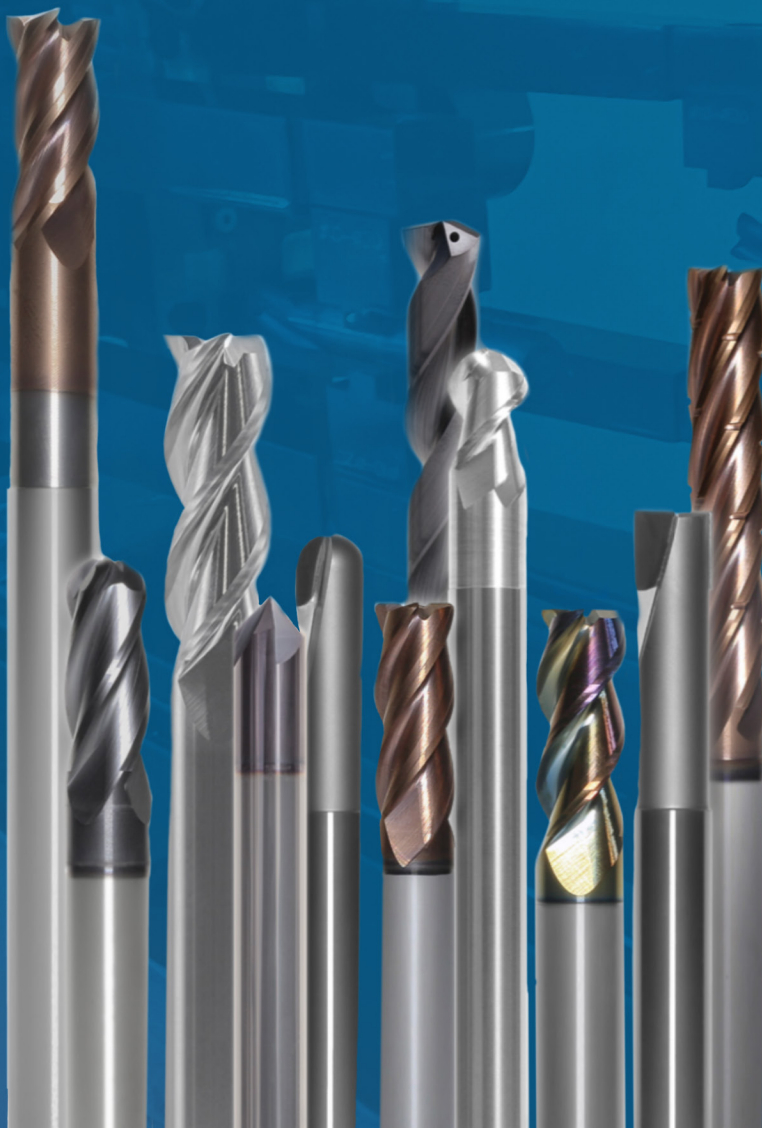




HY-PRO Additions 2023

Carbide Milling & Drilling



2023

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1 TOOL MATERIAL

CARBIDE Tungsten carbide














2 TOLERANCE FOR DRILL DIAMETER

m7 Drill diameter tolerance

3 DRILL POINT ANGLE

120° Point angle

4 MILLING EXAMPLES

-  Suitable for contouring
-  Slotting ball end
-  Profiling
-  Side milling
-  Slotting square end
-  Profiling
-  Side milling
-  Side milling ball end
-  Ramping
-  Slotting corner radius
-  Trochoidal milling
-  Helical milling
-  High feed corner radius milling



5 HELIX ANGLE

45° Displays flute helix angle

6 SURFACE TREATMENT

- TiAlN** Titanium aluminium nitride coating
- TiSiN** Multi-layer coating for exotic nickel and titanium alloys
- WDI** Multi-layer coating, for improved wear resistance
- EgiAs** Multi-layer coating, for improved wear resistance and performance.
- AlCrN** Multi-layer coating with unique nanostructure for high temperature resistance.

7 SHANK

- SHRINK FIT** Suitable for shrink fit system
-  Flatted shank
- h6** Shank diameter tolerance
-  Whistle notch

8 MISCELLANEOUS

-  Centre cutting
- HIGH SPEED** High speed milling
- RF** Suitable for roughing and finishing
-  Through coolant
-  Milling conditions

PRODUCT LINE UP



Side Milling



Side Milling



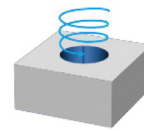
Slotting



Side Milling



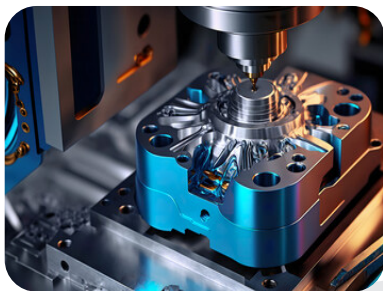
Ramping



Helical Milling



Trochoidal Milling



VG4-WEMS

Carbide end mill with TiSiN coating

For general applications and exotic materials

4 flute variable lead carbide endmill

6 sizes



HYP-VG7-(CR)-EMS

Carbide end mill with AlCrN coating

Low cutting force and high productivity

7 fluted cutters allow for faster and more efficient material removal while reducing the potential of chip buildup and tool wear

12 sizes





Side Milling



Slotting



Side Milling



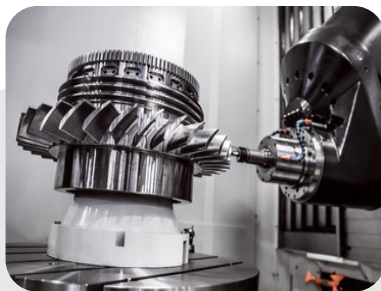
Ramping



Side Milling



Trochoidal Milling



EPL-HP-5FL

Carbide end mill with EgiAs coating

For general applications and exotic material:

5 flutes, variable helix and unequal spacing, corner radius

37 sizes



HYP-HP(O)SC-3D

Carbide step drill with EgiAs coating

3XD step length

General purpose, for tap drills holes

13 sizes



KEY FEATURES: VG4-WEMS

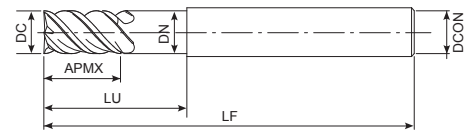
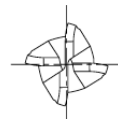
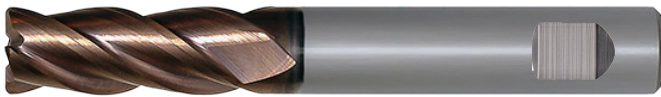
- 1 New variable helix flute design for better balance, resulting in a superb surface finish
- 2 TiSiN multi layered coating
- 3 For exotic nickel and titanium alloys
- 4 4 flute variable lead carbide endmill
- 5 Weldon shank

⊙ EXCELLENT ○ GOOD

| Work Material | | | | | | | | | | | | |
|---------------|-------------|---------|--------------|-----------|-----------|-----------|------------|-----------|------------|---------|-----------|---------|
| C<0,2% | 0,25<C<0,4% | C>0,45% | Alloy Steels | 25~35 HRC | 35~45 HRC | 45~52 HRC | 52~62 HRC | Stainless | Tool Steel | SC | Cast Iron | Ductile |
| ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | | | ⊙ | ⊙ | | ○ | ⊙ |
| Copper | Brass | BsC | PB | Aluminium | Cast Al | MC | Zinc Alloy | Titanium | Ni Alloys | Plastic | Graphite | CFRP |
| | | | | | | | | ⊙ | ⊙ | | | |

VG4-WEMS

Milling | Solid carbide



| EDP | ZEFP | DC | LU | LF | APMX | DCON | DN | List Price |
|------------|------|----|----|-----|------|------|------|------------|
| 501-2362-W | 4 | 6 | 20 | 58 | 25 | 6 | 5,8 | £32.40 |
| 501-3150-W | 4 | 8 | 25 | 64 | 20 | 8 | 7,8 | £35.05 |
| 501-3937-W | 4 | 10 | 30 | 73 | 25 | 10 | 9,8 | £52.69 |
| 501-4724-W | 4 | 12 | 38 | 84 | 30 | 20 | 11,8 | £66.22 |
| 501-6299-W | 4 | 16 | 45 | 93 | 40 | 16 | 15,8 | £95.52 |
| 501-7874-W | 4 | 20 | 60 | 105 | 50 | 20 | 19,8 | £129.34 |

Cutting Conditions

Slotting

| | | Low Carbon / Alloy / Tool Steels | | | | | | Cast Iron | | Stainless steel | | Titanium | | Nickel Alloy | | Aluminium Alloy | |
|----|---|----------------------------------|------------|------------------------|------------|------------------------|------------|------------------------|------------|------------------------|------------|------------------------|------------|------------------------|------------|------------------------|------------|
| | | < 30 HRC | | < 40 HRC | | < 180 HB | | | | | | ap = 0.5 | | | | | |
| Vc | | 100 m/min | | 90 m/min | | 80 m/min | | 100 m/min | | 70 m/min | | 60 m/min | | 30 m/min | | 150 m/min | |
| Ø | Z | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) |
| 3 | 4 | 10600 | 760 | 9550 | 610 | 8500 | 510 | 10600 | 640 | 7450 | 480 | 6350 | 410 | 2100 | 170 | 15900 | 1270 |
| 4 | 4 | 7950 | 800 | 7150 | 660 | 6350 | 510 | 7950 | 640 | 5550 | 440 | 4750 | 380 | 1600 | 140 | 11950 | 1200 |
| 5 | 4 | 6350 | 840 | 5750 | 720 | 5100 | 610 | 6350 | 760 | 4450 | 390 | 3800 | 330 | 1250 | 130 | 9550 | 1260 |
| 6 | 4 | 5300 | 1060 | 4750 | 860 | 4250 | 680 | 5300 | 850 | 3700 | 370 | 3200 | 320 | 1050 | 130 | 7950 | 1590 |
| 8 | 4 | 4000 | 880 | 3600 | 720 | 3200 | 640 | 4000 | 800 | 2800 | 390 | 2400 | 340 | 800 | 130 | 5950 | 1430 |
| 10 | 4 | 3200 | 830 | 2850 | 680 | 2550 | 560 | 3200 | 700 | 2250 | 360 | 1900 | 300 | 650 | 130 | 4750 | 1330 |
| 12 | 4 | 2650 | 800 | 2400 | 670 | 2100 | 550 | 2650 | 690 | 1850 | 370 | 1600 | 320 | 550 | 120 | 4000 | 1200 |
| 16 | 4 | 2000 | 600 | 1800 | 500 | 1600 | 420 | 2000 | 520 | 1400 | 360 | 1200 | 310 | 400 | 90 | 3000 | 900 |
| 20 | 4 | 1600 | 510 | 1450 | 440 | 1250 | 350 | 1600 | 450 | 1100 | 310 | 950 | 270 | 300 | 70 | 2400 | 770 |

ap x d
F(z)
correction

Maximum depth of cut

= $D \times 1$

(1) The above milling conditions are guideline based on an overhang length of 3 X D

Side Milling

| | | Low Carbon / Alloy / Tool Steels | | | | | | Cast Iron | | Stainless steel | | Titanium | | Nickel Alloy | | Aluminium Alloy | |
|----|---|----------------------------------|------------|------------------------|------------|------------------------|------------|------------------------|------------|------------------------|------------|------------------------|------------|------------------------|------------|------------------------|------------|
| | | < 30 HRC | | < 40 HRC | | < 180 HB | | | | | | | | | | | |
| Vc | | 150 m/min | | 130 m/min | | 110 m/min | | 130 m/min | | 110 m/min | | 100 m/min | | 40 m/min | | 200 m/min | |
| Ø | Z | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) | S (min ⁻¹) | F (mm/min) |
| 3 | 4 | 15900 | 1910 | 13800 | 1100 | 11650 | 840 | 13800 | 990 | 11650 | 930 | 10600 | 850 | 3200 | 260 | 21200 | 3390 |
| 4 | 4 | 11950 | 2060 | 10350 | 1240 | 8750 | 880 | 10350 | 1040 | 8750 | 1050 | 7950 | 950 | 2400 | 240 | 15900 | 3180 |
| 5 | 4 | 9550 | 2290 | 8300 | 1330 | 7000 | 980 | 8300 | 1160 | 7000 | 1260 | 6350 | 1140 | 1900 | 230 | 12750 | 3570 |
| 6 | 4 | 7950 | 2390 | 6900 | 1660 | 5850 | 1170 | 6900 | 1380 | 5850 | 1170 | 5300 | 1060 | 1600 | 260 | 10600 | 3820 |
| 8 | 4 | 5950 | 2020 | 5150 | 1650 | 4400 | 1140 | 5150 | 1340 | 4400 | 1140 | 4000 | 1040 | 1200 | 220 | 7950 | 4130 |
| 10 | 4 | 4750 | 1900 | 4150 | 1490 | 3500 | 980 | 4150 | 1160 | 3500 | 1120 | 3200 | 1020 | 950 | 190 | 6350 | 4060 |
| 12 | 4 | 4000 | 1760 | 3450 | 1380 | 2900 | 810 | 3450 | 970 | 2900 | 1040 | 2650 | 950 | 800 | 210 | 5300 | 4030 |
| 16 | 4 | 3000 | 1440 | 2600 | 1140 | 2200 | 700 | 2600 | 830 | 2200 | 880 | 2000 | 800 | 600 | 190 | 4000 | 3840 |
| 20 | 4 | 2400 | 1150 | 2050 | 900 | 1750 | 560 | 2050 | 660 | 1750 | 840 | 1600 | 770 | 500 | 200 | 3200 | 3070 |

ap x d
F(z)
correction

Maximum depth of cut

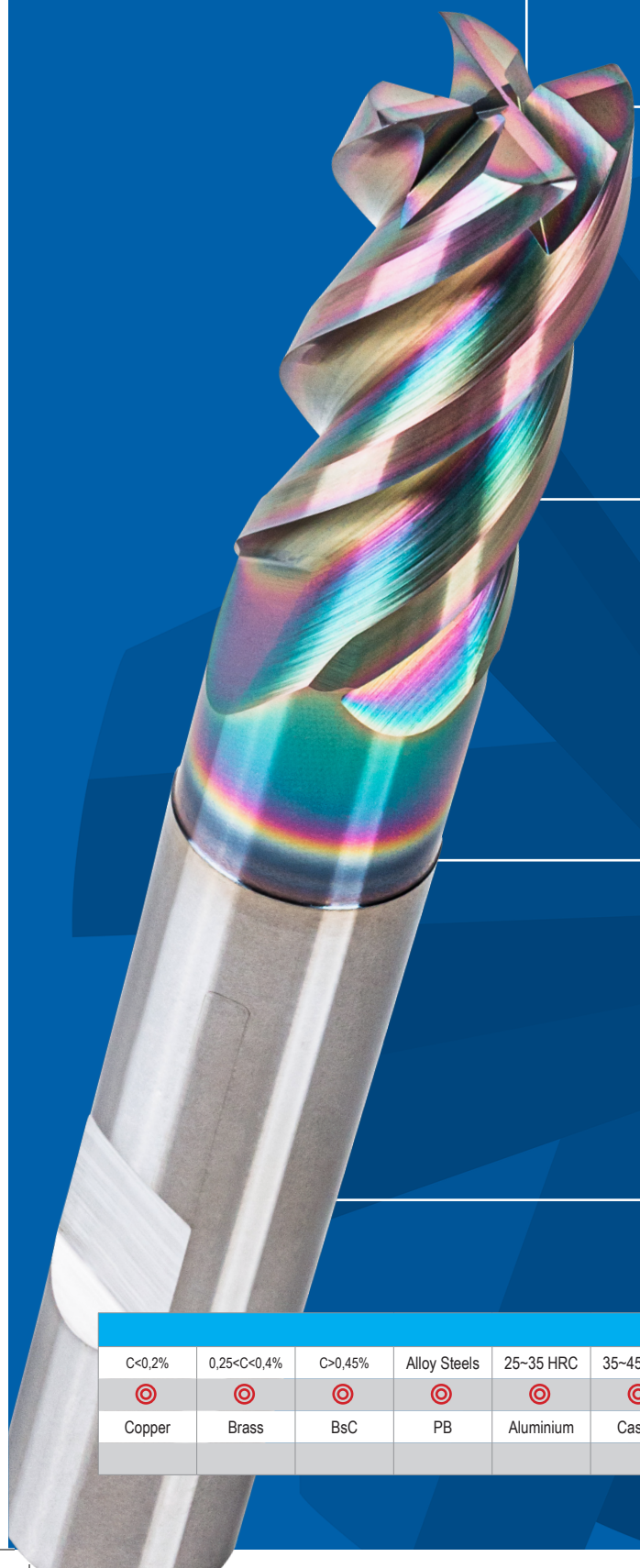
ap = 1.5D
ae = 0.2D

(1) The above milling conditions are guideline based on an overhang length of 3 X D

Milling | Endmills



KEY FEATURES: EPL-HP-5FL



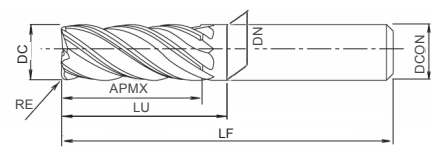
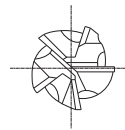
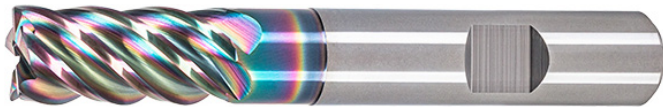
- 1 Unequal spacing, variable lead results in superior vibration suppression
- 2 Optimal flute shape for smooth evacuation of chips
- 3 Web taper: highly efficient milling due to increased rigidity
- 4 Available with 4 and 5 flutes
- 5 Weldon shank

⊙ EXCELLENT ○ GOOD

| Work Material | | | | | | | | | | | | |
|---------------|-------------|---------|--------------|-----------|-----------|-----------|------------|-----------|------------|---------|-----------|---------|
| C<0,2% | 0,25<C<0,4% | C>0,45% | Alloy Steels | 25~35 HRC | 35~45 HRC | 45~52 HRC | 52~62 HRC | Stainless | Tool Steel | SC | Cast Iron | Ductile |
| ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | | | ⊙ | ⊙ | | ⊙ | |
| Copper | Brass | BsC | PB | Aluminium | Cast Al | MC | Zinc Alloy | Titanium | Ni Alloys | Plastic | Graphite | CFRP |
| | | | | | | | | ⊙ | ⊙ | | | |

EPL-HP-5FL

Milling | Solid carbide



| EDP | ZEFP | DC | RE | LU | LF | APMX | DCON | DN | List Price |
|------------|------|----|------|----|-----|------|------|------|------------|
| EP01940699 | 5 | 6 | - | 20 | 57 | 13 | 6 | 5,8 | £38.49 |
| EP01940600 | 5 | 6 | 0,25 | 20 | 57 | 13 | 6 | 5,8 | £38.49 |
| EP01940601 | 5 | 6 | 0,5 | 20 | 57 | 13 | 6 | 5,8 | £38.49 |
| EP01940602 | 5 | 6 | 1 | 20 | 57 | 13 | 6 | 5,8 | £38.49 |
| EP01940899 | 5 | 8 | - | 25 | 63 | 19 | 8 | 7,8 | £41.48 |
| EP01940800 | 5 | 8 | 0,25 | 25 | 63 | 19 | 8 | 7,8 | £41.48 |
| EP01940801 | 5 | 8 | 0,5 | 25 | 63 | 19 | 8 | 7,8 | £41.48 |
| EP01940802 | 5 | 8 | 1 | 25 | 63 | 19 | 8 | 7,8 | £41.48 |
| EP01940803 | 5 | 8 | 1,5 | 25 | 63 | 19 | 8 | 7,8 | £41.48 |
| EP01941099 | 5 | 10 | - | 30 | 72 | 22 | 10 | 9,8 | £56.05 |
| EP01941000 | 5 | 10 | 0,25 | 30 | 72 | 22 | 10 | 9,8 | £56.05 |
| EP01941001 | 5 | 10 | 0,5 | 30 | 72 | 22 | 10 | 9,8 | £56.05 |
| EP01941002 | 5 | 10 | 1 | 30 | 72 | 22 | 10 | 9,8 | £56.05 |
| EP01941003 | 5 | 10 | 1,5 | 30 | 72 | 22 | 10 | 9,8 | £56.05 |
| EP01941004 | 5 | 10 | 2 | 30 | 72 | 22 | 10 | 9,8 | £56.05 |
| EP01941006 | 5 | 10 | 3 | 30 | 72 | 22 | 10 | 9,8 | £56.05 |
| EP01941299 | 5 | 12 | - | 38 | 83 | 26 | 12 | 11,8 | £71.40 |
| EP01941200 | 5 | 12 | 0,25 | 38 | 83 | 26 | 12 | 11,8 | £71.40 |
| EP01941201 | 5 | 12 | 0,5 | 38 | 83 | 26 | 12 | 11,8 | £71.40 |
| EP01941202 | 5 | 12 | 1 | 38 | 83 | 26 | 12 | 11,8 | £71.40 |
| EP01941204 | 5 | 12 | 2 | 38 | 83 | 26 | 12 | 11,8 | £71.40 |
| EP01941206 | 5 | 12 | 3 | 38 | 83 | 26 | 12 | 11,8 | £71.40 |
| EP01941207 | 5 | 12 | 4 | 38 | 83 | 26 | 12 | 11,8 | £71.40 |
| EP01941699 | 5 | 16 | - | 44 | 92 | 32 | 16 | 15,8 | £120.77 |
| EP01941600 | 5 | 16 | 0,25 | 44 | 92 | 32 | 16 | 15,8 | £120.77 |
| EP01941601 | 5 | 16 | 0,5 | 44 | 92 | 32 | 16 | 15,8 | £120.77 |
| EP01941602 | 5 | 16 | 1 | 44 | 92 | 32 | 16 | 15,8 | £120.77 |
| EP01941604 | 5 | 16 | 2 | 44 | 92 | 32 | 16 | 15,8 | £120.77 |
| EP01941606 | 5 | 16 | 3 | 44 | 92 | 32 | 16 | 15,8 | £120.77 |
| EP01941607 | 5 | 16 | 4 | 44 | 92 | 32 | 16 | 15,8 | £120.77 |
| EP01942099 | 5 | 20 | - | 54 | 104 | 38 | 20 | 19,8 | £186.25 |
| EP01942000 | 5 | 20 | 0,25 | 54 | 104 | 38 | 20 | 19,8 | £186.25 |
| EP01942001 | 5 | 20 | 0,5 | 54 | 104 | 38 | 20 | 19,8 | £186.25 |
| EP01942002 | 5 | 20 | 1 | 54 | 104 | 38 | 20 | 19,8 | £186.25 |
| EP01942004 | 5 | 20 | 2 | 54 | 104 | 38 | 20 | 19,8 | £186.25 |
| EP01942006 | 5 | 20 | 3 | 54 | 104 | 38 | 20 | 19,8 | £186.25 |
| EP01942007 | 5 | 20 | 4 | 54 | 104 | 38 | 20 | 19,8 | £186.25 |

Cutting Conditions

Slotting

| | | Steels St-52 · C45 · GG-25 | | | Hardened steels ~35 HRC 42CrMo4 | | | Hardened steels ~45 HRC 1.2379 | | | Stainless steel 1.4301 | | | Titanium Ti6AlV4 | | |
|----|---|-------------------------------|------------|---------|---------------------------------------|------------|---------|--------------------------------------|------------|---------|---------------------------|------------|---------|------------------------|------------|---------|
| Vc | | 120 m/min | | | 120 m/min | | | 70 m/min | | | 60 m/min | | | 50 m/min | | |
| Ø | Z | S (min ⁻¹) | F (mm/min) | fz (mm) | S (min ⁻¹) | F (mm/min) | fz (mm) | S (min ⁻¹) | F (mm/min) | fz (mm) | S (min ⁻¹) | F (mm/min) | fz (mm) | S (min ⁻¹) | F (mm/min) | fz (mm) |
| 6 | 5 | 6.369 | 1.433 | 0,045 | 6.369 | 1.433 | 0,045 | 3.715 | 836 | 0,045 | 3.185 | 650 | 0,035 | 2.654 | 464 | 0,035 |
| 8 | 5 | 4.775 | 1.432 | 0,060 | 4.775 | 1.432 | 0,060 | 2.785 | 836 | 0,060 | 2.387 | 477 | 0,040 | 1.989 | 398 | 0,040 |
| 10 | 5 | 3.820 | 1.432 | 0,075 | 3.820 | 1.432 | 0,075 | 2.228 | 836 | 0,075 | 1.910 | 477 | 0,050 | 1.592 | 398 | 0,050 |
| 12 | 5 | 3.183 | 1.432 | 0,090 | 3.183 | 1.432 | 0,090 | 1.857 | 836 | 0,090 | 1.592 | 477 | 0,060 | 1.326 | 398 | 0,060 |
| 16 | 5 | 2.387 | 1.432 | 0,120 | 2.387 | 1.432 | 0,120 | 1.393 | 836 | 0,120 | 1.194 | 477 | 0,080 | 995 | 398 | 0,080 |
| 20 | 5 | 1.910 | 1.432 | 0,150 | 1.910 | 1.432 | 0,150 | 1.114 | 836 | 0,150 | 955 | 477 | 0,100 | 796 | 398 | 0,100 |

| ap x d | F(fz) correction | ap | Fakt. |
|--------|------------------|-----|-------|
| | | 0,5 | 1,0 |
| | | 1,0 | 0,7 |
| | | 1,5 | 0,5 |
| | | 2,0 | 0,3 |

The above stated application data are as per **RED** marked parameters.

Side milling

| | | Steels St-52 · C45 · GG-25 | | | Hardened steels ~35 HRC 42CrMo4 | | | Hardened steels ~45 HRC 1.2379 | | | Stainless steel 1.4301 | | | Titanium Ti6AlV4 | | |
|----|---|-------------------------------|------------|---------|---------------------------------------|------------|---------|--------------------------------------|------------|---------|---------------------------|------------|---------|------------------------|------------|---------|
| Vc | | 140 m/min | | | 140 m/min | | | 80 m/min | | | 70 m/min | | | 60 m/min | | |
| Ø | Z | S (min ⁻¹) | F (mm/min) | fz (mm) | S (min ⁻¹) | F (mm/min) | fz (mm) | S (min ⁻¹) | F (mm/min) | fz (mm) | S (min ⁻¹) | F (mm/min) | fz (mm) | S (min ⁻¹) | F (mm/min) | fz (mm) |
| 6 | 5 | 7.431 | 4.459 | 0,120 | 7.431 | 4.459 | 0,120 | 4.246 | 2.548 | 0,120 | 3.715 | 1.274 | 0,060 | 3.185 | 955 | 0,060 |
| 8 | 5 | 5.570 | 4.456 | 0,160 | 5.570 | 4.456 | 0,160 | 3.183 | 2.546 | 0,160 | 2.785 | 1.114 | 0,080 | 2.387 | 955 | 0,080 |
| 10 | 5 | 4.456 | 4.456 | 0,200 | 4.456 | 4.456 | 0,200 | 2.546 | 2.546 | 0,200 | 2.228 | 1.114 | 0,100 | 1.910 | 955 | 0,100 |
| 12 | 5 | 3.714 | 4.456 | 0,240 | 3.714 | 4.456 | 0,240 | 2.122 | 2.546 | 0,240 | 1.857 | 1.114 | 0,120 | 1.592 | 955 | 0,120 |
| 16 | 5 | 2.785 | 4.456 | 0,320 | 2.785 | 4.456 | 0,320 | 1.592 | 2.546 | 0,320 | 1.393 | 1.114 | 0,160 | 1.194 | 955 | 0,160 |
| 20 | 5 | 2.228 | 4.456 | 0,400 | 2.228 | 4.456 | 0,400 | 1.273 | 2.546 | 0,400 | 1.114 | 1.114 | 0,200 | 955 | 955 | 0,200 |

| ap x d | F(fz) correction | ap | Fakt. |
|--------|------------------|-----|-------|
| | | 0,5 | 1,3 |
| | | 1 | 1,2 |
| | | 1,5 | 1,0 |
| | | 2 | 0,8 |

The above stated application data are as per **RED** marked parameters.

Milling | Endmills



KEY FEATURES: HYP-VG7-(CR)-EMS

1 7 fluted cutters allow for faster and more efficient material removal while reducing the potential of chip buildup and tool wear

2 Low cutting force and high productivity

3 Carbide end mill with AlCrN coating

⊙ EXCELLENT ○ GOOD

| Work Material | | | | | | | | | | | | |
|---------------|-------------|---------|--------------|-----------|-----------|-----------|------------|-----------|------------|---------|-----------|---------|
| C<0,2% | 0,25<C<0,4% | C>0,45% | Alloy Steels | 25~35 HRC | 35~45 HRC | 45~52 HRC | 52~62 HRC | Stainless | Tool Steel | SC | Cast Iron | Ductile |
| ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | ⊙ | | | ⊙ | ⊙ | | ○ | ⊙ |
| Copper | Brass | BsC | PB | Aluminium | Cast Al | MC | Zinc Alloy | Titanium | Ni Alloys | Plastic | Graphite | CFRP |
| | | | | | | | | ⊙ | ⊙ | | | |

KEY FEATURES: HYP-HP(O)-SC-3D

1 Carbide step drill with EgiAs coating

2 3xD step length

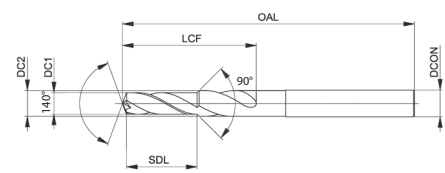
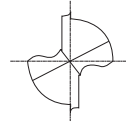
3 For tap drill holes

🎯 EXCELLENT ○ GOOD

| Work Material | | | | | | | | | | | | |
|---------------|-------------|---------|--------------|-----------|-----------|-----------|------------|-----------|------------|---------|-----------|---------|
| C<0,2% | 0,25<C<0,4% | C>0,45% | Alloy Steels | 25~35 HRC | 35~45 HRC | 45~52 HRC | 52~62 HRC | Stainless | Tool Steel | SC | Cast Iron | Ductile |
| 🎯 | 🎯 | 🎯 | 🎯 | 🎯 | | | | | | | 🎯 | 🎯 |
| Copper | Brass | BsC | PB | Aluminium | Cast Al | MC | Zinc Alloy | Titanium | Ni Alloys | Plastic | Graphite | CFRP |

HYP-HP(O)-SC-3D NEW

Drilling | Solid carbide | 3xD



HYP-HP-SC-3D

| EDP | For threading | DC1 | DC2 | DCON | SDL | LCF | OAL | List Price |
|-----------|---------------|------|-----|------|-----|-----|-----|------------|
| EP0201138 | M3x0,5 | 2,5 | 6 | 6 | 9 | 13 | 66 | £70.89 |
| EP0201144 | M4x0,7 | 3,3 | 6 | 6 | 12 | 16 | 66 | £70.89 |
| EP0201149 | M5x0,8 | 4,2 | 6 | 6 | 15 | 18 | 66 | £70.89 |
| EP0201155 | M6x1 | 5 | 8 | 8 | 18 | 23 | 79 | £88.61 |
| EP0201161 | M8x1,25 | 6,8 | 10 | 10 | 24 | 29 | 89 | £121.85 |
| EP0201169 | M10x1,5 | 8,5 | 12 | 12 | 30 | 35 | 89 | £166.16 |
| EP0201179 | M12x1,75 | 10,2 | 14 | 14 | 36 | 41 | 112 | £239.27 |

HYP-HPO-SC-3D

| EDP | For threading | DC1 | DC2 | DCON | SDL | LCF | OAL | List Price |
|-----------|---------------|------|-----|------|-----|-----|-----|------------|
| EP0202144 | M4x0,7 | 3,3 | 6 | 6 | 12 | 16 | 66 | £90.84 |
| EP0202149 | M5x0,8 | 4,2 | 6 | 6 | 15 | 18 | 66 | £90.84 |
| EP0202155 | M6x1 | 5 | 8 | 8 | 18 | 23 | 79 | £113.41 |
| EP0202161 | M8x1,25 | 6,8 | 10 | 10 | 24 | 29 | 89 | £155.97 |
| EP0202169 | M10x1,5 | 8,5 | 12 | 12 | 30 | 35 | 89 | £212.66 |
| EP0202179 | M12x1,75 | 10,2 | 14 | 14 | 36 | 41 | 112 | £306.27 |

Cutting Conditions

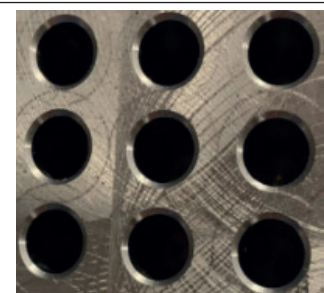
Standard drilling

| | Steel | | | Cu | A5052 /A7075 | Al < 13% Si < 130 HB |
|----|-------------------------|-------------------------|--------------------------|----------------|----------------|----------------------------|
| | < 700 N/mm ² | < 850 N/mm ² | < 1000 N/mm ² | | | |
| Vc | 100 ~ 150 m/min | 80 ~ 120 m/min | 70 ~ 110 m/min | 50 ~ 90 m/min | 60 ~ 110 m/min | 120 ~ 220 m/min |
| Ø | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) |
| 3 | 0,09~0,12 | 0,09~0,12 | 0,09~0,12 | 0,02~0,03 | 0,09~0,20 | 0,09~0,28 |
| 4 | 0,10~0,15 | 0,10~0,15 | 0,10~0,15 | 0,02~0,04 | 0,10~0,24 | 0,10~0,38 |
| 5 | 0,12~0,18 | 0,12~0,18 | 0,12~0,18 | 0,03~0,05 | 0,12~0,28 | 0,12~0,40 |
| 6 | 0,14~0,20 | 0,14~0,20 | 0,14~0,20 | 0,03~0,06 | 0,14~0,34 | 0,14~0,48 |
| 8 | 0,16~0,24 | 0,16~0,24 | 0,16~0,24 | 0,04~0,08 | 0,16~0,38 | 0,16~0,53 |
| 10 | 0,18~0,27 | 0,18~0,27 | 0,18~0,27 | 0,05~0,10 | 0,18~0,45 | 0,18~0,63 |
| 12 | 0,20~0,30 | 0,20~0,30 | 0,20~0,30 | 0,06~0,12 | 0,20~0,53 | 0,20~0,75 |
| 14 | 0,22~0,35 | 0,22~0,35 | 0,22~0,35 | 0,08~0,16 | 0,22~0,57 | 0,22~0,81 |
| 16 | 0,25~0,36 | 0,25~0,36 | 0,25~0,36 | 0,10~0,18 | 0,25~0,61 | 0,25~0,85 |
| 18 | 0,28~0,38 | 0,28~0,38 | 0,28~0,38 | 0,12~0,20 | 0,28~0,63 | 0,28~0,90 |
| 20 | 0,30~0,40 | 0,30~0,40 | 0,30~0,40 | 0,20~0,28 | 0,28~0,68 | 0,30~0,98 |

| | GG (G) | | Stainless Steel | High-Alloy Steel | Special Alloys | Hardened Steel |
|----|-----------------|-----------------|-----------------|--------------------------|----------------|----------------|
| | < 180 HB | < 300 HB | < 820 HB | < 1200 N/mm ² | < 30 HRC | < 60 HRC |
| Vc | 150 ~ 200 m/min | 100 ~ 150 m/min | 40 ~ 50 m/min | 50 ~ 60 m/min | 15 ~ 25 m/min | 15 ~ 25 m/min |
| Ø | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) | F (mm/rev.) |
| 3 | 0,12~0,15 | 0,12~0,15 | 0,09~0,12 | 0,07~0,11 | 0,05~0,09 | 0,03~0,05 |
| 4 | 0,13~0,18 | 0,13~0,18 | 0,10~0,15 | 0,08~0,13 | 0,06~0,10 | 0,04~0,06 |
| 5 | 0,15~0,22 | 0,15~0,22 | 0,12~0,18 | 0,10~0,15 | 0,08~0,12 | 0,05~0,07 |
| 6 | 0,18~0,25 | 0,18~0,25 | 0,14~0,20 | 0,12~0,18 | 0,09~0,15 | 0,05~0,07 |
| 8 | 0,20~0,30 | 0,20~0,30 | 0,16~0,24 | 0,14~0,22 | 0,12~0,20 | 0,06~0,08 |
| 10 | 0,23~0,33 | 0,23~0,33 | 0,18~0,27 | 0,15~0,25 | 0,13~0,23 | 0,07~0,10 |
| 12 | 0,25~0,38 | 0,25~0,38 | 0,20~0,30 | 0,17~0,26 | 0,14~0,24 | 0,09~0,12 |
| 14 | 0,30~0,43 | 0,30~0,43 | 0,22~0,35 | 0,18~0,30 | 0,15~0,26 | 0,10~0,13 |
| 16 | 0,35~0,50 | 0,35~0,50 | 0,25~0,36 | 0,20~0,32 | 0,16~0,26 | 0,10~0,13 |
| 18 | 0,38~0,55 | 0,38~0,55 | 0,28~0,38 | 0,23~0,33 | 0,18~0,28 | 0,12~0,16 |
| 20 | 0,40~0,63 | 0,40~0,63 | 0,30~0,40 | 0,25~0,35 | 0,20~0,30 | 0,14~0,18 |

Cutting Data

| | |
|----------------|-----------------------------|
| Material | C45 |
| Drilling depth | 26mm |
| S | 4.681 rev/min |
| Vc | 100m/min |
| f | 0,2mm/rev |
| Coolant | Emulsion 8% internal |
| Machine | Horizontal machining center |

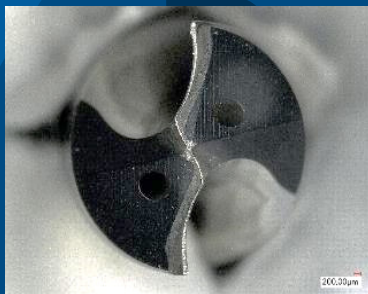
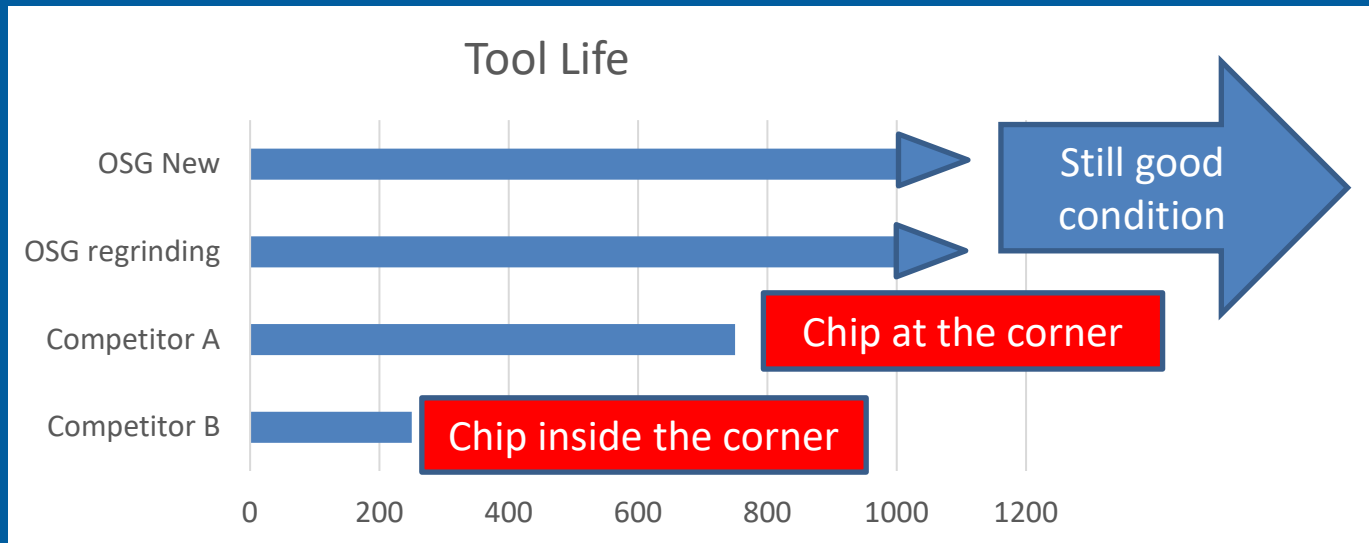


Drilling | Solid carbide



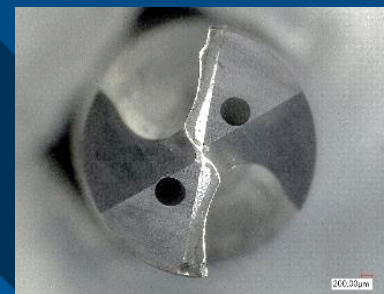
WHY REGRIND WITH OSG ?

- ▶ Maximise Cost Efficiency
- ▶ Guaranteed Quality
- ▶ Industry Low Lead Times

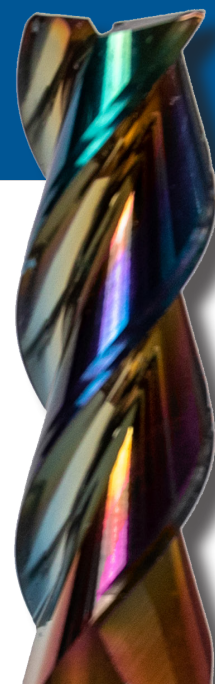
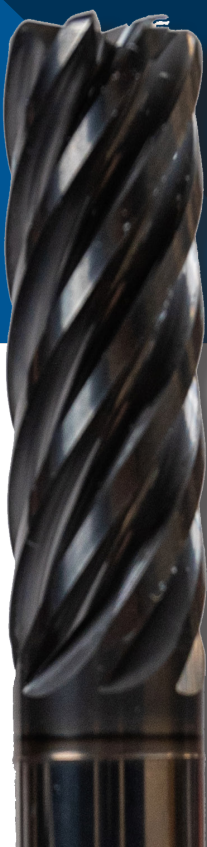


OSG Regrind
at 1,000 Holes

Tool - ADO-SUS-5D 6.00mm Dia
Work Material - SUS 316L
Cutting Speed - 4,244rpm
Feed rate - 679mm/min
Depth of cut - 30mm



Competitor Regrind
at 250 Holes.



At OSG UK, we are committed to delivering the highest quality CNC tooling solutions to our customers, regardless of the challenges we face.

Over the last three years, we've navigated numerous obstacles, from supply chain disruptions to economic uncertainties. Despite these challenges, we remain dedicated to providing cutting-edge technology and unparalleled expertise.

We continue to invest in our UK facilities and in developing new tools that can further improve our clients' production requirements ensuring that we stay ahead of the curve and deliver the best possible outcomes everytime.





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