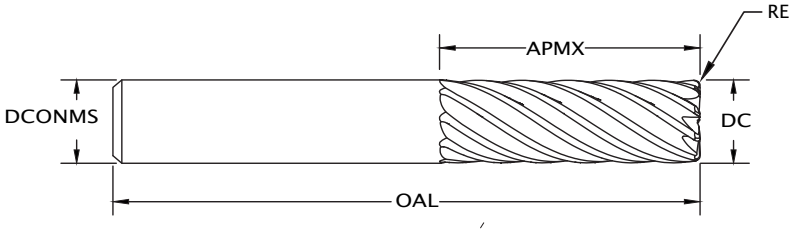
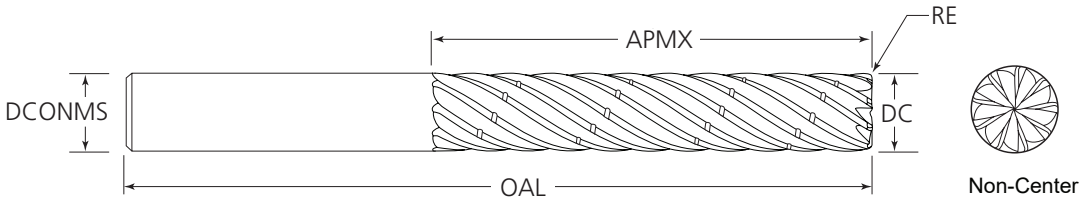
TuffCut® XT9 Series 380



Non-Center Cutting

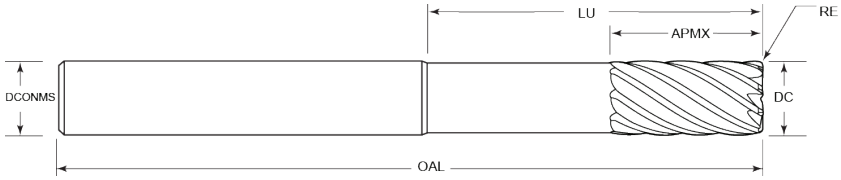
ALtima® Xtreme		DC			DCONMS		OAL		APMX		RE	
Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
380M0800-0.5RAX	38042	-	8	.3150	-	8.0	-	63	-	22	-	0.50
380M0800-1.0RAX	38044	-	8	.3150	-	8.0	-	63	-	22	-	1.00
38037511AX	18973	3/8	-	.3750	3/8	-	2-1/2	-	1	-	.010	-
38037512AX	38038	3/8	-	.3750	3/8	-	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	-
380X5002AX	38081	1/2	-	.5000	1/2	-	4	-	2	-	.015	-
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

TuffCut® XT9 Series 380CB



ALtima® Xtreme		DC			DCONMS		OAL		APMX		RE	
Tool No.	EDP	Inch	mm	Decimal	Inch	mm	Inch	mm	Inch	mm	Inch	mm
380CBM0800-0.5RAX	38050	-	8	.3150	-	8	-	63	-	22	-	0.5
380CBM0800-1.0RAX	38051	-	8	.3150	-	8	-	63	-	22	-	1.0
380CB37511AX	38052	3/8	-	.3750	3/8	-	2-1/2	-	1	-	.010	-
380CB37512AX	38053	3/8	-	.3750	3/8	-	2-1/2	-	1	-	.015	-
380CB37513AX	38054	3/8	-	.3750	3/8	-	2-1/2	-	1	-	.020	-
380CB37514AX	38055	3/8	-	.3750	3/8	-	2-1/2	-	1	-	.030	-
380CBM1000-0.5RAX	38056	-	10	.3937	-	10	-	72	-	27	-	0.5
380CBM1000-1.0RAX	38057	-	10	.3937	-	10	-	72	-	27	-	1.0
380CBM1200-0.5RAX	38058	-	12	.4724	-	12	-	84	-	32	-	0.5
380CBM1200-1.0RAX	38059	-	12	.4724	-	12	-	84	-	32	-	1.0
380CB50011AX	38060	1/2	-	.5000	1/2	-	3	-	1-1/4	-	.010	-
380CB50012AX	38061	1/2	-	.5000	1/2	-	3	-	1-1/4	-	.015	-
380CB50013AX	38062	1/2	-	.5000	1/2	-	3	-	1-1/4	-	.020	-
380CB50014AX	38063	1/2	-	.5000	1/2	-	3	-	1-1/4	-	.030	-
380CB50016AX	38064	1/2	-	.5000	1/2	-	3	-	1-1/4	-	.060	-
380LCB5004AX	38065	1/2	-	.5000	1/2	-	3-1/2	-	1-3/4	-	.030	-
380XCB5002AX	38080	1/2	-	.5000	1/2	-	4	-	2	-	.015	-
380CB62512AX	38066	5/8	-	.6250	5/8	-	3-1/2	-	1-1/4	-	.015	-
380CB62514AX	38067	5/8	-	.6250	5/8	-	3-1/2	-	1-1/4	-	.030	-
380CB62516AX	38068	5/8	-	.6250	5/8	-	3-1/2	-	1-1/4	-	.060	-
380LCB6254AX	38069	5/8	-	.6250	5/8	-	4	-	1-7/8	-	.030	-
380CBM1600-0.5RAX	38070	-	16	.6299	-	16	-	92	-	42	-	0.5
380CBM1600-1.0RAX	38071	-	16	.6299	-	16	-	92	-	42	-	1.0
380CB75012AX	38072	3/4	-	.7500	3/4	-	4	-	1-1/2	-	.015	-
380CB75014AX	38073	3/4	-	.7500	3/4	-	4	-	1-1/2	-	.030	-
380CB75016AX	38074	3/4	-	.7500	3/4	-	4	-	1-1/2	-	.060	-
380CB75018AX	38075	3/4	-	.7500	3/4	-	4	-	1-1/2	-	.120	-
380LCB7504AX	38076	3/4	-	.7500	3/4	-	5	-	2-1/4	-	.030	-
380CBM2000-0.5RAX	38077	-	20	.7874	-	20	-	104	-	52	-	0.5
380CBM2000-1.0RAX	38078	-	20	.7874	-	20	-	104	-	52	-	1.0

TuffCut® XT9 Series 380N



Non-Center Cutting

Tool Number	EDP	DC	DCONMS	DN	OAL	APMX	LU	RE
38037512N4AX	40282	3/8	3/8	0.36	3	3/4	1-1/2	0.015
38037514N4AX	40283	3/8	3/8	0.36	3	3/4	1-1/2	0.03
38037512N5AX	40284	3/8	3/8	0.36	3-1/2	3/4	1-7/8	0.015
38037514N5AX	40285	3/8	3/8	0.36	3-1/2	3/4	1-7/8	0.03
38050012N4AX	40286	1/2	1/2	0.48	4	1	2	0.015
38050014N4AX	40287	1/2	1/2	0.48	4	1	2	0.03
38050012N5AX	40288	1/2	1/2	0.48	5	1	2-1/2	0.015
38050014N5AX	40289	1/2	1/2	0.48	5	1	2-1/2	0.03
38062512N4AX	40290	5/8	5/8	0.60	5	1-1/4	2-1/2	0.015
38062514N4AX	40291	5/8	5/8	0.60	5	1-1/4	2-1/2	0.03
38062512N5AX	40292	5/8	5/8	0.60	5	1-1/4	3-1/8	0.015
38062514N5AX	40293	5/8	5/8	0.60	5	1-1/4	3-1/8	0.03
38075012N4AX	40294	3/4	3/4	0.72	6	1-1/2	3	0.015
38075014N4AX	40295	3/4	3/4	0.72	6	1-1/2	3	0.03
38075012N5AX	40296	3/4	3/4	0.72	6	1-1/2	3-3/4	0.015
38075014N5AX	40297	3/4	3/4	0.72	6	1-1/2	3-3/4	0.03

ISO 9001:2015 Certified

380/380CB Series Recommended Cutting Data - Profile Milling Inch

Workpiece Material Group	ISO	Coolant			RWOC (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				
		Emulsion	Air	MQL	Vc - SFM		fz - in/tooth			
Low Carbon Steels	P	○	•	○	1475	1150	.0023	.0030	.0038	.0045
Medium Carbon Steels		○	•	○	1130	900	.0023	.0030	.0038	.0045
Alloy Steels		○	•	○	1035	840	.0023	.0030	.0038	.0045
Die / Tool Steels		○	•	○	900	725	.0023	.0030	.0038	.0045
Free Machining Stainless Steels	M	•	•	○	675	545	.0023	.0030	.0038	.0045
Austenitic Stainless Steels		•	x	○	525	430	.0019	.0025	.0031	.0038
Difficult Stainless Steels		•	x	○	410	330	.0015	.0020	.0025	.0030
PH Stainless Steels		•	•	○	525	430	.0015	.0020	.0025	.0030
Cobalt Chrome Alloys		•	x	○	410	325	.0015	.0020	.0025	.0030
Duplex (22%)		•	x	○	330	295	.0015	.0020	.0025	.0030
Super Duplex (25%)		•	x	○	245	195	.0015	.0020	.0025	.0030
High Temp Alloys	S	•	x	x	180	150	.0009	.0013	.0016	.0019
Titanium Alloys		•	○	○	375	330	.0015	.0020	.0025	.0030
Gray Cast Irons	K	•	○	○	1625	1295	.0023	.0030	.0038	.0045
Ductile Cast Irons		•	○	○	975	885	.0023	.0030	.0038	.0045
Malleable Cast Irons		•	○	○	575	490	.0023	.0030	.0038	.0045
Hardened Steels 45-50 HRC	H	○	•	○	610	495	.0019	.0025	.0031	.0038
Hardened Steels 50-55 HRC		○	•	○	510	-	.0013	.0018	.0022	.0026
Hardened Steels 55-60 HRC		○	•	○	330	-	.0008	.0010	.0013	.0015

• Preferred ○ Possible x Not Possible

Notes:

- For machining materials above 50 HRC, reduce stepover (ae) to 2-3% of DC for optimal performance

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula: (Calculated Feed x Spindle Maximum)/Calculated Speed.

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

380/380CB Series Recommended Cutting Data - Profile Milling Metric

Workpiece Material Group	ISO	Coolant			RWOC (Ae)		End Mill Diameter (mm)			
							10	12	16	20
							← 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.			
		Emulsion	Air	MQL	5%	10%				
					2.3	1.67				
					Vc - SFM		fz - mm/tooth			
Low Carbon Steels	P	○	•	○	450	350	0.060	0.072	0.096	0.120
Medium Carbon Steels		○	•	○	345	275	0.060	0.072	0.096	0.120
Alloy Steels		○	•	○	315	255	0.060	0.072	0.096	0.120
Die / Tool Steels		○	•	○	275	220	0.060	0.072	0.096	0.120
Free Machining Stainless Steels	M	•	•	○	205	165	0.060	0.072	0.096	0.120
Austenitic Stainless Steels		•	x	○	160	130	0.050	0.060	0.080	0.100
Difficult Stainless Steels		•	x	○	125	100	0.040	0.048	0.064	0.080
PH Stainless Steels		•	•	○	160	130	0.040	0.048	0.064	0.080
Cobalt Chrome Alloys		•	x	○	125	100	0.040	0.048	0.064	0.080
Duplex (22%)		•	x	○	100	90	0.040	0.048	0.064	0.080
Super Duplex (25%)		•	x	○	75	60	0.040	0.048	0.064	0.080
High Temp Alloys	S	•	x	x	55	45	0.025	0.030	0.040	0.050
Titanium Alloys		•	○	○	115	100	0.040	0.048	0.064	0.080
Gray Cast Irons	K	•	○	○	495	395	0.060	0.072	0.096	0.120
Ductile Cast Irons		•	○	○	295	270	0.060	0.072	0.096	0.120
Malleable Cast Irons		•	○	○	175	150	0.060	0.072	0.096	0.120
Hardened Steels 45-50 HRC	H	○	•	○	185	150	0.050	0.060	0.080	0.100
Hardened Steels 50-55 HRC		○	•	○	155	-	0.035	0.042	0.056	0.070
Hardened Steels 55-60 HRC		○	•	○	100	-	0.020	0.024	0.032	0.040

• Preferred ○ Possible x Not Possible

Notes:

- For machining materials above 50 HRC, reduce stepover (ae) to 2-3% of DC for optimal performance

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula: (Calculated Feed x Spindle Maximum)/Calculated Speed.

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

380N Series Recommended Cutting Data - Profile Milling with 4xD Neck Length- Inch

Workpiece Material Group	ISO	Coolant			RWOC (Ae)		End Mill Diameter (Inch)			
							3/8	1/2	5/8	3/4
					5%	7%	← 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	1.96				
		Emulsion	Air	MQL	Vc - SFM		fz - in/tooth			
Low Carbon Steels	P	○	•	○	1330	1035	.0023	.0030	.0038	.0045
Medium Carbon Steels		○	•	○	1015	810	.0023	.0030	.0038	.0045
Alloy Steels		○	•	○	930	755	.0023	.0030	.0038	.0045
Die / Tool Steels		○	•	○	810	655	.0023	.0030	.0038	.0045
Free Machining Stainless Steels	M	•	•	○	610	490	.0023	.0030	.0038	.0045
Austenitic Stainless Steels		•	x	○	475	385	.0019	.0025	.0031	.0038
Difficult Stainless Steels		•	x	○	370	295	.0015	.0020	.0025	.0030
PH Stainless Steels		•	•	○	475	385	.0015	.0020	.0025	.0030
Cobalt Chrome Alloys		•	x	○	370	295	.0015	.0020	.0025	.0030
Duplex (22%)		•	x	○	295	265	.0015	.0020	.0025	.0030
Super Duplex (25%)		•	x	○	220	175	.0015	.0020	.0025	.0030
High Temp Alloys	S	•	x	x	160	-	.0009	.0013	.0016	.0019
Titanium Alloys		•	○	○	340	295	.0015	.0020	.0025	.0030
Gray Cast Irons	K	•	○	○	1465	1165	.0023	.0030	.0038	.0045
Ductile Cast Irons		•	○	○	880	795	.0023	.0030	.0038	.0045
Malleable Cast Irons		•	○	○	520	440	.0023	.0030	.0038	.0045
Hardened Steels 45-50 HRC	H	○	•	○	550	-	.0019	.0025	.0031	.0038
Hardened Steels 50-55 HRC		○	•	○	460	-	.0013	.0018	.0022	.0026
Hardened Steels 55-60 HRC		○	•	○	295	-	.0008	.0010	.0013	.0015

• Preferred ○ Possible x Not Possible

Notes:

- For machining materials above 50 HRC, reduce stepover (ae) to 2-3% of DC for optimal performance

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula: (Calculated Feed x Spindle Maximum)/Calculated Speed.

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

380N Series Recommended Cutting Data - Profile Milling with 5xD Neck Length- Inch

Workpiece Material Group	ISO	Coolant			RWOC (Ae)		End Mill Diameter (Inch)			
							3/8	1/2	5/8	3/4
					3%	5%	← 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.			
					2.93	2.3				
		Emulsion	Air	MQL	Vc - SFM		fz - in/tooth			
Low Carbon Steels	P	○	•	○	1035	805	.0018	.0024	.0030	.0036
Medium Carbon Steels		○	•	○	790	630	.0018	.0024	.0030	.0036
Alloy Steels		○	•	○	725	590	.0018	.0024	.0030	.0036
Die / Tool Steels		○	•	○	630	505	.0018	.0024	.0030	.0036
Free Machining Stainless Steels	M	•	•	○	470	380	.0018	.0024	.0030	.0036
Austenitic Stainless Steels		•	x	○	370	300	.0015	.0020	.0025	.0030
Difficult Stainless Steels		•	x	○	285	230	.0012	.0016	.0020	.0024
PH Stainless Steels		•	•	○	370	300	.0012	.0016	.0020	.0024
Cobalt Chrome Alloys		•	x	○	285	225	.0012	.0016	.0020	.0024
Duplex (22%)		•	x	○	230	205	.0012	.0016	.0020	.0024
Super Duplex (25%)		•	x	○	170	135	.0012	.0016	.0020	.0024
High Temp Alloys	S	•	x	x	125	-	.0008	.0010	.0013	.0015
Titanium Alloys		•	○	○	265	230	.0012	.0016	.0020	.0024
Gray Cast Irons	K	•	○	○	1140	905	.0018	.0024	.0030	.0036
Ductile Cast Irons		•	○	○	685	620	.0018	.0024	.0030	.0036
Malleable Cast Irons		•	○	○	405	345	.0018	.0024	.0030	.0036
Hardened Steels 45-50 HRC	H	○	•	○	425	-	.0015	.0020	.0025	.0030
Hardened Steels 50-55 HRC		○	•	○	355	-	.0011	.0014	.0018	.0021
Hardened Steels 55-60 HRC		○	•	○	230	-	.0006	.0008	.0010	.0012

• Preferred ○ Possible x Not Possible

Notes:

- For machining materials above 50 HRC, reduce stepover (ae) to 2-3% of DC for optimal performance

Spindle Maximum - Should the calculated spindle speed be more than your actual spindle maximum, use this formula: (Calculated Feed x Spindle Maximum)/Calculated Speed.

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

380 Series Recommended Cutting Data - Chip Thickness Compensation Factors - Inch

RWOC (ae)	Chip Thicknesss Compensation Factor
2%	3.57
3%	2.93
5%	2.30
7%	1.96
8%	1.84
10%	1.67

During profile milling with a radial width of less than 50% of the cutter diameter, the actual chip thickness at the cutting edge is less than the programmed chipload. The accompanying table shows the increase in chipload by given radial width percentage to adjust for chip thinning. Multiply your recommended chip thickness by the appropriate feed factor to establish the correct feed rate.

Safety Note
Always wear the appropriate personal protective equipment such as safety glasses and protective clothing when using solid carbide or HSS cutting tools. Machines should be fully guarded.

⚠ WARNING: This product can expose you to chemicals including cobalt, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

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