

M527 Application Guide – Speed & Feed (metric)

ISO Code	Work Material	Type of Cut	Axial DOC	Radial DOC	No. of Flutes	Speed (M/min)	Feed (MM per Tooth)				
							10.0	12.0	16.0	20.0	25.0
K	Cast Iron Gray	Slotting	.5 x D	1 x D	7	91	.0353	.0425	.0566	.0706	.0886
		Peripheral - Rough	1.25 x D	.3 x D	7	114	.0467	.0563	.0749	.0935	.1173
		Finish	2 x D	.015 x D	7	137	.0476	.0573	.0762	.0951	.1194
	Cast Iron	Slotting	.5 x D	1 x D	7	84	.0285	.0343	.0456	.0569	.0714
		Peripheral - Rough	1.25 x D	.3 x D	7	107	.0388	.0468	.0622	.0776	.0974
		Peripheral - HEM*	3 x D	.05 x D	7	119	.1133	.1365	.1816	.2266	.2844
	Finish	2 x D	.015 x D	7	107	.0395	.0476	.0633	.0790	.0992	
P	Low Carbon Steels ≤ 38 Rc 1018, 1020, 12L14, 5120, 8620	Slotting	.5 x D	1 x D	7	99	.0398	.0480	.0638	.0797	.1000
		Peripheral - Rough	1.25 x D	.3 x D	7	122	.0543	.0655	.0871	.1087	.1364
		Peripheral - HEM*	3 x D	.05 x D	7	137	.1743	.2100	.2793	.3486	.4375
		Finish	2 x	.015 x D	7	122	.0553	.0666	.0886	.1106	.1388
	Medium Carbon Steels ≤ 48 HRC 1045, 4140, 4340, 5140	Slotting	.5 x D	1 x D	7	91	.0364	.0439	.0584	.0729	.0914
		Peripheral - Rough	1.25 x D	.3 x D	7	114	.0497	.0599	.0796	.0994	.1247
		Peripheral - HEM*	3 x D	.05 x D	7	126	.1708	.2058	.2737	.3417	.4288
		Finish	2 x D	.015 x D	7	114	.0506	.0609	.0810	.1011	.1269
	Tool and Die Steels ≤ 48 Rc A2, D2, O1, S7, P20, H13	Slotting	.5 x D	1 x D	7	84	.0307	.0370	.0493	.0615	.0772
		Peripheral - Rough	1.25 x D	.3 x D	7	107	.0419	.0505	.0672	.0838	.1052
		Peripheral - HEM*	3 x D	.05 x D	7	119	.1464	.1764	.2346	.2929	.3675
		Finish	2 x D	.015 x D	7	107	.0427	.0514	.0684	.0853	.1071
M	Martensitic & Ferritic Stainless Steels 410, 416, 440	Slotting	.5 x D	1 x D	7	91	.0364	.0439	.0584	.0729	.0914
		Peripheral - Rough	1.25 x D	.3 x D	7	114	.0497	.0599	.0796	.0994	.1247
		Peripheral - HEM*	3 x D	.05 x D	7	126	.1708	.2058	.2737	.3417	.4288
		Finish	2 x D	.015 x D	7	114	.0506	.0609	.0810	.1011	.1269
	Austenitic Stainless Steels, FeNi Alloys 303, 304, 316, Invar, Kovar	Slotting	.5 x D	1 x D	7	84	.0341	.0411	.0547	.0683	.0857
		Peripheral - Rough	1.25 x D	.3 x D	7	107	.0466	.0561	.0746	.0931	.1169
		Peripheral - HEM*	3 x D	.05 x D	7	119	.1660	.2000	.2660	.3320	.4166
		Finish	2 x D	.015 x D	7	107	.0474	.0571	.0760	.0948	.1190
	Precipitation Hardening Stainless Steels 17-4, 15-5	Slotting	.5 x D	1 x D	7	76	.0285	.0343	.0456	.0569	.0714
		Peripheral - Rough	1.25 x D	.3 x D	7	99	.0388	.0468	.0622	.0776	.0974
		Peripheral - HEM*	3 x D	.05 x D	7	110	.1328	.1600	.2128	.2656	.3333
		Finish	1.5 x D	.015 x D	7	99	.0395	.0476	.0633	.0790	.0992
S	Titanium Alloys 6Al-4V, 6-2-4	Slotting	.5 x D	1 x D	7	76	.0262	.0315	.0420	.0524	.0657
		Peripheral - Rough	1 x D	.3 x D	7	91	.0357	.0430	.0572	.0714	.0896
		Peripheral - HEM*	3 x D	.05 x D	7	101	.1257	.1515	.2015	.2515	.3156
		Finish	1.5 x D	.015 x D	7	91	.0363	.0438	.0582	.0727	.0912
	Difficult-to-Machine Titanium Alloys 10-2-3 Precipitation Hardening Stainless Steels M 13-8	Slotting	.25 x D	1 x D	7	61	.0193	.0233	.0310	.0387	.0486
		Peripheral - Rough	1 x D	.25 x D	7	76	.0279	.0336	.0447	.0558	.0701
		Peripheral - HEM*	3 x D	.05 x D	7	84	.0975	.1175	.1563	.1950	.2448
		Finish	1.5 x D	.01 x D	7	76	.0328	.0395	.0526	.0656	.0824

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

- 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 125.

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