



| MATERIAL GROUP | HARDNESS HRC | NORMAL SPEED | Size (mm) | | | | | | | | | |
|----------------|----------------------|--------------|---------------|-------|-------|-------|------|-------|-------|------|-------|-------|
| | | | 3.0 | 4.0 | 5.0 | 6.0 | 8.0 | 10.0 | 12.0 | 16.0 | 20.0 | |
| P | 13 14 | < 30-40 | v_c (m/min) | 95 | 105 | 115 | 130 | 145 | 160 | 175 | 190 | 205 |
| | | | n | 10000 | 8400 | 7300 | 6900 | 5770 | 5090 | 4640 | 3780 | 3260 |
| | | | f_s | 0.023 | 0.032 | 0.04 | 0.06 | 0.08 | 0.1 | 0.12 | 0.14 | 0.16 |
| | | | f (mm/min) | 460 | 530 | 580 | 830 | 920 | 1020 | 1110 | 1080 | 1040 |
| H | 15 16 | 45-65 | v_c (m/min) | 45 | 55 | 60 | 60 | 62 | 65 | 65 | 70 | 70 |
| | | | n | 4520 | 4200 | 3680 | 3180 | 2470 | 2040 | 1750 | 1350 | 1110 |
| | | | f_s | 0.017 | 0.021 | 0.024 | 0.03 | 0.045 | 0.055 | 0.07 | 0.091 | 0.113 |
| | | | f (mm/min) | 150 | 180 | 180 | 190 | 220 | 225 | 245 | 245 | 250 |
| K | 31 32 33 34 | | v_c (m/min) | 125 | 130 | 145 | 160 | 180 | 200 | 220 | 240 | 260 |
| | | | n | 13100 | 10500 | 9140 | 8490 | 7160 | 6370 | 5840 | 4770 | 4140 |
| | | | f_s | 0.026 | 0.035 | 0.045 | 0.06 | 0.09 | 0.12 | 0.15 | 0.18 | 0.2 |
| | | | f (mm/min) | 680 | 740 | 820 | 1020 | 1290 | 1530 | 1750 | 1720 | 1660 |

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| <p>< HRc45</p> <p>a_p: $\phi 1.0\text{mm} - 6.0\text{mm} = 0.2\text{mm}$ a_p: $\phi 8.0\text{mm} - 20.0\text{mm} = 0.3\text{mm}$ a_e: $0.2 \times D$</p> | | <p>> HRc45</p> <p>a_p: $\phi 1.0\text{mm} - 6.0\text{mm} = 0.2\text{mm}$ a_p: $\phi 8.0\text{mm} - 20.0\text{mm} = 0.3\text{mm}$ a_e: $0.1 \times D$</p> | |
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| MATERIAL GROUP | HARDNESS HRC | HIGH SPEED | Size (mm) | | | | | | | | | |
|----------------|----------------------|------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | | 3.0 | 4.0 | 5.0 | 6.0 | 8.0 | 10.0 | 12.0 | 16.0 | 20.0 | |
| P | 13 14 | < 30-40 | v_c (m/min) | 200 | 265 | 330 | 395 | 420 | 440 | 460 | 480 | 500 |
| | | | n | 21000 | 21000 | 21000 | 21000 | 16700 | 14000 | 12200 | 9550 | 7960 |
| | | | f_s | 0.048 | 0.07 | 0.088 | 0.095 | 0.12 | 0.139 | 0.16 | 0.181 | 0.2 |
| | | | f (mm/min) | 2000 | 2940 | 3600 | 4000 | 4000 | 3900 | 3900 | 3450 | 3180 |
| H | 15 16 | 45-65 | v_c (m/min) | 160 | 170 | 190 | 200 | 210 | 220 | 230 | 240 | 250 |
| | | | n | 17000 | 13660 | 12000 | 10500 | 8360 | 7000 | 6100 | 4770 | 3980 |
| | | | f_s | 0.031 | 0.042 | 0.05 | 0.06 | 0.075 | 0.088 | 0.095 | 0.105 | 0.116 |
| | | | f (mm/min) | 1040 | 1160 | 1200 | 1250 | 1250 | 1200 | 1160 | 1000 | 920 |
| K | 31 32 33 34 | | v_c (m/min) | 200 | 265 | 330 | 395 | 420 | 440 | 460 | 480 | 500 |
| | | | n | 21000 | 21000 | 21000 | 21000 | 16700 | 14000 | 12200 | 9550 | 7960 |
| | | | f_s | 0.048 | 0.07 | 0.088 | 0.095 | 0.12 | 0.139 | 0.16 | 0.181 | 0.2 |
| | | | f (mm/min) | 2000 | 2940 | 3600 | 4000 | 4000 | 3900 | 3900 | 3450 | 3180 |

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| <p>a_p: $\phi 1.0\text{mm} - 6.0\text{mm} = 0.2\text{mm}$ a_p: $\phi 8.0\text{mm} - 20.0\text{mm} = 0.3\text{mm}$ a_e: $0.05 \times D$</p> | |
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