

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.

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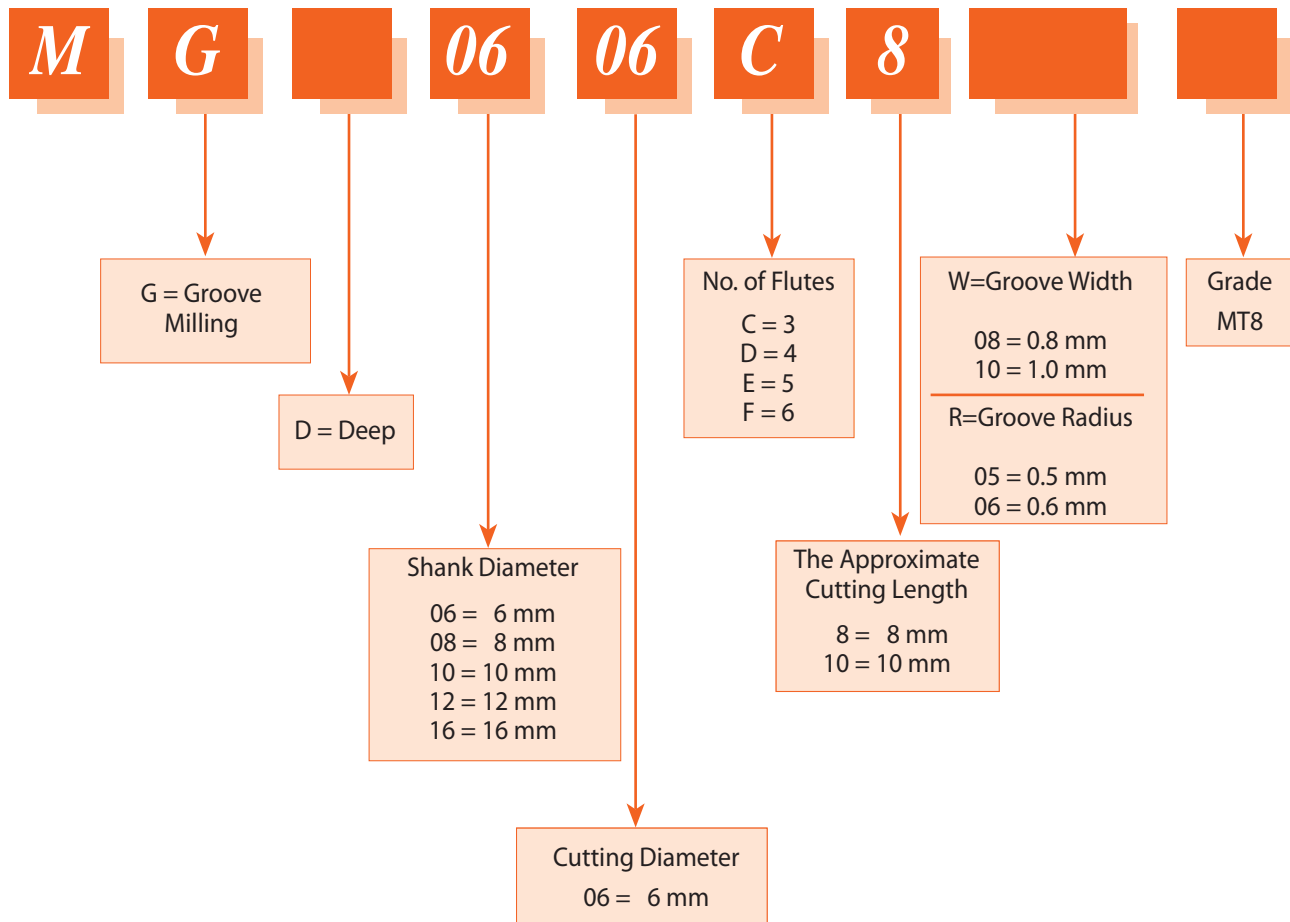
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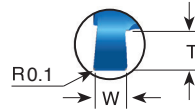
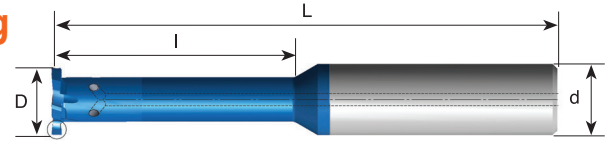
## Product Identification Groove Milling Ordering Codes



## 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	l	L
0.50	0.6	∅ > 4	<b>*MG 0604 C4 W05</b>	6	4.0	3	4.2	51
1.00	0.6	∅ > 4	<b>*MG 0604 C4 W10</b>	6	4.0	3	4.2	51
0.80	0.8	∅ > 6	<b>MG 0606 C8 W08</b>	6	6.0	3	8.0	58
1.00	1.0	∅ > 6	<b>*MG 0606 C7 W10</b>	6	6.0	3	7.0	58
1.50	1.0	∅ > 6	<b>*MG 0606 C7 W15</b>	6	6.0	3	7.0	58
1.00	1.2	∅ ≥ 7.8	<b>MG 08078 D10 W10</b>	8	7.8	4	10.0	64
1.50	1.5	∅ ≥ 7.8	<b>MG 08078 D15 W15</b>	8	7.8	4	15.0	64
2.00	1.5	∅ ≥ 7.8	<b>MG 08078 D15 W20</b>	8	7.8	4	15.0	64
1.20	1.4	∅ ≥ 9.8	<b>MG 10098 D20 W12</b>	10	9.8	4	20.0	73
1.50	2.0	∅ ≥ 9.8	<b>MG 10098 D20 W15</b>	10	9.8	4	20.0	73
2.00	2.0	∅ ≥ 9.8	<b>MG 10098 D20 W20</b>	10	9.8	4	20.0	73
1.50	2.2	∅ ≥ 12	<b>MG 1212 E30 W15</b>	12	12.0	5	30.0	84
2.00	2.2	∅ ≥ 12	<b>MG 1212 E30 W20</b>	12	12.0	5	30.0	84
3.00	2.2	∅ ≥ 12	<b>MG 1212 E30 W30</b>	12	12.0	5	30.0	84
1.40	1.8	∅ ≥ 16	<b>MG 1616 E30 W14</b>	16	16.0	5	30.0	101
1.70	2.0	∅ ≥ 16	<b>MG 1616 E40 W17</b>	16	16.0	5	40.0	101
1.95	2.2	∅ ≥ 16	<b>MG 1616 E45 W19</b>	16	16.0	5	45.0	101

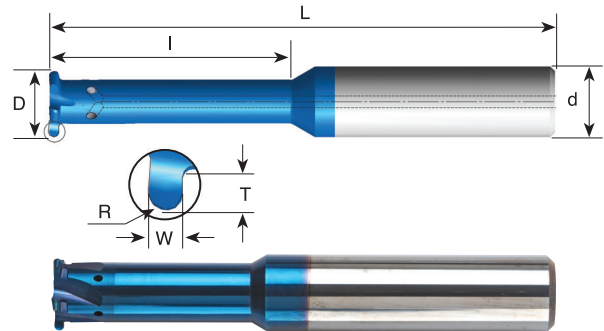
Order example: MG 10098D20 W12 MT8

\* Tools without coolant

## Full Radius Groove Milling

with internal coolant through the flutes

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



For grooving deep parts

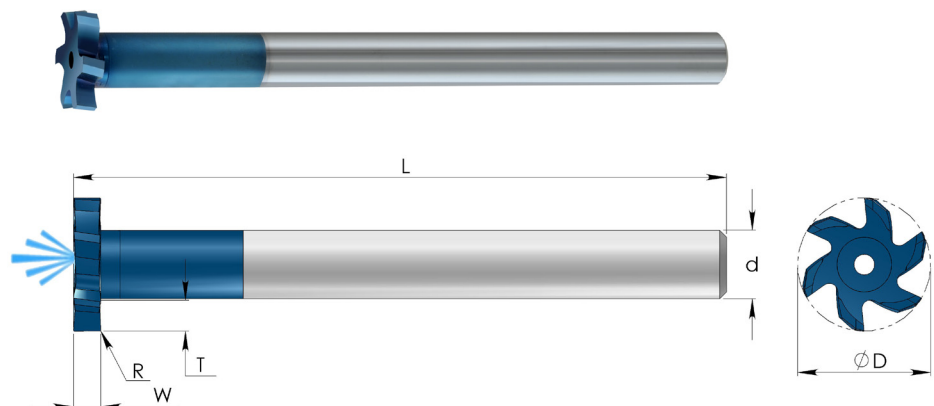
R	W ± 0.02	T Max.	Groove Dia. (min.)	Ordering Code	d	D	No. of Flutes	I	L
0.5	1.00	0.6	$\phi > 4$	<b>*MG 0604 C4 R05</b>	6	4.0	3	4.2	51
0.5	1.00	0.8	$\phi > 6$	<b>MG 0606 C8 R05</b>	6	6.0	3	8.0	58
0.75	1.50	1.0	$\phi > 6$	<b>*MG 0606 C7 R075</b>	6	6.0	3	7.0	58
0.5	1.00	1.0	$\phi \geq 8.8$	<b>MG 10088 D16 R05</b>	10	8.8	4	16.0	73
0.6	1.20	1.0	$\phi \geq 10$	<b>MG 1010 D20 R06</b>	10	10.0	4	20.0	73
0.75	1.50	2.0	$\phi \geq 10$	<b>MG 1010 D20 R075</b>	10	10.0	4	20.0	73
1.00	2.00	2.0	$\phi \geq 10$	<b>MG 1010 D20 R10</b>	10	10.0	4	20.0	73
0.9	1.80	1.4	$\phi \geq 12$	<b>MG 1212 D30 R09</b>	12	12.0	4	30.0	84
1.0	2.00	1.6	$\phi \geq 16$	<b>MG 1616 E40 R10</b>	16	16.0	5	40.0	101
1.5	3.00	2.2	$\phi \geq 16$	<b>MG 1616 E40 R15</b>	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
<b>MGD 10195 F W15</b>	1.5	0.1	4.5	$\phi > 19.5$	10	19.5	6	128
<b>MGD 10195 F W20</b>	2.0	0.1	4.5	$\phi > 19.5$	10	19.5	6	128
<b>MGD 10195 F W30</b>	3.0	0.1	4.5	$\phi > 19.5$	10	19.5	6	128
<b>MGD 10195 F W35</b>	3.5	0.1	4.5	$\phi > 19.5$	10	19.5	6	128
<b>MGD 10195 F W40</b>	4.0	0.1	4.5	$\phi > 19.5$	10	19.5	6	128
<b>MGD 10195 F W50</b>	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
<b>P</b>	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
<b>M</b>	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
<b>K</b>	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
<b>N</b>	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
<b>S</b>	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
<b>H</b>	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

