

**NEW
LINE!**

**HIGH PERFORMANCE
METRIC DRILLS**

DIN 6537

*Pricing current as of January 1, 2006
in U.S. Dollars*

**No. 0601DS
SUPPLEMENT TO
CATALOG 2003-04**

GARR TOOL[®]

Series 1580HD - 2 flute High Performance 3xD - Helica Coated

TOLERANCES

| | | | | |
|--------------------------|--------|-------------------|-------|-------------------|
| d_1 : m7 (DIN 6537) | m7 * | | h6 | |
| d_2 : h6 (DIN 6535 HA) | 3-6 | +0.016mm +0.004mm | 6 | +0.000mm -0.008mm |
| | >6-10 | +0.021mm +0.006mm | 8-10 | +0.000mm -0.009mm |
| | >10-18 | +0.025mm +0.007mm | 12-18 | +0.000mm -0.011mm |
| | >18-20 | +0.029mm +0.008mm | 20 | +0.000mm -0.013mm |

High performance solid carbide reinforced straight shank

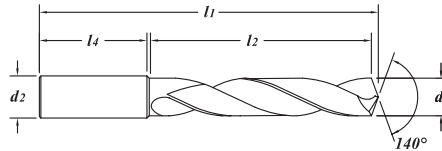
Utilizes DIN standard 6537 *

Up to 50% faster than standard carbide drills

30° helix for better chip evacuation

Recommended to run in high nickel, high temperature alloys, cobalt based alloys, stainless steels and tool steels

Balinit® Helica is a multi-layer AlCr-based coating designed exclusively for high performance drilling



*** Note - These drills are made to a plus/plus tolerance on the drill diameter. If you are in need of a minus tolerance drill, please refer to our high performance drills starting on page 6 of our full line 2003-04 catalog.**

| EDP# | Decimal Equiv. | d_1 mm | d_2 mm | l_1 mm | l_2 mm | l_4 mm | 1-11 | 12-25 | 26-49 | 50-100 |
|-------|----------------|----------|----------|----------|----------|----------|-------|-------|-------|--------|
| 20085 | .1181" | 3.00 | 6.0 | 62 | 20 | 36 | 48.90 | 46.77 | 44.65 | 42.52 |
| 20095 | .1220" | 3.10 | 6.0 | 62 | 20 | 36 | 48.90 | 46.77 | 44.65 | 42.52 |
| 20105 | .1248" | 3.17 | 6.0 | 62 | 20 | 36 | 48.90 | 46.77 | 44.65 | 42.52 |
| 20115 | .1260" | 3.20 | 6.0 | 62 | 20 | 36 | 48.90 | 46.77 | 44.65 | 42.52 |
| 20125 | .1280" | 3.25 | 6.0 | 62 | 20 | 36 | 48.90 | 46.77 | 44.65 | 42.52 |
| 20135 | .1299" | 3.30 | 6.0 | 62 | 20 | 36 | 48.90 | 46.77 | 44.65 | 42.52 |
| 20145 | .1339" | 3.40 | 6.0 | 62 | 20 | 36 | 48.90 | 46.77 | 44.65 | 42.52 |
| 20155 | .1378" | 3.50 | 6.0 | 62 | 20 | 36 | 48.28 | 46.18 | 44.08 | 41.98 |
| 20165 | .1417" | 3.60 | 6.0 | 62 | 20 | 36 | 48.28 | 46.18 | 44.08 | 41.98 |
| 20175 | .1457" | 3.70 | 6.0 | 62 | 20 | 36 | 48.28 | 46.18 | 44.08 | 41.98 |
| 20185 | .1476" | 3.75 | 6.0 | 62 | 20 | 36 | 48.28 | 46.18 | 44.08 | 41.98 |
| 20195 | .1496" | 3.80 | 6.0 | 66 | 24 | 36 | 48.28 | 46.18 | 44.08 | 41.98 |
| 20205 | .1535" | 3.90 | 6.0 | 66 | 24 | 36 | 48.28 | 46.18 | 44.08 | 41.98 |
| 20215 | .1575" | 4.00 | 6.0 | 66 | 24 | 36 | 47.67 | 45.60 | 43.52 | 41.45 |
| 20225 | .1614" | 4.10 | 6.0 | 66 | 24 | 36 | 47.67 | 45.60 | 43.52 | 41.45 |
| 20235 | .1654" | 4.20 | 6.0 | 66 | 24 | 36 | 47.67 | 45.60 | 43.52 | 41.45 |
| 20245 | .1673" | 4.25 | 6.0 | 66 | 24 | 36 | 47.67 | 45.60 | 43.52 | 41.45 |
| 20255 | .1693" | 4.30 | 6.0 | 66 | 24 | 36 | 47.67 | 45.60 | 43.52 | 41.45 |
| 20265 | .1732" | 4.40 | 6.0 | 66 | 24 | 36 | 47.67 | 45.60 | 43.52 | 41.45 |
| 20275 | .1772" | 4.50 | 6.0 | 66 | 24 | 36 | 47.05 | 45.00 | 42.96 | 40.91 |
| 20285 | .1811" | 4.60 | 6.0 | 66 | 24 | 36 | 47.05 | 45.00 | 42.96 | 40.91 |
| 20295 | .1831" | 4.65 | 6.0 | 66 | 24 | 36 | 47.05 | 45.00 | 42.96 | 40.91 |
| 20305 | .1850" | 4.70 | 6.0 | 66 | 24 | 36 | 47.05 | 45.00 | 42.96 | 40.91 |
| 20315 | .1870" | 4.75 | 6.0 | 66 | 24 | 36 | 47.05 | 45.00 | 42.96 | 40.91 |
| 20325 | .1890" | 4.80 | 6.0 | 66 | 28 | 36 | 47.05 | 45.00 | 42.96 | 40.91 |
| 20335 | .1929" | 4.90 | 6.0 | 66 | 28 | 36 | 47.05 | 45.00 | 42.96 | 40.91 |
| 20345 | .1969" | 5.00 | 6.0 | 66 | 28 | 36 | 46.44 | 44.42 | 42.40 | 40.38 |
| 20355 | .2008" | 5.10 | 6.0 | 66 | 28 | 36 | 46.44 | 44.42 | 42.40 | 40.38 |
| 20365 | .2027" | 5.15 | 6.0 | 66 | 28 | 36 | 46.44 | 44.42 | 42.40 | 40.38 |
| 20375 | .2047" | 5.20 | 6.0 | 66 | 28 | 36 | 46.44 | 44.42 | 42.40 | 40.38 |
| 20385 | .2087" | 5.30 | 6.0 | 66 | 28 | 36 | 46.44 | 44.42 | 42.40 | 40.38 |
| 20395 | .2165" | 5.50 | 6.0 | 66 | 28 | 36 | 45.82 | 43.83 | 41.84 | 39.84 |

2 flute High Performance - Series 1580HD

Helica Coated - 3xD

| EDP# | Decimal Equiv. | <i>d</i> ₁ mm | <i>d</i> ₂ mm | <i>l</i> ₁ mm | <i>l</i> ₂ mm | <i>l</i> ₄ mm | 1-11 | 12-25 | 26-49 | 50-100 |
|-------|-------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|--------|--------|--------|--------|
| 20405 | .2185" | 5.55 | 6.0 | 66 | 28 | 36 | 45.82 | 43.83 | 41.84 | 39.84 |
| 20415 | .2283" | 5.80 | 6.0 | 66 | 28 | 36 | 45.82 | 43.83 | 41.84 | 39.84 |
| 20425 | .2323" | 5.90 | 6.0 | 66 | 28 | 36 | 45.82 | 43.83 | 41.84 | 39.84 |
| 20435 | .2342" | 5.95 | 6.0 | 66 | 28 | 36 | 45.82 | 43.83 | 41.84 | 39.84 |
| 20445 | .2362" | 6.00 | 6.0 | 66 | 28 | 36 | 45.21 | 43.24 | 41.28 | 39.31 |
| 20455 | .2500" | 6.35 | 8.0 | 79 | 34 | 36 | 64.66 | 61.85 | 59.04 | 56.23 |
| 20465 | .2559" | 6.50 | 8.0 | 79 | 34 | 36 | 64.04 | 61.26 | 58.47 | 55.69 |
| 20475 | .2657" | 6.75 | 8.0 | 79 | 34 | 36 | 64.04 | 61.26 | 58.47 | 55.69 |
| 20485 | .2677" | 6.80 | 8.0 | 79 | 34 | 36 | 64.04 | 61.26 | 58.47 | 55.69 |
| 20495 | .2717" | 6.90 | 8.0 | 79 | 34 | 36 | 64.04 | 61.26 | 58.47 | 55.69 |
| 20505 | .2756" | 7.00 | 8.0 | 79 | 34 | 36 | 63.45 | 60.69 | 57.93 | 55.17 |
| 20515 | .2795" | 7.10 | 8.0 | 79 | 41 | 36 | 63.45 | 60.69 | 57.93 | 55.17 |
| 20525 | .2815" | 7.15 | 8.0 | 79 | 41 | 36 | 63.45 | 60.69 | 57.93 | 55.17 |
| 20535 | .2835" | 7.20 | 8.0 | 79 | 41 | 36 | 63.45 | 60.69 | 57.93 | 55.17 |
| 20545 | .2913" | 7.40 | 8.0 | 79 | 41 | 36 | 63.45 | 60.69 | 57.93 | 55.17 |
| 20555 | .2953" | 7.50 | 8.0 | 79 | 41 | 36 | 62.80 | 60.07 | 57.34 | 54.61 |
| 20565 | .2972" | 7.55 | 8.0 | 79 | 41 | 36 | 62.80 | 60.07 | 57.34 | 54.61 |
| 20575 | .2992" | 7.60 | 8.0 | 79 | 41 | 36 | 62.80 | 60.07 | 57.34 | 54.61 |
| 20585 | .3031" | 7.70 | 8.0 | 79 | 41 | 36 | 62.80 | 60.07 | 57.34 | 54.61 |
| 20595 | .3071" | 7.80 | 8.0 | 79 | 41 | 36 | 62.80 | 60.07 | 57.34 | 54.61 |
| 20605 | .3130" | 7.95 | 8.0 | 79 | 41 | 36 | 62.80 | 60.07 | 57.34 | 54.61 |
| 20615 | .3150" | 8.00 | 8.0 | 79 | 41 | 36 | 62.19 | 59.49 | 56.78 | 54.08 |
| 20625 | .3228" | 8.20 | 10.0 | 89 | 47 | 40 | 90.22 | 86.30 | 82.37 | 78.45 |
| 20635 | .3268" | 8.30 | 10.0 | 89 | 47 | 40 | 90.22 | 86.30 | 82.37 | 78.45 |
| 20645 | .3287" | 8.35 | 10.0 | 89 | 47 | 40 | 90.22 | 86.30 | 82.37 | 78.45 |
| 20655 | .3346" | 8.50 | 10.0 | 89 | 47 | 40 | 89.30 | 85.42 | 81.53 | 77.65 |
| 20665 | .3386" | 8.60 | 10.0 | 89 | 47 | 40 | 89.30 | 85.42 | 81.53 | 77.65 |
| 20675 | .3425" | 8.70 | 10.0 | 89 | 47 | 40 | 89.30 | 85.42 | 81.53 | 77.65 |
| 20685 | .3445" | 8.75 | 10.0 | 89 | 47 | 40 | 89.30 | 85.42 | 81.53 | 77.65 |
| 20695 | .3465" | 8.80 | 10.0 | 89 | 47 | 40 | 89.30 | 85.42 | 81.53 | 77.65 |
| 20705 | .3504" | 8.90 | 10.0 | 89 | 47 | 40 | 89.30 | 85.42 | 81.53 | 77.65 |
| 20715 | .3543" | 9.00 | 10.0 | 89 | 47 | 40 | 88.38 | 84.54 | 80.69 | 76.85 |
| 20725 | .3583" | 9.10 | 10.0 | 89 | 47 | 40 | 88.38 | 84.54 | 80.69 | 76.85 |
| 20735 | .3602" | 9.15 | 10.0 | 89 | 47 | 40 | 88.38 | 84.54 | 80.69 | 76.85 |
| 20745 | .3622" | 9.20 | 10.0 | 89 | 47 | 40 | 88.38 | 84.54 | 80.69 | 76.85 |
| 20755 | .3661" | 9.30 | 10.0 | 89 | 47 | 40 | 88.38 | 84.54 | 80.69 | 76.85 |
| 20765 | .3740" | 9.50 | 10.0 | 89 | 47 | 40 | 87.45 | 83.65 | 79.85 | 76.04 |
| 20775 | .3760" | 9.55 | 10.0 | 89 | 47 | 40 | 87.45 | 83.65 | 79.85 | 76.04 |
| 20785 | .3858" | 9.80 | 10.0 | 89 | 47 | 40 | 87.45 | 83.65 | 79.85 | 76.04 |
| 20795 | .3898" | 9.90 | 10.0 | 89 | 47 | 40 | 87.45 | 83.65 | 79.85 | 76.04 |
| 20805 | .3937" | 10.00 | 10.0 | 89 | 47 | 40 | 86.53 | 82.77 | 79.01 | 75.24 |
| 20815 | .4016" | 10.20 | 12.0 | 102 | 55 | 45 | 117.54 | 112.43 | 107.32 | 102.21 |

Series 1580HD - 2 flute High Performance

3xD - Helica Coated (cont'd.)

| EDP# | Decimal Equiv. | <i>d</i> ₁ mm | <i>d</i> ₂ mm | <i>l</i> ₁ mm | <i>l</i> ₂ mm | <i>l</i> ₄ mm | 1-11 | 12-25 | 26-49 | 50-100 |
|-------|-------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|--------|--------|--------|--------|
| 20825 | .4055" | 10.30 | 12.0 | 102 | 55 | 45 | 117.54 | 112.43 | 107.32 | 102.21 |
| 20835 | .4134" | 10.50 | 12.0 | 102 | 55 | 45 | 116.31 | 111.25 | 106.20 | 101.14 |
| 20845 | .4213" | 10.70 | 12.0 | 102 | 55 | 45 | 116.31 | 111.25 | 106.20 | 101.14 |
| 20855 | .4252" | 10.80 | 12.0 | 102 | 55 | 45 | 116.31 | 111.25 | 106.20 | 101.14 |
| 20865 | .4331" | 11.00 | 12.0 | 102 | 55 | 45 | 115.06 | 110.06 | 105.05 | 100.05 |
| 20875 | .4370" | 11.10 | 12.0 | 102 | 55 | 45 | 115.06 | 110.06 | 105.05 | 100.05 |
| 20885 | .4409" | 11.20 | 12.0 | 102 | 55 | 45 | 115.06 | 110.06 | 105.05 | 100.05 |
| 20895 | .4528" | 11.50 | 12.0 | 102 | 55 | 45 | 113.84 | 108.89 | 103.94 | 98.99 |
| 20905 | .4606" | 11.70 | 12.0 | 102 | 55 | 45 | 113.84 | 108.89 | 103.94 | 98.99 |
| 20915 | .4685" | 11.90 | 12.0 | 102 | 55 | 45 | 113.84 | 108.89 | 103.94 | 98.99 |
| 20925 | .4724" | 12.00 | 12.0 | 102 | 55 | 45 | 112.57 | 107.68 | 102.78 | 97.89 |
| 20935 | .4764" | 12.10 | 14.0 | 107 | 60 | 45 | 146.13 | 139.78 | 133.42 | 127.07 |
| 20945 | .4842" | 12.30 | 14.0 | 107 | 60 | 45 | 146.13 | 139.78 | 133.42 | 127.07 |
| 20955 | .4921" | 12.50 | 14.0 | 107 | 60 | 45 | 144.88 | 138.58 | 132.28 | 125.98 |
| 20965 | .5000" | 12.70 | 14.0 | 107 | 60 | 45 | 144.88 | 138.58 | 132.28 | 125.98 |
| 20975 | .5039" | 12.80 | 14.0 | 107 | 60 | 45 | 144.88 | 138.58 | 132.28 | 125.98 |
| 20985 | .5118" | 13.00 | 14.0 | 107 | 60 | 45 | 143.65 | 137.40 | 131.16 | 124.91 |
| 20995 | .5157" | 13.10 | 14.0 | 107 | 60 | 45 | 143.65 | 137.40 | 131.16 | 124.91 |
| 21005 | .5315" | 13.50 | 14.0 | 107 | 60 | 45 | 142.40 | 136.21 | 130.02 | 123.83 |
| 21015 | .5394" | 13.70 | 14.0 | 107 | 60 | 45 | 142.40 | 136.21 | 130.02 | 123.83 |
| 21025 | .5433" | 13.80 | 14.0 | 107 | 60 | 45 | 142.40 | 136.21 | 130.02 | 123.83 |
| 21035 | .5512" | 14.00 | 14.0 | 107 | 60 | 45 | 141.17 | 135.03 | 128.89 | 122.76 |
| 21045 | .5551" | 14.10 | 16.0 | 115 | 65 | 48 | 172.73 | 165.22 | 157.71 | 150.20 |
| 21055 | .5610" | 14.25 | 16.0 | 115 | 65 | 48 | 172.73 | 165.22 | 157.71 | 150.20 |
| 21065 | .5630" | 14.30 | 16.0 | 115 | 65 | 48 | 172.73 | 165.22 | 157.71 | 150.20 |
| 21075 | .5709" | 14.50 | 16.0 | 115 | 65 | 48 | 171.48 | 164.02 | 156.57 | 149.11 |
| 21085 | .5787" | 14.70 | 16.0 | 115 | 65 | 48 | 171.48 | 164.02 | 156.57 | 149.11 |
| 21095 | .5827" | 14.80 | 16.0 | 115 | 65 | 48 | 171.48 | 164.02 | 156.57 | 149.11 |
| 21105 | .5906" | 15.00 | 16.0 | 115 | 65 | 48 | 170.25 | 162.85 | 155.45 | 148.04 |
| 21115 | .5945" | 15.10 | 16.0 | 115 | 65 | 48 | 170.25 | 162.85 | 155.45 | 148.04 |
| 21125 | .6102" | 15.50 | 16.0 | 115 | 65 | 48 | 169.03 | 161.68 | 154.33 | 146.98 |
| 21135 | .6181" | 15.70 | 16.0 | 115 | 65 | 48 | 169.03 | 161.68 | 154.33 | 146.98 |
| 21145 | .6220" | 15.80 | 16.0 | 115 | 65 | 48 | 169.03 | 161.68 | 154.33 | 146.98 |
| 21155 | .6299" | 16.00 | 16.0 | 115 | 65 | 48 | 167.80 | 160.50 | 153.21 | 145.91 |
| 21165 | .6398" | 16.25 | 18.0 | 123 | 73 | 48 | 232.58 | 222.47 | 212.35 | 202.24 |
| 21175 | .6496" | 16.50 | 18.0 | 123 | 73 | 48 | 230.13 | 220.12 | 210.12 | 200.11 |
| 21185 | .6555" | 16.65 | 18.0 | 123 | 73 | 48 | 230.13 | 220.12 | 210.12 | 200.11 |
| 21195 | .6693" | 17.00 | 18.0 | 123 | 73 | 48 | 227.61 | 217.71 | 207.82 | 197.92 |
| 21205 | .6713" | 17.05 | 18.0 | 123 | 73 | 48 | 227.61 | 217.71 | 207.82 | 197.92 |
| 21215 | .6870" | 17.45 | 18.0 | 123 | 73 | 48 | 227.61 | 217.71 | 207.82 | 197.92 |
| 21225 | .6890" | 17.50 | 18.0 | 123 | 73 | 48 | 225.19 | 215.40 | 205.61 | 195.82 |

2 flute High Performance - Series 1580HD

Helica Coated - 3xD

| EDP# | Decimal Equiv. | d_1 mm | d_2 mm | l_1 mm | l_2 mm | l_4 mm | 1-11 | 12-25 | 26-49 | 50-100 |
|-------|-------------------|-------------|-------------|-------------|-------------|-------------|--------|--------|--------|--------|
| 21235 | .7027" | 17.85 | 18.0 | 123 | 73 | 48 | 225.19 | 215.40 | 205.61 | 195.82 |
| 21245 | .7087" | 18.00 | 18.0 | 123 | 73 | 48 | 222.72 | 213.04 | 203.35 | 193.67 |
| 21255 | .7185" | 18.25 | 20.0 | 131 | 79 | 50 | 314.86 | 301.17 | 287.48 | 273.79 |
| 21265 | .7283" | 18.50 | 20.0 | 131 | 79 | 50 | 312.41 | 298.83 | 285.24 | 271.66 |
| 21275 | .7342" | 18.65 | 20.0 | 131 | 79 | 50 | 312.41 | 298.83 | 285.24 | 271.66 |
| 21285 | .7480" | 19.00 | 20.0 | 131 | 79 | 50 | 309.94 | 296.46 | 282.99 | 269.51 |
| 21295 | .7500" | 19.05 | 20.0 | 131 | 79 | 50 | 309.94 | 296.46 | 282.99 | 269.51 |
| 21305 | .7638" | 19.40 | 20.0 | 131 | 79 | 50 | 309.94 | 296.46 | 282.99 | 269.51 |
| 21315 | .7677" | 19.50 | 20.0 | 131 | 79 | 50 | 307.49 | 294.12 | 280.75 | 267.38 |
| 21325 | .7815" | 19.85 | 20.0 | 131 | 79 | 50 | 307.49 | 294.12 | 280.75 | 267.38 |
| 21335 | .7874" | 20.00 | 20.0 | 131 | 79 | 50 | 305.00 | 291.74 | 278.48 | 265.22 |



The superior properties of the G6 generation of Balzers coatings have been optimized especially for twist drills. In wet or dry machining as well as with minimum quantity lubrication, the new multi-layer Balinit® HELICA coating delivers much better productivity and reliability. This coating is particularly advantageous for carbide drills, whether cooling is external or internal. Wear at the main cutting edge is markedly reduced in comparison with conventional coatings. The outstanding oxidation resistance and hot hardness of the coating also contribute greatly to the stability at the severely loaded cutting edge corners, while the improved toughness of the multi-layer structure significantly reduces the tendency towards cracking.

- Reprinted from Balzers HELICA technical literature

Series 1280KHD - 2 flute High Performance 5xD Coolant Fed - Helica Coated

TOLERANCES

| | | | | |
|--------------------------|--------|-------------------|-------|-------------------|
| d_1 : m7 (DIN 6537) | m7 * | | h6 | |
| d_2 : h6 (DIN 6535 HA) | 3-6 | +0.016mm +0.004mm | 6 | +0.000mm -0.008mm |
| | >6-10 | +0.021mm +0.006mm | 8-10 | +0.000mm -0.009mm |
| | >10-18 | +0.025mm +0.007mm | 12-18 | +0.000mm -0.011mm |
| | >18-20 | +0.029mm +0.008mm | 20 | +0.000mm -0.013mm |

High performance solid carbide reinforced shank

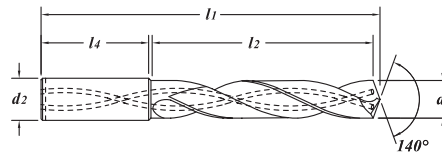
Utilizes DIN standard 6537 *

Up to 50% faster than standard carbide drills

30° helix for better chip evacuation

Recommended to run in high nickel, high temperature alloys, cobalt based alloys, stainless steels and tool steels

Balinit® Helica is a multi-layer AlCr-based coating designed exclusively for high performance drilling



*** Note - These drills are made to a plus/plus tolerance on the drill diameter. If you are in need of a minus tolerance drill, please refer to our high performance drills starting on page 6 of our full line 2003-04 catalog.**

| EDP# | Decimal Equiv. | d_1 mm | d_2 mm | l_1 mm | l_2 mm | l_4 mm | 1-11 | 12-25 | 26-49 | 50-100 |
|-------|----------------|----------|----------|----------|----------|----------|--------|--------|-------|--------|
| 25205 | .1575" | 4.00 | 6.0 | 74 | 36 | 36 | 75.83 | 72.53 | 69.24 | 65.94 |
| 25215 | .1614" | 4.10 | 6.0 | 74 | 36 | 36 | 75.83 | 72.53 | 69.24 | 65.94 |
| 25225 | .1654" | 4.20 | 6.0 | 74 | 36 | 36 | 75.83 | 72.53 | 69.24 | 65.94 |
| 25235 | .1673" | 4.25 | 6.0 | 74 | 36 | 36 | 75.83 | 72.53 | 69.24 | 65.94 |
| 25245 | .1693" | 4.30 | 6.0 | 74 | 36 | 36 | 75.83 | 72.53 | 69.24 | 65.94 |
| 25255 | .1732" | 4.40 | 6.0 | 74 | 36 | 36 | 75.83 | 72.53 | 69.24 | 65.94 |
| 25265 | .1772" | 4.50 | 6.0 | 74 | 36 | 36 | 75.19 | 71.92 | 68.65 | 65.38 |
| 25275 | .1811" | 4.60 | 6.0 | 74 | 36 | 36 | 75.19 | 71.92 | 68.65 | 65.38 |
| 25285 | .1831" | 4.65 | 6.0 | 74 | 36 | 36 | 75.19 | 71.92 | 68.65 | 65.38 |
| 25295 | .1850" | 4.70 | 6.0 | 74 | 36 | 36 | 75.19 | 71.92 | 68.65 | 65.38 |
| 25305 | .1870" | 4.75 | 6.0 | 74 | 36 | 36 | 75.19 | 71.92 | 68.65 | 65.38 |
| 25315 | .1890" | 4.80 | 6.0 | 82 | 44 | 36 | 75.19 | 71.92 | 68.65 | 65.38 |
| 25325 | .1929" | 4.90 | 6.0 | 82 | 44 | 36 | 75.19 | 71.92 | 68.65 | 65.38 |
| 25335 | .1969" | 5.00 | 6.0 | 82 | 44 | 36 | 74.58 | 71.34 | 68.09 | 64.85 |
| 25345 | .2008" | 5.10 | 6.0 | 82 | 44 | 36 | 74.58 | 71.34 | 68.09 | 64.85 |
| 25355 | .2027" | 5.15 | 6.0 | 82 | 44 | 36 | 74.58 | 71.34 | 68.09 | 64.85 |
| 25365 | .2047" | 5.20 | 6.0 | 82 | 44 | 36 | 74.58 | 71.34 | 68.09 | 64.85 |
| 25375 | .2087" | 5.30 | 6.0 | 82 | 44 | 36 | 74.58 | 71.34 | 68.09 | 64.85 |
| 25385 | .2165" | 5.50 | 6.0 | 82 | 44 | 36 | 71.50 | 68.39 | 65.28 | 62.17 |
| 25395 | .2185" | 5.55 | 6.0 | 82 | 44 | 36 | 71.50 | 68.39 | 65.28 | 62.17 |
| 25405 | .2283" | 5.80 | 6.0 | 82 | 44 | 36 | 71.50 | 68.39 | 65.28 | 62.17 |
| 25415 | .2323" | 5.90 | 6.0 | 82 | 44 | 36 | 71.50 | 68.39 | 65.28 | 62.17 |
| 25425 | .2342" | 5.95 | 6.0 | 82 | 44 | 36 | 71.50 | 68.39 | 65.28 | 62.17 |
| 25435 | .2362" | 6.00 | 6.0 | 82 | 44 | 36 | 68.43 | 65.45 | 62.48 | 59.50 |
| 25445 | .2500" | 6.35 | 8.0 | 91 | 53 | 36 | 104.86 | 100.30 | 95.74 | 91.18 |
| 25455 | .2559" | 6.50 | 8.0 | 91 | 53 | 36 | 102.70 | 98.23 | 93.77 | 89.30 |
| 25465 | .2657" | 6.75 | 8.0 | 91 | 53 | 36 | 102.70 | 98.23 | 93.77 | 89.30 |
| 25475 | .2677" | 6.80 | 8.0 | 91 | 53 | 36 | 102.70 | 98.23 | 93.77 | 89.30 |
| 25485 | .2717" | 6.90 | 8.0 | 91 | 53 | 36 | 102.70 | 98.23 | 93.77 | 89.30 |
| 25495 | .2756" | 7.00 | 8.0 | 91 | 53 | 36 | 100.52 | 96.15 | 91.78 | 87.41 |
| 25505 | .2795" | 7.10 | 8.0 | 91 | 53 | 36 | 100.52 | 96.15 | 91.78 | 87.41 |
| 25515 | .2815" | 7.15 | 8.0 | 91 | 53 | 36 | 100.52 | 96.15 | 91.78 | 87.41 |

2 flute High Performance - Series 1280KHD *Helica Coated - 5xD Coolant Fed*

| EDP# | Decimal Equiv. | <i>d</i> ₁ mm | <i>d</i> ₂ mm | <i>l</i> ₁ mm | <i>l</i> ₂ mm | <i>l</i> ₄ mm | 1-11 | 12-25 | 26-49 | 50-100 |
|-------|-------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|--------|--------|--------|--------|
| 25525 | .2835" | 7.20 | 8.0 | 91 | 53 | 36 | 100.52 | 96.15 | 91.78 | 87.41 |
| 25535 | .2913" | 7.40 | 8.0 | 91 | 53 | 36 | 100.52 | 96.15 | 91.78 | 87.41 |
| 25545 | .2953" | 7.50 | 8.0 | 91 | 53 | 36 | 98.37 | 94.09 | 89.82 | 85.54 |
| 25555 | .2972" | 7.55 | 8.0 | 91 | 53 | 36 | 98.37 | 94.09 | 89.82 | 85.54 |
| 25565 | .2992" | 7.60 | 8.0 | 91 | 53 | 36 | 98.37 | 94.09 | 89.82 | 85.54 |
| 25575 | .3031" | 7.70 | 8.0 | 91 | 53 | 36 | 98.37 | 94.09 | 89.82 | 85.54 |
| 25585 | .3071" | 7.80 | 8.0 | 91 | 53 | 36 | 98.37 | 94.09 | 89.82 | 85.54 |
| 25595 | .3130" | 7.95 | 8.0 | 91 | 53 | 36 | 98.37 | 94.09 | 89.82 | 85.54 |
| 25605 | .3150" | 8.00 | 8.0 | 91 | 53 | 36 | 96.23 | 92.05 | 87.86 | 83.68 |
| 25615 | .3228" | 8.20 | 10.0 | 103 | 61 | 40 | 133.80 | 127.98 | 122.16 | 116.35 |
| 25625 | .3268" | 8.30 | 10.0 | 103 | 61 | 40 | 133.80 | 127.98 | 122.16 | 116.35 |
| 25635 | .3287" | 8.35 | 10.0 | 103 | 61 | 40 | 133.80 | 127.98 | 122.16 | 116.35 |
| 25645 | .3346" | 8.50 | 10.0 | 103 | 61 | 40 | 131.34 | 125.63 | 119.92 | 114.21 |
| 25655 | .3386" | 8.60 | 10.0 | 103 | 61 | 40 | 131.34 | 125.63 | 119.92 | 114.21 |
| 25665 | .3425" | 8.70 | 10.0 | 103 | 61 | 40 | 131.34 | 125.63 | 119.92 | 114.21 |
| 25675 | .3445" | 8.75 | 10.0 | 103 | 61 | 40 | 131.34 | 125.63 | 119.92 | 114.21 |
| 25685 | .3465" | 8.80 | 10.0 | 103 | 61 | 40 | 131.34 | 125.63 | 119.92 | 114.21 |
| 25695 | .3504" | 8.90 | 10.0 | 103 | 61 | 40 | 131.34 | 125.63 | 119.92 | 114.21 |
| 25705 | .3543" | 9.00 | 10.0 | 103 | 61 | 40 | 128.89 | 123.29 | 117.68 | 112.08 |
| 25715 | .3583" | 9.10 | 10.0 | 103 | 61 | 40 | 128.89 | 123.29 | 117.68 | 112.08 |
| 25725 | .3602" | 9.15 | 10.0 | 103 | 61 | 40 | 128.89 | 123.29 | 117.68 | 112.08 |
| 25735 | .3622" | 9.20 | 10.0 | 103 | 61 | 40 | 128.89 | 123.29 | 117.68 | 112.08 |
| 25745 | .3661" | 9.30 | 10.0 | 103 | 61 | 40 | 128.89 | 123.29 | 117.68 | 112.08 |
| 25755 | .3740" | 9.50 | 10.0 | 103 | 61 | 40 | 126.41 | 120.91 | 115.42 | 109.92 |
| 25765 | .3760" | 9.55 | 10.0 | 103 | 61 | 40 | 126.41 | 120.91 | 115.42 | 109.92 |
| 25775 | .3858" | 9.80 | 10.0 | 103 | 61 | 40 | 126.41 | 120.91 | 115.42 | 109.92 |
| 25785 | .3898" | 9.90 | 10.0 | 103 | 61 | 40 | 126.41 | 120.91 | 115.42 | 109.92 |
| 25795 | .3937" | 10.00 | 10.0 | 103 | 61 | 40 | 123.96 | 118.57 | 113.18 | 107.79 |
| 25805 | .4016" | 10.20 | 12.0 | 118 | 71 | 45 | 172.20 | 164.71 | 157.23 | 149.74 |
| 25815 | .4055" | 10.30 | 12.0 | 118 | 71 | 45 | 172.20 | 164.71 | 157.23 | 149.74 |
| 25825 | .4134" | 10.50 | 12.0 | 118 | 71 | 45 | 169.12 | 161.77 | 154.41 | 147.06 |
| 25835 | .4213" | 10.70 | 12.0 | 118 | 71 | 45 | 169.12 | 161.77 | 154.41 | 147.06 |
| 25845 | .4252" | 10.80 | 12.0 | 118 | 71 | 45 | 169.12 | 161.77 | 154.41 | 147.06 |
| 25855 | .4331" | 11.00 | 12.0 | 118 | 71 | 45 | 166.03 | 158.81 | 151.59 | 144.37 |
| 25865 | .4370" | 11.10 | 12.0 | 118 | 71 | 45 | 166.03 | 158.81 | 151.59 | 144.37 |
| 25875 | .4409" | 11.20 | 12.0 | 118 | 71 | 45 | 166.03 | 158.81 | 151.59 | 144.37 |
| 25885 | .4528" | 11.50 | 12.0 | 118 | 71 | 45 | 162.97 | 155.88 | 148.80 | 141.71 |
| 25895 | .4606" | 11.70 | 12.0 | 118 | 71 | 45 | 162.97 | 155.88 | 148.80 | 141.71 |
| 25905 | .4685" | 11.90 | 12.0 | 118 | 71 | 45 | 162.97 | 155.88 | 148.80 | 141.71 |
| 25915 | .4724" | 12.00 | 12.0 | 118 | 71 | 45 | 159.87 | 152.92 | 145.97 | 139.02 |
| 25925 | .4764" | 12.10 | 14.0 | 124 | 77 | 45 | 248.23 | 237.44 | 226.64 | 215.85 |
| 25935 | .4842" | 12.30 | 14.0 | 124 | 77 | 45 | 248.23 | 237.44 | 226.64 | 215.85 |

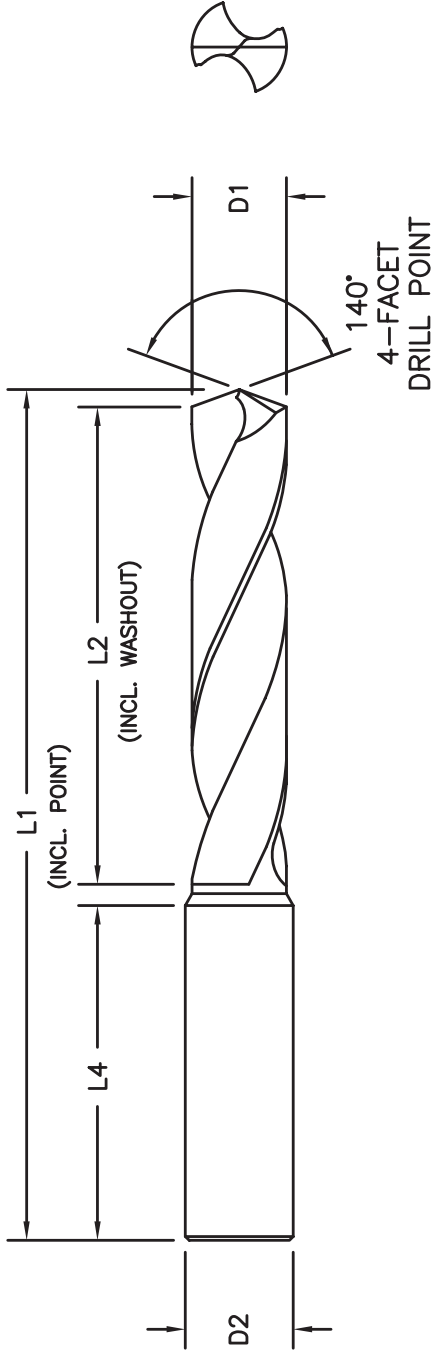
989-463-6171

800-248-9003

fax 989-463-3609

Series 1280KHD - 2 flute High Performance 5xD Coolant Fed - *Helica Coated* (cont'd.)

| EDP# | Decimal Equiv. | <i>d</i> ₁ mm | <i>d</i> ₂ mm | <i>l</i> ₁ mm | <i>l</i> ₂ mm | <i>l</i> ₄ mm | 1-11 | 12-25 | 26-49 | 50-100 |
|-------|-------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|--------|--------|--------|--------|
| 25945 | .4921" | 12.50 | 14.0 | 124 | 77 | 45 | 245.16 | 234.50 | 223.84 | 213.18 |
| 25955 | .5000" | 12.70 | 14.0 | 124 | 77 | 45 | 245.16 | 234.50 | 223.84 | 213.18 |
| 25960 | .5039" | 12.80 | 14.0 | 124 | 77 | 45 | 245.16 | 234.50 | 223.84 | 213.18 |
| 25965 | .5118" | 13.00 | 14.0 | 124 | 77 | 45 | 242.09 | 231.56 | 221.04 | 210.51 |
| 25975 | .5157" | 13.10 | 14.0 | 124 | 77 | 45 | 242.09 | 231.56 | 221.04 | 210.51 |
| 25985 | .5315" | 13.50 | 14.0 | 124 | 77 | 45 | 238.98 | 228.59 | 218.20 | 207.81 |
| 25995 | .5394" | 13.70 | 14.0 | 124 | 77 | 45 | 238.98 | 228.59 | 218.20 | 207.81 |
| 26005 | .5433" | 13.80 | 14.0 | 124 | 77 | 45 | 238.98 | 228.59 | 218.20 | 207.81 |
| 26015 | .5512" | 14.00 | 14.0 | 124 | 77 | 45 | 235.90 | 225.64 | 215.39 | 205.13 |
| 26025 | .5551" | 14.10 | 16.0 | 133 | 83 | 48 | 327.21 | 312.98 | 298.76 | 284.53 |
| 26035 | .5610" | 14.25 | 16.0 | 133 | 83 | 48 | 327.21 | 312.98 | 298.76 | 284.53 |
| 26045 | .5630" | 14.30 | 16.0 | 133 | 83 | 48 | 327.21 | 312.98 | 298.76 | 284.53 |
| 26055 | .5709" | 14.50 | 16.0 | 133 | 83 | 48 | 323.82 | 309.74 | 295.66 | 281.58 |
| 26065 | .5787" | 14.70 | 16.0 | 133 | 83 | 48 | 323.82 | 309.74 | 295.66 | 281.58 |
| 26067 | .5827" | 14.80 | 16.0 | 133 | 83 | 48 | 323.82 | 309.74 | 295.66 | 281.58 |
| 26075 | .5906" | 15.00 | 16.0 | 133 | 83 | 48 | 320.45 | 306.52 | 292.58 | 278.65 |
| 26085 | .5945" | 15.10 | 16.0 | 133 | 83 | 48 | 320.45 | 306.52 | 292.58 | 278.65 |
| 26095 | .6102" | 15.50 | 16.0 | 133 | 83 | 48 | 317.03 | 303.25 | 289.46 | 275.68 |
| 26105 | .6181" | 15.70 | 16.0 | 133 | 83 | 48 | 317.03 | 303.25 | 289.46 | 275.68 |
| 26107 | .6220" | 15.80 | 16.0 | 133 | 83 | 48 | 317.03 | 303.25 | 289.46 | 275.68 |
| 26115 | .6299" | 16.00 | 16.0 | 133 | 83 | 48 | 313.66 | 300.02 | 286.38 | 272.75 |
| 26125 | .6398" | 16.25 | 18.0 | 143 | 93 | 48 | 397.81 | 380.51 | 363.22 | 345.92 |
| 26135 | .6496" | 16.50 | 18.0 | 143 | 93 | 48 | 391.62 | 374.59 | 357.56 | 340.54 |
| 26145 | .6555" | 16.65 | 18.0 | 143 | 93 | 48 | 391.62 | 374.59 | 357.56 | 340.54 |
| 26155 | .6693" | 17.00 | 18.0 | 143 | 93 | 48 | 385.33 | 368.58 | 351.82 | 335.07 |
| 26165 | .6713" | 17.05 | 18.0 | 143 | 93 | 48 | 385.33 | 368.58 | 351.82 | 335.07 |
| 26175 | .6870" | 17.45 | 18.0 | 143 | 93 | 48 | 385.33 | 368.58 | 351.82 | 335.07 |
| 26185 | .6890" | 17.50 | 18.0 | 143 | 93 | 48 | 379.18 | 362.69 | 346.21 | 329.72 |
| 26195 | .7027" | 17.85 | 18.0 | 143 | 93 | 48 | 379.18 | 362.69 | 346.21 | 329.72 |
| 26205 | .7087" | 18.00 | 18.0 | 143 | 93 | 48 | 372.91 | 356.70 | 340.48 | 324.27 |
| 26215 | .7185" | 18.25 | 20.0 | 153 | 101 | 50 | 478.19 | 457.40 | 436.61 | 415.82 |
| 26225 | .7283" | 18.50 | 20.0 | 153 | 101 | 50 | 471.87 | 451.35 | 430.84 | 410.32 |
| 26235 | .7342" | 18.65 | 20.0 | 153 | 101 | 50 | 471.87 | 451.35 | 430.84 | 410.32 |
| 26245 | .7480" | 19.00 | 20.0 | 153 | 101 | 50 | 465.45 | 445.21 | 424.97 | 404.97 |
| 26255 | .7500" | 19.05 | 20.0 | 153 | 101 | 50 | 465.45 | 445.21 | 424.97 | 404.97 |
| 26265 | .7638" | 19.40 | 20.0 | 153 | 101 | 50 | 465.45 | 445.21 | 424.97 | 404.97 |
| 26275 | .7677" | 19.50 | 20.0 | 153 | 101 | 50 | 459.06 | 439.10 | 419.14 | 399.18 |
| 26285 | .7815" | 19.85 | 20.0 | 153 | 101 | 50 | 459.06 | 439.10 | 419.14 | 399.18 |
| 26295 | .7874" | 20.00 | 20.0 | 153 | 101 | 50 | 452.64 | 432.96 | 413.28 | 393.60 |



D1: _____ TOL: _____

D2: _____ TOL: _____

L1: _____

L2: _____

L4: _____

COATING: _____

MAT'L BEING CUT: _____

DIMENSIONS NOT SHOWN TO BE GARR TOOL STANDARDS
TOLERANCES ARE BEFORE ANY COATING IS APPLIED

GARR TOOL

ALMA, MICHIGAN

SOLID CARBIDE - MICRO GRAIN
2 RHS FLUTES
30° HELIX

SCALE: _____

DRAWN BY: _____

APPR. BY: _____

DATE: _____

DATE: _____

TITLE: _____

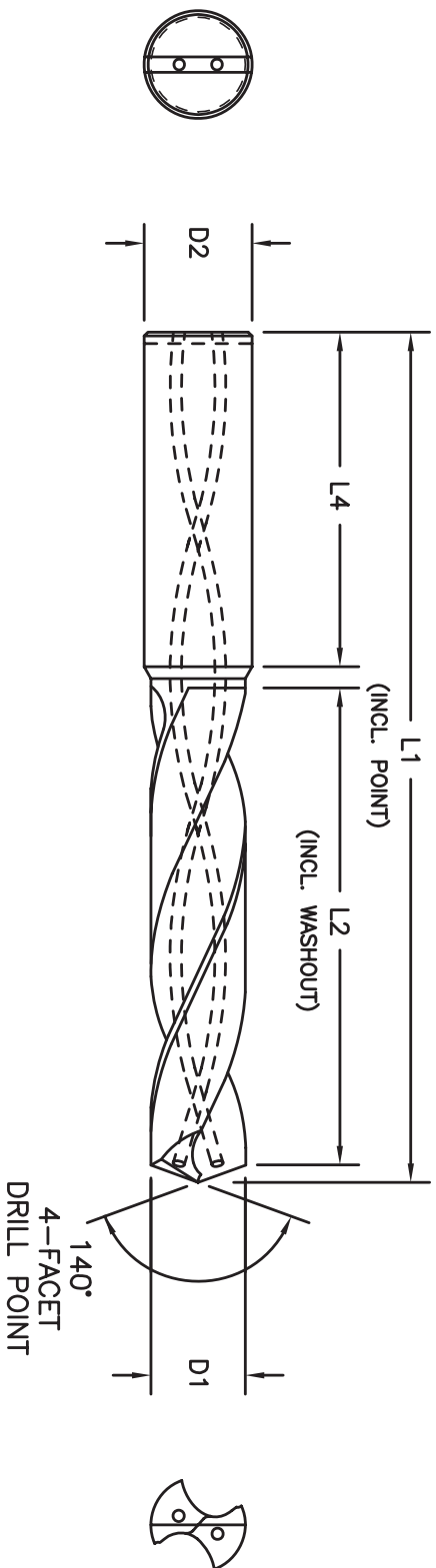
HIGH PERFORMANCE DRILL

CUSTOMER: _____

DWG NO.: _____

REVISIONS

| NO. | DESCRIPTION | DATE |
|-----|-------------|------|
| | | |
| | | |
| | | |



D1: _____ TOL: _____
 D2: _____ TOL: _____
 L1: _____
 L2: _____
 L4: _____
 COATING: _____
 MAT'L BEING CUT: _____

DIMENSIONS NOT SHOWN TO BE GARR TOOL STANDARDS
 TOLERANCES ARE BEFORE ANY COATING IS APPLIED

SOLID CARBIDE – MICRO GRAIN
 2 RHS FLUTES
 30° HELIX

REVISIONS

| | | |
|--|--|--|
| | | |
| | | |

GARR TOOL

ALMA, MICHIGAN

SCALE: _____ DRAWN BY: _____

APPR. BY: _____

DATE: _____

DATE: _____

TITLE:

COOLANT FED HIGH PERFORMANCE DRILL

CUSTOMER: _____

DWG NO.: _____

GARR TOOL High Performance Drilling Guide

fractional

| Material | Type | Rc Hardness | Recommended SFM | | CHIPLOAD PER FLUTE (Fz) | | | | |
|---------------------------------|--|-------------|-----------------|---------|-------------------------|-----------------|-----------------|-----------------|-----------------|
| | | | 1580HHD | 1280KHD | 3.0 - 6.0 mm | 6.0 - 10.0 mm | 10.0 - 13.0 mm | 13.0 - 16.0 mm | 16.0 - 20.0 mm |
| COBALT BASE ALLOYS | Stellite, Hs-21, Haynes 25/188, X-40, L-605 | Under 32 | 225 | 300 | .0015" - .0025" | .0025" - .0035" | .0030" - .0040" | .0035" - .0045" | .0040" - .0060" |
| | | Over 32 | 180 | 240 | .0010" - .0020" | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0035" - .0050" |
| NICKEL BASE ALLOYS | Inconel-625/718, Waspalloy, Rene, Hastalloy | Under 32 | 225 | 300 | .0015" - .0025" | .0025" - .0035" | .0030" - .0040" | .0035" - .0045" | .0040" - .0060" |
| | | Over 32 | 180 | 240 | .0010" - .0020" | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0035" - .0050" |
| IRON BASE ALLOYS | Incoloy 800-802, Multimet N-155, Timkin 16-25-6, Carpenter 22-b3 | Under 32 | 300 | 375 | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" | .0040" - .0060" |
| | | Over 32 | 240 | 300 | .0010" - .0020" | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0035" - .0050" |
| MONEL | Monel - 65% Nickel | | 225 | 300 | .0015" - .0025" | .0020" - .0030" | .0025" - .0035" | .0030" - .0040" | .0040" - .0060" |
| TITANIUM ALLOYS | Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si | | 350 | 425 | .0015" - .0025" | .0025" - .0035" | .0030" - .0040" | .0035" - .0045" | .0040" - .0060" |
| STAINLESS STEEL (Precipitation) | 13/8, 15/5, 17-4, AM-350/355 | Under 32 | 300 | 375 | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" | .0045" - .0060" |
| | | Over 32 | 240 | 300 | .0010" - .0020" | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" |
| STAINLESS STEEL (Austenitic) | 200 Series, 302, 303, 304, 316 | Under 32 | 300 | 375 | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" | .0045" - .0060" |
| | | Over 32 | 225 | 300 | .0015" - .0020" | .0020" - .0030" | .0025" - .0030" | .0030" - .0040" | .0040" - .0050" |
| STAINLESS STEEL (Austenitic) | 304L, 316L | Under 32 | 175 | 225 | .0015" - .0020" | .0020" - .0025" | .0025" - .0030" | .0030" - .0040" | .0035" - .0050" |
| | | Over 32 | 100 | 150 | .0008" - .0015" | .0015" - .0020" | .0025" - .0035" | .0030" - .0040" | .0030" - .0050" |
| STAINLESS STEEL (Martensitic) | 403, 410, 416, 440 | Under 32 | 300 | 375 | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" | .0045" - .0060" |
| | | Over 32 | 240 | 300 | .0010" - .0020" | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" |
| HIGH STRENGTH TOOL STEELS | 4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1 | Under 32 | 300 | 375 | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" | .0050" - .0060" |
| | | Over 32 | 240 | 300 | .0010" - .0020" | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" |
| MEDIUM ALLOY STEELS | 200, 250, 300 | Under 32 | 300 | 375 | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" | .0050" - .0070" |
| | | Over 32 | 240 | 300 | .0010" - .0020" | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" |
| CARBON STEELS | 1000's, 1100's, 1300's | Under 32 | 300 | 375 | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" | .0050" - .0070" |
| | | Over 32 | 240 | 300 | .0010" - .0020" | .0020" - .0030" | .0030" - .0035" | .0035" - .0040" | .0040" - .0050" |
| CAST | Ductile Cast Irons Gray Cast Irons Aluminum Steel | | 600 | 700 | .0040" - .0050" | .0040" - .0050" | .0050" - .0060" | .0070" - .0080" | .0080" - .0120" |
| | | | 625 | 750 | .0040" - .0050" | .0040" - .0050" | .0050" - .0060" | .0070" - .0080" | .0080" - .0120" |
| | | | 700 | 850 | .0050" - .0060" | .0070" - .0080" | .0090" - .0100" | .0090" - .0100" | .0100" - .0150" |
| | | | 300 | 450 | .0040" - .0050" | .0040" - .0050" | .0050" - .0060" | .0070" - .0080" | .0080" - .0120" |
| ALUMINUM | 2014, 2024, 6061-(T1-T6), 7075, Die Cast Extruded | | 700 | 850 | .0050" - .0060" | .0070" - .0080" | .0090" - .0100" | .0090" - .0100" | .0090" - .0120" |
| MAGNESIUM | | | 600 | 725 | .0050" - .0060" | .0070" - .0080" | .0090" - .0100" | .0090" - .0100" | .0090" - .0120" |
| COPPER | Copper Alloys | | 600 | 725 | .0040" - .0050" | .0040" - .0050" | .0050" - .0060" | .0070" - .0080" | .0080" - .0100" |
| BRASS | Short Chips Long Chips | | 600 | 725 | .0050" - .0060" | .0070" - .0080" | .0090" - .0100" | .0090" - .0100" | .0100" - .0120" |
| | | | 475 | 600 | .0040" - .0050" | .0060" - .0070" | .0080" - .0090" | .0080" - .0090" | .0080" - .0100" |
| BRONZE | Short Chips Long Chips | | 400 | 525 | .0040" - .0050" | .0040" - .0050" | .0060" - .0070" | .0080" - .0090" | .0080" - .0120" |
| | | | 275 | 325 | .0030" - .0040" | .0030" - .0040" | .0050" - .0060" | .0070" - .0080" | .0080" - .0100" |

NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.

GARR TOOL High Performance Drilling Guide

metric

| Material | Type | Rc Hardness | Recommended SMM | | CHIPLOAD PER FLUTE (Fz) | | | | |
|---------------------------------|--|-------------|-----------------|---------|-------------------------|---------------|----------------|----------------|----------------|
| | | | 1580HD | 1280KHD | 3.0 - 6.0 mm | 6.0 - 10.0 mm | 10.0 - 13.0 mm | 13.0 - 16.0 mm | 16.0 - 20.0 mm |
| COBALT BASE ALLOYS | Stellite, Hs-21, Haynes 25/188, X-40, L-605 | Under 32 | 70 | 90 | 0.035 - 0.060 | 0.060 - 0.085 | 0.075 - 0.100 | 0.085 - 0.110 | 0.095 - 0.130 |
| | | Over 32 | 55 | 70 | 0.025 - 0.050 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.095 - 0.110 |
| NICKEL BASE ALLOYS | Inconel-625/718, Waspalloy, Rene, Hastalloy | Under 32 | 70 | 90 | 0.035 - 0.060 | 0.060 - 0.085 | 0.075 - 0.100 | 0.085 - 0.110 | 0.085 - 0.110 |
| | | Over 32 | 55 | 70 | 0.025 - 0.050 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.085 - 0.100 |
| IRON BASE ALLOYS | Incoloy 800-802, Multimet N-155, Timkin 16-25-6, Carpenter 22-b3 | Under 32 | 90 | 115 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.100 - 0.125 | 0.110 - 0.140 |
| | | Over 32 | 70 | 90 | 0.025 - 0.050 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.095 - 0.110 |
| MONEL | Monel - 65% Nickel | | 70 | 90 | 0.035 - 0.060 | 0.050 - 0.075 | 0.060 - 0.085 | 0.075 - 0.100 | 0.085 - 0.120 |
| TITANIUM ALLOYS | Commercially Pure, 6Al-4V, Astm 1/2/3, 6Al-25N-4Zr-2Mo-Si | | 105 | 130 | 0.035 - 0.060 | 0.060 - 0.085 | 0.075 - 0.100 | 0.085 - 0.110 | 0.095 - 0.130 |
| STAINLESS STEEL (Precipitation) | 13/8, 15/5, 17-4, AM-350/355 | Under 32 | 90 | 115 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.100 - 0.125 | 0.100 - 0.140 |
| | | Over 32 | 70 | 90 | 0.025 - 0.050 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.085 - 0.110 |
| STAINLESS STEEL (Austenitic) | 200 Series, 302, 303, 304, 316 | Under 32 | 90 | 115 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.100 - 0.125 | 0.100 - 0.140 |
| | | Over 32 | 70 | 90 | 0.035 - 0.050 | 0.050 - 0.060 | 0.060 - 0.075 | 0.075 - 0.100 | 0.075 - 0.110 |
| STAINLESS STEEL (Austenitic) | 304L, 316L | Under 32 | 55 | 70 | 0.035 - 0.050 | 0.050 - 0.060 | 0.060 - 0.075 | 0.075 - 0.100 | 0.075 - 0.110 |
| | | Over 32 | 30 | 45 | 0.025 - 0.035 | 0.035 - 0.050 | 0.060 - 0.085 | 0.075 - 0.100 | 0.075 - 0.110 |
| STAINLESS STEEL (Martensitic) | 403, 410, 416, 440 | Under 32 | 90 | 115 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.100 - 0.125 | 0.100 - 0.130 |
| | | Over 32 | 70 | 90 | 0.025 - 0.050 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.085 - 0.110 |
| HIGH STRENGTH TOOL STEELS | 4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1 | Under 32 | 90 | 115 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.100 - 0.125 | 0.100 - 0.130 |
| | | Over 32 | 70 | 90 | 0.025 - 0.050 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.085 - 0.100 |
| MEDIUM ALLOY STEELS | 200, 250, 300 | Under 32 | 90 | 115 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.100 - 0.125 | 0.100 - 0.140 |
| | | Over 32 | 70 | 90 | 0.025 - 0.050 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.085 - 0.110 |
| CARBON STEELS | 1000's, 1100's, 1300's | Under 32 | 90 | 115 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.100 - 0.125 | 0.100 - 0.140 |
| | | Over 32 | 70 | 90 | 0.025 - 0.050 | 0.050 - 0.075 | 0.075 - 0.085 | 0.085 - 0.100 | 0.085 - 0.120 |
| CAST | Ductile Cast Irons Gray Cast Irons Aluminum Steel | | 90 | 215 | 0.100 - 0.125 | 0.100 - 0.125 | 0.125 - 0.150 | 0.175 - 0.200 | 0.200 - 0.300 |
| | | | 190 | 225 | 0.100 - 0.125 | 0.100 - 0.125 | 0.125 - 0.150 | 0.175 - 0.200 | 0.200 - 0.300 |
| | | | 215 | 260 | 0.125 - 0.150 | 0.175 - 0.200 | 0.225 - 0.250 | 0.225 - 0.250 | 0.200 - 0.300 |
| | | | 90 | 135 | 0.100 - 0.125 | 0.100 - 0.125 | 0.125 - 0.150 | 0.175 - 0.200 | 0.200 - 0.300 |
| ALUMINUM | 2014, 2024, 6061-(T1-T6), 7075, Die Cast Extruded | | 215 | 260 | 0.125 - 0.150 | 0.175 - 0.200 | 0.225 - 0.250 | 0.225 - 0.250 | 0.230 - 0.280 |
| MAGNESIUM | | | 185 | 220 | 0.125 - 0.150 | 0.175 - 0.200 | 0.225 - 0.250 | 0.225 - 0.250 | 0.230 - 0.280 |
| COPPER | Copper Alloys | | 185 | 220 | 0.100 - 0.125 | 0.100 - 0.125 | 0.125 - 0.150 | 0.175 - 0.200 | 0.200 - 0.250 |
| BRASS | Short Chips Long Chips | | 185 | 220 | 0.125 - 0.150 | 0.175 - 0.200 | 0.225 - 0.250 | 0.225 - 0.250 | 0.250 - 0.280 |
| | | | 145 | 180 | 0.100 - 0.125 | 0.150 - 0.175 | 0.200 - 0.225 | 0.200 - 0.225 | 0.220 - 0.250 |
| BRONZE | Short Chips Long Chips | | 120 | 160 | 0.100 - 0.125 | 0.100 - 0.125 | 0.150 - 0.175 | 0.200 - 0.225 | 0.230 - 0.280 |
| | | | 85 | 100 | 0.060 - 0.085 | 0.075 - 0.100 | 0.125 - 0.150 | 0.175 - 0.200 | 0.200 - 0.220 |

NOTE - ABOVE ARE STARTING PARAMETERS ONLY. HIGHER RESULTS MAY BE ACHIEVED WITH OPTIMUM CONDITIONS.