



List 3704 - EXOCARB® WXL®: Regular Length, 4 Flute

Side Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | |
|---------------|--|----------------|------------------------------|----------------|---|----------------|--------------|----------------|------|-------|-----|------|-------|-------------------------|--|--|--|
| Work Material | Copper Copper Alloy | | Mild Steels Carbon Steels | | Hardened Steels Prehardened Steels Stainless Steels | | | | | | | | | | | | |
| Cutting Speed | 516-990 SFM | | 248-254 SFM | | 143-184 SFM | | 129-164 SFM | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D<3</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>3≤D</td> <td>1.5D</td> <td>0.10D</td> </tr> </tbody> </table> | | | | Dia | aa | ar | D<3 | 1.5D | 0.05D | 3≤D | 1.5D | 0.10D | aa = 1.0D ar = 0.02D | | | |
| Dia | aa | ar | | | | | | | | | | | | | | | |
| D<3 | 1.5D | 0.05D | | | | | | | | | | | | | | | |
| 3≤D | 1.5D | 0.10D | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 1.0 | 25,000 | 8.7 | 24,000 | 8.3 | 14,000 | 3.1 | 12,500 | 2.8 | | | | | | | | | |
| 1.5 | 25,000 | 19.2 | 16,000 | 12.2 | 9,250 | 4.5 | 8,400 | 4.1 | | | | | | | | | |
| 2.0 | 25,000 | 22.8 | 12,000 | 11.6 | 7,000 | 4.3 | 6,350 | 3.9 | | | | | | | | | |
| 2.5 | 25,000 | 49.2 | 9,600 | 18.9 | 6,200 | 5.5 | 5,550 | 4.9 | | | | | | | | | |
| 3.0 | 25,000 | 49.2 | 8,150 | 16.9 | 5,300 | 4.9 | 4,750 | 4.3 | | | | | | | | | |
| 4.0 | 24,000 | 66.9 | 6,050 | 17.7 | 4,250 | 5.3 | 3,700 | 4.5 | | | | | | | | | |
| 5.0 | 19,000 | 78.7 | 4,900 | 20.5 | 3,550 | 5.5 | 3,150 | 4.9 | | | | | | | | | |
| 6.0 | 16,000 | 78.7 | 4,100 | 20.5 | 2,950 | 5.7 | 2,650 | 5.1 | | | | | | | | | |
| 8.0 | 12,000 | 74.8 | 3,050 | 19.9 | 2,200 | 5.7 | 1,950 | 5.1 | | | | | | | | | |
| 10.0 | 9,500 | 74.8 | 2,450 | 19.9 | 1,750 | 5.7 | 1,550 | 5.1 | | | | | | | | | |
| 12.0 | 7,900 | 74.8 | 2,050 | 19.9 | 1,450 | 5.7 | 1,300 | 5.1 | | | | | | | | | |
| 14.0 | 6,800 | 74.8 | 1,750 | 19.5 | 1,250 | 5.7 | 1,100 | 4.9 | | | | | | | | | |
| 15.0 | 6,300 | 74.8 | 1,600 | 19.3 | 1,150 | 5.3 | 1,050 | 4.7 | | | | | | | | | |
| 16.0 | 5,900 | 70.9 | 1,500 | 18.9 | 1,100 | 5.1 | 995 | 4.5 | | | | | | | | | |
| 18.0 | 5,300 | 70.9 | 1,350 | 18.5 | 990 | 4.5 | 880 | 4.1 | | | | | | | | | |
| 20.0 | 4,800 | 68.4 | 1,200 | 17.5 | 890 | 4.1 | 795 | 3.7 | | | | | | | | | |
| 25.0 | 3,800 | 55.1 | 970 | 14.2 | 710 | 3.3 | 635 | 3.0 | | | | | | | | | |
| 30.0 | 3,200 | 44.7 | 815 | 11.8 | 590 | 2.8 | 530 | 2.4 | | | | | | | | | |

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Milling

| Hardness | - | | <32 HRC | | 33-41 HRC | | 42-50 HRC | | | | | | | | | | |
|---------------|--|----------------|------------------------------|----------------|--|----------------|--------------|----------------|------|-------|-----|------|-------|-------------------------|--|--|--|
| Work Material | Copper Copper Alloy | | Mild Steels Carbon Steels | | Hardened Steels Pre-hardened Steels | | | | | | | | | | | | |
| Cutting Speed | 1597-1625 SFM | | 1197-1238 SFM | | 805-820 SFM | | 480-492 SFM | | | | | | | | | | |
| Depth of Cut | <table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D<3</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>3≤D</td> <td>1.5D</td> <td>0.02D</td> </tr> </tbody> </table> | | | | Dia | aa | ar | D<3 | 1.5D | 0.01D | 3≤D | 1.5D | 0.02D | aa = 1.0D ar = 0.02D | | | |
| Dia | aa | ar | | | | | | | | | | | | | | | |
| D<3 | 1.5D | 0.01D | | | | | | | | | | | | | | | |
| 3≤D | 1.5D | 0.02D | | | | | | | | | | | | | | | |
| Mill Dia. | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | Speed RPM | Feed in/min | | | | | | | | | |
| 6 | 25,000 | 109.8 | 20,000 | 90.6 | 13,000 | 59.1 | 7,950 | 31.3 | | | | | | | | | |
| 8 | 19,500 | 118.1 | 14,500 | 90.6 | 9,900 | 57.1 | 5,950 | 31.3 | | | | | | | | | |
| 10 | 15,500 | 114.2 | 12,000 | 90.6 | 7,950 | 57.1 | 4,750 | 31.3 | | | | | | | | | |
| 12 | 13,000 | 118.1 | 9,900 | 90.6 | 6,600 | 57.1 | 3,950 | 31.1 | | | | | | | | | |
| 14 | 11,100 | 110.2 | 8,500 | 86.6 | 5,650 | 53.1 | 3,400 | 29.1 | | | | | | | | | |
| 15 | 10,500 | 110.2 | 7,950 | 84.6 | 5,250 | 53.1 | 3,150 | 28.7 | | | | | | | | | |
| 16 | 9,700 | 106.3 | 7,450 | 82.7 | 4,950 | 53.1 | 2,950 | 28.1 | | | | | | | | | |
| 18 | 8,600 | 106.3 | 6,600 | 82.7 | 4,400 | 51.2 | 2,650 | 27.8 | | | | | | | | | |
| 20 | 7,800 | 102.4 | 5,950 | 78.7 | 3,950 | 51.2 | 2,350 | 26.2 | | | | | | | | | |
| 25 | 6,200 | 78.7 | 4,750 | 63.0 | 3,150 | 41.3 | 1,900 | 22.0 | | | | | | | | | |
| 30 | 5,200 | 66.9 | 3,950 | 53.1 | 2,650 | 35.0 | 1,550 | 17.9 | | | | | | | | | |

