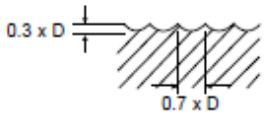
315303, 316303, 515303, 517303 (4 Flute, Ball Nose)

MATERIAL GROUP		HRc		Size (mm)											
				2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	11 12	< 30	v_c (m/min)	35	35	35	35	30	30	30	35	35	35	35	30
			n	5200	3500	2600	2100	1700	1270	1000	870	750	650	580	500
			f_z	0.007	0.011	0.014	0.019	0.022	0.028	0.035	0.037	0.043	0.05	0.056	0.065
			f (mm/min)	140	150	150	160	150	140	140	130	130	130	130	130
	13 14	30-40	v_c (m/min)	30	25	25	25	25	30	25	30	25	25	25	25
			n	4400	2900	2100	1700	1430	1100	870	730	620	540	480	430
			f_z	0.004	0.006	0.008	0.01	0.012	0.016	0.02	0.024	0.028	0.032	0.036	0.041
			f (mm/min)	70	70	70	70	70	70	70	70	70	70	70	70
K	31 32 33		v_c (m/min)	45	45	45	45	45	45	45	45	45	45	45	45
			n	7300	4900	3600	2900	2400	1800	1430	1200	1000	920	810	730
			f_z	0.008	0.012	0.021	0.03	0.04	0.067	0.084	0.1	0.123	0.133	0.151	0.151
			f (mm/min)	230	240	300	350	380	480	480	480	490	490	490	440
N	71 72 73		v_c (m/min)	135	135	135	140	135	140	135	135	130	135	135	130
			n	21500	14300	10900	8800	7260	5500	4300	3600	3000	2700	2400	2100
			f_z	0.005	0.007	0.01	0.014	0.017	0.026	0.033	0.046	0.055	0.053	0.059	0.068
			f (mm/min)	420	420	420	500	500	570	570	660	660	570	570	570



▶ The feed rate for long and long reach tools should be reduced by up to 50%

v_c - cutting speed (m/min)
n - RPM (rev/min)
f_Z - feed rate (mm/tooth)
f - feed rate (mm/rev)
z - No. of teeth
a_p - axial depth of cut
a_e - radial depth of cut

To calculate RPM from cutting speed: $n = \frac{v_c \cdot 1000}{\pi \cdot ø}$

To calculate cutting speed from RPM: $v_c = \frac{n \cdot \pi \cdot ø}{1000}$

All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up. The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.