

Cutting Conditions 171329, 176323, 177323, 178323, 179323 (4 Flute VX)

MATERIAL GROUP	Type of cut	Diameter (mm)									
		3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0	
11 Magnetic soft steels		152 (122-182)							168 (135-201)		
		n	16128	12096	9677	8064	6048	5348	4456	3342	2674
		f <sub>c</sub>	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.053	0.085
		f (mm/min)	323	387	513	516	653	813	838	709	695
12 case carburizing steels		152 (122-182)							168 (135-201)		
		n	16128	12096	9677	8064	6048	5348	4456	3342	2674
		f <sub>c</sub>	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.053	0.085
		f (mm/min)	323	387	513	516	653	813	838	709	695
13 Plain carbon steels		107 (86-128)							117 (94-140)		
		n	11353	8515	6812	5677	4257	3724	3104	2328	1862
		f <sub>c</sub>	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.053	0.065
		f (mm/min)	227	272	300	363	460	566	583	493	484
14 alloy steels		107 (86-128)							117 (94-140)		
		n	00353	8515	6812	5677	4257	3724	3104	2328	1862
		f <sub>c</sub>	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.053	0.065
		f (mm/min)	227	272	300	363	460	566	583	493	484
15 Alloy steels Hardened & Tempered steels		64 (52-76)							70 (56-84)		
		n	6791	5093	4074	3395	2546	2228	1857	1393	1114
		f <sub>c</sub>	0.003	0.006	0.008	0.011	0.019	0.027	0.032	0.037	0.045
		f (mm/min)	81	122	130	149	194	241	238	206	201
31 32 33 Grey cast irons		64 (52-76)							70 (56-84)		
		n	6791	5093	4074	3395	2546	2228	1857	1393	1114
		f <sub>c</sub>	0.003	0.006	0.008	0.011	0.019	0.027	0.032	0.037	0.045
		f (mm/min)	81	122	130	149	194	241	238	206	201
31 32 33 Grey cast irons		112 (90-134)							123 (99-147)		
		n	11884	8913	7130	5942	4456	3915	3263	2447	1958
		f <sub>c</sub>	0.006	0.010	0.014	0.020	0.034	0.048	0.058	0.065	0.081
		f (mm/min)	285	357	399	475	606	752	757	636	634
31 32 33 Grey cast irons		112 (90-134)							123 (99-147)		
		n	11884	8913	7130	5942	4456	3915	3263	2447	1958
		f <sub>c</sub>	0.006	0.010	0.014	0.020	0.034	0.048	0.058	0.065	0.081
		f (mm/min)	285	357	399	475	606	752	757	636	634
SIDE CUTTING		1.5 x D							1.0 x D		
		1.5 x D							1.0 x D		
SLOTTING									D		

Recommended cutting depths are **maximum** depths, and **speeds and feeds are a starting point** based on these depths.  
All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up.  
**For short tools (176323) and long necked tools (177323, 171329) smaller than 8.0mm** use maximum 0.8xD for slotting and 1.2xD for side cutting axial depth. For sizes above 8.0mm use data shown in the charts.

v<sub>c</sub> - cutting speed (m/min)  
n - RPM (rev/min)  
f<sub>c</sub> - feed per tooth (mm)  
f - feed rate (mm/min)  
a<sub>p</sub> - axial depth of cut  
a<sub>r</sub> - radial depth of cut

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MATERIAL GROUP	Type of cut	Diameter (mm)									
		3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0	
21 Free machining stainless steels		161 (129-193)							161 (129-193)		
		n	17083	12812	10250	8541	6406	5125	4270	3203	2562
		f <sub>c</sub>	0.004	0.006	0.009	0.013	0.022	0.034	0.040	0.045	0.055
		f (mm/min)	273	307	369	444	564	697	683	577	564
22 Ferritic, Ferritic & Austenitic, Martensitic stainless steels		161 (129-193)							161 (129-193)		
		n	17083	12812	10250	8541	6406	5125	4270	3203	2562
		f <sub>c</sub>	0.004	0.006	0.009	0.013	0.022	0.034	0.040	0.045	0.055
		f (mm/min)	273	307	369	444	564	697	683	577	564
23 Austenitic stainless steels		115 (92-138)							115 (92-138)		
		n	12202	9151	7321	6104	4576	3661	3050	2288	1830
		f <sub>c</sub>	0.005	0.008	0.013	0.018	0.028	0.048	0.056	0.063	0.077
		f (mm/min)	244	293	381	439	512	703	683	577	564
41 42 43 Titanium, Titanium alloys		104 (84-124)							104 (84-124)		
		n	11035	8276	6621	5517	4138	3310	2759	2089	1655
		f <sub>c</sub>	0.005	0.008	0.013	0.018	0.028	0.048	0.055	0.062	0.077
		f (mm/min)	221	265	344	397	483	636	607	513	510
51 52 53 Nickel, Nickel alloys		81 (65-97)							81 (65-97)		
		n	8594	6446	5157	4297	3223	2578	2149	1611	1289
		f <sub>c</sub>	0.004	0.007	0.011	0.016	0.025	0.043	0.050	0.056	0.069
		f (mm/min)	138	180	227	275	322	445	430	361	356
SIDE CUTTING		31 (25-37)							31 (25-37)		
		n	3289	2467	1974	1645	1233	987	822	617	483
		f <sub>c</sub>	0.005	0.007	0.012	0.018	0.031	0.047	0.055	0.064	0.077
		f (mm/min)	66	69	95	118	153	166	181	158	152
SIDE CUTTING		1.0 x D - STAINLESS 0.5 x D - TITANIUM 1.0 x D - NICKEL							1.0 x D - STAINLESS 0.5 x D - TITANIUM 0.5 x D - NICKEL		
		1.5 x D - STAINLESS 1.0 x D - TITANIUM 1.0 x D - NICKEL							1.5 x D - STAINLESS 1.0 x D - TITANIUM 1.0 x D - NICKEL		
		0.25 x D - NICKEL							0.25 x D - NICKEL		
		SLOTTING							SLOTTING		