

M706 Series Application Guide (inch) • Speed & Feed

ISO Classification	Work Material	Type of Cut	Axial DOC	Radial DOC	Number of Flutes	Speed (M/Min)	Feed (MM per Tooth)						
							3,0	6,0	10,0	12,0	16,0	20,0	
M	Precipitation Hardening Stainless Steels 17-4 PH, 15-5 PH, 13-8 PH	Peripheral - Rough	1.25 x D	.2 x D	6	69	0.0147	0.0293	0.0487	0.0587	0.0780	0.0980	
		Peripheral - HEM	1.5 x D	.05 x D	6	99	0.0291	0.0583	0.0967	0.1165	0.1550	0.1946	
		Finish	1.5 x D	.01 x D	6	91	0.0172	0.0345	0.0572	0.0689	0.0917	0.1151	
	Martensitic Stainless Steel 416, 410, 440C	Peripheral - Rough	1.25 x D	.2 x D	6	84	0.0159	0.0319	0.0529	0.0637	0.0848	0.1064	
		Peripheral - HEM	1.5 x D	.12 x D	6	130	0.0205	0.0409	0.0679	0.0818	0.1088	0.1366	
		Finish	1.5 x D	.01 x D	6	130	0.0198	0.0396	0.0658	0.0793	0.1054	0.1324	
P	Medium Carbon Steels 4140, 4340	Peripheral - Rough	1.25 x D	.25 x D	6	84	0.0152	0.0305	0.0506	0.0610	0.0811	0.1018	
		Peripheral - HEM	1.5 x D	.14 x D	6	122	0.0216	0.0432	0.0717	0.0864	0.1149	0.1442	
		Finish	1.5 x D	.01 x D	6	122	0.0203	0.0406	0.0675	0.0813	0.1081	0.1357	
H	Tool & Die Steels < 48 Rc A2, D2, H13, P20	Peripheral - Rough	1.25 x D	.18 x D	6	84	0.0140	0.0279	0.0464	0.0559	0.0743	0.0933	
		Peripheral - HEM	1.5 x D	.1 x D	6	130	0.0191	0.0381	0.0632	0.0762	0.1013	0.1273	
		Finish	1.5 x D	.01 x D	6	130	0.0165	0.0330	0.0548	0.0660	0.0878	0.1103	
	Hardened Steels 49 Rc to 57 Rc	Slotting	.25 x D	1 x D	6	30	0.0089	0.0178	0.0295	0.0356	0.0473	0.0594	
		Peripheral - Rough	1.0 x D	.16 x D	6	55	0.0114	0.0229	0.0379	0.0457	0.0608	0.0764	
		Peripheral - HEM	1.25 x D	.08 x D	6	107	0.0152	0.0305	0.0506	0.0610	0.0811	0.1018	
	Hardened Steels 58 Rc to 62 Rc	Slotting	.25 x D	1 x D	6	23	0.0089	0.0178	0.0295	0.0356	0.0473	0.0594	
		Peripheral - Rough	1.0 x D	.1 x D	6	46	0.0114	0.0229	0.0379	0.0457	0.0608	0.0764	
		Peripheral - HEM	1.25 x D	.06 x D	6	114	0.0127	0.0254	0.0422	0.0508	0.0676	0.0848	
	S	High Temperature Alloys Inconel, Haynes, Stellite, Hastalloy, Waspalloy	Slotting	.25 x D	1 x D	6	18	.0107	.0213	.0354	.0427	.0568	.0713
			Peripheral - Rough	1.25 x D	.1 x D	6	24	.0127	.0254	.0422	.0508	.0676	.0848
			Finish	1.5 x D	.01 x D	6	38	.0129	.0258	.0429	.0517	.0688	.0863
K	Cast Iron - Gray	Finish	1.5 x D	.01 x D	6	130	0.0233	0.0465	0.0772	0.0930	0.1238	0.1554	
	Cast Iron - Malleable	Finish	1.5 x D	.01 x D	6	122	0.0215	0.0431	0.0715	0.0862	0.1146	0.1439	

D = Tool Diameter *HEM= High-efficiency machining (chip thinning calculations have already been applied to HEM parameters shown)

Common Machining Formulas

$$RPM = \frac{M/MIN \times 318.057}{D}$$

$$M/MIN = RPM \times D \times .00314$$

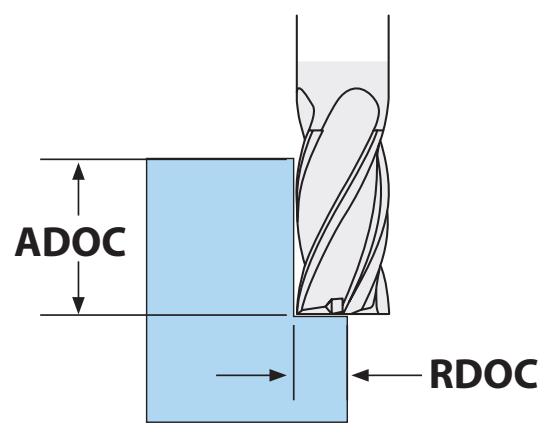
$$MM/MIN = RPM \times MMPT \times Z$$

$$MRR = RDOC \times ADOC \times MM/MIN$$

D Tool Cutting Diameter
R Tool Radius
Z Number of Flutes
RPM Revolutions per Minute
M/MIN Meters per Minute
MM/Min Millimeters per Minute
MRR Metal Removal Rate
RDOC Radial Depth of Cut
ADOC Axial Depth of Cut

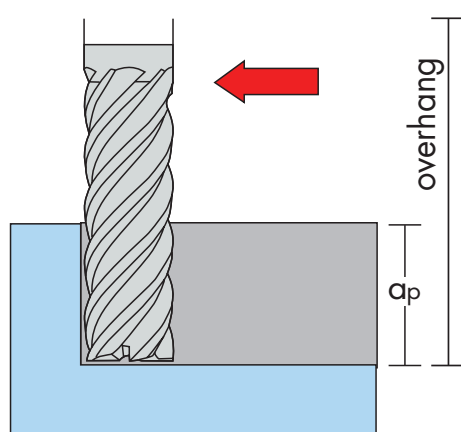
Radial Chip Thinning Adjustment

$$MMPT_{adj} = \frac{MMPT \times (D/2)}{\sqrt{(D \times RDOC) - RDOC^2}}$$



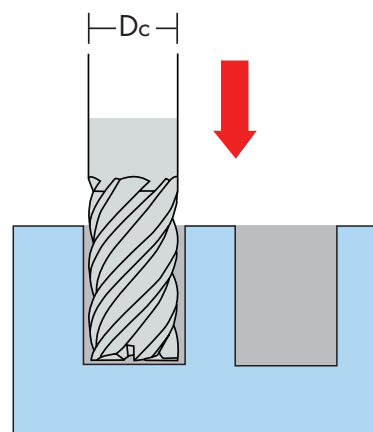
Apply chip thinning adjustment when $RDOC < D$

Adjustments – Apply these adjustments when programming the following applications.



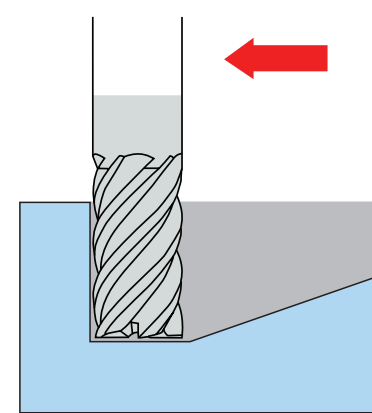
1. Long reach mills with large overhang

- Reduce speed rate and chipload by 10%



2. Plunge entry into work piece

- Reduce chipload by 80% of recommended slotting rate
- Peck mill if axial DOC (a_p) exceeds 50% of D_c



3. Ramp entry into work piece

- Ramp at 1.5°–2.5° angle
- Reduce chipload by 20% of recommended slotting rate