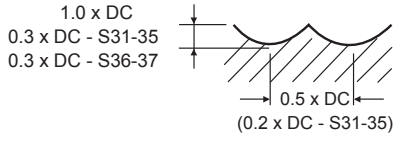
CUTTING DATA

170329 (4 Flute VX Ball Nose)

VDI MATERIAL GROUP			HRc		Size (mm)									
					3.0	**4.0**	**5.0**	**6.0**	**8.0**	**10.0**	**12.0**	**16.0**	**20.0**	**25.0**
P	1-5	Non-alloy Steel	**<25**	v_c (m/min)	162	162	162	162	162	162	162	162	162	162
				n	17189	12892	10313	8594	6446	5157	4297	3223	2578	2063
				f_z	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
	6-9	Low alloy Steel	**25-35**	v_c (m/min)	113	113	113	113	113	113	113	113	113	113
				n	11990	8992	7194	5995	4496	3597	2997	2248	1798	1439
				f_z	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
	10-11	High alloy Steel, Tool Steel	**35-45**	v_c (m/min)	68	68	68	68	68	68	68	68	68	68
				n	7215	5411	4329	3608	2706	2165	1804	1353	1082	866
				f_z	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	12	Ferritic/ Martensitic Stainless Steel		v_c (m/min)	85	85	85	85	85	85	85	85	85	85
				n	9019	6764	5411	4509	3382	2706	2255	1691	1353	1082
				f_z	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
	13	Martensitic Stainless Steel		v_c (m/min)	77	77	77	77	77	77	77	77	77	77
				n	8170	6127	4902	4085	3064	2451	2042	1532	1225	980
				f_z	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
	14	Austenitic Stainless Steel		v_c (m/min)	77	77	77	77	77	77	77	77	77	77
				n	8170	6127	4902	4085	3064	2451	2042	1532	1225	980
				f_z	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	15-20	Cast Iron		v_c (m/min)	119	119	119	119	119	119	119	119	119	119
				n	12626	9470	7576	6313	4735	3788	3157	2367	1894	1515
				f_z	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	31-35	HRSA Fe & Ni/Co Based		v_c (m/min)	21	21	21	21	21	21	21	21	21	21
				n	2228	1671	1337	1114	836	668	557	418	334	267
				f_z	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
	36-37	Titanium/ Titanium Alloys		v_c (m/min)	47	47	47	47	47	47	47	47	47	47
				n	4987	3740	2992	2493	1870	1496	1247	935	748	598
				f_z	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



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 long series and long necked tools it may be necessary to reduce feed rate by up to 50%.

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