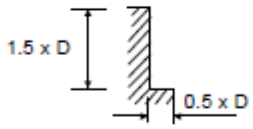
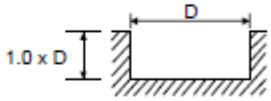
Cutting Conditions 171329, 176323, 177323, 178323, 179323 (4 Flute VX)

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
P	11 12	Magnetic soft steels, structural steels, case carburizing steels		v_c (m/min)	152 (122-182)					168 (135-201)			
				n	16128	12096	9677	8064	6048	5348	4456	3342	2674
				f_z	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.053	0.065
				f (mm/min)	323	387	513	516	653	813	838	709	695
				v_c (m/min)	152 (122-182)					168 (135-201)			
				n	16128	12096	9677	8064	6048	5348	4456	3342	2674
				f_z	0.005	0.008	0.011	0.016	0.027	0.038	0.047	0.053	0.065
				f (mm/min)	323	387	513	516	653	813	838	709	695
	13 14	Plain carbon steels, alloy steels		v_c (m/min)	107 (86-128)					117 (94-140)			
				n	11353	8515	6812	5677	4257	3724	3104	2328	1862
				f_z	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
				v_c (m/min)	107 (86-128)					117 (94-140)			
				n	00353	8515	6812	5677	4257	3724	3104	2328	1862
				f_z	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
H	15	Alloy steels Hardened & Tempered steels		v_c (m/min)	64 (52-76)					70 (56-84)			
				n	6791	5093	4074	3395	2546	2228	1857	1393	1114
				f_z	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
				v_c (m/min)	64 (52-76)					70 (56-84)			
				n	6791	5093	4074	3395	2546	2228	1857	1393	1114
				f_z	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
K	31 32 33 34	Grey cast irons		v_c (m/min)	112 (90-134)					123 (99-147)			
				n	11884	8913	7130	5942	4456	3915	3263	2447	1958
				f_z	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
				v_c (m/min)	112 (90-134)					123 (99-147)			
				n	11884	8913	7130	5942	4456	3915	3263	2447	1958
				f_z	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



SLOTTING



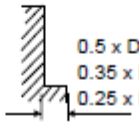
Recommended cutting depths are **maximum** depths, and speeds and feeds are a starting point based on these depths.
All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up.
For short tools (176323) and long necked tools (177323, 171329) smaller 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_c - cutting speed (m/min)
n - RPM (rev/min)
f_z - feed per tooth (mm)
f - feed rate (mm/min)
a_p - axial depth of cut
a_e - radial depth of cut

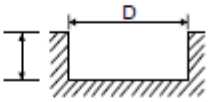
MATERIAL GROUP			Type of cut		Diameter (mm)								
					3.0	4.0	5.0	6.0	8.0	10.0	12.0	16.0	20.0
M	21	Free machining stainless steels		v_c (m/min)	161 (129-193)								
				n	17083	12812	10250	8541	6406	5125	4270	3203	2562
				f_z	0.004	0.006	0.009	0.013	0.022	0.034	0.040	0.045	0.055
				f (mm/min)	273	307	369	444	564	697	683	577	564
				v_c (m/min)	161 (129-193)								
				n	17083	12812	10250	8541	6406	5125	4270	3203	2562
				f_z	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	Austenitic stainless steels		v_c (m/min)	115 (92-138)								
				n	12202	9151	7321	6104	4576	3661	3050	2288	1830
				f_z	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
				v_c (m/min)	115 (92-138)								
				n	12202	9151	7321	6104	4576	3661	3050	2288	1830
				f_z	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
	23	Ferritic, Ferritic & Austenitic, Martensitic stainless steels		v_c (m/min)	104 (84-124)								
				n	11035	8276	6621	5517	4138	3310	2759	2069	1655
				f_z	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	463	636	607	513	510
				v_c (m/min)	104 (84-124)								
				n	11035	8276	6621	5517	4138	3310	2759	2069	1655
				f_z	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	463	636	607	513	510
S	41 42 43	Titanium, Titanium alloys		v_c (m/min)	81 (65-97)								
				n	8594	6446	5157	4297	3223	2578	2149	1611	1289
				f_z	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
				v_c (m/min)	81 (65-97)								
				n	8594	6446	5157	4297	3223	2578	2149	1611	1289
				f_z	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
	51 52 53	Nickel, Nickel alloys		v_c (m/min)	31 (25-37)								
				n	3289	2467	1974	1645	1233	987	822	617	493
				f_z	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	186	181	158	152
				v_c (m/min)	31 (25-37)								
				n	3289	2467	1974	1645	1233	987	822	617	493
				f_z	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	186	181	158	152

SIDE CUTTING

1.5 x D - STAINLESS
1.0 x D - TITANIUM
1.0 x D - NICKEL



0.5 x D - STAINLESS
0.35 x D - TITANIUM
0.25 x D - NICKEL

SLOTTING

1.0 x D - STAINLESS
0.5 x D - TITANIUM
0.5 x D - NICKEL