

M525 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)						
							6.0	8.0	10.0	12.0	16.0	20.0	25.0
K	Cast Iron Gray ASTM-A48 Class 20, 25, 30, 35 & 40	Slotting	.5 x D	1 x D	5	91	.0288	.0384	.0478	.0576	.0766	.0956	.1200
		Peripheral - Rough	1.25 x D	.3 x D	5	114	.0393	.0524	.0652	.0786	.1045	.1304	.1636
		Finish	2 x D	.015 x D	5	114	.0400	.0533	.0664	.0800	.1063	.1327	.1666
	Cast Iron Malleable	Slotting	.5 x D	1 x D	5	84	.0240	.0320	.0398	.0480	.0638	.0797	.1000
		Peripheral - Rough	1.25 x D	.3 x D	5	107	.0327	.0436	.0543	.0655	.0871	.1087	.1364
		Peripheral - HEM*	3 x D	.05 x D	5	119	.0966	.1288	.1604	.1932	.2570	.3207	.4025
	Finish	2 x D	.015 x D	5	107	.0333	.0444	.0553	.0666	.0886	.1106	.1388	
P	Low Carbon Steels ≤ 38 Rc 1018, 1020, 12L14, 5120, 8620	Slotting	.5 x D	1 x D	5	99	.0336	.0448	.0558	.0672	.0894	.1115	.1400
		Peripheral - Rough	1.25 x D	.3 x D	5	122	.0458	.0611	.0761	.0916	.1219	.1521	.1909
		Peripheral - HEM*	3 x D	.07 x D	5	137	.1344	.1792	.2231	.2688	.3575	.4463	.5601
		Finish	2 x	.015 x D	5	122	.0466	.0622	.0774	.0933	.1241	.1549	.1943
	Medium Carbon Steels ≤ 48 HRC 1045, 4140, 4340, 5140	Slotting	.5 x D	1 x D	5	91	.0307	.0410	.0510	.0614	.0817	.1020	.1280
		Peripheral - Rough	1.25 x D	.3 x D	5	114	.0419	.0559	.0695	.0838	.1114	.1391	.1746
		Peripheral - HEM*	3 x D	.05 x D	5	126	.1239	.1652	.2057	.2478	.3296	.4114	.5163
		Finish	2 x D	.015 x D	5	114	.0426	.0569	.0708	.0853	.1134	.1416	.1777
	Tool and Die Steels ≤ 48 Rc A2, D2, O1, S7, P20, H13	Slotting	.5 x D	1 x D	5	84	.0259	.0346	.0430	.0518	.0689	.0860	.1080
		Peripheral - Rough	1.25 x D	.3 x D	5	107	.0353	.0471	.0587	.0707	.0940	.1174	.1473
		Peripheral - HEM*	3 x D	.05 x D	5	119	.1040	.1386	.1726	.2079	.2765	.3452	.4332
		Finish	2 x D	.015 x D	5	107	.0360	.0480	.0597	.0720	.0957	.1195	.1499
M	Martensitic & Ferritic Stainless Steels 410, 416, 440	Slotting	.5 x D	1 x D	5	91	.0307	.0410	.0510	.0614	.0817	.1020	.1280
		Peripheral - Rough	1.25 x D	.3 x D	5	114	.0419	.0559	.0695	.0838	.1114	.1391	.1746
		Peripheral - HEM*	3 x D	.05 x D	5	126	.1239	.1652	.2057	.2478	.3296	.4114	.5163
		Finish	2 x D	.015 x D	5	114	.0426	.0569	.0708	.0853	.1134	.1416	.1777
	Austenitic Stainless Steels, FeNi Alloys 303, 304, 316, Invar, Kovar	Slotting	.5 x D	1 x D	5	84	.0288	.0384	.0478	.0576	.0766	.0956	.1200
		Peripheral - Rough	1.25 x D	.3 x D	5	107	.0393	.0524	.0652	.0786	.1045	.1304	.1636
		Peripheral - HEM*	3 x D	.05 x D	5	119	.1185	.1580	.1967	.2370	.3152	.3934	.4937
		Finish	2 x D	.015 x D	5	107	.0400	.0533	.0664	.0800	.1063	.1327	.1666
	Precipitation Hardening Stainless Steels 17-4, 15-5	Slotting	.5 x D	1 x D	5	76	.0240	.0320	.0398	.0480	.0638	.0797	.1000
		Peripheral - Rough	1.25 x D	.3 x D	5	99	.0327	.0436	.0543	.0655	.0871	.1087	.1364
		Peripheral - HEM*	3 x D	.05 x D	5	110	.0950	.1267	.1577	.1900	.2527	.3154	.3958
		Finish	1.5 x D	.015 x D	5	99	.0333	.0444	.0553	.0666	.0886	.1106	.1388
S	Titanium Alloys 6Al-4V, 6-2-4	Slotting	.5 x D	1 x D	5	76	.0221	.0294	.0366	.0442	.0587	.0733	.0920
		Peripheral - Rough	1 x D	.3 x D	5	91	.0301	.0401	.0500	.0602	.0801	.1000	.1255
		Peripheral - HEM*	3 x D	.05 x D	5	101	.0875	.1167	.1452	.1750	.2327	.2905	.3646
		Finish	1.5 x D	.015 x D	5	91	.0307	.0409	.0509	.0613	.0815	.1018	.1277
	Difficult-to-Machine Titanium Alloys 10-2-3 Precipitation Hardening Stainless Steels M 13-8	Slotting	.25 x D	1 x D	5	61	.0163	.0218	.0271	.0326	.0434	.0542	.0680
		Peripheral - Rough	1 x D	.25 x D	5	76	.0236	.0314	.0391	.0471	.0627	.0782	.0981
		Peripheral - HEM*	3 x D	.05 x D	5	84	.0712	.0950	.1183	.1425	.1895	.2365	.2968
		Finish	1.5 x D	.01 x D	5	76	.0277	.0369	.0459	.0554	.0736	.0919	.1153

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