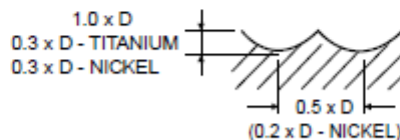


Cutting Conditions 170329, (4 Flute VX Ball Nose)

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	25.0	
P	11 12	Magnetic soft steels, structural steels, case carburizing steels		v_c (m/min)	162 (130-194)									
				n	17189	12892	10313	8594	6446	5157	4297	3223	2578	2063
				f_t	0.025	0.027	0.030	0.040	0.060	0.065	0.070	0.075	0.090	0.099
		f (mm/min)	1719	1392	1238	1375	1547	1341	1203	967	928	817		
	13 14	Plain carbon steels, alloy steels		v_c (m/min)	113 (90-136)									
				n	11990	8992	7194	5695	4496	3597	2997	2248	1798	1439
f_t				0.025	0.027	0.030	0.040	0.060	0.065	0.070	0.074	0.090	0.099	
	f (mm/min)	1199	921	863	959	1079	935	839	665	647	570			
H	15	Alloy steels Hardened & Tempered steels		v_c (m/min)	68 (54-82)									
				n	7215	5411	4329	3608	2706	2165	1804	1353	1082	866
				f_t	0.017	0.019	0.021	0.028	0.042	0.045	0.049	0.052	0.063	0.070
				f (mm/min)	491	411	364	404	455	390	354	281	273	242
M	21	Free machining stainless steels		v_c (m/min)	85 (68-102)									
				n	9019	6764	5411	4509	3382	2706	2255	1691	1353	1082
				f_t	0.020	0.020	0.025	0.041	0.045	0.050	0.055	0.060	0.065	0.068
		f (mm/min)	722	541	541	740	609	541	496	406	352	294		
	22	Austenitic stainless steels		v_c (m/min)	77 (62-92)									
				n	8170	6127	4902	4085	3064	2451	2042	1532	1225	980
				f_t	0.015	0.015	0.025	0.030	0.040	0.045	0.050	0.054	0.058	0.059
		f (mm/min)	490	368	490	490	490	441	408	332	284	231		
	23	Ferritic, Ferritic & Austenitic, Martensitic stainless steels		v_c (m/min)	77 (62-92)									
n				8170	6127	4902	4085	3064	2451	2042	1532	1225	980	
f_t				0.020	0.020	0.025	0.041	0.045	0.050	0.055	0.060	0.065	0.068	
	f (mm/min)	654	490	490	670	551	490	449	368	319	267			
K	31 32 33 34	Grey cast irons		v_c (m/min)	119 (95-143)									
				n	12626	9470	7576	6313	4735	3788	3157	2367	1894	1515
				f_t	0.031	0.033	0.037	0.050	0.074	0.081	0.087	0.093	0.112	0.124
				f (mm/min)	1566	1250	1121	1263	1402	1227	1098	881	848	752
S	41 42 43	Titanium, Titanium alloys		v_c (m/min)	47 (38-56)									
				n	4987	3740	2992	2493	1870	1496	1247	935	748	598
				f_t	0.018	0.018	0.022	0.037	0.040	0.045	0.049	0.054	0.058	0.064
		f (mm/min)	359	269	263	369	299	269	244	202	174	146		
	51 52 53	Nickel, Nickel alloys		v_c (m/min)	21 (17-25)									
				n	2228	1671	1337	1114	836	668	557	418	334	267
f_t				0.014	0.014	0.017	0.028	0.031	0.035	0.038	0.042	0.045	0.048	
	f (mm/min)	125	94	91	125	104	94	85	70	60	51			



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.

v_c - cutting speed (m/min)
 n - RPM (rev/min)
 f_t - feed per tooth (mm)
 f - feed rate (mm/min)
 a_p - axial depth of cut
 a_e - radial depth of cut