







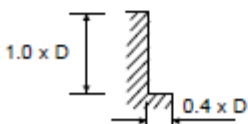
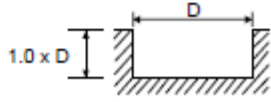


Cutting Conditions 170323 (4 Flute VXD)

| MATERIAL GROUP | | Type of cut | Diameter (mm) | | | | | | | | |
|----------------|--|---|---|---------------|-------|-------|-------|-------|-------|-------|-------|
| | | | 6.0 | 8.0 | 10.0 | 12.0 | 14.0 | 16.0 | 20.0 | 25.0 | |
| P | 11 12 Magnetic soft steels, structural steels, case carburizing steels |  | v_c (m/min) | 160 (128-192) | | | | | | | |
| | | | n | 8488 | 6366 | 5093 | 4244 | 3638 | 3183 | 2546 | 2037 |
| | | | f_t | 0.027 | 0.035 | 0.042 | 0.053 | 0.058 | 0.063 | 0.077 | 0.084 |
| | | f (mm/min) | 917 | 891 | 856 | 900 | 844 | 802 | 784 | 684 | |
| | |  | v_c (m/min) | 125 (100-150) | | | | | | | |
| | | | n | 6631 | 4974 | 3979 | 3316 | 2842 | 2487 | 1989 | 1592 |
| | f_t | | 0.025 | 0.034 | 0.042 | 0.049 | 0.056 | 0.063 | 0.070 | 0.084 | |
| | 13 14 Plain carbon steels, alloy steels |  | v_c (m/min) | 150 (120-180) | | | | | | | |
| | | | n | 7958 | 5968 | 4775 | 3979 | 3410 | 2984 | 2387 | 1910 |
| | | | f_t | 0.025 | 0.035 | 0.042 | 0.049 | 0.056 | 0.063 | 0.070 | 0.084 |
| | | f (mm/min) | 796 | 836 | 802 | 780 | 764 | 752 | 668 | 642 | |
| | |  | v_c (m/min) | 120 (96-144) | | | | | | | |
| n | | | 6366 | 4775 | 3820 | 3183 | 2728 | 2387 | 1910 | 1528 | |
| f_t | 0.025 | | 0.034 | 0.042 | 0.049 | 0.056 | 0.063 | 0.070 | 0.077 | | |
| H | 15 Alloy steels Hardened & Tempered steels |  | v_c (m/min) | 150 (120-180) | | | | | | | |
| | | | n | 7958 | 5968 | 4775 | 3979 | 3410 | 2984 | 2387 | 1910 |
| | | | f_t | 0.027 | 0.035 | 0.046 | 0.053 | 0.060 | 0.067 | 0.077 | 0.084 |
| | | f (mm/min) | 859 | 836 | 879 | 844 | 819 | 800 | 736 | 642 | |
| | |  | v_c (m/min) | 120 (96-144) | | | | | | | |
| | | | n | 6366 | 4775 | 3820 | 3183 | 2728 | 238 | 1910 | 1528 |
| | f_t | | 0.027 | 0.035 | 0.042 | 0.053 | 0.058 | 0.063 | 0.077 | 0.084 | |
| | 31 32 33 34 Grey cast irons |  | v_c (m/min) | 175 (140-210) | | | | | | | |
| | | | n | 9284 | 6963 | 5570 | 4642 | 3979 | 3482 | 2785 | 2228 |
| | | | f_t | 0.021 | 0.028 | 0.035 | 0.042 | 0.048 | 0.053 | 0.060 | 0.070 |
| | | f (mm/min) | 780 | 780 | 780 | 780 | 764 | 738 | 668 | 624 | |
| | |  | v_c (m/min) | 140 (112-168) | | | | | | | |
| n | | | 7427 | 5570 | 4458 | 3714 | 3183 | 2785 | 2228 | 1783 | |
| f_t | 0.021 | | 0.028 | 0.035 | 0.042 | 0.048 | 0.053 | 0.060 | 0.067 | | |
| f (mm/min) | 624 | 624 | 624 | 624 | 611 | 590 | 535 | 478 | | | |
| 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.

Finishing cuts typically require reduced feed rates and/or higher spindle speed, with a_p of 2% x D; please adjust parameters accordingly.

v_c - cutting speed (m/min)












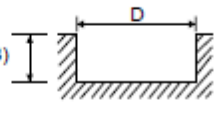
n - RPM (rev/min)

f_t - feed per tooth (mm)

f - feed rate (mm/min)

a_p - axial depth of cut

a_e - radial depth of cut

| MATERIAL GROUP | | Type of cut | Diameter (mm) | | | | | | | | | |
|---|---|---|--|---|---------------|--------------|-------|-------|-------|-------|-------|-------|
| | | | 6.0 | 8.0 | 10.0 | 12.0 | 14.0 | 16.0 | 20.0 | 25.0 | | |
| M | 21 | Free machining stainless steels |  | v_c (m/min) | 155 (124-186) | | | | | | | |
| | | | | n | 8223 | 6167 | 4934 | 4112 | 3524 | 3084 | 2467 | 1974 |
| | | | | f_z | 0.034 | 0.046 | 0.057 | 0.067 | 0.076 | 0.086 | 0.095 | 0.114 |
| | | | f (mm/min) | 1125 | 1125 | 1125 | 1094 | 1071 | 1055 | 937 | 900 | |
| | | |  | v_c (m/min) | 125 (100-150) | | | | | | | |
| | | | | n | 6631 | 4974 | 3979 | 3316 | 2842 | 2487 | 1989 | 1592 |
| | f_z | 0.034 | | 0.046 | 0.057 | 0.067 | 0.074 | 0.081 | 0.095 | 0.105 | | |
| | f (mm/min) | 907 | 907 | 907 | 882 | 841 | 803 | 756 | 665 | | | |
| | | 22 | Austenitic stainless steels |  | v_c (m/min) | 105 (84-126) | | | | | | |
| | | | | | n | 5570 | 4187 | 3342 | 2785 | 2387 | 2089 | 1671 |
| | f_z | | | | 0.025 | 0.034 | 0.042 | 0.048 | 0.055 | 0.062 | 0.071 | 0.081 |
| | f (mm/min) | | | | | | | | | | | |
|  | v_c (m/min) | | | 85 (68-102) | | | | | | | | |
| | n | | | 4509 | 3382 | 2706 | 2255 | 1933 | 1691 | 1353 | 1082 | |
| | f_z | 0.025 | 0.034 | 0.042 | 0.048 | 0.055 | 0.062 | 0.071 | 0.081 | | | |
| f (mm/min) | 446 | 463 | 452 | 428 | 425 | 418 | 386 | 350 | | | | |
| 23 | Ferritic, Ferritic & Austenitic, Martensitic stainless steels |  | v_c (m/min) | 44 (35-53) | | | | | | | | |
| | | | n | 2334 | 1751 | 1401 | 1168 | 1000 | 875 | 700 | 560 | |
| | | | f_z | 0.016 | 0.021 | 0.027 | 0.032 | 0.036 | 0.040 | 0.046 | 0.052 | |
| | | f (mm/min) | 151 | 146 | 149 | 151 | 144 | 140 | 128 | 117 | | |
| | |  | v_c (m/min) | 36 (29-43) | | | | | | | | |
| | | | n | 1910 | 1432 | 1146 | 955 | 819 | 716 | 573 | 458 | |
| f_z | 0.016 | | 0.021 | 0.027 | 0.032 | 0.036 | 0.040 | 0.046 | 0.052 | | | |
| f (mm/min) | 123 | 120 | 122 | 123 | 118 | 114 | 105 | 96 | | | | |
| S | 41 42 43 | Titanium, Titanium alloys |  | v_c (m/min) | 70 (56-84) | | | | | | | |
| | | | | n | 3714 | 2785 | 2228 | 1857 | 1592 | 1393 | 1114 | 891 |
| | | | | f_z | 0.034 | 0.048 | 0.057 | 0.067 | 0.076 | 0.086 | 0.095 | 0.114 |
| | | | f (mm/min) | 508 | 529 | 508 | 494 | 484 | 476 | 423 | 406 | |
| | | |  | v_c (m/min) | 55 (44-66) | | | | | | | |
| | | | | n | 2918 | 2188 | 1751 | 1459 | 1251 | 1094 | 875 | 700 |
| | f_z | 0.034 | | 0.046 | 0.057 | 0.067 | 0.076 | 0.086 | 0.095 | 0.105 | | |
| | f (mm/min) | 399 | 399 | 399 | 388 | 380 | 374 | 333 | 293 | | | |
| | 51 52 53 | Nickel, Nickel alloys |  | v_c (m/min) | 32 (26-38) | | | | | | | |
| | | | | n | 1698 | 1273 | 1019 | 849 | 728 | 637 | 509 | 407 |
| | | | | f_z | 0.020 | 0.026 | 0.032 | 0.038 | 0.044 | 0.048 | 0.055 | 0.065 |
| | | | f (mm/min) | 136 | 132 | 130 | 129 | 128 | 122 | 112 | 106 | |
|  | | | v_c (m/min) | 25 (20-30) | | | | | | | | |
| | | | n | 1326 | 995 | 796 | 663 | 568 | 497 | 397 | 318 | |
| | f_z | 0.018 | 0.024 | 0.030 | 0.036 | 0.040 | 0.044 | 0.050 | 0.055 | | | |
| f (mm/min) | 95 | 95 | 95 | 95 | 91 | 88 | 80 | 70 | | | | |
| SIDE CUTTING | | |  <p>1.0 x D - STAINLESS 0.6 x D - STAINLESS (23) 1.0 x D - TITANIUM 0.6 x D - NICKEL</p> <p>0.4 x D - STAINLESS 0.4 x D - TITANIUM 0.3 x D - NICKEL</p> | | | | | | | | | |
| SLOTTING | | |  <p>1.0 x D - STAINLESS 0.5 x D - STAINLESS (23) 1.0 x D - TITANIUM 0.4 x D - NICKEL</p> | | | | | | | | | |