M706 Series Application Guide (inch) • Speed & Feed

ISO Classification	Work Material	Type of Cut	Axial DOC	Radial DOC	Number of Flutes	Speed (SFM)	Feed (Inches per Tooth) 1/8	1/4	3/8	1/2	5/8	3/4	1
M	Precipition Hardening Stainless Steels	Peripheral - Rough	1.25 x D	.2 x D	6	225	.0006	.0012	.0017	.0023	.0029	.0035	.0046
	17-4 PH, 15-5 PH, 13-8 PH	Peripheral - HEM	1.5 x D	.05 x D	6	325	.0011	.0023	.0034	.0046	.0057	.0069	.0092
		Finish	1.5 x D	.01 x D	6	300	.0007	.0014	.0020	.0027	.0034	.0041	.0054
	Martensitic Stainless Steel	Peripheral - Rough	1.25 x D	.2 x D	6	275	.0005	.0010	.0015	.0020	.0025	.0030	.0040
	416, 410, 440C	Peripheral - HEM	1.5 x D	.12 x D	6	425	.0006	.0012	.0018	.0024	.0030	.0036	.0048
		Finish	1.5 x D	.01 x D	6	425	.0006	.0011	.0017	.0022	.0028	.0033	.0044
P	Medium Carbon Steels	Peripheral - Rough	1.25 x D	.25 x D	6	275	.0006	.0012	.0018	.0024	.0030	.0036	.0048
	4140, 4340	Peripheral - HEM	1.5 x D	.14 x D	6	400	.0009	.0017	.0026	.0034	.0043	.0051	.0068
		Finish	1.5 x D	.01 x D	6	400	.0008	.0016	.0024	.0032	.0040	.0048	.0064
H	Tool & Die Steels < 48 Rc	Peripheral - Rough	1.25 x D	.18 x D	6	275	.0006	.0011	.0017	.0022	.0028	.0033	.0044
	A2, D2, H13, P20	Peripheral - HEM	1.5 x D	.1 x D	6	425	.0008	.0015	.0023	.0030	.0038	.0045	.0060
		Finish	1.5 x D	.01 x D	6	425	.0007	.0013	.0020	.0026	.0033	.0039	.0052
	Hardened Steels	Slotting	.25 x D	1 x D	6	100	.0004	.0007	.0011	.0014	.0018	.0021	.0028
	49 Rc to 57 Rc	Peripheral - Rough	1 x D	.16 x D	6	180	.0005	.0009	.0014	.0018	.0023	.0027	.0036
		Peripheral - HEM	1.25 x D	.08 x D	6	350	.0006	.0012	.0018	.0024	.0030	.0036	.0048
		Finish	1.5 x D	.01 x D	6	350	.0005	.0010	.0015	.0020	.0025	.0030	.0040
	Hardened Steels	Slotting	.25 x D	1 x D	6	75	.0004	.0007	.0011	.0014	.0018	.0021	.0028
	58 Rc to 62 Rc	Peripheral - Rough	1.0 x D	.1 x D	6	150	.0005	.0009	.0014	.0018	.0023	.0027	.0036
		Peripheral - HEM	1.25 x D	.06 x D	6	375	.0005	.0010	.0015	.0020	.0025	.0030	.0040
		Finish	1.5 x D	.01 x D	6	350	.0005	.0009	.0014	.0018	.0023	.0027	.0036
S	High Temperature Alloys	Slotting	.25 x D	1 x D	6	60	.0004	.0008	.0013	.0017	.0021	.0025	.0034
	Inconel, Haynes, Stellite,	Peripheral - Rough	1.25 x D	.1 x D	6	80	.0005	.0010	.0015	.0020	.0025	.0030	.0040
	Hastalloy, Waspalloy	Finish	1.5 x D	.01 x D	6	125	.0005	.0010	.0015	.0020	.0025	.0031	.0041
K	Cast Iron - Gray	Finish	1.5 x D	.01 x D	6	425	.0009	.0018	.0027	.0037	.0046	.0055	.0073
	Cast Iron - Malleable	Finish	1.5 x D	.01 x D	6	400	.0008	.0017	.0025	.0034	.0042	.0051	.0068

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

Common Machining Formulas

$$RPM = \frac{SFM \times 3.82}{D}$$

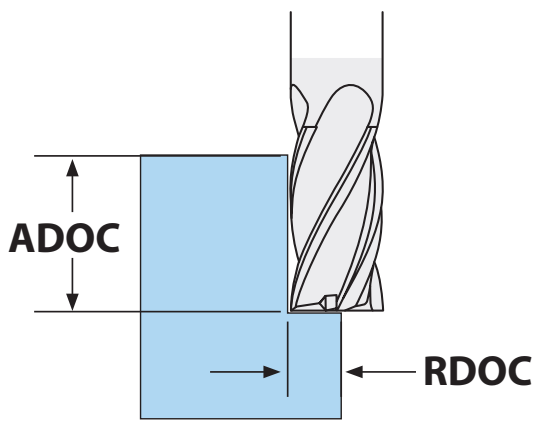
$$SFM = RPM \times D \times .262$$

$$IPM = RPM \times IPT \times Z$$

$$MRR = RDOC \times ADOC \times IPM$$

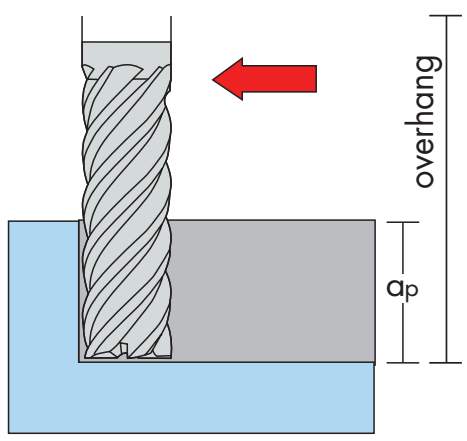
Radial Chip Thinning Adjustment $$IPT_{adj} = \frac{IPT \times (D/2)}{\sqrt{(D \times RDOC) - RDOC^2}}$$

D	Tool Cutting Diameter
R	Tool Radius
Z	Number of Flutes
RPM	Revolutions per Minute
SFM	Surface Feet per Minute
IPM	Inches per Minute
MRR	Metal Removal Rate
RDOC	Radial Depth of Cut
ADOC	Axial Depth of Cut



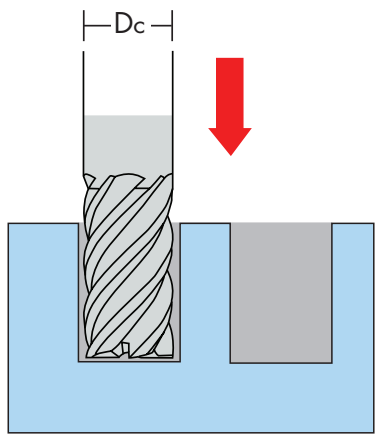
Apply chip thinning adjustment when RDOC < D

Adjustments – Apply these adjustments when programming the following applications.



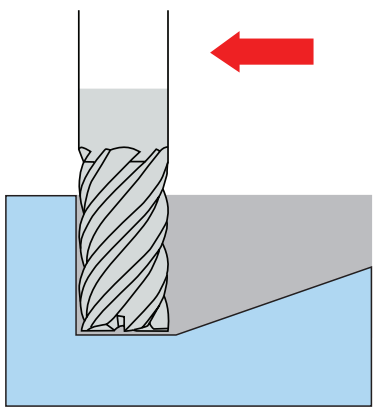
1. Long reach mills with large overhang

- 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 (ap) exceeds 50% of Dc



3. Ramp entry into work piece

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