HGT SOLID CARBIDE TOOLS

HG TECHNOLOGY CO., LTD.
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HGT®

www.hgt.com.tw

Create the largest profit.
Improve and Elevate the Quality.

HG TECHNOLOGY CO., LTD.

INTRODUCTION

HG TECHNOLOGY CO., LTD.,

located at Changhua, Taiwan, dedicated to developing, designing, producing, and marketing cutting tools, comprises professionals with sophisticated processing experience that provide extensive services and ensure total customer satisfaction.

Our service range extensively covers 3C, semiconductor, medical care equipment, aerospace, and precision molding industries.

HG Technology continuously develops more advanced processing technologies based on the enterprise philosophy of extending the lifespan of tools, increasing work efficiencies, minimizing production costs in terms of wear and tear of tools, and maximizing customer benefits.

For HGT Cutting Tools, from material to finished products,
HG Technology insists on utilizing the processes provided by the original European manufacturers for the production. We only use high quality and stable German Carbide Rods, German and Swiss 6-axis CNC Grinding machines, advanced Swiss Coating technologies, and sophisticated German Digital Measuring Instruments.

With reasonable prices and stable quality, HG Technology has an expanding sales network that currently covers more than 30 countries throughout the world. Based on the enterprise philosophy of maximizing customer's benefits, HG Technology continuously refines itself and grows together with all its customers.

Always improve and elevate the quality,
in order let our customers keep the best competition

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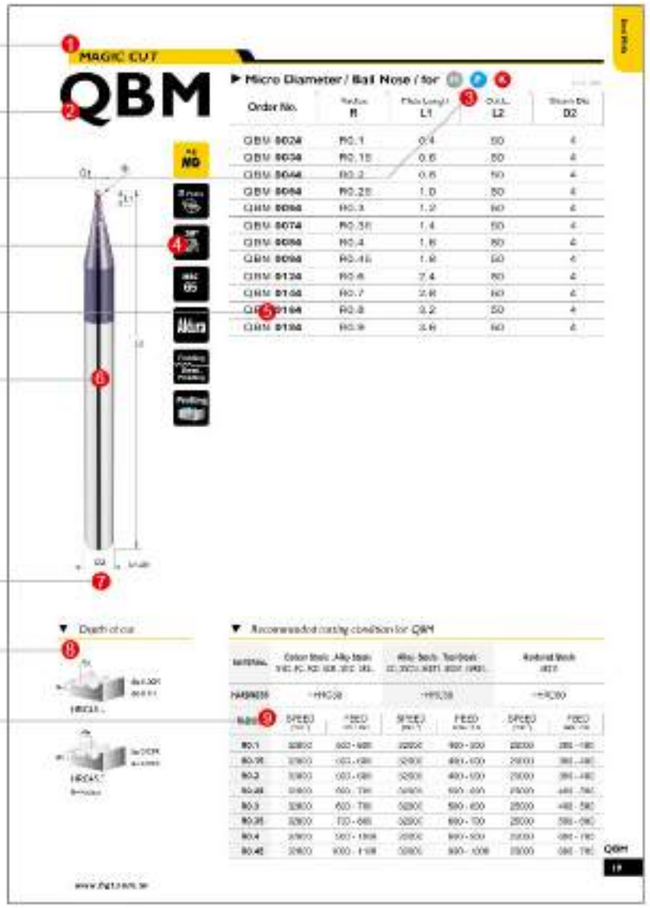

THE SYSTEM CODE INTRODUCES

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TOLERANCE

Square End Mills (mm)

Flute Dia.	Dia. Tolerance
1.0	0~ -0.015
1.5	0~ -0.015
2.0	0~ -0.015
2.5	0~ -0.015
3.0	0~ -0.015
4.0	0~ -0.015
5.0	0~ -0.015
6.0	0~ -0.015
8.0	0~ -0.020
10.0	0~ -0.020
12.0	0~ -0.020
16.0	0~ -0.020
20.0	0~ -0.020

Ball Nose End Mills (mm)

Flute Dia.	R Tolerance
R0.5	±0.01
R1	±0.01
R1.5	±0.01
R2	±0.01
R2.5	±0.01
R3	±0.01
R4	±0.01
R5	±0.01
R6	±0.01
R8	±0.02
R10	±0.02

Corner Radius End Mills (mm)

Flute Dia.	R Tolerance
1.0	±0.01
2.0	±0.01
3.0	±0.01
4.0	±0.01
6.0	±0.01
8.0	±0.01
10.0	±0.01
12.0	±0.01
16.0	±0.015

Shank (mm)

Shank Dia. (h6)	Shank Tolerance
ø 3	0~ -0.008
ø 4	0~ -0.008
ø 6	0~ -0.008
ø 8	0~ -0.009
ø 10	0~ -0.009
ø 12	0~ -0.011
ø 16	0~ -0.011
ø 20	0~ -0.013

Recommended Cutting Instructions

1. In order to enhance processing efficiency and extend life of cutters, please use the balanced chucks with high rigidity and high accuracy.
2. Make overhang enough for processing. If it's necessary to extend the milling cutter, please be sure to reduce spindle speed and feed speed.
3. If there's abnormal sound or vibration during processing, please adjust cutting data to prevent cutters from being influenced or broken.
4. Please choose correct cutting oil to maximize efficiency.
5. The result of cutting data depends on working materials, machines, work clips, programming and etc. Cutting data are for reference. You may increase cutting data starting from 50%.

ICONS

Flutes

Helix Angle (0°,5°,7°,25°,30°,35°,45°,55°)

Work Material Hardness (40,55,60,65)

Coating

Roughing Pitch

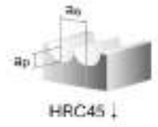
Corner Radius (0.1 , 0.2 , 0.3 , 0.5 , 1 , 1.5 , 2)

Tip Angle (60° , 90° , 120°)

Applications

Statistics For Drills

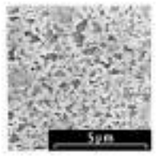
DEPTH OF CUT

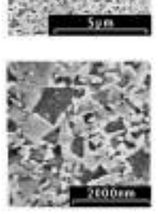
SIDE MILLING	SLOTTING	RADIUS	PROFILING
			
HRC45 ↓	HRC45 ↓	HRC45 ↓	HRC45 ↓
D1 6mm ↓ ap=1.5D ae=0.02D D1 6mm ↑ ap=1.5D ae=0.05D	ap 0.2D ae=D1	ap 0.04R ae 0.08R	ap 0.02R ae 0.02R

SOLID CARBIDE

QMG

ISO-Classification		K10-K30
Diameter	(mm)	1.2-32.2
Co	(%)	9.0
WC+cryc+vc	(%)	91.0
Density	(g/cm³)	14.40
HV_{10}	(kg/mm²)	1920
HRA	(ISO3738)	93.9
K_{IC}	(MNm-3/2)	9.3
TRS	(kA/mm²)	> 4000
	A	02
Porosity	B	00
	C	00
WC-grain size	(µm)	0.2-0.5





Co %	9
WC incl. Doping (%)	89.83
Tungsten Carbide α	ø0.2µm

SMG

ISO-Classification		K40-K50
Diameter	(mm)	1.2-42.2
Co	(%)	12.0
WC+cryc+vc	(%)	88.0
Density	(g/cm³)	14.05
HV_{10}	(kg/mm²)	1680
HRA	(ISO3738)	92.5
K_{IC}	(MNm-3/2)	10.0
TRS	(N/mm²)	> 4000
	A	02
Porosity	B	00
	C	00
WC-grain size	(µm)	0.5

Co %	12
WC incl. Doping (%)	88
Tungsten Carbide α	ø0.4µm

MG

ISO-Classification		K40-K50
Diameter	(mm)	1.2-42.2
Co	(%)	10.0
WC+cryc+vc	(%)	90.0
Density	(g/cm³)	14.5
HV_{10}	(kg/mm²)	1610
HRA	(ISO3738)	92.3
K_{IC}	(MNm-3/2)	10.5
TRS	(N/mm²)	> 4000
	A	02
Porosity	B	00
	C	00
WC-grain size	(µm)	0.6

Co %	10
WC incl. Doping (%)	90
Tungsten Carbide α	ø0.6µm

WORK MATERIAL

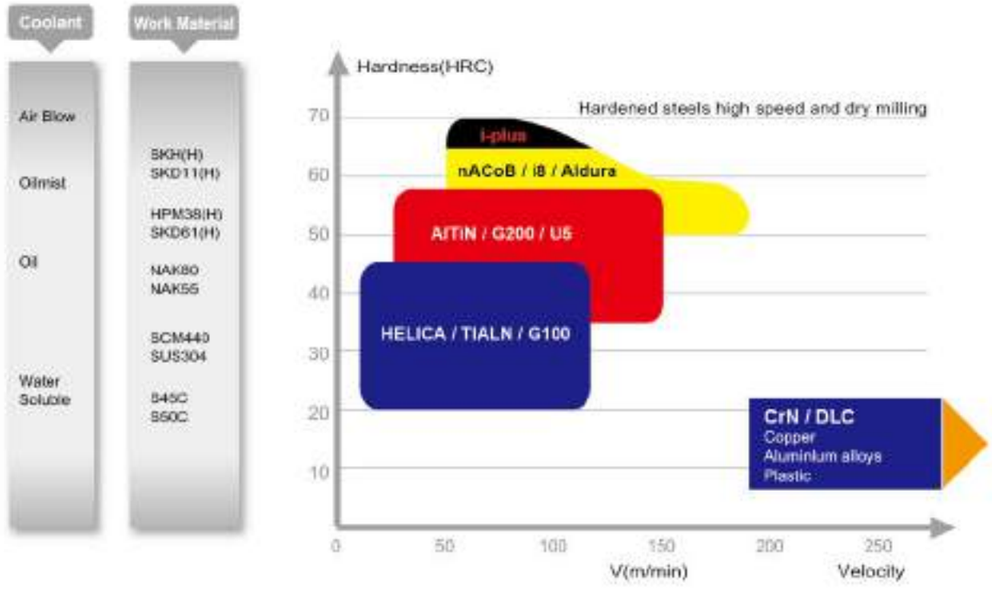
ISO	H	P	K	M	S	N
MATERIAL	Hardened steel	Low alloy steel High alloy steel, cast steel, tool steel	Cast iron	Stainless steel	High temp. alloys Titanium and Ti alloys	Aluminum alloy Copper alloys Non-metallic

HARD COATIING PROPERTIES

Coating Type	Symbol Color	Nanohard-ness(GPa)	Thickness (μm)	Friction Coefficient	Max usage Temp(°C)	Coating Temp(°C)
TIALN	BLACK	30	1 - 4	0.4	800	450 †
AlTiN	BLACK	38	1 - 4	0.6	900	450 †
nACoB	BLUE	45	1 - 4	0.45	1200	400 †
HELICA	COPPER	30	1 - 4	0.25	1000	480 †
CrN	METAL-SILVER	18	1 - 7	0.4	700	200 - 400
DLC	BLACK	20	1 - 3	0.15	400	150 - 250
G100	BURGUNDY-VIOLET	33	1 - 4	0.3	500	
G300	SOFT GOLD	35	1 - 4	0.4	800	
i8	GOLD-BRASS	47	1 - 4	0.45	900	
Aldura	BLACK	32	1 - 4	0.35	1100	
G-plus	WHITE GOLD		1 - 4	0.25	550	
i-plus	COPPER		1 - 3	0.3	1200	

COATING APPLICATIONS

Coating Type	Symbol Color	Introduce coating on different materials
TIALN	BLACK	General steel for wet cutting (HRC35-45)
AlTiN	BLACK	High Hard steel for Dry cutting (HRC45-65)
nACoB	BLUE	High Hard steel for Dry cutting (HRC55-65)
HELICA	COPPER	General steel, Cast iron, with special flute design and work on Stainless steel(EX: SEPS)
CrN	METAL-SILVER	Copper Alloy
DLC	BLACK	Aluminum Alloy
G100	BURGUNDY-VIOLET	General steel for wet cutting (HRC35-45)
G300	SOFT GOLD	Tough material, ex: Titanium Alloy, Nickel Alloy ,Stainless steel and Heat-resistant alloy
i8	GOLD-BRASS	High Hard steel for Dry and wet cutting(HRC55-65)
Aldura	BLACK	High Hard steel for Dry cutting (HRC55-65)
Diamond	BLACK GRAY	Graphite, Zirconium Oxide
G-plus	WHITE GOLD	Tough material, ex: Titanium Alloy, Nickel Alloy ,Stainless steel and Heat-resistant alloy
i-plus	COPPER	High Hard steel for Dry and wet cutting(HRC70)

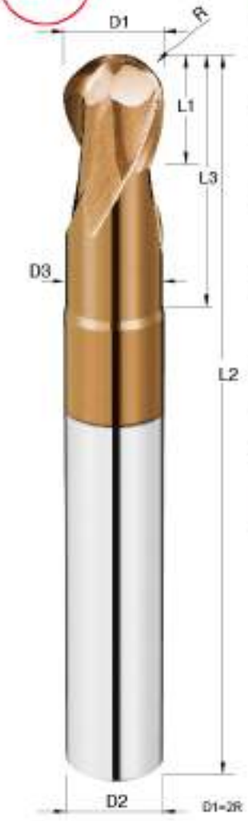


V70

Hardened Steels HRC70 series

V70B

NEW



MG

2 Flutes

30°

HRC 70

i-plus

Finishing
Semi-Finishing

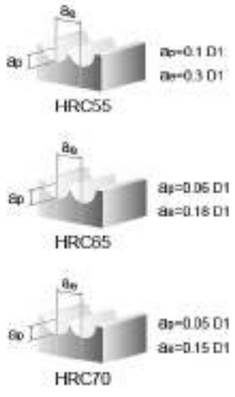
Profiling

▶ **Ball Nose / for** H P

unit: mm

Order No.	Radius R	Neck Dia D3	Flute Length L1	Effective Length L3	O.A.L. L2	Shank Dia D2
V70B **0306**	R1.5	2.90	3	8	50	6
V70B **0406**	R2	3.88	4	10	50	6
V70B **0506**	R2.5	4.80	5	13	50	6
V70B **0606**	R3	5.80	6	15	50	6
V70B **0808**	R4	7.70	8	20	60	8
V70B **1010**	R5	9.60	10	25	75	10
V70B **1212**	R6	11.50	12	30	75	12

▼ *Depth of cut*



▼ *Recommended cutting condition for V70B*

MATERIAL	Hardened Steels SKD61 , SKT4		Hardened Steels SKD11 , SKH51		Hardened Steels SKH , HAP	
HARDNESS	~HRC55		~HRC65		~HRC70	
Radius (R)	SPEED (min^{-1})	FEED mm / min	SPEED (min^{-1})	FEED mm / min	SPEED (min^{-1})	FEED mm / min
R1.5	22000	2200	18000	1800	10500	850
R2	16500	2200	13500	1800	8000	850
R2.5	13400	2200	11000	1850	6400	850
R3	11300	2300	9100	1850	5500	850
R4	8600	2350	7000	1900	4100	850
R5	7000	2350	5600	1900	3200	850
R6	5800	2300	4700	1850	2700	850

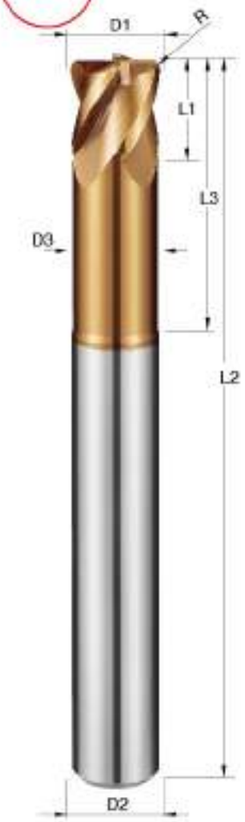
V70R

▶ Corner Radius / for H P

unit: mm

Order No.	Diameter D1	Corner R R	Neck Dia D3	Flute Length L1	Effective Length L3	O.A.L. L2	Shank Dia D2
V70R **0605**	6.0	0.5	5.80	6	18	50	6
V70R **0610**	6.0	1.0	5.80	6	18	50	6
V70R **0805**	8.0	0.5	7.70	8	24	60	8
V70R **0810**	8.0	1.0	7.70	8	24	60	8
V70R **1005**	10.0	0.5	9.60	10	30	75	10
V70R **1010**	10.0	1.0	9.60	10	30	75	10
V70R **1020**	10.0	2.0	9.60	10	30	75	10
V70R **1205**	12.0	0.5	11.50	12	36	75	12
V70R **1210**	12.0	1.0	11.50	12	36	75	12
V70R **1220**	12.0	2.0	11.50	12	36	75	12

NEW



▼ *Depth of cut*

▼ *Recommended cutting condition for V70R*

MATERIAL	Hardened Steels SKD61 , SKT4		Hardened Steels SKD11 , SKH51		Hardened Steels SKS , SKH	
HARDNESS	~HRC55		~HRC65		~HRC70	
Dia. (D1)	SPEED (min⁻¹)	FEED mm / min	SPEED (min⁻¹)	FEED mm / min	SPEED (min⁻¹)	FEED mm / min
6	5050	420	4000	260	3500	200
8	3800	400	3000	250	2700	180
10	3050	360	2400	240	2100	160
12	2520	360	2000	230	1800	150

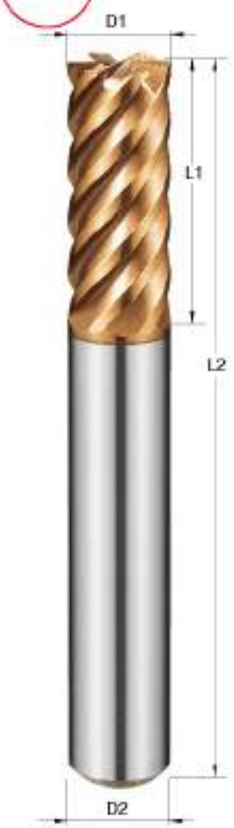
V70E

▶ Square / for H P

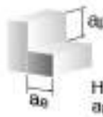
unit: mm

Order No.	Diameter D1	Flute Length L1	O.A.L. L2	Shank Dia D2
V70E **0606**	6.0	16	50	6
V70E **0808**	8.0	20	60	8
V70E **1010**	10.0	25	75	10
V70E **1212**	12.0	30	75	12
V70E **1616**	16.0	40	100	16

NEW



▼ *Depth of cut*

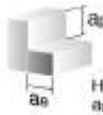


HRC55
ap≤1.5 D1

Dia	ae(mm)
6	0.3
8	0.4
10	0.5
12	0.6
16	0.8

HRC65
ap≤1.5 D1

Dia	ae(mm)
6	0.2
8	0.2
10	0.3
12	0.3
16	0.5



HRC70
ap≤1.0 D1

Dia	ae(mm)
6	0.1
8	0.1
10	0.2
12	0.2
16	0.3

▼ *Recommended cutting condition for V70E*

MATERIAL	Hardened Steels SKD61 , SKT4		Hardened Steels SKD11		Hardened Steels SKS , SKH	
HARDNESS	~HRC55		~HRC65		~HRC70	
Dia. (D1)	SPEED (min⁻¹)	FEED mm / min	SPEED (min⁻¹)	FEED mm / min	SPEED (min⁻¹)	FEED mm / min
6	13000	4600	6400	2400	4200	1450
8	10000	4600	4800	2400	3200	1450
10	7700	4600	4000	2400	2600	1450
12	6400	3800	3200	1900	2200	1200
16	4800	2900	2400	1400	1600	900