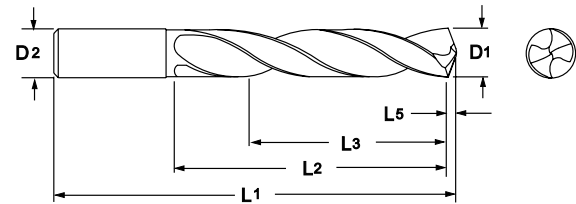
Artikelnummer		Bohrerabmessungen (mm)					
CXDSS	CXDCS	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSS 0890AP	CXDCS 0890AP	8.9	10.0	89.0	47.0	35.0	1.38
CXDSS 0900AP	CXDCS 0900AP	9.0	10.0	89.0	47.0	35.0	1.39
CXDSS 0910AP	CXDCS 0910AP	9.1	10.0	89.0	47.0	35.0	1.41
CXDSS 0920AP	CXDCS 0920AP	9.2	10.0	89.0	47.0	35.0	1.43
CXDSS 0925AP	CXDCS 0925AP	9.25	10.0	89.0	47.0	35.0	1.43
CXDSS 0930AP	CXDCS 0930AP	9.3	10.0	89.0	47.0	35.0	1.44
CXDSS 0940AP	CXDCS 0940AP	9.4	10.0	89.0	47.0	35.0	1.46
CXDSS 0950AP	CXDCS 0950AP	9.5	10.0	89.0	47.0	35.0	1.47
CXDSS 0960AP	CXDCS 0960AP	9.6	10.0	89.0	47.0	35.0	1.49
CXDSS 0970AP	CXDCS 0970AP	9.7	10.0	89.0	47.0	35.0	1.5
CXDSS 0980AP	CXDCS 0980AP	9.8	10.0	89.0	47.0	35.0	1.52
CXDSS 0990AP	CXDCS 0990AP	9.9	10.0	89.0	47.0	35.0	1.53
CXDSS 1000AP	CXDCS 1000AP	10.0	10.0	89.0	47.0	35.0	1.55
CXDSS 1010AP	CXDCS 1010AP	10.1	12.0	102.0	55.0	40.0	1.56
CXDSS 1020AP	CXDCS 1020AP	10.2	12.0	102.0	55.0	40.0	1.58
CXDSS 1030AP	CXDCS 1030AP	10.3	12.0	102.0	55.0	40.0	1.6
CXDSS 1040AP	CXDCS 1040AP	10.4	12.0	102.0	55.0	40.0	1.61
CXDSS 1050AP	CXDCS 1050AP	10.5	12.0	102.0	55.0	40.0	1.63
CXDSS 1060AP	CXDCS 1060AP	10.6	12.0	102.0	55.0	40.0	1.64
CXDSS 1070AP	CXDCS 1070AP	10.7	12.0	102.0	55.0	40.0	1.66
CXDSS 1080AP	CXDCS 1080AP	10.8	12.0	102.0	55.0	40.0	1.67
CXDSS 1090AP	CXDCS 1090AP	10.9	12.0	102.0	55.0	40.0	1.69
CXDSS 1100AP	CXDCS 1100AP	11.0	12.0	102.0	55.0	40.0	1.7
CXDSS 1110AP	CXDCS 1110AP	11.1	12.0	102.0	55.0	40.0	1.72
CXDSS 1120AP	CXDCS 1120AP	11.2	12.0	102.0	55.0	40.0	1.74
CXDSS 1130AP	CXDCS 1130AP	11.3	12.0	102.0	55.0	40.0	1.75
CXDSS 1140AP	CXDCS 1140AP	11.4	12.0	102.0	55.0	40.0	1.77
CXDSS 1150AP	CXDCS 1150AP	11.5	12.0	102.0	55.0	40.0	1.78
CXDSS 1160AP	CXDCS 1160AP	11.6	12.0	102.0	55.0	40.0	1.8
CXDSS 1170AP	CXDCS 1170AP	11.7	12.0	102.0	55.0	40.0	1.81

CYCLONE CXD

Hochleistungsbohrer



3xD Serie CXDSS & CXDCS

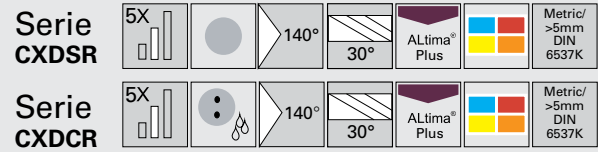


Artikelnummer		Bohrerabmessungen (mm)					
CXDSS	CXDCS	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSS 1180AP	CXDCS 1180AP	11.8	12.0	102.0	55.0	40.0	1.83
CXDSS 1190AP	CXDCS 1190AP	11.9	12.0	102.0	55.0	40.0	1.84
CXDSS 1200AP	CXDCS 1200AP	12.0	12.0	102.0	55.0	40.0	1.86
CXDSS 1210AP	CXDCS 1210AP	12.1	14.0	107.0	60.0	43.0	1.87
CXDSS 1250AP	CXDCS 1250AP	12.5	14.0	107.0	60.0	43.0	1.94
CXDSS 1280AP	CXDCS 1280AP	12.8	14.0	107.0	60.0	43.0	1.98
CXDSS 1283AP	CXDCS 1283AP	12.83	14.0	107.0	60.0	43.0	1.99
CXDSS 1290AP	CXDCS 1290AP	12.9	14.0	107.0	60.0	43.0	2.0
CXDSS 1300AP	CXDCS 1300AP	13.0	14.0	107.0	60.0	43.0	2.01
CXDSS 1350AP	CXDCS 1350AP	13.5	14.0	107.0	60.0	43.0	2.09
CXDSS 1370AP	CXDCS 1370AP	13.7	14.0	107.0	60.0	43.0	2.12
CXDSS 1400AP	CXDCS 1400AP	14.0	14.0	107.0	60.0	43.0	2.17
CXDSS 1450AP	CXDCS 1450AP	14.5	16.0	115.0	65.0	45.0	2.25
CXDSS 1470AP	CXDCS 1470AP	14.7	16.0	115.0	65.0	45.0	2.28
CXDSS 1500AP	CXDCS 1500AP	15.0	16.0	115.0	65.0	45.0	2.32
CXDSS 1530AP	CXDCS 1530AP	15.3	16.0	115.0	65.0	45.0	2.37
CXDSS 1550AP	CXDCS 1550AP	15.5	16.0	115.0	65.0	45.0	2.4
CXDSS 1570AP	CXDCS 1570AP	15.7	16.0	115.0	65.0	45.0	2.43
CXDSS 1600AP	CXDCS 1600AP	16.0	16.0	115.0	65.0	45.0	2.48
CXDSS 1608AP	-	16.08	18.0	123.0	73.0	51.0	2.49
CXDSS 1630AP	-	16.3	18.0	123.0	73.0	51.0	2.53
CXDSS 1650AP	-	16.5	18.0	123.0	73.0	51.0	2.56
CXDSS 1700AP	-	17.0	18.0	123.0	73.0	51.0	2.63
CXDSS 1750AP	-	17.5	18.0	123.0	73.0	51.0	2.71
CXDSS 1800AP	-	18.0	18.0	123.0	73.0	51.0	2.79
CXDSS 1850AP	-	18.5	20.0	131.0	79.0	55.0	2.87
CXDSS 1916AP	-	19.16	20.0	131.0	79.0	55.0	2.97
CXDSS 1925AP	-	19.25	20.0	131.0	79.0	55.0	2.98
CXDSS 1930AP	-	19.3	20.0	131.0	79.0	55.0	2.99
CXDSS 1950AP	-	19.5	20.0	131.0	79.0	55.0	3.02
CXDSS 2000AP	-	20.0	20.0	131.0	79.0	55.0	3.1

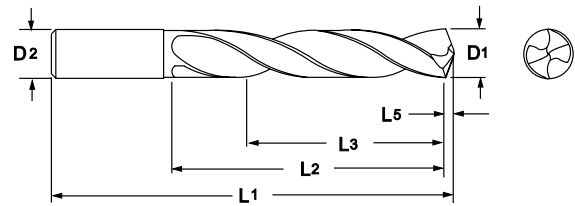
D1	Toleranz (m7)	D2	Toleranz (h6)
0- 3.0	+0.002/+0.012	0- 3.0	+0/-0.006
3.01- 6.0	+0.004/+0.016	3.01- 6.0	+0/-0.008
6.01- 10.0	+0.006/+0.021	6.01- 10.0	+0/-0.009
10.01- 18.0	+0.007/+0.025	10.01- 18.0	+0/-0.011
18.01- 20.0	+0.008/+0.029	18.01- 20.0	+0/-0.013

CYCLONE CXD

Hochleistungsbohrer



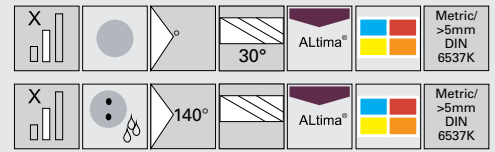
5xD Serie CXDSR & CXDCR



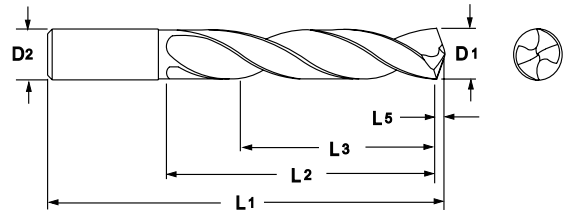
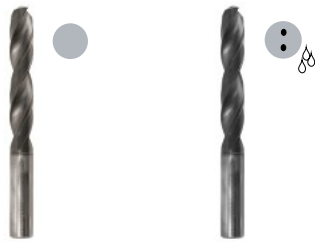
Artikelnummer		Bohrerabmessungen (mm)					
CXDSR	CXDCR	D1 (m7)	D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSR 0300AP	CXDCR 0300AP	3.0	3.0	66.0	28.0	23.0	0.46
CXDSR 0310AP	CXDCR 0310AP	3.1	4.0	66.0	28.0	23.0	0.48
CXDSR 0320AP	CXDCR 0320AP	3.2	4.0	66.0	28.0	23.0	0.5
CXDSR 0330AP	CXDCR 0330AP	3.3	4.0	66.0	28.0	23.0	0.51
CXDSR 0340AP	CXDCR 0340AP	3.4	4.0	66.0	28.0	23.0	0.53
CXDSR 0350AP	CXDCR 0350AP	3.5	4.0	66.0	28.0	23.0	0.54
CXDSR 0360AP	CXDCR 0360AP	3.6	4.0	66.0	28.0	23.0	0.56
CXDSR 0370AP	CXDCR 0370AP	3.7	4.0	66.0	28.0	23.0	0.57
CXDSR 0380AP	CXDCR 0380AP	3.8	4.0	74.0	36.0	29.0	0.59
CXDSR 0390AP	CXDCR 0390AP	3.9	4.0	74.0	36.0	29.0	0.6
CXDSR 0400AP	CXDCR 0400AP	4.0	4.0	74.0	36.0	29.0	0.62
CXDSR 0410AP	CXDCR 0410AP	4.1	5.0	74.0	36.0	29.0	0.64
CXDSR 0420AP	CXDCR 0420AP	4.2	5.0	74.0	36.0	29.0	0.65
CXDSR 0430AP	CXDCR 0430AP	4.3	5.0	74.0	36.0	29.0	0.67
CXDSR 0440AP	CXDCR 0440AP	4.4	5.0	74.0	36.0	29.0	0.68
CXDSR 0450AP	CXDCR 0450AP	4.5	5.0	74.0	36.0	29.0	0.7
CXDSR 0460AP	CXDCR 0460AP	4.6	5.0	74.0	36.0	29.0	0.71
CXDSR 0470AP	CXDCR 0470AP	4.7	5.0	74.0	36.0	29.0	0.73
CXDSR 0480AP	CXDCR 0480AP	4.8	5.0	82.0	44.0	35.0	0.74
CXDSR 0490AP	CXDCR 0490AP	4.9	5.0	82.0	44.0	35.0	0.76
CXDSR 0500AP	CXDCR 0500AP	5.0	5.0	82.0	44.0	35.0	0.77
CXDSR 0510AP	CXDCR 0510AP	5.1	6.0	82.0	44.0	35.0	0.79
CXDSR 0520AP	CXDCR 0520AP	5.2	6.0	82.0	44.0	35.0	0.81
CXDSR 0530AP	CXDCR 0530AP	5.3	6.0	82.0	44.0	35.0	0.82
CXDSR 0540AP	CXDCR 0540AP	5.4	6.0	82.0	44.0	35.0	0.84
CXDSR 0550AP	CXDCR 0550AP	5.5	6.0	82.0	44.0	35.0	0.85
CXDSR 0560AP	CXDCR 0560AP	5.6	6.0	82.0	44.0	35.0	0.86
CXDSR 0570AP	CXDCR 0570AP	5.7	6.0	82.0	44.0	35.0	0.88
CXDSR 0580AP	CXDCR 0580AP	5.8	6.0	82.0	44.0	35.0	0.9
CXDSR 0590AP	CXDCR 0590AP	5.9	6.0	82.0	44.0	35.0	0.91
CXDSR 0600AP	CXDCR 0600AP	6.0	6.0	82.0	44.0	35.0	0.93
CXDSR 0610AP	CXDCR 0610AP	6.1	8.0	91.0	53.0	43.0	0.95
CXDSR 0620AP	CXDCR 0620AP	6.2	8.0	91.0	53.0	43.0	0.96
CXDSR 0630AP	CXDCR 0630AP	6.3	8.0	91.0	53.0	43.0	0.98
CXDSR 0640AP	CXDCR 0640AP	6.4	8.0	91.0	53.0	43.0	0.99
CXDSR 0650AP	CXDCR 0650AP	6.5	8.0	91.0	53.0	43.0	1.01
CXDSR 0660AP	CXDCR 0660AP	6.6	8.0	91.0	53.0	43.0	1.03
CXDSR 0670AP	CXDCR 0670AP	6.7	8.0	91.0	53.0	43.0	1.04
CXDSR 0680AP	CXDCR 0680AP	6.8	8.0	91.0	53.0	43.0	1.05
CXDSR 0690AP	CXDCR 0690AP	6.9	8.0	91.0	53.0	43.0	1.07

CYCLONE CXD

Hochleistungsbohrer



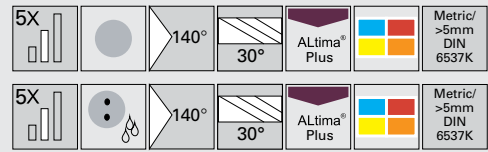
5xD Serie CXDSR & CXDCR



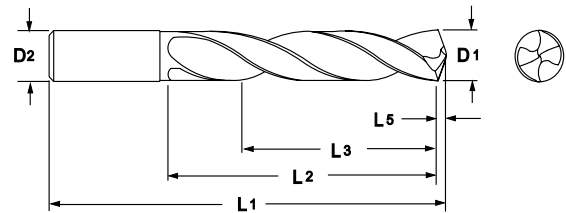
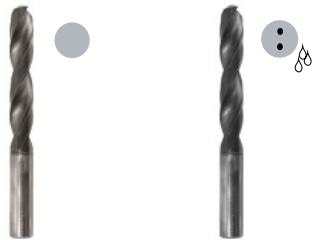
Artikelnummer		Bohrerabmessungen (mm)					
CXDSR	CXDCR	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSR 0700AP	CXDCR 0700AP	7.0	8.0	91.0	53.0	43.0	1.08
CXDSR 0710AP	CXDCR 0710AP	7.1	8.0	91.0	53.0	43.0	1.1
CXDSR 0720AP	CXDCR 0720AP	7.2	8.0	91.0	53.0	43.0	1.12
CXDSR 0730AP	CXDCR 0730AP	7.3	8.0	91.0	53.0	43.0	1.13
CXDSR 0740AP	CXDCR 0740AP	7.4	8.0	91.0	53.0	43.0	1.15
CXDSR 0750AP	CXDCR 0750AP	7.5	8.0	91.0	53.0	43.0	1.16
CXDSR 0760AP	CXDCR 0760AP	7.6	8.0	91.0	53.0	43.0	1.18
CXDSR 0770AP	CXDCR 0770AP	7.7	8.0	91.0	53.0	43.0	1.19
CXDSR 0780AP	CXDCR 0780AP	7.8	8.0	91.0	53.0	43.0	1.21
CXDSR 0790AP	CXDCR 0790AP	7.9	8.0	91.0	53.0	43.0	1.22
CXDSR 0800AP	CXDCR 0800AP	8.0	8.0	91.0	53.0	43.0	1.24
CXDSR 0810AP	CXDCR 0810AP	8.1	10.0	103.0	61.0	49.0	1.26
CXDSR 0820AP	CXDCR 0820AP	8.2	10.0	103.0	61.0	49.0	1.27
CXDSR 0830AP	CXDCR 0830AP	8.3	10.0	103.0	61.0	49.0	1.29
CXDSR 0840AP	CXDCR 0840AP	8.4	10.0	103.0	61.0	49.0	1.31
CXDSR 0850AP	CXDCR 0850AP	8.5	10.0	103.0	61.0	49.0	1.32
CXDSR 0860AP	CXDCR 0860AP	8.6	10.0	103.0	61.0	49.0	1.33
CXDSR 0870AP	CXDCR 0870AP	8.7	10.0	103.0	61.0	49.0	1.35
CXDSR 0880AP	CXDCR 0880AP	8.8	10.0	103.0	61.0	49.0	1.36
CXDSR 0890AP	CXDCR 0890AP	8.9	10.0	103.0	61.0	49.0	1.38
CXDSR 0900AP	CXDCR 0900AP	9.0	10.0	103.0	61.0	49.0	1.39
CXDSR 0910AP	CXDCR 0910AP	9.1	10.0	103.0	61.0	49.0	1.41
CXDSR 0920AP	CXDCR 0920AP	9.2	10.0	103.0	61.0	49.0	1.43
CXDSR 0925AP	CXDCR 0925AP	9.3	10.0	103.0	61.0	49.0	1.43
CXDSR 0930AP	CXDCR 0930AP	9.3	10.0	103.0	61.0	49.0	1.44
CXDSR 0940AP	CXDCR 0940AP	9.4	10.0	103.0	61.0	49.0	1.46
CXDSR 0950AP	CXDCR 0950AP	9.5	10.0	103.0	61.0	49.0	1.47
CXDSR 0960AP	CXDCR 0960AP	9.6	10.0	103.0	61.0	49.0	1.49
CXDSR 0970AP	CXDCR 0970AP	9.7	10.0	103.0	61.0	49.0	1.5
CXDSR 0980AP	CXDCR 0980AP	9.8	10.0	103.0	61.0	49.0	1.52
CXDSR 0990AP	CXDCR 0990AP	9.9	10.0	103.0	61.0	49.0	1.53
CXDSR 1000AP	CXDCR 1000AP	10.0	10.0	103.0	61.0	49.0	1.55
CXDSR 1010AP	CXDCR 1010AP	10.1	12.0	118.0	71.0	56.0	1.56
CXDSR 1020AP	CXDCR 1020AP	10.2	12.0	118.0	71.0	56.0	1.58
CXDSR 1030AP	CXDCR 1030AP	10.3	12.0	118.0	71.0	56.0	1.6
CXDSR 1040AP	CXDCR 1040AP	10.4	12.0	118.0	71.0	56.0	1.61
CXDSR 1050AP	CXDCR 1050AP	10.5	12.0	118.0	71.0	56.0	1.63
CXDSR 1060AP	CXDCR 1060AP	10.6	12.0	118.0	71.0	56.0	1.64
CXDSR 1070AP	CXDCR 1070AP	10.7	12.0	118.0	71.0	56.0	1.66
CXDSR 1080AP	CXDCR 1080AP	10.8	12.0	118.0	71.0	56.0	1.67

CYCLONE CXD

Hochleistungsbohrer



5xD Serie CXDSR & CXDCR



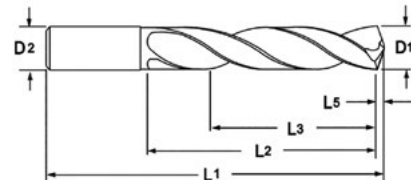
Artikelnummer		Bohrerabmessungen (mm)					
CXDSR	CXDCR	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDSR 1090AP	CXDCR 1090AP	10.9	12.0	118.0	71.0	56.0	1.69
CXDSR 1100AP	CXDCR 1100AP	11.0	12.0	118.0	71.0	56.0	1.7
CXDSR 1110AP	CXDCR 1110AP	11.1	12.0	118.0	71.0	56.0	1.72
CXDSR 1120AP	CXDCR 1120AP	11.2	12.0	118.0	71.0	56.0	1.74
CXDSR 1130AP	CXDCR 1130AP	11.3	12.0	118.0	71.0	56.0	1.75
CXDSR 1140AP	CXDCR 1140AP	11.4	12.0	118.0	71.0	56.0	1.77
CXDSR 1150AP	CXDCR 1150AP	11.5	12.0	118.0	71.0	56.0	1.78
CXDSR 1160AP	CXDCR 1160AP	11.6	12.0	118.0	71.0	56.0	1.8
CXDSR 1170AP	CXDCR 1170AP	11.7	12.0	118.0	71.0	56.0	1.81
CXDSR 1180AP	CXDCR 1180AP	11.8	12.0	118.0	71.0	56.0	1.83
CXDSR 1190AP	CXDCR 1190AP	11.9	12.0	118.0	71.0	56.0	1.84
CXDSR 1200AP	CXDCR 1200AP	12.0	12.0	118.0	71.0	56.0	1.86
CXDSR 1210AP	CXDCR 1210AP	12.1	14.0	124.0	77.0	60.0	1.87
CXDSR 1250AP	CXDCR 1250AP	12.5	14.0	124.0	77.0	60.0	1.94
CXDSR 1280AP	CXDCR 1280AP	12.8	14.0	124.0	77.0	60.0	1.98
CXDSR 1283AP	CXDCR 1283AP	12.8	14.0	124.0	77.0	60.0	1.99
CXDSR 1290AP	CXDCR 1290AP	12.9	14.0	124.0	77.0	60.0	2.0
CXDSR 1300AP	CXDCR 1300AP	13.0	14.0	124.0	77.0	60.0	2.01
CXDSR 1350AP	CXDCR 1350AP	13.5	14.0	124.0	77.0	60.0	2.09
CXDSR 1370AP	CXDCR 1370AP	13.7	14.0	124.0	77.0	60.0	2.12
CXDSR 1400AP	CXDCR 1400AP	14.0	14.0	124.0	77.0	60.0	2.17
CXDSR 1450AP	CXDCR 1450AP	14.5	16.0	133.0	83.0	63.0	2.25
CXDSR 1470AP	CXDCR 1470AP	14.7	16.0	133.0	83.0	63.0	2.28
CXDSR 1500AP	CXDCR 1500AP	15.0	16.0	133.0	83.0	63.0	2.32
CXDSR 1530AP	CXDCR 1530AP	15.3	16.0	133.0	83.0	63.0	2.37
CXDSR 1550AP	CXDCR 1550AP	15.5	16.0	133.0	83.0	63.0	2.4
CXDSR 1570AP	CXDCR 1570AP	15.7	16.0	133.0	83.0	63.0	2.43
CXDSR 1600AP	CXDCR 1600AP	16.0	16.0	133.0	83.0	63.0	2.48
-	CXDCR 1608AP	16.08	18.0	143.0	93.0	71.0	2.49
-	CXDCR 1630AP	16.3	18.0	143.0	93.0	71.0	2.53
-	CXDCR 1650AP	16.5	18.0	143.0	93.0	71.0	2.56
-	CXDCR 1700AP	17.0	18.0	143.0	93.0	71.0	2.63
-	CXDCR 1750AP	17.5	18.0	143.0	93.0	71.0	2.71
-	CXDCR 1800AP	18.0	18.0	143.0	93.0	71.0	2.79
-	CXDCR 1850AP	18.5	20.0	153.0	101.0	79.0	2.87
-	CXDCR 1916AP	19.16	20.0	153.0	101.0	79.0	2.97
-	CXDCR 1925AP	19.25	20.0	153.0	101.0	79.0	2.98
-	CXDCR 1930AP	19.3	20.0	153.0	101.0	79.0	2.99
-	CXDCR 1950AP	19.5	20.0	153.0	101.0	79.0	3.02
-	CXDCR 2000AP	20.0	20.0	153.0	101.0	79.0	3.1

CYCLONE CXD

Hochleistungsbohrer



8xD Serie CXDCLM



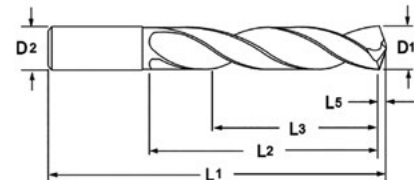
Artikelnummer	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDCLM0300AP	3.0	3.0	81.0	33.0	25.0	0.46
CXDCL1200AP	3.05	4.0	92.0	44.0	33.0	0.48
CXDCLM0310AP	3.1	4.0	92.0	44.0	33.0	0.48
CXDCL1250AP	3.18	4.0	92.0	44.0	33.0	0.48
CXDCLM0320AP	3.2	4.0	92.0	44.0	33.0	0.5
CXDCLM0325AP	3.25	4.0	92.0	44.0	33.0	0.51
CXDCL1285AP	3.26	4.0	92.0	44.0	33.0	0.51
CXDCLM0330AP	3.3	4.0	92.0	44.0	33.0	0.51
CXDCLM0340AP	3.4	4.0	92.0	44.0	33.0	0.53
CXDCL1360AP	3.45	4.0	92.0	44.0	33.0	0.53
CXDCLM0350AP	3.5	4.0	92.0	44.0	33.0	0.54
CXDCL1406AP	3.57	4.0	92.0	44.0	33.0	0.56
CXDCLM0360AP	3.6	4.0	92.0	44.0	33.0	0.56
CXDCLM0370AP	3.7	4.0	92.0	44.0	33.0	0.57
CXDCL1496AP	3.8	4.0	92.0	44.0	33.0	0.59
CXDCL1520AP	3.86	4.0	92.0	44.0	33.0	0.6
CXDCLM0390AP	3.9	4.0	92.0	44.0	33.0	0.6
CXDCL1562AP	3.97	4.0	92.0	44.0	33.0	0.61

CYCLONE CXD

Hochleistungsbohrer



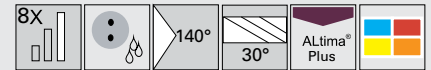
8xD Serie CXDCLM



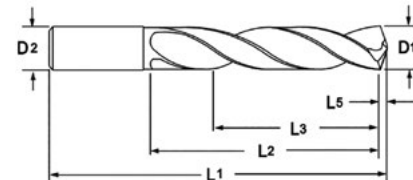
Artikelnummer	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDCLM0400AP	4.0	4.0	92.0	44.0	33.0	0.62
CXDCL1590AP	4.04	5.0	100.0	45.0	34.0	0.63
CXDCLM0410AP	4.1	5.0	100.0	45.0	34.0	0.64
CXDCLM0420AP	4.2	5.0	100.0	45.0	34.0	0.65
CXDCLM0430AP	4.3	5.0	100.0	45.0	34.0	0.67
CXDCL1719AP	4.37	5.0	100.0	45.0	34.0	0.68
CXDCLM0440AP	4.4	5.0	100.0	45.0	34.0	0.68
CXDCLM0450AP	4.5	5.0	100.0	45.0	34.0	0.7
CXDCLM0460AP	4.6	5.0	100.0	45.0	34.0	0.71
CXDCLM0465AP	4.65	5.0	100.0	45.0	34.0	0.72
CXDCLM0470AP	4.7	5.0	100.0	45.0	34.0	0.73
CXDCL1875AP	4.76	5.0	100.0	45.0	34.0	0.74
CXDCLM0480AP	4.8	5.0	100.0	45.0	34.0	0.74
CXDCLM0490AP	4.9	5.0	100.0	45.0	34.0	0.76
CXDCLM0500AP	5.0	5.0	100.0	45.0	34.0	0.77
CXDCLM0510AP	5.1	6.0	100.0	57.0	43.0	0.79
CXDCL2031AP	5.16	6.0	100.0	57.0	43.0	0.79
CXDCLM0520AP	5.2	6.0	100.0	57.0	43.0	0.81
CXDCLM0530AP	5.3	6.0	100.0	57.0	43.0	0.82
CXDCLM0540AP	5.4	6.0	100.0	57.0	43.0	0.84
CXDCLM0550AP	5.5	6.0	100.0	57.0	43.0	0.85
CXDCL2187AP	5.56	6.0	100.0	57.0	43.0	0.86
CXDCLM0560AP	5.6	6.0	100.0	57.0	43.0	0.86
CXDCL2210AP	5.61	6.0	100.0	57.0	43.0	0.86
CXDCLM0570AP	5.7	6.0	100.0	57.0	43.0	0.88
CXDCLM0580AP	5.8	6.0	100.0	57.0	43.0	0.9
CXDCLM0590AP	5.9	6.0	100.0	57.0	43.0	0.91
CXDCL2344AP	5.95	6.0	100.0	57.0	43.0	0.91
CXDCLM0600AP	6.0	6.0	100.0	57.0	43.0	0.93
CXDCLM0610AP	6.1	8.0	118.0	76.0	57.0	0.95
CXDCL2420AP	6.15	8.0	118.0	76.0	57.0	0.95
CXDCLM0620AP	6.2	8.0	118.0	76.0	57.0	0.96
CXDCL2460AP	6.25	8.0	118.0	76.0	57.0	0.97
CXDCLM0630AP	6.3	8.0	118.0	76.0	57.0	0.98
CXDCL2500AP	6.35	8.0	118.0	76.0	57.0	0.99
CXDCLM0640AP	6.4	8.0	118.0	76.0	57.0	0.99
CXDCLM0650AP	6.5	8.0	118.0	76.0	57.0	1.01
CXDCL2570AP	6.53	8.0	118.0	76.0	57.0	1.03
CXDCLM0660AP	6.6	8.0	118.0	76.0	57.0	1.03
CXDCL2610AP	6.63	8.0	118.0	76.0	57.0	1.03
CXDCLM0670AP	6.7	8.0	118.0	76.0	57.0	1.04
CXDCL2656AP	6.75	8.0	118.0	76.0	57.0	1.04
CXDCLM0680AP	6.8	8.0	118.0	76.0	57.0	1.05
CXDCLM0690AP	6.9	8.0	118.0	76.0	57.0	1.07
CXDCLM0700AP	7.0	8.0	118.0	76.0	57.0	1.08
CXDCLM0710AP	7.1	8.0	118.0	76.0	57.0	1.1

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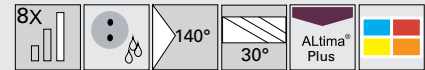


8xD Serie CXDCLM

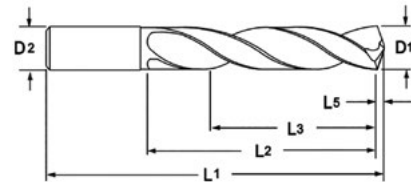


Artikelnummer	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDCL2812AP	7.14	8.0	118.0	76.0	57.0	1.12
CXDCLM0720AP	7.2	8.0	118.0	76.0	57.0	1.12
CXDCLM0730AP	7.3	8.0	118.0	76.0	57.0	1.13
CXDCLM0740AP	7.4	8.0	118.0	76.0	57.0	1.15
CXDCLM0750AP	7.5	8.0	118.0	76.0	57.0	1.16
CXDCL2969AP	7.54	8.0	118.0	76.0	57.0	1.17
CXDCLM0760AP	7.6	8.0	118.0	76.0	57.0	1.18
CXDCLM0770AP	7.7	8.0	118.0	76.0	57.0	1.19
CXDCLM0780AP	7.8	8.0	118.0	76.0	57.0	1.21
CXDCLM0790AP	7.9	8.0	118.0	76.0	57.0	1.22
CXDCL3125AP	7.94	8.0	118.0	76.0	57.0	1.22
CXDCLM0800AP	8.0	8.0	118.0	76.0	57.0	1.24
CXDCLM0810AP	8.1	10.0	139.0	87.0	65.0	1.26
CXDCLM0820AP	8.2	10.0	139.0	87.0	65.0	1.27
CXDCLM0830AP	8.3	10.0	139.0	87.0	65.0	1.29
CXDCL3281AP	8.33	10.0	139.0	87.0	65.0	1.3
CXDCLM0840AP	8.4	10.0	139.0	87.0	65.0	1.31
CXDCL3320AP	8.43	10.0	139.0	87.0	65.0	1.31
CXDCLM0850AP	8.5	10.0	139.0	87.0	65.0	1.32
CXDCLM0860AP	8.6	10.0	139.0	87.0	65.0	1.33
CXDCLM0870AP	8.7	10.0	139.0	87.0	65.0	1.35
CXDCL3438AP	8.73	10.0	139.0	87.0	65.0	1.35
CXDCLM0880AP	8.8	10.0	139.0	87.0	65.0	1.36
CXDCLM0890AP	8.9	10.0	139.0	87.0	65.0	1.38
CXDCLM0900AP	9.0	10.0	139.0	87.0	65.0	1.39
CXDCLM0910AP	9.1	10.0	139.0	95.0	71.0	1.41
CXDCL3594AP	9.13	10.0	139.0	95.0	71.0	1.42
CXDCLM0920AP	9.2	10.0	139.0	95.0	71.0	1.43
CXDCLM0925AP	9.25	10.0	139.0	95.0	71.0	1.43
CXDCLM0930AP	9.3	10.0	139.0	95.0	71.0	1.44
CXDCL3680AP	9.35	10.0	139.0	95.0	71.0	1.45
CXDCLM0940AP	9.4	10.0	139.0	95.0	71.0	1.46
CXDCLM0950AP	9.5	10.0	139.0	95.0	71.0	1.47
CXDCL3750AP	9.52	10.0	139.0	95.0	71.0	1.47
CXDCLM0960AP	9.6	10.0	139.0	95.0	71.0	1.49
CXDCLM0970AP	9.7	10.0	139.0	95.0	71.0	1.5
CXDCL3858AP	9.8	10.0	139.0	95.0	71.0	1.52
CXDCLM0990AP	9.9	10.0	139.0	95.0	71.0	1.53
CXDCL3906AP	9.92	10.0	139.0	95.0	71.0	1.55
CXDCLM1000AP	10.0	10.0	139.0	95.0	71.0	1.55
CXDCLM1010AP	10.1	12.0	155.0	106.0	80.0	1.56
CXDCLM1020AP	10.2	12.0	155.0	106.0	80.0	1.58
CXDCLM1030AP	10.3	12.0	155.0	106.0	80.0	1.6
CXDCL4062AP	10.32	12.0	155.0	106.0	80.0	1.6
CXDCLM1040AP	10.4	12.0	155.0	106.0	80.0	1.61
CXDCLM1050AP	10.5	12.0	155.0	106.0	80.0	1.63

CYCLONE CXD HOCHLEISTUNGSBOHRER



8xD Serie CXDCLM



Artikelnummer	Ø D1 (m7)	Ø D2 (h6)	L1	L2 (Max.)	L3	L5
CXDCLM1060AP	10.6	12.0	155.0	106.0	80.0	1.64
CXDCLM1070AP	10.7	12.0	155.0	106.0	80.0	1.66
CXDCL4219AP	10.72	12.0	155.0	106.0	80.0	1.65
CXDCLM1080AP	10.8	12.0	155.0	106.0	80.0	1.67
CXDCLM1090AP	10.9	12.0	155.0	106.0	80.0	1.69
CXDCLM1100AP	11.0	12.0	155.0	106.0	80.0	1.7
CXDCLM1110AP	11.1	12.0	163.0	114.0	86.0	1.72
CXDCL4375AP	11.11	12.0	163.0	114.0	86.0	1.73
CXDCLM1120AP	11.2	12.0	163.0	114.0	86.0	1.74
CXDCLM1130AP	11.3	12.0	163.0	114.0	86.0	1.75
CXDCLM1140AP	11.4	12.0	163.0	114.0	86.0	1.77
CXDCLM1150AP	11.5	12.0	163.0	114.0	86.0	1.78
CXDCLM1160AP	11.6	12.0	163.0	114.0	86.0	1.8
CXDCLM1170AP	11.7	12.0	163.0	114.0	86.0	1.81
CXDCLM1180AP	11.8	12.0	163.0	114.0	86.0	1.83
CXDCLM1190AP	11.9	12.0	163.0	114.0	86.0	1.84
CXDCL4688AP	11.91	12.0	163.0	114.0	86.0	1.85
CXDCLM1200AP	12.0	12.0	163.0	114.0	86.0	1.86
CXDCLM1210AP	12.1	14.0	182.0	133.0	112.0	1.87
CXDCL4844AP	12.3	14.0	182.0	133.0	100.0	1.91
CXDCLM1250AP	12.5	14.0	182.0	133.0	112.0	1.93
CXDCL5000AP	12.7	14.0	182.0	133.0	100.0	1.95
CXDCLM1280AP	12.8	14.0	182.0	133.0	112.0	1.98
CXDCLM1290AP	12.9	14.0	182.0	133.0	112.0	1.99
CXDCLM1300AP	13.0	14.0	182.0	133.0	112.0	2.01
CXDCL5156AP	13.09	14.0	182.0	133.0	112.0	2.03
CXDCL5312AP	13.49	14.0	182.0	133.0	112.0	2.08
CXDCLM1350AP	13.5	14.0	182.0	133.0	112.0	2.09
CXDCLM1370AP	13.7	14.0	182.0	133.0	112.0	2.12
CXDCL5469AP	13.89	14.0	182.0	133.0	112.0	2.16
CXDCLM1400AP	14.0	14.0	182.0	133.0	112.0	2.16
CXDCL5625AP	14.29	16.0	204.0	152.0	128.0	2.21
CXDCLM1450AP	14.5	16.0	204.0	152.0	128.0	2.24
CXDCLM1470AP	14.7	16.0	204.0	152.0	128.0	2.27
CXDCLM1500AP	15.0	16.0	204.0	152.0	128.0	2.32
CXDCL5938AP	15.08	16.0	204.0	152.0	128.0	2.33
CXDCLM1530AP	15.3	16.0	204.0	152.0	128.0	2.36
CXDCLM1550AP	15.5	16.0	204.0	152.0	128.0	2.39
CXDCLM1570AP	15.7	16.0	204.0	152.0	128.0	2.43
CXDCL6250AP	15.87	16.0	204.0	152.0	128.0	2.46
CXDCLM1600AP	16.0	16.0	204.0	152.0	128.0	2.47

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