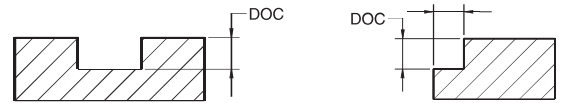


Recommended Starting Speed and Feeds



End Mill Series – HPFSS..S3..S5., F3AS..BDK35

- Starting parameters are based on using regular-length tools; for stub-length tools, increase feed by 20%.
- 3-flute end mill is recommended for slotting applications, 5-flute for profiling applications.
- These guidelines may require possible variations to achieve optimum results.



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Low & Plain Carbon Steels, Alloy & Tool Steels (<286 HB) <30 HRC

AISI: 1008, 1010, 1018, 1141, 12L13, 12L14, 1045, 1335, 4140, 4340, 5120, 8620, P20

application	maximum cutting parameters		cutting speed	feed per tooth								
	DOC	WOC		SFM	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
				4 mm	5 mm	6 mm	8 mm	10 mm	12 mm	16 mm	20 mm	25 mm
profiling	1 x dia.	.1 x dia.	325-425	.0014	.0016	.0019	.0025	.0028	.0035	.0040	.0050	.0055
slotting	.5 x dia.	–	275-325	.0012	.0014	.0016	.0020	.0024	.0026	.0028	.0030	.0032

Plain Carbon, Alloy & Tool Steels (294-371 HB) 31-40 HRC

Tool steels: H10, H11, Alloy steels AISI: 1335, 4140, 4150, 4320, 4340, 4422, 5120, 8620

application	maximum cutting parameters		cutting speed	feed per tooth								
	DOC	WOC		SFM	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
				4 mm	5 mm	6 mm	8 mm	10 mm	12 mm	16 mm	20 mm	25 mm
profiling	1 x dia.	.1 x dia.	250-325	.0010	.0013	.0015	.0020	.0022	.0030	.0036	.0047	.0050
slotting	.5 x dia.	–	225-275	.0007	.0011	.0012	.0016	.0020	.0022	.0024	.0026	.0028

Austenitic Stainless Steels (200 & 300 Series) Including Duplex (<275 HB) <28 HRC

AISI: 201, 209, 219, 302, 303, 304, 316, 321, 347, 329, ASTM: XM-1, XM-7, XM-21, CF-8M

application	maximum cutting parameters		cutting speed	feed per tooth								
	DOC	WOC		SFM	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
				4 mm	5 mm	6 mm	8 mm	10 mm	12 mm	16 mm	20 mm	25 mm
profiling	1 x dia.	.1 x dia.	350-450	.0010	.0013	.0015	.0020	.0022	.0030	.0036	.0047	.0050
slotting	.5 x dia.	–	270-325	.0010	.0011	.0012	.0016	.0020	.0022	.0024	.0026	.0028

Ferritic, Martensitic (400 & 500 Series) & PH Stainless Steels (<421 HB) <45 HRC

AISI: 416, 416F, 416Se, 420F, PH Steels 15-5 PH, 17-4 H, 17-7 PH

application	maximum cutting parameters		cutting speed	feed per tooth								
	DOC	WOC		SFM	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
				4 mm	5 mm	6 mm	8 mm	10 mm	12 mm	16 mm	20 mm	25 mm
profiling	1 x dia.	.1 x dia.	250-325	.0010	.0013	.0015	.0020	.0022	.0030	.0036	.0047	.0050
slotting	.5 x dia.	–	225-275	.0007	.0011	.0012	.0016	.0020	.0022	.0024	.0026	.0028

Cast Iron (<220 HB) <18 HRC

Gray: Class 20, 25; Ductile: Grades 60-40-18, 65-45-12; Malleable: 32510, 35018, M3210

application	maximum cutting parameters		cutting speed	feed per tooth								
	DOC	WOC		SFM	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
				4 mm	5 mm	6 mm	8 mm	10 mm	12 mm	16 mm	20 mm	25 mm
profiling	1 x dia.	.1 x dia.	450-600	.0005	.0008	.0015	.0020	.0025	.0035	.0045	.0060	.0070
slotting	.25 x dia.	–	400-475	.0004	.0008	.0010	.0015	.0020	.0025	.0030	.0040	.0048

Titanium Alloys, Nickel Base

Inconel: 601, 617, 625, 718, X-750, 901, Waspaloy, Hastelloy

application	maximum cutting parameters		cutting speed	feed per tooth								
	DOC	WOC		SFM	1/8"	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
				4 mm	5 mm	6 mm	8 mm	10 mm	12 mm	16 mm	20 mm	25 mm
profiling	1 x dia.	.1 x dia.	200-250	.0008	.0010	.0013	.0015	.0020	.0026	.0036	.0047	.0050
slotting	.25 x dia.	–	75-125	.0004	.0007	.0010	.0012	.0014	.0016	.0018	.0020	.0025

NOTE: For cast iron >18 HRC (Gray: class 45, 55; Ductile: grades 80-55-06, 120-90-02, D5506; Malleable: 70003, 80002, 90001), reduce SFM by 20% and maintain chiploads.