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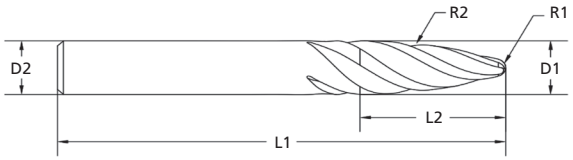
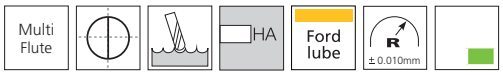
Contents

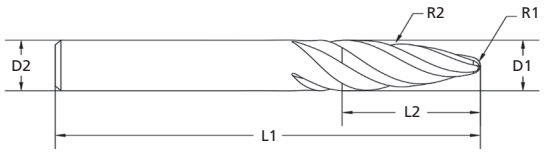
TuffCut® 3D Series XFO



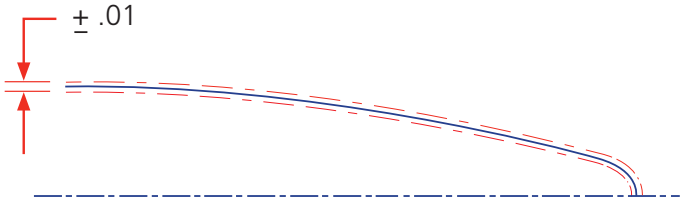
Tool No.	EDP	D1	D2 (h6)	L1	L2	R1	R2	No. of Flutes
XFO-4M06R95AQ	19904	6.0	6.0	64.0	20.8	1.0	95.0	4
XFO-4M08R90AQ	19905	8.0	8.0	64.0	24.5	1.0	90.0	4
XFO-4M10R85AQ	19906	10.0	10.0	72.0	24.7	2.0	85.0	4
XFO-6M10R85AQ	19907	10.0	10.0	72.0	24.7	2.0	85.0	6
XFO-4M12R80AQ	19908	12.0	12.0	84.0	27.3	2.0	80.0	4
XFO-6M12R80AQ	19909	12.0	12.0	84.0	27.3	2.0	80.0	6

TuffCut® 3D Series XFO-AL





Tool No.	EDP	D1	D2 (h6)	L1	L2	R1	R2	No. of Flutes
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 tolerance

The XFO and XFO-AL series are held to a precision radius form tolerance of ±.010mm to ensure high accuracy finishing, and prevention of mis-match on component surfaces.

Recommended Cutting Data

Series XFO						
Workpiece Material Group	ISO	Depths of Cut 			Finishing	Semi-Finishing
					0.01-0.03 x D	0.05-0.07 x D
		Coolant			Vc - M/Min	
		Emulsion	Air	MQL		
Low Carbon	P	●	●	●	450	350
Medium Carbon		●	●	●	345	275
Alloy Steels		●	●	●	315	255
Die / Tool Steels (≤ 45 HRC)		●	●	●	275	220
Free Machining	M	●	X	○	205	165
Austenitic		●	X	○	160	130
Difficult Stainless		●	X	○	125	100
PH Stainless (≤ 45 HRC)		●	X	○	160	130
Cobalt Chrome Alloys		●	X	○	125	100
Duplex (22%)		●	X	○	75	60
Super Duplex (25%)		●	X	○	60	50
High Temp Alloys	S	●	X	X	45	30
Titanium Alloys		●	X	X	110	90

● Preferred ○ Possible X Not Possible

Series XFO									
Material Type	ISO	Tool Diameter (mm)							
		6		8		10		12	
		Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish
		Fz - mm/tooth							
Low Carbon Steels	P	0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
Medium Carbon Steels		0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
Alloy Steels		0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
Die / Tool Steels		0.036	0.024	0.048	0.032	0.060	0.040	0.072	0.048
Free Machining Stainless Steels	M	0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
Austenitic Stainless Steels		0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
Difficult Stainless Steels		0.048	0.030	0.064	0.040	0.080	0.050	0.096	0.060
PH Stainless Steels		0.036	0.024	0.048	0.032	0.060	0.040	0.072	0.048
Cobalt Chrome Alloys		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%)		0.036	0.024	0.048	0.032	0.060	0.040	0.072	0.048
High Temp Alloys	S	0.036	0.024	0.048	0.032	0.060	0.040	0.072	0.048
Titanium Alloys		0.042	0.030	0.056	0.040	0.070	0.050	0.084	0.060

Notes:

- Cutting data provided should be considered advisory only. Adjustments may be necessary depending on the application.
- To prevent chip evcaution issues, utilize 4-flute tools for semi-finishing operations & avoid cutting with the tip of the tool wherever possible.
- Reduced feeds required when cutting with the tip of the tool.

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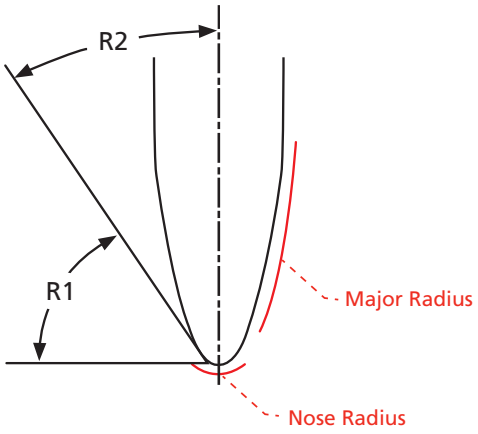
Recommended Cutting Data

Series XFO-AL						
Workpiece Material Group	ISO	Depths of Cut			Finishing	Semi-Finishing
					0.01-0.03 x D	0.05-0.07 x D
		Coolant			Vc - M/Min	
		Emulsion	Air	MQL		
Aluminium Alloys	N	●	X	○	610	580

● Preferred ○ Possible X Not Possible

Series XFO-AL									
Workpiece Material Group	ISO	Tool Diameter							
		6		8		10		12	
		Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish	Semi Finish	Finish
		Fz - mm/tooth							
Aluminium Alloys	N	0.060	0.039	0.080	0.052	0.100	0.065	0.120	0.078

Notes:
- Cutting data provided should be considered advisory only. Adjustments may be necessary depending on the application.
- To prevent chip evcaution issues, avoid cutting with the tip of the tool wherever possible.
- Reduced feeds required when cutting with the tip of the tool.



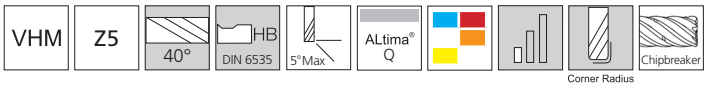
Tool Ø	Nose Radius		Major Radius	
D1	R1	Effective Angle (Max.)	R2	Effective Angle (Max.)
6	1	78.2°	95	11.8°
8	1	75.1°	90	14.9°
10	2	74.6°	85	15.4°
12	2	71.6°	80	18.4°

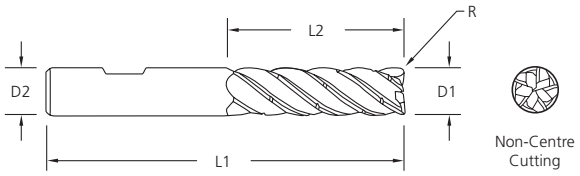
*Numbers above represent maximum angle values.

Stepover Distance by Cusp Height

Tool Ø (mm)		Cusp Height (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

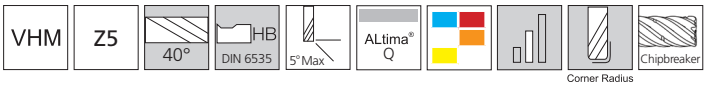
TuffCut® XV Series XV5CB 2.5xD

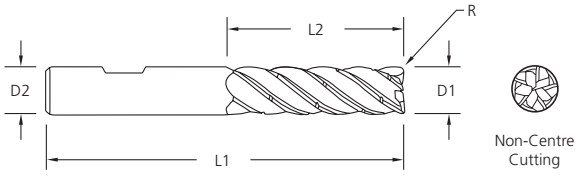




Tool Number	D1	D2	L1	L2	R
XV5CBM1002-R0.5AQW	10.0	10.0	74.0	27.0	0.5
XV5CBM1202-R0.5AQW	12.0	12.0	85.0	32.0	0.5
XV5CBM1602-R0.5AQW	16.0	16.0	98.0	42.0	0.5
XV5CBM2002-R0.5AQW	20.0	20.0	110.0	52.0	0.5

TuffCut® XV Series XV5CB 3xD





Tool Number	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

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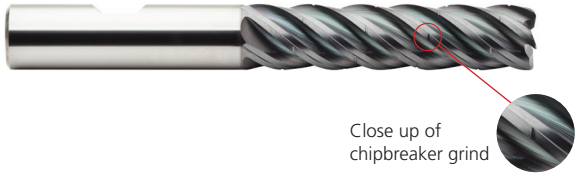
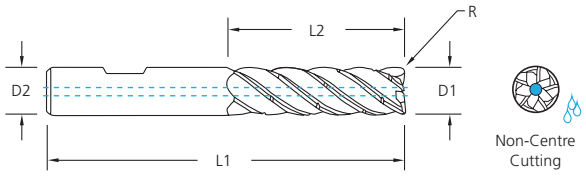
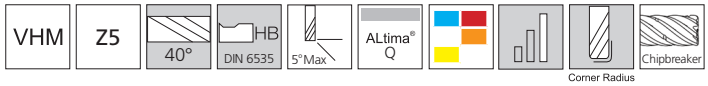
TuffCut® XV Series XV5CB 3xD-C

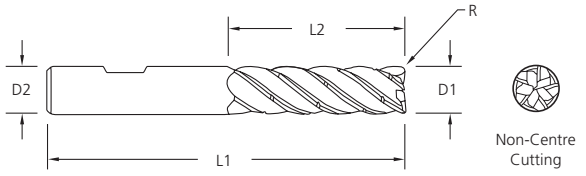




Tool Number	D1	D2	L1	L2	R
XV5CBM1003-R0.5AQW-C	10.0	10.0	80.0	33.0	0.5
XV5CBM1203-R0.5AQW-C	12.0	12.0	93.0	40.0	0.5
XV5CBM1603-R0.5AQW-C	16.0	16.0	110.0	54.0	0.5
XV5CBM2003-R0.5AQW-C	20.0	20.0	124.0	66.0	0.5

TuffCut® XV Series XV5CB 4xD





Tool Number	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

Recommended Cutting Data

Series XV5CB - 2.5xD											
Workpiece Material Group	ISO	Coolant			Radial (Ae)			Tool Diameter (mm)			
								10	12	16	20
		Emulsion	Air	MQL	10%	15%	20%	← Multiply fz by this Factor based on ae. When finishing, use the standard fz per chart below. Only use this calculation when roughing or semi-finishing.			
					1.67	1.4	1.2				
					Vc - M/Min			fz - mm/tooth			
Low Carbon Steels	P	•	•	•	350	300	250	0.060	0.072	0.096	0.120
Medium Carbon Steels		•	•	•	260	240	220	0.060	0.072	0.096	0.120
Alloy Steels		•	•	•	240	220	200	0.060	0.072	0.096	0.120
Die / Tool Steels		•	•	•	220	200	180	0.060	0.072	0.096	0.120
Free Machining Stainless Steels	M	•	•	o	205	180	150	0.060	0.072	0.096	0.120
Austenitic Stainless Steels		•	x	o	160	140	100	0.048	0.058	0.077	0.096
Difficult Stainless Steels		•	x	o	110	90	70	0.040	0.048	0.064	0.080
PH Stainless Steels		•	•	o	160	140	100	0.048	0.058	0.077	0.096
Titanium Alloys	S	•	x	x	120	100	80	0.040	0.048	0.064	0.080

Series XV5CB - 3xD											
Workpiece Material Group	ISO	Coolant			Radial (Ae)			Tool Diameter (mm)			
								10	12	16	20
		Emulsion	Air	MQL	5%	10%	15%	← Multiply fz by this Factor based on ae. When finishing, use the standard fz per chart below. Only use this calculation when roughing or semi-finishing.			
					2.3	1.67	1.4				
					Vc - M/Min			fz - mm/tooth			
Low Carbon Steels	P	•	•	•	350	300	250	0.060	0.072	0.096	0.120
Medium Carbon Steels		•	•	•	260	240	220	0.060	0.072	0.096	0.120
Alloy Steels		•	•	•	240	220	200	0.060	0.072	0.096	0.120
Die / Tool Steels		•	•	•	220	200	180	0.060	0.072	0.096	0.120
Free Machining Stainless Steels	M	•	•	o	205	180	150	0.060	0.072	0.096	0.120
Austenitic Stainless Steels		•	x	o	160	140	100	0.048	0.058	0.077	0.096
Difficult Stainless Steels		•	x	o	110	90	70	0.040	0.048	0.064	0.080
PH Stainless Steels		•	•	o	160	140	100	0.048	0.058	0.077	0.096
Titanium Alloys	S	•	x	x	120	100	80	0.040	0.048	0.064	0.080

Series XV5CB - 4xD											
Workpiece Material Group	ISO	Coolant			Radial (Ae)			Tool Diameter (mm)			
								10	12	16	20
		Emulsion	Air	MQL	5%	7%	10%	← Multiply fz by this Factor based on ae. When finishing, use the standard fz per chart below. Only use this calculation when roughing or semi-finishing.			
					2.3	2.0	1.67				
					Vc - M/Min			fz - mm/tooth			
Low Carbon Steels	P	•	•	•	300	275	250	0.040	0.048	0.064	0.080
Medium Carbon Steels		•	•	•	240	230	220	0.040	0.048	0.064	0.080
Alloy Steels		•	•	•	220	210	200	0.040	0.048	0.064	0.080
Die / Tool Steels		•	•	•	200	190	180	0.040	0.048	0.064	0.080
Free Machining Stainless Steels	M	•	•	o	180	165	150	0.040	0.048	0.064	0.080
Austenitic Stainless Steels		•	x	o	160	150	140	0.028	0.034	0.045	0.056
Difficult Stainless Steels		•	x	o	90	80	70	0.024	0.029	0.038	0.048
PH Stainless Steels		•	•	o	160	150	140	0.028	0.034	0.045	0.056
Titanium Alloys	S	•	x	x	100	90	80	0.024	0.029	0.038	0.048

• Preferred o Possible x Not Possible

Notes

Cutting data provided should be considered advisory only. Adjustments may be necessary depending on the application, workpiece rigidity, machine tool, etc.
The XV5CB should only be used in accurate tool holders with high gripping power. ER collet type holders are not recommended.
For optimal performance in ISO S materials, ae = ≤ 0.1 x D

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XV5CB Series Recommended Cutting Data - Profile Milling with 4xD Axial Depth of Cut (Ap)

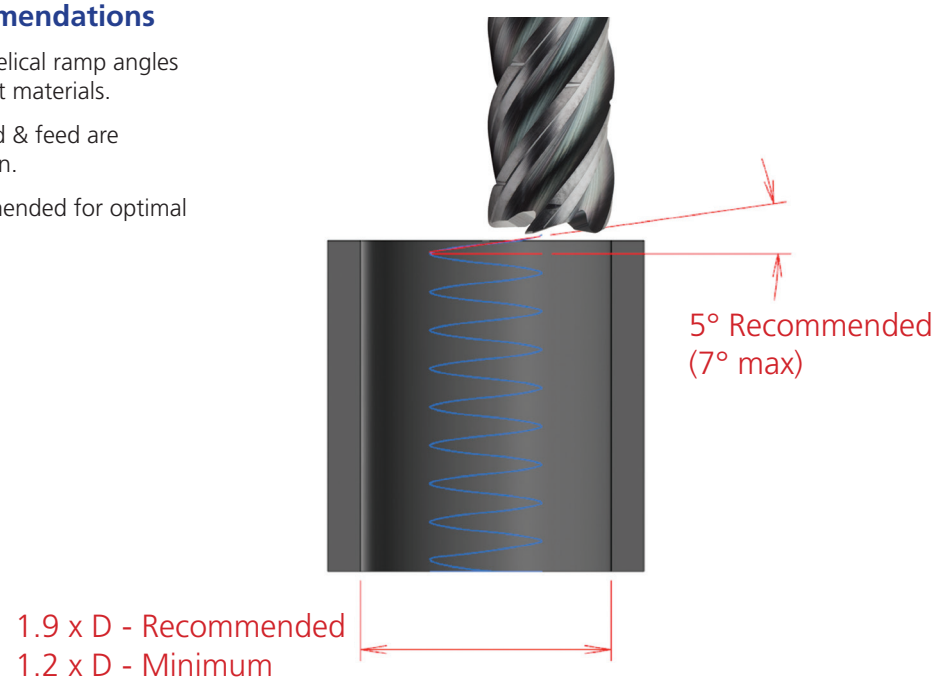
Helical interpolation recommendations

Under optimal conditions, up to 5° helical ramp angles are achievble with the XV5CB in most materials.

A reduction of 30-50% in both speed & feed are recommended for helical interpolation.

A hole diameter of 1.9 x D is recommended for optimal helical interpolation performance.

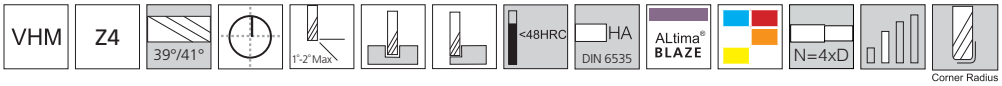
Minumum hole diameter = 1.2 x D

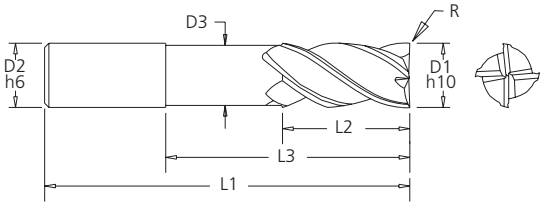


Radial Width of Cut (Ae)	Chip Thicknesss Compensation Factor
5%	2.30
7%	1.96
8%	1.84
10%	1.67
15%	1.40
20%	1.20

During profile milling less than 50% of the cutter diameter radial width, the actual chip thickness at the cutting edge is less than the programmed chipload. The accompanying table shows the increase in tooth load by given raidal percentage engagement. Multiply your feed per tooth by the factor before finalising your table feed.

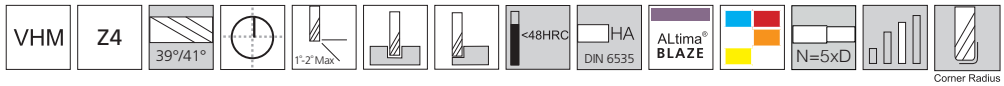
TuffCut® XT Series 277NR-4

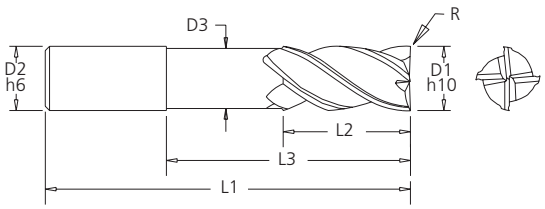




Tool Number	D1	D2	D3	L1	L2	L3	R
277 06N4-0.5RB	6.0	6.0	5.8	64.0	13.0	26.0	0.5
277 08N4-0.5RB	8.0	8.0	7.6	75.0	19.0	34.0	0.5
277 10N4-0.5RB	10.0	10.0	9.6	82.0	22.0	42.0	0.5
277 12N4-0.5RB	12.0	12.0	11.4	100.0	26.0	50.0	0.5
277 12N4-3.0RB	12.0	12.0	11.4	100.0	26.0	50.0	3.0
277 16N4-0.5RB	16.0	16.0	15.2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

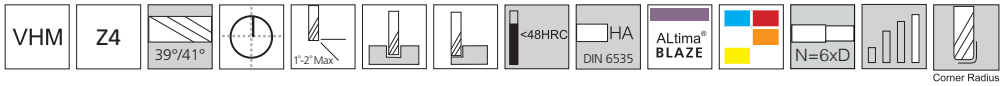
TuffCut® XT Series 277NR-5

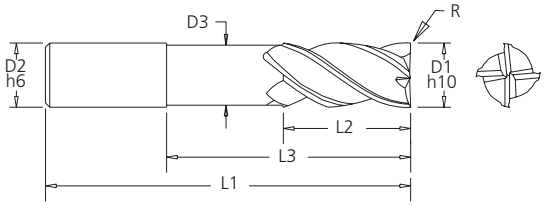




Tool Number	D1	D2	D3	L1	L2	L3	R
277 06N5-0.5RB	6.0	6.0	5.8	70.0	13.0	32.0	0.5
277 08N5-0.5RB	8.0	8.0	7.6	80.0	19.0	42.0	0.5
277 10N5-0.5RB	10.0	10.0	9.6	92.0	22.0	52.0	0.5
277 12N5-0.5RB	12.0	12.0	11.4	110.0	26.0	62.0	0.5
277 12N5-3.0RB	12.0	12.0	11.4	110.0	26.0	62.0	3.0
277 16N5-0.5RB	16.0	16.0	15.2	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 Series 277NR-6





Tool Number	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

Recommended Cutting Data

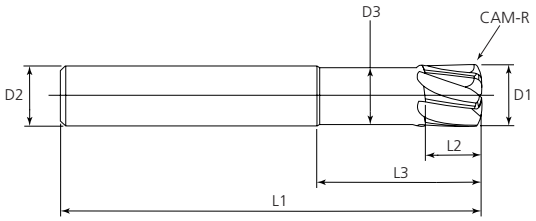
Series 277NR - 4xD													
Workpiece Material Group	ISO	Coolant			Application	Depths of Cut		Vc- M/min	Tool Diameter (mm)				
		Emulsion	Air	MQL		Axial (Ap)	Radial (Ae)		6	8	10	12	16
									fz - mm/tooth by Cutter Diameter				
Low Carbon Steels	P	•	•	•	Profiling	1xD	0.4xD	300	0.06	0.08	0.1	0.12	0.16
					Slotting	0.5xD	-	200	0.03	0.04	0.05	0.06	0.08
Medium Carbon Steels		•	•	•	Profiling	1xD	0.4xD	230	0.06	0.08	0.1	0.12	0.16
					Slotting	0.5xD	-	155	0.03	0.04	0.05	0.06	0.08
Alloy Steels		•	•	•	Profiling	1xD	0.4xD	205	0.06	0.08	0.1	0.12	0.16
					Slotting	0.5xD	-	135	0.03	0.04	0.05	0.06	0.08
Die / Tool Steels		•	•	•	Profiling	1xD	0.4xD	170	0.06	0.08	0.1	0.12	0.16
					Slotting	0.5xD	-	115	0.03	0.04	0.05	0.06	0.08
Austenitic Stainless Steels	M	•	x	o	Profiling	1xD	0.4xD	120	0.06	0.08	0.1	0.12	0.16
					Slotting	0.5xD	-	80	0.03	0.04	0.05	0.06	0.08
Duplex (22%)		•	x	o	Profiling	1xD	0.4xD	80	0.06	0.08	0.1	0.12	0.16
					Slotting	0.5xD	-	55	0.03	0.04	0.05	0.06	0.08
Supper Duplex (25%)		•	x	o	Profiling	1xD	0.4xD	50	0.06	0.08	0.1	0.12	0.16
					Slotting	0.5xD	-	35	0.03	0.04	0.05	0.06	0.08
Titanium Alloys	S	•	x	x	Profiling	1xD	0.4xD	60	0.06	0.08	0.1	0.12	0.16
					Slotting	0.5xD	-	40	0.03	0.04	0.05	0.06	0.08

Series 277NR - 5xD													
Workpiece Material Group	ISO	Coolant			Application	Depths of Cut		Vc- M/min	Tool Diameter (mm)				
		Emulsion	Air	MQL		Axial (Ap)	Radial (Ae)		6	8	10	12	16
									fz - mm/tooth by Cutter Diameter				
Low Carbon Steels	P	•	•	•	Profiling	1xD	0.25xD	270	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	180	0.03	0.04	0.05	0.06	0.08
Medium Carbon Steels		•	•	•	Profiling	1xD	0.25xD	205	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	135	0.03	0.04	0.05	0.06	0.08
Alloy Steels		•	•	•	Profiling	1xD	0.25xD	185	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	125	0.03	0.04	0.05	0.06	0.08
Die / Tool Steels		•	•	•	Profiling	1xD	0.25xD	153	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	105	0.03	0.04	0.05	0.06	0.08
Austenitic Stainless Steels	M	•	x	o	Profiling	1xD	0.25xD	80	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	55	0.03	0.04	0.05	0.06	0.08
Duplex (22%)		•	x	o	Profiling	1xD	0.25xD	70	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	45	0.03	0.04	0.05	0.06	0.08
Supper Duplex (25%)		•	x	o	Profiling	1xD	0.25xD	45	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	30	0.03	0.04	0.05	0.06	0.08
Titanium Alloys	S	•	x	x	Profiling	1xD	0.25xD	75	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	50	0.03	0.04	0.05	0.06	0.08

Series 277NR - 6xD													
Workpiece Material Group	ISO	Coolant			Application	Depths of Cut		Vc- M/min	Tool Diameter (mm)				
		Emulsion	Air	MQL		Axial (Ap)	Radial (Ae)		6	8	10	12	16
									fz - mm/tooth by Cutter Diameter				
Low Carbon Steels	P	•	•	•	Profiling	1xD	0.25xD	240	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	160	0.03	0.04	0.05	0.06	0.08
Medium Carbon Steels		•	•	•	Profiling	1xD	0.25xD	184	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	125	0.03	0.04	0.05	0.06	0.08
Alloy Steels		•	•	•	Profiling	1xD	0.25xD	164	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	110	0.03	0.04	0.05	0.06	0.08
Die / Tool Steels		•	•	•	Profiling	1xD	0.25xD	136	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	90	0.03	0.04	0.05	0.06	0.08
Austenitic Stainless Steels	M	•	x	o	Profiling	1xD	0.25xD	75	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	50	0.03	0.04	0.05	0.06	0.08
Duplex (22%)		•	x	o	Profiling	1xD	0.25xD	65	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	45	0.03	0.04	0.05	0.06	0.08
Supper Duplex (25%)		•	x	o	Profiling	1xD	0.25xD	35	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	25	0.03	0.04	0.05	0.06	0.08
Titanium Alloys	S	•	x	x	Profiling	1xD	0.25xD	64	0.06	0.08	0.1	0.12	0.16
					Slotting	0.3xD	-	45	0.03	0.04	0.05	0.06	0.08

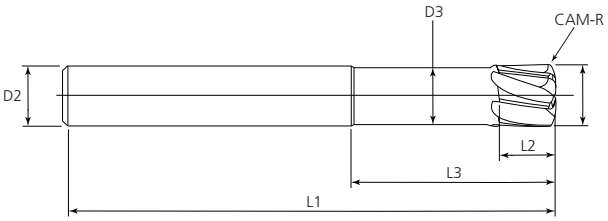
• Preferred o Possible x Not Possible

TuffCut® HF Series FHFN-N3



Tool Number	D1	D2	D3	L1	L2	L3	Flutes	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 Series FHFN-N4



Tool Number	D1	D2	D3	L1	L2	L3	Flutes	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

Recommended Cutting Data

Series FHFN - 3xD																		
Workpiece Material Group	ISO	Coolant			Vc- m/min	Tool Diameter & CAM-R												
		Emulsion	Air	MQL		3mm x R0.25			4mm x R0.3			5mm x R0.35			6mm x R0.45		
						Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Pre-Hardened Steels 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
Hardened Steels 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
Hardened Steels 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
Hardened Steels 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
Hardened Steels 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

Series FHFN - 3xD														
Workpiece Material Group	ISO	Coolant			Vc- m/min	Tool Diameter & CAM-R								
		Emulsion	Air	MQL		8mm x R0.6			10mm x R0.75			12mm x R0.9		
						Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Pre-Hardened Steels 35-45HRC	P	○	●	●	100	0.4	4.4	0.240	0.5	5.5	0.300	0.6	6.6	0.360
Hardened Steels 50 - 55HRC	H	X	●	○	80	0.32	4.4	0.305	0.4	5.5	0.380	0.48	6.6	0.460
Hardened Steels 55 - 60HRC		X	●	○	60	0.185	4.4	0.195	0.23	5.5	0.240	0.28	6.6	0.290
Hardened Steels 60 - 65HRC		X	●	○	50	0.145	4.4	0.140	0.18	5.5	0.175	0.22	6.6	0.210
Hardened Steels 65 - 70HRC		X	●	○	40	0.105	4.0	0.100	0.13	5.0	0.125	0.16	6.0	0.150

Series FHFN - 4xD																		
Workpiece Material Group	ISO	Coolant			Vc- m/min	Tool Diameter & CAM-R												
		Emulsion	Air	MQL		6mm x R0.45			8mm x R0.6			10mm x R0.75			12mm x R0.9		
						Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Pre-Hardened Steels 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
Hardened Steels 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
Hardened Steels 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
Hardened Steels 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
Hardened Steels 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

● Preferred ○ Possible X Not Possible

Notes:
Ramp angle 0.5° or less
For roughing, area clearance, slotting and pocketing operations

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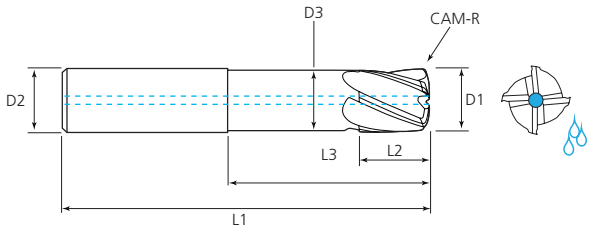
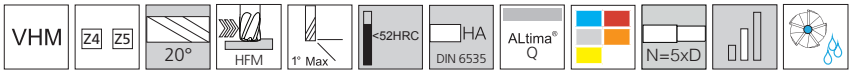
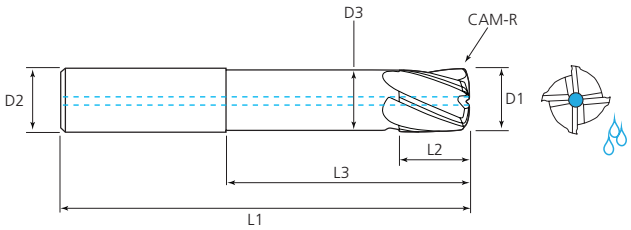
TuffCut® HF Series FHFP N3



Tool Number	D1	D2	D3	L1	L2	L3	Flutes	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

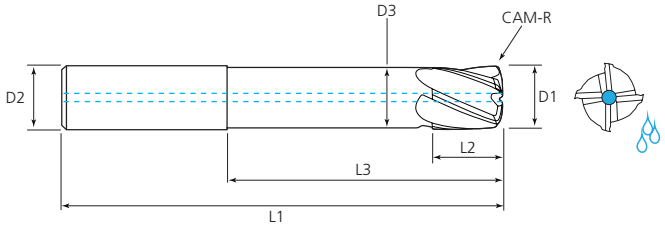
TuffCut® HF Series FHFP N5





Tool Number	D1	D2	D3	L1	L2	L3	Flutes	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 Series FHFP N8



Tool Number	D1	D2	D3	L1	L2	L3	Flutes	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

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Recommended Cutting Data

Series FHFP - 3xD																				
Workpiece Material Group	ISO	Coolant			Vc- m/min	End Mill Diameter and CAM-R														
						6mm x R0.6			8mm x R0.8			10mm x R1.0			12mm x R1.2			16mm x R1.6		
		Max	Air	MQL		Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Low Carbon Steels	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
Medium Carbon Steels		●	●	●	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
Alloy Steels		●	●	●	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
Die/Tool Steels		●	●	●	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
Austentic Stainless Steels	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
Titanium Alloys	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
High Temp Alloys		●	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
Hardened Steels 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
Hardened Steels 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

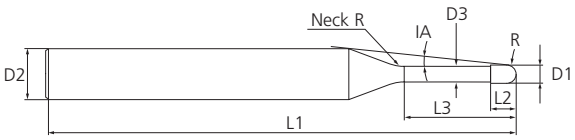
Series FHFP - 5xD																				
Workpiece Material Group	ISO	Coolant			Vc- m/min	End Mill Diameter and CAM-R														
						6mm x R0.6			8mm x R0.8			10mm x R1.0			12mm x R1.2			16mm x R1.6		
		Max	Air	MQL		Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Low Carbon Steels	P	●	●	●	270	0.24	4.5	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
Medium Carbon Steels		●	●	●	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
Alloy Steels		●	●	●	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
Die/Tool Steels		●	●	●	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
Austentic Stainless Steels	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
Titanium Alloys	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
High Temp Alloys		●	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
Hardened Steels 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
Hardened Steels 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

Series FHFP - 8xD																				
Workpiece Material Group	ISO	Coolant			Vc- m/min	End Mill Diameter and CAM-R														
						6mm x R0.6			8mm x R0.8			10mm x R1.0			12mm x R1.2			16mm x R1.6		
		Max	Air	MQL		Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz	Ap	Ae	Fz
Low Carbon Steels	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
Medium Carbon Steels		●	●	●	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
Alloy Steels		●	●	●	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
Die/Tool Steels		●	●	●	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
Austentic Stainless Steels	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
Titanium Alloys	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
High Temp Alloys		●	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
Hardened Steels 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
Hardened Steels 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

● Preferred ○ Possible X Not Possible

Note: If the calculated feed cannot be achieved due to limitations such as machine capability or component size, adjust the cutting speed (RPM) to acheive the required feed per tooth (fz). For full slotting a reduction in Ap may be required to maintain an effective cutting strategy.

TuffCut® XM Series XM2B



Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											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						14.48°	0.31	0.33	0.34	0.36	0.39
XM2B-001N0.5X	FM0031			0.5						14.12°	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						13.77°	0.78	0.80	0.83	0.86	0.92
XM2B-002N1X	FM0034			1.0						13.36°	1.04	1.07	1.11	1.15	1.23
XM2B-002N1.25X	FM0035			1.25						12.97°	1.30	1.34	1.39	1.43	1.54
XM2B-002N1.5X	FM0036			1.5						12.6°	1.56	1.61	1.66	1.72	1.85
XM2B-002N2X	FM0037			2.0						11.92°	2.07	2.14	2.22	2.30	2.48
XM2B-002N2.5X	FM0038			2.5						11.31°	2.59	2.68	2.77	2.87	3.10
XM2B-002N3X	FM0039			3.0						10.76°	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						13.72°	0.79	0.83	0.87	0.91	0.98
XM2B-003N1X	FM0042			1.0						13.3°	1.05	1.11	1.16	1.20	1.29
XM2B-003N1.25X	FM0043			1.25						12.9°	1.32	1.38	1.44	1.50	1.61
XM2B-003N1.5X	FM0044			1.5						12.53°	1.58	1.66	1.72	1.78	1.92
XM2B-003N2X	FM0045			2.0						11.84°	2.11	2.20	2.28	2.36	2.54
XM2B-003N2.5X	FM0046			2.5						11.22°	2.63	2.74	2.83	2.93	3.16
XM2B-003N3X	FM0047			3.0						10.66°	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						13.34°	1.05	1.10	1.15	1.19	1.28
XM2B-004N1.5X	FM0050			1.5						12.55°	1.58	1.65	1.72	1.78	1.90
XM2B-004N2X	FM0051			2.0						11.84°	2.11	2.19	2.27	2.35	2.53
XM2B-004N2.5X	FM0052			2.5						11.2°	2.63	2.73	2.83	2.93	3.15
XM2B-004N3X	FM0053			3.0						10.63°	3.15	3.27	3.38	3.50	3.77
XM2B-004N3.5X	FM0054			3.5						10.12°	3.67	3.80	3.94	4.08	4.39
XM2B-004N4X	FM0055			4.0						9.65°	4.19	4.34	4.49	4.65	5.01
XM2B-004N4.5X	FM0056			4.5						9.22°	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						12.56°	1.58	1.65	1.71	1.77	1.89
XM2B-005N2X	FM0059			2.0						11.83°	2.10	2.19	2.27	2.34	2.51
XM2B-005N2.5X	FM0060			2.5						11.18°	2.63	2.73	2.82	2.92	3.14
XM2B-005N3X	FM0061			3.0						10.6°	3.15	3.27	3.38	3.49	3.76
XM2B-005N4X	FM0062			4.0						9.6°	4.19	4.34	4.48	4.64	5.00
XM2B-005N5X	FM0063			5.0						8.77°	5.23	5.41	5.59	5.79	6.24
XM2B-005N5.5X	FM0064			5.5						8.4°	5.75	5.94	6.15	6.37	6.86
XM2B-005N6X	FM0065			6.0						8.07°	6.27	6.48	6.70	6.94	7.49
XM2B-005N8X	FM0066			8.0						6.96°	8.33	8.62	8.92	9.24	9.97
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

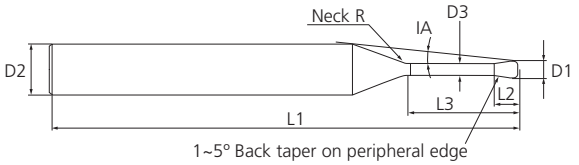
Series XM2B

Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											0.5°	1°	1.5°	2°	3°
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			55.0			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			60.0			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
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			55.0			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			55.0			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			55.0			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			60.0			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	-

Series XM2B

Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											0.5°	1°	1.5°	2°	3°
XM2B-016N8X	FM0132	1.6	0.8	8.0	1.28	1.54	50.0	4.0	4.0	5.8°	8.38	8.66	8.94	9.25	9.93
XM2B-016N12X	FM0133			12.0			55.0			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			60.0			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			55.0			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			60.0			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			55.0			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			60.0			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	-
XM2B-020N25X	FM0152			25.0			65.0			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						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						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						4.26°	16.55	17.07	17.63	18.24	19.60
XM2B-030N20X	FM0166			20.0			65.0			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						3.23°	16.51	17.02	17.56	18.14	19.45
XM2B-040N20X	FM0177			20.0			65.0			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						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 Series XM2R



Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											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			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
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			2.0						11.53°	2.11	2.21	2.29	2.38	2.57
XM2R-005N3-0.02RX	FM0365			3.0						10.35°	3.16	3.28	3.40	3.53	3.81
XM2R-005N4-0.02RX	FM0366			4.0						9.39°	4.20	4.35	4.51	4.68	5.06
XM2R-005N6-0.02RX	FM0367			6.0						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

Series XM2R

Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											0.5°	1°	1.5°	2°	3°
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	5.25
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			55.0			5.05°	12.61	13.04	13.51	14.02	15.15
XM2R-008N4-0.1RX	FM0403		0.1	4.0			50.0			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	0.8	0.1	8.0	0.64	0.76	50.0	4.0	4.0	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
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			55.0			4.83°	12.61	13.05	13.52	14.02	15.16
XM2R-010N2-0.05RX	FM0417		0.05	2.0			50.0			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			55.0			4.84°	12.61	13.04	13.51	14.02	15.15
XM2R-010N16-0.05RX	FM0425			16.0			60.0			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	2.0			50.0			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			55.0			4.85°	12.60	13.04	13.51	14.01	15.14
XM2R-010N16-0.1RX	FM0435			16.0			60.0			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

Series XM2R

Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											0.5°	1°	1.5°	2°	3°
XM2R-010N2-0.2RX	FM0437	1.0	0.2	2.0	0.80	0.96	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			55.0			4.88°	12.60	13.03	13.50	14.00	15.11
XM2R-010N16-0.2RX	FM0445			16.0			60.0			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	2.0			50.0			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			55.0			4.9°	12.60	13.03	13.49	13.98	15.09
XM2R-010N16-0.3RX	FM0455			16.0			60.0			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
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			55.0			3.9°	15.68	16.22	16.80	17.43	18.83
XM2R-0125N20-0.1RX	FM0460			20.0			60.0			3.13°	20.84	21.57	22.34	23.18	25.05
XM2R-0125N5-0.2RX	FM0461		0.2	5.0			50.0			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			55.0			3.92°	15.67	16.21	16.79	17.41	18.81
XM2R-0125N20-0.2RX	FM0464			20.0			60.0			3.14°	20.84	21.56	22.33	23.16	25.02
XM2R-0125N5-0.3RX	FM0465		0.3	5.0			50.0			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			55.0			3.94°	15.67	16.20	16.78	17.40	18.78
XM2R-0125N20-0.3RX	FM0468			20.0			60.0			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			55.0			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			60.0			2.9°	20.82	21.54	22.32	23.15	-
XM2R-015N4-0.2RX	FM0475		0.2	4.0			50.0			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			55.0			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			60.0			2.91°	20.82	21.53	22.31	23.13	-
XM2R-015N4-0.3RX	FM0481		0.3	4.0			50.0			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			55.0			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			60.0			2.92°	20.81	21.53	22.29	23.12	-
XM2R-015N4-0.5RX	FM0487		0.5	4.0			50.0			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			55.0			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			60.0			2.95°	20.81	21.51	22.27	23.09	-

Series XM2R

Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											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			55.0			3.35°	15.63	16.17	16.75	17.38	18.78
XM2R-0175N20-0.1RX	FM0496			20.0			60.0			2.66°	20.80	21.52	22.29	23.13	-
XM2R-0175N5-0.2RX	FM0497		0.2	5.0			50.0			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			55.0			3.37°	15.63	16.16	16.74	17.36	18.75
XM2R-0175N20-0.2RX	FM0500			20.0			60.0			2.67°	20.80	21.51	22.28	23.11	-
XM2R-0175N5-0.3RX	FM0501		0.3	5.0			50.0			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			55.0			3.39°	15.62	16.16	16.73	17.35	18.73
XM2R-0175N20-0.3RX	FM0504			20.0			60.0			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			55.0			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			60.0			2.42°	20.78	21.50	22.27	23.11	-
XM2R-020N25-0.1RX	FM0511			25.0			65.0			2°	25.95	26.85	27.82	-	-
XM2R-020N30-0.1RX	FM0512			30.0			70.0			1.7°	31.12	32.20	33.36	-	-
XM2R-020N4-0.2RX	FM0513		0.2	4.0			50.0			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			55.0			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			60.0			2.43°	20.78	21.49	22.26	23.09	-
XM2R-020N25-0.2RX	FM0519			25.0			65.0			2°	25.95	26.84	27.80	-	-
XM2R-020N30-0.2RX	FM0520			30.0			70.0			1.71°	31.11	32.19	33.35	-	-
XM2R-020N4-0.3RX	FM0521		0.3	4.0			50.0			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			55.0			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			60.0			2.44°	20.77	21.49	22.25	23.08	-
XM2R-020N25-0.3RX	FM0527			25.0			65.0			2.01°	25.94	26.84	27.79	28.82	-
XM2R-020N30-0.3RX	FM0528			30.0			70.0			1.71°	31.11	32.18	33.34	-	-
XM2R-020N6-0.5RX	FM0529		0.5	6.0			50.0			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			55.0			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			60.0			2.46°	20.77	21.47	22.23	23.05	-
XM2R-020N25-0.5RX	FM0534			25.0			65.0			2.03°	25.94	26.82	27.77	28.79	-
XM2R-020N30-0.5RX	FM0535			30.0			70.0			1.72°	31.10	32.17	33.31	-	-
XM2R-020N6-0.8RX	FM0536		0.8	6.0			50.0			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			55.0			3.81°	12.49	12.89	13.33	13.80	14.86
XM2R-020N16-0.8RX	FM0539			16.0			55.0			3.01°	16.62	17.17	17.77	18.40	19.83
XM2R-020N20-0.8RX	FM0540			20.0			60.0			2.49°	20.76	21.45	22.20	23.00	-
XM2R-020N25-0.8RX	FM0541			25.0			65.0			2.05°	25.93	26.80	27.74	28.75	-
XM2R-020N30-0.8RX	FM0542			30.0			70.0			1.74°	31.09	32.15	33.28	-	-
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	-	-	-

Series XM2R

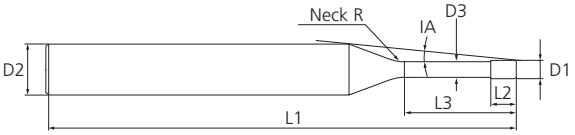
Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											0.5°	1°	1.5°	2°	3°
XM2R-025N10-0.3RX	FM0549	2.5	0.3	10.0	2.0	2.40	50.0	4.0	4.0	3.42°	10.41	10.76	11.14	11.54	12.46
XM2R-025N20-0.3RX	FM0550			20.0			60.0			1.91°	20.74	21.46	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						3.99°	16.59	17.17	17.78	18.45	19.94
XM2R-030N18-0.1RX	FM0559			18.0			65.0			3.65°	18.66	19.31	20.00	20.75	22.42
XM2R-030N20-0.1RX	FM0560			20.0						3.36°	20.73	21.45	22.22	23.05	24.91
XM2R-030N30-0.1RX	FM0561			30.0			75.0			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						4°	16.59	17.16	17.77	18.43	19.91
XM2R-030N18-0.2RX	FM0567			18.0			65.0			3.66°	18.66	19.30	19.99	20.73	22.40
XM2R-030N20-0.2RX	FM0568			20.0						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						4.02°	16.59	17.15	17.76	18.42	19.89
XM2R-030N18-0.3RX	FM0575			18.0			65.0			3.68°	18.65	19.29	19.98	20.72	22.37
XM2R-030N20-0.3RX	FM0576			20.0						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						4.06°	16.58	17.14	17.74	18.39	19.84
XM2R-030N18-0.5RX	FM0582			18.0			65.0			3.71°	18.65	19.28	19.96	20.69	22.33
XM2R-030N20-0.5RX	FM0583			20.0						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						4.16°	16.56	17.10	17.69	18.31	19.72
XM2R-030N18-1.0RX	FM0589			18.0			65.0			3.79°	18.63	19.24	19.90	20.61	22.20
XM2R-030N20-1.0RX	FM0590			20.0						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	-
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						2.91°	16.57	17.15	17.76	18.43	-
XM2R-040N20-0.1RX	FM0596			20.0			65.0			2.42°	20.71	21.43	22.20	23.03	-
XM2R-040N30-0.1RX	FM0597			30.0			75.0			1.71°	31.05	32.12	33.28	-	-
XM2R-040N35-0.1RX	FM0598			35.0			80.0			1.49°	36.21	37.47	-	-	-
XM2R-040N45-0.1RX	FM0599			45.0			90.0			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						2.93°	16.57	17.14	17.75	18.41	-
XM2R-040N20-0.2RX	FM0603			20.0			65.0			2.43°	20.71	21.42	22.19	23.01	-
XM2R-040N30-0.2RX	FM0604			30.0			75.0			1.71°	31.04	32.12	33.27	-	-

Series XM2R

Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											0.5°	1°	1.5°	2°	3°
XM2R-040N35-0.2RX	FM0605		0.2	35.0			80.0			1.49°	36.21	37.47	-	-	-
XM2R-040N45-0.2RX	FM0606			45.0			90.0			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						2.94°	16.57	17.13	17.74	18.40	-
XM2R-040N20-0.3RX	FM0610			20.0			65.0			2.44°	20.70	21.41	22.18	23.00	-
XM2R-040N30-0.3RX	FM0611			30.0			75.0			1.72°	31.04	32.11	33.26	-	-
XM2R-040N35-0.3RX	FM0612			35.0			80.0			1.49°	36.21	37.46	-	-	-
XM2R-040N45-0.3RX	FM0613			45.0			90.0			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	4.0		16.0	3.2	3.86		6.0	4.0	2.97°	16.56	17.12	17.72	18.37	-
XM2R-040N20-0.5RX	FM0616			20.0			65.0			2.47°	20.70	21.40	22.15	22.97	-
XM2R-040N30-0.5RX	FM0617			30.0			75.0			1.73°	31.03	32.10	33.24	-	-
XM2R-040N35-0.5RX	FM0618			35.0			80.0			1.5°	36.20	37.44	-	-	-
XM2R-040N45-0.5RX	FM0619			45.0			90.0			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						3.05°	16.54	17.09	17.67	18.29	19.70
XM2R-040N20-1.0RX	FM0622			20.0			65.0			2.52°	20.68	21.36	22.10	22.89	-
XM2R-040N30-1.0RX	FM0623			30.0			75.0			1.75°	31.02	32.06	33.18	-	-
XM2R-040N35-1.0RX	FM0624			35.0			80.0			1.52°	36.18	37.41	38.73	-	-
XM2R-040N45-1.0RX	FM0625			45.0			90.0			1.2°	46.52	48.11	-	-	-
XM2R-050N20-0.1RX	FM0626		0.1	20.0			65.0			1.32°	20.7	21.42	-	-	-
XM2R-050N40-0.1RX	FM0627			40.0			85.0			0.69°	41.38	-	-	-	-
XM2R-050N20-0.2RX	FM0628		0.2	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	5.0	0.3	20.0	4.0	4.85	65.0	6.0	4.0	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	-	-	-	-
XM2R-060N12-0.1RX	FM0636		0.1	12.0			50.0			-	-	-	-	-	-
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			50.0			-	-	-	-	-	-
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			50.0			-	-	-	-	-	-
XM2R-060N18-0.3RX	FM0647	6.0		18.0	4.8	5.85	60.0	6.0	-	-	-	-	-	-	-
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			60.0			-	-	-	-	-	-
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			60.0			-	-	-	-	-	-
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 Series XM4R

VHM | Z4 | ALtima® Xtreme | <60 HRC | Up to 20xD | Corner Radius | R0.05 - R1.00 ±0.005



Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											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			60.0			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	4.0			50.0			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			60.0			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			60.0			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	4.0			50.0			8.17°	4.23	4.42	4.58	4.75	5.13
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			60.0			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	-
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			60.0			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			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			60.0			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			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			60.0			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			25.0			70.0			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		0.3	4.0			50.0			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

Series XM4R

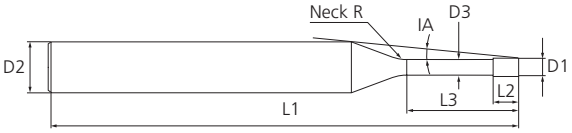
Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											0.5°	1°	1.5°	2°	3°
XM4R-020N12-0.3RX	FM0705	2.0	0.3	12.0	1.6	1.92	60.0	4.0	4.0	3.63°	15.65	16.19	16.77	17.40	18.80
XM4R-020N16-0.3RX	FM0706			16.0						2.9°	20.82	21.54	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			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			60.0			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			25.0						2.03°	25.94	26.82	27.77	28.79	-
XM4R-020N30-0.5RX	FM0715			30.0			50.0			1.72°	31.10	32.17	33.31	-	-
XM4R-025N8-0.1RX	FM0716	2.50	0.1	8.0	2.0	2.4	50.0	4.0	4.0	3.98°	8.34	8.63	8.94	9.27	10.02
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		0.2	8.0			60.0			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			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		0.5	12.0			60.0			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	-	-
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			60.0			2.42°	31.06	32.14	33.30	34.55	-
XM4R-030N8-0.2RX	FM0730		0.2	8.0			50.0			6.36°	8.32	8.60	8.91	9.23	9.97
XM4R-030N12-0.2RX	FM0731			12.0			60.0			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			70.0			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			80.0			2.43°	31.06	32.14	33.29	34.53	-
XM4R-030N8-0.3RX	FM0736		0.3	8.0			60.0			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			70.0			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			30.0			80.0			2.43°	31.06	32.13	33.28	34.52	-
XM4R-030N8-0.5RX	FM0741		0.5	8.0			60.0			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			70.0			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			80.0			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			80.0			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			60.0			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			80.0			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			60.0			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			80.0			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			60.0			3.75°	12.43	12.84	13.29	13.77	14.84

Series XM4R

Tool Number	EDP	D1	R	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
											0.5°	1°	1.5°	2°	3°
XM4R-040N20-0.5RX	FM0761	4.0	0.5	20.0	3.2	3.86	60.0	6.0	4.0	2.47°	20.70	21.40	22.15	22.97	-
XM4R-040N30-0.5RX	FM0762			30.0			80.0			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			70.0			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			70.0			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			70.0			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			70.0			1.38°	20.67	21.36	-	-	-
XM4R-050N40-1.0RX	FM0773			40.0			90.0			0.71°	41.34	-	-	-	-
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			-	-	-	-	-	-

TuffCut® XM Series XM2S

VHM | Z2 | ALtima® Xtreme | <60HRC | Up to 20xD | Square Corner



Tool Number	EDP	D1	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
										0.5°	1°	1.5°	2°	3°
XM2S-001N0.3X	FM0192		0.3						14.39°	0.31	0.33	0.35	0.37	0.40
XM2S-001N0.5X	FM0193	0.1	0.5	0.15	0.08	50.0	4.0	1.0	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		0.5						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	0.2	1.5	0.3	0.17	50.0	4.0	1.0	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		1.0						13.06°	1.06	1.12	1.18	1.23	1.33
XM2S-003N1.5X	FM0201		1.5						12.31°	1.59	1.67	1.74	1.81	1.95
XM2S-003N2X	FM0202	0.3	2.0	0.45	0.27	50.0	4.0	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		1.0						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	0.4	3.5	0.6	0.37	50.0	4.0	2.0	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		1.0						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	0.5	3.0	0.75	0.47	50.0	4.0	2.0	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
XM2S-006N2X	FM0226		2.0						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	0.6	6.0	0.9	0.57	50.0	4.0	4.0	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		2.0						12.45°	1.56	1.62	1.67	1.74	1.88
XM2S-007N4X	FM0236	0.7	4.0	1.05	0.67	50.0	4.0	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

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Series XM2S

Tool Number	EDP	D1	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
										0.5°	1°	1.5°	2°	3°
XM2S-007N8X	FM0238	0.7	8.0	1.05	0.67	50.0	4.0	4.0	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			55.0			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			55.0			9.92°	3.68	3.82	3.96	4.11	4.44
XM2S-010N2X	FM0249	1.0	2.0	1.5	0.96	50.0	4.0	4.0	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		8.0						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			55.0			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			60.0			7.91°	6.27	6.49	6.73	6.98	7.55
XM2S-010N25X	FM0262		25.0			65.0			-	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			55.0			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			55.0			11.79°	2.08	2.15	2.23	2.31	2.50
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			55.0			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			60.0			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			65.0			10.97°	2.64	2.75	2.85	2.96	3.20
XM2S-015N30X	FM0280		30.0			70.0			10.42°	3.16	3.28	3.40	3.53	3.82
XM2S-015N35X	FM0281		35.0			75.0			9.92°	3.68	3.82	3.96	4.11	4.44
XM2S-015N40X	FM0282		40.0			80.0			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°	5.24	5.42	5.62	5.83	6.30
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			55.0			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

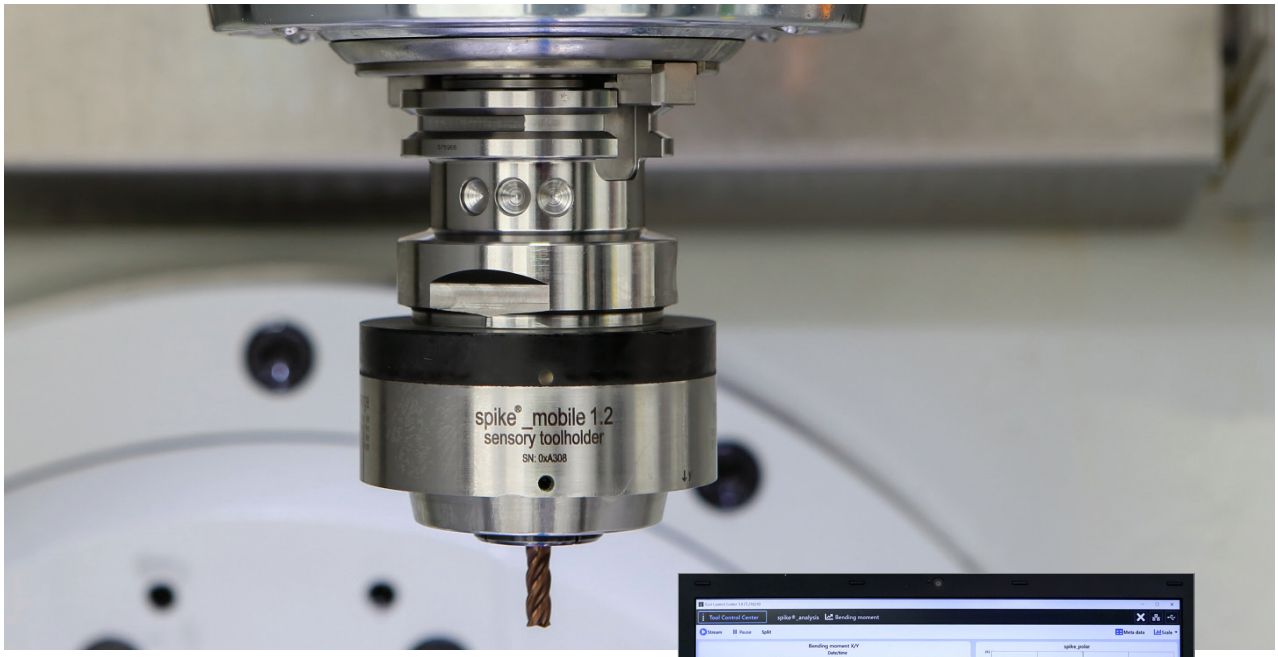
Series XM2S

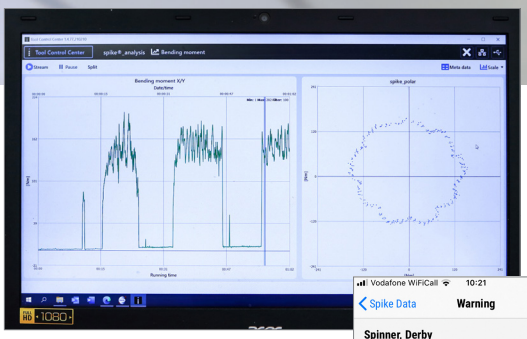
Tool Number	EDP	D1	L3	L2	D3	L1	D2	Neck R	Interference Angle IA	Effective Under-Neck Length (L3) For Inclined Angle				
										0.5°	1°	1.5°	2°	3°
XM2S-020N18X	FM0294	2.0	18.0	3.0	1.92	60.0	4.0	4.0	7.91°	6.27	6.49	6.73	6.98	7.55
XM2S-020N20X	FM0295		20.0						6.84°	8.34	8.63	8.94	9.28	10.03
XM2S-020N25X	FM0296		25.0			65.0			6.02°	10.41	10.77	11.16	11.58	12.52
XM2S-020N30X	FM0297		30.0			70.0			11.21°	2.17	2.31	2.44	2.56	2.78
XM2S-020N35X	FM0298		35.0			75.0			10.07°	3.24	3.42	3.58	3.72	4.02
XM2S-020N40X	FM0299		40.0			80.0			9.13°	4.30	4.51	4.69	4.87	5.26
XM2S-020N50X	FM0300		50.0			90.0			8.36°	5.35	5.59	5.80	6.02	6.50
XM2S-025N8X	FM0301	2.5	8.0	3.75	2.4	50.0	4.0	4.0	14.39°	0.31	0.33	0.35	0.37	0.40
XM2S-025N12X	FM0302		12.0			55.0			14.03°	0.52	0.55	0.58	0.60	0.65
XM2S-025N16X	FM0303		16.0						13.22°	1.05	1.09	1.13	1.18	1.27
XM2S-025N20X	FM0304		20.0			60.0			14.03°	0.52	0.54	0.57	0.59	0.64
XM2S-025N30X	FM0305		30.0			70.0			13.2°	1.04	1.08	1.12	1.16	1.26
XM2S-025N40X	FM0306		40.0			80.0			12.45°	1.56	1.62	1.67	1.74	1.88
XM2S-025N50X	FM0307		50.0			90.0			11.79°	2.08	2.15	2.23	2.31	2.50
XM2S-030N8X	FM0308	3.0	8.0	4.5	2.88	55.0	6.0	4.0	10.65°	3.11	3.22	3.34	3.46	3.74
XM2S-030N12X	FM0309		12.0			60.0			13.06°	1.06	1.12	1.18	1.23	1.33
XM2S-030N16X	FM0310		16.0						12.31°	1.59	1.67	1.74	1.81	1.95
XM2S-030N20X	FM0311		20.0			65.0			11.65°	2.12	2.21	2.29	2.38	2.57
XM2S-030N25X	FM0312		25.0			70.0			11.05°	2.64	2.75	2.85	2.96	3.20
XM2S-030N30X	FM0313		30.0			75.0			10.51°	3.16	3.28	3.40	3.53	3.82
XM2S-030N40X	FM0314		40.0			90.0			13.01°	1.06	1.12	1.18	1.23	1.33
XM2S-030N50X	FM0315		50.0			100.0			4°	4.00	1.67	1.74	1.81	1.95
XM2S-040N12X	FM0316	4.0	12.0	6.0	3.86	60.0	6.0	4.0	11.57°	2.12	2.21	2.29	2.38	2.57
XM2S-040N16X	FM0317		16.0						10.97°	2.64	2.75	2.85	2.96	3.20
XM2S-040N20X	FM0318		20.0			70.0			10.42°	3.16	3.28	3.40	3.53	3.82
XM2S-040N25X	FM0319		25.0						9.92°	3.68	3.82	3.96	4.11	4.44
XM2S-040N30X	FM0320		30.0			80.0			9.47°	4.20	4.35	4.51	4.68	5.06
XM2S-040N35X	FM0321		35.0						8.68°	5.24	5.42	5.62	5.83	6.30
XM2S-040N40X	FM0322		40.0			90.0			8.01°	6.27	6.49	6.73	6.98	7.55
XM2S-040N50X	FM0323		50.0			100.0			6.94°	8.34	8.63	8.94	9.28	10.03
XM2S-050N20X	FM0324	5.0	20.0	7.5	4.85	70.0	6.0	4.0	6.12°	10.41	10.77	11.16	11.58	12.52
XM2S-050N25X	FM0325		25.0						12.96°	1.06	1.12	1.18	1.23	1.33
XM2S-050N30X	FM0326		30.0			80.0			12.19°	1.59	1.67	1.74	1.81	1.95
XM2S-050N40X	FM0327		40.0			90.0			11.5°	2.12	2.21	2.29	2.38	2.57
XM2S-050N50X	FM0328		50.0			100.0			10.88°	2.64	2.75	2.85	2.96	3.20
XM2S-060N20X	FM0329	6.0	20.0	9.0	5.85	70.0	6.0	-	10.33°	3.16	3.28	3.40	3.53	3.82
XM2S-060N30X	FM0330		30.0			80.0			9.37°	4.20	4.35	4.51	4.68	5.06
XM2S-060N40X	FM0331		40.0			90.0			8.58°	5.24	5.42	5.62	5.83	6.30
XM2S-060N50X	FM0332		50.0			100.0			7.91°	6.27	6.49	6.73	6.98	7.55

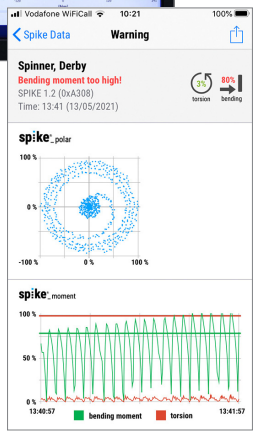
Integrated Manufacturing Solutions

Spike® cutting force monitoring

As part of our Integrated Manufacturing Solutions (IMS) programme, the Spike® cutting force monitoring system enables us to provide customers with optimised performance data derived from their own applications.







By monitoring tension/pressure, torsion and bending moment in real time, Spike® allows the effects of changes in parameters, such as speed, feed and depth of cut to be instantly viewed and analysed by the software.

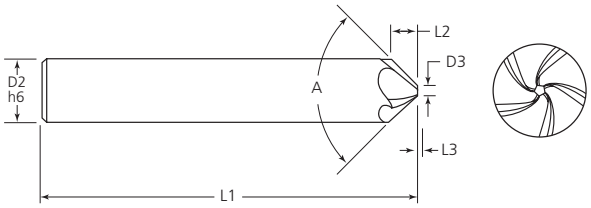
The results are then displayed as graphic and numerical data, which enables tooling to be optimised to specific machining conditions or requirements.

At M.A. Ford Europe, we also use the system as an integral part of our tool development programme to analyse the effects that edge geometry, carbide and coating variations have on tool performance in any material. This allows us to deliver a high-performance solution backed up by robust data.

For further information please contact our support team on: 01332 267960

TuffCut® Series 5HC 90°

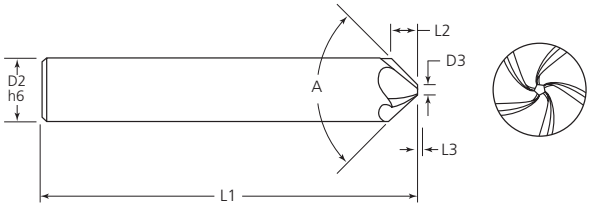
VHM | Z5 | <48HRC | HA DIN 6535 | ALtima® BLAZE



Tool Number	EDP	D2	D3	Angle	L1	L2	L3
5HCM06003B	35026	6.0	1.5	90°	57.0	2.25	0.75
5HCM08003B	35027	8.0	1.75	90°	63.0	3.125	0.875
5HCM10003B	35028	10.0	1.75	90°	72.0	4.125	0.875
5HCM12003B	35029	12.0	2.0	90°	83.0	5.0	1.0
5HCM16003B	35030	16.0	2.25	90°	92.0	6.875	1.125

TuffCut® Series 5HC 60°

VHM | Z5 | <48HRC | HA DIN 6535 | ALtima® BLAZE



Tool Number	EDP	D2	D3	Angle	L1	L2	L3
5HCM06001B	19993	6.0	1.5	60°	57.0	3.9	1.3
5HCM08001B	19994	8.0	1.75	60°	63.0	5.4	1.5
5HCM10001B	19995	10.0	1.75	60°	72.0	7.1	1.5
5HCM12001B	19996	12.0	2.0	60°	83.0	8.7	1.7
5HCM16001B	19997	16.0	2.25	60°	92.0	13.9	2.0

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Recommended Cutting Data

Series 5HCM										
Workpiece Material Group	ISO	Coolant			Vc-m/min	Tool Diameter				
		Emulsion	Air	MQL		6mm	8mm	10mm	12mm	16mm
						fz-mm/tooth				
Low Carbon Steels	P	●	●	●	350	0.072	0.096	0.120	0.144	0.192
Medium Carbon Steels		●	●	●	270	0.048	0.064	0.080	0.096	0.128
Alloy Tool Steels		●	●	●	250	0.048	0.064	0.080	0.096	0.128
Die/Tool Steels		●	●	●	220	0.042	0.056	0.070	0.084	0.112
Free Machining Stainless	M	●	X	○	180	0.042	0.056	0.070	0.084	0.112
Austenitic Stainless		●	X	○	130	0.036	0.048	0.060	0.072	0.096
Difficult Stainless		●	X	○	75	0.030	0.040	0.050	0.060	0.080
PH Stainless		●	X	○	130	0.036	0.048	0.060	0.072	0.096
Cobalt Chrome Alloys		●	X	○	75	0.030	0.040	0.050	0.060	0.080
Duplex (22%)		●	X	○	75	0.030	0.040	0.050	0.060	0.080
Super Duplex (25%)		●	X	○	55	0.030	0.040	0.050	0.060	0.080
High Temp Alloys	S	●	X	X	45	0.030	0.040	0.050	0.060	0.080
Titanium Alloys		●	X	X	100	0.036	0.048	0.060	0.072	0.096
Grey Cast Iron	K	●	○	○	300	0.084	0.112	0.140	0.168	0.224
Ductile Cast Iron		●	○	○	190	0.060	0.080	0.100	0.120	0.160
Hardened Steels 45 - 50HRC	H	○	●	○	80	0.030	0.040	0.050	0.060	0.080
Hardened Steels 50 - 55HRC		○	●	○	60	0.036	0.048	0.060	0.072	0.096
Aluminium Alloys	N	●	X	○	600	0.072	0.096	0.120	0.144	0.192

● Preferred ○ Possible X Not Possible

Please note:

Technical data provided should be considered as advisory only and alterations may be necessary depending on the specific application.
Decreased feeds and/or a finish pass may be required to reach the desired surface finish requirements.
Decreased speeds and feeds may be required for heavy duty cutting.

Cutting speed (Vc) should be calculated from the effective cutting diameter using the following formula:
(Major diameter D2 + minor diameter D3) / 2.
Alternatively, estimate the actual diameter that is in contact with the workpiece.

HC20S & HC32S
Hydraulic Milling Chuck SK (DIN 69871 AD+B)

EDP	Tool No.	SK	Type
FA13327	SK40-HC20S-64.5	40	HC20S
FA13330	SK50-HC32S-81	50	HC32S

HC20 Hydraulic Milling Chuck SK (DIN 69871)

EDP	Tool No.	SK	Type
FA13376	SK40-HC20-24.60SGP	40	HC20

HC20S & HC32S
Hydraulic Milling Chuck BT (MAS 403)

EDP	Tool No.	BT	Type
FA13203	BT40-HC20S-72.5	40	HC20S
FA13206	BT50-HC32S-090	50	HC32S

HC20 Hydraulic Milling Chuck BT (Mas 403)

EDP	Tool No.	BT	Type
FA13262	BT40-HC20-32.50SGP	40	HC20

HC20S & HC32S
Hydraulic Milling Chuck HSK (DIN 69893 A)

EDP	Tool No.	HSK	Type
FA13380	HSK-A63-HC20S-080	63	HC20S
FA13383	HSK-A100-HC32S-110	100	HC32S

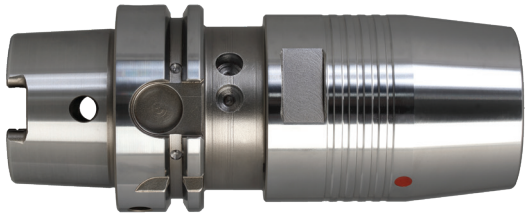
HC20 Hydraulic Milling Chuck KBT (MAS 403) Face and Taper Contact

EDP	Tool No.	BT	Type
FA13325	KBT40-HC20-32.50SGP	40	HC20

HC25 Hydraulic Milling Chuck BT (MAS 403)

EDP	Tool No.	BT	Type
FA13238	BT40-HC25-090ADB	40	HC25

HC25 Hydraulic Milling Chuck HSK-A (DIN 69893-1)



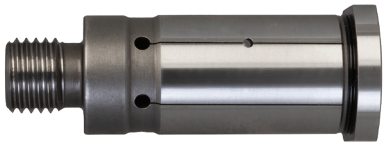
EDP	Tool No.	HSK	Type
FA13439	HSK-A63-HC25-120	63	HC25

HC25 Hydraulic Milling Chuck SK (DIN 69871)

EDP	Tool No.	SK	Type
FA13352	SK40-HC25-095ADB	40	HC25

HRNPO25 Cylindrical Reduction Sleeves

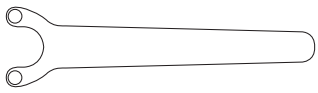
Non Pullout



EDP	Tool No.	M
FA13604	HRNPO25-12.0	M16X2
FA13605	HRNPO25-16.0	M16X2

Spare Parts

ER25A Pin Spanner



EDP	Tool Number
FA12701	E25A-SPA

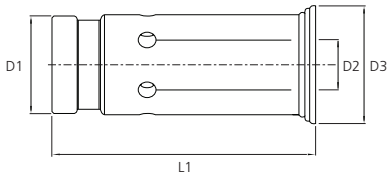
Non Pull-Out Sleeve Pin

EDP	Tool Number
FA13606	NPO-PIN

Non Pull-Out Sleeve Pin Ejector

EDP	Tool Number
FA13607	NPO-PINEJE

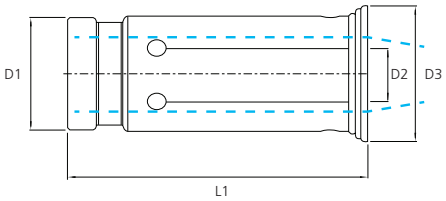
HRS Cylindrical Reduction Sleeves



EDP	Tool No.	D1	D2	D3	L1
FA13536	HRS20-3.0	20.0	3.0	29.0	52.5
FA13537	HRS20-4.0	20.0	4.0	29.0	52.5
FA13538	HRS20-5.0	20.0	5.0	29.0	52.5
FA13539	HRS20-6.0	20.0	6.0	29.0	52.5
FA13540	HRS20-7.0	20.0	7.0	29.0	52.5
FA13541	HRS20-8.0	20.0	8.0	29.0	52.5
FA13542	HRS20-9.0	20.0	9.0	29.0	52.5
FA13543	HRS20-10.0	20.0	10.0	29.0	52.5
FA13544	HRS20-11.0	20.0	11.0	29.0	52.5
FA13545	HRS20-12.0	20.0	12.0	29.0	52.5
FA13546	HRS20-13.0	20.0	13.0	29.0	52.5
FA13547	HRS20-14.0	20.0	14.0	29.0	52.5
FA13548	HRS20-15.0	20.0	15.0	29.0	52.5
FA13549	HRS20-16.0	20.0	16.0	29.0	52.5
FA13560	HRS25-6.0	25.0	6.0	29.0	56.5
FA13561	HRS25-8.0	25.0	8.0	29.0	56.5
FA13562	HRS25-10.0	25.0	10.0	29.0	56.5
FA13563	HRS25-12.0	25.0	12.0	29.0	56.5
FA13564	HRS25-14.0	25.0	14.0	29.0	56.5
FA13565	HRS25-16.0	25.0	16.0	29.0	56.5
FA13566	HRS25-18.0	25.0	18.0	29.0	56.5
FA13567	HRS25-20.0	25.0	20.0	29.0	56.5
FA13550	HRS32-6.0	32.0	6.0	39.0	63.5
FA13551	HRS32-8.0	32.0	8.0	39.0	63.5
FA13552	HRS32-10.0	32.0	10.0	39.0	63.5
FA13553	HRS32-12.0	32.0	12.0	39.0	63.5
FA13554	HRS32-14.0	32.0	14.0	39.0	63.5
FA13555	HRS32-16.0	32.0	16.0	39.0	63.5
FA13556	HRS32-18.0	32.0	18.0	39.0	63.5
FA13557	HRS32-20.0	32.0	20.0	39.0	63.5
FA13558	HRS32-25.0	32.0	25.0	39.0	63.5

HRTC Cylindrical Reduction Sleeves

Through Face Coolant



EDP	Tool No.	D1	D2	D3	L1
FA13568	HRTC20-3.0	20.0	3.0	24.0	52.5
FA13569	HRTC20-4.0	20.0	4.0	24.0	52.5
FA13570	HRTC20-5.0	20.0	5.0	24.0	52.5
FA13571	HRTC20-6.0	20.0	6.0	24.0	52.5
FA13572	HRTC20-7.0	20.0	7.0	24.0	52.5
FA13573	HRTC20-8.0	20.0	8.0	24.0	52.5
FA13574	HRTC20-9.0	20.0	9.0	24.0	52.5
FA13575	HRTC20-10.0	20.0	10.0	24.0	52.5
FA13576	HRTC20-11.0	20.0	11.0	24.0	52.5
FA13577	HRTC20-12.0	20.0	12.0	24.0	52.5
FA13578	HRTC20-13.0	20.0	13.0	24.0	52.5
FA13579	HRTC20-14.0	20.0	14.0	24.0	52.5
FA13580	HRTC20-15.0	20.0	15.0	24.0	52.5
FA13581	HRTC20-16.0	20.0	16.0	24.0	52.5
FA13582	HRTC25-6.0	25.0	6.0	29.0	56.5
FA13583	HRTC25-8.0	25.0	8.0	29.0	56.5
FA13584	HRTC25-10.0	25.0	10.0	29.0	56.5
FA13585	HRTC25-12.0	25.0	12.0	29.0	56.5
FA13586	HRTC25-14.0	25.0	14.0	29.0	56.5
FA13587	HRTC25-16.0	25.0	16.0	29.0	56.5
FA13588	HRTC25-18.0	25.0	18.0	29.0	56.5
FA13589	HRTC25-20.0	25.0	20.0	29.0	56.5
FA13590	HRTC32-6.0	32.0	6.0	36.0	63.5
FA13591	HRTC32-7.0	32.0	7.0	36.0	63.5
FA13592	HRTC32-8.0	32.0	8.0	36.0	63.5
FA13593	HRTC32-9.0	32.0	9.0	36.0	63.5
FA13594	HRTC32-10.0	32.0	10.0	36.0	63.5
FA13595	HRTC32-11.0	32.0	11.0	36.0	63.5
FA13596	HRTC32-12.0	32.0	12.0	36.0	63.5
FA13597	HRTC32-13.0	32.0	13.0	36.0	63.5
FA13598	HRTC32-14.0	32.0	14.0	36.0	63.5
FA13599	HRTC32-15.0	32.0	15.0	36.0	63.5
FA13600	HRTC32-16.0	32.0	16.0	36.0	63.5
FA13601	HRTC32-18.0	32.0	18.0	36.0	63.5
FA13602	HRTC32-20.0	32.0	20.0	36.0	63.5
FA13603	HRTC32-25.0	32.0	25.0	36.0	63.5

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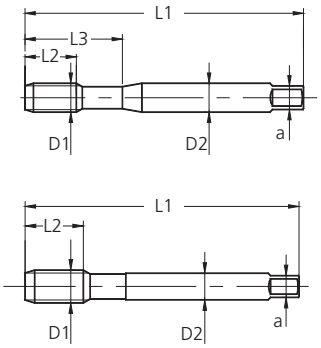
High Performance Taps



EVO-SP/SF HSSE | ISO 2 6H | 60° P | OX

UNI-SP/SF HSSEV | ISO 2 6H | 60° P | TiN

	EVOSP	EVOSF	UNISP	UNISF
	P 6-10, 10-15; M; K; N 12-20; S	P 10-12, 10-12; M; K; N 12-20; S	P 10-12, 10-12; M 6-10; K; N 10-30; S	P 8-10, 8-10; M 4-7; K; N 10-30; S
Hole type	< 3d	< 3d	< 2.5d	< 2.5d
Coating	OX	OX	TIN	TIN
Chamfer	B / 3.5-6	C / 2-3P	B / 3.5-6	C / 2-3P
Tolerance	6HX	6HX	6HX	6HX

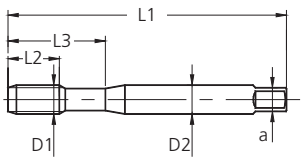
M Ø D1	P	L1	L2	L3	Ø D2	a		EVOSP	EVOSF	UNISP	UNISF
DIN 371											
M2	0.4	45.0	8.0	12.0	2.8	2.1	1.6	M2 x 0.4	M2 x 0.4	-	-
M2.5	0.45	50.0	9.0	14.0	2.8	2.1	2.05	M2.5 x 0.45	M2.5 x 0.45	-	-
M3	0.5	56.0	9.0	18.0	3.5	2.7	2.5	M3 x 0.5	M3 x 0.5	M3 x 0.5	M3 x 0.5
M4	0.7	63.0	12.0	21.0	4.5	3.4	3.3	M4 x 0.7	M4 x 0.7	M4 x 0.7	M4 x 0.7
M5	0.8	70.0	13.0	25.0	6.0	4.9	4.2	M5 x 0.8	M5 x 0.8	M5 x 0.8	M5 x 0.8
M6	1.0	80.0	15.0	30.0	6.0	4.9	5.0	M6 x 1.0	M6 x 1.0	M6 x 1.0	M6 x 1.0
M8	1.25	90.0	18.0	35.0	8.0	6.2	6.8	M8 x 1.25	M8 x 1.25	M8 x 1.25	M8 x 1.25
M10	1.5	100.0	20.0	39.0	10.0	8.0	8.5	M10 x 1.5	M10 x 1.5	M10 x 1.5	M10 x 1.5
DIN 376											
M12	1.75	110.0	23.0	-	9.0	7.0	10.2	M12 x 1.75	M12 x 1.75	M12 x 1.75	M12 x 1.75
M14	2	110.0	25.0	-	11.0	9.0	12.0	M14 x 2.0	M14 x 2.0	M14 x 2.0	M14 x 2.0
M16	2	110.0	25.0	-	12.0	9.0	14.0	M16 x 2.0	M16 x 2.0	M16 x 2.0	M16 x 2.0
M20	2.5	140.0	30.0	-	16.0	12.0	17.5	-	M20 x 2.5	M20 x 2.5	M20 x 2.5
M24	3.0	160.0	30.0	-	18.0	14.5	21.0	-	M24 x 3.0	-	-
M30	3.5	180.0	35.0	-	22.0	18.0	26.5	-	M30 x 3.5	-	-
MF Ø D1	**P**	**L1**	**L2**		**Ø D2**	**a**					
DIN 374											
M8 x 1	1.0	90.0	10.0		6.0	4.9	7.0	M8 x 1.0	M8 x 1.0	-	-
M10 x 1	1.0	90.0	10.0		7.0	5.5	9.0	M10 x 1.0	M10 x 1.0	-	-
M10 x 1.25	1.25	100.0	15.0		7.0	5.5	8.8	M10 x 1.25	M10 x 1.25	-	-
M12 x 1.5	1.5	100.0	15.0		9.0	7.0	10.5	M12 x 1.5	M12 x 1.5	-	-
M14 x 1.5	1.5	100.0	15.0		11.0	9.0	12.5	M14 x 1.5	M14 x 1.5	-	-
M16 x 1.5	1.5	100.0	15.0		12.0	9.0	14.5	M16 x 1.5	M16 x 1.5	-	-

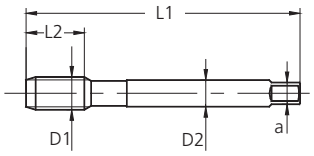
Example of order

EVOSP - M2 x 0.4

	Vc (m/min)				
P	< 150 HB	6-10	10-12	10-12	8-10
	150-240 HB	10-15	10-12	10-12	8-10
M	-	-	-	-	4-7
K	-	-	-	-	-
N	-	12-20	12-20	10-30	10-30
S	-	-	-	-	-

High Performance Taps





HPSP/HPSF

HSSE PM | 60° P | HL

	HPSP	HPSPC	HPSF	HPSFC
	P 6-8, 4-6; M 6-14; K 10-30; N 10-30; S	P 10-12, 4-6; M 6-14; K 10-50; N 10-50; S	P 6-8; M 6-14; K 10-30; N 10-30; S	P 10-12; M 6-14; K 10-50; N 10-30; S
Hole type	< 3d	< 3d	< 2.5d	< 2.5d
Coating	HL	HL	HL	HL
Chamfer	B / 3.5-6P	B / 3.5-6P	C / 2-3P	C / 2-3P
Tolerance	6HX	6HX	6HX	6HX

M Ø D1	P	L1	L2	L3	Ø D2	a	d	HPSP	HPSPC	HPSF	HPSFC
DIN 371											
M3	0.5	56.0	9.0	18.0	3.5	2.7	2.5	M3 X 0.5	-	M3 X 0.5	-
M4	0.7	63.0	12.0	21.0	4.5	3.4	3.3	M4 X 0.7	-	M4 X 0.7	-
M5	0.8	70.0	13.0	25.0	6.0	4.9	4.2	M5 X 0.8	-	M5 X 0.8	-
M6	1.0	80.0	15.0	30.0	6.0	4.9	5.0	M6 X 1.0	M6 X 1.0	M6 X 1.0	M6 X 1.0
M8	1.25	90.0	18.0	35.0	8.0	6.2	6.8	M8 X 1.25	M8 X 1.25	M8 X 1.25	M8 X 1.25
M10	1.5	100.0	20.0	39.0	10.0	8.0	8.5	M10 X 1.5	M10 X 1.5	M10 X 1.5	M10 X 1.5
DIN 376											
M12	1.75	110.0	23.0	-	9.0	7.0	10.2	M12 x 1.75	-	M12 x 1.75	M12 x 1.75
M14	2.0	110.0	25.0	-	11.0	9.0	12.0	M14 x 2.0	-	M14 x 2.0	-
M16	2.0	110.0	25.0	-	12.0	9.0	14.0	M16 x 2.0	-	M16 x 2.0	-
M20	2.5	140.0	30.0	-	16.0	12.0	17.5	M20 X 2.5	-	M20 x 2.5	-

Example of order

HPSP - M3 X 0.5

		Vc (m/min)			
P	Rm < 1200	6-8	10-12	6-8	10-12
	Rm < 1400	4-6	4-6	-	-
M	-	6-14	6-14	6-14	6-14
K	-	10-30	10-50	10-30	10-50
N	-	10-30	10-50	10-30	10-30
S	-	-	-	-	-

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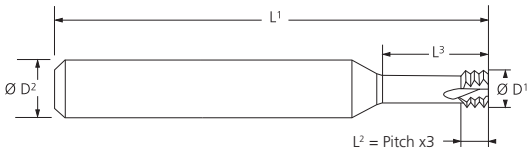
Metric 2xD Carbide Thread Mills Series 3TC

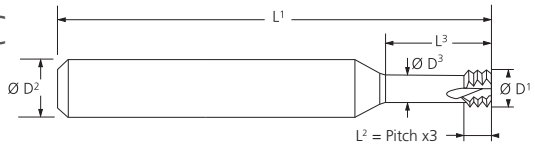
VHM | Z3 Z4 | HA | ALtima® Xtreme | 60° P | M | MF | 2xD | RH Cutting



Tool Number	Thread		Tool Dimensions					
	M Coarse	M Fine	Pitch (mm)	D¹	D²	L¹	L³	Flutes
3TCM 0154D2-040AX	M2x0.4	-	0.4	1.54	4.0	50.0	4.5	3
3TCM 0196D2-045AX	M2.5x0.45	-	0.45	1.96	4.0	50.0	5.5	3
3TCM 0240D2-050AX	M3x0.5	M3.5x0.5	0.5	2.4	4.0	50.0	7.0	3
3TCM 0315D2-070AX	M4x0.7	-	0.7	3.15	4.0	50.0	8.8	3
3TCM 0400D2-080AX	M5x0.8	-	0.8	4.0	6.0	50.0	12.0	3
3TCM 0475D2-100AX	M6x1.0	M8x1.0	1.0	4.75	6.0	50.0	12.0	3
3TCM 0600D2-125AX	M8x1.25	-	1.25	6.0	6.0	60.0	17.5	3
3TCM 0800D2-150AX	M10x1.5	M12x1.5	1.5	8.0	8.0	60.0	22.0	4
3TCM 1000D2-175AX	M12x1.75	-	1.75	10.0	10.0	75.0	28.0	4
3TCM 1200D2-200AX	M16x2.0	-	2.0	12.0	12.0	75.0	35.0	4

Metric 3xD Carbide Thread Mills Series 3TC

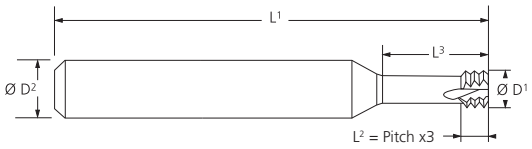
VHM | Z3 Z4 Z6 | HA | ALtima® Xtreme | 60° P | M | 3xD | RH Cutting



Tool Number	Thread	Tool Dimensions							
	M Coarse	Pitch (mm)	D¹	D²	D³	L¹	L³	Flutes	Drill Dia.
3TC-M1606D3-0.35X	M1.6	0.35	1.2	4.0	0.68	50.0	5.0	3	1.25
3TC-M206D3-0.4X	M2	0.4	1.54	6.0	0.88	60.0	6.5	3	1.6
3TC-M2506D3-0.45X	M2.5	0.45	1.96	6.0	1.15	60.0	8.0	3	2.05
3TC-M306D3-0.5X	M3	0.5	2.42	6.0	1.63	60.0	9.5	3	2.5
3TC-M406D3-0.7X	M4	0.7	3.15	6.0	1.99	60.0	12.5	3	3.3
3TC-M506D3-0.8X	M5	0.8	4.0	6.0	2.54	60.0	15.5	3	4.2
3TC-M606D3-1.0X	M6	1.0	4.75	6.0	3.03	60.0	18.5	3	5
3TC-M806D3-1.25X	M8	1.25	5.95	6.0	3.81	65.0	25.0	3	6.75
3TC-M1008D3-1.5X	M10	1.5	7.9	8.0	5.82	75.0	31.0	4	8.5
3TC-M1210D3-1.75X	M12	1.75	9.9	10.0	7.42	80.0	37.0	4	10.25
3TC-M1612D3-2.0X	M16	2.0	11.9	12.0	8.95	100.0	50.0	4	14
3TC-M2016D3-2.5X	M20	2.5	15.9	16.0	12.39	110.0	62.0	6	17.5

UN 2xD Carbide Thread Mills Series 3TC

VHM | Z3 Z4 | HA | ALtima® Xtreme | 60° P | UNC | UNF | 2xD | RH Cutting



Tool Number	Thread		Tool Dimensions					
	UNC	UNF	Pitch (TPI)	D¹	D²	L¹	L³	Flutes
3TCU 0140D2-64AX	1-64	2-64	64	1.4	4.0	50.0	4.0	3
3TCU 0145D2-72AX	-	1-72	72	1.45	4.0	50.0	3.8	3
3TCU 0165D2-56AX	2-56	3-56	56	1.65	4.0	50.0	5.0	3
3TCU 0190D2-48AX	3-48	4-48	48	1.9	4.0	50.0	5.0	3
3TCU 0210D2-40AX	4-40	6-40	40	2.1	4.0	50.0	6.0	3
3TCU 0245D2-40AX	5-40	6-40	40	2.45	4.0	50.0	8.0	3
3TCU 0255D2-32AX	6-32	10-32	32	2.55	4.0	50.0	7.4	3
3TCU 0320D2-32AX	8-32	10-32	32	3.2	4.0	50.0	11.0	3
3TCU 0330D2-36AX	-	8-36	36	3.3	4.0	50.0	11.0	3
3TCU 0358D2-24AX	10-24	5/16-24	24	3.58	4.0	50.0	11.0	3
3TCU 0488D2-20AX	1/4-20	7/16-20	20	4.88	6.0	50.0	13.5	3
3TCU 0525D2-28AX	-	1/4-28	28	5.25	6.0	50.0	15.0	3
3TCU 0668D2-24AX	-	5/16-24	24	6.68	8.0	65.0	21.0	4
3TCU 0670D2-16AX	3/8-16	-	16	7.6	8.0	60.0	20.0	4
3TCU 0900D2-14AX	7/16-14	-	14	9.0	10.0	75.0	28.0	4
3TCU 0955D2-20AX	-	7/16-20	20	9.55	10.0	75.0	28.0	4

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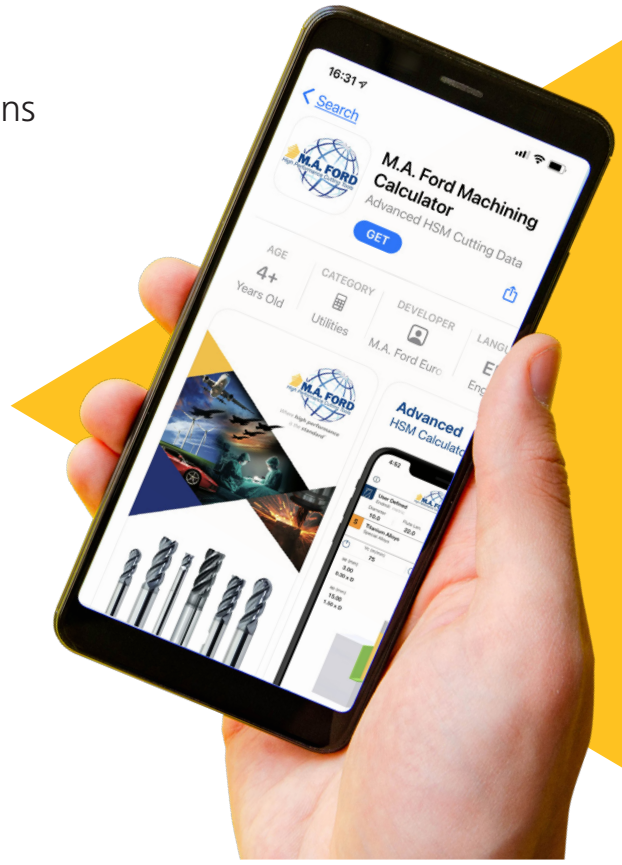

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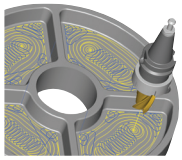

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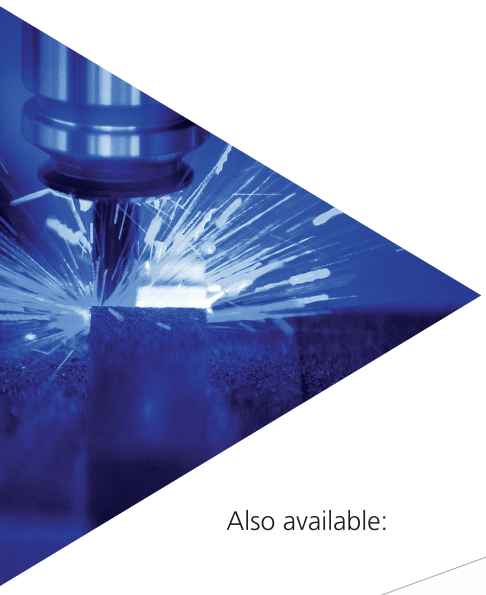

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