

# M7 Application Guide (inch) • Speed & Feed

ISO Classification	Number of Flutes	EM Dia.	Type of Cut	Axial Max	Radial Max	Speed (SFM)	RMP	IPT	IPM
<b>H</b> 51 HRC-63 HRC	5	1/8	Rough	0.1250	0.0075	350	10,696	0.00035	18.7
			Rough < 10,000	0.1250	0.0075	325	9,932	0.00035	17.4
			Finish	0.2500	0.0010	300	9,168	0.00030	13.7
	5	3/16	Rough	0.1875	0.0130	250	5,093	0.00070	17.8
			Finish	0.3750	0.0015	300	6,112	0.00040	12.2
	6	1/4	Rough	0.2500	0.0150	400	6,112	0.00100	36.6
			Finish	0.5000	0.0020	300	4,584	0.00050	13.8
	6	5/16	Rough	0.3125	0.0220	400	4,890	0.00125	36.6
			Finish	0.6250	0.0020	300	3,667	0.00060	13.2
	6	3/8	Rough	0.3750	0.0300	400	4,074	0.00150	36.6
			Finish	0.7500	0.0030	300	3,056	0.00070	12.8
	6	1/2	Rough	0.5000	0.0400	400	3,056	0.00200	36.6
			Finish	1.0000	0.0030	300	2,292	0.00100	13.7
	6	5/8	Rough	0.6250	0.0500	400	2,445	0.00250	36.6
			Finish	1.2500	0.0050	300	1,833	0.00130	14.3
	6	3/4	Rough	0.7500	0.0600	400	2,037	0.00300	36.6
			Finish	1.5000	0.0050	300	1,528	0.00150	13.7
	6	1	Rough	1.0000	0.0800	400	1,528	0.00400	36.6
Finish			2.0000	0.0080	300	1,146	0.00200	13.7	
<b>H</b> 43 HRC-50 HRC	5	1/8	Rough	0.1250	0.0100	500	15,280	0.0006	45.8
			Rough < 10,000	0.1250	0.0100	325	9,932	0.0006	29.8
			Finish	0.2500	0.0010	400	12,224	0.0003	18.3
			Finish < 10,000	0.2500	0.0010	325	9,932	0.0003	14.9
	5	3/16	Rough	0.1875	0.0150	500	10,186	0.0009	45.8
			Rough < 10,000	0.1875	0.0150	480	9,780	0.0009	44.0
			Finish	0.3750	0.0015	400	8,150	0.0005	20.4
	6	1/4	Rough	0.2500	0.0200	500	7,640	0.0012	55.0
			Finish	0.5000	0.0030	400	6,112	0.0007	25.7
	6	5/16	Rough	0.3125	0.0250	500	6,112	0.0014	51.3
			Finish	0.6250	0.0030	400	4,889	0.0007	20.5
	6	3/8	Rough	0.7500	0.0300	500	5,093	0.0017	52.0
			Finish	0.7500	0.0050	400	4,074	0.0010	24.4
	6	1/2	Rough	0.5000	0.0400	500	3,820	0.0023	52.7
			Finish	1.0000	0.0070	400	3,056	0.0014	25.6
	6	5/8	Rough	0.6250	0.0500	500	3,056	0.0029	53.2
			Finish	1.2500	0.0080	400	2,445	0.0018	26.4
	6	3/4	Rough	0.7500	0.0600	500	2,547	0.0034	52.0
Finish			1.5000	0.0090	400	2,037	0.0020	24.4	
6	1	Rough	1.0000	0.0800	500	1,910	0.0046	52.7	
		Finish	2.0000	0.0100	400	1,528	0.0023	21.0	
<b>P</b> <b>M</b> 36 HRC-42 HRC	5	1/8	Rough	0.1250	0.0100	600	18,336	0.0010	91.7
			Rough < 10,000	0.1250	0.0100	325	9,932	0.0010	49.6
			Finish	0.2500	0.0015	450	13,752	0.0005	34.4
			Finish < 10,000	0.2500	0.0015	325	9,932	0.0005	24.8
	5	3/16	Rough	0.1875	0.0150	600	12,224	0.0013	79.5
			Rough < 10,000	0.1875	0.0150	475	9,677	0.0013	63.0
			Finish	0.3750	0.0020	450	9,168	0.0008	36.7
	6	1/4	Rough	0.2500	0.0250	600	9,168	0.0020	110.0
			Finish	0.5000	0.0030	500	7,640	0.0010	45.8
	6	5/16	Rough	0.3125	0.0310	600	7,334	0.0025	110.0
			Finish	0.6250	0.0030	500	6,112	0.0013	47.6
	6	3/8	Rough	0.3750	0.0370	600	6,112	0.0030	110.0
			Finish	0.7500	0.0030	500	5,093	0.0015	45.8
	6	1/2	Rough	0.5000	0.0500	600	4,584	0.0040	110.0
			Finish	1.0000	0.0050	500	3,820	0.0020	45.8
	6	5/8	Rough	0.6250	0.0625	600	3,667	0.0050	110.0
			Finish	1.2500	0.0050	500	3,056	0.0025	45.8
	6	3/4	Rough	0.7500	0.0750	600	3,056	0.0060	110.0
Finish			1.5000	0.0050	500	2,546	0.0030	45.8	
6	1	Rough	1.0000	0.1000	600	2,292	0.0080	110.0	
		Finish	2.0000	0.0070	500	1,910	0.0040	45.8	

D = Tool Diameter

## Common Machining Formulas

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

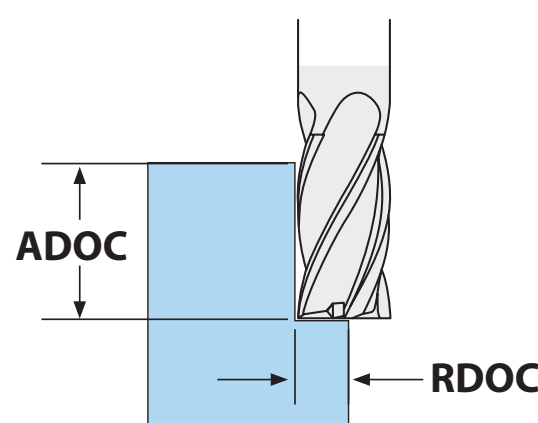
$$SFM = RPM \times D \times .262$$

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

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

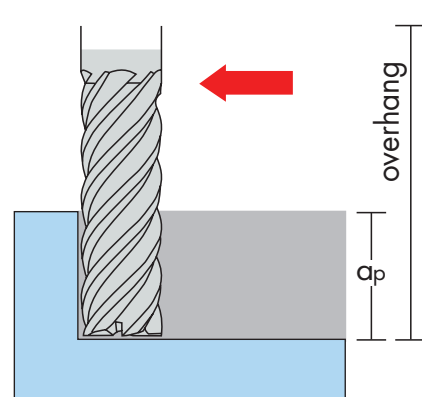
D Tool Cutting Diameter  
 R Tool Radius  
 Z Number of Flutes  
 RPM Revolutions per Minute  
 SFM Surface Feet per Minute  
 IPM Inches per Minute  
 MRR Metal Removal Rate  
 RDOC Radial Depth of Cut  
 ADOC Axial Depth of Cut

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



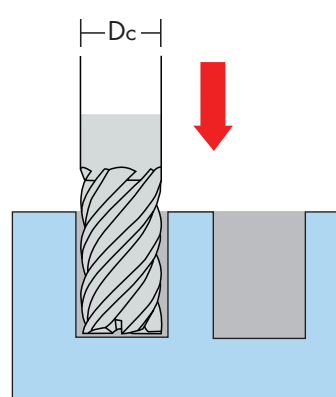
Apply chip thinning adjustment when RDOC < D

**Adjustments** - Apply these adjustments when programming the following applications.



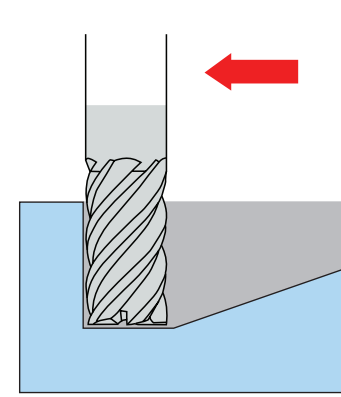
### 1. Long reach mills with large overhang

- 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 (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