APT5/APC5 Application Guide – Speed & Feed (inch)

ISO Code	Work Material	Tool LBS/d1	Type of Cut	Axial DOC	Radial DOC	No. of Flutes	Speed (SFM)	Feed (Inch per Tooth) 1/4	3/8	1/2	5/8	3/4	1
N	Aluminum Alloys 6061, 7075, 2024	≤ 2	Slotting	1 x D	1 x D	5	600	.0015	.0023	.0030	.0038	.0045	.0060
		≤ 2	Peripheral - HEM	≤ 2 x D	.25 x D	5	850	.0050	.0075	.0100	.0125	.0150	.0200
		2 - 2.5	Peripheral - HEM	> 2 - 2.5 x D	.25 x D	5	800	.0050	.0075	.0100	.0125	.0150	.0200
		2.5 - 3	Peripheral - HEM	> 2.5 - 3 x D	.25 x D	5	800	.0050	.0075	.0100	.0125	.0150	.0200
		3 - 3.5	Peripheral - HEM	> 3 - 3.5 x D	.25 x D	5	800	.0048	.0071	.0095	.0119	.0143	.0190
		3.5 - 4	Peripheral - HEM	> 3.5 - 4 x D	.20 x D	5	780	.0048	.0071	.0095	.0119	.0143	.0190
		≤ 2	Peripheral - Rough	≤ 2 x D	.45 x D	5	1000	.0024	.0036	.0048	.0060	.0072	.0096
		>2 - 3	Peripheral - Rough	> 2 - 3 x D	.375 x D	5	900	.0023	.0035	.0046	.0058	.0069	.0092
		>3	Peripheral - Rough	> 3 - 4 x D	.35 x D	5	800	.0023	.0034	.0045	.0056	.0068	.0090
		≤ 4 x D	Finish	≤ 4 x D	.01 x D	5	650	.0015	.0023	.0030	.0038	.0045	.0060

D = Tool Diameter HEM = High-efficiency machining

APT5/APC5 Application Guide – Speed & Feed (metric)

ISO Code	Work Material	Tool LBS/d1	Type of Cut	Axial DOC	Radial DOC	Number of Flutes	Speed (M/min)	Feed (MM per Tooth) 6.0	8.0	10.0	12.0	16.0	20.0
N	Aluminum Alloys 6061, 7075, 2024	≤ 2	Slotting	1 x D	1 x D	5	183	.0360	.0480	.0598	.0720	.0958	.1195
		≤ 2	Peripheral - HEM	≤ 2 x D	.25 x D	5	259	.1200	.1600	.1992	.2400	.3192	.3984
		2 - 2.5	Peripheral - HEM	> 2 - 2.5 x D	.25 x D	5	244	.1200	.1600	.1992	.2400	.3192	.3984
		2.5 - 3	Peripheral - HEM	> 2.5 - 3 x D	.25 x D	5	244	.1200	.1600	.1992	.2400	.3192	.3984
		3 - 3.5	Peripheral - HEM	> 3 - 3.5 x D	.25 x D	5	244	.1140	.1520	.1892	.2280	.3032	.3784
		3.5 - 4	Peripheral - HEM	> 3.5 - 4 x D	.20 x D	5	238	.1140	.1520	.1892	.2280	.3032	.3784
		≤ 2	Peripheral - Rough	≤ 2 x D	.45 x D	5	305	.0576	.0768	.0956	.1152	.1532	.1912
		>2 - 3	Peripheral - Rough	> 2 - 3 x D	.375 x D	5	274	.0552	.0736	.0916	.1104	.1468	.1832
		> 3	Peripheral - Rough	> 3 - 4 x D	.35 x D	5	244	.0540	.0720	.0896	.1080	.1436	.1793
		≤ 4 x D	Finish	≤ 4 x D	.01 x D	5	198	.0360	.0480	.0598	.0720	.0958	.1195

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

≈ Approximately Equals
< Less Than
≤ Less Than or Equal To
> Greater Than
≥ Greater Than or Equal To
= Equals
× Multiply

Common Machining Formulas

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

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

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

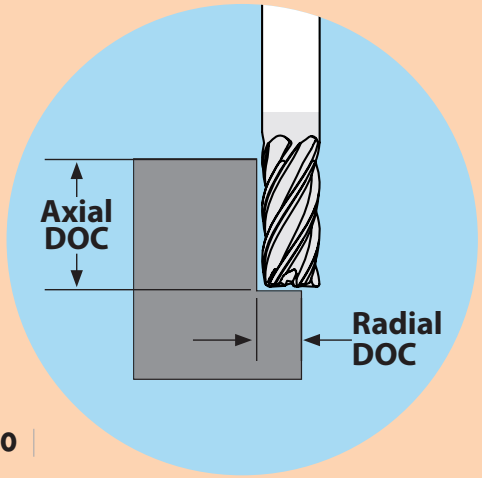
$$MRR = RDOC \times ADOC \times IPM$$

$$RPM = \frac{M/min \times 318.3}{D}$$

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

$$MMPM = RPM \times MMPT \times Z$$

$$MRR = RDOC \times ADOC \times MMPM$$



D Tool Diameter
Z Number of Flutes
RPM Revolutions per Minute
SFM Surface Feet per Minute
M/min Surface Meters per Minute
IPM Inches per Minute
MMPM Millimeters per Minute
IPT Inch per Tooth
MMPT Millimeters per Tooth
MRR Metal Removal Rate
RDOC Radial Depth of Cut
ADOC Axial Depth of Cut

Technical Resources

Information on tips and adjustments for the following milling operations can be found in our Technical Resources section beginning on page 129.

- HEM slotting
- Face milling
- Helical entry ramping
- Straight line ramping
- Long tool projection adjustments
- Ball nose milling adjustments
- Other helpful tips and calculations