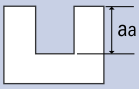
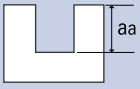
# List HP421

### Slotting (Fractional)

| Hardness | – | <20 HRC | 20-30 HRC | 30-38 HRC | 38-45 HRC | 45-55 HRC | 55-60 HRC |
|---|---|---|---|---|---|---|---|
| Work Material | Cast Iron | Mild Steels Carbon Steels | Alloy Steels Tool Steels Ti Alloys (Annealed) | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | Hardened Steels | Hardened Steels |
| Cutting Speed | 360 SFM | 330 SFM | 260 SFM | 220 SFM | 180 SFM | 120 SFM | 80 SFM |
| Depth of Cut | | Dia / aa: D<1/16: 0.1D; 1/16≤D≤1/8: 0.3D; 1/8≤D: 0.5D |  | | | Dia / aa: D<1/16: 0.02D; 1/16≤D: 0.05D | Dia / aa: D<1/16: 0.01D; 1/16≤D≤1/8: 0.02D; 1/8≤D: 0.05D |
| Mill Dia. | Speed RPM / Feed in/min | Speed RPM / Feed in/min | Speed RPM / Feed in/min | Speed RPM / Feed in/min | Speed RPM / Feed in/min | Speed RPM / Feed in/min | Speed RPM / Feed in/min |
| 1/16 | 21,990 / 7.9 | 20,150 / 7.2 | 15,880 / 7.2 | 13,440 / 5.1 | 10,990 / 3.5 | 7,330 / 2.0 | 4,890 / 1.3 |
| 3/32 | 14,660 / 9.6 | 13,440 / 8.8 | 10,590 / 7.3 | 8,960 / 5.1 | 7,330 / 3.7 | 4,890 / 2.3 | 3,260 / 1.3 |
| 1/8 | 10,990 / 12.4 | 10,080 / 11.5 | 7,940 / 8.0 | 6,720 / 5.4 | 5,500 / 4.0 | 3,660 / 2.5 | 2,440 / 1.5 |
| 5/32 | 8,790 / 13.6 | 8,060 / 12.4 | 6,350 / 9.2 | 5,370 / 6.1 | 4230 / 4.2 | 2,930 / 2.6 | 1870 / 1.4 |
| 3/16 | 7,190 / 15.4 | 6,540 / 14.0 | 5,325 / 10.5 | 4,455 / 6.0 | 3,785 / 4.5 | 2,360 / 2.6 | 1,590 / 1.4 |
| 1/4 | 5,600 / 16.0 | 5,090 / 14.5 | 4,125 / 11.1 | 3,375 / 6.0 | 2,870 / 4.7 | 1,775 / 2.6 | 1,205 / 1.2 |
| 5/16 | 4,395 / 15.3 | 4,000 / 13.9 | 3,270 / 11.1 | 2,660 / 5.9 | 2,295 / 4.7 | 1,390 / 2.4 | 960 / 1.2 |
| 3/8 | 3,695 / 14.7 | 3,360 / 13.3 | 2,735 / 11.0 | 2,225 / 5.9 | 1,910 / 4.5 | 1,200 / 2.4 | 800 / 1.2 |
| 7/16 | 3,160 / 14.5 | 2,870 / 13.2 | 2,345 / 10.9 | 1,895 / 5.9 | 1,630 / 4.4 | 1,035 / 2.3 | 690 / 1.0 |
| 1/2 | 2,760 / 14.5 | 2,510 / 13.2 | 2,030 / 10.6 | 1,655 / 5.6 | 1,415 / 4.4 | 900 / 2.1 | 600 / 0.9 |
| 5/8 | 2,195 / 12.6 | 1,995 / 12.3 | 1,625 / 9.5 | 1,330 / 4.7 | 1,150 / 4.0 | 720 / 1.7 | 470 / 0.7 |
| 3/4 | 1,760 / 11.1 | 1,605 / 10.0 | 1,305 / 7.6 | 1,095 / 3.8 | 935 / 3.2 | 580 / 1.4 | 410 / 0.6 |
| 1 | 1,360 / 8.5 | 1,240 / 7.7 | 1,020 / 6.0 | 840 / 3.0 | 720 / 2.6 | 440 / 0.9 | 300 / 0.5 |

For side milling, increase feeds 20% to 50%.

### Slotting (Metric)

| Hardness | – | <20 HRC | 20-30 HRC | 30-38 HRC | 38-45 HRC | 45-55 HRC | 55-60 HRC |
|---|---|---|---|---|---|---|---|
| Work Material | Cast Iron | Mild Steels Carbon Steels | Alloy Steels Tool Steels Ti Alloys (Annealed) | Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged) | Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys | Hardened Steels | Hardened Steels |
| Cutting Speed | 360 SFM | 330 SFM | 260 SFM | 220 SFM | 180 SFM | 120 SFM | 80 SFM |
| Depth of Cut | | Dia / aa: D<1: 0.1D; 1≤D≤3: 0.3D; 3≤D: 0.5D |  | | | Dia / aa: D<1: 0.02D; 1≤D: 0.05D | Dia / aa: D<1: 0.01D; 1≤D≤3: 0.02D; 3≤D: 0.05D |
| Mill Dia. | Speed RPM / Feed in/min | Speed RPM / Feed in/min | Speed RPM / Feed in/min | Speed RPM / Feed in/min | Speed RPM / Feed in/min | Speed RPM / Feed in/min | Speed RPM / Feed in/min |
| 1 | 25,000 / 6.5 | 25,000 / 6.6 | 25,000 / 8.4 | 21,330 / 6.0 | 17,450 / 4.1 | 11,634 / 2.0 | 7,756 / 1.5 |
| 2 | 17,424 / 8.4 | 15,840 / 7.6 | 12,096 / 7.0 | 10,660 / 5.3 | 9,144 / 4.0 | 5,688 / 2.3 | 3,960 / 1.4 |
| 3 | 11,750 / 12.5 | 10,656 / 11.4 | 8,400 / 7.8 | 7,110 / 5.2 | 5,817 / 3.9 | 3,960 / 2.6 | 2,585 / 1.5 |
| 4 | 8,730 / 13.6 | 8,000 / 12.6 | 6,300 / 9.4 | 5,330 / 6.1 | 4,363 / 4.4 | 2,908 / 2.6 | 1,939 / 1.5 |
| 5 | 6,980 / 16.4 | 6,400 / 15.0 | 5,040 / 10.9 | 4,270 / 6.1 | 3,490 / 4.5 | 2,327 / 2.7 | 1,551 / 1.4 |
| 6 | 5,820 / 16.0 | 5,330 / 14.6 | 4,200 / 10.8 | 3,560 / 6.2 | 2,908 / 4.5 | 1,939 / 2.8 | 1,293 / 1.2 |
| 8 | 4,360 / 15.3 | 4,000 / 14.1 | 3,150 / 10.8 | 2,670 / 5.9 | 2,181 / 4.5 | 1,454 / 2.5 | 969 / 1.2 |
| 10 | 3,490 / 14.5 | 3,200 / 13.3 | 2,520 / 10.7 | 2,130 / 6.0 | 1,745 / 4.3 | 1,163 / 2.4 | 776 / 1.2 |
| 12 | 2,910 / 14.5 | 2,670 / 13.3 | 2,100 / 10.6 | 1,780 / 6.0 | 1,454 / 4.3 | 969 / 2.2 | 646 / 1.0 |
| 14 | 2,490 / 14.4 | 2,290 / 13.2 | 1,800 / 10.2 | 1,520 / 5.2 | 1,246 / 4.4 | 831 / 2.0 | 554 / 0.9 |
| 16 | 2,180 / 12.5 | 2,000 / 12.4 | 1,580 / 9.2 | 1,330 / 4.7 | 1,091 / 3.8 | 727 / 1.7 | 485 / 0.7 |
| 18 | 1,940 / 12.2 | 1,780 / 11.2 | 1,400 / 8.3 | 1,190 / 4.2 | 969 / 3.4 | 646 / 1.4 | 431 / 0.7 |
| 20 | 1,750 / 10.9 | 1,600 / 10.0 | 1,260 / 7.3 | 1,070 / 3.7 | 873 / 3.0 | 582 / 1.4 | 388 / 0.6 |
| 22 | 1,590 / 9.9 | 1,460 / 9.1 | 1,150 / 6.8 | 970 / 3.3 | 793 / 2.8 | 529 / 1.2 | 353 / 0.5 |
| 25 | 1,400 / 8.7 | 1,280 / 7.9 | 1,010 / 6.0 | 850 / 3.1 | 698 / 2.5 | 465 / 1.0 | 310 / 0.5 |

For side milling, increase feeds 20% to 50%.