

**YG X5070
END MILLS**

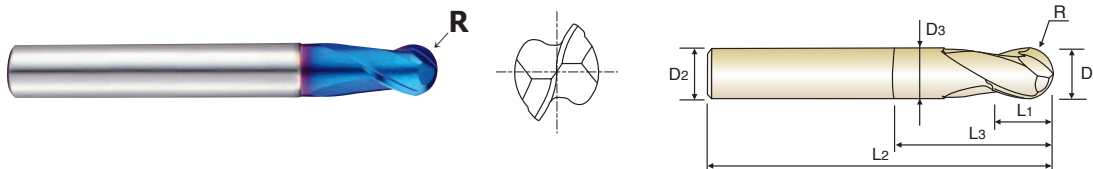
G8A28 SERIES

PLAIN SHANK
GLATTER ZYLINDERSCHAFT

**CARBIDE, 2 FLUTE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS**

- ▶ Designed to machine high hardened materials.
- ▶ Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- ▶ Excellent workpiece finish.
- ▶ Designed for high precision milling operation.
- ▶ Higher wear-resistance.

- ▶ Geeignet zum Fräsen hochgehärteter Stähle.
- ▶ Geeignet zum Trockenfräsen und HSC-Fräsen dank neuentwickeltem Material und Beschichtung.
- ▶ Excellente Werkstückoberflächen.
- ▶ Geeignet für hochpräzises Fräsen.
- ▶ Höhere Verschleißfestigkeit.



NG HM
2
BLUE
30°
R ±0.005
R ±0.010
PLAIN
PLAIN
P.689

R0.05-R3 R4-R6

Unit : mm

| EDP No. | Radius of Ball Nose R | Mill Diameter D1 | Shank Diameter D2 | Length of Cut L1 | Length Below Shank L3 | Overall Length L2 | Neck Diameter D3 |
|----------|--------------------------|---------------------|----------------------|---------------------|--------------------------|----------------------|---------------------|
| G8A28001 | R0.05 | 0.1 | 4 | 0.2 | - | 40 | - |
| G8A28002 | R0.1 | 0.2 | 4 | 0.3 | - | 40 | - |
| G8A28003 | R0.15 | 0.3 | 4 | 0.5 | - | 40 | - |
| G8A28004 | R0.2 | 0.4 | 4 | 0.6 | - | 40 | - |
| G8A28005 | R0.25 | 0.5 | 4 | 0.7 | - | 40 | - |
| G8A28006 | R0.3 | 0.6 | 4 | 0.9 | - | 40 | - |
| G8A28007 | R0.35 | 0.7 | 4 | 1.1 | - | 40 | - |
| G8A28008 | R0.4 | 0.8 | 4 | 1.2 | - | 40 | - |
| G8A28009 | R0.45 | 0.9 | 4 | 1.4 | - | 40 | - |
| G8A28010 | R0.5 | 1.0 | 6 | 1.5 | 3 | 50 | 0.95 |
| G8A28015 | R0.75 | 1.5 | 6 | 2 | 4 | 50 | 1.45 |
| G8A28020 | R1.0 | 2.0 | 6 | 2.5 | 5 | 50 | 1.95 |
| G8A28025 | R1.25 | 2.5 | 6 | 3 | 7 | 50 | 2.4 |
| G8A28030 | R1.5 | 3.0 | 6 | 4 | 10 | 60 | 2.85 |
| G8A28035 | R1.75 | 3.5 | 6 | 4.5 | 10 | 60 | 3.35 |
| G8A28040 | R2.0 | 4.0 | 6 | 5 | 10 | 60 | 3.85 |
| G8A28045 | R2.25 | 4.5 | 6 | 5.5 | 10 | 60 | 4.35 |
| G8A28050 | R2.5 | 5.0 | 6 | 6 | 12 | 60 | 4.85 |
| G8A28055 | R2.75 | 5.5 | 6 | 6.5 | 12 | 60 | 5.35 |
| G8A28060 | R3.0 | 6.0 | 6 | 7 | 15 | 60 | 5.85 |
| G8A28903 | R3.0 | 6.0 | 6 | 9 | 30 | 90 | 5.85 |
| G8A28901 | R4.0 | 8.0 | 8 | 9 | 15 | 60 | 7.7 |
| G8A28080 | R4.0 | 8.0 | 8 | 9 | 15 | 80 | 7.7 |
| G8A28904 | R4.0 | 8.0 | 8 | 12 | 30 | 100 | 7.7 |
| G8A28902 | R5.0 | 10.0 | 10 | 11 | 25 | 60 | 9.7 |
| G8A28100 | R5.0 | 10.0 | 10 | 11 | 25 | 80 | 9.7 |
| G8A28905 | R5.0 | 10.0 | 10 | 15 | 30 | 100 | 9.7 |
| G8A28120 | R6.0 | 12.0 | 12 | 14 | 25 | 80 | 11.7 |

Due to the characteristics of blue decoration layer which might be erased during short term using, the color layer might not be uniform moreover.
However, it doesn't effect on performance of tool.

| Size | Radius Tolerance (mm) | Mill Dia. Tolerance (mm) | Shank Dia. Tolerance |
|----------|-----------------------|--------------------------|----------------------|
| up to R3 | ±0.005 | 0~-0.012 | h6 |
| over R3 | ±0.010 | 0~-0.015 | |

◎ : Excellent ○ : Good

| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Copper | Graphite | Cast Iron | Aluminum | Stainless Steels | Titanium | Inconel | Acrylic | CFRP |
|---------------|--------------|--------------------|-------------------|----------------------|--------|----------|-----------|----------|------------------|----------|---------|---------|------|
| ~HB225 | HB225~325 | HRC30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | | | |
| | | ○ | ○ | ◎ | | | | | | | | | |



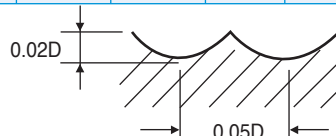
**RECOMMENDED CUTTING CONDITIONS
EMPFOHLENE SCHNEIDKONDITIONEN**

**CARBIDE, 2 FLUTE BALL NOSE
VOLLHARTMETALL, 2 SCHNEIDEN STIRNRADIUS**

G8A28, G8A38, G8A53 SERIES

| MATERIAL | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | | | | | |
|--------------|---------------------------------------|------|------|-------|-----------------|------|------|-------|-----------------|------|------|-------|
| | HRc 30 ~ HRc 40 | | | | HRc 40 ~ HRc 50 | | | | HRc 50 ~ HRc 55 | | | |
| | HARDNESS DIAMETER | RPM | FEED | Vc | fz | RPM | FEED | Vc | fz | RPM | FEED | Vc |
| R0.1 × 0.2 | 50000 | 1200 | 30 | 0.012 | 50000 | 1050 | 30 | 0.011 | 45000 | 960 | 30 | 0.011 |
| R0.15 × 0.3 | 50000 | 1500 | 45 | 0.015 | 50000 | 1350 | 45 | 0.014 | 45000 | 1200 | 40 | 0.013 |
| R0.2 × 0.4 | 50000 | 1900 | 65 | 0.019 | 50000 | 1700 | 65 | 0.017 | 45000 | 1500 | 55 | 0.017 |
| R0.25 × 0.5 | 50000 | 2400 | 80 | 0.024 | 50000 | 2100 | 80 | 0.021 | 45000 | 1900 | 70 | 0.021 |
| R0.3 × 0.6 | 50000 | 2900 | 95 | 0.029 | 50000 | 2500 | 95 | 0.025 | 45000 | 2200 | 85 | 0.024 |
| R0.4 × 0.8 | 50000 | 3900 | 125 | 0.039 | 50000 | 3300 | 125 | 0.033 | 45000 | 3000 | 115 | 0.033 |
| R0.5 × 1.0 | 50000 | 4800 | 155 | 0.048 | 50000 | 4200 | 155 | 0.042 | 45000 | 3800 | 140 | 0.042 |
| R0.6 × 1.2 | 50000 | 5100 | 190 | 0.051 | 48000 | 4300 | 180 | 0.045 | 43000 | 3850 | 160 | 0.045 |
| R0.75 × 1.5 | 50000 | 5400 | 235 | 0.054 | 48000 | 4500 | 225 | 0.047 | 43000 | 4000 | 205 | 0.047 |
| R1.0 × 2.0 | 49700 | 5700 | 310 | 0.057 | 47800 | 4800 | 300 | 0.050 | 40000 | 4000 | 250 | 0.050 |
| R1.5 × 3.0 | 33100 | 6000 | 310 | 0.091 | 31800 | 5300 | 300 | 0.083 | 26500 | 4000 | 250 | 0.075 |
| R2.0 × 4.0 | 24900 | 6000 | 315 | 0.120 | 23900 | 5300 | 300 | 0.111 | 20000 | 4000 | 250 | 0.100 |
| R2.5 × 5.0 | 18600 | 5800 | 290 | 0.156 | 17800 | 4900 | 280 | 0.138 | 15000 | 3750 | 235 | 0.125 |
| R3.0 × 6.0 | 13900 | 4850 | 260 | 0.174 | 13400 | 4100 | 255 | 0.153 | 11000 | 3100 | 205 | 0.141 |
| R4.0 × 8.0 | 11100 | 4200 | 280 | 0.189 | 10700 | 3500 | 270 | 0.164 | 9000 | 2700 | 225 | 0.150 |
| R5.0 × 10.0 | 9300 | 3700 | 290 | 0.199 | 8900 | 3100 | 280 | 0.174 | 7500 | 2400 | 235 | 0.160 |
| R6.0 × 12.0 | 6950 | 2950 | 260 | 0.212 | 6680 | 2500 | 250 | 0.187 | 5600 | 1900 | 210 | 0.170 |
| R8.0 × 16.0 | 5570 | 2650 | 280 | 0.238 | 5350 | 2200 | 270 | 0.206 | 4500 | 1700 | 225 | 0.189 |
| R10.0 × 20.0 | 4450 | 2350 | 280 | 0.264 | 4300 | 1950 | 270 | 0.227 | 3600 | 1500 | 225 | 0.208 |

| MATERIAL | HARDENED STEELS | | | | | | | | | | | |
|--------------|----------------------|------|------|-------|-----------------|------|------|-------|-----------------|------|------|-------|
| | HRc 55 ~ HRc 60 | | | | HRc 60 ~ HRc 65 | | | | HRc 65 ~ HRc 70 | | | |
| | HARDNESS DIAMETER | RPM | FEED | Vc | fz | RPM | FEED | Vc | fz | RPM | FEED | Vc |
| R0.1 × 0.2 | 40000 | 770 | 25 | 0.010 | 35000 | 674 | 20 | 0.010 | 31500 | 570 | 20 | 0.009 |
| R0.15 × 0.3 | 40000 | 965 | 40 | 0.012 | 35000 | 840 | 35 | 0.012 | 31500 | 700 | 30 | 0.011 |
| R0.2 × 0.4 | 40000 | 1200 | 50 | 0.015 | 35000 | 1050 | 45 | 0.015 | 31500 | 890 | 40 | 0.014 |
| R0.25 × 0.5 | 40000 | 1500 | 65 | 0.019 | 35000 | 1300 | 55 | 0.019 | 31500 | 1100 | 50 | 0.017 |
| R0.3 × 0.6 | 40000 | 1800 | 75 | 0.023 | 35000 | 1600 | 65 | 0.023 | 31500 | 1400 | 60 | 0.022 |
| R0.4 × 0.8 | 40000 | 2400 | 100 | 0.030 | 35000 | 2100 | 90 | 0.030 | 31500 | 1800 | 80 | 0.029 |
| R0.5 × 1.0 | 40000 | 3000 | 125 | 0.038 | 35000 | 2600 | 110 | 0.037 | 35000 | 2300 | 110 | 0.033 |
| R0.6 × 1.2 | 38000 | 3000 | 145 | 0.039 | 34000 | 2700 | 130 | 0.040 | 30600 | 2300 | 115 | 0.038 |
| R0.75 × 1.5 | 37000 | 3100 | 175 | 0.042 | 33000 | 2700 | 155 | 0.041 | 29700 | 2300 | 140 | 0.039 |
| R1.0 × 2.0 | 35000 | 3150 | 220 | 0.045 | 32000 | 2800 | 200 | 0.044 | 28500 | 2300 | 180 | 0.040 |
| R1.5 × 3.0 | 23500 | 3150 | 220 | 0.067 | 21000 | 2800 | 200 | 0.067 | 19000 | 2300 | 180 | 0.061 |
| R2.0 × 4.0 | 17500 | 3150 | 220 | 0.090 | 16000 | 2800 | 200 | 0.088 | 14500 | 2300 | 180 | 0.079 |
| R2.5 × 5.0 | 13500 | 3050 | 210 | 0.113 | 11500 | 2550 | 180 | 0.111 | 10500 | 2100 | 165 | 0.100 |
| R3.0 × 6.0 | 10000 | 2500 | 190 | 0.125 | 8800 | 2150 | 165 | 0.122 | 8000 | 1750 | 150 | 0.109 |
| R4.0 × 8.0 | 8000 | 2150 | 200 | 0.134 | 7000 | 1850 | 175 | 0.132 | 6500 | 1550 | 165 | 0.119 |
| R5.0 × 10.0 | 6600 | 1900 | 205 | 0.144 | 5800 | 1650 | 180 | 0.142 | 5300 | 1380 | 165 | 0.130 |
| R6.0 × 12.0 | 5000 | 1550 | 190 | 0.155 | 4400 | 1250 | 165 | 0.142 | 4000 | 1050 | 150 | 0.131 |
| R8.0 × 16.0 | 4000 | 1350 | 200 | 0.169 | 3500 | 1000 | 175 | 0.143 | 3200 | 850 | 160 | 0.133 |
| R10.0 × 20.0 | 3200 | 1200 | 200 | 0.188 | 2800 | 800 | 175 | 0.143 | 2550 | 660 | 160 | 0.129 |



RPM = rev./min.
FEED = mm/min.
Vc = m/min.
fz = mm/t

HSS

CBN
END MILLS

i-Xmill
END MILLS

i-HS mill
END MILLS

X5070
END MILLS

4G MILL
END MILLS

X-SPEED
ROUGHER
END MILLS

X-POWER
END MILLS

JET-POWER
END MILLS

TN MILL
END MILLS

V7 Mill
END MILLS

ALU-POWER
END MILLS

CRX S
END MILLS

D-POWER
GRAPHITE
END MILLS

D-POWER
CFRP
END MILLS

ROUTERS

K-2 CARBIDE
END MILLS

GENERAL
CARBIDE
END MILLS

TANK-POWER
END MILLS

GENERAL
HSS
END MILLS

MILLING
CUTTERS

TECHNICAL
DATA