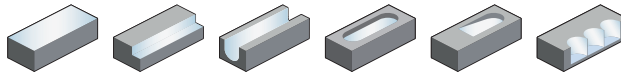


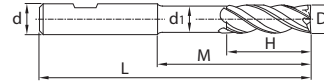
End mill long cutting edge

HSC/HPC machining

5602R38414GM



- Type of shank: DIN 6535HB
- Centre cutting
- Helix angle 38°/41°



Article	*	Dimensions [mm]						Teeth	Grade KMG405
		D	d (h6)	d ₁	H	M	L		
5602R38414GM-0300L		3	6	2.7	6.5	15	58	4	○
5602R38414GM-0400L		4	6	3.7	8.5	20	62	4	○
5602R38414GM-0400		4	6	3.7	11	19	57	4	●
5602R38414GM-0500		5	6	4.7	13	21	57	4	●
5602R38414GM-0500L		5	6	4.7	10.5	25	70	4	○
5602R38414GM-0600L		6	6	5.7	13	30	70	4	○
5602R38414GM-0600		6	6	5.7	13	21	57	4	●
5602R38414GM-0800		8	8	7.7	19	27	63	4	●
5602R38414GM-0800L		8	8	7.7	17	40	80	4	○
5602R38414GM-1000		10	10	9.5	22	32	72	4	●
5602R38414GM-1000L		10	10	9.5	21	50	94	4	○
5602R38414GM-1200		12	12	11.5	26	38	83	4	●
5602R38414GM-1200L		12	12	11.5	25	60	109	4	○
5602R38414GM-1400		14	14	13.5	26	38	83	4	●
5602R38414GM-1600L		16	16	15.5	33	80	132	4	○
5602R38414GM-1600		16	16	15.5	32	44	92	4	●
5602R38414GM-1800		18	18	17.5	32	44	92	4	●
5602R38414GM-2000		20	20	19.5	38	54	104	4	●

● Ex stock ○ On demand

* With internal cooling

Application field

P	M	K	N	S	H
✓	✓	✓			✓

✓ Very suitable

✓ Suitable

End mill – UM/HPC/VSM series

	Material group	Composition / structure / heat treatment	Brinell hardness HB	Machining group	Starting values for cutting speed v_c [m/min]									
					5501R38414GM (-R) 5502R38414GM (-R) 5602R38414GM (-R)				5501R38414GM (-R) long series 5502R38414GM (-R) long series 5602R38414GM (-R) long series					
					Slot milling		Shoulder milling		Slot milling		Shoulder milling			
					$\varnothing$ [mm]	a_p max	$\varnothing$ [mm]	a_e max	$\varnothing$ [mm]	a_p max	$\varnothing$ [mm]	a_e max		
					$0 < x < 3$	$0,3 \times D$	$0 < x < 3$	$0,15 \times D$	$0 < x < 3$	$0,3 \times D$	$0 < x < 3$	$0,15 \times D$		
A Turning	P Milling	Unalloyed steel	approx. 0,15 % C approx. 0,45 % C approx. 0,45 % C approx. 0,75 % C approx. 0,75 % C	annealed annealed tempered annealed tempered	125 190 250 270 300	1 2 3 4 5	250 240 175 150 140	300 285 210 180 165	9 9 9 9 9	190 185 135 115 105	225 215 160 135 125	285 275 200 175 160	9 9 9 9 9	
B Milling	P Milling	Low-alloyed steel	annealed tempered tempered tempered	180 275 300 350	6 7 8 9	190 150 140 130	225 180 165 160	285 230 210 200	9 9 9 9	145 115 105 100	170 135 125 120	215 175 160 150	9 9 9 9	
C Drilling	M Drilling	Stainless steel	ferritic/martensitic martensitic austenitic austenitic-ferritic	annealed tempered quench hardened	200 240 180 230	12 13 14 15	80 70 85 70	100 85 105 85	125 110 9 9	65 55 65 55	75 65 80 65			

Recommended feed rate

Solid carbide milling group 9 – Square shoulder mills UM series HSC/HPC

	a_e / D	Feed rate per cutting edge (f_z) [mm]															
		Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20						
P	1/1	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08						
	1/2	0,08	0,08	0,08	0,09	0,09	0,09	0,09	0,10	0,10	0,10						
	1/10	0,14	0,14	0,16	0,18	0,22	0,25	0,27	0,3	0,32	0,36						
M	1/1	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,06	0,06	0,06						
	1/2	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08						
	1/10	0,10	0,10	0,10	0,12	0,12	0,14	0,16	0,16	0,18	0,18						
K	1/1	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08						
	1/2	0,08	0,08	0,08	0,09	0,09	0,09	0,09	0,10	0,10	0,10						
	1/10	0,14	0,14	0,16	0,18	0,22	0,25	0,27	0,3	0,32	0,36						
H	1/1	0,045	0,045	0,045	0,053	0,053	0,053	0,053	0,06	0,06	0,06						
	1/2	0,06	0,06	0,06	0,07	0,07	0,07	0,07	0,08	0,08	0,08						
	1/10	0,10	0,10	0,10	0,12	0,12	0,14	0,16	0,16	0,18	0,18						

Note: The given cutting values are guide values, which were determined under ideal conditions.
The values have to be adapted in individual cases.

Solid carbide milling group 10 – Square shoulder mills VSM series

	a_e / D	Feed rate per cutting edge (f_z) [mm]															
		Ø 4	Ø 5	Ø 6	Ø 8	Ø 10	Ø 12	Ø 14	Ø 16	Ø 18	Ø 20						
P	1/1	0,03	0,04	0,05	0,05	0,05	0,05	0,06	0,06	0,07	0,08						
	1/2	0,04	0,06	0,07	0,07	0,07	0,07	0,08	0,09	0,10	0,11						
	1/10	0,05	0,08	0,09	0,09	0,09	0,09	0,11	0,12	0,14	0,15						
M	1/1	0,02	0,03	0,04	0,04	0,04	0,04	0,04	0,05	0,05	0,06						
	1/2	0,03	0,05	0,05	0,05												



HPC series

High Performance Cutter (HPC)

- For roughing and finishing of steel up to 55 HRC, stainless steel and cast iron.
- Geometry with unequal helix angle ($38^{\circ}/41^{\circ}$) and unequal pitch for smooth machining without vibrations.
- End mills and torus mills
- Diameter range 4.0–20.0 mm



5501R38414GM



5502R38414GM



5502R38414GM-R



5 5 0 1 R 30 2 GM R05 0800

1 2 3 4 5 6 7 8 9 10

A

Turning

Type	
Code	Description
5	Milling cutter

Shank type	
Code	Description
1	Shank
5	DIN 6535 HA
6	Weldon shank DIN 6535 HB
7	Whistle Notch DIN 6535 HE
9	Morse taper shank

B

Milling

1

2

Cutting edge type	
Code	Description
0	Square shoulder mill
6	Ball nose cutter
8	Torus mill

Tool length	
Code	Description
1	DIN 6527 K
2	DIN 6527 L
5	Factory standard ZCC-A
6	Factory standard ZCC-B
8	DIN 6528
9	Factory standard ZCC-D

C

Drilling

3

4

Rotation direction	
Code	Description
R	Right
L	Left

Helix angle	
Code	Description
20	20°
30	30°
3841	38°/41°
45	45°
55	55°
60	60°

Number of teeth	
Code	Description
2	2
...	
M	Indicated when different diameters have a different number of teeth

D

5

6

7

Application	
Code	Description
GM	Semi-finishing
GF	Finishing
HM	Hard machining
MHH	High-speed hard machining
NH	High-performance machining of heat-resistant alloys

Radius [mm]	
Code	Description
R03	0,3
R15	1,5
R30	3,0
...	

Diameter [mm]	
Code	Description
0100	1,0
0800	8,0
2000	20,0
...	

E

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9

10



a Groove milling
g Plunge milling



b Square shoulder milling
h Circular milling/Ramping



c Profile milling



A

Turning

Coated cemented carbide PVD

Grade	Grade description
KMD401	PVD coated carbide substrate for high performance milling application of non-ferrous metals, CFRP and GFRP and organic materials. The DLC layer has very good wear protection and high thermal stability.

B

Milling

KMG303	PVD coated carbide substrate for universal milling application of steel (up to HRC<=48), stainless steel and cast iron.
KMG405	PVD coated carbide substrate for high performance milling application of steel (up to HRC <55), stainless steel, super alloy material and cast iron. High wear resistance and toughness for a wide application field.

C

Drilling

KMG555	PVD coated carbide substrate for hard milling application of steel (HRC 55–68), highest wear resistance and toughness for best cutting result.
KMG309	PVD coated carbide substrate for non ferrous materials. High wear resistance even in abrasive materials.

D

Technical Information

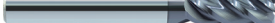
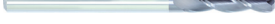
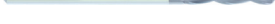
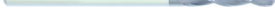
Uncoated cemented carbide

Grade	Grade description
YK30F	Uncoated K30 carbide substrate for steel, stainless steel, cast iron and non ferrous materials.
YK40F	Uncoated K20–K30/N20–N30 carbide substrate for cast iron and non ferrous materials.

E

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HPC with unequal helix angle

Products	Solid carbide cutters	Teeth	Ø	Application						Type	Page
				P	M	K	N	S	H		
5501R38414GM		4	4.0-20.0	✓	✓	✓			✓	End mills	B408
5502R38414GM		4	4.0-20.0	✓	✓	✓			✓	End mills	B409
5601R38414GM		4	4.0-20.0	✓	✓	✓			✓	End mills	B410
5602R38414GM		4	3.0-20.0	✓	✓	✓			✓	End mills	B411
5502R38414GM-R		4	4.0-20.0	✓	✓	✓			✓	Torus mills	B412
5602R38414GM-R		4	4.0-20.0	✓	✓	✓			✓	Torus mills	B413
UM-4E		4	4.0-20.0	✓	✓	✓			✓	End mills	B416
UM-4E-W		4	4.0-20.0	✓	✓	✓			✓	End mills	B417
UM-4EL		4	4.0-20.0	✓	✓	✓			✓	End mills	B418
UM-4EL-W		4	4.0-20.0	✓	✓	✓			✓	End mills	B419
UM-4ELP-W		4	4.0-20.0	✓	✓	✓			✓	End mills	B420
UM-4EFP		4	6.0-20.0	✓	✓	✓			✓	End mills	B421
UM-4R		4	4.0-20.0	✓	✓	✓			✓	Torus mills	B422
UM-4RL		4	6.0-16.0	✓	✓	✓			✓	Torus mills	B423
UM-4RFP		4	6.0-16.0	✓	✓	✓			✓	Torus mills	B424
VSM-4E		4	4.0-20.0	✓	✓			✓		End mills	B426
VSM-4E-C		4	10.0-20.0	✓	✓			✓		End mills	B427
VSM-4R		4	4.0-20.0	✓	✓			✓		Torus mills	B428

✓ Very suitable ✓ Suitable