TuffCut® XV

XV5CB Series Recommended Cutting Data - Profile Milling with 3xD Cutting Length - **Inch**

Workpiece Material Group	ISO	Hardness	• Preferred o Possible x Not Possible			RWOC (ae)			End Mill Diameter (inch)			
									3/8	1/2	5/8	3/4
			Emulsion	Compressed Air	MQL	5%	10%	15%	← 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	1.4				
						Vc - SFM			fz - in/tooth			
Low Carbon Steels 12L14, 1018, A36	P	≤ 28 HRC	o	•	o	1150	985	820	.0023	.0030	.0038	.0045
Medium Carbon Steels 1045, 1050, 1070	P	≤ 38 HRC	o	•	o	850	785	720	.0023	.0030	.0038	.0045
Alloy Steels 4130, 4140, 4340	P	≤ 38 HRC	o	•	o	785	720	655	.0023	.0030	.0038	.0045
Die / Tool Steels A2, D2, H13, P20	P	≤ 45 HRC	o	•	o	720	655	590	.0023	.0030	.0038	.0045
Stainless Steels - Free Machining 303, 400 Series	M	≤ 28 HRC	•	•	o	675	590	500	.0023	.0030	.0038	.0045
Stainless Steels - Austenitic 304, 316	M	≤ 28 HRC	•	x	o	525	460	330	.0018	.0024	.0030	.0036
Stainless Steels - Difficult to Machine 13-8PH, Nitronics	M	≤ 45 HRC	•	x	o	360	295	230	.0015	.0020	.0025	.0030
Stainless Steels - Precipitation Hardened 15-5 PH, 17-4 PH, 17-7 PH	M	≤ 45 HRC	•	•	o	525	460	330	.0018	.0024	.0030	.0036
Titanium Alloys 6Al-4V	S	≤ 42 HRC	•	x	x	400	330	265	.0015	.0020	.0025	.0030

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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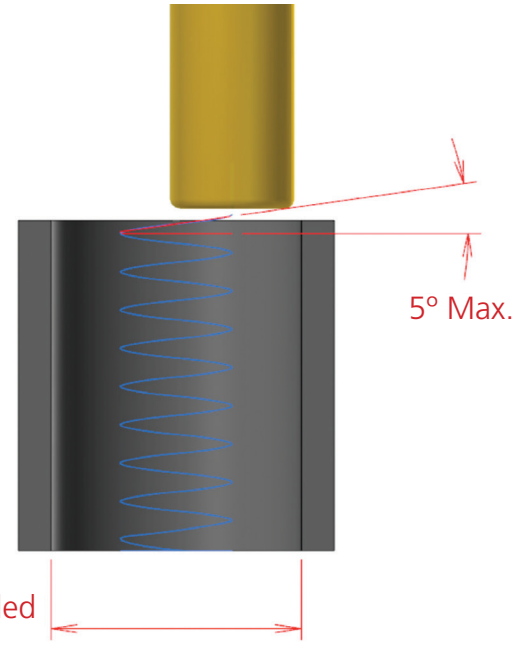
Helical interpolation recommendations

- Under optimal conditions, with proper coolant flow/air blast techniques, up to 5° helical ramp angles are achievable with the XV5CB in most materials.
- A reduction of 30-50% in both cutting speed (Vc) & feed per tooth (fz) are recommended.
- Recommended hole diameter = 1.9 x D.
- Minimum hole diameter = 1.2 x D.



RWOC (ae)	Chip Thicknesss Compensation Factor
5%	2.30
7%	1.96
8%	1.84
10%	1.67
13%	1.49
15%	1.40

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.

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Workpiece Material Group	ISO	Hardness	• Preferred o Possible x Not Possible			RWOC (ae)		End Mill Diameter (inch)			
								3/8	1/2	5/8	3/4
			Emulsion	Compressed Air	MQL	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			
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Medium Carbon Steels 1045, 1050, 1070		≤ 38 HRC	o	•	o	785	720	.0015	.0020	.0025	.0030
Alloy Steels 4130, 4140, 4340			o	•	o	720	655	.0015	.0020	.0025	.0030
Die / Tool Steels A2, D2, H13, P20		≤ 45 HRC	o	•	o	655	590	.0015	.0020	.0025	.0030
Stainless Steels - Free Machining 303, 400 Series	M	≤ 28 HRC	•	•	o	590	500	.0015	.0020	.0025	.0030
Stainless Steels - Austenitic 304, 316			•	x	o	525	460	.0011	.0014	.0018	.0021
Stainless Steels - Difficult to Machine 13-8PH, Nitronics		≤ 45 HRC	•	x	o	295	230	.0009	.0012	.0015	.0018
Stainless Steels - Precipitation Hardened 15-5 PH, 17-4 PH, 17-7 PH			•	•	o	525	460	.0011	.0014	.0018	.0021
Titanium Alloys 6Al-4V	S	≤ 42 HRC	•	x	x	330	265	.0009	.0012	.0015	.0018

Notes

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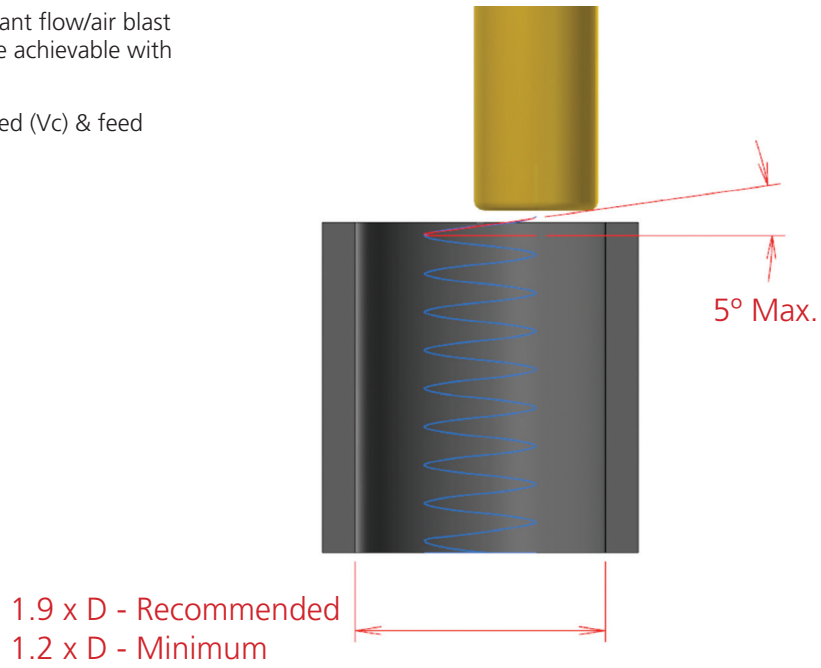

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