



YG **X-POWER PRO**

**PERFORMANCE UPGRADE
Y-COATED SOLID CARBIDE END MILLS**
for Pre-Hardened Steels up to HRc55
for Mold & Die
for Dry & Wet Cutting

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YG1YEXP190308001

X-POWER PRO

Performance Upgrade

- Achieved from several tests to apply the most optimal technology
- New coating, raw material, honing technology

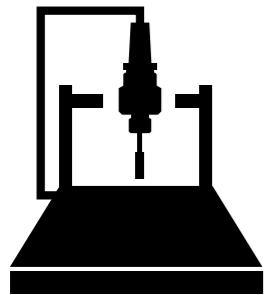
Work Material

- Pre-Hardened Steels up to HRC 55, and Cast Iron

P K

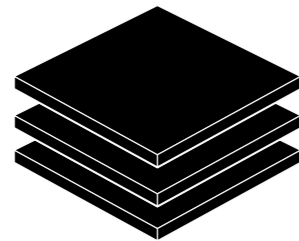
For Mold & Die Industries

- Plastic injection, die casting, military parts, automotive parts, electronic parts, etc.



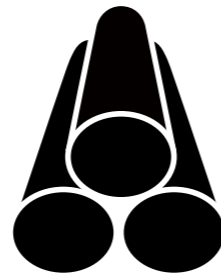
Honing

Advanced honing technology system made from YG-1



Coating

The optimal coating applied, chosen by several tests of different coating technologies



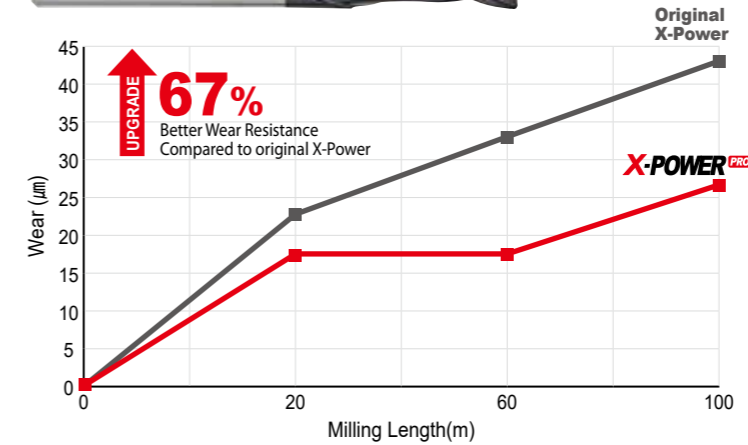
Raw Material

Made from high performance raw material with better quality



CASE STUDY

2 FLUTE SQUARE END MILLS



X-POWER PRO Milling length : 100m

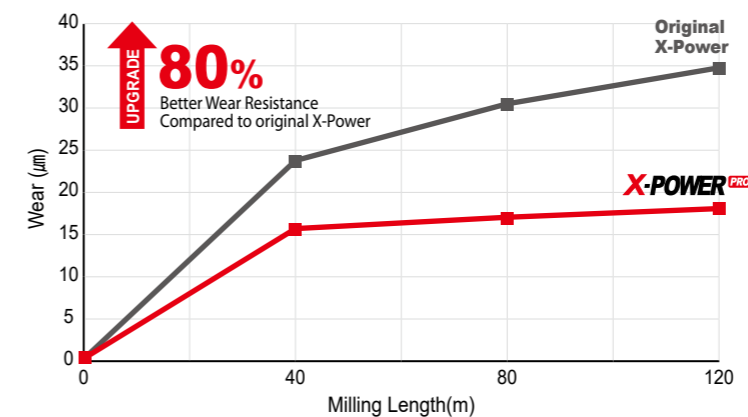


Original X-Power Milling length : 100m



| Tool | X-POWER PRO | Original X-Power |
|-------------------|-------------|---------------------------------------|
| Milling Length(m) | | 100 |
| Size | | Ø10.0 x Ø10.0 x 22 x 70 |
| Material | | KP4M(HRC35) / DIN 1.2311, ANSI P20+Ni |
| Vc(m/min) | | 63 |
| Feed(mm/min) | | 300 |
| Milling Depth(mm) | | Ae : 10, Ap : 0.5 |
| Coolant | | Oil Mist |
| Milling Method | | Down & Side Cutting |

2 FLUTE BALL END MILLS



X-POWER PRO Milling length : 120m

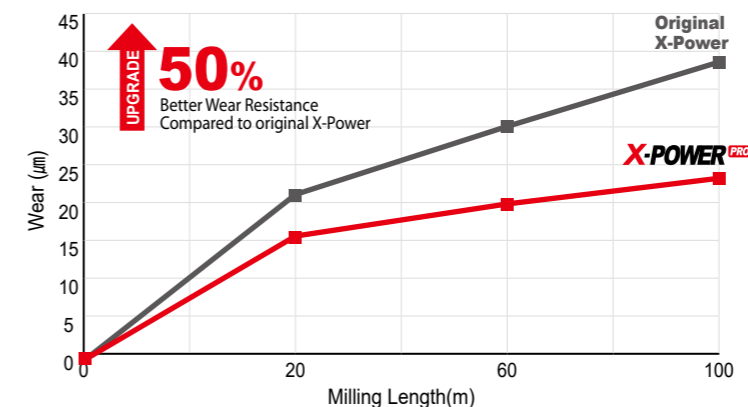


Original X-Power Milling length : 120m



| Tool | X-POWER PRO | Original X-Power |
|-------------------|-------------|---------------------------------------|
| Milling Length(m) | | 120 |
| Size | | Ø6.0 x Ø6.0 x 12 x 90 |
| Material | | KP4M(HRC35) / DIN 1.2311, ANSI P20+Ni |
| Vc(m/min) | | 130 |
| Feed(mm/min) | | 830 |
| Milling Depth(mm) | | Ae : 0.2, Ap : 1.2 |
| Coolant | | Oil Mist |
| Milling Method | | Profile Cutting |

4 FLUTE CORNER RADIUS END MILLS



X-POWER PRO Milling length : 100m



Original X-Power Milling length : 100m



| Tool | X-POWER PRO | Original X-Power |
|-------------------|-------------|---------------------------------------|
| Milling Length(m) | | 100 |
| Size | | Ø10.0(R0.5) x Ø10.0 x 30 x 90 |
| Material | | KP4M(HRC35) / DIN 1.2311, ANSI P20+Ni |
| Vc(m/min) | | 52 |
| Feed(mm/min) | | 180 |
| Milling Depth(mm) | | Ae : 25, Ap : 0.5 |
| Coolant | | Oil Mist |
| Milling Method | | Down & Side Cutting |

SELECTION GUIDE

| ITEM | MODEL | DESCRIPTION | SIZE | | PAGE |
|--------------|---|--|-------|-------|-----------|
| | | | MIN | MAX | |
| GM876 |  | CARBIDE, 2 FLUTE SHORT LENGTH BALL NOSE | R0.5 | R8.0 | 6 |
| GM813 |  | CARBIDE, 2 FLUTE LONG LENGTH BALL NOSE | R0.5 | R10.0 | 7 |
| GM886 |  | CARBIDE, 2 FLUTE BALL NOSE for RIB PROCESSING | R0.25 | R3.0 | 8 |
| GM902 |  | CARBIDE, 2 FLUTE BALL NOSE with TAPER NECK | R0.5 | R4.0 | 10 |
| GM815 |  | CARBIDE, 4 FLUTE LONG LENGTH BALL NOSE | R1.0 | R8.0 | 11 |
| GM818 |  | CARBIDE, 2 FLUTE LONG LENGTH CORNER RADIUS | D4.0 | D12.0 | 12 |
| GM8A1 |  | CARBIDE, 2 FLUTE CORNER RADIUS for RIB PROCESSING | D1.0 | D6.0 | 13 |
| GM839 |  | CARBIDE, 4 FLUTE STUB LENGTH CORNER RADIUS | D2.0 | D12.0 | 14 |
| GM819 |  | CARBIDE, 4 FLUTE LONG LENGTH CORNER RADIUS | D3.0 | D20.0 | 15 |
| GM810 |  | CARBIDE, 2 FLUTE SHORT LENGTH | D0.4 | D20.0 | 16 |
| GM883 |  | CARBIDE, 2 FLUTE for RIB PROCESSING | D0.4 | D6.0 | 17 |
| GM895 |  | CARBIDE, 3 FLUTE 38° HELIX SHORT LENGTH | D1.0 | D16.0 | 19 |
| GM811 |  | CARBIDE, 4 FLUTE SHORT LENGTH | D2.0 | D25.0 | 20 |
| GM817 |  | CARBIDE, 4 FLUTE LONG LENGTH | D2.0 | D20.0 | 21 |
| GM812 |  | CARBIDE, 6&8 FLUTE 45° HELIX LONG LENGTH | D6.0 | D20.0 | 22 |
| GM834 |  | CARBIDE, 6 FLUTE 45° HELIX EXTRA LONG LENGTH | D6.0 | D25.0 | 23 |
| GM814 |  | CARBIDE, MULTI FLUTE 20° HELIX LONG LENGTH ROUGHING - FINE | D6.0 | D20.0 | 24 |
| | | RECOMMENDED CUTTING CONDITIONS | | | 25 |

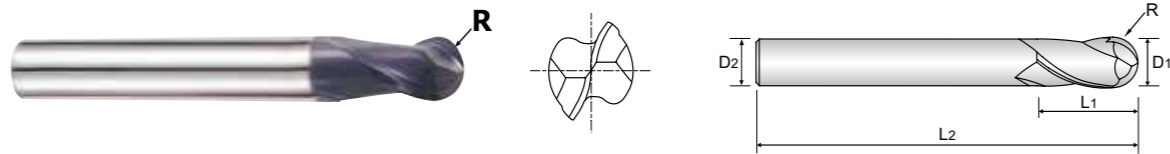
◎ : Excellent ○ : Good

| P | | | | | H | M | K | N | | | S | |
|---------------|--------------|--------------------|-----------------|----------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel |
| ~HB225 | HB225~325 | HRC30~40 | HRc40~45 | HRc45~55 | HRc55~70 | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | | ○ | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | | ○ | | | | | |
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**Y-COATED SOLID CARBIDE END MILLS
2 FLUTE SHORT LENGTH BALL NOSE**

GM876 PLAIN SHANK

- ▶ Economic type with short overall length
- ▶ Radius tolerance $\pm 0.02\text{mm}$ & short length of cut



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

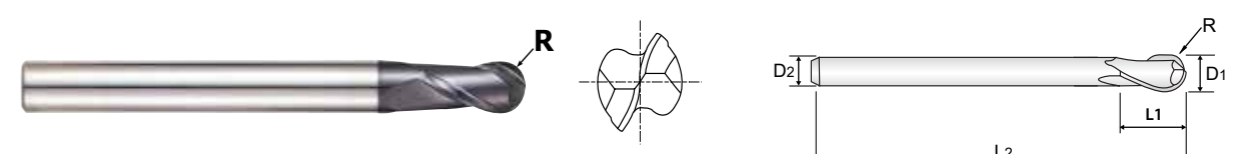
Unit : mm

| EDP No. | Radius of Ball Nose | Mill Diameter D1 | Shank Diameter D2 | Length of Cut L1 | Overall Length |
|----------|---------------------|---------------------|----------------------|---------------------|----------------|
| | R(± 0.02) | | | | L2 |
| GM876010 | R0.5 | 1.0 | 3 | 3 | 38 |
| GM876020 | R1.0 | 2.0 | 6 | 3 | 50 |
| GM876030 | R1.5 | 3.0 | 6 | 4 | 50 |
| GM876040 | R2.0 | 4.0 | 6 | 5 | 54 |
| GM876060 | R3.0 | 6.0 | 6 | 7 | 54 |
| GM876080 | R4.0 | 8.0 | 8 | 9 | 58 |
| GM876100 | R5.0 | 10.0 | 10 | 11 | 66 |
| GM876120 | R6.0 | 12.0 | 12 | 12 | 73 |
| GM876160 | R8.0 | 16.0 | 16 | 16 | 82 |

**Y-COATED SOLID CARBIDE END MILLS
2 FLUTE LONG LENGTH BALL NOSE**

GM813 PLAIN SHANK

- ▶ Designed to machine tool steel, alloy steel, mold steel and other high hardened materials
- ▶ For copy - milling machines



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

Unit : mm

| EDP No. | Radius of Ball Nose | Mill Diameter D1 | Shank Diameter D2 | Length of Cut L1 | Overall Length |
|----------|---------------------|---------------------|----------------------|---------------------|----------------|
| | R(± 0.02) | | | | L2 |
| GM813010 | R0.5 | 1.0 | 4 | 2.5 | 50 |
| GM813020 | R1.0 | 2.0 | 6 | 5 | 50 |
| GM813030 | R1.5 | 3.0 | 6 | 8 | 60 |
| GM813040 | R2.0 | 4.0 | 6 | 8 | 70 |
| GM813050 | R2.5 | 5.0 | 6 | 10 | 80 |
| GM813060 | R3.0 | 6.0 | 6 | 12 | 90 |
| GM813080 | R4.0 | 8.0 | 8 | 14 | 100 |
| GM813100 | R5.0 | 10.0 | 10 | 18 | 100 |
| GM813120 | R6.0 | 12.0 | 12 | 22 | 110 |
| GM813160 | R8.0 | 16.0 | 16 | 30 | 140 |
| GM813200 | R10.0 | 20.0 | 20 | 38 | 160 |

◎ : Excellent ○ : Good

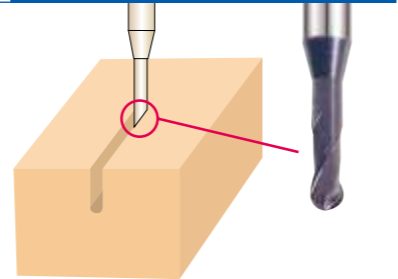
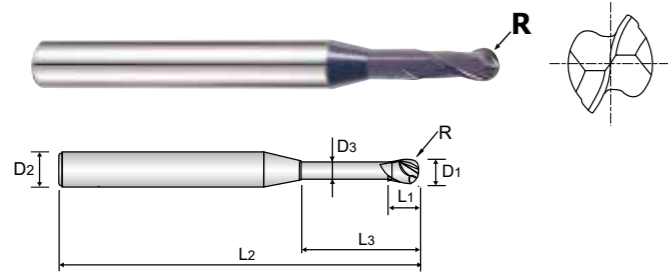
| P | | | | | H | M | K | N | | | | S | |
|---------------|--------------|--------------------|-----------------|----------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 | HRc45~55 | HRc55~70 | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | | ○ | | | | | | |

◎ : Excellent ○ : Good

| P | | | | | H | M | K | N | | | | S | |
|---------------|--------------|--------------------|-----------------|----------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 | HRc45~55 | HRc55~70 | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | | ○ | | | | | | |

Y-COATED SOLID CARBIDE END MILLS
2 FLUTE BALL NOSE for RIB PROCESSING

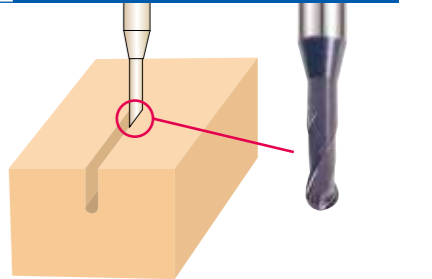
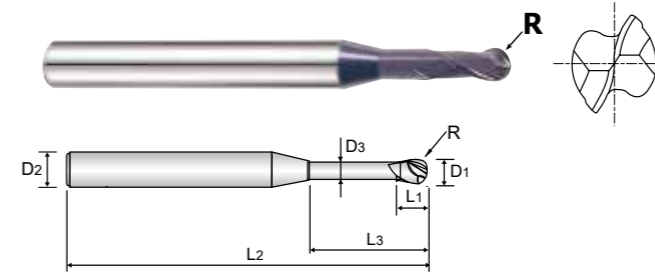
GM886 PLAIN SHANK



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.02 | h6 |

Y-COATED SOLID CARBIDE END MILLS
2 FLUTE BALL NOSE for RIB PROCESSING

GM886 PLAIN SHANK



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.02 | h6 |

Unit : mm

| EDP No. | Radius of Ball Nose R(±0.01) | Mill Diameter D1 | Shank Diameter D2 | Length of Cut L1 | Length Below Shank L3 | Overall Length L2 | Neck Diameter D3 |
|----------|---------------------------------|---------------------|----------------------|---------------------|--------------------------|----------------------|---------------------|
| GM886005 | R0.25 | 0.5 | 4 | 0.7 | 2 | 45 | 0.45 |
| GM886962 | R0.25 | 0.5 | 4 | 0.7 | 4 | 45 | 0.45 |
| GM886957 | R0.3 | 0.6 | 4 | 0.9 | 2 | 45 | 0.55 |
| GM886915 | R0.3 | 0.6 | 4 | 0.9 | 4 | 45 | 0.55 |
| GM886916 | R0.3 | 0.6 | 4 | 0.9 | 6 | 45 | 0.55 |
| GM886919 | R0.4 | 0.8 | 4 | 1.2 | 4 | 45 | 0.75 |
| GM886008 | R0.4 | 0.8 | 4 | 1.2 | 6 | 45 | 0.75 |
| GM886921 | R0.5 | 1.0 | 4 | 1.5 | 4 | 45 | 0.95 |
| GM886923 | R0.5 | 1.0 | 4 | 1.5 | 5 | 45 | 0.95 |
| GM886010 | R0.5 | 1.0 | 4 | 1.5 | 6 | 45 | 0.95 |
| GM886902 | R0.5 | 1.0 | 4 | 1.5 | 8 | 45 | 0.95 |
| GM886903 | R0.5 | 1.0 | 4 | 1.5 | 10 | 45 | 0.95 |
| GM886904 | R0.5 | 1.0 | 4 | 1.5 | 12 | 45 | 0.95 |
| GM886927 | R0.5 | 1.0 | 4 | 1.5 | 16 | 50 | 0.95 |
| GM886012 | R0.6 | 1.2 | 4 | 1.8 | 8 | 45 | 1.15 |
| GM886930 | R0.75 | 1.5 | 4 | 2.3 | 6 | 45 | 1.45 |
| GM886015 | R0.75 | 1.5 | 4 | 2.3 | 8 | 45 | 1.45 |
| GM886931 | R0.75 | 1.5 | 4 | 2.3 | 10 | 45 | 1.45 |
| GM886906 | R0.75 | 1.5 | 4 | 2.3 | 12 | 45 | 1.45 |
| GM886940 | R1.0 | 2.0 | 4 | 3 | 6 | 45 | 1.95 |
| GM886020 | R1.0 | 2.0 | 4 | 3 | 8 | 45 | 1.95 |
| GM886941 | R1.0 | 2.0 | 4 | 3 | 10 | 45 | 1.95 |
| GM886942 | R1.0 | 2.0 | 4 | 3 | 12 | 50 | 1.95 |
| GM886909 | R1.0 | 2.0 | 4 | 3 | 16 | 50 | 1.95 |
| GM886910 | R1.0 | 2.0 | 4 | 3 | 20 | 55 | 1.95 |
| GM886945 | R1.0 | 2.0 | 4 | 3 | 25 | 60 | 1.95 |
| GM886967 | R1.0 | 2.0 | 4 | 3 | 30 | 70 | 1.95 |

▶ NEXT PAGE

Unit : mm

| EDP No. | Radius of Ball Nose R(±0.01) | Mill Diameter D1 | Shank Diameter D2 | Length of Cut L1 | Length Below Shank L3 | Overall Length L2 | Neck Diameter D3 |
|----------|---------------------------------|---------------------|----------------------|---------------------|--------------------------|----------------------|---------------------|
| GM886947 | R1.5 | 3.0 | 6 | 4.5 | 10 | 50 | 2.85 |
| GM886948 | R1.5 | 3.0 | 6 | 4.5 | 12 | 50 | 2.85 |
| GM886030 | R1.5 | 3.0 | 6 | 4.5 | 16 | 55 | 2.85 |
| GM886911 | R1.5 | 3.0 | 6 | 4.5 | 20 | 60 | 2.85 |
| GM886968 | R1.5 | 3.0 | 6 | 4.5 | 25 | 65 | 2.85 |
| GM886040 | R2.0 | 4.0 | 6 | 6 | 16 | 60 | 3.85 |
| GM886912 | R2.0 | 4.0 | 6 | 6 | 20 | 65 | 3.85 |
| GM886913 | R2.0 | 4.0 | 6 | 6 | 25 | 70 | 3.85 |
| GM886971 | R2.0 | 4.0 | 6 | 6 | 30 | 70 | 3.85 |
| GM886972 | R2.0 | 4.0 | 6 | 6 | 35 | 80 | 3.85 |
| GM886050 | R2.5 | 5.0 | 6 | 7.5 | 16 | 60 | 4.85 |
| GM886060 | R3.0 | 6.0 | 6 | 9 | 20 | 80 | 5.85 |
| GM886954 | R3.0 | 6.0 | 6 | 9 | 30 | 90 | 5.85 |

◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | | S | | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | | |
| ~HB225 | HB225~325 | HRC30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | | | | | | | |

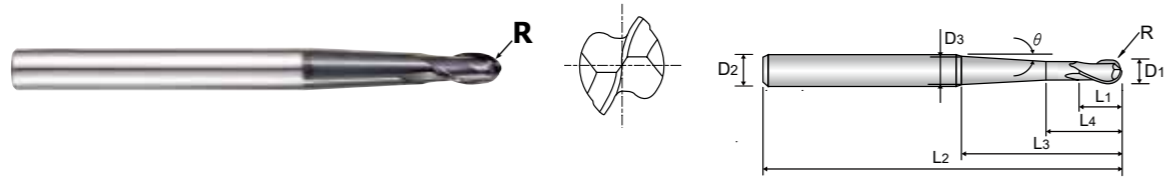
◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | | S | | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | | |
| ~HB225 | HB225~325 | HRC30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | | | | | | | |

**Y-COATED SOLID CARBIDE END MILLS
2 FLUTE BALL NOSE with TAPER NECK**

GM902 PLAIN SHANK

► High efficiency milling in deep slotting due to long projection of the end mills



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

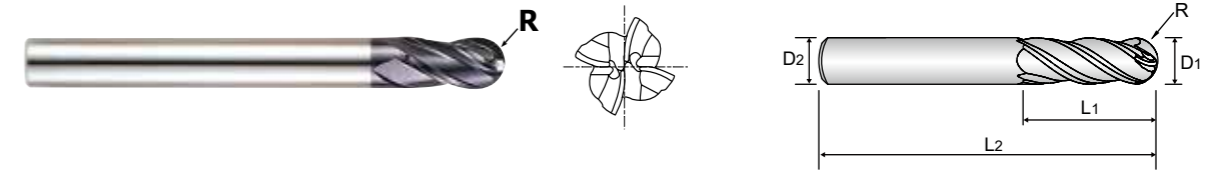
Unit : mm

| EDP No. | Radius of Ball Nose | Mill Diameter | Shank Diameter | Length of Cut | Under Neck Parallel Length | Length Below Shank | Overall Length | Neck Diameter | Taper Neck Angle |
|----------|---------------------|---------------|----------------|---------------|----------------------------|--------------------|----------------|---------------|------------------|
| | R(±0.01) | D1 | D2 | L1 | L4 | L3 | L2 | D3 | θ |
| GM902010 | R0.5 | 1.0 | 6 | 2 | 4 | 23 | 60 | 2 | 1° 30' |
| GM902901 | R0.5 | 1.0 | 6 | 2 | 4 | 23 | 60 | 4.3 | 5° |
| GM902902 | R0.5 | 1.0 | 6 | 2 | 4 | 42 | 80 | 5 | 3° |
| GM902020 | R1.0 | 2.0 | 6 | 4 | 6 | 23 | 60 | 2.9 | 1° 30' |
| GM902903 | R1.0 | 2.0 | 6 | 4 | 6 | 23 | 60 | 5 | 5° |
| GM902904 | R1.0 | 2.0 | 6 | 4 | 6 | 41 | 80 | 5.7 | 3° |
| GM902030 | R1.5 | 3.0 | 6 | 6 | 8 | 32 | 70 | 5.6 | 3° |
| GM902905 | R1.5 | 3.0 | 6 | 6 | 8 | 52 | 90 | 5.3 | 1° 30' |
| GM902040 | R2.0 | 4.0 | 6 | 8 | 10 | 28 | 70 | 5.9 | 3° |
| GM902906 | R2.0 | 4.0 | 6 | 8 | 10 | 49 | 90 | 6 | 1° 30' |
| GM902060 | R3.0 | 6.0 | 8 | 12 | 15 | 34 | 90 | 8 | 3° |
| GM902908 | R3.0 | 6.0 | 8 | 12 | 15 | 53 | 110 | 8 | 1° 30' |
| GM902080 | R4.0 | 8.0 | 10 | 14 | 17 | 36 | 100 | 10 | 3° |
| GM902909 | R4.0 | 8.0 | 10 | 14 | 17 | 55 | 120 | 10 | 1° 30' |

**Y-COATED SOLID CARBIDE END MILLS
4 FLUTE LONG LENGTH BALL NOSE**

GM815 PLAIN SHANK

► Designed to machine tool steels, alloy steels, mold steels and other high hardened materials
► For copy - milling machines
► 4 Flute design - higher feed than GM813 series



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

Unit : mm

| EDP No. | Radius of Ball Nose | Mill Diameter | Shank Diameter | Length of Cut | Overall Length |
|----------|---------------------|---------------|----------------|---------------|----------------|
| | R(±0.02) | D1 | D2 | L1 | L2 |
| GM815020 | R1.0 | 2.0 | 6 | 5 | 50 |
| GM815030 | R1.5 | 3.0 | 6 | 8 | 60 |
| GM815040 | R2.0 | 4.0 | 6 | 8 | 70 |
| GM815050 | R2.5 | 5.0 | 6 | 10 | 80 |
| GM815060 | R3.0 | 6.0 | 6 | 12 | 90 |
| GM815080 | R4.0 | 8.0 | 8 | 14 | 100 |
| GM815100 | R5.0 | 10.0 | 10 | 18 | 100 |
| GM815120 | R6.0 | 12.0 | 12 | 22 | 110 |
| GM815160 | R8.0 | 16.0 | 16 | 30 | 140 |

◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | | S |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | |
| ○ | ○ | ◎ | ◎ | ○ | | | | | | | |

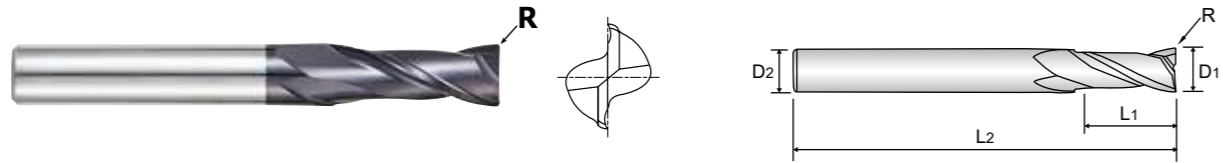
◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | | S |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | | | | | |

**Y-COATED SOLID CARBIDE END MILLS
2 FLUTE LONG LENGTH CORNER RADIUS**

GM818 PLAIN SHANK

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials
- ▶ Superior workpiece finishes
- ▶ Increased feed rates



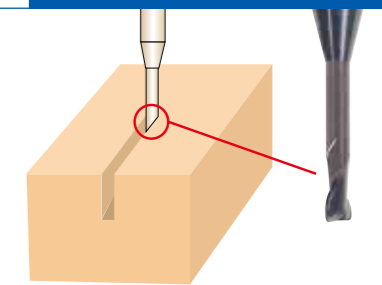
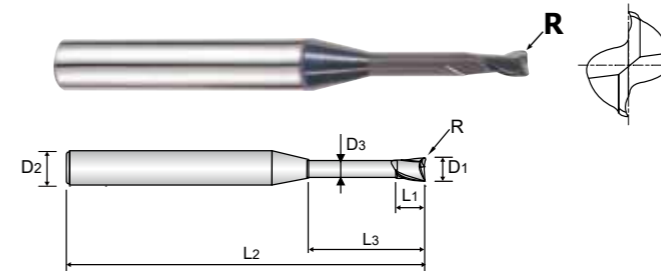
| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

Unit : mm

| EDP No. | Corner Radius | Mill Diameter | Shank Diameter | Length of Cut | Overall Length |
|----------|---------------|---------------|----------------|---------------|----------------|
| | R | D1 | D2 | L1 | L2 |
| GM818911 | R0.5 | 4.0 | 6 | 15 | 50 |
| GM818060 | R0.5 | 6.0 | 6 | 20 | 60 |
| GM818901 | R1.0 | 6.0 | 6 | 20 | 60 |
| GM818080 | R0.5 | 8.0 | 8 | 25 | 70 |
| GM818902 | R1.0 | 8.0 | 8 | 25 | 70 |
| GM818100 | R0.5 | 10.0 | 10 | 30 | 90 |
| GM818905 | R1.0 | 10.0 | 10 | 30 | 90 |
| GM818908 | R1.0 | 12.0 | 12 | 30 | 90 |

**Y-COATED SOLID CARBIDE END MILLS
2 FLUTE CORNER RADIUS for RIB PROCESSING**

GM8A1 PLAIN SHANK



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

Unit : mm

| EDP No. | Corner Radius | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|----------|---------------|---------------|----------------|---------------|--------------------|----------------|---------------|
| | R | D1 | D2 | L1 | L3 | L2 | D3 |
| GM8A1010 | R0.1 | 1.0 | 4 | 1.5 | 6 | 45 | 0.95 |
| GM8A1920 | R0.1 | 1.0 | 4 | 1.5 | 8 | 45 | 0.95 |
| GM8A1921 | R0.1 | 1.0 | 4 | 1.5 | 10 | 45 | 0.95 |
| GM8A1012 | R0.2 | 1.2 | 4 | 1.8 | 6 | 45 | 1.15 |
| GM8A1015 | R0.2 | 1.5 | 4 | 2.3 | 6 | 45 | 1.45 |
| GM8A1937 | R0.2 | 1.5 | 4 | 2.3 | 8 | 45 | 1.45 |
| GM8A1938 | R0.2 | 1.5 | 4 | 2.3 | 10 | 45 | 1.45 |
| GM8A1939 | R0.2 | 1.5 | 4 | 2.3 | 12 | 45 | 1.45 |
| GM8A1941 | R0.2 | 1.5 | 4 | 2.3 | 16 | 50 | 1.45 |
| GM8A1018 | R0.2 | 1.8 | 4 | 2.7 | 6 | 45 | 1.75 |
| GM8A1960 | R0.2 | 2.0 | 4 | 3 | 6 | 45 | 1.95 |
| GM8A1020 | R0.2 | 2.0 | 4 | 3 | 8 | 45 | 1.95 |
| GM8A1962 | R0.2 | 2.0 | 4 | 3 | 12 | 45 | 1.95 |
| GM8A1961 | R0.2 | 2.0 | 4 | 3 | 10 | 45 | 1.95 |
| GM8A1964 | R0.2 | 2.0 | 4 | 3 | 16 | 50 | 1.95 |
| GM8A1966 | R0.2 | 2.0 | 4 | 3 | 20 | 55 | 1.95 |
| GM8A1967 | R0.2 | 2.0 | 4 | 3 | 25 | 60 | 1.95 |
| GM8A1969 | R0.2 | 2.5 | 4 | 3.7 | 12 | 45 | 2.40 |
| GM8A1981 | R0.3 | 3.0 | 6 | 4.5 | 16 | 55 | 2.85 |
| GM8A1983 | R0.3 | 3.0 | 6 | 4.5 | 20 | 60 | 2.85 |
| GM8A1984 | R0.3 | 3.0 | 6 | 4.5 | 25 | 65 | 2.85 |
| GM8A1976 | R0.3 | 3.0 | 6 | 4.5 | 30 | 70 | 2.85 |
| GM8A1985 | R0.3 | 3.0 | 6 | 4.5 | 40 | 90 | 2.85 |
| GM8A1040 | R0.3 | 4.0 | 6 | 6 | 12 | 50 | 3.85 |
| GM8A1986 | R0.3 | 4.0 | 6 | 6 | 16 | 60 | 3.85 |
| GM8A1987 | R0.3 | 4.0 | 6 | 6 | 20 | 60 | 3.85 |
| GM8A1060 | R0.5 | 6.0 | 6 | 9 | 20 | 80 | 5.85 |
| GM8A1802 | R0.5 | 6.0 | 6 | 9 | 40 | 100 | 5.85 |

◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | | S | | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | | |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | | | | | | | | |

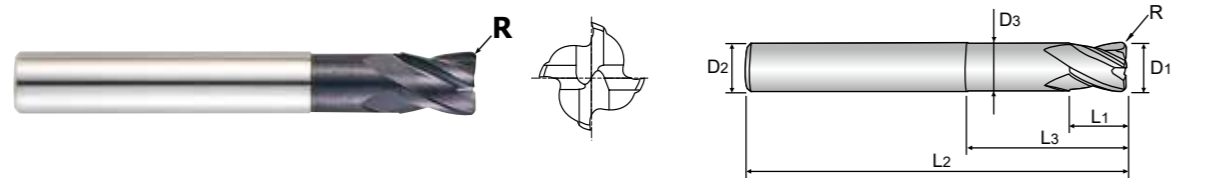
◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | | S | | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | | |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | | | | | | | |

Y-COATED SOLID CARBIDE END MILLS
4 FLUTE STUB LENGTH CORNER RADIUS

GM839 PLAIN SHANK

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials
- ▶ Superior workpiece finishes
- ▶ Increased feed rates



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

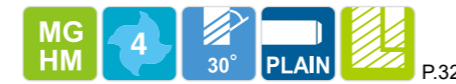
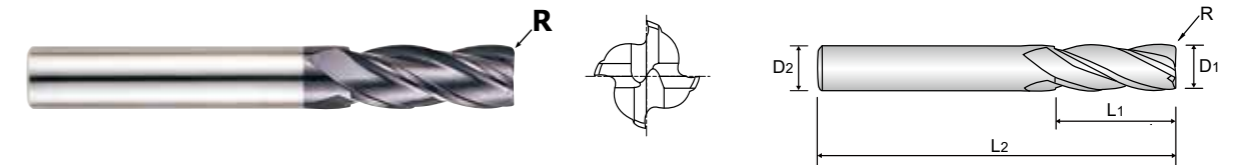
Unit : mm

| EDP No. | Corner Radius | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|----------|---------------|---------------|----------------|---------------|--------------------|----------------|---------------|
| | R | D1 | D2 | L1 | L3 | L2 | D3 |
| GM839020 | R0.2 | 2.0 | 6 | 2.5 | 5 | 50 | 1.9 |
| GM839030 | R0.3 | 3.0 | 6 | 4 | 7 | 50 | 2.8 |
| GM839040 | R0.4 | 4.0 | 6 | 5 | 9 | 50 | 3.7 |
| GM839060 | R0.6 | 6.0 | 6 | 7 | 14 | 55 | 5.6 |
| GM839080 | R0.8 | 8.0 | 8 | 10 | 18 | 60 | 7.4 |
| GM839100 | R1.0 | 10.0 | 10 | 12 | 25 | 70 | 9.4 |
| GM839120 | R1.2 | 12.0 | 12 | 15 | 30 | 80 | 11.4 |

Y-COATED SOLID CARBIDE END MILLS
4 FLUTE LONG LENGTH CORNER RADIUS

GM819 PLAIN SHANK

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials
- ▶ 4 flute allows for better workpiece finishes
- ▶ Increased production



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

Unit : mm

| EDP No. | Corner Radius | Mill Diameter | Shank Diameter | Length of Cut | Overall Length |
|----------|---------------|---------------|----------------|---------------|----------------|
| | R | D1 | D2 | L1 | L2 |
| GM819030 | R0.3 | 3.0 | 6 | 12 | 50 |
| GM819040 | R0.3 | 4.0 | 6 | 15 | 50 |
| GM819911 | R0.5 | 4.0 | 6 | 15 | 50 |
| GM819912 | R0.5 | 5.0 | 6 | 20 | 60 |
| GM819060 | R0.5 | 6.0 | 6 | 20 | 60 |
| GM819901 | R1.0 | 6.0 | 6 | 20 | 60 |
| GM819080 | R0.5 | 8.0 | 8 | 25 | 70 |
| GM819902 | R1.0 | 8.0 | 8 | 25 | 70 |
| GM819904 | R2.0 | 8.0 | 8 | 25 | 70 |
| GM819100 | R0.5 | 10.0 | 10 | 30 | 90 |
| GM819905 | R1.0 | 10.0 | 10 | 30 | 90 |
| GM819906 | R1.5 | 10.0 | 10 | 30 | 90 |
| GM819907 | R2.0 | 10.0 | 10 | 30 | 90 |
| GM819120 | R0.5 | 12.0 | 12 | 30 | 90 |
| GM819908 | R1.0 | 12.0 | 12 | 30 | 90 |
| GM819909 | R1.5 | 12.0 | 12 | 30 | 90 |
| GM819910 | R2.0 | 12.0 | 12 | 30 | 90 |
| GM819160 | R0.5 | 16.0 | 16 | 50 | 110 |
| GM819916 | R1.0 | 16.0 | 16 | 50 | 110 |
| GM819918 | R2.0 | 16.0 | 16 | 50 | 110 |
| GM819921 | R2.0 | 20.0 | 20 | 55 | 110 |

◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | S | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | | | | | |

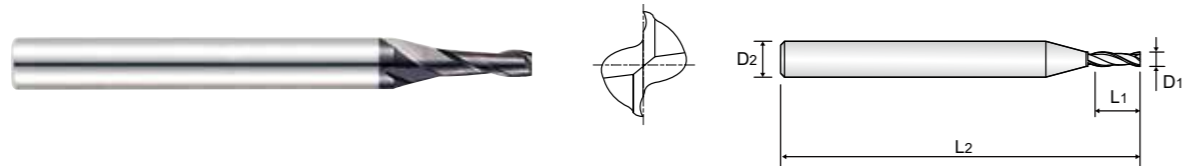
◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | S | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | ○ | | | | |

**Y-COATED SOLID CARBIDE END MILLS
2 FLUTE SHORT LENGTH**

GM810 PLAIN SHANK

- ▶ High precision milling in medical, optical, electronics and aerospace industries
- ▶ Excellent performance on hardened steel



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

Unit : mm

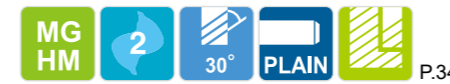
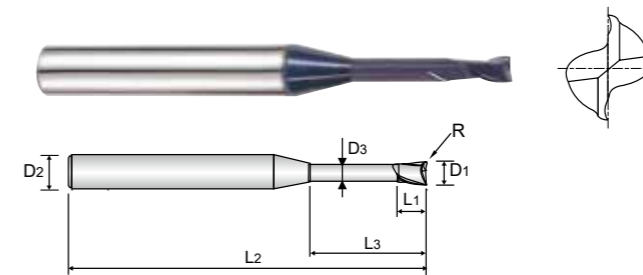
| EDP No. | Mill Diameter | Shank Diameter | Length of Cut | Overall Length |
|----------|---------------|----------------|---------------|----------------|
| | D1 | | | D2 |
| GM810004 | 0.4 | 3 | 0.8 | 40 |
| GM810005 | 0.5 | 3 | 1 | 40 |
| GM810006 | 0.6 | 3 | 1.2 | 40 |
| GM810007 | 0.7 | 3 | 1.4 | 40 |
| GM810008 | 0.8 | 3 | 1.6 | 40 |
| GM810009 | 0.9 | 3 | 2 | 40 |
| GM810010 | 1.0 | 4 | 2.5 | 40 |
| GM810901 | 1.0 | 6 | 2.5 | 40 |
| GM810012 | 1.2 | 4 | 4 | 40 |
| GM810014 | 1.4 | 4 | 4 | 40 |
| GM810015 | 1.5 | 4 | 4 | 40 |
| GM810902 | 1.5 | 6 | 4 | 40 |
| GM810020 | 2.0 | 4 | 6 | 40 |
| GM810903 | 2.0 | 6 | 6 | 40 |
| GM810025 | 2.5 | 4 | 8 | 40 |
| GM810030 | 3.0 | 6 | 8 | 45 |
| GM810035 | 3.5 | 6 | 10 | 45 |
| GM810040 | 4.0 | 6 | 11 | 45 |
| GM810050 | 5.0 | 6 | 13 | 50 |
| GM810060 | 6.0 | 6 | 13 | 50 |
| GM810070 | 7.0 | 8 | 16 | 60 |
| GM810080 | 8.0 | 8 | 19 | 60 |
| GM810090 | 9.0 | 10 | 19 | 70 |
| GM810100 | 10.0 | 10 | 22 | 70 |
| GM810110 | 11.0 | 12 | 22 | 75 |
| GM810120 | 12.0 | 12 | 26 | 75 |
| GM810140 | 14.0 | 14 | 26 | 85 |
| GM810160 | 16.0 | 16 | 32 | 100 |
| GM810180 | 18.0 | 18 | 32 | 100 |
| GM810200 | 20.0 | 20 | 38 | 105 |

◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | | S | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | |
| ~HB225 | HB225~325 | HRC30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | | | | | | |

**Y-COATED SOLID CARBIDE END MILLS
2 FLUTE for RIB PROCESSING**

GM883 PLAIN SHANK



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.015 | h6 |

Unit : mm

| EDP No. | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|----------|---------------|----------------|---------------|--------------------|----------------|---------------|
| | D1 | | | D2 | | L1 |
| GM883004 | 0.4 | 4 | 0.6 | 2 | 45 | 0.37 |
| GM883005 | 0.5 | 4 | 0.7 | 2 | 45 | 0.45 |
| GM883988 | 0.5 | 4 | 0.7 | 4 | 45 | 0.45 |
| GM883820 | 0.7 | 4 | 1 | 3 | 45 | 0.65 |
| GM883008 | 0.8 | 4 | 1.2 | 4 | 45 | 0.75 |
| GM883908 | 0.8 | 4 | 1.2 | 6 | 45 | 0.75 |
| GM883996 | 1.0 | 4 | 1.5 | 4 | 45 | 0.95 |
| GM883010 | 1.0 | 4 | 1.5 | 6 | 45 | 0.95 |
| GM883912 | 1.0 | 4 | 1.5 | 8 | 45 | 0.95 |
| GM883913 | 1.0 | 4 | 1.5 | 10 | 45 | 0.95 |
| GM883914 | 1.0 | 4 | 1.5 | 12 | 45 | 0.95 |
| GM883997 | 1.0 | 4 | 1.5 | 16 | 50 | 0.95 |
| GM883998 | 1.0 | 4 | 1.5 | 20 | 55 | 0.95 |
| GM883012 | 1.2 | 4 | 1.8 | 6 | 45 | 1.15 |
| GM883015 | 1.5 | 4 | 2.3 | 6 | 45 | 1.45 |
| GM883923 | 1.5 | 4 | 2.3 | 8 | 45 | 1.45 |
| GM883924 | 1.5 | 4 | 2.3 | 10 | 45 | 1.45 |
| GM883925 | 1.5 | 4 | 2.3 | 12 | 45 | 1.45 |
| GM883927 | 1.5 | 4 | 2.3 | 16 | 50 | 1.45 |
| GM883810 | 1.5 | 4 | 2.3 | 20 | 55 | 1.45 |
| GM883946 | 1.8 | 4 | 2.7 | 12 | 45 | 1.75 |
| GM883958 | 2.0 | 4 | 3 | 6 | 45 | 1.95 |
| GM883020 | 2.0 | 4 | 3 | 8 | 45 | 1.95 |
| GM883959 | 2.0 | 4 | 3 | 10 | 45 | 1.95 |
| GM883960 | 2.0 | 4 | 3 | 12 | 45 | 1.95 |
| GM883961 | 2.0 | 4 | 3 | 14 | 50 | 1.95 |
| GM883962 | 2.0 | 4 | 3 | 16 | 50 | 1.95 |
| GM883964 | 2.0 | 4 | 3 | 20 | 55 | 1.95 |

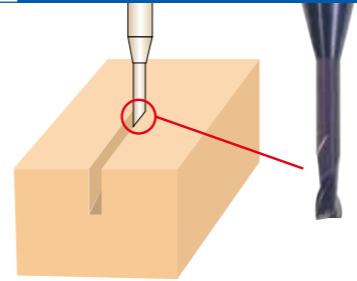
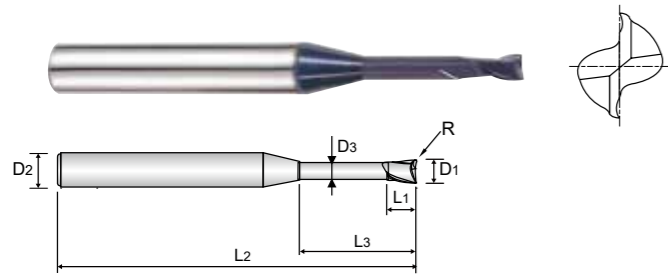
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◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | | S | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | |
| ~HB225 | HB225~325 | HRC30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | | | | | | |

**Y-COATED SOLID CARBIDE END MILLS
2 FLUTE for RIB PROCESSING**

GM883 PLAIN SHANK



| | |
|-------------------------|----------------------|
| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
| 0 ~ -0.015 | h6 |

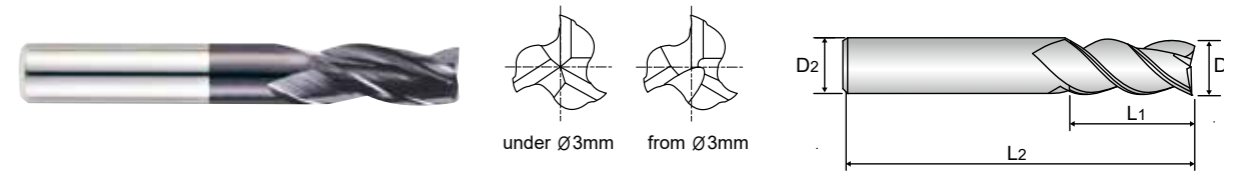
Unit : mm

| EDP No. | Mill Diameter | Shank Diameter | Length of Cut | Length Below Shank | Overall Length | Neck Diameter |
|----------|---------------|----------------|---------------|--------------------|----------------|---------------|
| | D1 | D2 | L1 | L3 | L2 | D3 |
| GM883966 | 2.0 | 4 | 3 | 25 | 60 | 1.95 |
| GM883814 | 2.0 | 4 | 3 | 30 | 70 | 1.95 |
| GM883970 | 2.5 | 4 | 3.7 | 16 | 55 | 2.40 |
| GM883975 | 3.0 | 6 | 4.5 | 10 | 45 | 2.85 |
| GM883976 | 3.0 | 6 | 4.5 | 12 | 45 | 2.85 |
| GM883978 | 3.0 | 6 | 4.5 | 16 | 55 | 2.85 |
| GM883979 | 3.0 | 6 | 4.5 | 18 | 55 | 2.85 |
| GM883980 | 3.0 | 6 | 4.5 | 20 | 60 | 2.85 |
| GM883981 | 3.0 | 6 | 4.5 | 25 | 65 | 2.85 |
| GM883832 | 3.0 | 6 | 4.5 | 30 | 70 | 2.85 |
| GM883983 | 3.0 | 6 | 4.5 | 40 | 90 | 2.85 |
| GM883801 | 4.0 | 6 | 6 | 16 | 60 | 3.85 |
| GM883802 | 4.0 | 6 | 6 | 20 | 60 | 3.85 |
| GM883803 | 4.0 | 6 | 6 | 25 | 70 | 3.85 |
| GM883834 | 4.0 | 6 | 6 | 30 | 70 | 3.85 |
| GM883836 | 4.0 | 6 | 6 | 40 | 90 | 3.85 |
| GM883838 | 4.0 | 6 | 6 | 50 | 100 | 3.85 |
| GM883807 | 6.0 | 6 | 9 | 30 | 90 | 5.85 |
| GM883809 | 6.0 | 6 | 9 | 50 | 110 | 5.85 |

**Y-COATED SOLID CARBIDE END MILLS
3 FLUTE 38° HELIX SHORT LENGTH**

GM895 PLAIN SHANK

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials
- ▶ Possesses the advantage of 2 flute and 4 flute end mill
- ▶ Superior workpiece finishes



| | |
|-------------------------|----------------------|
| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
| 0 ~ -0.03 | h6 |

Unit : mm

| EDP No. | Mill Diameter | Shank Diameter | Length of Cut | Overall Length |
|----------|---------------|----------------|---------------|----------------|
| | D1 | D2 | L1 | L2 |
| GM895010 | 1.0 | 3 | 2.5 | 38 |
| GM895015 | 1.5 | 4 | 5 | 50 |
| GM895025 | 2.5 | 3 | 7 | 38 |
| GM895030 | 3.0 | 3 | 10 | 38 |
| GM895901 | 3.0 | 6 | 10 | 50 |
| GM895040 | 4.0 | 4 | 12 | 50 |
| GM895903 | 4.0 | 6 | 12 | 50 |
| GM895050 | 5.0 | 5 | 14 | 50 |
| GM895904 | 5.0 | 6 | 14 | 57 |
| GM895060 | 6.0 | 6 | 16 | 57 |
| GM895080 | 8.0 | 8 | 20 | 63 |
| GM895100 | 10.0 | 10 | 22 | 72 |
| GM895120 | 12.0 | 12 | 25 | 73 |
| GM895160 | 16.0 | 16 | 32 | 82 |

◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | S | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel |
| ~HB225 | HB225~325 | HRC30~40 | HRC40~45 HRc45~55 | HRc55~70 | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | | | | | |

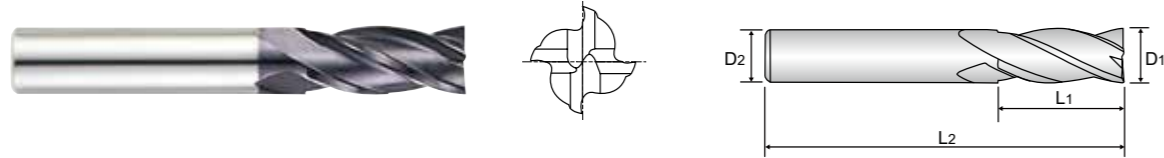
◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | S | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel |
| ~HB225 | HB225~325 | HRC30~40 | HRC40~45 HRc45~55 | HRc55~70 | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | ○ | | | | |

**Y-COATED SOLID CARBIDE END MILLS
4 FLUTE SHORT LENGTH**

GM811 PLAIN SHANK

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials
- ▶ 4 flute allows for better workpiece finishes
- ▶ Increased production



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

Unit : mm

| EDP No. | Mill Diameter | Shank Diameter | Length of Cut | Overall Length |
|----------|---------------|----------------|---------------|----------------|
| | D1 | D2 | L1 | L2 |
| GM811020 | 2.0 | 4 | 6 | 40 |
| GM811901 | 2.0 | 6 | 6 | 40 |
| GM811025 | 2.5 | 4 | 8 | 40 |
| GM811902 | 2.5 | 6 | 8 | 40 |
| GM811030 | 3.0 | 6 | 8 | 45 |
| GM811035 | 3.5 | 6 | 10 | 45 |
| GM811040 | 4.0 | 6 | 11 | 45 |
| GM811045 | 4.5 | 6 | 11 | 45 |
| GM811050 | 5.0 | 6 | 13 | 50 |
| GM811060 | 6.0 | 6 | 13 | 50 |
| GM811080 | 8.0 | 8 | 19 | 60 |
| GM811100 | 10.0 | 10 | 22 | 70 |
| GM811120 | 12.0 | 12 | 26 | 75 |
| GM811140 | 14.0 | 14 | 26 | 85 |
| GM811160 | 16.0 | 16 | 32 | 100 |
| GM811200 | 20.0 | 20 | 38 | 105 |
| GM811250 | 25.0 | 25 | 45 | 120 |

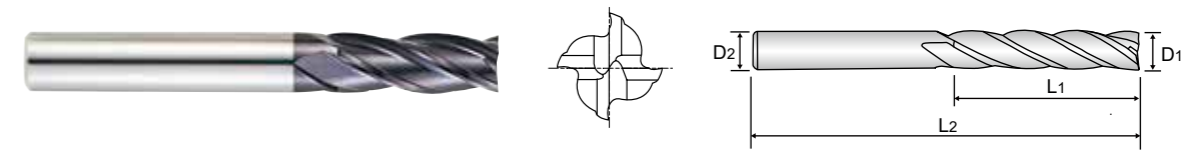
◎ : Excellent ○ : Good

| P | | | | | H | M | K | N | | | | S | |
|---------------|--------------|--------------------|-----------------|----------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 | HRc45~55 | HRc55~70 | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | ○ | | | | | | |

**Y-COATED SOLID CARBIDE END MILLS
4 FLUTE LONG LENGTH**

GM817 PLAIN SHANK

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials
- ▶ 4 flute allows for better workpiece finishes
- ▶ Increased production



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

Unit : mm

| EDP No. | Mill Diameter | Shank Diameter | Length of Cut | Overall Length |
|----------|---------------|----------------|---------------|----------------|
| | D1 | D2 | L1 | L2 |
| GM817020 | 2.0 | 4 | 8 | 40 |
| GM817030 | 3.0 | 6 | 12 | 50 |
| GM817040 | 4.0 | 6 | 15 | 50 |
| GM817050 | 5.0 | 6 | 20 | 60 |
| GM817060 | 6.0 | 6 | 20 | 60 |
| GM817080 | 8.0 | 8 | 25 | 70 |
| GM817100 | 10.0 | 10 | 30 | 90 |
| GM817120 | 12.0 | 12 | 30 | 90 |
| GM817140 | 14.0 | 16 | 40 | 110 |
| GM817160 | 16.0 | 16 | 50 | 110 |
| GM817200 | 20.0 | 20 | 55 | 110 |

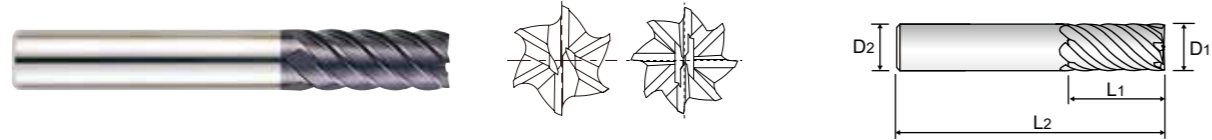
◎ : Excellent ○ : Good

| P | | | | | H | M | K | N | | | | S | |
|---------------|--------------|--------------------|-----------------|----------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 | HRc45~55 | HRc55~70 | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | | ○ | | | | | | |

Y-COATED SOLID CARBIDE END MILLS
6&8 FLUTE 45° HELIX LONG LENGTH

GM812 PLAIN SHANK

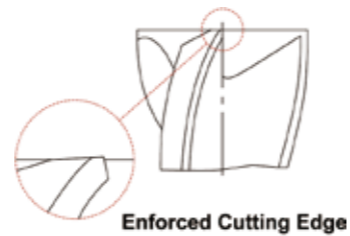
- ▶ Designed to machine hardened materials
- ▶ High speed cutting and finish milling with high feed rates
- ▶ Superior workpiece finishes
- ▶ Superior wear resistant
- ▶ Suitable for dry milling



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

Unit : mm

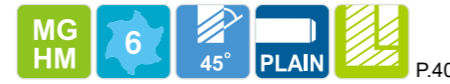
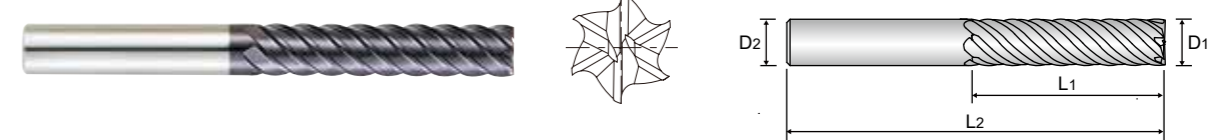
| EDP No. | Mill Diameter | Shank Diameter | Length of Cut | Overall Length | No. of Flute |
|----------|---------------|----------------|---------------|----------------|--------------|
| | D1 | D2 | L1 | L2 | |
| GM812060 | 6.0 | 6 | 13 | 57 | 6 |
| GM812080 | 8.0 | 8 | 19 | 63 | 6 |
| GM812100 | 10.0 | 10 | 22 | 72 | 6 |
| GM812120 | 12.0 | 12 | 26 | 83 | 6 |
| GM812160 | 16.0 | 16 | 32 | 92 | 6 |
| GM812200 | 20.0 | 20 | 38 | 104 | 8 |



Y-COATED SOLID CARBIDE END MILLS
6 FLUTE 45° HELIX EXTRA LONG LENGTH

GM834 PLAIN SHANK

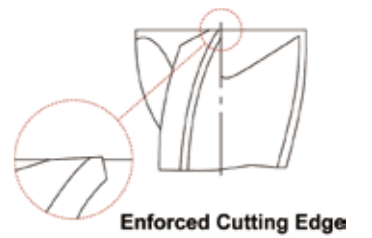
- ▶ Designed to machine hardened materials
- ▶ High speed cutting and finish milling with high feed rates
- ▶ Superior workpiece finishes
- ▶ Superior wear resistant
- ▶ Suitable for dry milling



| Mill Dia. Tolerance(mm) | Shank Dia. Tolerance |
|-------------------------|----------------------|
| 0 ~ -0.03 | h6 |

Unit : mm

| EDP No. | Mill Diameter | Shank Diameter | Length of Cut | Overall Length |
|----------|---------------|----------------|---------------|----------------|
| | D1 | D2 | L1 | L2 |
| GM834060 | 6.0 | 6 | 26 | 70 |
| GM834080 | 8.0 | 8 | 36 | 90 |
| GM834100 | 10.0 | 10 | 46 | 100 |
| GM834120 | 12.0 | 12 | 56 | 110 |
| GM834160 | 16.0 | 16 | 66 | 130 |
| GM834200 | 20.0 | 20 | 76 | 140 |
| GM834250 | 25.0 | 25 | 92 | 180 |



◎ : Excellent ○ : Good

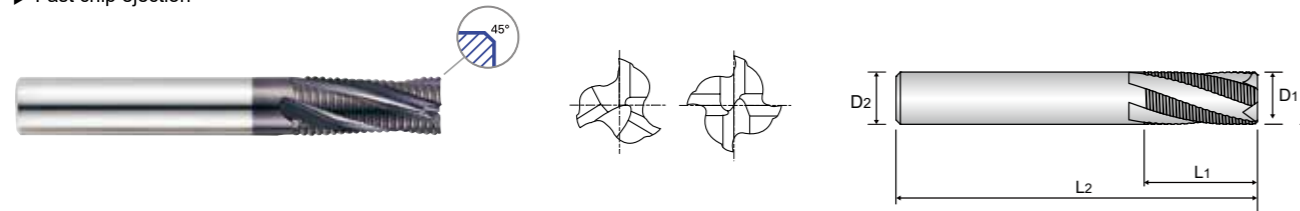
| P | | | | H | M | K | N | | | | S | | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | | |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | | | | | | | |

◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | | S | | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|--|--|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel | | |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | | ○ | | | | | | | |

Y-COATED SOLID CARBIDE END MILLS
MULTI FLUTE 20° HELIX LONG LENGTH ROUGHING - FINE GM814 PLAIN SHANK

- ▶ Designed to machine tool steels, alloy steels, mold steels and other hardened materials
- ▶ High velocity milling of hardened steels
- ▶ For dry and wet milling
- ▶ Fast chip ejection

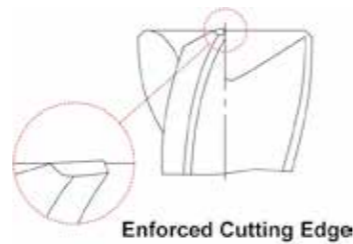


Unit : mm

| EDP No. | Mill Diameter | Shank Diameter | Length of Cut | Overall Length | No. of Flute | Chamfer |
|----------|---------------|----------------|---------------|----------------|--------------|---------|
| | D1 | D2 | L1 | L2 | | |
| GM814060 | 6.0 | 6 | 16 | 57 | 3 | 0.38 |
| GM814080 | 8.0 | 8 | 16 | 63 | 3 | 0.38 |
| GM814100 | 10.0 | 10 | 22 | 72 | 4 | 0.6 |
| GM814120 | 12.0 | 12 | 26 | 83 | 4 | 0.6 |
| GM814160 | 16.0 | 16 | 32 | 92 | 4 | 0.6 |
| GM814200 | 20.0 | 20 | 38 | 104 | 4 | 0.6 |

Tolerances according to DIN 7160 & 7161

| | Tolerance range in μm | | | | |
|-----|-----------------------------------|-------------|--------------|---------------|---------------|
| | Nominal-Diameter in μm | | | | |
| | from 1 to 3 | over 3 to 6 | over 6 to 10 | over 10 to 18 | over 18 to 30 |
| h10 | 0 | 0 | 0 | 0 | 0 |
| | -40 | -48 | -58 | -70 | -84 |
| h6 | 0 | 0 | 0 | 0 | 0 |
| | -6 | -8 | -9 | -11 | -13 |



◎ : Excellent ○ : Good

| P | | | | H | M | K | N | | | S | |
|---------------|--------------|--------------------|-------------------|----------------------|------------------|-----------|--------|----------|----------|----------|---------|
| Carbon Steels | Alloy Steels | Prehardened Steels | Hardened Steels | High Hardened Steels | Stainless Steels | Cast Iron | Copper | Graphite | Aluminum | Titanium | Inconel |
| ~HB225 | HB225~325 | HRc30~40 | HRc40~45 HRc45~55 | HRc55~70 | | | | | | | |
| ○ | ◎ | ◎ | ◎ | ○ | ○ | ○ | | | | | |

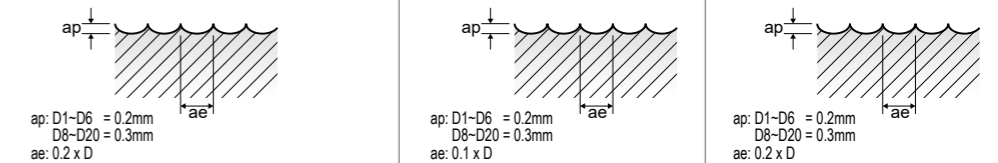
RECOMMENDED CUTTING CONDITIONS

GM876, GM813 Y-COATED SOLID CARBIDE END MILLS
2 FLUTE BALL NOSE

NORMAL SPEED

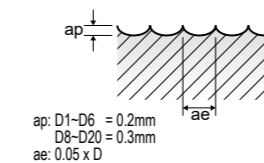
RPM = rev./min. Vc = m/min.
 FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | | | | K | | | |
|--------------|------------------------------------|------|-----|-------|---------------------------------------|------|-----|-------|------------------------------|------|----|-------|-----------|------|-----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | | CAST IRON | | | |
| HARDNESS | ~HRc30 | | | | HRc30~HRc40 | | | | HRc45~HRc55 | | | | | | | |
| STRENGTH | ~1000N/mm ² | | | | 1000 ~ 1250N/mm ² | | | | 1500 ~ 2000N/mm ² | | | | | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| R0.5 x 1.0 | 17650 | 280 | 55 | 0.008 | 14250 | 225 | 45 | 0.008 | 6500 | 100 | 20 | 0.008 | 17490 | 280 | 55 | 0.008 |
| R0.75 x 1.5 | 17650 | 390 | 85 | 0.011 | 13600 | 300 | 65 | 0.011 | 5960 | 135 | 30 | 0.011 | 17490 | 390 | 80 | 0.011 |
| R1.0 x 2.0 | 16130 | 840 | 100 | 0.026 | 11980 | 550 | 75 | 0.023 | 5240 | 170 | 35 | 0.016 | 15980 | 835 | 100 | 0.026 |
| R1.25 x 2.5 | 16130 | 840 | 125 | 0.026 | 11980 | 550 | 95 | 0.023 | 5240 | 170 | 40 | 0.016 | 15980 | 835 | 125 | 0.026 |
| R1.5 x 3.0 | 14670 | 760 | 140 | 0.026 | 11200 | 515 | 105 | 0.023 | 5060 | 170 | 50 | 0.017 | 14540 | 755 | 135 | 0.026 |
| R2.0 x 4.0 | 11760 | 830 | 150 | 0.035 | 9410 | 595 | 120 | 0.032 | 4700 | 200 | 60 | 0.021 | 11660 | 820 | 145 | 0.035 |
| R2.5 x 5.0 | 10240 | 920 | 160 | 0.045 | 8180 | 650 | 130 | 0.040 | 4120 | 200 | 65 | 0.024 | 10150 | 910 | 160 | 0.045 |
| R3.0 x 6.0 | 9510 | 1140 | 180 | 0.060 | 7730 | 930 | 145 | 0.060 | 3560 | 215 | 65 | 0.030 | 9420 | 1130 | 180 | 0.060 |
| R4.0 x 8.0 | 8020 | 1445 | 200 | 0.090 | 6460 | 1030 | 160 | 0.080 | 2770 | 245 | 70 | 0.044 | 7950 | 1430 | 200 | 0.090 |
| R5.0 x 10.0 | 7130 | 1715 | 225 | 0.120 | 5700 | 1140 | 180 | 0.100 | 2280 | 250 | 70 | 0.055 | 7070 | 1700 | 220 | 0.120 |
| R6.0 x 12.0 | 6540 | 1960 | 245 | 0.150 | 5200 | 1245 | 195 | 0.120 | 1960 | 275 | 75 | 0.070 | 6480 | 1945 | 245 | 0.150 |
| R8.0 x 16.0 | 5340 | 1925 | 270 | 0.180 | 4230 | 1185 | 215 | 0.140 | 1510 | 275 | 75 | 0.091 | 5290 | 1910 | 265 | 0.181 |
| R10.0 x 20.0 | 4640 | 1860 | 290 | 0.200 | 3650 | 1165 | 230 | 0.160 | 1240 | 280 | 80 | 0.113 | 4600 | 1845 | 290 | 0.201 |



HIGH SPEED

| MATERIAL | P | | | | | | | | K | | | |
|--------------|------------------------------------|------|-----|-------|-------------------------|------|-----|-------|-----------|------|-----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | HARDENED STEELS | | | | CAST IRON | | | |
| HARDNESS | ~HRc45 | | | | HRc45~HRc55 | | | | | | | |
| STRENGTH | ~1500N/mm ² | | | | 1500N/mm ² ~ | | | | | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| R0.5 x 1.0 | 28000 | 1455 | 90 | 0.026 | 28000 | 895 | 90 | 0.016 | 28000 | 1455 | 90 | 0.026 |
| R0.75 x 1.5 | 25760 | 1570 | 120 | 0.030 | 25760 | 965 | 120 | 0.019 | 25760 | 1570 | 120 | 0.030 |
| R1.0 x 2.0 | 23520 | 1660 | 150 | 0.035 | 23520 | 1055 | 150 | 0.022 | 23520 | 1660 | 150 | 0.035 |
| R1.25 x 2.5 | 23520 | 1970 | 185 | 0.042 | 21280 | 1100 | 165 | 0.026 | 23520 | 1970 | 185 | 0.042 |
| R1.5 x 3.0 | 23520 | 2240 | 220 | 0.048 | 19040 | 1165 | 180 | 0.031 | 23520 | 2240 | 220 | 0.048 |
| R2.0 x 4.0 | 23520 | 3295 | 295 | 0.070 | 15300 | 1300 | 190 | 0.042 | 23520 | 3295 | 295 | 0.070 |
| R2.5 x 5.0 | 23520 | 4030 | 370 | 0.086 | 13440 | 1345 | 210 | 0.050 | 23520 | 4030 | 370 | 0.086 |
| R3.0 x 6.0 | 23520 | 4480 | 445 | 0.095 | 11760 | 1400 | 220 | 0.060 | 23520 | 4480 | 445 | 0.095 |
| R4.0 x 8.0 | 18700 | 4480 | 470 | 0.120 | 9360 | 1400 | 235 | 0.075 | 18700 | 4480 | 470 | 0.120 |
| R5.0 x 10.0 | 15680 | 4370 | 495 | 0.139 | 7840 | 1345 | 245 | 0.086 | 15680 | 4370 | 495 | 0.139 |
| R6.0 x 12.0 | 13660 | 4370 | 515 | 0.160 | 6830 | 1300 | 255 | 0.095 | 13660 | 4370 | 515 | 0.160 |
| R8.0 x 16.0 | 10700 | 3865 | 540 | 0.181 | 5340 | 1120 | 270 | 0.105 | 10700 | 3865 | 540 | 0.181 |
| R10.0 x 20.0 | 8920 | 3560 | 560 | 0.200 | 4460 | 1030 | 280 | 0.115 | 8920 | 3560 | 560 | 0.200 |

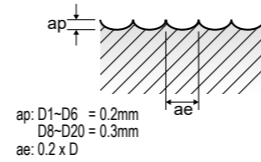
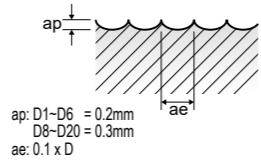
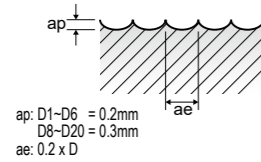


GM815 Y-COATED SOLID CARBIDE END MILLS
4 FLUTE LONG LENGTH BALL NOSE

NORMAL SPEED

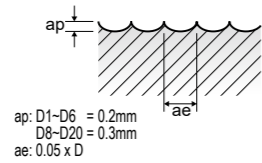
RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | | | | K | | | |
|-------------|------------------------------------|------|-----|-------|---------------------------------------|------|-----|-------|-----------------------|------|----|-------|-----------|------|-----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | | CAST IRON | | | |
| | ~HRc30 | | | | HRc30~HRc40 | | | | HRc45~HRc55 | | | | | | | |
| HARDNESS | | | | | | | | | | | | | | | | |
| STRENGTH | ~1000N/mm ² | | | | 1000 ~ 1250N/mm ² | | | | 1500N/mm ² | | | | | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| R1.0 x 2.0 | 16550 | 840 | 105 | 0.013 | 12140 | 505 | 75 | 0.010 | 5080 | 170 | 30 | 0.008 | 16550 | 840 | 105 | 0.013 |
| R1.5 x 3.0 | 13760 | 1070 | 130 | 0.019 | 10500 | 725 | 100 | 0.017 | 4750 | 230 | 45 | 0.012 | 13760 | 1070 | 130 | 0.019 |
| R2.0 x 4.0 | 11030 | 1165 | 140 | 0.026 | 8820 | 840 | 110 | 0.024 | 4410 | 285 | 55 | 0.016 | 11030 | 1165 | 140 | 0.026 |
| R2.5 x 5.0 | 9600 | 1290 | 150 | 0.034 | 7670 | 915 | 120 | 0.030 | 3860 | 285 | 60 | 0.018 | 9600 | 1290 | 150 | 0.034 |
| R3.0 x 6.0 | 8910 | 1605 | 170 | 0.045 | 7250 | 1315 | 135 | 0.045 | 3340 | 295 | 65 | 0.022 | 8910 | 1605 | 170 | 0.045 |
| R4.0 x 8.0 | 7520 | 2050 | 190 | 0.068 | 6060 | 1450 | 150 | 0.060 | 2590 | 345 | 65 | 0.033 | 7520 | 2050 | 190 | 0.068 |
| R5.0 x 10.0 | 6690 | 2415 | 210 | 0.090 | 5340 | 1605 | 170 | 0.075 | 2140 | 355 | 65 | 0.041 | 6690 | 2415 | 210 | 0.090 |
| R6.0 x 12.0 | 6130 | 2730 | 230 | 0.111 | 4870 | 1735 | 185 | 0.089 | 1840 | 390 | 70 | 0.053 | 6130 | 2730 | 230 | 0.111 |
| R8.0 x 16.0 | 5010 | 2730 | 250 | 0.136 | 3970 | 1680 | 200 | 0.106 | 1420 | 390 | 70 | 0.069 | 5010 | 2730 | 250 | 0.136 |



HIGH SPEED

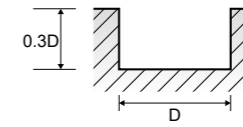
| MATERIAL | P | | | | | | | | K | | | |
|-------------|------------------------------------|------|-----|-------|-------------------------|------|-----|-------|-----------|------|-----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | HARDENED STEELS | | | | CAST IRON | | | |
| | ~HRc30 | | | | HRc45~HRc55 | | | | | | | |
| HARDNESS | | | | | | | | | | | | |
| STRENGTH | ~1000N/mm ² | | | | 1500N/mm ² ~ | | | | | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| R1.0 x 2.0 | 22050 | 2310 | 140 | 0.026 | 22050 | 1470 | 140 | 0.017 | 22050 | 2310 | 140 | 0.026 |
| R1.5 x 3.0 | 22050 | 3150 | 210 | 0.036 | 17850 | 1640 | 170 | 0.023 | 22050 | 3150 | 210 | 0.036 |
| R2.0 x 4.0 | 22050 | 4620 | 275 | 0.052 | 14340 | 1825 | 180 | 0.032 | 22050 | 4620 | 275 | 0.052 |
| R2.5 x 5.0 | 22050 | 5670 | 345 | 0.064 | 12600 | 1890 | 200 | 0.038 | 22050 | 5670 | 345 | 0.064 |
| R3.0 x 6.0 | 22050 | 6300 | 415 | 0.071 | 11030 | 1975 | 210 | 0.045 | 22050 | 6300 | 415 | 0.071 |
| R4.0 x 8.0 | 17540 | 6300 | 440 | 0.090 | 8780 | 1975 | 220 | 0.056 | 17540 | 6300 | 440 | 0.090 |
| R5.0 x 10.0 | 14700 | 6145 | 460 | 0.105 | 7350 | 1890 | 230 | 0.064 | 14700 | 6145 | 460 | 0.105 |
| R6.0 x 12.0 | 12810 | 6145 | 485 | 0.120 | 6410 | 1825 | 240 | 0.071 | 12810 | 6145 | 485 | 0.120 |
| R8.0 x 16.0 | 10030 | 5440 | 505 | 0.136 | 5010 | 1575 | 250 | 0.079 | 10030 | 5440 | 505 | 0.136 |



GM818 Y-COATED SOLID CARBIDE END MILLS
2 FLUTE LONG LENGTH CORNER RADIUS - **SLOTING**

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

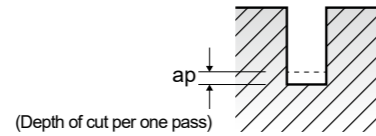
| MATERIAL | P | | | | | | | | | | | |
|----------|------------------------------------|------|----|-------|---------------------------------------|------|----|-------|------------------------------|------|----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | |
| | ~HRc45 | | | | HRc30~HRc45 | | | | HRc45~HRc55 | | | |
| HARDNESS | | | | | | | | | | | | |
| STRENGTH | ~1500N/mm ² | | | | 1000 ~ 1500N/mm ² | | | | 1500 ~ 2000N/mm ² | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 4.0 | 5900 | 185 | 75 | 0.016 | 3750 | 95 | 45 | 0.013 | 2370 | 30 | 30 | 0.006 |
| 5.0 | 5040 | 230 | 80 | 0.023 | 3190 | 110 | 50 | 0.017 | 2090 | 35 | 35 | 0.008 |
| 6.0 | 4350 | 275 | 80 | 0.032 | 2770 | 140 | 50 | 0.025 | 1800 | 35 | 35 | 0.010 |
| 8.0 | 3300 | 295 | 85 | 0.045 | 2090 | 140 | 55 | 0.033 | 1390 | 35 | 35 | 0.013 |
| 10.0 | 2770 | 295 | 85 | 0.053 | 1800 | 140 | 55 | 0.039 | 1110 | 35 | 35 | 0.016 |
| 12.0 | 2270 | 230 | 85 | 0.051 | 1530 | 125 | 60 | 0.041 | 920 | 35 | 35 | 0.019 |



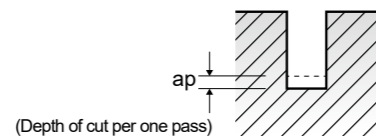
GM8A1 Y-COATED SOLID CARBIDE END MILLS
2 FLUTE CORNER RADIUS for RIB PROCESSING - **SLOTING**

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | |
|----------|------------------------------------|---------|-------------|-------|-------------|---------------------------------------|---------|-------------|-------|-------------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | |
| HARDNESS | ~HRc30 | | | | | HRc30~HRc45 | | | | |
| STRENGTH | ~1000N/mm ² | | | | | 1000 ~ 1500N/mm ² | | | | |
| DIAMETER | RPM | FEED | ap (mm) | Vc | Fz | RPM | FEED | ap (mm) | Vc | Fz |
| 1.0 | 23630~29400 | 295~850 | 0.045~0.090 | 71~88 | 0.006~0.014 | 16490~21000 | 200~630 | 0.045~0.090 | 49~63 | 0.006~0.015 |
| 1.2 | 19430~23630 | 295~945 | 0.055~0.100 | 70~85 | 0.008~0.020 | 13650~17330 | 200~630 | 0.055~0.100 | 49~62 | 0.007~0.018 |
| 1.4 | 16800~21000 | 295~945 | 0.062~0.125 | 70~88 | 0.009~0.023 | 12080~14700 | 200~630 | 0.062~0.125 | 51~62 | 0.008~0.021 |
| 1.5 | 15230~19430 | 295~945 | 0.070~0.135 | 68~87 | 0.010~0.024 | 11030~14180 | 200~630 | 0.070~0.135 | 49~64 | 0.009~0.022 |
| 1.6 | 14700~18900 | 295~945 | 0.075~0.145 | 70~90 | 0.010~0.025 | 10710~13440 | 200~630 | 0.075~0.145 | 51~64 | 0.009~0.023 |
| 1.8 | 13650~17330 | 295~945 | 0.080~0.160 | 74~93 | 0.011~0.027 | 9660~12080 | 200~630 | 0.080~0.160 | 52~65 | 0.010~0.026 |
| 2.0 | 12600~15230 | 295~945 | 0.090~0.180 | 75~91 | 0.012~0.031 | 8720~11030 | 200~630 | 0.090~0.180 | 52~66 | 0.011~0.029 |
| 2.5 | 9980~12600 | 295~945 | 0.112~0.235 | 75~94 | 0.015~0.038 | 7040~8930 | 200~630 | 0.112~0.235 | 53~67 | 0.014~0.035 |
| 3.0 | 8400~10500 | 295~945 | 0.135~0.270 | 75~94 | 0.018~0.045 | 5780~7350 | 200~630 | 0.135~0.270 | 52~66 | 0.017~0.043 |
| 4.0 | 6300~7880 | 295~945 | 0.180~0.360 | 75~94 | 0.023~0.060 | 4310~5570 | 200~630 | 0.180~0.360 | 52~67 | 0.023~0.057 |
| 5.0 | 5040~6300 | 295~945 | 0.225~0.450 | 75~94 | 0.029~0.075 | 3470~4410 | 200~630 | 0.225~0.450 | 52~66 | 0.029~0.071 |
| 6.0 | 4200~5250 | 295~945 | 0.270~0.540 | 75~94 | 0.035~0.090 | 2940~3680 | 200~630 | 0.270~0.540 | 53~66 | 0.034~0.086 |



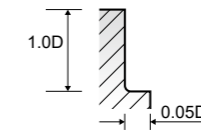
| MATERIAL | P | | | | | K | | | | |
|----------|------------------------------|--------|-------------|-------|-------------|-------------|---------|-------------|-------|-------------|
| | HARDENED STEELS | | | | | CAST IRON | | | | |
| HARDNESS | HRc45~HRc55 | | | | | | | | | |
| STRENGTH | 1500 ~ 2000N/mm ² | | | | | | | | | |
| DIAMETER | RPM | FEED | ap (mm) | Vc | Fz | RPM | FEED | ap (mm) | Vc | Fz |
| 1.0 | 10500~13130 | 70~135 | 0.009~0.018 | 31~39 | 0.003~0.005 | 23630~29400 | 295~850 | 0.045~0.090 | 71~88 | 0.006~0.014 |
| 1.2 | 8720~11030 | 70~135 | 0.010~0.022 | 31~40 | 0.004~0.006 | 19430~23630 | 295~945 | 0.055~0.100 | 70~85 | 0.008~0.020 |
| 1.4 | 7560~9450 | 70~135 | 0.012~0.025 | 32~40 | 0.005~0.007 | 16800~21000 | 295~945 | 0.062~0.125 | 70~88 | 0.009~0.023 |
| 1.5 | 7040~8610 | 70~135 | 0.014~0.028 | 32~39 | 0.005~0.008 | 15230~19430 | 295~945 | 0.070~0.135 | 68~87 | 0.010~0.024 |
| 1.6 | 6720~8400 | 70~135 | 0.015~0.030 | 32~40 | 0.005~0.008 | 14700~18900 | 295~945 | 0.075~0.145 | 70~90 | 0.010~0.025 |
| 1.8 | 5990~7560 | 70~135 | 0.016~0.032 | 32~41 | 0.006~0.009 | 13650~17330 | 295~945 | 0.080~0.160 | 74~93 | 0.011~0.027 |
| 2.0 | 5570~6930 | 70~135 | 0.018~0.035 | 33~41 | 0.006~0.010 | 12600~15230 | 295~945 | 0.090~0.180 | 75~91 | 0.012~0.031 |
| 2.5 | 4520~5570 | 70~135 | 0.022~0.045 | 34~42 | 0.008~0.012 | 9980~12600 | 295~945 | 0.112~0.235 | 75~94 | 0.015~0.038 |
| 3.0 | 3680~4620 | 70~135 | 0.028~0.055 | 33~41 | 0.009~0.015 | 8400~10500 | 295~945 | 0.135~0.270 | 75~94 | 0.018~0.045 |
| 4.0 | 2730~3470 | 70~135 | 0.036~0.072 | 33~41 | 0.013~0.020 | 6300~7880 | 295~945 | 0.180~0.360 | 75~94 | 0.023~0.060 |
| 5.0 | 2210~2730 | 70~135 | 0.045~0.090 | 33~41 | 0.015~0.025 | 5040~6300 | 295~945 | 0.225~0.450 | 75~94 | 0.029~0.075 |
| 6.0 | 1840~2730 | 70~135 | 0.054~0.108 | 33~49 | 0.019~0.025 | 4200~5250 | 295~945 | 0.270~0.540 | 75~94 | 0.035~0.090 |



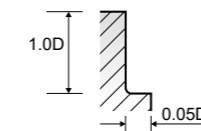
GM839 Y-COATED SOLID CARBIDE END MILLS
4 FLUTE STUB LENGTH CORNER RADIUS - **SIDE CUTTING**

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | | | |
|----------|------------------------------------|------|-----|-------|---------------------------------------|------|----|-------|------------------------------|------|----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | |
| HARDNESS | ~HRc30 | | | | HRc30~HRc45 | | | | HRc45~HRc55 | | | |
| STRENGTH | ~1000N/mm ² | | | | 1000 ~ 1500N/mm ² | | | | 1500 ~ 2000N/mm ² | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 2.0 | 15260 | 375 | 95 | 0.006 | 9980 | 225 | 65 | 0.006 | 6660 | 65 | 40 | 0.002 |
| 3.0 | 11770 | 425 | 110 | 0.009 | 7340 | 265 | 70 | 0.009 | 4430 | 75 | 40 | 0.004 |
| 4.0 | 9980 | 755 | 125 | 0.019 | 6090 | 460 | 75 | 0.019 | 3880 | 75 | 50 | 0.005 |
| 6.0 | 7340 | 870 | 140 | 0.030 | 4430 | 540 | 85 | 0.030 | 2640 | 105 | 50 | 0.010 |
| 8.0 | 5540 | 935 | 140 | 0.042 | 3320 | 500 | 85 | 0.038 | 2220 | 145 | 55 | 0.016 |
| 10.0 | 4300 | 805 | 135 | 0.047 | 2640 | 395 | 85 | 0.037 | 1790 | 120 | 55 | 0.017 |
| 12.0 | 3620 | 690 | 135 | 0.048 | 2220 | 330 | 85 | 0.037 | 1530 | 105 | 60 | 0.017 |



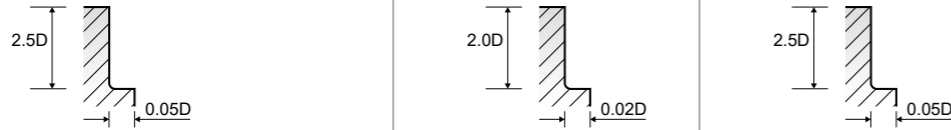
| MATERIAL | K | | | |
|----------|-----------|------|-----|-------|
| | CAST IRON | | | |
| HARDNESS | | | | |
| STRENGTH | | | | |
| DIAMETER | RPM | FEED | Vc | Fz |
| 2.0 | 15260 | 375 | 95 | 0.006 |
| 3.0 | 11770 | 425 | 110 | 0.009 |
| 4.0 | 9980 | 755 | 125 | 0.019 |
| 6.0 | 7340 | 870 | 140 | 0.030 |
| 8.0 | 5540 | 935 | 140 | 0.042 |
| 10.0 | 4300 | 805 | 135 | 0.047 |
| 12.0 | 3620 | 690 | 135 | 0.048 |



GM819 Y-COATED SOLID CARBIDE END MILLS
4 FLUTE LONG LENGTH CORNER RADIUS - **SIDE CUTTING**

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | | | | K | | | |
|----------|------------------------------------|------|----|-------|---------------------------------------|------|----|-------|------------------------------|------|----|-------|-----------|------|----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | | CAST IRON | | | |
| | ~HRc30 | | | | HRc30~HRc45 | | | | HRc45~HRc55 | | | | | | | |
| STRENGTH | ~1000N/mm ² | | | | 1000 ~ 1500N/mm ² | | | | 1500 ~ 2000N/mm ² | | | | | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 3.0 | 7280 | 185 | 70 | 0.006 | 4710 | 145 | 45 | 0.008 | 2900 | 70 | 25 | 0.006 | 7280 | 185 | 70 | 0.006 |
| 4.0 | 5900 | 230 | 75 | 0.010 | 3750 | 165 | 45 | 0.011 | 2370 | 75 | 30 | 0.008 | 5900 | 230 | 75 | 0.010 |
| 5.0 | 5040 | 235 | 80 | 0.012 | 3190 | 200 | 50 | 0.016 | 2090 | 95 | 35 | 0.011 | 5040 | 235 | 80 | 0.012 |
| 6.0 | 4350 | 235 | 80 | 0.014 | 2770 | 200 | 50 | 0.018 | 1800 | 95 | 35 | 0.013 | 4350 | 235 | 80 | 0.014 |
| 8.0 | 3300 | 255 | 85 | 0.019 | 2090 | 200 | 55 | 0.024 | 1390 | 95 | 35 | 0.017 | 3300 | 255 | 85 | 0.019 |
| 10.0 | 2770 | 255 | 85 | 0.023 | 1800 | 200 | 55 | 0.028 | 1110 | 95 | 35 | 0.021 | 2770 | 255 | 85 | 0.023 |
| 12.0 | 2270 | 200 | 85 | 0.022 | 1530 | 175 | 60 | 0.029 | 920 | 75 | 35 | 0.020 | 2270 | 200 | 85 | 0.022 |
| 16.0 | 1910 | 175 | 95 | 0.023 | 1180 | 140 | 60 | 0.030 | 740 | 65 | 35 | 0.022 | 1910 | 175 | 95 | 0.023 |
| 20.0 | 1390 | 125 | 85 | 0.022 | 900 | 100 | 55 | 0.028 | 550 | 50 | 35 | 0.023 | 1390 | 125 | 85 | 0.022 |



GM810 Y-COATED SOLID CARBIDE END MILLS
2 FLUTE SHORT LENGTH - **SLOTING**

| MATERIAL | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | |
|----------|---------------------------------------|------|----|-------|------------------------------|------|----|-------|
| | HRc30~HRc45 | | | | HRc45~HRc55 | | | |
| | 1000 ~ 1500N/mm ² | | | | 1500 ~ 2000N/mm ² | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 0.4 | 33000 | 100 | 40 | 0.002 | 25300 | 55 | 30 | 0.001 |
| 0.8 | 26400 | 165 | 65 | 0.003 | 19800 | 70 | 50 | 0.002 |
| 1 | 22000 | 175 | 70 | 0.004 | 16500 | 85 | 50 | 0.003 |
| 1.2 | 17600 | 175 | 65 | 0.005 | 13200 | 85 | 50 | 0.003 |
| 1.5 | 13200 | 165 | 60 | 0.006 | 9900 | 75 | 45 | 0.004 |



GM810 Y-COATED SOLID CARBIDE END MILLS
2 FLUTE SHORT LENGTH - **SLOTING**

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

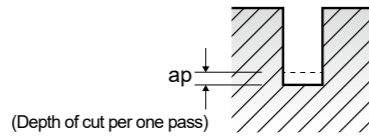
| MATERIAL | P | | | | | | | | | | | |
|----------|------------------------------------|------|-----|-------|---------------------------------------|------|----|-------|------------------------------|------|----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | |
| | ~HRc30 | | | | HRc30~HRc45 | | | | HRc45~HRc55 | | | |
| STRENGTH | ~1000N/mm ² | | | | 1000 ~ 1500N/mm ² | | | | 1500 ~ 2000N/mm ² | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 2.0 | 10360 | 215 | 65 | 0.010 | 6780 | 135 | 45 | 0.010 | 4510 | 40 | 30 | 0.004 |
| 3.0 | 8010 | 235 | 75 | 0.015 | 4980 | 155 | 45 | 0.016 | 3010 | 45 | 30 | 0.007 |
| 4.0 | 6780 | 335 | 85 | 0.025 | 4140 | 200 | 50 | 0.024 | 2630 | 45 | 35 | 0.009 |
| 5.0 | 5660 | 360 | 90 | 0.032 | 3380 | 215 | 55 | 0.032 | 2080 | 55 | 35 | 0.013 |
| 6.0 | 4980 | 390 | 95 | 0.039 | 3010 | 245 | 55 | 0.041 | 1790 | 60 | 35 | 0.017 |
| 8.0 | 3760 | 425 | 95 | 0.057 | 2260 | 225 | 55 | 0.050 | 1510 | 85 | 40 | 0.028 |
| 10.0 | 2910 | 370 | 90 | 0.064 | 1790 | 180 | 55 | 0.050 | 1220 | 65 | 40 | 0.027 |
| 12.0 | 2460 | 315 | 95 | 0.064 | 1510 | 145 | 55 | 0.048 | 1040 | 60 | 40 | 0.029 |
| 16.0 | 1970 | 245 | 100 | 0.062 | 1220 | 125 | 60 | 0.051 | 810 | 45 | 40 | 0.028 |
| 20.0 | 1510 | 190 | 95 | 0.063 | 950 | 90 | 60 | 0.047 | 620 | 35 | 40 | 0.028 |



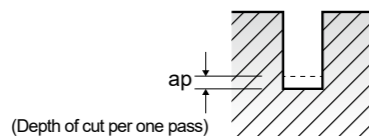
GM883 Y-COATED SOLID CARBIDE END MILLS
2 FLUTE for RIB PROCESSING - **SLOTTING**

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | |
|----------|------------------------------------|---------|-------------|-------|-------------|---------------------------------------|---------|-------------|-------|-------------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | |
| | ~HRc30 | | | | | HRc30~HRc45 | | | | |
| STRENGTH | ~1000N/mm ² | | | | | | | | | |
| DIAMETER | RPM | FEED | ap (mm) | Vc | Fz | RPM | FEED | ap (mm) | Vc | Fz |
| 0.4 | 32550~42000 | 210~460 | 0.007~0.018 | 39~50 | 0.003~0.006 | 23630~29400 | 90~355 | 0.007~0.018 | 28~35 | 0.002~0.006 |
| 0.5 | 32550~42000 | 210~460 | 0.009~0.022 | 49~63 | 0.003~0.006 | 23630~29400 | 90~355 | 0.009~0.022 | 35~44 | 0.002~0.006 |
| 0.6 | 32550~42000 | 265~600 | 0.011~0.026 | 58~75 | 0.004~0.007 | 23630~29400 | 115~450 | 0.011~0.026 | 42~53 | 0.002~0.008 |
| 0.7 | 32550~42000 | 265~600 | 0.012~0.031 | 68~88 | 0.004~0.007 | 23630~29400 | 115~450 | 0.012~0.031 | 49~62 | 0.002~0.008 |
| 0.8 | 28350~36750 | 295~660 | 0.014~0.035 | 68~88 | 0.005~0.009 | 20480~25730 | 125~505 | 0.014~0.035 | 49~62 | 0.003~0.010 |
| 0.9 | 26250~33080 | 295~755 | 0.030~0.060 | 71~89 | 0.006~0.011 | 18380~23630 | 170~565 | 0.030~0.060 | 49~64 | 0.005~0.012 |
| 1.0 | 23630~29400 | 295~850 | 0.045~0.090 | 71~88 | 0.006~0.014 | 16490~21000 | 200~630 | 0.045~0.090 | 49~63 | 0.006~0.015 |
| 1.2 | 19430~23630 | 295~945 | 0.055~0.100 | 70~85 | 0.008~0.020 | 13650~17330 | 200~630 | 0.055~0.100 | 49~62 | 0.007~0.018 |
| 1.4 | 16800~21000 | 295~945 | 0.062~0.125 | 70~88 | 0.009~0.023 | 12080~14700 | 200~630 | 0.062~0.125 | 51~62 | 0.008~0.021 |
| 1.5 | 15230~19430 | 295~945 | 0.070~0.135 | 68~87 | 0.010~0.024 | 11030~14180 | 200~630 | 0.070~0.135 | 49~64 | 0.009~0.022 |
| 1.6 | 14700~18900 | 295~945 | 0.075~0.145 | 70~90 | 0.010~0.025 | 10710~13440 | 200~630 | 0.075~0.145 | 51~64 | 0.009~0.023 |
| 1.8 | 13650~17330 | 295~945 | 0.080~0.160 | 74~93 | 0.011~0.027 | 9660~12080 | 200~630 | 0.080~0.160 | 52~65 | 0.010~0.026 |
| 2.0 | 12600~15230 | 295~945 | 0.090~0.180 | 75~91 | 0.012~0.031 | 8720~11030 | 200~630 | 0.090~0.180 | 52~66 | 0.011~0.029 |
| 2.5 | 9980~12600 | 295~945 | 0.112~0.235 | 75~94 | 0.015~0.038 | 7040~8930 | 200~630 | 0.112~0.235 | 53~67 | 0.014~0.035 |
| 3.0 | 8400~10500 | 295~945 | 0.135~0.270 | 75~94 | 0.018~0.045 | 5780~7350 | 200~630 | 0.135~0.270 | 52~66 | 0.017~0.043 |
| 4.0 | 6300~7880 | 295~945 | 0.180~0.360 | 75~94 | 0.023~0.060 | 4310~5570 | 200~630 | 0.180~0.360 | 52~67 | 0.023~0.057 |
| 5.0 | 5040~6300 | 295~945 | 0.225~0.450 | 75~94 | 0.029~0.075 | 3470~4410 | 200~630 | 0.225~0.450 | 52~66 | 0.029~0.071 |
| 6.0 | 4200~5250 | 295~945 | 0.270~0.540 | 75~94 | 0.035~0.090 | 2940~3680 | 200~630 | 0.270~0.540 | 53~66 | 0.034~0.086 |



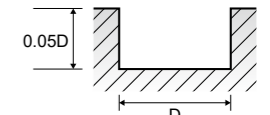
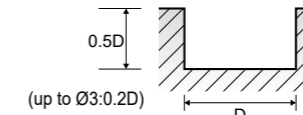
| MATERIAL | P | | | | | K | | | | |
|----------|------------------------------|--------|-------------|-------|-------------|-------------|---------|-------------|-------|-------------|
| | HARDENED STEELS | | | | | CAST IRON | | | | |
| | HRc45~HRc55 | | | | | | | | | |
| STRENGTH | 1500 ~ 2000N/mm ² | | | | | | | | | |
| DIAMETER | RPM | FEED | ap (mm) | Vc | Fz | RPM | FEED | ap (mm) | Vc | Fz |
| 0.4 | 15020~17850 | 30~95 | 0.004~0.008 | 18~21 | 0.001~0.003 | 32550~42000 | 210~460 | 0.007~0.018 | 39~50 | 0.003~0.006 |
| 0.5 | 15020~17850 | 30~95 | 0.004~0.009 | 22~27 | 0.001~0.003 | 32550~42000 | 210~460 | 0.009~0.022 | 49~63 | 0.003~0.006 |
| 0.6 | 15020~17850 | 40~115 | 0.005~0.011 | 27~32 | 0.001~0.003 | 32550~42000 | 265~600 | 0.011~0.026 | 58~75 | 0.004~0.007 |
| 0.7 | 15020~17850 | 40~115 | 0.006~0.013 | 31~37 | 0.001~0.003 | 32550~42000 | 265~600 | 0.012~0.031 | 68~88 | 0.004~0.007 |
| 0.8 | 13130~15540 | 45~130 | 0.007~0.015 | 31~37 | 0.002~0.004 | 28350~36750 | 295~660 | 0.014~0.035 | 68~88 | 0.005~0.009 |
| 0.9 | 11550~13130 | 60~135 | 0.008~0.016 | 31~35 | 0.003~0.005 | 26250~33080 | 295~755 | 0.030~0.060 | 71~89 | 0.006~0.011 |
| 1.0 | 10500~13130 | 70~135 | 0.009~0.018 | 31~39 | 0.003~0.005 | 23630~29400 | 295~850 | 0.045~0.090 | 71~88 | 0.006~0.014 |
| 1.2 | 8720~11030 | 70~135 | 0.010~0.022 | 31~40 | 0.004~0.006 | 19430~23630 | 295~945 | 0.055~0.100 | 70~85 | 0.008~0.020 |
| 1.4 | 7560~9450 | 70~135 | 0.012~0.025 | 32~40 | 0.005~0.007 | 16800~21000 | 295~945 | 0.062~0.125 | 70~88 | 0.009~0.023 |
| 1.5 | 7040~8610 | 70~135 | 0.014~0.028 | 32~39 | 0.005~0.008 | 15230~19430 | 295~945 | 0.070~0.135 | 68~87 | 0.010~0.024 |
| 1.6 | 6720~8400 | 70~135 | 0.015~0.030 | 32~40 | 0.005~0.008 | 14700~18900 | 295~945 | 0.075~0.145 | 70~90 | 0.010~0.025 |
| 1.8 | 5990~7560 | 70~135 | 0.016~0.032 | 32~41 | 0.006~0.009 | 13650~17330 | 295~945 | 0.080~0.160 | 74~93 | 0.011~0.027 |
| 2.0 | 5570~6930 | 70~135 | 0.018~0.035 | 33~41 | 0.006~0.010 | 12600~15230 | 295~945 | 0.090~0.180 | 75~91 | 0.012~0.031 |
| 2.5 | 4520~5570 | 70~135 | 0.022~0.045 | 34~42 | 0.008~0.012 | 9980~12600 | 295~945 | 0.112~0.235 | 75~94 | 0.015~0.038 |
| 3.0 | 3680~4620 | 70~135 | 0.028~0.055 | 33~41 | 0.009~0.015 | 8400~10500 | 295~945 | 0.135~0.270 | 75~94 | 0.018~0.045 |
| 4.0 | 2730~3470 | 70~135 | 0.036~0.072 | 33~41 | 0.013~0.020 | 6300~7880 | 295~945 | 0.180~0.360 | 75~94 | 0.023~0.060 |
| 5.0 | 2210~2730 | 70~135 | 0.045~0.090 | 33~41 | 0.015~0.025 | 5040~6300 | 295~945 | 0.225~0.450 | 75~94 | 0.029~0.075 |
| 6.0 | 1840~2730 | 70~135 | 0.054~0.108 | 33~49 | 0.019~0.025 | 4200~5250 | 295~945 | 0.270~0.540 | 75~94 | 0.035~0.090 |



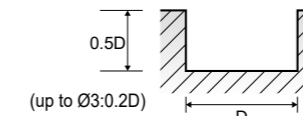
GM895 Y-COATED SOLID CARBIDE END MILLS
3 FLUTE 38° HELIX SHORT LENGTH - **SLOTTING**

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | | | |
|----------|------------------------------------|------|-----|-------|---------------------------------------|------|----|-------|-----------------|------|----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | |
| | ~HRc30 | | | | HRc30~HRc45 | | | | HRc45~HRc55 | | | |
| STRENGTH | ~1000N/mm ² | | | | | | | | | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 2.0 | 12720 | 185 | 80 | 0.005 | 8320 | 120 | 50 | 0.005 | 5540 | 35 | 35 | 0.002 |
| 3.0 | 9810 | 210 | 90 | 0.007 | 6120 | 145 | 60 | 0.008 | 3700 | 40 | 35 | 0.004 |
| 4.0 | 8320 | 295 | 105 | 0.012 | 5080 | 175 | 65 | 0.011 | 3230 | 40 | 40 | 0.004 |
| 5.0 | 6930 | 310 | 110 | 0.015 | 4160 | 185 | 65 | 0.015 | 2550 | 50 | 40 | 0.007 |
| 6.0 | 6120 | 340 | 115 | 0.019 | 3700 | 220 | 70 | 0.020 | 2200 | 55 | 40 | 0.008 |
| 8.0 | 4620 | 375 | 115 | 0.027 | 2770 | 200 | 70 | 0.024 | 1850 | 70 | 45 | 0.013 |
| 10.0 | 3590 | 330 | 115 | 0.031 | 2200 | 155 | 70 | 0.023 | 1500 | 60 | 45 | 0.013 |
| 12.0 | 3010 | 275 | 115 | 0.030 | 1850 | 130 | 70 | 0.023 | 1280 | 55 | 50 | 0.014 |
| 16.0 | 2420 | 220 | 120 | 0.030 | 1500 | 110 | 75 | 0.024 | 990 | 40 | 50 | 0.013 |



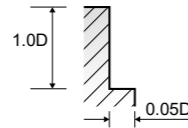
| MATERIAL | M | | | | K | | | |
|----------|------------------------------|------|----|-------|-----------|------|-----|-------|
| | STAINLESS STEELS | | | | CAST IRON | | | |
| | | | | | | | | |
| STRENGTH | 1500 ~ 2000N/mm ² | | | | | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 2.0 | 6930 | 90 | 45 | 0.004 | 12720 | 185 | 80 | 0.005 |
| 3.0 | 5080 | 120 | 50 | 0.008 | 9810 | 210 | 90 | 0.007 |
| 4.0 | 4270 | 145 | 55 | 0.011 | 8320 | 295 | 105 | 0.012 |
| 5.0 | 3480 | 155 | 55 | 0.015 | 6930 | 310 | 110 | 0.015 |
| 6.0 | 3120 | 175 | 60 | 0.019 | 6120 | 340 | 115 | 0.019 |
| 8.0 | 2310 | 175 | 60 | 0.025 | 4620 | 375 | 115 | 0.027 |
| 10.0 | 1850 | 160 | 60 | 0.029 | 3590 | 330 | 115 | 0.031 |
| 12.0 | 1500 | 130 | 55 | 0.029 | 3010 | 275 | 115 | 0.030 |
| 16.0 | 1170 | 110 | 60 | 0.031 | 2420 | 220 | 120 | 0.030 |



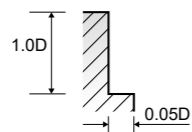
GM895 Y-COATED SOLID CARBIDE END MILLS
3 FLUTE 38° HELIX SHORT LENGTH - SIDE CUTTING

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | | | |
|----------|------------------------------------|------|-----|-------|---------------------------------------|------|----|-------|------------------------------|------|----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | |
| | ~HRc30 | | | | HRc30~HRc45 | | | | HRc45~HRc55 | | | |
| STRENGTH | ~1000N/mm ² | | | | 1000 ~ 1500N/mm ² | | | | 1500 ~ 2000N/mm ² | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 2.0 | 12720 | 230 | 80 | 0.006 | 8320 | 155 | 50 | 0.006 | 5540 | 35 | 35 | 0.002 |
| 3.0 | 9810 | 265 | 90 | 0.009 | 6120 | 165 | 60 | 0.009 | 3700 | 45 | 35 | 0.004 |
| 4.0 | 8320 | 475 | 105 | 0.019 | 5080 | 285 | 65 | 0.019 | 3230 | 50 | 40 | 0.005 |
| 5.0 | 6930 | 495 | 110 | 0.024 | 4160 | 295 | 65 | 0.024 | 2550 | 60 | 40 | 0.008 |
| 6.0 | 6120 | 550 | 115 | 0.030 | 3700 | 340 | 70 | 0.031 | 2200 | 65 | 40 | 0.010 |
| 8.0 | 4620 | 585 | 115 | 0.042 | 2770 | 320 | 70 | 0.039 | 1850 | 90 | 45 | 0.016 |
| 10.0 | 3590 | 505 | 115 | 0.047 | 2200 | 255 | 70 | 0.039 | 1500 | 75 | 45 | 0.017 |
| 12.0 | 3010 | 430 | 115 | 0.048 | 1850 | 210 | 70 | 0.038 | 1280 | 65 | 50 | 0.017 |
| 16.0 | 2420 | 340 | 120 | 0.047 | 1500 | 165 | 75 | 0.037 | 990 | 50 | 50 | 0.017 |



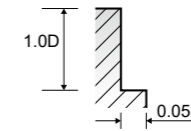
| MATERIAL | M | | | | K | | | |
|----------|------------------|------|----|-------|-----------|------|-----|-------|
| | STAINLESS STEELS | | | | CAST IRON | | | |
| HARDNESS | | | | | | | | |
| STRENGTH | | | | | | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 2.0 | 6930 | 125 | 45 | 0.006 | 12720 | 230 | 80 | 0.006 |
| 3.0 | 5080 | 140 | 50 | 0.009 | 9810 | 265 | 90 | 0.009 |
| 4.0 | 4270 | 230 | 55 | 0.018 | 8320 | 475 | 105 | 0.019 |
| 5.0 | 3480 | 255 | 55 | 0.024 | 6930 | 495 | 110 | 0.024 |
| 6.0 | 3120 | 275 | 60 | 0.029 | 6120 | 550 | 115 | 0.030 |
| 8.0 | 2310 | 290 | 60 | 0.042 | 4620 | 585 | 115 | 0.042 |
| 10.0 | 1850 | 255 | 60 | 0.046 | 3590 | 505 | 115 | 0.047 |
| 12.0 | 1500 | 200 | 55 | 0.044 | 3010 | 430 | 115 | 0.048 |
| 16.0 | 1170 | 165 | 60 | 0.047 | 2420 | 340 | 120 | 0.047 |



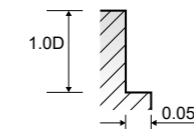
GM811 Y-COATED SOLID CARBIDE END MILLS
4 FLUTE SHORT LENGTH - SIDE CUTTING

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | | | |
|----------|------------------------------------|------|-----|-------|---------------------------------------|------|----|-------|------------------------------|------|----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | |
| | ~HRc30 | | | | HRc30~HRc45 | | | | HRc45~HRc55 | | | |
| STRENGTH | ~1000N/mm ² | | | | 1000 ~ 1500N/mm ² | | | | 1500 ~ 2000N/mm ² | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 2.0 | 12950 | 315 | 80 | 0.006 | 8470 | 190 | 55 | 0.006 | 5640 | 55 | 35 | 0.002 |
| 3.0 | 9990 | 360 | 95 | 0.009 | 6230 | 225 | 60 | 0.009 | 3760 | 65 | 35 | 0.004 |
| 4.0 | 8470 | 640 | 105 | 0.019 | 5170 | 390 | 65 | 0.019 | 3290 | 65 | 40 | 0.005 |
| 5.0 | 7060 | 670 | 110 | 0.024 | 4230 | 405 | 65 | 0.024 | 2600 | 80 | 40 | 0.008 |
| 6.0 | 6230 | 740 | 115 | 0.030 | 3760 | 460 | 70 | 0.031 | 2240 | 90 | 40 | 0.010 |
| 8.0 | 4700 | 795 | 120 | 0.042 | 2820 | 425 | 70 | 0.038 | 1880 | 125 | 45 | 0.017 |
| 10.0 | 3650 | 685 | 115 | 0.047 | 2240 | 335 | 70 | 0.037 | 1520 | 100 | 50 | 0.016 |
| 12.0 | 3070 | 580 | 115 | 0.047 | 1880 | 280 | 70 | 0.037 | 1300 | 90 | 50 | 0.017 |
| 16.0 | 2460 | 460 | 125 | 0.047 | 1520 | 225 | 75 | 0.037 | 1010 | 65 | 50 | 0.016 |
| 20.0 | 1880 | 360 | 120 | 0.048 | 1190 | 180 | 75 | 0.038 | 760 | 45 | 50 | 0.015 |
| 25.0 | 1520 | 280 | 120 | 0.046 | 940 | 145 | 75 | 0.039 | 600 | 35 | 45 | 0.015 |



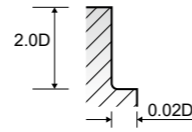
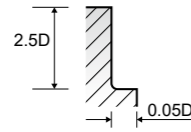
| MATERIAL | M | | | | K | | | |
|----------|------------------|------|----|-------|-----------|------|-----|-------|
| | STAINLESS STEELS | | | | CAST IRON | | | |
| HARDNESS | | | | | | | | |
| STRENGTH | | | | | | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 2.0 | 7060 | 155 | 45 | 0.005 | 12950 | 315 | 80 | 0.006 |
| 3.0 | 5170 | 190 | 50 | 0.009 | 9990 | 360 | 95 | 0.009 |
| 4.0 | 4350 | 315 | 55 | 0.018 | 8470 | 640 | 105 | 0.019 |
| 5.0 | 3540 | 335 | 55 | 0.024 | 7060 | 670 | 110 | 0.024 |
| 6.0 | 3180 | 370 | 60 | 0.029 | 6230 | 740 | 115 | 0.030 |
| 8.0 | 2350 | 390 | 60 | 0.041 | 4700 | 795 | 120 | 0.042 |
| 10.0 | 1880 | 335 | 60 | 0.045 | 3650 | 685 | 115 | 0.047 |
| 12.0 | 1520 | 270 | 55 | 0.044 | 3070 | 580 | 115 | 0.047 |
| 16.0 | 1230 | 225 | 60 | 0.046 | 2460 | 460 | 125 | 0.047 |
| 20.0 | 940 | 170 | 60 | 0.045 | 1880 | 360 | 120 | 0.048 |
| 25.0 | 760 | 135 | 60 | 0.044 | 1520 | 280 | 120 | 0.046 |



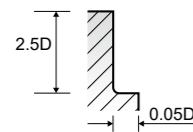
GM817 Y-COATED SOLID CARBIDE END MILLS
4 FLUTE LONG LENGTH - SIDE CUTTING

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | | | |
|----------|------------------------------------|------|----|-------|---------------------------------------|------|----|-------|------------------------------|------|----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | |
| | ~HRc30 | | | | HRc30~HRc45 | | | | HRc45~HRc55 | | | |
| STRENGTH | ~1000N/mm ² | | | | 1000 ~ 1500N/mm ² | | | | 1500 ~ 2000N/mm ² | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 2.0 | 9880 | 225 | 60 | 0.006 | 5640 | 90 | 35 | 0.004 | 3530 | 50 | 20 | 0.004 |
| 3.0 | 6910 | 260 | 65 | 0.009 | 4000 | 110 | 40 | 0.007 | 2460 | 60 | 25 | 0.006 |
| 4.0 | 5600 | 315 | 70 | 0.014 | 3180 | 130 | 40 | 0.010 | 2000 | 65 | 25 | 0.008 |
| 5.0 | 4780 | 405 | 75 | 0.021 | 2710 | 155 | 45 | 0.014 | 1770 | 80 | 30 | 0.011 |
| 6.0 | 4120 | 480 | 80 | 0.029 | 2350 | 200 | 45 | 0.021 | 1530 | 100 | 30 | 0.016 |
| 8.0 | 3140 | 515 | 80 | 0.041 | 1770 | 200 | 45 | 0.028 | 1180 | 100 | 30 | 0.021 |
| 10.0 | 2630 | 515 | 85 | 0.049 | 1530 | 200 | 50 | 0.033 | 940 | 100 | 30 | 0.027 |
| 12.0 | 2150 | 405 | 80 | 0.047 | 1300 | 180 | 50 | 0.035 | 780 | 80 | 30 | 0.026 |
| 16.0 | 1810 | 360 | 90 | 0.050 | 1000 | 140 | 50 | 0.035 | 630 | 65 | 30 | 0.026 |
| 20.0 | 1320 | 260 | 85 | 0.049 | 760 | 100 | 50 | 0.033 | 470 | 50 | 30 | 0.027 |



| MATERIAL | K | | | |
|----------|-----------|----------|----------|-------|
| | CAST IRON | | | |
| | HARDNESS | STRENGTH | DIAMETER | RPM |
| | | | FEED | Vc |
| | | | Fz | |
| 2.0 | 9880 | 225 | 60 | 0.006 |
| 3.0 | 6910 | 260 | 65 | 0.009 |
| 4.0 | 5600 | 315 | 70 | 0.014 |
| 5.0 | 4780 | 405 | 75 | 0.021 |
| 6.0 | 4120 | 480 | 80 | 0.029 |
| 8.0 | 3140 | 515 | 80 | 0.041 |
| 10.0 | 2630 | 515 | 85 | 0.049 |
| 12.0 | 2150 | 405 | 80 | 0.047 |
| 16.0 | 1810 | 360 | 90 | 0.050 |
| 20.0 | 1320 | 260 | 85 | 0.049 |

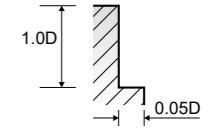
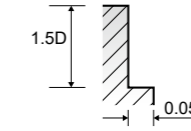
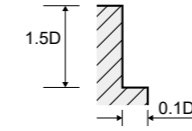


GM812 Y-COATED SOLID CARBIDE END MILLS
6&8 FLUTE 45° HELIX LONG LENGTH - SIDE CUTTING

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

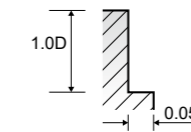
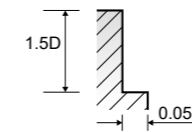
NORMAL SPEED

| MATERIAL | P | | | | | | | | | | | |
|----------|------------------------------------|------|-----|-------|---------------------------------------|------|----|-------|------------------------------|------|----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | |
| | ~HRc30 | | | | HRc30~HRc50 | | | | HRc50~HRc55 | | | |
| STRENGTH | ~1000N/mm ² | | | | 1000 ~ 1750N/mm ² | | | | 1750 ~ 2080N/mm ² | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 6.0 | 5670 | 2040 | 105 | 0.060 | 3960 | 1395 | 75 | 0.059 | 1610 | 215 | 30 | 0.022 |
| 8.0 | 4280 | 2040 | 110 | 0.079 | 3000 | 1395 | 75 | 0.078 | 1180 | 215 | 30 | 0.030 |
| 10.0 | 3430 | 2040 | 110 | 0.099 | 2370 | 1395 | 75 | 0.098 | 1020 | 215 | 30 | 0.035 |
| 12.0 | 2900 | 1715 | 110 | 0.099 | 2040 | 1185 | 75 | 0.097 | 860 | 185 | 30 | 0.036 |
| 16.0 | 2140 | 1285 | 110 | 0.100 | 1510 | 900 | 75 | 0.099 | 650 | 135 | 35 | 0.035 |
| 20.0 | 1710 | 1030 | 105 | 0.075 | 1180 | 705 | 75 | 0.075 | 510 | 110 | 30 | 0.027 |



HIGH SPEED

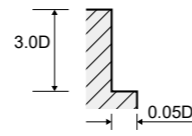
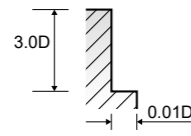
| MATERIAL | P | | | | | | | |
|----------|------------------------------------|------|-----|-------|---------------------------------------|------|-----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | |
| | ~ HRc50 | | | | HRc50 ~ HRc55 | | | |
| STRENGTH | ~1750N/mm ² | | | | 1750 ~ 2080N/mm ² | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 6.0 | 17140 | 6210 | 325 | 0.060 | 8570 | 3110 | 160 | 0.060 |
| 8.0 | 12850 | 6210 | 325 | 0.081 | 6430 | 3110 | 160 | 0.081 |
| 10.0 | 10180 | 6110 | 320 | 0.100 | 5140 | 3110 | 160 | 0.101 |
| 12.0 | 8570 | 5140 | 325 | 0.100 | 4280 | 2570 | 160 | 0.100 |
| 16.0 | 6430 | 3855 | 325 | 0.100 | 3220 | 1930 | 160 | 0.100 |
| 20.0 | 5140 | 3110 | 325 | 0.076 | 2570 | 1500 | 160 | 0.073 |



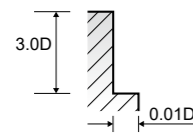
GM834 Y-COATED SOLID CARBIDE END MILLS
6 FLUTE 45° HELIX EXTRA LONG LENGTH - **SIDE CUTTING**

RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | | | |
|----------|--|------|----|-------|---------------------------------------|------|----|-------|-----------------|------|----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | |
| | ~HRC30 | | | | HRC30~HRC45 | | | | HRC45~HRC55 | | | |
| STRENGTH | ~1000N/mm ² 1000 ~ 1500N/mm ² 1500 ~ 2000N/mm ² | | | | | | | | | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 6.0 | 2270 | 480 | 45 | 0.035 | 1700 | 355 | 30 | 0.035 | 1420 | 255 | 25 | 0.030 |
| 8.0 | 1700 | 460 | 45 | 0.045 | 1280 | 335 | 30 | 0.044 | 1070 | 245 | 25 | 0.038 |
| 10.0 | 1360 | 450 | 45 | 0.055 | 1020 | 305 | 30 | 0.050 | 860 | 235 | 25 | 0.046 |
| 12.0 | 1130 | 410 | 45 | 0.060 | 860 | 275 | 30 | 0.053 | 700 | 215 | 25 | 0.051 |
| 16.0 | 860 | 335 | 45 | 0.065 | 640 | 235 | 30 | 0.061 | 540 | 175 | 25 | 0.054 |
| 20.0 | 680 | 285 | 45 | 0.070 | 510 | 205 | 30 | 0.067 | 430 | 155 | 25 | 0.060 |
| 25.0 | 550 | 245 | 45 | 0.074 | 410 | 175 | 30 | 0.071 | 350 | 135 | 25 | 0.064 |



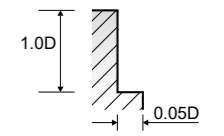
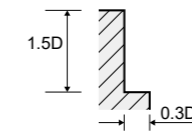
| MATERIAL | K | | | |
|----------|-----------|-----|------|-------|
| | CAST IRON | | | |
| | DIAMETER | RPM | FEED | Fz |
| 6.0 | 2270 | 480 | 45 | 0.035 |
| 8.0 | 1700 | 460 | 45 | 0.045 |
| 10.0 | 1360 | 450 | 45 | 0.055 |
| 12.0 | 1130 | 410 | 45 | 0.060 |
| 16.0 | 860 | 335 | 45 | 0.065 |
| 20.0 | 680 | 285 | 45 | 0.070 |
| 25.0 | 550 | 245 | 45 | 0.074 |



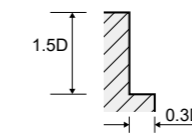
GM814 Y-COATED SOLID CARBIDE END MILLS
MULTI FLUTE 20° HELIX LONG LENGTH ROUGHING - **SIDE CUTTING**

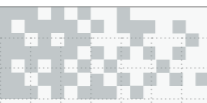
RPM = rev./min. Vc = m/min.
FEED = mm/min. Fz = mm/tooth

| MATERIAL | P | | | | | | | | | | | |
|----------|--|------|-----|-------|---------------------------------------|------|-----|-------|-----------------|------|----|-------|
| | NON-ALLOYED STEELS ALLOY STEELS | | | | ALLOY STEELS HEAT RESISTANT STEELS | | | | HARDENED STEELS | | | |
| | ~HRC30 | | | | HRC30~HRC45 | | | | HRC45~HRC55 | | | |
| STRENGTH | ~1000N/mm ² 1000 ~ 1500N/mm ² 1500 ~ 2000N/mm ² | | | | | | | | | | | |
| DIAMETER | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz | RPM | FEED | Vc | Fz |
| 6.0 | 16380 | 2435 | 310 | 0.050 | 13020 | 880 | 245 | 0.023 | 3570 | 275 | 65 | 0.026 |
| 8.0 | 12180 | 2435 | 305 | 0.067 | 9660 | 880 | 245 | 0.030 | 2520 | 250 | 65 | 0.033 |
| 10.0 | 9660 | 2435 | 305 | 0.063 | 7980 | 880 | 250 | 0.028 | 2100 | 305 | 65 | 0.036 |
| 12.0 | 8400 | 2520 | 315 | 0.075 | 6300 | 840 | 240 | 0.033 | 1760 | 275 | 65 | 0.039 |
| 16.0 | 6300 | 2520 | 315 | 0.100 | 5040 | 800 | 255 | 0.040 | 1260 | 170 | 65 | 0.034 |
| 20.0 | 5040 | 2270 | 315 | 0.113 | 3780 | 590 | 240 | 0.039 | 1050 | 160 | 65 | 0.038 |



| MATERIAL | M | | | | K | | | |
|----------|------------------|-----|------|-------|-----------|------|-----|-------|
| | STAINLESS STEELS | | | | CAST IRON | | | |
| | DIAMETER | RPM | FEED | Fz | RPM | FEED | Vc | Fz |
| 6.0 | 8820 | 600 | 165 | 0.023 | 16380 | 2435 | 310 | 0.050 |
| 8.0 | 6620 | 600 | 165 | 0.030 | 12180 | 2435 | 305 | 0.067 |
| 10.0 | 5360 | 600 | 170 | 0.028 | 9660 | 2435 | 305 | 0.063 |
| 12.0 | 4410 | 600 | 165 | 0.034 | 8400 | 2520 | 315 | 0.075 |
| 16.0 | 3470 | 535 | 175 | 0.039 | 6300 | 2520 | 315 | 0.100 |
| 20.0 | 2520 | 380 | 160 | 0.038 | 5040 | 2270 | 315 | 0.113 |





HIGH QUALITY PRODUCTS and ON TIME DELIVERY for WORLD-WIDE CUSTOMERS

Since 1982, YG-1 has been committed to quality, innovation and the unique customer experience. Our performance and experience have granted YG-1 the global impression of one of the leading manufacturers of high quality cutting tool solutions. This global footprint expands over 75 countries, with international logistic centers, pledging to our customers to give the best service available today - and tomorrow.

EUROPE

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|----------------|---------|-----------|----------|-------------|-----------------|
| BELGIUM | FINLAND | ITALY | PORTUGAL | SLOVENIA | THE NETHERLANDS |
| CROATIA | FRANCE | LITHUANIA | ROMANIA | SPAIN | TURKEY |
| CZECH REPUBLIC | GERMANY | NORWAY | RUSSIA | SWEDEN | UNITED KINGDOM |
| DENMARK | HUNGARY | POLAND | SERBIA | SWITZERLAND | |

ASIA PACIFIC

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|-----------|-----------|-------------------------|-------------|----------------------|
| AUSTRALIA | INDONESIA | KINGDOM OF SAUDI ARABIA | SINGAPORE | UNITED ARAB EMIRATES |
| CHINA | IRAN | MALAYSIA | SOUTH KOREA | VIETNAM |
| HONG KONG | ISRAEL | PAKISTAN | TAIWAN | |
| INDIA | JAPAN | PHILIPPINES | THAILAND | |

AMERICAS

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|--------|--------|----------|--------|---------------|
| BRAZIL | CANADA | COLOMBIA | MEXICO | UNITED STATES |
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AFRICA

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| EGYPT | SOUTH AFRICA |
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