

Demonstration

For Grooving Deep Parts

Advantages

Carbide grade: MT8 Sub-micron grade with advanced PVD triple coating (ISO K10-K20). Extremely high heat resistant and smooth cutting operation. For high performance and normal machining conditions. General purpose for all materials.

- Enables machining in deep holes.
- Coolant through the flutes is very effective for deep holes.
- Spiral flutes allow smooth cutting action.
- Longer tool life due to special multi-layer coating.
- Shorter machining time due to multi (3 to 5) flutes.

Contents:

Page:

Page:

Product Identification
Groove Milling with internal coolant
through the flutes

2

3

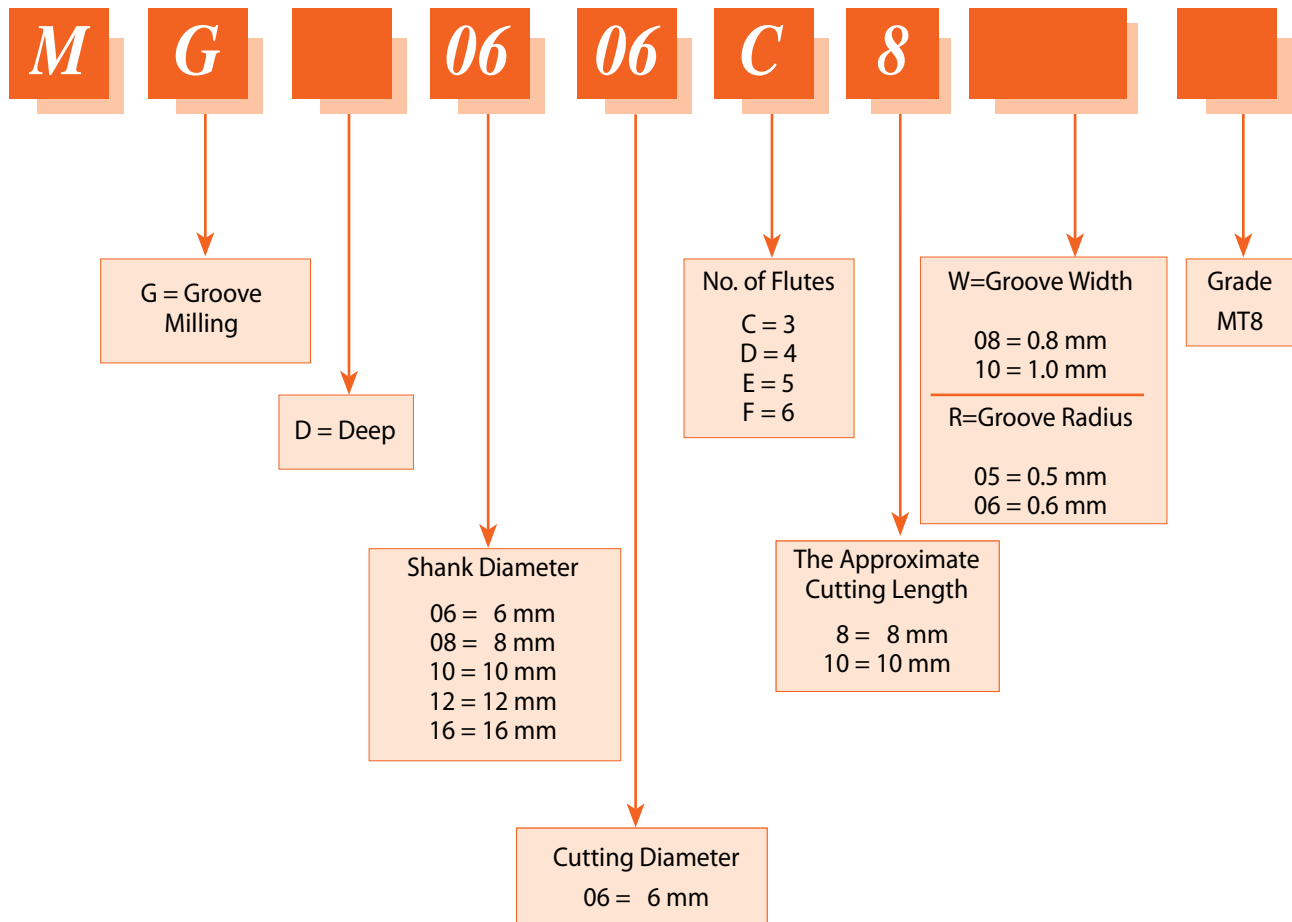
Full Radius Groove Milling with internal
coolant through the flutes
Deep Groove Milling
Technical Section

4

4

5

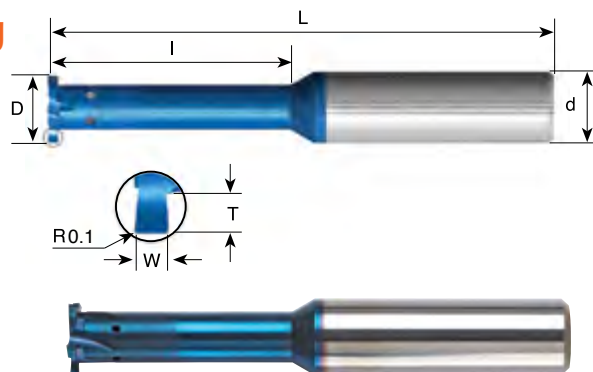
Product Identification Groove Milling Ordering Codes



Groove Milling

with internal coolant through the flutes

Same Tool for Internal and External Grooving



For grooving deep parts

| W ± 0.02 | T Max. | Groove Dia. (min.) mm | Ordering Code | d | D | No. of Flutes | I | L |
|-------------|-----------|-----------------------------|-------------------------|----|------|------------------|------|-----|
| 0.50 | 0.6 | ∅ > 4 | *MG 0604 C4 W05 | 6 | 4.0 | 3 | 4.2 | 51 |
| 1.00 | 0.6 | ∅ > 4 | *MG 0604 C4 W10 | 6 | 4.0 | 3 | 4.2 | 51 |
| 0.80 | 0.8 | ∅ > 6 | MG 0606 C8 W08 | 6 | 6.0 | 3 | 8.0 | 58 |
| 1.00 | 1.0 | ∅ > 6 | *MG 0606 C7 W10 | 6 | 6.0 | 3 | 7.0 | 58 |
| 1.50 | 1.0 | ∅ > 6 | *MG 0606 C7 W15 | 6 | 6.0 | 3 | 7.0 | 58 |
| 1.00 | 1.2 | ∅ ≥ 7.8 | MG 08078 D10 W10 | 8 | 7.8 | 4 | 10.0 | 64 |
| 1.50 | 1.5 | ∅ ≥ 7.8 | MG 08078 D15 W15 | 8 | 7.8 | 4 | 15.0 | 64 |
| 2.00 | 1.5 | ∅ ≥ 7.8 | MG 08078 D15 W20 | 8 | 7.8 | 4 | 15.0 | 64 |
| 1.20 | 1.4 | ∅ ≥ 9.8 | MG 10098 D20 W12 | 10 | 9.8 | 4 | 20.0 | 73 |
| 1.50 | 2.0 | ∅ ≥ 9.8 | MG 10098 D20 W15 | 10 | 9.8 | 4 | 20.0 | 73 |
| 2.00 | 2.0 | ∅ ≥ 9.8 | MG 10098 D20 W20 | 10 | 9.8 | 4 | 20.0 | 73 |
| 1.50 | 2.2 | ∅ ≥ 12 | MG 1212 E30 W15 | 12 | 12.0 | 5 | 30.0 | 84 |
| 2.00 | 2.2 | ∅ ≥ 12 | MG 1212 E30 W20 | 12 | 12.0 | 5 | 30.0 | 84 |
| 3.00 | 2.2 | ∅ ≥ 12 | MG 1212 E30 W30 | 12 | 12.0 | 5 | 30.0 | 84 |
| 1.40 | 1.8 | ∅ ≥ 16 | MG 1616 E30 W14 | 16 | 16.0 | 5 | 30.0 | 101 |
| 1.70 | 2.0 | ∅ ≥ 16 | MG 1616 E40 W17 | 16 | 16.0 | 5 | 40.0 | 101 |
| 1.95 | 2.2 | ∅ ≥ 16 | MG 1616 E45 W19 | 16 | 16.0 | 5 | 45.0 | 101 |

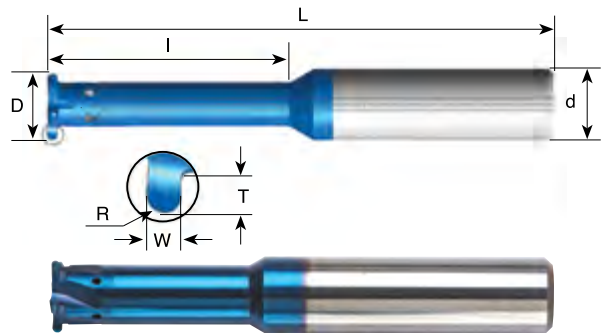
Order example: MG 10098D20 W12 MT8

* Tools without coolant

Full Radius Groove Milling

with internal coolant through the flutes

***Same Tool for Internal and External Grooving**



For grooving deep parts

| R | W ± 0.02 | T Max. | Groove Dia. (min.) | Ordering Code | d | D | No. of Flutes | l | L |
|------|-------------|-----------|-----------------------|-------------------------|----|------|------------------|------|-----|
| 0.5 | 1.00 | 0.6 | $\phi > 4$ | *MG 0604 C4 R05 | 6 | 4.0 | 3 | 4.2 | 51 |
| 0.5 | 1.00 | 0.8 | $\phi > 6$ | MG 0606 C8 R05 | 6 | 6.0 | 3 | 8.0 | 58 |
| 0.75 | 1.50 | 1.0 | $\phi > 6$ | *MG 0606 C7 R075 | 6 | 6.0 | 3 | 7.0 | 58 |
| 0.5 | 1.00 | 1.0 | $\phi \geq 8.8$ | MG 10088 D16 R05 | 10 | 8.8 | 4 | 16.0 | 73 |
| 0.6 | 1.20 | 1.0 | $\phi \geq 10$ | MG 1010 D20 R06 | 10 | 10.0 | 4 | 20.0 | 73 |
| 0.75 | 1.50 | 2.0 | $\phi \geq 10$ | MG 1010 D20 R075 | 10 | 10.0 | 4 | 20.0 | 73 |
| 1.00 | 2.00 | 2.0 | $\phi \geq 10$ | MG 1010 D20 R10 | 10 | 10.0 | 4 | 20.0 | 73 |
| 0.9 | 1.80 | 1.4 | $\phi \geq 12$ | MG 1212 D30 R09 | 12 | 12.0 | 4 | 30.0 | 84 |
| 1.0 | 2.00 | 1.6 | $\phi \geq 16$ | MG 1616 E40 R10 | 16 | 16.0 | 5 | 40.0 | 101 |
| 1.5 | 3.00 | 2.2 | $\phi \geq 16$ | MG 1616 E40 R15 | 16 | 16.0 | 5 | 40.0 | 101 |

Order example: MG 1010 D20 R06 MT8

* Tools without coolant

Deep Groove Milling

with internal coolant bore



| Ordering Code | W ± 0.02 | R | T (max.) | Groove Dia. (min.) | d | D | No. of Flutes | L |
|------------------------|-------------|-----|-------------|-----------------------|----|------|------------------|-----|
| MGD 10195 F W15 | 1.5 | 0.1 | 4.5 | $\phi > 19.5$ | 10 | 19.5 | 6 | 128 |
| MGD 10195 F W20 | 2.0 | 0.1 | 4.5 | $\phi > 19.5$ | 10 | 19.5 | 6 | 128 |
| MGD 10195 F W30 | 3.0 | 0.1 | 4.5 | $\phi > 19.5$ | 10 | 19.5 | 6 | 128 |
| MGD 10195 F W35 | 3.5 | 0.1 | 4.5 | $\phi > 19.5$ | 10 | 19.5 | 6 | 128 |
| MGD 10195 F W40 | 4.0 | 0.1 | 4.5 | $\phi > 19.5$ | 10 | 19.5 | 6 | 128 |
| MGD 10195 F W50 | 5.0 | 0.1 | 4.5 | $\phi > 19.5$ | 10 | 19.5 | 6 | 128 |

* Same tool for internal and external grooving

Technical Section

Cutting Data

| ISO | Materials | Cutting Speed m/min | Feed mm/tooth Cutting Diameter=D | | | | | | | | | | | | |
|----------|--|------------------------|-------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| | | | Ø1.5 | Ø2 | Ø3 | Ø4 | Ø5 | Ø6 | Ø7 | Ø8 | Ø9 | Ø10 | Ø12 | Ø14 | Ø16 |
| P | Low and Medium Carbon Steels <0.55%C | 60 - 120 | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | 0.09 | 0.10 | 0.11 | 0.11 | 0.11 | 0.12 | 0.13 | 0.13 |
| | High Carbon Steels ≥0.55%C | 60 - 90 | 0.02 | 0.04 | 0.04 | 0.06 | 0.06 | 0.07 | 0.08 | 0.09 | 0.10 | 0.10 | 0.11 | 0.12 | 0.13 |
| | Alloy Steels, Treated Steels | 50 - 80 | 0.02 | 0.03 | 0.04 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.06 | 0.07 | 0.08 | 0.09 | 0.10 |
| M | Stainless Steels - Free Cutting | 70 - 100 | 0.01 | 0.02 | 0.03 | 0.04 | 0.04 | 0.04 | 0.05 | 0.06 | 0.06 | 0.07 | 0.08 | 0.08 | 0.09 |
| | Stainless Steels - Austenitic | 60 - 90 | 0.01 | 0.02 | 0.03 | 0.04 | 0.04 | 0.04 | 0.05 | 0.06 | 0.06 | 0.07 | 0.08 | 0.08 | 0.09 |
| | Cast Steels | 70 - 90 | 0.02 | 0.03 | 0.04 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.06 | 0.07 | 0.08 | 0.09 | 0.10 |
| K | Cast Iron | 40 - 80 | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | 0.09 | 0.10 | 0.11 | 0.11 | 0.11 | 0.12 | 0.13 | 0.13 |
| N | Aluminum ≤12%Si, Copper | 100 - 200 | 0.03 | 0.04 | 0.05 | 0.06 | 0.08 | 0.09 | 0.10 | 0.11 | 0.11 | 0.11 | 0.12 | 0.13 | 0.13 |
| | Aluminum >12% Si | 60 - 140 | 0.02 | 0.02 | 0.03 | 0.04 | 0.04 | 0.04 | 0.05 | 0.06 | 0.06 | 0.07 | 0.08 | 0.09 | 0.10 |
| | Synthetics, Duroplastics, Thermoplastics | 50 - 200 | 0.06 | 0.08 | 0.08 | 0.10 | 0.11 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 | 0.14 | 0.14 |
| S | Nickel Alloys, Titanium Alloys | 20 - 40 | 0.02 | 0.02 | 0.03 | 0.03 | 0.04 | 0.04 | 0.04 | 0.04 | 0.05 | 0.05 | 0.05 | 0.06 | 0.06 |
| H | Hardened Steel, ≤50 HRc | 60 - 70 | 0.02 | 0.03 | 0.04 | 0.04 | 0.04 | 0.04 | 0.05 | 0.05 | 0.06 | 0.06 | 0.06 | 0.07 | 0.08 |