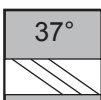


TuffCut® XT9 Series 380

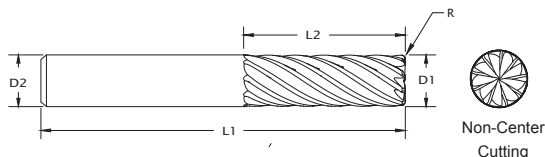
Z9



9
Flute

- Designed for high speed machining of Titanium, Inconel, and similar materials.
- New Altima® Xtreme (AX) coating designed for high speed machining and dry machining.
- Uneven number of flutes reduces harmonics to provide stable machining zones.

NEW



ALtima® Xtreme Coating Properties

Microhardness (HV)	3800
Max. Service Temp.	1100° C / 2012° F
Friction Coefficient	0.3 - 0.5
Designation	AX
Color	Copper

ALtima® Xtreme		Diameter			Shank		OAL		Flute Length		Corner Radius	
		D1			D2 (h6)		L1		L2		R	
Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
380M0800-0.5RAX	38042		8	.3150		8.0		63		22		0.50
380M0800-1.0RAX	38044		8	.3150		8.0		63		22		1.00
38037511AX	18973	3/8		.3750	3/8		2-1/2		1		.010	
38037512AX	38038	3/8		.3750	3/8		2-1/2		1		.015	
38037513AX	18974	3/8		.3750	3/8		2-1/2		1		.020	
38037514AX	38040	3/8		.3750	3/8		2-1/2		1		.030	
380M1000-0.5RAX	38046		10	.3937		10.0		72		27		0.50
380M1000-1.0RAX	38048		10	.3937		10.0		72		27		1.00
380M1200-0.5RAX	38026		12	.4724		12.0		84		32		0.50
380M1200-1.0RAX	38028		12	.4724		12.0		84		32		1.00
38050011AX	18975	1/2		.5000	1/2		3		1-1/4		.010	
38050012AX	38000	1/2		.5000	1/2		3		1-1/4		.015	
38050013AX	18976	1/2		.5000	1/2		3		1-1/4		.020	
38050014AX	38002	1/2		.5000	1/2		3		1-1/4		.030	
38050016AX	38004	1/2		.5000	1/2		3		1-1/4		.060	
380L5004AX	38006	1/2		.5000	1/2		3-1/2		1-3/4		.030	
38062512AX	38008	5/8		.6250	5/8		3-1/2		1-1/4		.015	
38062514AX	38010	5/8		.6250	5/8		3-1/2		1-1/4		.030	
38062516AX	38012	5/8		.6250	5/8		3-1/2		1-1/4		.060	
380L6254AX	38014	5/8		.6250	5/8		4		1-7/8		.030	
380M1600-0.5RAX	38030		16	.6299		16.0		92		42		0.50
380M1600-1.0RAX	38032		16	.6299		16.0		92		42		1.00
38075012AX	38016	3/4		.7500	3/4		4		1-1/2		.015	
38075014AX	38018	3/4		.7500	3/4		4		1-1/2		.030	
38075016AX	38020	3/4		.7500	3/4		4		1-1/2		.060	
38075018AX	38022	3/4		.7500	3/4		4		1-1/2		.120	
380L7504AX	38024	3/4		.7500	3/4		5		2-1/4		.030	
380M2000-0.5RAX	38034		20	.7874		20.0		104		52		0.50
380M2000-1.0RAX	38036		20	.7874		20.0		104		52		1.00

Inch	
D1	Tolerance
.3750 - .3937	+0/- .0020
>.3937 - .7874	+0/- .0025

mm	
D1	Tolerance
8.0 - 10.0	+0/- .050
>10.0 - 20.0	+0/- .064

Inch	
D2	Tolerance (h6)
.3750 - .3937	+0/- .00035
.3938 - .7087	+0/- .00043
.7088 - .7874	+0/- .00051

mm	
D2	Tolerance (h6)
8.0 - 10.0	+0/- .009
>10.0 - 18.0	+0/- .011
>18.0 - 20.0	+0/- .013



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3MVR / 380
TuffCut® 3MV / XT9

HIGH PERFORMANCE

380 Series Recommended Cutting Data - Profile Milling Inch

Workpiece Material Group	ISO	Hardness	Coolant • Preferred o Possible x Not Possible			Profiling (ae)		End Mill Diameter (inch)			
								3/8	1/2	5/8	3/4
						5%	10%	Multiply fz by this Factor based on ae. When finishing, use the standard fz per chart below. Only add chip thinning when roughing or semi-finishing.			
						2.3	1.67				
						vc - SFM		fz - in/tooth			
Low Carbon Steels 1018, 1020	P	up to 28 Rc	•	•	•	1475	1150	.0039	.0047	.0060	.0078
Medium Carbon Steels 1140, 1145	P	28 to 38 Rc	•	•	•	1130	900	.0039	.0047	.0060	.0078
Alloy Steels 4140, 4145	P	28 to 44 Rc	•	•	•	1035	840	.0039	.0047	.0060	.0078
Die / Tool Steels A2, D2, H13, P20	P	28 to 44 Rc	•	•	•	900	725	.0039	.0047	.0060	.0078
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430	M	up to 28 Rc	•	x	o	675	545	.0015-.0020	.0020-.0031	.0020-.0033	.0022-.0035
Stainless Steel - Austenitic 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH	M	up to 28 Rc	•	x	o	525	430	.0015-.0020	.0020-.0031	.0020-.0033	.0022-.0035
Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321	M	up to 28 Rc	•	x	o	410	330	.0015-.0020	.0020-.0031	.0020-.0033	.0022-.0035
Stainless Steel - Difficult to Machine 17-4 PH, PH13-8Mo, Nitronics	M	over 28 Rc	•	x	o	525	430	.0015-.0020	.0020-.0031	.0020-.0033	.0022-.0035
Cobalt Chrome Alloys	M		•	x	o	410	325	.0020	.0031	.0033	.0035
Duplex (22%)	M		•	x	o	245	195	.0020	.0031	.0033	.0035
Super Duplex (25%)	M		•	x	o	245	195	.0020	.0031	.0033	.0035
High Temp Alloys	S	up to 42 Rc	•	x	x	180	150	.0015-.0020	.0020-.0031	.0020-.0033	.0022-.0035
Inconel	S		•	x	x	180	150	.0010-.0016	.0010-.0016	.0010-.0017	.0011-.0018
Titanium Alloys 6Al-4V, 5Al-2.5 Sn, 6Al-2 Sn-4Zr-6Mo, 3Al-8V-6Cr4Mo-4Zr, 10V-2Fe-3Al, 13V-11Cr-3Al	S	up to 42 Rc	•	x	x	375	350	.0010-.0016	.0010-.0016	.0010-.0017	.0011-.0018
Cast-Iron - Gray CG, ASTM A48, CLASS 20, 25, 30, 35, SAE J431C, GRADES G1800, G3000, G3500, GG 10, 15, 20, 25, 30, 35, 40	K	up to 240 HB	•	o	o	1625	1295	.0039	.0047	.0060	.0078
Cast Iron - Ductile & Malleable CGI 60-40-18, 65-45-12, D4018, D4512, D5506, 32510, 35108, M3210, M4504, M5503, 250, 300, 350, 400, 450	K	over 240 HB	•	o	o	675	540	.0031	.0039	.0047	.0078
Hardened Steels	H	40-50 Rc	•	o	o	610	495	.0024	.0030	.0040	.0048
Hardened Steels		50-55 Rc	•	o	o	510	410	.0016	.0018	.0024	.0028
Hardened Steels		>55 Rc	•	o	o	330	310	.0010	.0015	.0018	.0021

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula:

$$(\text{Calculated Feed} \times \text{Spindle Maximum}) / \text{Calculated Speed}$$



Made in USA

ISO 9001:2015 Certified

Technical data provided should be considered advisory only as variations may be necessary depending on the particular application.

380 Series Recommended Cutting Data - Profile Milling Metric

Workpiece Material Group	ISO	Hardness	Coolant ● Preferred ○ Possible x Not Possible			Profiling (ae)		End Mill Diameter (mm)				
								8	10	12	16	20
						5%	10%	 Multiply fz by this Factor based on ae. When finishing, use the standard fz per chart below. Only add chip thinning when roughing or semi-finishing.				
						2.3	1.67					
			Max.	Air	MMS	vc - m/min		fz - mm/tooth				
Low Carbon Steels 1018, 1020	P	up to 28 Rc	●	●	●	450	350	.0800	.1000	.1100	.1500	.2540
Medium Carbon Steels 1140, 1145	P	28 to 38 Rc	●	●	●	345	275	.0800	.1000	.1100	.1500	.2540
Alloy Steels 4140, 4145	P	28 to 44 Rc	●	●	●	315	255	.0800	.1000	.1100	.1500	.2540
Die / Tool Steels A2, D2, H13, P20	P	28 to 44 Rc	●	●	●	275	220	.0800	.1000	.1100	.1500	.2540
Stainless Steel - Easy to Machine 430F, 301, 303, 410, 416 Annealed, 420F, 430	M	up to 28 Rc	●	x	○	205	165	.030-.040	.038-.050	.050-.078	.050-.083	.060-.099
Stainless Steel - Austenitic 301, 302, 303 High Tensile, 304, 304L, 305, 420, 15-5PH, 17-4PH, 17-7PH	M	up to 28 Rc	●	x	○	160	130	.030-.040	.038-.050	.050-.078	.050-.083	.060-.099
Stainless Steel - Difficult to Machine 302B, 304B, 309, 310, 316, 316B, 316L, 316Ti, 317, 317L, 321	M	up to 28 Rc	●	x	○	125	100	.030-.040	.038-.050	.050-.078	.050-.083	.060-.099
Stainless Steel - Difficult to Machine 17-4 PH, PH13-8Mo, Nitronics	M	over 28 Rc	●	x	○	160	130	.030-.040	.038-.050	.050-.078	.050-.083	.060-.099
Cobalt Chrome Alloys	M		●	x	○	125	100	.0400	.0500	.0780	.0830	.0990
Duplex (22%)	M		●	x	○	75	60	.0400	.0500	.0780	.0830	.0990
Super Duplex (25%)	M		●	x	○	75	60	.0400	.0500	.0780	.0830	.0990
High Temp Alloys	S	up to 42 Rc	●	x	x	55	45	.030-.040	.038-.050	.025-.040	.025-.043	.030-.050
Inconel	S		●	x	x	55	45	.020-.030	.025-.040	.025-.040	.025-.043	.030-.050
Titanium Alloys 6Al-4V, 5Al-2.5 Sn, 6Al-2 Sn-4Zr-6Mo, 3Al-8V-6Cr4Mo-4Zr, 10V-2Fe-3Al, 13V-11Cr-3Al	S	up to 42 Rc	●	x	x	115	105	.020-.030	.025-.040	.050-.078	.050-.083	.030-.050
Cast-Iron - Gray CG, ASTM A48, CLASS 20, 25, 30, 35, SAE J431C, GRADES G1800, G3000, G3500, GG 10, 15, 20, 25, 30, 35, 40	K	up to 240 HB	●	○	○	495	395	.0800	.1000	.1100	.1500	.2540
Cast Iron - Ductile & Malleable CGI 60-40-18, 65-45-12, D4018, D4512, D5506, 32510, 35108, M3210, M4504, M5503, 250, 300, 350, 400, 450	K	over 240 HB	●	○	○	205	165	.0650	.0800	.1100	.1500	.2540
Hardened Steels	H	40-50 Rc	●	○	○	185	150	.0500	.0600	.1016	.1168	.1524
Hardened Steels		50-55 Rc	●	○	○	155	125	.0300	.0400	.0610	.0762	.0889
Hardened Steels		>55 Rc	●	○	○	100	95	.0200	.0250	.0457	.0559	.0635

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula:

$$(\text{Calculated Feed} \times \text{Spindle Maximum}) / \text{Calculated Speed}$$