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WWW.SAMHOTOOL.COM
0755-8450 7348
AM9:00~PM17:30（Except weekends）

2024.5

SAMHO Tools Comprehensive Catalog

SAMHO TOOL

SAMHO

www.samhotool.com

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Coating Characteristics

Coating Name	HG	HT	HB	HD
Ingredient	ALTiSi+N	ALTiSi+N	ALTiCR+N	Nano Diamond
Colour	Bronze	Bronze	Dark grey	Dark grey
Characteristics	Ultra high hardness, super oxidation resistance, high density.	Ultra high hardness, super oxidation resistance, high density.	Ultra low oxidation low friction	Ultra high wear resistance
Hardness	3700 (HV)	3500 (HV)	3500 (HV)	10000 (HV)
Coefficient of Friction	0.4	0.36	0.3	<0.1
Oxidation Onset Temperature	1300	1200	1100	600
Coating Thickness	2-4um	2-4um	2-4um	6-10um

High precision SHH series

1. Shank diameter tolerance 0-0.003 mm
2. Test results for each end mill

SAMHO

SHHS-2 Flutes Square

MG | HG Coating | 30 | SD 0-0.003

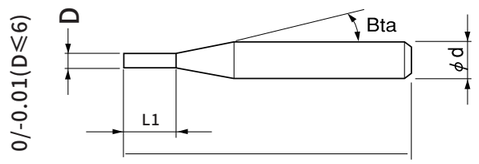
★ ○ ○

Highly recommend/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	★
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special coating + bar for high hard hardened materials;
*Very good finish on flat surfaces and side cuts;
*Long processing life in high hardness HRC48-65 degree materials.



2 Flutes

Square

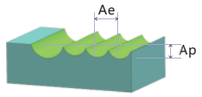
Total 8 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHS2-0010020	0.1	0.2	–	12°	50	2	4	○
SHHS2-0020040	0.2	0.4	–	12°	50	2	4	○
SHHS2-0030060	0.3	0.6	–	12°	50	2	4	○
SHHS2-0040080	0.4	0.8	–	12°	50	2	4	○
SHHS2-0050100	0.5	1	–	12°	50	2	4	○
SHHS2-0060120	0.6	1.2	–	12°	50	2	4	○
SHHS2-0070140	0.7	1.4	–	12°	50	2	4	○
SHHS2-0080160	0.8	1.6		12°	50	2	4	○

*New size added from this series.

○ Stocked items.



Cutting Parameter

Work Material	HRC48-55Hardened steels		HRC56-62Hardened steels		HRC63-70Hardened steels	
Diameter	Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
0.1	40000	120	40000	100	40000	50
0.2	30000	150	30000	120	30000	80
0.3	30000	260	30000	200	26000	100
0.4	30000	400	30000	300	26000	120
0.5	26000	500	23000	400	20000	200
0.6	26000	500	23000	500	20000	300
0.7	26000	600	23000	500	18000	300
0.8	24000	700	20000	600	18000	300

Milling Amount for Side Milling(mm)

Length of Cut / Work Material	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
Below 45HRC	a_e=0.07D a_p=2D	a_e=0.07D a_p=2D
Above 45HRC	a_e=0.03D a_p=1.5D	a_e=0.03D a_p=1.5D

D：Diameter（mm）
a_p：Axial Depth（mm）
a_e：Radial Depth（mm）

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering;
*When the material hardness is greater than HRC58 degrees, it is recommended to use air blow cooling for roughing and oil mist or air blow cooling for finishing.

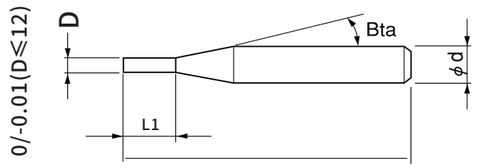
MG | HG Coating | 43-45 | SD 0-0.003

★ ◯ ◯
Highly recommend/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels（SK/SCM/SUS)	
Prehardened steels（NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	★
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special coating + bar for high hard hardened materials;
*Very good finish on flat surfaces and side cuts;
*Long life in cutting high hardness material of HRC48-65.



Total 24 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHS4-0100300	1.0	3	–	12°	50	4	4	◯
SHHS4-0150400	1.5	4	–	12°	50	4	4	◯
SHHS4-0200500	2.0	5	–	12°	50	4	4	◯
SHHS4-0250600	2.5	6	–	12°	50	4	4	◯
SHHS4-0300800-3	3.0	8	–	–	50	4	3	◯
SHHS4-0300800-4	3.0	8	–	12°	50	4	4	◯
SHHS4-0300800-6	3.0	8	–	12°	60	4	6	◯
SHHS4-0401000-4	4.0	10	–	–	50	4	4	◯
SHHS4-0401000-6	4.0	10	–	12°	60	4	6	◯
SHHS4-0401000-75	4.0	10	–	12°	75	4	4	◯
SHHS4-0501300	5.0	13	–	12°	60	4	6	◯
SHHS4-0601500	6.0	15	–	–	60	4	6	◯
SHHS4-0601500-75	6.0	15	–	–	75	4	6	◯
SHHS4-0601500-100	6.0	15	–	–	100	4	6	◯
SHHS4-0802000	8.0	20	–	–	60	4	8	◯
SHHS4-0802000-75	8.0	20	–	–	75	4	8	◯
SHHS4-0802000-100	8.0	20	–	–	100	4	8	◯
SHHS4-0802000-150	8.0	20	–	–	150	4	8	◯
SHHS4-1002500	10.0	25	–	–	75	4	10	◯
SHHS4-1002500-100	10.0	25	–	–	100	4	10	◯

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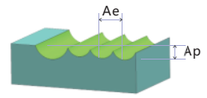
Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHS4-1002500-150	10.0	25	–	–	150	4	10	○
SHHS4-1203000	12.0	30	–	–	75	4	12	○
SHHS4-1203000-100	12.0	30	–	–	100	4	12	○
SHHS4-1203000-150	12.0	30	–	–	150	4	12	○

*New size added from this series. Stocked items.



Cutting Parameter

Work Material	HRC48-55Hardened steels		HRC56-62Hardened steels		HRC63-70Hardened steels	
Diameter	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
1.0	22000	600	20000	500	15000	400
1.5	18000	700	16000	600	12000	400
2.0	15000	900	12000	600	10000	500
2.5	13000	900	10000	600	9000	500
3.0	11000	1000	8000	700	7000	600
4.0	8500	1200	7500	800	6000	600
5.0	7500	1500	6000	1200	5000	600
6.0	6500	1800	5500	1000	4500	600
8.0	5000	2000	4000	1200	3500	700
10.0	4000	2000	3200	1500	2500	800
12.0	3500	2000	2500	1500	2200	800

Milling Amount for Side Milling(mm)

Length of Cut / Work Material	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
Below 45HRC	ae=0.07D ap=2D	ae=0.07D ap=2D
Above 45HRC	ae=0.03D ap=1.5D	ae=0.03D ap=1.5D

D：Diameter（mm）
ap：Axial Depth（mm）
ae：Radial Depth（mm）

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering;
*When the material hardness is greater than HRC58 degrees, it is recommended to use air blow cooling for roughing and oil mist or air blow cooling for finishing.

MG | HG Coating | 30 | SD 0-0.003

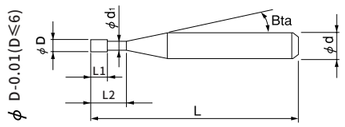
★ ◎ ○

Highly recommend/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	★
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special coating + bar for high hard hardened materials;
*The large arc at the clearance avoids cutter damage;
*Long life in cutting high hardness material of HRC48-65.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Total 23 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLS2-002005	0.2	0.3	0.5	12°	50	2	4	○
SHHLS2-002010	0.2	0.3	1	12°	50	2	4	○
SHHLS2-002015	0.2	0.3	1.5	12°	50	2	4	○
SHHLS2-003010	0.3	0.5	1	12°	50	2	4	○
SHHLS2-003015	0.3	0.5	1.5	12°	50	2	4	○
SHHLS2-003020	0.3	0.5	2	12°	50	2	4	○
SHHLS2-003030	0.3	0.5	3	12°	50	2	4	○
SHHLS2-004010	0.4	0.6	1	12°	50	2	4	○
SHHLS2-004020	0.4	0.6	2	12°	50	2	4	○
SHHLS2-004030	0.4	0.6	3	12°	50	2	4	○
SHHLS2-004040	0.4	0.6	4	12°	50	2	4	○
SHHLS2-005010	0.5	0.75	1	12°	50	2	4	○
SHHLS2-005020	0.5	0.75	2	12°	50	2	4	○
SHHLS2-005040	0.5	0.75	4	12°	50	2	4	○
SHHLS2-005060	0.5	0.75	6	12°	50	2	4	○
SHHLS2-006020	0.6	0.9	2	12°	50	2	4	○
SHHLS2-006040	0.6	0.9	4	12°	50	2	4	○
SHHLS2-006060	0.6	0.9	6	12°	50	2	4	○
SHHLS2-006080	0.6	0.9	8	12°	50	2	4	○

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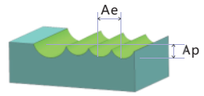
Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLS2-008020	0.8	1.2	2	12°	50	2	4	○
SHHLS2-008040	0.8	1.2	4	12°	50	2	4	○
SHHLS2-008060	0.8	1.2	6	12°	50	2	4	○
SHHLS2-008080	0.8	1.2	8	12°	50	2	4	○

*New size added from this series.

Stocked items.



Cutting Parameter

Work Material		HRC48-55 hardened steel				HRC56-62 hardened steel				HRC63-70 hardened steel			
Diameter	Effective Length(mm)	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth
0.2	0.5	30000	200	0.003	0.1	30000	160	0.003	0.08	30000	120	0.003	0.06
0.2	1	30000	150	0.003	0.1	30000	120	0.003	0.08	30000	80	0.003	0.06
0.2	1.5	30000	100	0.002	0.1	30000	80	0.002	0.08	30000	60	0.002	0.06
0.3	1	30000	300	0.003	0.15	30000	250	0.003	0.12	30000	200	0.003	0.09
0.3	1.5	30000	200	0.003	0.15	30000	160	0.003	0.12	30000	120	0.003	0.09
0.3	2	30000	150	0.003	0.15	30000	120	0.003	0.12	25000	100	0.003	0.09
0.3	3	25000	50	0.002	0.15	25000	40	0.002	0.12	25000	30	0.002	0.09
0.4	1	30000	400	0.005	0.2	30000	350	0.005	0.16	25000	300	0.005	0.12
0.4	2	30000	320	0.005	0.2	25000	280	0.005	0.16	25000	220	0.005	0.12
0.4	3	25000	360	0.004	0.2	20000	220	0.003	0.16	18000	180	0.003	0.12
0.4	4	25000	200	0.003	0.2	20000	160	0.002	0.16	18000	120	0.002	0.12
0.5	1	25000	500	0.01	0.25	23000	450	0.007	0.2	20000	400	0.005	0.15
0.5	2	25000	420	0.01	0.25	23000	380	0.007	0.2	20000	320	0.005	0.15
0.5	4	25000	280	0.005	0.25	23000	240	0.003	0.2	20000	200	0.002	0.15
0.5	6	20000	200	0.003	0.25	18000	150	0.002	0.2	16000	100	0.002	0.15
0.6	2	25000	500	0.01	0.3	23000	400	0.007	0.25	18000	350	0.005	0.18
0.6	4	25000	400	0.005	0.3	23000	300	0.003	0.25	18000	250	0.002	0.18
0.6	6	20000	300	0.002	0.3	18000	200	0.002	0.25	16000	150	0.001	0.18
0.6	8	20000	300	0.002	0.3	18000	200	0.002	0.25	16000	150	0.001	0.18
0.8	2	25000	780	0.03	0.4	23000	650	0.02	0.32	20000	550	0.012	0.24
0.8	4	25000	700	0.025	0.4	23000	600	0.015	0.32	20000	500	0.007	0.24
0.8	6	20000	550	0.02	0.4	18000	450	0.01	0.32	16000	350	0.005	0.24
0.8	8	16000	400	0.007	0.4	14000	300	0.005	0.32	12000	200	0.003	0.24

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering;
*When the material hardness is higher than HRC58, it is recommended to use air blow cooling for roughing and oil mist or air blow cooling for finishing.

MG | HG Coating | 43-45 | SD 0-0.003

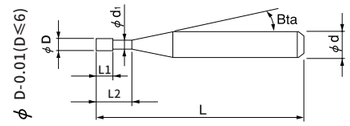
★ ◎ ○

Highly recommend/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	★
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special coating + bar for high hard hardened materials;
*The large arc at the clearance avoids cutter damage;
*Long life in cutting high hardness material of HRC48-65.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Total 26 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLS4-010040	1.0	1.5	4	12°	50	4	4	○
SHHLS4-010060	1.0	1.5	6	12°	50	4	4	○
SHHLS4-010080	1.0	1.5	8	12°	50	4	4	○
SHHLS4-010100	1.0	1.5	10	12°	50	4	4	○
SHHLS4-010160	1.0	1.5	16	12°	50	4	4	○
SHHLS4-015040	1.5	2.3	4	12°	50	4	4	○
SHHLS4-015060	1.5	2.3	6	12°	50	4	4	○
SHHLS4-015080	1.5	2.3	8	12°	50	4	4	○
SHHLS4-015100	1.5	2.3	10	12°	50	4	4	○
SHHLS4-015160	1.5	2.3	16	12°	50	4	4	○
SHHLS4-020060	2.0	3.0	6	12°	50	4	4	○
SHHLS4-020080	2.0	3.0	8	12°	50	4	4	○
SHHLS4-020100	2.0	3.0	10	12°	50	4	4	○
SHHLS4-020120	2.0	3.0	12	12°	50	4	4	○
SHHLS4-020160	2.0	3.0	16	12°	50	4	4	○
SHHLS4-020200	2.0	3.0	20	12°	50	4	4	○
SHHLS4-030080	3.0	4.5	8	12°	50	4	4	○
SHHLS4-030100	3.0	4.5	10	12°	50	4	4	○
SHHLS4-030120	3.0	4.5	12	12°	50	4	4	○
SHHLS4-030160	3.0	4.5	16	12°	50	4	4	○
SHHLS4-030200	3.0	4.5	20	12°	50	4	4	○

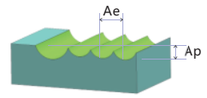
Next page

SHHLS-4Flutes Long Neck Square

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLS4-030080-6	3.0	4.5	8	12°	50	4	6	○
SHHLS4-030100-6	3.0	4.5	10	12°	50	4	6	○
SHHLS4-030120-6	3.0	4.5	12	12°	50	4	6	○
SHHLS4-030160-6	3.0	4.5	16	12°	50	4	6	○
SHHLS4-030200-6	3.0	4.5	20	12°	50	4	6	○

*New size added from this series. Stocked items.

SHHLS4-000 Milling Conditions



Cutting Parameter

Work Material		HRC48-55 hardened steel				HRC56-62 hardened steel				HRC63-70 hardened steel			
Diameter of Ball Nose	Effective Length(mm)	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth
1.0	4	23000	900	0.04	0.5	18000	800	0.03	0.4	14000	500	0.02	0.3
1.0	6	18000	700	0.02	0.5	14000	600	0.01	0.4	10000	400	0.007	0.3
1.0	8	16000	600	0.02	0.5	12000	500	0.01	0.4	8000	340	0.005	0.3
1.0	10	14000	500	0.01	0.5	10000	400	0.007	0.4	6000	250	0.005	0.3
1.0	16	12000	320	0.006	0.5	9000	250	0.004	0.4	5500	150	0.003	0.3
1.5	4	20000	900	0.05	0.75	18000	800	0.04	0.6	4000	600	0.03	0.45
1.5	6	20000	800	0.04	0.75	18000	700	0.03	0.6	14000	500	0.02	0.45
1.5	8	18000	600	0.03	0.75	14000	600	0.03	0.6	10000	380	0.01	0.45
1.5	10	16000	500	0.03	0.75	14000	500	0.02	0.6	10000	350	0.01	0.45
1.5	16	10000	360	0.01	0.75	9000	300	0.007	0.6	6800	200	0.005	0.45
2.0	6	18000	900	0.06	1	15000	750	0.05	0.8	12000	600	0.03	0.6
2.0	8	16000	800	0.05	1	12000	600	0.04	0.8	9500	500	0.02	0.6
2.0	10	14000	700	0.05	1	12000	500	0.04	0.8	9500	450	0.02	0.6
2.0	12	12000	600	0.04	1	10000	500	0.03	0.8	8200	400	0.01	0.6
2.0	16	10000	500	0.03	1	9200	400	0.02	0.8	7500	340	0.007	0.6
2.0	20	9200	380	0.02	1	8500	340	0.01	0.8	6000	260	0.005	0.6
3.0	8	14000	900	0.1	1.5	10000	800	0.07	1.2	8000	600	0.05	0.9
3.0	10	14000	900	0.1	1.5	10000	800	0.07	1.2	8000	600	0.05	0.9
3.0	12	12000	800	0.08	1.5	9200	700	0.06	1.2	7200	500	0.04	0.9
3.0	16	10000	700	0.007	1.5	8500	600	0.05	1.2	6500	400	0.03	0.9
3.0	20	9000	700	0.07	1.5	7800	600	0.04	1.2	5800	400	0.02	0.9

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering;
*When the material hardness is higher than HRC58, it is recommended to use air blow cooling for roughing and oil mist or air blow cooling for finishing.

SAMHO

MG | HG Coating | 30 | SD 0-0.003 | R ±0.005 R≤3 | R ±0.007 R4~10

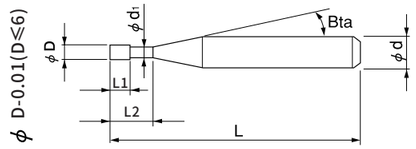
★ ◎ ○

Highly recommend/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	★
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special coating + bar for high hard hardened materials;
*Excellent surface finishing;
*Long life in cutting high hardness material of HRC48-65.



Total 31 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHR2-002003	R0.1	0.3	–	12°	50	2	4	○
SHHR2-0030045	R0.15	0.45	–	12°	50	2	4	○
SHHR2-004006	R0.2	0.6	–	12°	50	2	4	○
SHHR2-005008	R0.25	0.8	–	12°	50	2	4	○
SHHR2-006009	R0.3	0.9	–	12°	50	2	4	○
SHHR2-008012	R0.4	1.2	–	12°	50	2	4	○
SHHR2-015015	R0.75	1.5	–	12°	50	2	4	○
SHHR2-020020	R1	2	–	12°	50	2	4	○
SHHR2-020040-6	R1	2	4	12°	60	2	6	○
SHHR2-030060-3	R1.5	3	6	–	50	2	3	○
SHHR2-030060-4	R1.5	3	6	12°	50	2	4	○
SHHR2-030060-6	R1.5	3	6	12°	60	2	6	○
SHHR2-040080	R2	4	8	–	50	2	4	○
SHHR2-040080-75	R2	4	8	–	75	2	4	○
SHHR2-040080-100	R2	4	8	–	100	2	4	○
SHHR2-040080-6	R2	4	8	12°	60	2	6	○
SHHR2-050100	R2.5	5	10	12°	60	2	6	○
SHHR2-060120	R3	6	12	–	60	2	6	○
SHHR2-060120-75	R3	6	12	–	75	2	6	○
SHHR2-060120-100	R3	6	12	–	100	2	6	○

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Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHR2-080160	R4	8	16	–	60	2	8	○
SHHR2-080160-75	R4	8	16	–	75	2	8	○
SHHR2-080160-100	R4	8	16	–	100	2	8	○
SHHR2-080160-150	R4	8	16	–	150	2	8	○
SHHR2-100200	R5	10	20	–	75	2	10	○
SHHR2-100200-100	R5	10	20	–	100	2	10	○
SHHR2-100200-150	R5	10	20	–	150	2	10	○
SHHR2-120240	R6	12	24	–	75	2	12	○
SHHR2-120240-100	R6	12	24	–	100	2	12	○
SHHR2-120240-150	R6	12	24		150	2	12	○

*New size added from this series. Stocked items.

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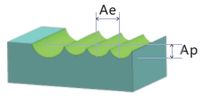
Cutting Parameter



Work Material		HRC48-55 hardened steel				HRC56-60 hardened steel				HRC63-70 hardened steel			
Radius of Ball Nose	Effective Length(mm)	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth
R0.1	0.3	40000	250	0.01	0.03	40000	250	0.01	0.03	36000	200	0.006	0.018
R0.15	0.45	40000	400	0.01	0.03	40000	350	0.01	0.03	36000	250	0.008	0.024
R0.2	0.6	40000	600	0.015	0.045	40000	550	0.015	0.045	36000	350	0.01	0.027
R0.25	0.8	40000	900	0.02	0.065	40000	800	0.015	0.05	30000	400	0.015	0.03
R0.3	0.9	40000	1400	0.045	0.15	36000	1200	0.025	0.13	25000	600	0.02	0.1
R0.4	1.2	35000	1600	0.06	0.21	30000	1600	0.04	0.17	20000	700	0.02	0.12
R0.5	1	30000	1800	0.1	0.3	24000	2000	0.1	0.3	16000	900	0.05	0.2
R0.75	1.5	30000	2200	0.2	0.5	18000	2000	0.12	0.4	11000	900	0.06	0.25
R1	4	28000	2600	0.3	0.7	14000	2000	0.15	0.5	11000	1000	0.08	0.35
R1.5	6	21000	3000	0.4	1	12000	2200	0.2	0.7	8500	1100	0.12	0.55
R2	8	18000	3200	0.5	1.3	9000	2200	0.25	0.95	7000	1200	0.15	0.55
R2.5	10	15000	3500	0.6	1.5	8000	2500	0.25	1.05	6500	1200	0.15	0.55
R3	12	13000	3500	0.7	1.8	6500	2500	0.3	1.3	5000	1500	0.2	1
R4	16	9500	3000	0.8	2.1	5500	2200	0.4	1.7	4000	1000	0.25	1.35
R5	20	7500	2500	0.9	2.5	4500	2000	0.5	2.1	3000	800	0.3	1.7
R6	24	6500	2000	0.9	3	4500	1700	0.6	2.6	2400	800	0.35	2

Milling Amount for Side Milling(mm)

Length of Cut / Work Material	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
Below 45HRC	ae=0.07D ap=2D	ae=0.07D ap=2D
Above 45HRC	ae=0.03D ap=1.5D	ae=0.03D ap=1.5D

D：Diameter（mm）
ap：Axial Depth（mm）
ae：Radial Depth（mm）

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering;
*When the material hardness is greater than HRC58 degrees, it is recommended to use air blow cooling for roughing and oil mist or air blow cooling for finishing.

SAMHO

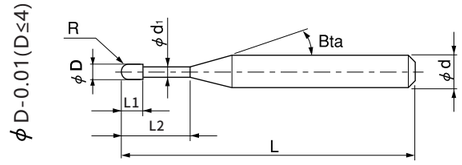
MG | HG Coating | 30 | SD 0-0.003 | R ±0.005

★ ◎ ○
Highly recommend/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	★
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special coating + bar for high hard hardened materials;
*Excellent surface finishing;
*The large arc at the clearance avoids cutter damage;
*The large arc transition in the avoidance position of the deep groove tool is not easy to break the tool.



Total 77 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLR2-002005	R0.1	0.2	0.5	12°	50	2	4	○
SHHLR2-002010	R0.1	0.2	1	12°	50	2	4	○
SHHLR2-002015	R0.1	0.2	1.5	12°	50	2	4	○
SHHLR2-003010	R0.15	0.3	1	12°	50	2	4	○
SHHLR2-003015	R0.15	0.3	1.5	12°	50	2	4	○
SHHLR2-003020	R0.15	0.3	2	12°	50	2	4	○
SHHLR2-003030	R0.15	0.3	3	12°	50	2	4	○
SHHLR2-004010	R0.2	0.4	1	12°	50	2	4	○
SHHLR2-004020	R0.2	0.4	2	12°	50	2	4	○
SHHLR2-004030	R0.2	0.4	3	12°	50	2	4	○
SHHLR2-004040	R0.2	0.4	4	12°	50	2	4	○
SHHLR2-005010	R0.25	0.5	1	12°	50	2	4	○
SHHLR2-005020	R0.25	0.5	2	12°	50	2	4	○
SHHLR2-005040	R0.25	0.5	4	12°	50	2	4	○
SHHLR2-005060	R0.25	0.5	6	12°	50	2	4	○
SHHLR2-005080	R0.25	0.5	8	12°	50	2	4	○
SHHLR2-006020	R0.3	0.6	2	12°	50	2	4	○
SHHLR2-006040	R0.3	0.6	4	12°	50	2	4	○
SHHLR2-006060	R0.3	0.6	6	12°	50	2	4	○
SHHLR2-006080	R0.3	0.6	8	12°	50	2	4	○

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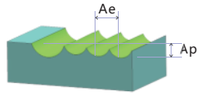
Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLR2-008020	R0.4	0.8	2	12°	50	2	4	○
SHHLR2-008040	R0.4	0.8	4	12°	50	2	4	○
SHHLR2-008060	R0.4	0.8	6	12°	50	2	4	○
SHHLR2-008080	R0.4	0.8	8	12°	50	2	4	○
SHHLR2-009020	R0.45	0.9	2	12°	50	2	4	○
SHHLR2-009040	R0.45	0.9	4	12°	50	2	4	○
SHHLR2-009060	R0.45	0.9	6	12°	50	2	4	○
SHHLR2-009080	R0.45	0.9	8	12°	50	2	4	○
SHHLR2-010020	R0.5	1	2	12°	50	2	4	○
SHHLR2-010040	R0.5	1	4	12°	50	2	4	○
SHHLR2-010060	R0.5	1	6	12°	50	2	4	○
SHHLR2-010080	R0.5	1	8	12°	50	2	4	○
SHHLR2-010100	R0.5	1	10	12°	50	2	4	○
SHHLR2-010120	R0.5	1	12	12°	50	2	4	○
SHHLR2-010140	R0.5	1	14	12°	50	2	4	○
SHHLR2-010160	R0.5	1	16	12°	50	2	4	○
SHHLR2-015040	R0.75	1.5	4	12°	50	2	4	○
SHHLR2-015060	R0.75	1.5	6	12°	50	2	4	○
SHHLR2-015080	R0.75	1.5	8	12°	50	2	4	○
SHHLR2-015100	R0.75	1.5	10	12°	50	2	4	○
SHHLR2-015120	R0.75	1.5	12	12°	50	2	4	○
SHHLR2-015140	R0.75	1.5	14	12°	50	2	4	○
SHHLR2-015160	R0.75	1.5	16	12°	50	2	4	○
SHHLR2-020040	R1	2	4	12°	50	2	4	○
SHHLR2-020060	R1	2	6	12°	50	2	4	○
SHHLR2-020080	R1	2	8	12°	50	2	4	○
SHHLR2-020100	R1	2	10	12°	50	2	4	○
SHHLR2-020120	R1	2	12	12°	50	2	4	○
SHHLR2-020160	R1	2	16	12°	50	2	4	○
SHHLR2-020040-6	R1	2	4	12°	60	2	6	○
SHHLR2-020060-6	R1	2	6	12°	60	2	6	○
SHHLR2-020080-6	R1	2	8	12°	60	2	6	○
SHHLR2-020100-6	R1	2	10	12°	60	2	6	○
SHHLR2-020120-6	R1	2	12	12°	60	2	6	○
SHHLR2-020160-6	R1	2	16	12°	60	2	6	○
								○

Next page ➞

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLR2-030060	R1.5	3	6	12°	50	2	4	○
SHHLR2-030080	R1.5	3	8	12°	50	2	4	○
SHHLR2-030100	R1.5	3	10	12°	50	2	4	○
SHHLR2-030120	R1.5	3	12	12°	50	2	4	○
SHHLR2-030160	R1.5	3	16	12°	50	2	4	○
SHHLR2-030200	R1.5	3	20	12°	50	2	4	○
SHHLR2-030060-6	R1.5	3	6	12°	60	2	6	○
SHHLR2-030080-6	R1.5	3	8	12°	60	2	6	○
SHHLR2-030100-6	R1.5	3	10	12°	60	2	6	○
SHHLR2-030120-6	R1.5	3	12	12°	60	2	6	○
SHHLR2-030160-6	R1.5	3	16	12°	60	2	6	○
SHHLR2-030200-6	R1.5	3	20	12°	60	2	6	○
SHHLR2-040080	R2	4	8	–	50	2	4	○
SHHLR2-040100	R2	4	10	–	50	2	4	○
SHHLR2-040120	R2	4	12	–	50	2	4	○
SHHLR2-040160	R2	4	16	–	50	2	4	○
SHHLR2-040200	R2	4	20	–	50	2	4	○
SHHLR2-040080-6	R2	4	8	12°	60	2	6	○
SHHLR2-040100-6	R2	4	10	12°	60	2	6	○
SHHLR2-040120-6	R2	4	12	12°	60	2	6	○
SHHLR2-040160-6	R2	4	16	12°	60	2	6	○
SHHLR2-040200-6	R2	4	20	12°	60	2	6	○

*New size added from this series.

Stocked items.



Work Material		HRC48-55 hardened steel				HRC56-62 hardened steel				HRC63-70 hardened steel			
Radius	Effective Length(mm)	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth
R0.1	0.5	40000	300	0.01	0.01	40000	280	0.005	0.005	40000	200	0.003	0.003
R0.1	1	40000	250	0.003	0.005	40000	160	0.003	0.005	40000	120	0.003	0.003
R0.1	1.5	40000	150	0.003	0.005	40000	120	0.003	0.003	40000	80	0.002	0.002
R0.15	1	40000	350	0.01	0.015	40000	280	0.005	0.01	40000	200	0.003	0.007
R0.15	1.5	40000	250	0.003	0.005	40000	160	0.003	0.005	40000	120	0.003	0.005
R0.15	2	40000	150	0.003	0.005	40000	120	0.003	0.003	40000	80	0.002	0.002
R0.15	3	40000	100	0.002	0.003	40000	100	0.002	0.003	40000	80	0.002	0.002
R0.2	1	40000	600	0.02	0.05	40000	500	0.02	0.03	40000	400	0.01	0.02
R0.2	2	40000	500	0.02	0.03	40000	500	0.01	0.02	40000	300	0.005	0.01
R0.2	2	35000	300	0.008	0.02	33000	300	0.008	0.015	30000	200	0.005	0.007
R0.2	4	35000	250	0.005	0.01	30000	200	0.005	0.01	25000	150	0.003	0.005
R0.25	1	40000	800	0.02	0.05	36000	700	0.02	0.03	30000	400	0.01	0.02
R0.25	2	40000	800	0.02	0.05	36000	700	0.02	0.03	30000	400	0.01	0.02
R0.25	4	32000	400	0.01	0.02	30000	400	0.01	0.02	24000	200	0.005	0.01
R0.25	6	25000	350	0.005	0.01	24000	250	0.005	0.01	20000	160	0.003	0.005
R0.25	8	25000	150	0.002	0.003	24000	100	0.002	0.002	20000	80	0.001	0.002
R0.3	2	40000	1200	0.03	0.08	36000	1000	0.02	0.08	25000	600	0.02	0.08
R0.3	4	40000	800	0.02	0.05	32000	800	0.02	0.05	25000	400	0.01	0.03
R0.3	6	30000	500	0.01	0.02	26000	400	0.01	0.02	20000	300	0.005	0.01
R0.3	8	25000	300	0.005	0.005	20000	300	0.005	0.005	16000	200	0.003	0.003
R0.4	2	35000	1400	0.04	0.1	30000	1400	0.03	0.08	20000	700	0.02	0.08
R0.4	4	35000	1400	0.04	0.1	30000	1400	0.03	0.08	20000	700	0.02	0.08
R0.4	6	28000	1000	0.02	0.05	25000	800	0.02	0.03	18000	500	0.01	0.02
R0.4	8	22000	700	0.01	0.03	20000	600	0.01	0.02	14000	300	0.005	0.01
R0.45	2	35000	1400	0.04	0.1	30000	1400	0.03	0.08	20000	700	0.02	0.08
R0.45	4	35000	1400	0.04	0.1	30000	1400	0.03	0.08	20000	700	0.02	0.08
R0.45	6	28000	1000	0.02	0.05	25000	800	0.02	0.03	18000	500	0.01	0.02
R0.45	8	22000	700	0.01	0.03	20000	600	0.01	0.02	14000	300	0.005	0.01
R0.5	2	30000	1600	0.08	0.3	24000	1600	0.08	0.3	18000	1000	0.05	0.15
R0.5	4	30000	1600	0.08	0.2	24000	1600	0.06	0.2	18000	800	0.03	0.13
R0.5	6	30000	1200	0.05	0.1	22000	1000	0.03	0.1	18000	600	0.02	0.05
R0.5	8	24000	800	0.02	0.08	18000	500	0.01	0.08	15000	400	0.01	0.03
R0.5	10	22000	600	0.015	0.05	16000	400	0.01	0.05	15000	300	0.01	0.02
R0.5	12	20000	600	0.01	0.03	16000	400	0.01	0.03	15000	300	0.005	0.01
R0.5	14	20000	400	0.005	0.01	16000	300	0.005	0.01	15000	200	0.003	0.005
R0.5	16	18000	300	0.005	0.005	16000	200	0.005	0.005	14000	150	0.002	0.002

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Work Material		HRC48-55 hardened steel				HRC56-62 hardened steel				HRC63-70 hardened steel			
Radius	Effective Length	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth
R0.75	4	30000	2000	0.1	0.3	24000	2000	0.1	0.2	18000	1200	0.06	0.15
R0.75	6	30000	2000	0.1	0.2	24000	2000	0.1	0.2	18000	1200	0.05	0.1
R0.75	8	24000	1400	0.1	0.15	20000	1000	0.05	0.08	16000	800	0.03	0.05
R0.75	10	24000	1400	0.1	0.1	20000	1000	0.05	0.05	16000	600	0.03	0.03
R0.75	12	20000	600	0.05	0.05	16000	400	0.03	0.05	15000	400	0.02	0.03
R0.75	14	20000	600	0.03	0.03	16000	400	0.02	0.02	15000	400	0.01	0.01
R0.75	16	20000	300	0.01	0.01	16000	200	0.005	0.005	14000	300	0.002	0.002
R1	4	24000	2600	0.15	0.4	22000	2400	0.15	0.3	18000	1400	0.1	0.2
R1	6	24000	2600	0.15	0.4	22000	2400	0.15	0.3	18000	1400	0.1	0.2
R1	8	20000	2400	0.1	0.3	18000	2400	0.1	0.2	16000	1400	0.07	0.15
R1	10	18000	1800	0.07	0.2	16000	1600	0.05	0.2	14000	1000	0.05	0.1
R1	12	16000	1600	0.05	0.15	14000	1400	0.05	0.1	12000	800	0.03	0.05
R1	16	16000	1600	0.05	0.1	14000	1400	0.05	0.05	12000	800	0.03	0.03
R1.5	6	20000	3000	0.2	0.5	18000	2600	0.2	0.4	14000	2000	0.15	0.3
R1.5	8	20000	3000	0.2	0.5	18000	2600	0.2	0.4	14000	2000	0.1	0.3
R1.5	10	20000	3000	0.2	0.5	18000	2600	0.15	0.3	14000	2000	0.07	0.2
R1.5	12	20000	3000	0.2	0.5	18000	2600	0.15	0.3	14000	1800	0.07	0.2
R1.5	16	18000	2400	0.1	0.4	16000	2000	0.1	0.3	12000	1600	0.05	0.1
R1.5	20	18000	2400	0.07	0.25	16000	2000	0.05	0.15	12000	1600	0.03	0.05
R2	8	16000	3000	0.2	1	14000	3000	0.2	0.8	12000	2600	0.2	0.6
R2	10	16000	3000	0.2	1	14000	3000	0.2	0.8	12000	2600	0.2	0.6
R2	12	16000	3000	0.2	1	14000	3000	0.2	0.8	12000	2600	0.2	0.6
R2	16	14000	2600	0.1	0.6	12000	2000	0.1	0.4	10000	2000	0.1	0.2
R2	20	14000	2600	0.07	0.4	12000	1200	0.05	0.3	10000	1600	0.03	0.1

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering;
*When the material hardness is higher than HRC58, it is recommended to use air blow cooling for roughing and oil mist or air blow cooling for finishing.

★ ◎ ○

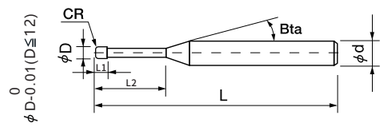
Highly recommend/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	★
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

MG | HG Coating | 30 | SD 0-0.003 | R ±0.005 D≤6 | R ±0.007 D8~12

Specialty

*Special coating + bar for high hard hardened materials;
*Excellent surface finishing for surface and contour milling;
*Long life in cutting high hardness material of HRC48-65.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

4 Flutes

Total 72 models

Unit (mm)

Model Number	D Outside Diameter	Radius	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHSR4-010005030	1	R0.05	1	3	12°	50	4	4	○
SHHSR4-01001030	1	R0.1	1	3	12°	50	4	4	○
SHHSR4-01002030	1	R0.2	1	3	12°	50	4	4	○
SHHSR4-01501045	1.5	R0.1	1.5	4.5	12°	50	4	4	○
SHHSR4-01502045	1.5	R0.2	1.5	4.5	12°	50	4	4	○
SHHSR4-02001060	2	R0.1	2	6	12°	50	4	4	○
SHHSR4-02002060	2	R0.2	2	6	12°	50	4	4	○
SHHSR4-02003060	2	R0.3	2	6	12°	50	4	4	○
SHHSR4-02005060	2	R0.5	2	6	12°	50	4	4	○
SHHSR4-03001090	3	R0.1	3	9	12°	50	4	4	○
SHHSR4-03002090-3	3	R0.2	3	9	12°	50	4	4	○
SHHSR4-03002090	3	R0.2	3	9	12°	50	4	4	○
SHHSR4-03003090	3	R0.3	3	9	12°	50	4	4	○
SHHSR4-03005090-3	3	R0.5	3	9	12°	50	4	4	○
SHHSR4-03005090	3	R0.5	3	9	12°	50	4	4	○
SHHSR4-04001120	4	R0.1	4	12	_	50	4	4	○
SHHSR4-04002120	4	R0.2	4	12	_	50	4	4	○
SHHSR4-04003120	4	R0.3	4	12	_	50	4	4	○
SHHSR4-04005120	4	R0.5	4	12	_	50	4	4	○
SHHSR4-04005120-75	4	R0.5	4	12	_	75	4	4	○

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Radius

Model Number	D Outside Diameter	Radius	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHSR4-04005120-100	4	R0.5	4	12	–	100	4	4	○
SHHSR4-04010120	4	R1	4	12	–	50	4	4	○
SHHSR4-04002120-6	4	R0.2	4	12	12°	60	4	6	○
SHHSR4-04005120-6	4	R0.5	4	12	12°	60	4	6	○
SHHSR4-05002150	5	R0.2	5	15	12°	60	4	6	○
SHHSR4-05005150	5	R0.5	5	15	12°	60	4	6	○
SHHSR4-06002200	6	R0.2	6	20	_	60	4	6	○
SHHSR4-06003200	6	R0.3	6	20	_	60	4	6	○
SHHSR4-06005200	6	R0.5	6	20	_	60	4	6	○
SHHSR4-06010200	6	R1	6	20	_	60	4	6	○
SHHSR4-06002200-75	6	R0.2	6	20	–	75	4	6	○
SHHSR4-06003200-75	6	R0.3	6	20	–	75	4	6	○
SHHSR4-06005200-75	6	R0.5	6	20	–	75	4	6	○
SHHSR4-06010200-75	6	R1	6	20	–	75	4	6	○
SHHSR4-06002200-100	6	R0.2	6	20	–	100	4	6	○
SHHSR4-06003200-100	6	R0.3	6	20	–	100	4	6	○
SHHSR4-06005200-100	6	R0.5	6	20	–	100	4	6	○
SHHSR4-06010200-100	6	R1	6	20	–	100	4	6	○
SHHSR4-08002240	8	R0.2	8	24	–	60	4	8	○
SHHSR4-08003240	8	R0.3	8	24	–	60	4	8	○
SHHSR4-08005240	8	R0.5	8	24	–	60	4	8	○
SHHSR4-08010240	8	R1	8	24	–	60	4	8	○
SHHSR4-08002240-75	8	R0.2	8	24	–	75	4	8	○
SHHSR4-08003240-75	8	R0.3	8	24	–	75	4	8	○
SHHSR4-08005240-75	8	R0.5	8	24	–	75	4	8	○
SHHSR4-08010240-75	8	R1	8	24	–	75	4	8	○
SHHSR4-08002240-100	8	R0.2	8	24	–	100	4	8	○
SHHSR4-08003240-100	8	R0.3	8	24	–	100	4	8	○
SHHSR4-08005240-100	8	R0.5	8	24	–	100	4	8	○
SHHSR4-08010240-100	8	R1	8	24	–	100	4	8	○
SHHSR4-08002240-150	8	R0.2	8	24	–	150	4	8	○
SHHSR4-08003240-150	8	R0.3	8	24	–	150	4	8	○
SHHSR4-08005240-150	8	R0.5	8	24	–	150	4	8	○
SHHSR4-08010240-150	8	R1	8	24	–	150	4	8	○

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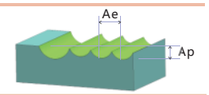
SHHSR- 4 Flutes Radius

Model Number	D Outside Diameter	Radius	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHSR4-10002300	10	R0.2	10	30	–	75	4	10	○
SHHSR4-10005300	10	R0.5	10	30	–	75	4	10	○
SHHSR4-10010300	10	R1	10	30	–	75	4	10	○
SHHSR4-10002300-100	10	R0.2	10	30	–	100	4	10	○
SHHSR4-10005300-100	10	R0.5	10	30	–	100	4	10	○
SHHSR4-10010300-100	10	R1	10	30	–	100	4	10	○
SHHSR4-10002300-150	10	R0.2	10	30	–	150	4	10	○
SHHSR4-10005300-150	10	R0.5	10	30	–	150	4	10	○
SHHSR4-10010300-150	10	R1	10	30	–	150	4	10	○
SHHSR4-12002360	12	R0.2	12	36	–	75	4	12	○
SHHSR4-12005360	12	R0.5	12	36	–	75	4	12	○
SHHSR4-12010360	12	R1	12	36	–	75	4	12	○
SHHSR4-12002360-100	12	R0.2	12	36	–	100	4	12	○
SHHSR4-12005360-100	12	R0.5	12	36	–	100	4	12	○
SHHSR4-12010360-100	12	R1	12	36	–	100	4	12	○
SHHSR4-12002360-150	12	R0.2	12	36	–	150	4	12	○
SHHSR4-12005360-150	12	R0.5	12	36	–	150	4	12	○
SHHSR4-12010360-150	12	R1	12	36	–	150	4	12	○

*New size added from this series. Stocked items.

SHHSR4-000 Milling Conditions



Work Material		HRC48-55 hardened steel				HRC56-62 hardened steel				HRC63-70 hardened steel			
Diameter	Radius (CR)	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth
1	R0.05	21000	1800	0.04	0.3	18000	1500	0.03	0.25	14000	1100	0.02	0.2
1	R0.1	21000	1800	0.04	0.3	18000	1500	0.03	0.25	14000	1100	0.02	0.2
1	R0.2	21000	1800	0.04	0.3	18000	1500	0.03	0.25	14000	1100	0.02	0.2
1.5	R0.1	19000	1800	0.045	0.5	16000	1500	0.03	0.4	13000	1100	0.02	0.3
1.5	R0.2	19000	1800	0.045	0.5	16000	1500	0.03	0.4	13000	1100	0.02	0.3
2	R0.1	18000	2100	0.06	0.6	15000	1800	0.05	0.5	12000	1300	0.03	0.35
2	R0.2	18000	2100	0.06	0.6	15000	1800	0.05	0.5	12000	1300	0.03	0.35
2	R0.3	18000	2100	0.06	0.6	15000	1800	0.05	0.5	12000	1300	0.03	0.35
2	R0.5	18000	2100	0.06	0.6	15000	1800	0.05	0.5	12000	1300	0.03	0.35
3	R0.1	11000	1700	0.09	0.8	9500	1400	0.06	0.7	7500	1000	0.04	0.6
3	R0.2	11000	1700	0.09	0.8	9500	1400	0.06	0.7	7500	1000	0.04	0.6
3	R0.3	11000	1700	0.09	0.8	9500	1400	0.06	0.7	7500	1000	0.04	0.6
3	R0.5	11000	1700	0.09	0.8	9500	1400	0.06	0.7	7500	1000	0.04	0.6
4	R0.1	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
4	R0.2	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
4	R0.3	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
4	R0.5	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
4	R1	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
5	R0.2	8000	2600	0.18	1.5	6000	2200	0.12	1.3	5000	1500	0.08	1
5	R0.5	8000	2600	0.18	1.5	6000	2200	0.12	1.3	5000	1500	0.08	1
6	R0.2	8000	2600	0.18	1.8	6000	2200	0.12	1.5	5000	1500	0.08	1.2
6	R0.3	8000	2600	0.18	1.8	6000	2200	0.12	1.5	5000	1500	0.08	1.2
6	R0.5	8000	2600	0.18	1.8	6000	2200	0.12	1.5	5000	1500	0.08	1.2
6	R1	8000	2600	0.18	1.8	6000	2200	0.12	1.5	5000	1500	0.08	1.2
8	R0.2	6000	2600	0.2	2.4	5000	2200	0.16	1.8	4000	1500	0.1	1.5
8	R0.3	6000	2600	0.2	2.4	5000	2200	0.16	1.8	4000	1500	0.1	1.5
8	R0.5	6000	2600	0.2	2.4	5000	2200	0.16	1.8	4000	1500	0.1	1.5
8	R1	6000	2600	0.2	2.4	5000	2200	0.16	1.8	4000	1500	0.1	1.5
10	R0.2	5000	2600	0.2	3	4000	2200	0.15	2.4	3000	1500	0.1	1.8
10	R0.3	5000	2600	0.2	3	4000	2200	0.15	2.4	3000	1500	0.1	1.8
10	R0.5	5000	2600	0.2	3	4000	2200	0.15	2.4	3000	1500	0.1	1.8
10	R1	5000	2600	0.2	3	4000	2200	0.15	2.4	3000	1500	0.1	1.8
12	R0.2	4000	3000	0.2	3.5	3000	2600	0.1	2.6	2000	1500	0.1	2
12	R0.3	4000	3000	0.2	3.5	3000	2600	0.1	2.6	2000	1500	0.1	2
12	R0.5	4000	3000	0.2	3.5	3000	2600	0.1	2.6	2000	1500	0.1	2
12	R1	4000	3000	0.2	3.5	3000	2600	0.1	2.6	2000	1500	0.1	2

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*When the material hardness is higher than HRC58, it is recommended to use air blow cooling for roughing and oil mist or air blow cooling for finishing.

MG | HG Coating | 30 | SD 0-0.003 | R ±0.005

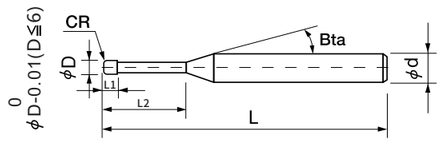
★ ◎ ○

Highly recommend/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	★
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special coating + bar for high hard hardened materials;
*Excellent surface finishing when processing flat surfaces and contours;
*The large arc at the clearance avoids cutter damage;
*Long life in cutting high hardness material of HRC48-65.



Total 41 models

Unit (mm)

Model Number	D Outside Diameter	Radius	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLSR2-002005005	D0.2	R0.05	0.2	0.5	12°	50	2	4	○
SHHLSR2-002005010	D0.2	R0.05	0.2	1	12°	50	2	4	○
SHHLSR2-002005015	D0.2	R0.05	0.2	1.5	12°	50	2	4	○
SHHLSR2-002005020	D0.2	R0.05	0.2	2	12°	50	2	4	○
SHHLSR2-003005005	D0.3	R0.05	0.3	0.5	12°	50	2	4	○
SHHLSR2-003005010	D0.3	R0.05	0.3	1	12°	50	2	4	○
SHHLSR2-003005015	D0.3	R0.05	0.3	1.5	12°	50	2	4	○
SHHLSR2-003005020	D0.3	R0.05	0.3	2	12°	50	2	4	○
SHHLSR2-003005030	D0.3	R0.05	0.3	3	12°	50	2	4	○
SHHLSR2-004005010	D0.4	R0.05	0.4	1	12°	50	2	4	○
SHHLSR2-004005020	D0.4	R0.05	0.4	2	12°	50	2	4	○
SHHLSR2-004005030	D0.4	R0.05	0.4	3	12°	50	2	4	○
SHHLSR2-004005040	D0.4	R0.05	0.4	4	12°	50	2	4	○
SHHLSR2-00401010	D0.4	R0.1	0.4	1	12°	50	2	4	○
SHHLSR2-00401020	D0.4	R0.1	0.4	2	12°	50	2	4	○
SHHLSR2-00401030	D0.4	R0.1	0.4	3	12°	50	2	4	○
SHHLSR2-00401040	D0.4	R0.1	0.4	4	12°	50	2	4	○
SHHLSR2-005005010	D0.5	R0.05	0.5	1	12°	50	2	4	○
SHHLSR2-005005020	D0.5	R0.05	0.5	2	12°	50	2	4	○
SHHLSR2-005005040	D0.5	R0.05	0.5	4	12°	50	2	4	○

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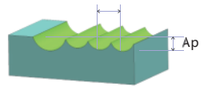
Model Number	D Outside Diameter	Radius	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLSR2-005005060	D0.5	R0.05	0.5	6	12°	50	2	4	○
SHHLSR2-00501010	D0.5	R0.1	0.5	1	12°	50	2	4	○
SHHLSR2-00501020	D0.5	R0.1	0.5	2	12°	50	2	4	○
SHHLSR2-00501040	D0.5	R0.1	0.5	4	12°	50	2	4	○
SHHLSR2-00501060	D0.5	R0.1	0.5	6	12°	50	2	4	○
SHHLSR2-006005020	D0.6	R0.05	0.6	2	12°	50	2	4	○
SHHLSR2-006005040	D0.6	R0.05	0.6	4	12°	50	2	4	○
SHHLSR2-006005060	D0.6	R0.05	0.6	6	12°	50	2	4	○
SHHLSR2-006005080	D0.6	R0.05	0.6	8	12°	50	2	4	○
SHHLSR2-00601020	D0.6	R0.1	0.6	2	12°	50	2	4	○
SHHLSR2-00601040	D0.6	R0.1	0.6	4	12°	50	2	4	○
SHHLSR2-00601060	D0.6	R0.1	0.6	6	12°	50	2	4	○
SHHLSR2-00601080	D0.6	R0.1	0.6	8	12°	50	2	4	○
SHHLSR2-008005020	D0.8	R0.05	0.8	2	12°	50	2	4	○
SHHLSR2-008005040	D0.8	R0.05	0.8	4	12°	50	2	4	○
SHHLSR2-008005060	D0.8	R0.05	0.8	6	12°	50	2	4	○
SHHLSR2-008005080	D0.8	R0.05	0.8	8	12°	50	2	4	○
SHHLSR2-00801020	D0.8	R0.1	0.8	2	12°	50	2	4	○
SHHLSR2-00801040	D0.8	R0.1	0.8	4	12°	50	2	4	○
SHHLSR2-00801060	D0.8	R0.1	0.8	6	12°	50	2	4	○
SHHLSR2-00801080	D0.8	R0.1	0.8	8	12°	50	2	4	○

*New size added from this series. Stocked items.

Cutting Parameter



Work Material			HRC48-55 hardened steel				HRC56-62 hardened steel				HRC63-70 hardened steel			
Diameter	Radius of Ball Nose	Effective Length (mm)	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth
D0.2	R0.05	0.5	30000	400	0.003	0.04	30000	320	0.003	0.02	30000	240	0.003	0.01
D0.2	R0.05	1	30000	300	0.003	0.04	30000	240	0.002	0.02	30000	160	0.002	0.01
D0.2	R0.05	1.5	30000	200	0.002	0.04	30000	160	0.002	0.02	30000	120	0.001	0.01
D0.2	R0.05	2	30000	100	0.002	0.04	30000	80	0.001	0.02	30000	60	0.001	0.01
D0.3	R0.05	0.5	30000	680	0.003	0.08	30000	560	0.003	0.04	30000	450	0.003	0.03
D0.3	R0.05	1	30000	600	0.003	0.08	30000	500	0.003	0.04	30000	400	0.003	0.03
D0.3	R0.05	1.5	30000	400	0.003	0.08	30000	320	0.003	0.04	30000	240	0.003	0.03
D0.3	R0.05	2	30000	300	0.003	0.08	30000	240	0.003	0.04	25000	200	0.003	0.03
D0.3	R0.05	3	25000	100	0.002	0.08	25000	80	0.002	0.04	20000	60	0.002	0.03
D0.4	R0.05	1	30000	800	0.005	0.1	28000	700	0.005	0.05	25000	600	0.005	0.04
D0.4	R0.05	2	30000	600	0.005	0.1	25000	500	0.005	0.05	25000	440	0.005	0.04
D0.4	R0.05	3	25000	500	0.004	0.1	23000	440	0.003	0.05	18000	320	0.003	0.04
D0.4	R0.05	4	25000	400	0.003	0.1	20000	320	0.002	0.05	18000	240	0.002	0.04
D0.4	R0.1	1	30000	800	0.005	0.1	28000	700	0.005	0.05	25000	600	0.005	0.04
D0.4	R0.1	2	30000	600	0.005	0.1	25000	500	0.005	0.05	25000	400	0.005	0.04
D0.4	R0.1	3	25000	500	0.004	0.1	23000	400	0.003	0.05	18000	320	0.003	0.04
D0.4	R0.1	4	25000	400	0.003	0.1	20000	320	0.002	0.05	18000	240	0.002	0.04
D0.5	R0.05	1	25000	1000	0.01	0.15	23000	900	0.007	0.1	20000	800	0.005	0.08
D0.5	R0.05	2	25000	840	0.01	0.15	23000	720	0.007	0.1	20000	600	0.005	0.08
D0.5	R0.05	4	25000	600	0.005	0.15	23000	480	0.003	0.1	20000	360	0.002	0.08
D0.5	R0.05	6	20000	320	0.003	0.15	18000	200	0.002	0.1	16000	140	0.001	0.08
D0.5	R0.1	1	25000	1000	0.01	0.15	23000	900	0.007	0.1	20000	800	0.005	0.08
D0.5	R0.1	2	25000	840	0.01	0.15	23000	720	0.007	0.1	20000	600	0.005	0.08
D0.5	R0.1	4	25000	600	0.005	0.15	23000	480	0.003	0.1	20000	360	0.002	0.08
D0.5	R0.1	6	20000	320	0.003	0.15	18000	200	0.002	0.1	16000	140	0.001	0.08
D0.6	R0.05	2	25000	1000	0.02	0.2	23000	800	0.01	0.15	20000	640	0.007	0.1
D0.6	R0.05	4	23000	800	0.015	0.2	20000	600	0.007	0.15	18000	400	0.005	0.1
D0.6	R0.05	6	20000	400	0.008	0.2	18000	300	0.005	0.15	12000	200	0.003	0.1
D0.6	R0.05	8	16000	300	0.005	0.2	14000	200	0.002	0.15	10000	160	0.001	0.1
D0.6	R0.1	2	25000	1000	0.02	0.2	23000	800	0.01	0.15	20000	640	0.007	0.1
D0.6	R0.1	4	23000	800	0.015	0.2	20000	600	0.007	0.15	18000	400	0.005	0.1
D0.6	R0.1	6	20000	400	0.008	0.2	18000	300	0.005	0.15	12000	200	0.003	0.1
D0.6	R0.1	8	16000	300	0.005	0.2	14000	200	0.002	0.15	10000	160	0.001	0.1
D0.8	R0.05	2	25000	1600	0.03	0.25	23000	1400	0.02	0.16	20000	1000	0.015	0.14
D0.8	R0.05	4	25000	1400	0.025	0.25	23000	1200	0.015	0.16	20000	800	0.01	0.14
D0.8	R0.05	6	20000	1100	0.02	0.25	18000	900	0.01	0.16	16000	650	0.007	0.14
D0.8	R0.05	8	16000	800	0.01	0.25	14000	600	0.005	0.16	12000	400	0.005	0.14

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Work Material			HRC48-55 hardened steel				HRC56-62 hardened steel				HRC63-70 hardened steel			
Diameter	Radius of Ball Nose	Effective Length (mm)	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth
D0.8	R0.1	2	25000	1600	0.03	0.25	23000	1400	0.02	0.16	20000	1000	0.015	0.14
D0.8	R0.1	4	25000	1400	0.025	0.25	23000	1200	0.015	0.16	20000	800	0.01	0.14
D0.8	R0.1	6	20000	1100	0.02	0.25	18000	900	0.01	0.16	16000	650	0.007	0.14
D0.8	R0.1	8	16000	800	0.01	0.25	14000	600	0.005	0.16	12000	400	0.005	0.14

Milling Amount for Side Milling(mm)

Length of Cut / Work Material	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
Below 45HRC	ae=0.07D ap=2D	ae=0.07D ap=2D
Above 45HRC	ae=0.03D ap=1.5D	ae=0.03D ap=1.5D

D：Diameter（mm）
ap：Axial Depth（mm）
ae：Radial Depth（mm）

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering;
*When the material hardness is greater than HRC58 degrees, it is recommended to use air blow cooling for roughing and oil mist or air blow cooling for finishing.

SAMHO

MG | HG Coating | 30 | SD 0-0.003 | R ±0.005

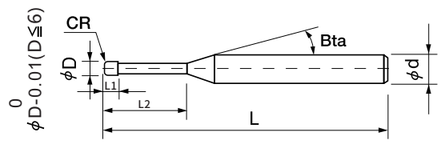
★ ◎ ○

Highly recommend/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	★
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special coating + bar for high hard hardened materials;
*Excellent surface finishing when processing flat surfaces and contours;
*The large arc at the clearance avoids cutter damage;
*Long life in cutting high hardness material of HRC48-65.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Total 83 models

Unit (mm)

Model Number	D Outside Diameter	Radius	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLSR4-01001040	D1.0	R0.1	1.0	4	12°	50	4	4	○
SHHLSR4-01001060	D1.0	R0.1	1.0	6	12°	50	4	4	○
SHHLSR4-01001080	D1.0	R0.1	1.0	8	12°	50	4	4	○
SHHLSR4-01001100	D1.0	R0.1	1.0	10	12°	50	4	4	○
SHHLSR4-01001120	D1.0	R0.1	1.0	12	12°	50	4	4	○
SHHLSR4-01001160	D1.0	R0.1	1.0	16	12°	50	4	4	○
SHHLSR4-01002040	D1.0	R0.2	1.0	4	12°	50	4	4	○
SHHLSR4-01002060	D1.0	R0.2	1.0	6	12°	50	4	4	○
SHHLSR4-01002080	D1.0	R0.2	1.0	8	12°	50	4	4	○
SHHLSR4-01002100	D1.0	R0.2	1.0	10	12°	50	4	4	○
SHHLSR4-01002120	D1.0	R0.2	1.0	12	12°	50	4	4	○
SHHLSR4-01002160	D1.0	R0.2	1.0	16	12°	50	4	4	○
SHHLSR4-01501060	D1.5	R0.1	1.5	6	12°	50	4	4	○
SHHLSR4-01501080	D1.5	R0.1	1.5	8	12°	50	4	4	○
SHHLSR4-01501100	D1.5	R0.1	1.5	10	12°	50	4	4	○
SHHLSR4-01501120	D1.5	R0.1	1.5	12	12°	50	4	4	○
SHHLSR4-01501160	D1.5	R0.1	1.5	16	12°	50	4	4	○
SHHLSR4-01502060	D1.5	R0.2	1.5	6	12°	50	4	4	○
SHHLSR4-01502080	D1.5	R0.2	1.5	8	12°	50	4	4	○
SHHLSR4-01502100	D1.5	R0.2	1.5	10	12°	75	4	4	○

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SHHLSR- 4Flutes Long Neck Radius

Model Number	D Outside Diameter	Radius	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLSR4-01502120	D1.5	R0.2	1.5	12	12°	50	4	4	○
SHHLSR4-01502160	D1.5	R0.2	1.5	16	12°	50	4	4	○
SHHLSR4-02001060	D2.0	R0.1	2.0	6	12°	50	4	4	○
SHHLSR4-02001080	D2.0	R0.1	2.0	8	12°	50	4	4	○
SHHLSR4-02001100	D2.0	R0.1	2.0	10	12°	50	4	4	○
SHHLSR4-02001120	D2.0	R0.1	2.0	12	12°	50	4	4	○
SHHLSR4-02001160	D2.0	R0.1	2.0	16	12°	50	4	4	○
SHHLSR4-02002060	D2.0	R0.2	2.0	6	12°	50	4	4	○
SHHLSR4-02002080	D2.0	R0.2	2.0	8	12°	50	4	4	○
SHHLSR4-02002100	D2.0	R0.2	2.0	10	12°	50	4	4	○
SHHLSR4-02002120	D2.0	R0.2	2.0	12	12°	50	4	4	○
SHHLSR4-02002160	D2.0	R0.2	2.0	16	12°	50	4	4	○
SHHLSR4-03001060	D3.0	R0.1	3.0	6	12°	50	4	4	○
SHHLSR4-03001080	D3.0	R0.1	3.0	8	12°	50	4	4	○
SHHLSR4-03001100	D3.0	R0.1	3.0	10	12°	50	4	4	○
SHHLSR4-03001120	D3.0	R0.1	3.0	12	12°	50	4	4	○
SHHLSR4-03001160	D3.0	R0.1	3.0	16	12°	50	4	4	○
SHHLSR4-03001200	D3.0	R0.1	3.0	20	12°	50	4	4	○
SHHLSR4-03002060	D3.0	R0.2	3.0	6	12°	50	4	4	○
SHHLSR4-03002080	D3.0	R0.2	3.0	8	12°	50	4	4	○
SHHLSR4-03002100	D3.0	R0.2	3.0	10	12°	50	4	4	○
SHHLSR4-03002120	D3.0	R0.2	3.0	12	12°	50	4	4	○
SHHLSR4-03002160	D3.0	R0.2	3.0	16	12°	50	4	4	○
SHHLSR4-03002200	D3.0	R0.2	3.0	20	12°	50	4	4	○
SHHLSR4-03005060	D3.0	R0.5	3.0	6	12°	50	4	4	○
SHHLSR4-03005080	D3.0	R0.5	3.0	8	12°	50	4	4	○
SHHLSR4-03005100	D3.0	R0.5	3.0	10	12°	50	4	4	○
SHHLSR4-03005120	D3.0	R0.5	3.0	12	12°	50	4	4	○
SHHLSR4-03005160	D3.0	R0.5	3.0	16	12°	50	4	4	○
SHHLSR4-03005200	D3.0	R0.5	3.0	20	12°	50	4	4	○
SHHLSR4-03001060-6	D3.0	R0.1	3.0	6	12°	60	4	6	○
SHHLSR4-03001080-6	D3.0	R0.1	3.0	8	12°	60	4	6	○
SHHLSR4-03001100-6	D3.0	R0.1	3.0	10	12°	60	4	6	○
SHHLSR4-03001120-6	D3.0	R0.1	3.0	12	12°	60	4	6	○
SHHLSR4-03001160-6	D3.0	R0.1	3.0	16	12°	60	4	6	○
SHHLSR4-03001200-6	D3.0	R0.1	3.0	20	12°	60	4	6	○

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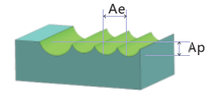
Model Number	D Outside Diameter	Radius	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHHLSR4-03002060-6	D3.0	R0.2	3.0	6	12°	60	4	6	○
SHHLSR4-03002080-6	D3.0	R0.2	3.0	8	12°	60	4	6	○
SHHLSR4-03002100-6	D3.0	R0.2	3.0	10	12°	60	4	6	○
SHHLSR4-03002120-6	D3.0	R0.2	3.0	12	12°	60	4	6	○
SHHLSR4-03002160-6	D3.0	R0.2	3.0	16	12°	60	4	6	○
SHHLSR4-03002200-6	D3.0	R0.2	3.0	20	12°	60	4	6	○
SHHLSR4-03005060-6	D3.0	R0.5	3.0	6	12°	60	4	6	○
SHHLSR4-03005080-6	D3.0	R0.5	3.0	8	12°	60	4	6	○
SHHLSR4-03005100-6	D3.0	R0.5	3.0	10	12°	60	4	6	○
SHHLSR4-03005120-6	D3.0	R0.5	3.0	12	12°	60	4	6	○
SHHLSR4-03005160-6	D3.0	R0.5	3.0	16	12°	60	4	6	○
SHHLSR4-03005200-6	D3.0	R0.5	3.0	20	12°	60	4	6	○
SHHLSR4-04001080-6	D4.0	R0.1	4.0	8	12°	60	4	6	○
SHHLSR4-04001100-6	D4.0	R0.1	4.0	10	12°	60	4	6	○
SHHLSR4-04001120-6	D4.0	R0.1	4.0	12	12°	60	4	6	○
SHHLSR4-04001160-6	D4.0	R0.1	4.0	16	12°	60	4	6	○
SHHLSR4-04001200-6	D4.0	R0.1	4.0	20	12°	60	4	6	○
SHHLSR4-04002080-6	D4.0	R0.2	4.0	8	12°	60	4	6	○
SHHLSR4-04002100-6	D4.0	R0.2	4.0	10	12°	60	4	6	○
SHHLSR4-04002120-6	D4.0	R0.2	4.0	12	12°	60	4	6	○
SHHLSR4-04002160-6	D4.0	R0.2	4.0	16	12°	60	4	6	○
SHHLSR4-04002200-6	D4.0	R0.2	4.0	20	12°	60	4	6	○
SHHLSR4-04005080-6	D4.0	R0.5	4.0	8	12°	60	4	6	○
SHHLSR4-04005100-6	D4.0	R0.5	4.0	10	12°	60	4	6	○
SHHLSR4-04005120-6	D4.0	R0.5	4.0	12	12°	60	4	6	○
SHHLSR4-04005160-6	D4.0	R0.5	4.0	16	12°	60	4	6	○
SHHLSR4-04005200-6	D4.0	R0.5	4.0	20	12°	60	4	6	○

*New size added from this series. Stocked items.

Cutting Parameter



Work Material			HRC48-55 hardened steel				HRC56-62 hardened steel				HRC63-70 hardened steel			
Diameter	Radius of Ball Nose	Effective Length (mm)	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth
D1.0	R0.1	4	21000	1800	0.04	0.3	18000	1500	0.03	0.25	14000	1100	0.02	0.2
D1.0	R0.1	6	16000	1400	0.02	0.3	14000	1200	0.01	0.25	11000	850	0.007	0.2
D1.0	R0.1	8	15000	1100	0.015	0.3	13000	900	0.008	0.25	10000	650	0.005	0.2
D1.0	R0.1	10	13000	800	0.01	0.3	11000	700	0.006	0.25	9000	500	0.005	0.2
D1.0	R0.2	4	21000	1800	0.04	0.3	18000	1500	0.03	0.25	14000	1100	0.02	0.2
D1.0	R0.2	6	16000	1400	0.02	0.3	14000	1200	0.01	0.25	11000	850	0.007	0.2
D1.0	R0.2	8	15000	1100	0.015	0.3	13000	900	0.008	0.25	10000	650	0.005	0.2
D1.0	R0.2	10	13000	800	0.01	0.3	11000	700	0.006	0.25	9000	500	0.005	0.2
D1.5	R0.1	6	19000	1800	0.045	0.5	16000	1500	0.3	0.4	13000	1100	0.02	0.3
D1.5	R0.1	8	16000	1500	0.04	0.5	14000	1300	0.025	0.4	11000	900	0.01	0.3
D1.5	R0.1	10	15000	1300	0.03	0.5	13000	1100	0.02	0.4	10000	750	0.01	0.3
D1.5	R0.1	12	13000	1100	0.03	0.5	11000	950	0.02	0.4	9000	650	0.007	0.3
D1.5	R0.1	16	11000	800	0.02	0.5	9000	700	0.007	0.4	7000	500	0.005	0.3
D1.5	R0.2	6	19000	1800	0.045	0.5	16000	1500	0.3	0.4	13000	1100	0.02	0.3
D1.5	R0.2	8	16000	1500	0.04	0.5	14000	1300	0.025	0.4	11000	900	0.01	0.3
D1.5	R0.2	10	15000	1300	0.03	0.5	13000	1100	0.02	0.4	10000	750	0.01	0.3
D1.5	R0.2	12	13000	1100	0.03	0.5	11000	950	0.02	0.4	9000	650	0.007	0.3
D1.5	R0.2	16	11000	800	0.02	0.5	9000	700	0.007	0.4	7000	500	0.005	0.3
D2.0	R0.1	6	18000	2100	0.06	0.6	15000	1800	0.05	0.5	12000	1300	0.03	0.35
D2.0	R0.1	8	16000	1800	0.05	0.6	14000	1500	0.04	0.5	11000	1100	0.02	0.35
D2.0	R0.1	10	14000	1500	0.05	0.6	13000	1300	0.03	0.5	10000	950	0.015	0.35
D2.0	R0.1	12	13000	1400	0.04	0.6	11000	1200	0.03	0.5	9000	850	0.01	0.35
D2.0	R0.1	16	11000	1100	0.03	0.6	9500	950	0.02	0.5	7500	650	0.007	0.35
D2.0	R0.2	6	18000	2100	0.06	0.6	15000	1800	0.05	0.5	12000	1300	0.03	0.35
D2.0	R0.2	8	16000	1800	0.05	0.6	14000	1500	0.04	0.5	11000	1100	0.02	0.35
D2.0	R0.2	10	14000	1500	0.05	0.6	13000	1300	0.03	0.5	10000	950	0.015	0.35
D2.0	R0.2	12	13000	1400	0.04	0.6	11000	1200	0.03	0.5	9000	850	0.01	0.35
D2.0	R0.2	16	11000	1100	0.03	0.6	9500	950	0.02	0.5	7500	650	0.007	0.35
D3.0	R0.1	6	13000	2100	0.1	0.8	11000	1800	0.07	0.7	9000	1300	0.05	0.6
D3.0	R0.1	8	11000	1800	0.1	0.8	9500	1500	0.07	0.7	7500	1100	0.05	0.6
D3.0	R0.1	10	11000	1700	0.09	0.8	9500	1400	0.06	0.7	7500	1000	0.04	0.6
D3.0	R0.1	12	11000	1600	0.08	0.8	9500	1400	0.06	0.7	7500	1000	0.04	0.6
D3.0	R0.1	16	10000	1500	0.07	0.8	8500	1300	0.05	0.7	7000	900	0.03	0.6
D3.0	R0.1	20	8000	1100	0.05	0.8	7000	950	0.04	0.7	5500	700	0.02	0.6
D3.0	R0.2	6	13000	2100	0.1	0.8	11000	1800	0.07	0.7	9000	1300	0.05	0.6
D3.0	R0.2	8	11000	1800	0.1	0.8	9500	1500	0.07	0.7	7500	1100	0.05	0.6
D3.0	R0.2	10	11000	1700	0.09	0.8	9500	1400	0.06	0.7	7500	1000	0.04	0.6
D3.0	R0.2	12	11000	1600	0.08	0.8	9500	1400	0.06	0.7	7500	1000	0.04	0.6
D3.0	R0.2	16	10000	1500	0.07	0.8	8500	1300	0.05	0.7	7000	900	0.03	0.6

Next page

SHHLSR4-000 Milling Conditions

SAMHO

Work Material			HRC48-55 hardened steel				HRC55-62 hardened steel				HRC62-70 hardened steel			
Diameter	Radius of Ball Nose	Effective Length (mm)	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth
D3.0	R0.2	20	8000	1100	0.05	0.8	7000	950	0.04	0.7	5500	700	0.02	0.6
D3.0	R0.5	6	13000	2100	0.1	0.8	11000	1800	0.07	0.7	9000	1300	0.05	0.6
D3.0	R0.5	8	11000	1800	0.1	0.8	9500	1500	0.07	0.7	7500	1100	0.05	0.6
D3.0	R0.5	10	11000	1700	0.09	0.8	9500	1400	0.06	0.7	7500	1000	0.04	0.6
D3.0	R0.5	12	11000	1600	0.08	0.8	9500	1400	0.06	0.7	7500	1000	0.04	0.6
D3.0	R0.5	16	10000	1500	0.07	0.8	8500	1300	0.05	0.7	7000	900	0.03	0.6
D3.0	R0.5	20	8000	1100	0.05	0.8	7000	950	0.04	0.7	5500	700	0.02	0.6
D4.0	R0.1	8	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
D4.0	R0.1	10	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
D4.0	R0.1	12	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
D4.0	R0.1	16	8000	1800	0.1	1.2	7000	1500	0.06	1	5500	1100	0.05	0.8
D4.0	R0.1	20	7200	1500	0.09	1.2	6300	1300	0.06	1	5000	950	0.04	0.8
D4.0	R0.2	8	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
D4.0	R0.2	10	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
D4.0	R0.2	12	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
D4.0	R0.2	16	8000	1800	0.1	1.2	7000	1500	0.06	1	5500	1100	0.05	0.8
D4.0	R0.2	20	7200	1500	0.09	1.2	6300	1300	0.06	1	5000	950	0.04	0.8
D4.0	R0.5	8	0000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
D4.0	R0.5	10	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
D4.0	R0.5	12	10000	2100	0.15	1.2	8500	1800	0.08	1	7000	1300	0.06	0.8
D4.0	R0.5	16	8000	1800	0.1	1.2	7000	1500	0.06	1	5500	1100	0.05	0.8
D4.0	R0.5	20	7200	1500	0.09	1.2	6300	1300	0.06	1	5000	950	0.04	0.8

Milling Amount for Side Milling(mm)

Work Material \ Length of Cut	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
Below 45HRC	ae=0.07D ap=2D	ae=0.07D ap=2D
Above 45HRC	ae=0.03D ap=1.5D	ae=0.03D ap=1.5D

D：Diameter（mm）
ap：Axial Depth（mm）
ae：Radial Depth（mm）

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering;
*When the material hardness is greater than HRC58 degrees, it is recommended to use air blow cooling for roughing and oil mist or air blow cooling for finishing.

Long Neck Radius

SAMHO

SHTISR-4 Flutes Radius for Excellent Roughing

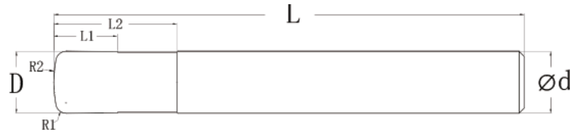
MG | HG Coating | 20 | SD 0-0.005

★ ○ ○
Highly recommend/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	○
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	○
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	○
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special coating + bar for high hard hardened materials;
*Special arc design at the blade bottom offers excellent roughing;
*Especially suitable for milling mold steel of high hardness HRC48-65, titanium alloy, stainless steel, heat resistant alloys and so on.



Radius

Total 12models

Unit (mm)

Model Number	D Outside Diameter	R1	R2	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	D Shank Diameter	In Stock
SHTISR4-06010180	6	R1	R12	6	18	–	60	4	6	○
SHTISR4-06015180	6	R1.5	R7.5	6	18	–	60	4	6	○
SHTISR4-08010240-75	8	R1	R20	8	24	–	75	4	8	○
SHTISR4-08020240-75	8	R2	R10.5	8	24	–	75	4	8	○
SHTISR4-10010300	10	R1	R35	10	30	–	75	4	10	○
SHTISR4-10020300	10	R2	R19	10	30	–	75	4	10	○
SHTISR4-10010300-100	10	R1	R35	10	30	–	100	4	10	○
SHTISR4-10020300-100	10	R2	R19	10	30	–	100	4	10	○
SHTISR4-12010360	12	R1	R42	12	36	–	75	4	12	○
SHTISR4-12020360	12	R2	R26	12	36	–	75	4	12	○
SHTISR4-12010360-100	12	R1	R42	12	36	–	100	4	12	○
SHTISR4-12020360-100	12	R2	R26	12	36	–	100	4	12	○

*New size added from this series.　　Stocked items.

SHTISR4-000 Milling Conditions

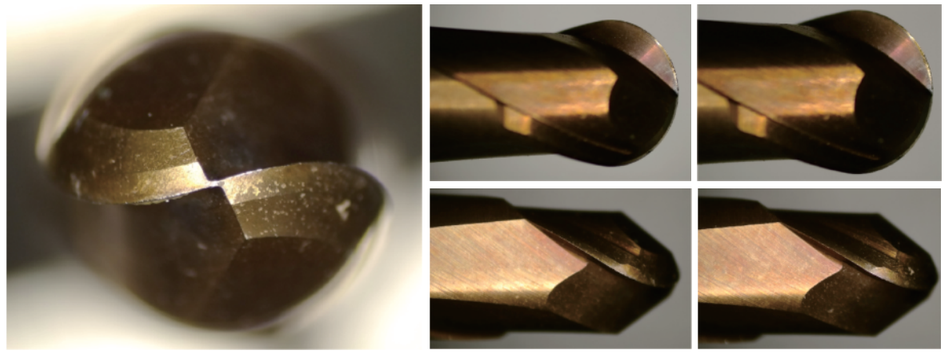
Work Material			HRC48-55 hardened steel				HRC56-62 hardened steel				HRC63-70 hardened steel			
Diameter	Radius of Ball Nose	Effective Length (mm)	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth	(min-1) Speed	(mm/min) Feed	(mm) Axial depth	(mm) Radidl depth
D6	R0.5	–	4200	4000	0.2	3.3	3200	2500	0.12	3.3	2500	1000	0.08	3
D6	R1	–	4200	4000	0.2	2	3200	2500	0.12	2	2500	1000	0.08	2
D6	R1.5	–	4200	4000	0.2	1.5	3200	2500	0.12	1.5	2500	1000	0.08	1.5
D8	R1	–	3200	5000	0.3	3	2400	2800	0.15	3	1800	1200	0.1	3
D8	R2	–	3200	5000	0.3	2	2400	2800	0.15	2	1800	1200	0.1	2
D10	R1	–	2500	5000	0.3	4	2000	2800	0.2	4	1600	1600	0.15	4
D10	R2	–	2500	5000	0.3	3	2000	2800	0.2	3	1600	1600	0.15	3
D12	R1	–	2100	5000	0.4	5	1600	2500	0.25	6	1300	1600	0.15	5
D12	R2	–	2100	5000	0.4	4	1600	2500	0.25	6	1300	1600	0.15	4

Milling Amount for Side Milling(mm)

Length of Cut / Work Material	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
Below 45HRC	a_e=0.07D a_p=2D	a_e=0.07D a_p=2D
Above 45HRC	a_e=0.03D a_p=1.5D	a_e=0.03D a_p=1.5D

D：Diameter（mm）
a_p：Axial Depth（mm）
a_e：Radial Depth（mm）

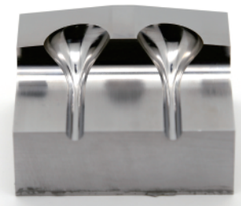
Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering;
*When the material hardness is greater than HRC58 degrees, it is recommended to use air blow cooling for roughing and oil mist or air blow cooling for finishing.



★ Analysis Report:Material S136(HRC48-52)

Purpose: D2R1 Finishing test
Processing machine: ROKU-ROKU machine (60000rpm)
Coolant: Oil Mist
Test time: 2021-7-20

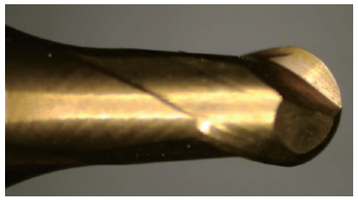
Milling Shape:

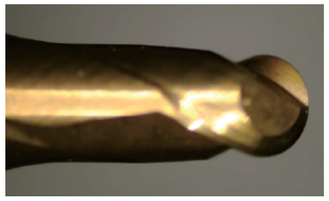


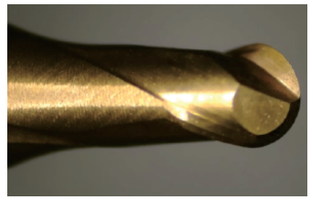
Milling Parameters

Tool	Spindle Speed	Feed Rate	Step	Axial Depth	Radial Depth	Cycle Time
HSGLR2-020040 D2R1*4	(min-1)	(mm/min)		(ap) mm	(ae) mm	
	22000	1000		0.01	0.01	1:30:45

Summary: Good quality milling, data error only 0.003mm for two small planes on the workpiece after processing, uniform workpiece pitch and surface quality,meets the requirements of the earphone mold.



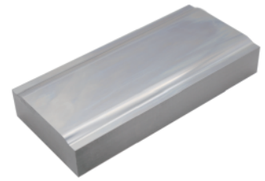




★ Analysis Report:Material M333(HRC48-52)

Purpose: D6R3 tool life test
Processing machine: ROKU-ROKU machine (60000rpm)
Coolant: Oil Mist
Test time: 2021-7-20

Milling Shape:



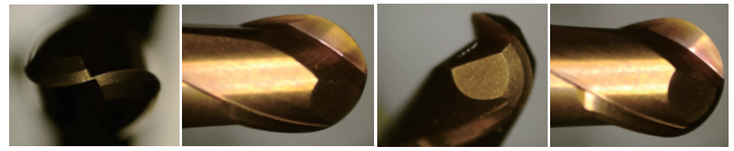
Milling Parameters

	Spindle Speed	Feed Rate	Step	Axial Depth	Radial Depth	Cycle Time
D6R3 Parallel finishing	(min-1)	(mm/min)		(ap) mm	(ae) mm	
	16000	1600		0.01	0.02	5:30:45

Summary: Good quality milling, less tool wear, data error only 0.001mm for two small planes on the workpiece after processing, uniform workpiece pitch and surface quality, no surface burrs.

Workpiece View:

Cutter Condition:



SHG 2 Flutes Square

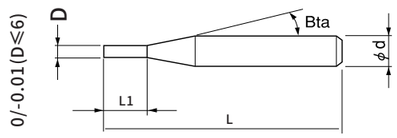
MG | HG Coating | 45 | SD 0-0.003

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	○
Alloy steels (SK/SCM/SUS)	○
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	◎
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	○
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*2 Flutes Square End Mills for Mold Steels.;
*The flute shape is specifically designed for outstanding chip evacuation, excellent milling performance, broad application range from Copper to Hardened Steels up to HRC60.

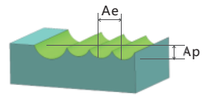


Total 15 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGS2-0020040	0.2	0.4	–	12°	50	2	4	○
SHGS2-0030060	0.3	0.6	–	12°	50	2	4	○
SHGS2-0040080	0.4	0.8	–	12°	50	2	4	○
SHGS2-0050100	0.5	1	–	12°	50	2	4	○
SHGS2-0060120	0.6	1.2	–	12°	50	2	4	○
SHGS2-0070140	0.7	1.4	–	12°	50	2	4	○
SHGS2-0080160	0.8	1.6	–	12°	50	2	4	○
SHGS2-0100300	1.0	3	–	12°	50	2	4	○
SHGS2-0150400	1.5	4	–	12°	50	2	4	○
SHGS2-0200500	2.0	5	–	12°	50	2	4	○
SHGS2-0250600	2.5	6	–	12°	50	2	4	○
SHGS2-0300800-4	3	8	–	12°	50	2	4	○
SHGS2-0401000-4	4	10	–	-	50	2	4	○
SHGS2-0401000-6	4	10	–	12°	60	2	6	○
SHGS2-0601500	6	15	–	-	60	2	6	○

*New size added from this series. ○ Stocked items.



側面切削 (Side Milling)

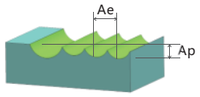
Work Material	HRC30-45 Prehardened Steels		HRC45-55 Hardened Steels		HRC55-65 Hardened Steels	
(mm) Diameter	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1.0	10000	100	8000	60	7000	40
D1.5	8000	120	6000	60	5000	50
D2.0	7000	120	5000	60	4000	55
D2.5	6000	120	4500	60	3500	55
D3	5000	150	4000	80	3000	60
D4	4000	150	4000	100	2200	100
D4	4000	150	4000	100	2200	120
D6	3500	250	3000	200	2000	150

Milling Amount for Side Milling(mm)

Work Material \ Length of Cut	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
Below 45HRC	ae=0.07D ap=2D	ae=0.07D ap=2D
Above 45HRC	ae=0.03D ap=1.5D	ae=0.03D ap=1.5D

D: Diameter (mm)
ap: Axial Depth (mm)
ae: Radial Depth (mm)

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering.



Contour Milling

Work Material	HRC30-45 Prehardened Steels		HRC45-55 Hardened Steels		HRC55-65 Hardened Steels	
(mm) Diameter	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D0.2	30000	120	30000	120	20000	50
D0.3	30000	150	30000	150	16000	50
D0.4	30000	200	30000	200	16000	60
D0.5	26000	200	26000	200	14000	80
D0.6	24000	300	24000	300	14000	80
D0.7	20000	500	20000	500	12000	100
D0.8	16000	800	16000	800	10000	150
D1.0	13000	1000	13000	1000	8000	300
D1.5	13000	1200	13000	1200	8000	300
D2.0	12000	1500	12000	1500	8000	500
D2.5	12000	1500	12000	1500	8000	800
D3	11000	1800	11000	1800	8000	1000
D4	10000	2200	10000	2200	7500	1200
D4	10000	2200	10000	2200	7500	1200
D6	9000	2500	9000	2500	7000	1400

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering.

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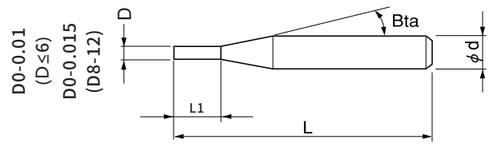
Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	○
Alloy steels (SK/SCM/SUS)	○
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	◎
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	○
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*4 Flutes Square End Mills for Mold Steels.
*Broad application range from Copper to Hardened Steels (HRC60).



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Total 32 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGS4-0100300	1.0	3	–	12°	50	4	4	○
SHGS4-0150400	1.5	4	–	12°	50	4	4	○
SHGS4-0200600	2.0	6	–	12°	50	4	4	○
SHGS4-0250600	2.5	6	–	12°	50	4	4	○
SHGS4-0300800-3	3	8	–	-	50	4	3	○
SHGS4-0300800-4	3	8	–	12°	50	4	4	○
SHGS4-0300800-6	3	8	–	12°	50	4	6	○
SHGS4-0401000-4	4	10	–	-	50	4	4	○
SHGS4-0401000-6	4	10	–	12°	60	4	6	○
SHGS4-0401000-75	4	10	–	-	75	4	4	○
SHGS4-0501300	5	13	–	12°	60	4	6	○
SHGS4-0601500	6	15	–	-	60	4	6	○
SHGS4-0601500-75	6	15	–	-	75	4	6	○
SHGS4-0601500-100	6	15	–	-	100	4	6	○
SHGS4-0802000	8	20	–	-	60	4	8	○
SHGS4-0802000-75	8	20	–	-	75	4	8	○

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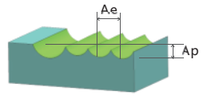
Total 32 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGS4-0802000-100	8	20	–	-	100	4	8	○
SHGS4-0802000-150	8	20	–	-	150	4	8	○
SHGS4-1002500	10	25	–	-	75	4	10	○
SHGS4-1002500-100	10	25	–	-	100	4	10	○
SHGS4-1002500-150	10	25	–	-	150	4	10	○
SHGS4-1203000	12	30	–	-	75	4	12	○
SHGS4-1203000-100	12	30	–	-	100	4	12	○
SHGS4-1203000-150	12	30	–	-	150	4	12	○
SHGS4-1403500-100	14	35	–	-	100	4	14	○
SHGS4-1403500-150	14	35	–	-	150	4	14	○
SHGS4-1604000-100	16	40	–	-	100	4	16	○
SHGS4-1604000-100	16	40	–	-	150	4	16	○
SHGS4-1804500-100	18	45	–	-	100	4	18	○
SHGS4-1804500-150	18	45	–	-	150	4	18	○
SHGS4-2005000-100	20	50	–	-	100	4	20	○
SHGS4-2005000-150	20	50	–	-	150	4	20	○

*New size added from this series.

○ Stocked items.



Side Milling

Work Material	HRC30-45 Prehardened Steels		HRC45-55 Hardened Steels		HRC55-65 Hardened Steels	
(mm) Diameter	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1.0	10000	100	8000	60	7000	40
D1.5	8000	120	6000	60	5000	50
D2.0	6000	150	4500	80	4000	55
D2.5	5000	150	4000	80	3500	55
D3	5000	150	4000	80	3000	60
D4	4000	200	3000	150	3000	120
D5	3500	300	3000	200	2500	150
D6	3500	300	3000	200	2500	150
D8	3000	300	2500	200	2000	200
D10	2500	300	2500	200	2000	200
D12	2000	250	2000	200	2000	200
D14	2000	350	2000	300	1800	200
D16	1800	350	1800	300	1600	200
D18	1600	350	1600	300	1400	200
D20	1200	350	1200	300	1200	150

Milling Amount for Side Milling(mm)

Work Material \ Length of Cut	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
Below 45HRC	ae=0.07D ap=2D	ae=0.07D ap=2D
Above 45HRC	ae=0.03D ap=1.5D	ae=0.03D ap=1.5D

D: Diameter (mm)
ap: Axial Depth (mm)
ae: Radial Depth (mm)

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Contour Milling

Work Material	HRC30-45 Prehardened Steels		HRC45-55 Hardened Steels		HRC55-65 Hardened Steels	
(mm) Diameter	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1.0	13000	1000	13000	1000	8000	300
D1.5	13000	1200	13000	1200	8000	300
D2.0	12000	1500	12000	1500	8000	500
D2.5	12000	1500	12000	1500	8000	800
D3	11000	1800	11000	1800	8000	1000
D4	10000	2200	10000	2200	7500	1200
D5	9000	2500	9000	2500	7000	1500
D6	9000	2500	9000	2500	7000	1500
D8	8000	2500	8000	2500	6000	1800
D10	7000	2500	7000	2500	5500	1800
D12	6000	2500	6000	2500	5000	2000
D14	4000	2200	4000	2200	4000	2200
D16	3500	2200	3500	2200	3500	2200
D18	3000	2000	3000	2000	3000	2000
D20	2500	2000	2500	2000	2500	2000

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering.

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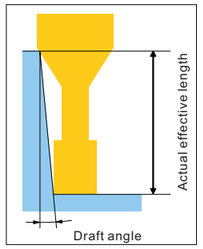
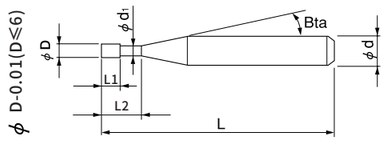
Highly recommend★ ◯ ◯
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	◯
Alloy steels (SK/SCM/SUS)	◯
Prehardened steels (NAK/HPM)	◯
Hardened steels (~55/~60/~70HRC)	◯
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	◯
Plastics	
Carbon fiber	
Titanium alloys	◯
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	



Specialty

*2 Flutes Long Neck Square End Mills for Mold Steels;
*Broad application range from Copper to Hardened Steels (HRC60).



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Total 37 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLS2-002010	0.2	0.3	1	12°	50	2	4	◯
SHGLS2-002015	0.2	0.3	1.5	12°	50	2	4	◯
SHGLS2-002020	0.2	0.3	2	12°	50	2	4	◯
SHGLS2-003010	0.3	0.5	1	12°	50	2	4	◯
SHGLS2-003015	0.3	0.5	1.5	12°	50	2	4	◯
SHGLS2-003020	0.3	0.5	2	12°	50	2	4	◯
SHGLS2-003030	0.3	0.5	3	12°	50	2	4	◯
SHGLS2-004010	0.4	0.6	1	12°	50	2	4	◯
SHGLS2-004020	0.4	0.6	2	12°	50	2	4	◯
SHGLS2-004030	0.4	0.6	3	12°	50	2	4	◯

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Total 37 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLS2-004040	0.4	0.6	4	12°	50	2	4	○
SHGLS2-005010	0.5	0.75	1	12°	50	2	4	○
SHGLS2-005020	0.5	0.75	2	12°	50	2	4	○
SHGLS2-005040	0.5	0.75	4	12°	50	2	4	○
SHGLS2-005060	0.5	0.75	6	12°	50	2	4	○
SHGLS2-006020	0.6	0.9	2	12°	50	2	4	○
SHGLS2-006040	0.6	0.9	4	12°	50	2	4	○
SHGLS2-006060	0.6	0.9	6	12°	50	2	4	○
SHGLS2-006080	0.6	0.9	8	12°	50	2	4	○
SHGLS2-008020	0.8	1.2	2	12°	50	2	4	○
SHGLS2-008040	0.8	1.2	4	12°	50	2	4	○
SHGLS2-008060	0.8	1.2	6	12°	50	2	4	○
SHGLS2-008080	0.8	1.2	8	12°	50	2	4	○
SHGLS2-010040	1	1.5	4	12°	50	2	4	○
SHGLS2-010060	1	1.5	6	12°	50	2	4	○
SHGLS2-010080	1	1.5	8	12°	50	2	4	○
SHGLS2-010100	1	1.5	10	12°	50	2	4	○
SHGLS2-015040	1.5	2.3	4	12°	50	2	4	○
SHGLS2-015060	1.5	2.3	6	12°	50	2	4	○
SHGLS2-015080	1.5	2.3	8	12°	50	2	4	○
SHGLS2-015100	1.5	2.3	10	12°	50	2	4	○
SHGLS2-020040	2	3	4	12°	50	2	4	○
SHGLS2-020060	2	3	6	12°	50	2	4	○
SHGLS2-020080	2	3	8	12°	50	2	4	○
SHGLS2-020100	2	3	10	12°	50	2	4	○
SHGLS2-020120	2	3	12	12°	50	2	4	○
SHGLS2-020160	2	3	16	12°	50	2	4	○

*New size added from this series.

○ Stocked items.

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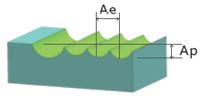
SHGLS2-000 Milling Conditions



Work Material		HRC30-45 Prehardened Steels		HRC45-55 Hardened Steels		HRC55-65 Hardened Steels	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D0.2	0.5	30000	120	30000	120	15000	15
D0.2	1	30000	120	30000	100	15000	10
D0.2	1.5	28000	120	28000	100	15000	10
D0.3	1	30000	150	30000	150	14000	20
D0.3	1.5	28000	120	26000	120	14000	15
D0.3	2	26000	120	22000	100	14000	15
D0.3	3	26000	100	20000	80	14000	10
D0.4	1	26000	300	26000	260	14000	80
D0.4	2	26000	220	24000	200	14000	60
D0.4	3	24000	180	20000	200	14000	40
D0.4	4	24000	150	18000	150	14000	20
D0.5	1	26000	400	20000	300	13000	100
D0.5	2	26000	300	18000	200	13000	80
D0.5	4	24000	180	16000	150	13000	50
D0.5	6	24000	150	15000	100	13000	30
D0.6	2	26000	500	20000	500	12000	120
D0.6	4	24000	300	16000	200	12000	80
D0.6	6	22000	200	16000	150	12000	50
D0.6	8	20000	150	14000	100	12000	20
D0.8	2	18000	600	18000	500	8000	200
D0.8	4	16000	400	14000	300	8000	120
D0.8	6	16000	300	14000	200	8000	100
D0.8	8	14000	150	13000	150	8000	60
D1.0	4	13000	800	12000	800	6500	240
D1.0	6	11000	600	10000	600	6500	200
D1.0	8	10000	300	9000	300	6500	150
D1.0	10	9000	150	8000	120	6500	100
D1.5	4	13000	1200	13000	1000	8000	600
D1.5	6	11000	800	11000	600	8000	500
D1.5	8	10000	500	10000	400	8000	400
D1.5	10	9000	400	9000	300	8000	200
D2.0	4	12000	1400	10000	1000	8000	1000
D2.0	6	12000	1200	10000	800	8000	800
D2.0	8	10000	1000	9000	600	8000	600

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Work Material		HRC30-45 Prehardened Steels		HRC45-55 Hardened Steels		HRC55-65 Hardened Steels	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D2.0	10	9500	600	8000	400	8000	300
D2.0	12	8500	400	7000	260	7000	200
D2.0	16	7000	300	6000	200	6000	100

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point.

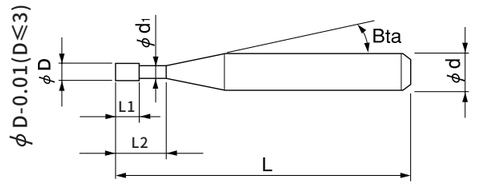
MG | HG Coating | 45 | SD 0-0.003

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	○
Alloy steels (SK/SCM/SUS)	○
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	◎
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	○
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*4 Flutes Long Neck Square End Mills for Mold Steels;
*Broad application range from Copper to Hardened Materials up to HRC65.



Total 24 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLS4-010040	1.0	1.5	4	12°	50	4	4	○
SHGLS4-010060	1.0	1.5	6	12°	50	4	4	○
SHGLS4-010080	1.0	1.5	8	12°	50	4	4	○
SHGLS4-010100	1.0	1.5	10	12°	50	4	4	○
SHGLS4-015040	1.5	2.3	4	12°	50	4	4	○
SHGLS4-015060	1.5	2.3	6	12°	50	4	4	○
SHGLS4-015080	1.5	2.3	8	12°	50	4	4	○
SHGLS4-015100	1.5	2.3	10	12°	50	4	4	○
SHGLS4-020060	2.0	3.0	6	12°	50	4	4	○
SHGLS4-020080	2.0	3.0	8	12°	50	4	4	○
SHGLS4-020100	2.0	3.0	10	12°	50	4	4	○
SHGLS4-020120	2.0	3.0	12	12°	50	4	4	○
SHGLS4-020160	2.0	4.5	16	12°	50	4	4	○
SHGLS4-020200	2.0	4.5	20	12°	50	4	4	○
SHGLS4-030080	3.0	4.5	8	12°	50	4	4	○
SHGLS4-030100	3.0	4.5	10	12°	50	4	4	○
SHGLS4-030120	3.0	4.5	12	12°	50	4	4	○
SHGLS4-030160	3.0	4.5	16	12°	50	4	4	○
SHGLS4-030200	3.0	4.5	20	12°	50	4	4	○

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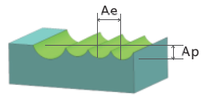
Total 24 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLS4-030080-6	3.0	4.5	8	12°	50	4	6	○
SHGLS4-030100-6	3.0	4.5	10	12°	50	4	6	○
SHGLS4-030120-6	3.0	4.5	12	12°	50	4	6	○
SHGLS4-030160-6	3.0	4.5	16	12°	50	4	6	○
SHGLS4-030200-6	3.0	4.5	20	12°	50	4	6	○

*New size added from this series.

○ Stocked items.



Work Material		HRC30-45 Prehardened Steels		HRC45-55 Hardened Steels		HRC55-65 Hardened Steels	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1.0	4	13000	1300	12000	1200	8500	800
D1.0	6	11000	1000	10000	800	7000	500
D1.0	8	10000	800	8500	700	6000	400
D1.0	10	9000	500	7500	500	5500	300
D1.5	4	13000	1400	13000	1200	10000	1000
D1.5	6	11000	1200	10000	1000	8000	800
D1.5	8	10000	1000	9000	900	7000	600
D1.5	10	9000	900	8500	800	6500	500
D2.0	6	12000	1500	10000	1200	7000	800
D2.0	8	11000	1300	9000	1000	7000	600
D2.0	10	10000	1200	8000	800	6000	500
D2.0	12	9000	900	7000	700	6000	400
D2.0	16	7500	700	6000	600	5000	200
D2.0	20	7000	400	5500	300	3500	100
D3.0	8	8500	2000	8000	1800	6000	1000
D3.0	10	8500	2000	8000	1800	6000	1000
D3.0	12	8000	1800	7000	1600	5000	700
D3.0	16	7000	1400	6000	1200	4000	400
D3.0	20	6500	1200	5500	1000	3500	300
D3.0	8	8500	2000	8000	1800	6000	1000
D3.0	10	8500	2000	8000	1800	6000	1000
D3.0	12	8000	1800	7000	1600	5000	700
D3.0	16	7000	1400	6000	1200	4000	400
D3.0	20	6500	1200	5500	1000	3500	300

Note:
* Decrease both spindle speed and feed rate pro portionally when the milling para meters exceed the machine's maximum spindle speed;
* Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
* Recommend using a non-contact measuring device to avoid damaging the precision tip point.

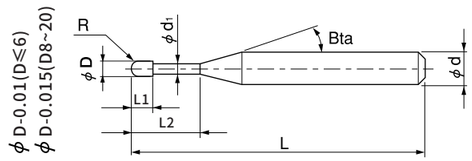
MG | HG Coating | 30 | SD 0-0.003 | R ±0.005 R≤3 | R ±0.007 R4~10

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	○
Alloy steels (SK/SCM/SUS)	○
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	◎
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	○
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*2 Flutes Ball End Mills for Mold Steel;
*Unique flute design, to achieve excellent flat surface quality;
*Outstanding milling performance and long tool life, high precision for the full series.



Total 36 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGR2-0030045	R0.15	0.45	--	12°	50	2	4	○
SHGR2-004006	R0.2	0.6	--	12°	50	2	4	○
SHGR2-005008	R0.25	0.8	--	12°	50	2	4	○
SHGR2-006009	R0.3	0.9	--	12°	50	2	4	○
SHGR2-0080012	R0.4	1.2	--	12°	50	2	4	○
SHGR2-010010	R0.5	1	--	12°	50	2	4	○
SHGR2-015015	R0.75	1.5	--	12°	50	2	4	○
SHGR2-020020	R1	2	--	12°	50	2	4	○
SHGR2-020020-6	R1	2	--	12°	60	2	6	○
SHGR2-030030-3	R1.5	3	--	-	50	2	3	○
SHGR2-030030-4	R1.5	3	--	12°	50	2	4	○
SHGR2-030030-6	R1.5	3	--	12°	60	2	6	○
SHGR2-040040-4	R2	4	--	-	50	2	4	○
SHGR2-040040-6	R2	4	--	12°	60	2	6	○
SHGR2-050100	R2.5	5	10	12°	60	2	6	○
SHGR2-060120	R3	6	12	-	60	2	6	○
SHGR2-060120-75	R3	6	12	-	75	2	6	○
SHGR2-060120-100	R3	6	12	-	100	2	6	○
SHGR2-080160	R4	8	16	-	60	2	8	○
SHGR2-080160-75	R4	8	16	-	75	2	8	○

Next page

Total 36 models

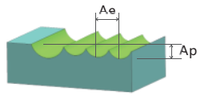
Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGR2-080160-100	R4	8	16	-	100	2	8	○
SHGR2-080160-150	R4	8	16	-	150	2	8	○
SHGR2-100200	R5	10	20	-	75	2	10	○
SHGR2-100200-100	R5	10	20	-	100	2	10	○
SHGR2-100200-150	R5	10	20	-	150	2	10	○
SHGR2-120240	R6	12	24	-	75	2	12	○
SHGR2-120240-100	R6	12	24	-	100	2	12	○
SHGR2-120240-150	R6	12	24	-	150	2	12	○
SHGR2-140280-100	R7	14	28	-	100	2	14	○
SHGR2-140280-150	R7	14	28	-	150	2	14	○
SHGR2-160320-100	R8	16	32	-	100	2	16	○
SHGR2-160320-150	R8	16	32	-	150	2	16	○
SHGR2-180360-100	R9	18	36	-	100	2	18	○
SHGR2-180360-150	R9	18	36	-	150	2	18	○
SHGR2-200400-100	R10	20	40	-	100	2	20	○
SHGR2-200400-150	R10	20	40	-	150	2	20	○

*New size added from this series.

○ Stocked items.

SAMHO



Work Material	HRC30-45 Prehardened Steels				HRC45-55 Hardened Steels				HRC55-65 Hardened Steels			
Radius of Ball Nose	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial Depth	Ae (mm) Radidl Depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial Depth	Ae (mm) Radidl Depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial Depth	Ae (mm) Radidl Depth
R0.15	26000	300	0.01	0	24000	200	0.008	0.008	20000	200	0.005	0.005
R0.2	22000	400	0.015	0.015	22000	300	0.01	0.01	18000	300	0.008	0.008
R0.25	20000	400	0.015	0.015	22000	400	0.015	0.015	16000	400	0.008	0.008
R0.3	20000	800	0.02	0.02	20000	600	0.015	0.015	15000	500	0.015	0.015
R0.4	18000	1200	0.02	0.03	20000	800	0.02	0.02	13000	600	0.02	0.02
R0.5	16000	1200	0.03	0.04	18000	1000	0.02	0.03	12000	700	0.02	0.03
R0.75	16000	1500	0.03	0.05	16000	1200	0.02	0.04	10000	800	0.02	0.04
R1	15000	1800	0.03	0.05	14000	1800	0.02	0.05	9000	1200	0.02	0.04
R1	15000	1800	0.04	0.05	14000	1800	0.02	0.05	9000	1400	0.02	0.04
R1.5	14000	2200	0.04	0.07	13000	2200	0.03	0.06	9000	1200	0.02	0.05
R1.5	14000	2200	0.05	0.07	13000	2200	0.03	0.06	9000	1300	0.02	0.05
R1.5	14000	2200	0.04	0.07	13000	2200	0.03	0.06	9000	1500	0.02	0.05
R2	14000	2400	0.04	0.08	12000	2400	0.03	0.06	8000	1500	0.02	0.06
R2	14000	2400	0.05	0.08	12000	2400	0.03	0.06	8000	1500	0.02	0.06
R2.5	12000	2600	0.05	0.08	12000	2400	0.03	0.06	8000	1500	0.02	0.06
R3	12000	2600	0.05	0.08	10000	2600	0.03	0.08	7000	1800	0.02	0.08
R4	10000	3000	0.05	0.1	9000	2800	0.03	0.1	6500	2200	0.02	0.1
R5	9000	3000	0.05	0.12	8000	2800	0.03	0.12	6000	2200	0.02	0.1
R6	9000	3000	0.05	0.15	7000	2800	0.03	0.12	5000	2000	0.02	0.12
R7	7000	3000	0.08	0.15	6000	2800	0.03	0.15	4000	2000	0.02	0.15
R8	6000	3000	0.08	0.15	5500	2800	0.03	0.15	4000	2000	0.02	0.15
R9	5000	3000	0.08	0.15	4500	2800	0.03	0.15	4000	2000	0.02	0.15
R10	4500	3000	0.08	0.15	4000	2800	0.03	0.15	4000	2000	0.02	0.15

Note:
*The above milling parameters are calculated based on 3xD. Decrease both spindle speed and feed rate proportionally if the overhang length exceeds 3xD;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.

SAMHO

SHGR 2 Flutes Long Neck Ball

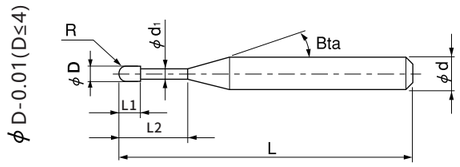
MG | HG Coating | 30 | SD 0-0.003 | R ±0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	○
Alloy steels (SK/SCM/SUS)	○
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	◎
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	○
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*2 Flutes Long Neck Ball for Mold Steel;
*Unique flute design, to achieve excellent flat surface quality;
*Outstanding milling performance and long tool life high precision for the full series.



Total 77 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLR2-002005	R0.1	0.2	0.5	12°	50	2	4	○
SHGLR2-002010	R0.1	0.2	1	12°	50	2	4	○
SHGLR2-002015	R0.1	0.2	1.5	12°	50	2	4	○
SHGLR2-003010	R0.15	0.3	1	12°	50	2	4	○
SHGLR2-003015	R0.15	0.3	1.5	12°	50	2	4	○
SHGLR2-003020	R0.15	0.3	2	12°	50	2	4	○
SHGLR2-003030	R0.15	0.3	3	12°	50	2	4	○
SHGLR2-004010	R0.2	0.4	1	12°	50	2	4	○
SHGLR2-004020	R0.2	0.4	2	12°	50	2	4	○
SHGLR2-004030	R0.2	0.4	3	12°	50	2	4	○
SHGLR2-004040	R0.2	0.4	4	12°	50	2	4	○
SHGLR2-005010	R0.25	0.5	1	12°	50	2	4	○
SHGLR2-005020	R0.25	0.5	2	12°	50	2	4	○
SHGLR2-005040	R0.25	0.5	4	12°	50	2	4	○
SHGLR2-005060	R0.25	0.5	6	12°	50	2	4	○
SHGLR2-005080	R0.25	0.5	8	12°	50	2	4	○
SHGLR2-006020	R0.3	0.6	2	12°	50	2	4	○
SHGLR2-006040	R0.3	0.6	4	12°	50	2	4	○
SHGLR2-006060	R0.3	0.6	6	12°	50	2	4	○
SHGLR2-006080	R0.3	0.6	8	12°	50	2	4	○
SHGLR2-008020	R0.4	0.8	2	12°	50	2	4	○
SHGLR2-008040	R0.4	0.8	4	12°	50	2	4	○

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Total 77 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLR2-008060	R0.4	0.8	6	12°	50	2	4	○
SHGLR2-008080	R0.4	0.8	8	12°	50	2	4	○
SHGLR2-009020	R0.45	0.9	2	12°	50	2	4	○
SHGLR2-009040	R0.45	0.9	4	12°	50	2	4	○
SHGLR2-009060	R0.45	0.9	6	12°	50	2	4	○
SHGLR2-009080	R0.45	0.9	8	12°	50	2	4	○
SHGLR2-010020	R0.5	1	2	12°	50	2	4	○
SHGLR2-010040	R0.5	1	4	12°	50	2	4	○
SHGLR2-010060	R0.5	1	6	12°	50	2	4	○
SHGLR2-010080	R0.5	1	8	12°	50	2	4	○
SHGLR2-010100	R0.5	1	10	12°	50	2	4	○
SHGLR2-010120	R0.5	1	12	12°	50	2	4	○
SHGLR2-010140	R0.5	1	14	12°	50	2	4	○
SHGLR2-010160	R0.5	1	16	12°	50	2	4	○
SHGLR2-015040	R0.75	1.5	4	12°	50	2	4	○
SHGLR2-015060	R0.75	1.5	6	12°	50	2	4	○
SHGLR2-015080	R0.75	1.5	8	12°	50	2	4	○
SHGLR2-015100	R0.75	1.5	10	12°	50	2	4	○
SHGLR2-015120	R0.75	1.5	12	12°	50	2	4	○
SHGLR2-015140	R0.75	1.5	14	12°	50	2	4	○
SHGLR2-015160	R0.75	1.5	16	12°	50	2	4	○
SHGLR2-020040	R1	2	4	12°	50	2	4	○
SHGLR2-020060	R1	2	6	12°	50	2	4	○
SHGLR2-020080	R1	2	8	12°	50	2	4	○
SHGLR2-020100	R1	2	10	12°	50	2	4	○
SHGLR2-020120	R1	2	12	12°	50	2	4	○
SHGLR2-020160	R1	2	16	12°	50	2	4	○
SHGLR2-020040-6	R1	2	4	12°	60	2	6	○
SHGLR2-020060-6	R1	2	6	12°	60	2	6	○
SHGLR2-020080-6	R1	2	8	12°	60	2	6	○
SHGLR2-020100-6	R1	2	10	12°	60	2	6	○
SHGLR2-020120-6	R1	2	12	12°	60	2	6	○
SHGLR2-020160-6	R1	2	16	12°	60	2	6	○
SHGLR2-030060	R1.5	3	6	12°	50	2	4	○

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Total 77 models

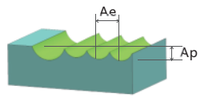
Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLR2-030080	R1.5	3	8	12°	50	2	4	○
SHGLR2-030100	R1.5	3	10	12°	50	2	4	○
SHGLR2-030120	R1.5	3	12	12°	50	2	4	○
SHGLR2-030160	R1.5	3	16	12°	50	2	4	○
SHGLR2-030200	R1.5	3	20	12°	50	2	4	○
SHGLR2-030060-6	R1.5	3	6	12°	60	2	6	○
SHGLR2-030080-6	R1.5	3	8	12°	60	2	6	○
SHGLR2-030100-6	R1.5	3	10	12°	60	2	6	○
SHGLR2-030120-6	R1.5	3	12	12°	60	2	6	○
SHGLR2-030160-6	R1.5	3	16	12°	60	2	6	○
SHGLR2-030200-6	R1.5	3	20	12°	60	2	6	○
SHGLR2-040080	R2	4	8	12°	50	2	4	○
SHGLR2-040100	R2	4	10	12°	50	2	4	○
SHGLR2-040120	R2	4	12	12°	50	2	4	○
SHGLR2-040160	R2	4	16	12°	50	2	4	○
SHGLR2-040200	R2	4	20	12°	50	2	4	○
SHGLR2-040080-6	R2	4	8	12°	60	2	6	○
SHGLR2-040100-6	R2	4	10	12°	60	2	6	○
SHGLR2-040120-6	R2	4	12	12°	60	2	6	○
SHGLR2-040160-6	R2	4	16	12°	60	2	6	○
SHGLR2-040200-6	R2	4	20	12°	60	2	6	○

*New size added from this series.

○ Stocked items.

SAMHO



2 Flutes

Work Material		HRC30-45 Prehardened Steels				HRC45-55 Hardened Steels				HRC55-65 Hardened Steels			
Radius of Ball Nose	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial Depth	Ae (mm) Radidl Depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial Depth	Ae (mm) Radidl Depth
R0.1	0.5	30000	150	0.006	0.006	30000	120	0.006	0.006	30000	100	0.003	0.003
R0.1	1	30000	100	0.006	0.006	30000	100	0.003	0.003	26000	60	0.002	0.002
R0.1	1.5	30000	100	0.003	0.003	30000	100	0.003	0.003	24000	40	0.001	0.001
R0.15	1	28000	300	0.01	0.01	26000	200	0.006	0.006	26000	200	0.005	0.005
R0.15	1.5	28000	300	0.008	0.008	26000	200	0.004	0.004	26000	200	0.003	0.003
R0.15	2	24000	200	0.007	0.007	24000	150	0.003	0.003	24000	100	0.003	0.003
R0.15	3	20000	100	0.005	0.005	18000	100	0.003	0.003	18000	50	0.002	0.002
R0.2	1	24000	600	0.01	0.01	20000	500	0.01	0.01	18000	300	0.01	0.01
R0.2	2	24000	400	0.01	0.01	20000	400	0.008	0.01	18000	250	0.008	0.008
R0.2	3	20000	300	0.008	0.008	18000	300	0.006	0.006	18000	200	0.005	0.005
R0.2	4	18000	150	0.005	0.005	16000	150	0.003	0.003	18000	100	0.003	0.003
R0.25	1	22000	800	0.015	0.015	20000	600	0.01	0.01	16000	500	0.01	0.015
R0.25	2	22000	800	0.015	0.015	18000	600	0.01	0.01	16000	400	0.01	0.015
R0.25	4	18000	400	0.01	0.01	16000	300	0.008	0.008	15000	100	0.005	0.005
R0.25	6	14000	200	0.005	0.005	14000	150	0.008	0.008	15000	80	0.005	0.005
R0.25	8	14000	100	0.003	0.003	14000	100	0.003	0.003	15000	40	0.003	0.003
R0.3	2	20000	1000	0.02	0.02	20000	800	0.02	0.02	13000	700	0.02	0.02
R0.3	4	17000	500	0.015	0.015	15000	500	0.01	0.01	13000	300	0.01	0.01
R0.3	6	15000	400	0.01	0.01	13000	300	0.008	0.008	12000	200	0.008	0.008
R0.3	8	14000	200	0.005	0.005	13000	150	0.005	0.005	12000	100	0.003	0.005
R0.4	2	18000	1200	0.03	0.03	18000	1200	0.02	0.02	13000	700	0.02	0.02
R0.4	4	18000	800	0.02	0.02	18000	800	0.02	0.02	12000	600	0.01	0.03
R0.4	6	14000	500	0.01	0.01	16000	600	0.01	0.02	10000	500	0.01	0.02
R0.4	8	14000	300	0.01	0.01	15000	400	0.005	0.01	10000	300	0.008	0.02
R0.45	2	17000	1400	0.03	0.03	17000	1300	0.02	0.03	12000	700	0.02	0.03
R0.45	4	17000	1200	0.03	0.03	17000	1000	0.02	0.03	11000	600	0.01	0.03
R0.45	6	15000	800	0.02	0.02	13000	600	0.01	0.02	10000	500	0.01	0.02
R0.45	8	13000	500	0.01	0.01	12000	400	0.01	0.02	10000	400	0.01	0.02
R0.5	2	16000	1500	0.03	0.03	14000	1200	0.02	0.03	12000	800	0.02	0.03
R0.5	4	16000	1300	0.03	0.03	14000	1000	0.02	0.03	12000	700	0.02	0.03
R0.5	6	16000	1000	0.03	0.03	14000	800	0.02	0.03	11000	600	0.01	0.03
R0.5	8	14000	500	0.02	0.02	12000	500	0.01	0.02	10000	500	0.01	0.02
R0.5	10	12000	400	0.01	0.01	12000	400	0.01	0.02	10000	400	0.01	0.02
R0.5	12	11000	300	0.01	0.01	10000	300	0.01	0.02	9000	300	0.006	0.02
R0.5	14	10000	250	0.01	0.01	10000	200	0.008	0.01	9000	300	0.006	0.01

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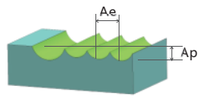
Long Neck Ball

SAMHO



2 Flutes

Work Material		HRC30-45 Prehardened Steels				HRC45-55 Hardened Steels				HRC55-65 Hardened Steels			
Radius of Ball Nose	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial Depth	Ae (mm) Radidl Depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial Depth	Ae (mm) Radidl Depth
R0.5	16	10000	200	0.01	0.01	10000	200	0.005	0.01	9000	200	0.005	0.01
R0.75	4	16000	1600	0.03	0.06	16000	1400	0.02	0.04	10000	800	0.02	0.04
R0.75	6	16000	1400	0.03	0.06	14000	1200	0.02	0.04	10000	800	0.02	0.04
R0.75	8	16000	1200	0.03	0.05	13000	1000	0.02	0.04	9000	800	0.02	0.04
R0.75	10	12000	800	0.02	0.05	12000	600	0.01	0.04	9000	800	0.01	0.04
R0.75	12	10000	500	0.02	0.04	11000	500	0.01	0.04	8500	600	0.01	0.04
R0.75	14	10000	400	0.01	0.03	10000	400	0.01	0.02	8500	400	0.01	0.02
R0.75	16	8000	300	0.01	0.03	9000	300	0.01	0.01	8500	300	0.01	0.01
R1	4	16000	1800	0.03	0.06	16000	2000	0.03	0.06	10000	1500	0.02	0.04
R1	6	15000	1800	0.03	0.06	14000	1800	0.03	0.06	9000	1300	0.02	0.04
R1	8	15000	1800	0.03	0.06	14000	1800	0.03	0.06	9000	1300	0.02	0.04
R1	10	15000	1800	0.03	0.06	14000	1800	0.03	0.06	9000	1000	0.02	0.04
R1	12	13000	1600	0.03	0.06	12000	1400	0.02	0.06	8000	800	0.02	0.04
R1	16	10000	1000	0.02	0.06	10000	1000	0.02	0.06	8000	500	0.01	0.04
R1	4	16000	1800	0.03	0.06	16000	2000	0.03	0.06	10000	1500	0.02	0.04
R1	6	15000	1800	0.03	0.06	14000	1800	0.03	0.06	9000	1400	0.02	0.04
R1	8	15000	1800	0.03	0.06	14000	1800	0.03	0.06	9000	1400	0.02	0.04
R1	10	15000	1800	0.03	0.06	14000	1800	0.03	0.06	9000	1200	0.02	0.04
R1	12	13000	1600	0.03	0.06	12000	1400	0.02	0.06	8000	1000	0.02	0.04
R1	16	10000	1000	0.02	0.06	10000	1000	0.02	0.06	8000	600	0.01	0.04
R1.5	6	14000	2200	0.05	0.07	13000	2200	0.03	0.07	9000	1300	0.02	0.06
R1.5	8	14000	2200	0.05	0.07	13000	2200	0.03	0.07	9000	1300	0.02	0.06
R1.5	10	14000	2200	0.05	0.07	13000	2200	0.03	0.07	9000	1300	0.02	0.06
R1.5	12	14000	2200	0.04	0.07	13000	2200	0.03	0.07	9000	1300	0.02	0.06
R1.5	16	12000	2000	0.03	0.07	11000	2000	0.03	0.07	9000	1300	0.02	0.06
R1.5	20	11000	1000	0.03	0.07	10000	1000	0.02	0.07	8000	1000	0.02	0.06
R1.5	6	14000	2200	0.05	0.07	13000	2200	0.03	0.07	8000	1500	0.02	0.06
R1.5	8	14000	2200	0.05	0.07	13000	2200	0.03	0.07	8000	1500	0.02	0.06
R1.5	10	14000	2200	0.05	0.07	13000	2200	0.03	0.07	9000	1500	0.02	0.06
R1.5	12	14000	2200	0.04	0.07	13000	2200	0.03	0.07	9000	1500	0.02	0.06
R1.5	16	12000	2000	0.03	0.07	11000	2000	0.03	0.07	9000	1500	0.02	0.06
R1.5	20	11000	1000	0.03	0.07	10000	1000	0.02	0.07	8000	1000	0.02	0.06
R2	8	14000	2400	0.05	0.07	12000	2200	0.03	0.07	8000	1500	0.02	0.06
R2	10	14000	2400	0.05	0.07	12000	2200	0.03	0.07	8000	1500	0.02	0.06
R2	12	14000	2400	0.05	0.07	12000	2200	0.03	0.07	8000	1500	0.02	0.06

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Long Neck Ball

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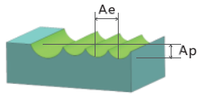


Work Material		HRC30-45 Prehardened Steels				HRC45-55 Hardened Steels				HRC55-65 Hardened Steels			
Radius of Ball Nose	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial Depth	Ae (mm) Radidl Depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial Depth	Ae (mm) Radidl Depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial Depth	Ae (mm) Radidl Depth
R2	16	14000	2400	0.04	0.07	12000	2200	0.03	0.07	8000	1500	0.02	0.06
R2	20	12000	2000	0.04	0.07	11000	2000	0.03	0.07	8000	1500	0.02	0.06
R2	8	14000	2400	0.05	0.07	12000	2200	0.03	0.07	8000	1500	0.02	0.06
R2	10	14000	2400	0.05	0.07	12000	2200	0.03	0.07	8000	1500	0.02	0.06
R2	12	14000	2400	0.05	0.07	12000	2200	0.03	0.07	8000	1500	0.02	0.06
R2	16	14000	2200	0.04	0.07	12000	2200	0.03	0.07	8000	1500	0.02	0.06
R2	20	12000	2000	0.04	0.07	11000	2000	0.03	0.07	8000	1500	0.02	0.06

Note:
* Suitable for air blow, water solube coolant, oil coolant and oil mist;
* Recommend air blow and oil mist for hardened materials above HRC58.

SAMHO

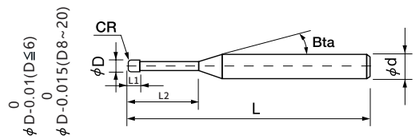
MG | HG Coating | 45 | SD 0-0.003 | R ±0.005 (D≤6) | R ±0.007 (D8~12)

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	○
Alloy steels (SK/SCM/SUS)	○
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	◎
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	○
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*4 Flutes Radius End Mills for Mold Steel;
*Unique flute design, excellent performance on flat surface and contour milling.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Total 72 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGSR4-01001030	1	1.5	3	R0.1	12°	50	4	4	○
SHGSR4-01002030	1	1.5	3	R0.2	12°	50	4	4	○
SHGSR4-01502045	1.5	2	4.5	R0.2	12°	50	4	4	○
SHGSR4-01503045	1.5	2	4.5	R0.3	12°	50	4	4	○
SHGSR4-01505045	1.5	2	4.5	R0.5	12°	50	4	4	○
SHGSR4-02002060	2	3	6	R0.2	12°	50	4	4	○
SHGSR4-02003060	2	3	6	R0.3	12°	50	4	4	○
SHGSR4-02005060	2	3	6	R0.5	12°	50	4	4	○
SHGSR4-02002060-6	2	3	6	R0.2	12°	60	4	6	○
SHGSR4-02003060-6	2	3	6	R0.3	12°	60	4	6	○
SHGSR4-02005060-6	2	3	6	R0.5	12°	60	4	6	○
SHGSR4-03002090	3	4.5	9	R0.2	12°	50	4	4	○
SHGSR4-03003090	3	4.5	9	R0.3	12°	50	4	4	○
SHGSR4-03005090	3	4.5	9	R0.5	12°	50	4	4	○
SHGSR4-03002090-6	3	4.5	9	R0.2	12°	60	4	6	○
SHGSR4-03003090-6	3	4.5	9	R0.3	12°	60	4	6	○
SHGSR4-03005090-6	3	4.5	9	R0.5	12°	60	4	6	○
SHGSR4-04002120	4	6	12	R0.2	-	50	4	4	○
SHGSR4-04003120	4	6	12	R0.3	-	50	4	4	○
SHGSR4-04005120	4	6	12	R0.5	-	50	4	4	○
SHGSR4-04002120-6	4	6	12	R0.2	12°	60	4	6	○
SHGSR4-04003120-6	4	6	12	R0.3	12°	60	4	6	○

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Total 72 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGSR4-04005120-6	4	6	12	R0.5	12°	60	4	6	○
SHGSR4-04005120-75	4	8	12	R0.5	-	75	4	4	○
SHGSR4-04010120-75	4	8	12	R1	-	75	4	4	○
SHGSR4-05005150	5	7.5	15	R0.5	12°	60	4	6	○
SHGSR4-05010150	5	7.5	15	R1	12°	60	4	6	○
SHGSR4-06002200	6	9	20	R0.2	-	60	4	6	○
SHGSR4-06005200	6	9	20	R0.5	-	60	4	6	○
SHGSR4-06010200	6	9	20	R1	-	60	4	6	○
SHGSR4-06002200-75	6	12	20	R0.2	-	75	4	6	○
SHGSR4-06005200-75	6	12	20	R0.5	-	75	4	6	○
SHGSR4-06010200-75	6	12	20	R1	-	75	4	6	○
SHGSR4-06002200-100	6	12	20	R0.2	-	100	4	6	○
SHGSR4-06005200-100	6	12	20	R0.5	-	100	4	6	○
SHGSR4-06010200-100	6	12	20	R1	-	100	4	6	○
SHGSR4-08005240	8	12	24	R0.5	-	60	4	8	○
SHGSR4-08010240	8	12	24	R1	-	60	4	8	○
SHGSR4-08005240-75	8	12	24	R0.5	-	75	4	8	○
SHGSR4-08010240-75	8	12	24	R1	-	75	4	8	○
SHGSR4-08005240-100	8	16	24	R0.5	-	100	4	8	○
SHGSR4-08010240-100	8	16	24	R1	-	100	4	8	○
SHGSR4-08005240-150	8	16	24	R0.5	-	150	4	8	○
SHGSR4-08010240-150	8	16	24	R1	-	150	4	8	○
SHGSR4-10005300	10	15	30	R0.5	-	75	4	10	○
SHGSR4-10010300	10	15	30	R1	-	75	4	10	○
SHGSR4-10005300-100	10	20	30	R0.5	-	100	4	10	○
SHGSR4-10010300-100	10	20	30	R1	-	100	4	10	○
SHGSR4-10005300-150	10	20	30	R0.5	-	150	4	10	○
SHGSR4-10010300-150	10	20	30	R1	-	150	4	10	○
SHGSR4-12005360	12	18	36	R0.5	-	75	4	12	○
SHGSR4-12010360	12	18	36	R1	-	75	4	12	○
SHGSR4-12005360-100	12	24	36	R0.5	-	100	4	12	○
SHGSR4-12010360-100	12	24	36	R1	-	100	4	12	○
SHGSR4-12005360-150	12	24	36	R0.5	-	150	4	12	○
SHGSR4-12010360-150	12	24	36	R1	-	150	4	12	○
SHGSR4-14010420-100	14	21	42	R1	-	100	4	14	○
SHGSR4-14020420-100	14	21	42	R2	-	100	4	14	○
SHGSR4-14010420-150	14	28	42	R1	-	150	4	14	○
SHGSR4-14020420-150	14	28	42	R2	-	150	4	14	○

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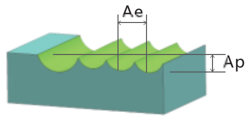
Total 72 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGSR4-16010480-100	16	24	48	R1	-	100	4	16	○
SHGSR4-16020480-100	16	24	48	R2	-	100	4	16	○
SHGSR4-16010480-150	16	32	48	R1	-	150	4	16	○
SHGSR4-16020480-150	16	32	48	R2	-	150	4	16	○
SHGSR4-18010540-100	18	27	54	R1	-	100	4	18	○
SHGSR4-18020540-100	18	27	54	R2	-	100	4	18	○
SHGSR4-18010540-150	18	36	54	R1	-	150	4	18	○
SHGSR4-18020540-150	18	36	54	R2	-	150	4	18	○
SHGSR4-20010600-100	20	30	60	R1	-	100	4	20	○
SHGSR4-20020600-100	20	30	60	R2	-	100	4	20	○
SHGSR4-20010600-150	20	40	60	R1	-	150	4	20	○
SHGSR4-20020600-150	20	40	60	R2	-	150	4	20	○

*New size added from this series.

○ Stocked items.



4 Flutes

Radius

Work Material	HRC30-45 Prehardened Steels		HRC45-55 Hardened Steels		HRC55-65 Hardened Steels	
(mm) Diameter /Radius	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1R0.2	15000	1000	12000	1000	10000	800
D1R0.3	15000	1000	12000	1000	10000	800
D1.5R0.2	14000	1500	12000	1200	10000	1000
D1.5R0.3	14000	1500	12000	1200	10000	1000
D1.5R0.5	14000	1500	12000	1200	10000	1000
D2R0.2	14000	1500	12000	1500	10000	1200
D2R0.3	14000	1500	12000	1500	10000	1200
D2R0.5	14000	1500	12000	1500	10000	1200
D2R0.2	14000	1800	12000	1800	10000	1200
D2R0.3	14000	1800	12000	1800	10000	1200
D2R0.5	14000	1800	12000	1800	10000	1200
D3R0.2	13000	1800	11000	1800	9000	1200
D3R0.3	13000	1800	11000	1800	9000	1200
D3R0.5	13000	1800	11000	1800	9000	1200
D3R0.2	13000	2000	11000	2000	9000	1400
D3R0.3	13000	2000	11000	2000	9000	1400
D3R0.5	13000	2000	11000	2000	9000	1400
D4R0.2	12000	2000	10000	2000	7500	1300
D4R0.3	12000	2000	10000	2000	7500	1300
D4R0.5	12000	2000	10000	2000	7500	1300
D4R0.2	12000	2200	10000	2000	7500	1500
D4R0.3	12000	2200	10000	2000	7500	1500
D4R0.5	12000	2200	10000	2000	7500	1500
D4R0.5	12000	2000	10000	2000	7500	1300
D4R1	12000	2000	10000	2000	7500	1300
D5R0.5	12000	2200	10000	2200	7500	1500
D5R1	12000	2200	10000	2200	7500	1500
D6R0.2	11000	2400	9000	2400	7000	1800
D6R0.5	11000	2400	9000	2400	7000	1800
D6R1	11000	2400	9000	2400	7000	1800
D6R0.2	11000	2400	9000	2400	7000	1800
D6R0.5	11000	2400	9000	2400	7000	1800
D6R1	11000	2400	9000	2400	7000	1800
D6R0.2	11000	2400	9000	2400	7000	1800
D6R0.5	11000	2400	9000	2400	7000	1800

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Work Material	HRC30-45 Prehardened Steels		HRC45-55 Hardened Steels		HRC55-65 Hardened Steels	
(mm) Diameter /Radius	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D6R1	11000	2400	9000	2400	7000	1800
D8R0.5	9000	2600	8000	2600	6000	2000
D8R1	9000	2600	8000	2600	6000	2000
D8R0.5	9000	2600	8000	2600	6000	2000
D8R1	9000	2600	8000	2600	6000	2000
D8R0.5	9000	2600	8000	2600	6000	2000
D8R1	9000	2600	8000	2600	6000	2000
D8R0.5	9000	2600	8000	2600	6000	2000
D8R1	9000	2600	8000	2600	6000	2000
D10R0.5	8000	2600	7000	2600	5500	2000
D10R1	8000	2600	7000	2600	5500	2000
D10R0.5	8000	2600	7000	2600	5500	2000
D10R1	8000	2600	7000	2600	5500	2000
D10R0.5	8000	2600	7000	2600	5500	2000
D10R1	8000	2600	7000	2600	5500	2000
D12R0.5	7500	3000	6500	2600	5000	2000
D12R1	7500	3000	6500	2600	5000	2000
D12R0.5	7500	3000	6500	2600	5000	2000
D12R1	7500	3000	6500	2600	5000	2000
D12R0.5	7500	3000	6500	2600	5000	2000
D12R1	7500	3000	6500	2600	5000	2000
D14R1	6500	3000	6000	2800	4500	1800
D14R2	6500	3000	6000	2800	4500	1800
D14R1	6500	3000	6000	2800	4500	1800
D14R2	6500	3000	6000	2800	4500	1800
D16R1	5500	3200	5000	2800	4000	1800
D16R2	5500	3200	5000	2800	4000	1800
D16R1	5500	3200	5000	2800	4000	1800
D16R2	5500	3200	5000	2800	4000	1800
D18R1	4500	3000	4000	2800	3500	1800
D18R2	4500	3000	4000	2800	3500	1800
D18R1	4500	3000	4000	2800	3500	1800
D18R2	4500	3000	4000	2800	3500	1800
D20R1	4000	2800	3500	2600	3000	1800
D20R2	4000	2800	3500	2600	3000	1800
D20R1	4000	2800	3500	2600	3000	1800
D20R2	4000	2800	3500	2600	3000	1800

Note:
* Decrease both spindle speed and feed rate proportionally when the milling para meters exceed the machine's maximum spindle speed;
* Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

4 Flutes

Radius

SAMHO

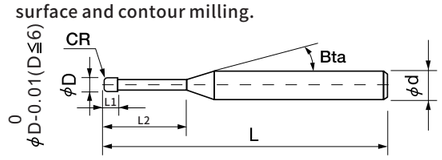
MG | HG Coating | 45 | SD 0-0.003 | R ±0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	○
Alloy steels (SK/SCM/SUS)	○
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	◎
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	○
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*4 Flutes Radius End Mills for Mold Steel;
*Unique flute design, excellent performance on flat surface and contour milling.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Total 69 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLSR2-002005005	D0.2	0.2	0.5	R0.05	12°	50	2	4	○
SHGLSR2-002005010	D0.2	0.2	1	R0.05	12°	50	2	4	○
SHGLSR2-002005015	D0.2	0.2	1.5	R0.05	12°	50	2	4	○
SHGLSR2-002005020	D0.2	0.2	2	R0.05	12°	50	2	4	○
SHGLSR2-003005005	D0.3	0.3	0.5	R0.05	12°	50	2	4	○
SHGLSR2-003005010	D0.3	0.3	1	R0.05	12°	50	2	4	○
SHGLSR2-003005015	D0.3	0.3	1.5	R0.05	12°	50	2	4	○
SHGLSR2-003005020	D0.3	0.3	2	R0.05	12°	50	2	4	○
SHGLSR2-003005030	D0.3	0.3	3	R0.05	12°	50	2	4	○
SHGLSR2-004005010	D0.4	0.4	1	R0.05	12°	50	2	4	○
SHGLSR2-004005020	D0.4	0.4	2	R0.05	12°	50	2	4	○
SHGLSR2-004005030	D0.4	0.4	3	R0.05	12°	50	2	4	○
SHGLSR2-004005040	D0.4	0.4	4	R0.05	12°	50	2	4	○
SHGLSR2-00401010	D0.4	0.4	1	R0.1	12°	50	2	4	○
SHGLSR2-00401020	D0.4	0.4	2	R0.1	12°	50	2	4	○
SHGLSR2-00401030	D0.4	0.4	3	R0.1	12°	50	2	4	○
SHGLSR2-00401040	D0.4	0.4	4	R0.1	12°	50	2	4	○
SHGLSR2-005005010	D0.5	0.5	1	R0.05	12°	50	2	4	○
SHGLSR2-005005020	D0.5	0.5	2	R0.05	12°	50	2	4	○
SHGLSR2-005005040	D0.5	0.5	4	R0.05	12°	50	2	4	○
SHGLSR2-005005060	D0.5	0.5	6	R0.05	12°	50	2	4	○
SHGLSR2-00501010	D0.5	0.5	1	R0.1	12°	50	2	4	○

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Total 69 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLSR2-00501020	D0.5	0.5	2	R0.1	12°	50	2	4	○
SHGLSR2-00501040	D0.5	0.5	4	R0.1	12°	50	2	4	○
SHGLSR2-00501060	D0.5	0.5	6	R0.1	12°	50	2	4	○
SHGLSR2-006005020	D0.6	0.6	2	R0.05	12°	50	2	4	○
SHGLSR2-006005040	D0.6	0.6	4	R0.05	12°	50	2	4	○
SHGLSR2-006005060	D0.6	0.6	6	R0.05	12°	50	2	4	○
SHGLSR2-006005080	D0.6	0.6	8	R0.05	12°	50	2	4	○
SHGLSR2-00601020	D0.6	0.6	2	R0.1	12°	50	2	4	○
SHGLSR2-00601040	D0.6	0.6	4	R0.1	12°	50	2	4	○
SHGLSR2-00601060	D0.6	0.6	6	R0.1	12°	50	2	4	○
SHGLSR2-00601080	D0.6	0.6	8	R0.1	12°	50	2	4	○
SHGLSR2-008005020	D0.8	0.8	2	R0.05	12°	50	2	4	○
SHGLSR2-008005040	D0.8	0.8	4	R0.05	12°	50	2	4	○
SHGLSR2-008005060	D0.8	0.8	6	R0.05	12°	50	2	4	○
SHGLSR2-008005080	D0.8	0.8	8	R0.05	12°	50	2	4	○
SHGLSR2-00801020	D0.8	0.8	2	R0.1	12°	50	2	4	○
SHGLSR2-00801040	D0.8	0.8	4	R0.1	12°	50	2	4	○
SHGLSR2-00801060	D0.8	0.8	6	R0.1	12°	50	2	4	○
SHGLSR2-00801080	D0.8	0.8	8	R0.1	12°	50	2	4	○
SHGLSR2-01001040	D1.0	1.0	4	R0.1	12°	50	2	4	○
SHGLSR2-01001060	D1.0	1.0	6	R0.1	12°	50	2	4	○
SHGLSR2-01001080	D1.0	1.0	8	R0.1	12°	50	2	4	○
SHGLSR2-01001100	D1.0	1.0	10	R0.1	12°	50	2	4	○
SHGLSR2-01002040	D1.0	1.0	4	R0.2	12°	50	2	4	○
SHGLSR2-01002060	D1.0	1.0	6	R0.2	12°	50	2	4	○
SHGLSR2-01002080	D1.0	1.0	8	R0.2	12°	50	2	4	○
SHGLSR2-01002100	D1.0	1.0	10	R0.2	12°	50	2	4	○
SHGLSR2-01501040	D1.5	1.5	4	R0.1	12°	50	2	4	○
SHGLSR2-01501060	D1.5	1.5	6	R0.1	12°	50	2	4	○
SHGLSR2-01501080	D1.5	1.5	8	R0.1	12°	50	2	4	○
SHGLSR2-01501100	D1.5	1.5	10	R0.1	12°	50	2	4	○
SHGLSR2-01502040	D1.5	1.5	4	R0.2	12°	50	2	4	○
SHGLSR2-01502060	D1.5	1.5	6	R0.2	12°	50	2	4	○
SHGLSR2-01502080	D1.5	1.5	8	R0.2	12°	50	2	4	○
SHGLSR2-01502100	D1.5	1.5	10	R0.2	12°	50	2	4	○
SHGLSR2-02001040	D2.0	2.0	4	R0.1	12°	50	2	4	○
SHGLSR2-02001060	D2.0	2.0	6	R0.1	12°	50	2	4	○
SHGLSR2-02001080	D2.0	2.0	8	R0.1	12°	50	2	4	○

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Total 69 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLSR2-02001100	D2.0	2.0	10	R0.1	12°	50	2	4	○
SHGLSR2-02001120	D2.0	2.0	12	R0.1	12°	50	2	4	○
SHGLSR2-02001160	D2.0	2.0	16	R0.1	12°	50	2	4	○
SHGLSR2-02002040	D2.0	2.0	4	R0.2	12°	50	2	4	○
SHGLSR2-02002060	D2.0	2.0	6	R0.2	12°	50	2	4	○
SHGLSR2-02002080	D2.0	2.0	8	R0.2	12°	50	2	4	○
SHGLSR2-02002100	D2.0	2.0	10	R0.2	12°	50	2	4	○
SHGLSR2-02002120	D2.0	2.0	12	R0.2	12°	50	2	4	○
SHGLSR2-02002160	D2.0	2.0	16	R0.2	12°	50	2	4	○

*New size added from this series.

○ Stocked items.

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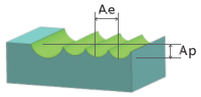

Work Material		HRC30-45		HRC45-55		HRC55-65	
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D0.2 R0.05	0.5	30000	200	30000	150	20000	60
D0.2 R0.05	1	30000	150	30000	100	15000	30
D0.2 R0.05	1.5	30000	120	27000	80	12000	25
D0.2 R0.05	2	30000	90	20000	60	10000	25
D0.3 R0.05	0.5	30000	350	28000	300	22000	150
D0.3 R0.05	1	30000	240	26000	200	22000	120
D0.3 R0.05	1.5	30000	180	26000	180	22000	100
D0.3 R0.05	2	30000	120	24000	120	18000	80
D0.3 R0.05	3	24000	80	18000	80	14000	50
D0.4 R0.05	1	26000	300	22000	300	22000	240
D0.4 R0.05	2	24000	260	20000	240	18000	180
D0.4 R0.05	3	22000	180	16000	160	16000	120
D0.4 R0.05	4	18000	120	14000	100	12000	60
D0.4 R0.1	1	26000	300	22000	300	22000	240
D0.4 R0.1	2	24000	220	20000	240	18000	180
D0.4 R0.1	3	22000	180	16000	160	16000	120
D0.4 R0.1	4	18000	120	14000	100	12000	60
D0.5 R0.05	1	20000	500	18000	400	16000	300
D0.5 R0.05	2	18000	360	15000	300	13000	200
D0.5 R0.05	4	16000	200	13000	180	10000	120
D0.5 R0.05	6	14000	120	12000	120	10000	80
D0.5 R0.1	1	20000	500	18000	400	16000	300
D0.5 R0.1	2	18000	360	15000	300	13000	200
D0.5 R0.1	4	16000	200	13000	180	10000	120
D0.5 R0.1	6	14000	120	12000	120	10000	80
D0.6 R0.05	2	16000	700	16000	600	15000	300
D0.6 R0.05	4	13000	400	12000	350	10000	160
D0.6 R0.05	6	11000	200	10000	200	9000	100
D0.6 R0.05	8	10000	120	10000	100	7000	50
D0.6 R0.1	2	16000	700	16000	600	15000	300
D0.6 R0.1	4	13000	400	12000	350	10000	160
D0.6 R0.1	6	11000	200	10000	200	9000	100
D0.6 R0.1	8	10000	120	10000	100	7000	50
D0.8 R0.05	2	16000	1200	16000	1000	12000	300
D0.8 R0.05	4	14000	800	13000	600	10000	200

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2 Flutes

Work Material		HRC30-45		HRC45-55		HRC55-65	
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D0.8 R0.05	6	13000	600	12000	500	8000	120
D0.8 R0.05	8	12000	300	10000	200	7000	50
D0.8 R0.1	2	16000	1200	16000	1000	12000	300
D0.8 R0.1	4	14000	800	13000	600	10000	200
D0.8 R0.1	6	13000	500	12000	400	8000	120
D0.8 R0.1	8	12000	300	10000	200	7000	50
D1.0 R0.1	4	13000	1000	12000	800	8000	400
D1.0 R0.1	6	11000	700	10000	600	7000	200
D1.0 R0.1	8	10000	500	8500	400	6000	150
D1.0 R0.1	10	8500	300	7500	300	5000	80
D1.0 R0.2	4	13000	1000	12000	800	8000	400
D1.0 R0.2	6	11000	700	10000	600	7000	200
D1.0 R0.2	8	10000	500	8500	400	6000	150
D1.0 R0.2	10	8500	300	7500	300	5000	80
D1.5 R0.1	4	13000	1000	12000	1000	9000	500
D1.5 R0.1	6	10000	1000	10000	900	7500	400
D1.5 R0.1	8	9000	800	8500	800	7000	200
D1.5 R0.1	10	8500	700	7500	600	6500	120
D1.5 R0.2	4	13000	1000	12000	1000	9000	500
D1.5 R0.2	6	10000	1000	10000	900	7500	400
D1.5 R0.2	8	9000	800	8500	800	7000	200
D1.5 R0.2	10	8500	700	7500	600	6500	120
D2.0 R0.1	4	13000	1500	13000	1500	10000	700
D2.0 R0.1	6	12000	1500	12000	1200	9000	500
D2.0 R0.1	8	11000	1000	10000	1000	800	400
D2.0 R0.1	10	10000	900	9000	800	7000	350
D2.0 R0.1	12	9000	800	8000	650	7000	300
D2.0 R0.1	16	7500	600	7000	500	6500	150
D2.0 R0.2	4	13000	1500	13000	1500	10000	700
D2.0 R0.2	6	12000	1500	12000	1200	9000	500
D2.0 R0.2	8	11000	1000	10000	1000	800	400
D2.0 R0.2	10	10000	900	9000	800	7000	350
D2.0 R0.2	12	9000	800	8000	650	7000	300
D2.0 R0.2	16	7500	600	7000	500	6500	150

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

Long Neck Radius

SAMHO

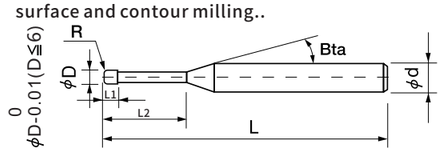
MG | HG Coating | 45 | SD 0-0.003 | R ±0.005

Highly recommend ★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	○
Alloy steels (SK/SCM/SUS)	○
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	◎
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	○
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*4 Flutes Long Neck Radius End Mills for Mold Steels.
*Unique flute design, excellent performance on flat surface and contour milling..



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

4 Flutes

Total 79 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLSR4-01001040	D1.0	1.0	4	R0.1	12°	50	4	4	○
SHGLSR4-01001060	D1.0	1.0	6	R0.1	12°	50	4	4	○
SHGLSR4-01001080	D1.0	1.0	8	R0.1	12°	50	4	4	○
SHGLSR4-01001100	D1.0	1.0	10	R0.1	12°	50	4	4	○
SHGLSR4-01001120	D1.0	1.0	12	R0.1	12°	50	4	4	○
SHGLSR4-01002040	D1.0	1.0	4	R0.2	12°	50	4	4	○
SHGLSR4-01002060	D1.0	1.0	6	R0.2	12°	50	4	4	○
SHGLSR4-01002080	D1.0	1.0	8	R0.2	12°	50	4	4	○
SHGLSR4-01002100	D1.0	1.0	10	R0.2	12°	50	4	4	○
SHGLSR4-01002120	D1.0	1.0	12	R0.2	12°	50	4	4	○
SHGLSR4-01501060	D1.5	1.5	6	R0.1	12°	50	4	4	○
SHGLSR4-01501080	D1.5	1.5	8	R0.1	12°	50	4	4	○
SHGLSR4-01501100	D1.5	1.5	10	R0.1	12°	50	4	4	○
SHGLSR4-01501120	D1.5	1.5	12	R0.1	12°	50	4	4	○
SHGLSR4-01502060	D1.5	1.5	6	R0.2	12°	50	4	4	○
SHGLSR4-01502080	D1.5	1.5	8	R0.2	12°	50	4	4	○
SHGLSR4-01502100	D1.5	1.5	10	R0.2	12°	50	4	4	○
SHGLSR4-01502120	D1.5	1.5	12	R0.2	12°	50	4	4	○
SHGLSR4-02001060	D2.0	2.0	6	R0.1	12°	50	4	4	○
SHGLSR4-02001080	D2.0	2.0	8	R0.1	12°	50	4	4	○

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Long Neck Radius

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Total 79 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLSR4-02001100	D2.0	2.0	10	R0.1	12°	50	4	4	○
SHGLSR4-02001120	D2.0	2.0	12	R0.1	12°	50	4	4	○
SHGLSR4-02001160	D2.0	2.0	16	R0.1	12°	50	4	4	○
SHGLSR4-02002060	D2.0	2.0	6	R0.2	12°	50	4	4	○
SHGLSR4-02002080	D2.0	2.0	8	R0.2	12°	50	4	4	○
SHGLSR4-02002100	D2.0	2.0	10	R0.2	12°	50	4	4	○
SHGLSR4-02002120	D2.0	2.0	12	R0.2	12°	50	4	4	○
SHGLSR4-02002160	D2.0	2.0	16	R0.2	12°	50	4	4	○
SHGLSR4-03001060	D3.0	3.0	6	R0.1	12°	50	4	4	○
SHGLSR4-03001080	D3.0	3.0	8	R0.1	12°	50	4	4	○
SHGLSR4-03001100	D3.0	3.0	10	R0.1	12°	50	4	4	○
SHGLSR4-03001120	D3.0	3.0	12	R0.1	12°	50	4	4	○
SHGLSR4-03001160	D3.0	3.0	16	R0.1	12°	50	4	4	○
SHGLSR4-03001200	D3.0	3.0	20	R0.1	12°	50	4	4	○
SHGLSR4-03002060	D3.0	3.0	6	R0.2	12°	50	4	4	○
SHGLSR4-03002080	D3.0	3.0	8	R0.2	12°	50	4	4	○
SHGLSR4-03002100	D3.0	3.0	10	R0.2	12°	50	4	4	○
SHGLSR4-03002120	D3.0	3.0	12	R0.2	12°	50	4	4	○
SHGLSR4-03002160	D3.0	3.0	16	R0.2	12°	50	4	4	○
SHGLSR4-03002200	D3.0	3.0	20	R0.2	12°	50	4	4	○
SHGLSR4-03005060	D3.0	3.0	6	R0.5	12°	50	4	4	○
SHGLSR4-03005080	D3.0	3.0	8	R0.5	12°	50	4	4	○
SHGLSR4-03005100	D3.0	3.0	10	R0.5	12°	50	4	4	○
SHGLSR4-03005120	D3.0	3.0	12	R0.5	12°	50	4	4	○
SHGLSR4-03005160	D3.0	3.0	16	R0.5	12°	50	4	4	○
SHGLSR4-03005200	D3.0	3.0	20	R0.5	12°	50	4	4	○
SHGLSR4-03001060-6	D3.0	3.0	6	R0.1	12°	60	4	6	○
SHGLSR4-03001080-6	D3.0	3.0	8	R0.1	12°	60	4	6	○
SHGLSR4-03001100-6	D3.0	3.0	10	R0.1	12°	60	4	6	○
SHGLSR4-03001120-6	D3.0	3.0	12	R0.1	12°	60	4	6	○
SHGLSR4-03001160-6	D3.0	3.0	16	R0.1	12°	60	4	6	○
SHGLSR4-03001200-6	D3.0	3.0	20	R0.1	12°	60	4	6	○
SHGLSR4-03002060-6	D3.0	3.0	6	R0.2	12°	60	4	6	○
SHGLSR4-03002080-6	D3.0	3.0	8	R0.2	12°	60	4	6	○
SHGLSR4-03002100-6	D3.0	3.0	10	R0.2	12°	60	4	6	○
SHGLSR4-03002120-6	D3.0	3.0	12	R0.2	12°	60	4	6	○
SHGLSR4-03002160-6	D3.0	3.0	16	R0.2	12°	60	4	6	○
SHGLSR4-03002200-6	D3.0	3.0	20	R0.2	12°	60	4	6	○

Next page

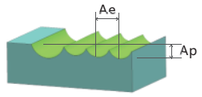
Total 79 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHGLSR4-03005060-6	D3.0	3.0	6	R0.5	12°	60	4	6	○
SHGLSR4-03005080-6	D3.0	3.0	8	R0.5	12°	60	4	6	○
SHGLSR4-03005100-6	D3.0	3.0	10	R0.5	12°	60	4	6	○
SHGLSR4-03005120-6	D3.0	3.0	12	R0.5	12°	60	4	6	○
SHGLSR4-03005160-6	D3.0	3.0	16	R0.5	12°	60	4	6	○
SHGLSR4-03005200-6	D3.0	3.0	20	R0.5	12°	60	4	6	○
SHGLSR4-04001080-6	D4.0	4.0	8	R0.1	12°	60	4	6	○
SHGLSR4-04001100-6	D4.0	4.0	10	R0.1	12°	60	4	6	○
SHGLSR4-04001120-6	D4.0	4.0	12	R0.1	12°	60	4	6	○
SHGLSR4-04001160-6	D4.0	4.0	16	R0.1	12°	60	4	6	○
SHGLSR4-04001200-6	D4.0	4.0	20	R0.1	12°	60	4	6	○
SHGLSR4-04002080-6	D4.0	4.0	8	R0.2	12°	60	4	6	○
SHGLSR4-04002100-6	D4.0	4.0	10	R0.2	12°	60	4	6	○
SHGLSR4-04002120-6	D4.0	4.0	12	R0.2	12°	60	4	6	○
SHGLSR4-04002160-6	D4.0	4.0	16	R0.2	12°	60	4	6	○
SHGLSR4-04002200-6	D4.0	4.0	20	R0.2	12°	60	4	6	○
SHGLSR4-04005080-6	D4.0	4.0	8	R0.5	12°	60	4	6	○
SHGLSR4-04005100-6	D4.0	4.0	10	R0.5	12°	60	4	6	○
SHGLSR4-04005120-6	D4.0	4.0	12	R0.5	12°	60	4	6	○
SHGLSR4-04005160-6	D4.0	4.0	16	R0.5	12°	60	4	6	○
SHGLSR4-04005200-6	D4.0	4.0	20	R0.5	12°	60	4	6	○

*New size added from this series.

○ Stocked items.



Work Material		HRC30-45		HRC45-55		HRC55-65	
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1.0R0.1	4	13000	1300	12000	1000	8500	700
D1.0R0.1	6	11000	1000	10000	900	7000	500
D1.0R0.1	8	10000	800	8500	700	6000	400
D1.0R0.1	10	8500	500	7500	450	5500	300
D1.0R0.1	12	7500	300	7000	200	5500	150
D1.0R0.2	4	13000	1300	12000	1000	8500	700
D1.0R0.2	6	11000	1000	10000	900	7000	500
D1.0R0.2	8	10000	800	8500	700	6000	400
D1.0R0.2	10	8500	500	7500	450	5500	300
D1.0R0.2	12	7500	300	7000	200	5500	150
D1.5R0.1	6	12000	1300	10000	1200	8000	500
D1.5R0.1	8	10000	1000	9000	1000	7000	400
D1.5R0.1	10	9000	900	8500	900	6500	300
D1.5R0.1	12	8500	800	7500	750	6000	200
D1.5R0.2	6	12000	1500	10000	1200	8000	500
D1.5R0.2	8	10000	1000	9000	1000	7000	400
D1.5R0.2	10	9000	900	8500	900	6500	300
D1.5R0.2	12	8500	800	7500	750	6000	200
D2.0R0.1	6	13000	1800	12000	1500	9000	700
D2.0R0.1	8	11000	1500	10000	1100	8000	600
D2.0R0.1	10	10000	1200	9000	1000	7500	500
D2.0R0.1	12	9000	1000	8500	950	7000	400
D2.0R0.1	16	8000	800	7000	700	6000	200
D2.0R0.2	6	13000	1800	12000	1500	9000	700
D2.0R0.2	8	11000	1500	10000	1100	8000	600
D2.0R0.2	10	10000	1200	9000	1000	7500	500
D2.0R0.2	12	9000	1000	8500	950	7000	400
D2.0R0.2	16	8000	800	7000	700	6000	200
D3.0R0.1	6	13000	2200	12000	2000	10000	1000
D3.0R0.1	8	12000	2200	11000	2000	10000	900
D3.0R0.1	10	11000	2000	10000	1800	9000	800
D3.0R0.1	12	10000	2000	10000	1800	8000	700
D3.0R0.1	16	9000	1600	8500	1400	7000	600
D3.0R0.1	20	8500	1400	8000	1200	6500	500
D3.0R0.2	6	13000	2200	12000	2000	10000	1000

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Work Material		HRC30-45		HRC45-55		HRC55-65	
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D3.0 R0.2	8	12000	2200	11000	2000	10000	1900
D3.0 R0.2	10	11000	2000	10000	1800	9000	800
D3.0 R0.2	12	10000	2000	10000	1800	8000	700
D3.0 R0.2	16	9000	1600	8500	1400	7000	600
D3.0 R0.2	20	8500	1400	8000	1200	6500	500
D3.0 R0.5	6	13000	2200	12000	2000	10000	1000
D3.0 R0.5	8	12000	2200	11000	2000	10000	900
D3.0 R0.5	10	11000	2000	10000	1800	9000	800
D3.0 R0.5	12	10000	2000	10000	1800	8000	700
D3.0 R0.5	16	9000	1600	8500	1400	7000	600
D3.0 R0.5	20	8500	1400	8000	1200	6500	500
D3.0 R0.1	6	13000	2200	12000	2000	10000	1000
D3.0 R0.1	8	12000	2200	11000	2000	10000	900
D3.0 R0.1	10	11000	2000	10000	1800	9000	800
D3.0 R0.1	12	10000	2000	10000	1800	8000	700
D3.0 R0.1	16	9000	1600	8500	1400	7000	600
D3.0 R0.1	20	8500	1400	8000	1200	6500	500
D3.0 R0.2	6	13000	2200	12000	2000	10000	1000
D3.0 R0.2	8	12000	2200	11000	2000	10000	900
D3.0 R0.2	10	11000	2000	10000	1800	9000	800
D3.0 R0.2	12	10000	2000	10000	1800	8000	700
D3.0 R0.2	16	9000	1600	8500	1400	7000	600
D3.0 R0.2	20	8500	1400	8000	1200	6500	500
D3.0 R0.5	6	13000	2200	12000	2000	10000	1000
D3.0 R0.5	8	12000	2200	11000	2000	10000	900
D3.0 R0.5	10	11000	2000	10000	1800	9000	800
D3.0 R0.5	12	10000	2000	10000	1800	8000	700
D3.0 R0.5	16	9000	1600	8500	1400	7000	600
D3.0 R0.5	20	8500	1400	8000	1200	6500	500
D4.0 R0.1	8	11000	2200	10000	2000	7500	900
D4.0 R0.1	10	11000	2200	10000	2000	7500	900
D4.0 R0.1	12	10000	2000	9000	2000	7000	800
D4.0 R0.1	16	8500	1800	8000	1600	6500	700
D4.0 R0.1	20	7500	1600	7000	1400	6500	600
D4.0 R0.2	8	11000	2200	10000	2000	7500	900
D4.0 R0.2	10	11000	2200	10000	2000	7500	900
D4.0 R0.2	12	10000	2000	9000	2000	7000	800

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Work Material		HRC30-45 Prehardened Steels		HRC45-55 Hardened Steels		HRC55-65 Hardened Steels	
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D4.0 R0.2	16	8500	1800	8000	1600	6500	700
D4.0 R0.2	20	7500	1600	7000	1400	6500	600
D4.0 R0.5	8	11000	2200	10000	2000	7500	900
D4.0 R0.5	10	11000	2200	10000	2000	7500	900
D4.0 R0.5	12	10000	2000	9000	2000	7000	800
D4.0 R0.5	16	8500	1800	8000	1600	6500	700
D4.0 R0.5	20	7500	1600	7000	1400	6500	600

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

SHB series high precision

1. Shank diameter tolerance 0-0.003 mm
2. Test results for each end mill

Case Studies

★Analysis Report:Material M333(HRC48-52)

Purpose: D1R0.5 life test
Processing machine: ROKU-ROKU CNC (60000rpm)
Coolant: Oil Mist
Test time: 2021-10-30

Milling Shape:

Milling Parameters

Tool	Spindle Speed	Feed Rate	Step	Axial Depth	Radial Depth	Cycle Time
SHBLR2-010040 R0.5*4*D4*50 Finishing milling	(min-1)	(mm/min)		(ap) mm	(ae) mm	
	18000	800		0.01	0.01	9:35:22

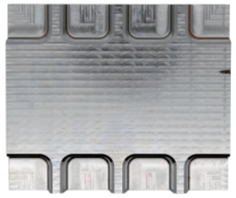
Summary: Slightly worn out after test for 10hours, good surface finishing, actual measured tolerance ±0.003mm.

Cutter Condition:

★ S136（HRC48-52）Analysis Report:Material S136（HRC48-52）

Purpose: D6R0.5 Accuracy test
Processing machine: ROKU-ROKU CNC (36000rpm)
Coolant: Oil Coolant
Test time: 2021-12-28

Milling Shape:

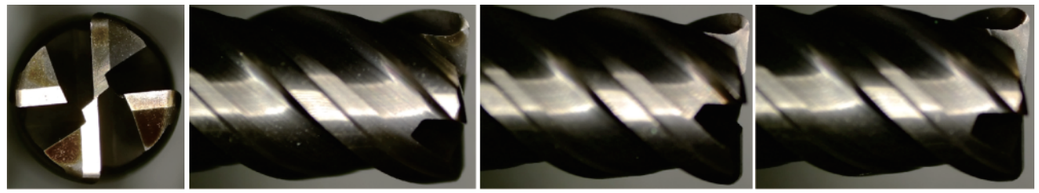


Milling Parameters

Tool	Spindle Speed	Feed Rate	Step	Axial Depth	Radial Depth	Cycle Time
D6R0.5 Contour finishing	(min-1)	(mm/min)		(ap) ㎜	(ae) ㎜	
	10000	800		0.05	0.03	01:35:09

Summary: Slightly worn out can be viewed under industrial microscope, good surface finishing, tolerance ±0.005mm.

Cutter Condition:



★ Analysis Report:Material S136 (HRC48-52)

Purpose: D6 test
Processing machine: ROKU-ROKU CNC (36000rpm)
Coolant: Oil Coolant
Test time: 2021-12-28

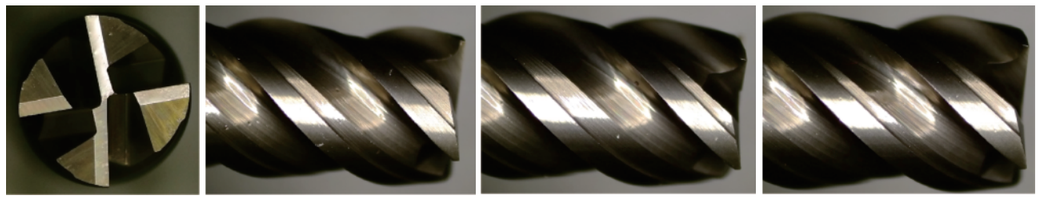
Milling Shape:

Milling Parameters

Tool	Spindle Speed	Feed Rate	Step	Axial Depth	Radial Depth	Cycle Time
D6側刃加工 Side milling	(min-1)	(mm/min)		(ap) ㎜	(ae) ㎜	
	3500	300		12	0.01	00:15:09

Summary: Variable flute design, long life for side milling, good surface finishing.

Cutter Condition:



SHBS 2 Flutes Square)

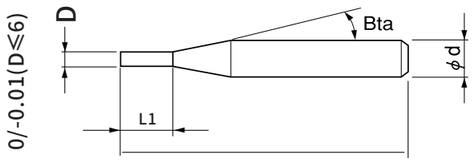
MG | HB Coating | 43 | SD 0-0.003

Highly recommend★ ◯ ◯
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	◯
Alloy steels (SK/SCM/SUS)	◯
Prehardened steels (NAK/HPM)	◯
Hardened steels (~55/~60/~70HRC)	◯
SPECIAL MATERIAL	
Aluminum alloys	◯
Graphite	
Copper	◯
Plastics	
Carbon fiber	
Titanium alloys	◯
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special U-shaped chip evacuation groove design;
*Tungsten steel with ultra-fine particles;
*New HB coating with low friction for HRC28~HRC52 mold steel, long life and excellent surface finishing.



Total 15 models

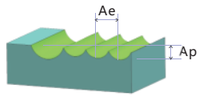
Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBS2-0020040	0.2	0.4	–	12°	50	2	4	◯
SHBS2-0030060	0.3	0.6	–	12°	50	2	4	◯
SHBS2-0040080	0.4	0.8	–	12°	50	2	4	◯
SHBS2-0050100	0.5	1	–	12°	50	2	4	◯
SHBS2-0060150	0.6	1.5	–	12°	50	2	4	◯
SHBS2-0070180	0.7	1.8	–	12°	50	2	4	◯
SHBS2-0080200	0.8	2	–	12°	50	2	4	◯
SHBS2-0100300	1.0	3	–	12°	50	2	4	◯
SHBS2-0150400	1.5	4	–	12°	50	2	4	◯
SHBS2-0200500	2.0	5	–	12°	50	2	4	◯
SHBS2-0250650	2.5	6.5	–	12°	50	2	4	◯
SHBS2-0300800-4	3	8	–	12°	50	2	4	◯
SHBS2-0401000-4	4	10	–	–	50	2	4	◯
SHBS2-0401000-6	4	10	–	12°	60	2	6	◯
SHBS2-0601500	6	15	–	-	60	2	6	◯

*New size added from this series.　　◯ Stocked items.

2 Flutes

Square



Side Milling

Work Material	Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1.0	10000	150	10000	100	8000	60
D1.5	8000	180	8000	120	6000	60
D2.0	8000	200	7000	120	5000	60
D2.5	6000	300	6000	120	4500	60
D3	7000	300	5000	150	4000	80
D4	7000	300	4000	150	4000	100
D4	7000	300	4000	150	4000	100
D6	7000	300	3500	250	3000	200

Milling Amount for Side Milling(mm)

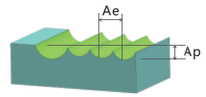
Work Material \ Length of Cut	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
45HRC以下 Below 45HRC	ae=0.07D ap=2D	ae=0.07D ap=2D
45HRC以上 Above 45HRC	ae=0.03D ap=1.5D	ae=0.03D ap=1.5D

D: Diameter (mm)
ap: Axial Depth (mm)
ae: Radial Depth (mm)

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering.

2 Flutes

Square



Contour Milling

Work Material	Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D0.2	30000	200	30000	120	30000	120
D0.3	30000	220	30000	150	30000	150
D0.3	30000	300	30000	200	30000	200
D0.3	26000	300	26000	200	26000	200
D0.3	24000	500	24000	300	24000	300
D0.3	20000	500	20000	500	20000	500
D0.3	16000	800	16000	800	16000	800
D0.3	13000	1000	13000	1000	13000	1000
D0.3	13000	1200	13000	1200	13000	1200
D0.3	12000	1500	12000	1500	12000	1500
D0.3	12000	1500	12000	1500	12000	1500
D0.3	12000	1500	12000	1500	12000	1500
D0.3	11000	1800	11000	1800	11000	1800
D0.3	10000	2200	10000	2200	10000	2200
D0.3	10000	2200	10000	2200	10000	2200
D0.3	9000	2500	9000	2500	9000	2500

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering.

SAMHO

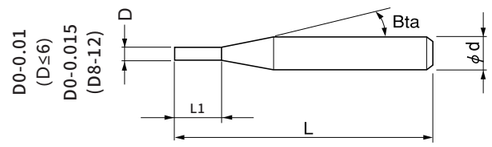
MG | HB Coating | 42~43 | SD 0-0.003 | 不等分割 Variable pitch | 不等螺旋 Unequal spiral

Highly recommend★ ◯ ◯
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	◯
Alloy steels (SK/SCM/SUS)	◯
Prehardened steels (NAK/HPM)	◯
Hardened steels (~55/~60/~70HRC)	◯
SPECIAL MATERIAL	
Aluminum alloys	◯
Graphite	
Copper	◯
Plastics	
Carbon fiber	
Titanium alloys	◯
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Unique U-shaped chip removal groove design can effectively reduce cutting load, have better chip removal performance, and obtain higher metal removal rate.
*Unique HB series coating for more wear resistance and higher heat resistance.
*Suitable for HRC28~ 52 die steel, stainless steel processing.



Total 32 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBS4-0100300	1.0	3	12°	50	4	4	◯
SHBS4-0150400	1.5	4	12°	50	4	4	◯
SHBS4-0200500	2.0	5	12°	50	4	4	◯
SHBS4-0250650	2.5	6.5	12°	50	4	4	◯
SHBS4-0300800-3	3	8	-	50	4	3	◯
SHBS4-0300800-4	3	8	12°	50	4	4	◯
SHBS4-0300800-6	3	8	12°	50	4	6	◯
SHBS4-0401000-4	4	10	-	50	4	4	◯
SHBS4-0401000-6	4	10	12°	50	4	6	◯
SHBS4-0401200-75	4	12	-	75	4	4	◯
SHBS4-0501300	5	13	12°	50	4	6	◯
SHBS4-0601500	6	15	-	50	4	6	◯
SHBS4-0601500-75	6	15	-	75	4	6	◯
SHBS4-0601500-100	6	15	-	100	4	6	◯
SHBS4-0802000	8	20	-	60	4	8	◯
SHBS4-0802000-75	8	20	-	75	4	8	◯

Next page ➞

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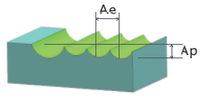
Model Number	D Outside Diameter	L1 Length Of Cut	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBS4-0802000-100	8	20	-	100	4	8	◯
SHBS4-0802000-150	8	20	-	150	4	8	◯
SHBS4-1002500	10	25	-	75	4	10	◯
SHBS4-1002500-100	10	25	-	100	4	10	◯
SHBS4-1002500-150	10	25	-	150	4	10	◯
SHBS4-1203000	12	30	-	75	4	12	◯
SHBS4-1203000-100	12	30	-	100	4	12	◯
SHBS4-1203000-150	12	30	-	150	4	12	◯
SHBS4-1403500-100	14	35	-	100	4	14	◯
SHBS4-1405500-150	14	55	-	150	4	14	◯
SHBS4-1604000-100	16	40	-	100	4	16	◯
SHBS4-1606000-150	16	60	-	150	4	16	◯
SHBS4-1804500-150	18	45	-	100	4	18	◯
SHBS4-1806500-150	18	65	-	150	4	18	◯
SHBS4-2005000-100	20	50	-	100	4	20	◯
SHBS4-2007000-150	20	70	-	150	4	20	◯

*New size added from this series. ◯ Stocked items.



Side Milling

Work Material	Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1.0	10000	220	10000	100	8000	60
D1.5	8000	240	8000	120	6000	60
D2.0	8000	300	6000	150	4500	80
D2.5	8000	300	5000	150	4000	80
D 3	7000	400	5000	150	4000	80
D 4	7000	500	4000	200	3000	150
D 5	7000	500	3500	300	3000	200
D 6	7000	500	3500	300	3000	200
D 8	6500	600	3000	300	2500	200
D 10	6000	600	2500	300	2500	200
D 12	6000	600	2000	250	2000	200
D 14	4000	600	2000	350	2000	300
D 16	4000	600	1800	350	1800	300
D 18	3000	400	1600	350	1600	300
D 20	3000	400	1200	350	1200	300

Milling Amount for Side Milling(mm)

Length of Cut / Work Material	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
45HRC以下 Below 45HRC	ae=0.07D ap=2D	ae=0.07D ap=2D
45HRC以上 Above 45HRC	ae=0.03D ap=1.5D	ae=0.03D ap=1.5D

D：Diameter(mm)
ap：Axial Depth(mm)
ae：Radial Depth(mm)

Contour Milling

Work Material	Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1.0	13000	1000	13000	1000	13000	1000
D1.5	13000	1200	13000	1200	13000	1200
D2.0	12000	1500	12000	1500	12000	1500
D2.5	12000	1500	12000	1500	12000	1500
D 3	11000	1800	11000	1800	11000	1800
D 4	10000	2200	10000	2200	10000	2200
D 5	9000	2500	9000	2500	9000	2500
D 6	9000	2500	9000	2500	9000	2500
D 8	8000	2500	8000	2500	8000	2500
D 10	7000	2500	7000	2500	7000	2500
D 12	6000	2500	6000	2500	6000	2500
D 14	4000	2200	4000	2200	4000	2200
D 16	3500	2200	3500	2200	3500	2200
D 18	3000	2000	3000	2000	3000	2000
D 20	2500	2000	2500	2000	2500	2000

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering.

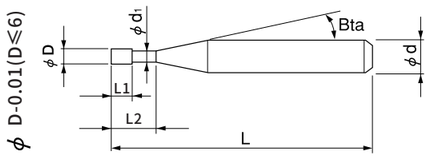
MG | HB Coating | 30 | SD 0-0.003

Highly recommend★ ◯ ◯
/Recommend/Suggest

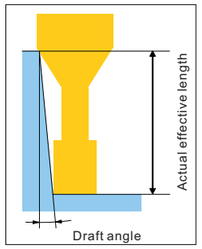
DIE STEEL	Grade
Carbon steels (S45C/S55C)	◯
Alloy steels (SK/SCM/SUS)	◯
Prehardened steels (NAK/HPM)	◯
Hardened steels (~55/~60/~70HRC)	◯
SPECIAL MATERIAL	
Aluminum alloys	◯
Graphite	
Copper	◯
Plastics	
Carbon fiber	
Titanium alloys	◯
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Unique U-shaped chip removal groove design can effectively reduce cutting load, have better chip removal performance, and obtain higher metal removal rate.
*Unique HB series coating for more wear resistance and higher heat resistance.
*Suitable for HRC28~ 52 die steel, stainless steel processing.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.



Total 37 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLS2-002005	0.2	0.3	0.5	12°	50	2	4	◯
SHBLS2-002010	0.2	0.3	1	12°	50	2	4	◯
SHBLS2-002015	0.2	0.3	1.5	12°	50	2	4	◯
SHBLS2-003010	0.3	0.5	1	12°	50	2	4	◯
SHBLS2-003015	0.3	0.5	1.5	12°	50	2	4	◯
SHBLS2-003020	0.3	0.5	2	12°	50	2	4	◯
SHBLS2-003030	0.3	0.5	3	12°	50	2	4	◯
SHBLS2-004010	0.4	0.6	1	12°	50	2	4	◯
SHBLS2-004020	0.4	0.6	2	12°	50	2	4	◯
SHBLS2-004030	0.4	0.6	3	12°	50	2	4	◯

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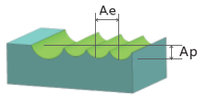
Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLS2-004040	0.4	0.6	4	12°	50	2	4	◯
SHBLS2-005010	0.5	0.75	1	12°	50	2	4	◯
SHBLS2-005020	0.5	0.75	2	12°	50	2	4	◯
SHBLS2-005040	0.5	0.75	4	12°	50	2	4	◯
SHBLS2-005060	0.5	0.75	6	12°	50	2	4	◯
SHBLS2-006020	0.6	0.9	2	12°	50	2	4	◯
SHBLS2-006040	0.6	0.9	4	12°	50	2	4	◯
SHBLS2-006060	0.6	0.9	6	12°	50	2	4	◯
SHBLS2-006080	0.6	0.9	8	12°	50	2	4	◯
SHBLS2-008020	0.8	1.2	2	12°	50	2	4	◯
SHBLS2-008040	0.8	1.2	4	12°	50	2	4	◯
SHBLS2-008060	0.8	1.2	6	12°	50	2	4	◯
SHBLS2-008080	0.8	1.2	8	12°	50	2	4	◯
SHBLS2-010040	1.0	1.5	4	12°	50	2	4	◯
SHBLS2-010060	1.0	1.5	6	12°	50	2	4	◯
SHBLS2-010080	1.0	1.5	8	12°	50	2	4	◯
SHBLS2-010100	1.0	1.5	10	12°	50	2	4	◯
SHBLS2-015040	1.5	2.3	4	12°	50	2	4	◯
SHBLS2-015060	1.5	2.3	6	12°	50	2	4	◯
SHBLS2-015080	1.5	2.3	8	12°	50	2	4	◯
SHBLS2-015100	1.5	2.3	10	12°	50	2	4	◯
SHBLS2-020040	2.0	3.0	4	12°	50	2	4	◯
SHBLS2-020060	2.0	3.0	6	12°	50	2	4	◯
SHBLS2-020080	2.0	3.0	8	12°	50	2	4	◯
SHBLS2-020100	2.0	3.0	10	12°	50	2	4	◯
SHBLS2-020120	2.0	3.0	12	12°	50	2	4	◯
SHBLS2-020160	2.0	3.0	16	12°	50	2	4	◯

*New size added from this series.

◯ Stocked items.



Work Material		Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D0.2	0.5	30000	120	30000	120	30000	120
D0.2	1	30000	120	30000	120	30000	100
D0.2	1.5	28000	120	28000	120	28000	100
D0.3	1	30000	150	30000	150	30000	150
D0.3	1.5	28000	120	28000	120	26000	120
D0.3	2	26000	120	26000	120	22000	100
D0.3	3	26000	100	26000	100	20000	80
D0.4	1	26000	300	26000	300	26000	260
D0.4	2	26000	220	26000	220	24000	200
D0.4	3	24000	180	24000	180	20000	200
D0.4	4	24000	150	24000	150	18000	150
D0.5	1	26000	400	26000	400	20000	300
D0.5	2	26000	300	26000	300	18000	200
D0.5	4	24000	180	24000	180	16000	150
D0.5	6	24000	150	24000	150	15000	100
D0.6	2	26000	500	26000	500	20000	500
D0.6	4	24000	300	24000	300	16000	200
D0.6	6	22000	200	22000	200	16000	150
D0.6	8	20000	150	20000	150	14000	100
D0.8	2	18000	600	18000	600	18000	500
D0.8	4	16000	400	16000	400	14000	300
D0.8	6	16000	300	16000	300	14000	200
D0.8	8	14000	150	14000	150	13000	150
D1.0	4	13000	800	13000	800	12000	800
D1.0	6	11000	600	11000	600	10000	600
D1.0	8	10000	300	10000	300	9000	300
D1.0	10	9000	150	9000	150	8000	120
D1.5	4	13000	1200	13000	1200	13000	1000
D1.5	6	11000	800	11000	800	11000	600
D1.5	8	10000	500	10000	500	10000	400
D1.5	10	9000	400	9000	400	9000	300
D2.0	4	12000	1400	12000	1400	10000	1000
D2.0	6	12000	1200	12000	1200	10000	800
D2.0	8	10000	1000	10000	1000	9000	600

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Work Material		Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D2.0	10	9500	600	9500	600	8000	400
D2.0	12	8500	400	8500	400	7000	260
D2.0	16	7000	300	7000	300	6000	200

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point.

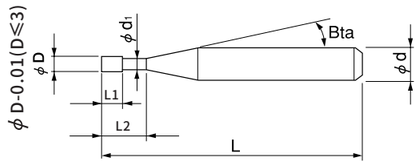
MG | HB Coating | 30 | SD 0-0.003

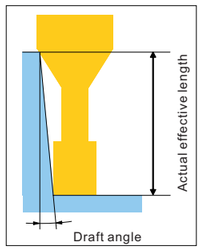
Highly recommend★ ◯ ◯
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	◯
Alloy steels (SK/SCM/SUS)	◯
Prehardened steels (NAK/HPM)	◯
Hardened steels (~55/~60/~70HRC)	◯
SPECIAL MATERIAL	
Aluminum alloys	◯
Graphite	
Copper	◯
Plastics	
Carbon fiber	
Titanium alloys	◯
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Unique U-shaped chip removal groove design can effectively reduce cutting load, have better chip removal performance, and obtain higher metal removal rate.
*Unique HB series coating for more wear resistance and higher heat resistance.
*Suitable for HRC28~ 52 die steel, stainless steel processing.





Total 24 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLS4-010040	1.0	1.5	4	12°	50	4	4	◯
SHBLS4-010060	1.0	1.5	6	12°	50	4	4	◯
SHBLS4-010080	1.0	1.5	8	12°	50	4	4	◯
SHBLS4-010100	1.0	1.5	10	12°	50	4	4	◯
SHBLS4-015040	1.5	2.3	4	12°	50	4	4	◯
SHBLS4-015060	1.5	2.3	6	12°	50	4	4	◯
SHBLS4-015080	1.5	2.3	8	12°	50	4	4	◯
SHBLS4-015100	1.5	2.3	10	12°	50	4	4	◯
SHBLS4-020060	2.0	3.0	6	12°	50	4	4	◯
SHBLS4-020080	2.0	3.0	8	12°	50	4	4	◯

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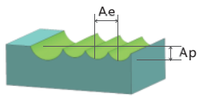
Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLS4-020100	2.0	3.0	10	12°	50	4	4	◯
SHBLS4-020120	2.0	3.0	12	12°	50	4	4	◯
SHBLS4-020160	2.0	3.0	16	12°	50	4	4	◯
SHBLS4-020200	2.0	3.0	20	12°	50	4	4	◯
SHBLS4-030080	3.0	4.5	8	12°	50	4	4	◯
SHBLS4-030100	3.0	4.5	10	12°	50	4	4	◯
SHBLS4-030120	3.0	4.5	12	12°	50	4	4	◯
SHBLS4-030160	3.0	4.5	16	12°	50	4	4	◯
SHBLS4-030200	3.0	4.5	20	12°	50	4	4	◯
SHBLS4-030080-6	3.0	4.5	8	12°	50	4	6	◯
SHBLS4-030100-6	3.0	4.5	10	12°	50	4	6	◯
SHBLS4-030120-6	3.0	4.5	12	12°	50	4	6	◯
SHBLS4-030160-6	3.0	4.5	16	12°	50	4	6	◯
SHBLS4-030200-6	3.0	4.5	20	12°	50	4	6	

*New size added from this series. ◯ Stocked items.



Work Material		Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1.0	4	13000	1300	13000	1300	12000	1200
D1.0	6	11000	1000	11000	1000	10000	800
D1.0	8	10000	800	10000	800	8500	700
D1.0	10	9000	500	9000	500	7500	500
D1.5	4	13000	1400	13000	1400	13000	1200
D1.5	6	11000	1200	11000	1200	10000	1000
D1.5	8	10000	1000	10000	1000	9000	900
D1.5	10	9000	900	9000	900	8500	800
D2.0	6	12000	1500	12000	1500	10000	1200
D2.0	8	11000	1300	11000	1300	9000	1000
D2.0	10	10000	1200	10000	1200	8000	800
D2.0	12	9000	900	9000	900	7000	700
D2.0	16	7500	700	7500	700	6000	600
D2.0	20	7000	400	7000	400	5500	300
D3.0	8	8500	2000	8500	2000	8000	1800
D3.0	10	8500	2000	8500	2000	8000	1800
D3.0	12	8000	1800	8000	1800	7000	1600
D3.0	16	7000	1400	7000	1400	6000	1200
D3.0	20	6500	1200	6500	1200	5500	1000
D3.0	8	8500	2000	8500	2000	8000	1800
D3.0	10	8500	2000	8500	2000	8000	1800
D3.0	12	8000	1800	8000	1800	7000	1600
D3.0	16	7000	1400	7000	1400	6000	1200
D3.0	20	6500	1200	6500	1200	5500	1000

Note:
* Decrease both spindle speed and feed rate pro portionally when the milling para meters exceed the machine's maximum spindle speed;
* Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
* Recommend using a non-contact measuring device toavoid damaging the precision tip point.

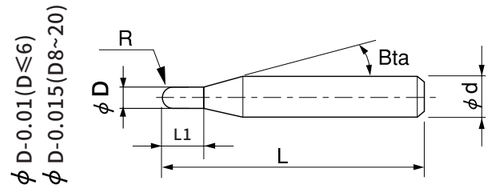
MG | HB Coating | 30 | SD 0-0.003 | R ±0.005 (R≤3) | R ±0.007 (R4~10)

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	◎
Alloy steels (SK/SCM/SUS)	◎
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	○
SPECIAL MATERIAL	
Aluminum alloys	○
Graphite	
Copper	◎
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Unique variable rake angle design;
*Tungsten steel with ultra-fine particles;
*Suitable for Automotive Mold milling.



Total 32 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBR2-002003	R0.1	0.3	12°	50	2	4	○
SHBR2-0030045	R0.15	0.45	12°	50	2	4	○
SHBR2-004006	R0.2	0.6	12°	50	2	4	○
SHBR2-005008	R0.25	0.8	12°	50	2	4	○
SHBR2-006009	R0.3	0.9	12°	50	2	4	○
SHBR2-008012	R0.4	1.2	12°	50	2	4	○
SHBR2-010015	R0.5	1.5	12°	50	2	4	○
SHBR2-015023	R0.75	2.3	12°	50	2	4	○
SHBR2-020030	R1	3	12°	50	2	4	○
SHBR2-030045-3	R1.5	4.5	-	50	2	3	○
SHBR2-030045-4	R1.5	4.5	12°	50	2	4	○
SHBR2-030045-6	R1.5	4.5	12°	50	2	6	○
SHBR2-040060-4	R2	6	-	50	2	4	○
SHBR2-040060-6	R2	6	12°	50	2	6	○
SHBR2-050075	R2.5	7.5	12°	50	2	6	○
SHBR2-060090	R3	9	-	50	2	6	○
SHBR2-060090-75	R3	9	-	75	2	6	○
SHBR2-060090-100	R3	9	-	100	2	6	○
SHBR2-080120	R4	12	-	60	2	8	○
SHBR2-080120-75	R4	12	-	75	2	8	○

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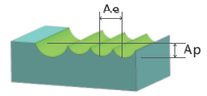
SHBR 2 Flutes Ball

SAMHO

Model Number	D Outside Diameter	L1 Length Of Cut	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBR2-080120-100	R4	12	-	100	2	8	○
SHBR2-080120-150	R4	12	-	150	2	8	○
SHBR2-100150	R5	15	-	75	2	10	○
SHBR2-100150-100	R5	15	-	100	2	10	○
SHBR2-100150-150	R5	15	-	150	2	10	○
SHBR2-120180	R6	18	-	75	2	12	○
SHBR2-120180-100	R6	18	-	100	2	12	○
SHBR2-120180-150	R6	18	-	150	2	12	○
SHBR2-140200-150	R7	20	-	150	2	14	○
SHBR2-160240-150	R8	24	-	150	2	16	○
SHBR2-180250-150	R9	25	-	150	2	18	○
SHBR2-200300-150	R10	30	-	150	2	20	○

*New size added from this series.　　○ Stocked items.

SHBR2-000 Milling Conditions



Work Material	Oxygen-free Copper Red Copper				HRC30-45 carbon steel and prehardened steel				HRC45-55 hardened steel			
Radius of Ball Nose	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth
R1	30000	150	0.006	0.006	30000	150	0.006	0.006	30000	150	0.006	0.006
R0.15	26000	300	0.01	0	26000	300	0.01	0	24000	200	0.008	0.008
R0.2	22000	400	0.015	0.015	22000	400	0.015	0.015	22000	300	0.01	0.01
R0.25	20000	400	0.015	0.015	20000	400	0.015	0.015	22000	400	0.015	0.015
R0.3	20000	800	0.02	0.02	20000	800	0.02	0.02	20000	600	0.015	0.015
R0.4	18000	1200	0.02	0.03	18000	1200	0.02	0.03	20000	800	0.02	0.02
R0.5	16000	1200	0.03	0.04	16000	1200	0.03	0.04	18000	1000	0.02	0.03
R0.75	16000	1500	0.03	0.05	16000	1500	0.03	0.05	16000	1200	0.02	0.04
R1	15000	1800	0.03	0.05	15000	1800	0.03	0.05	14000	1800	0.02	0.05
R1	15000	1800	0.04	0.05	15000	1800	0.04	0.05	14000	1800	0.02	0.05
R1.5	14000	2200	0.04	0.07	14000	2200	0.04	0.07	13000	2200	0.03	0.06
R1.5	14000	2200	0.05	0.07	14000	2200	0.05	0.07	13000	2200	0.03	0.06
R1.5	14000	2200	0.04	0.07	14000	2200	0.04	0.07	13000	2200	0.03	0.06
R2	14000	2400	0.04	0.08	14000	2400	0.04	0.08	12000	2400	0.03	0.06
R2	14000	2400	0.05	0.08	14000	2400	0.05	0.08	12000	2400	0.03	0.06
R2.5	12000	2600	0.05	0.08	12000	2600	0.05	0.08	12000	2400	0.03	0.06
R3	12000	2600	0.05	0.08	12000	2600	0.05	0.08	10000	2600	0.03	0.08
R4	10000	3000	0.05	0.1	10000	3000	0.05	0.1	9000	2800	0.03	0.1
R5	9000	3000	0.05	0.12	9000	3000	0.05	0.12	8000	2800	0.03	0.12
R6	9000	3000	0.05	0.15	9000	3000	0.05	0.15	7000	2800	0.03	0.12
R7	7000	3000	0.08	0.15	7000	3000	0.08	0.15	6000	2800	0.03	0.15
R8	6000	3000	0.08	0.15	6000	3000	0.08	0.15	5500	2800	0.03	0.15
R9	5000	3000	0.08	0.15	5000	3000	0.08	0.15	4500	2800	0.03	0.15
R10	4500	3000	0.08	0.15	4500	3000	0.08	0.15	4000	2800	0.03	0.15

Note:
*The above milling parameters are calculated based on 3D. Decrease both spindle speed and feed rate proportionally if the overhang length exceeds 3xD;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.

SAMHO

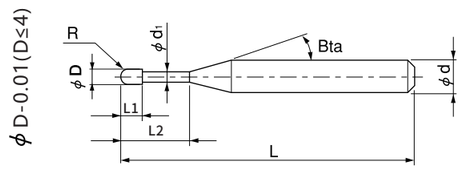
MG | HB Coating | 30 | SD 0-0.003 | R ±0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	◎
Alloy steels (SK/SCM/SUS)	◎
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	○
SPECIAL MATERIAL	
Aluminum alloys	○
Graphite	
Copper	◎
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Unique U-shaped chip removal groove design can effectively reduce cutting load, have better chip removal performance, and obtain higher metal removal rate.
*Unique HB series coating for more wear resistance and higher heat resistance.
*Suitable for HRC28~ 52 die steel, stainless steel processing.



Total 77 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLR2-002005	R0.1	0.2	0.5	12°	50	2	4	○
SHBLR2-002010	R0.1	0.2	1	12°	50	2	4	○
SHBLR2-002015	R0.1	0.2	1.5	12°	50	2	4	○
SHBLR2-003010	R0.15	0.3	1	12°	50	2	4	○
SHBLR2-003015	R0.15	0.3	1.5	12°	50	2	4	○
SHBLR2-003020	R0.15	0.3	2	12°	50	2	4	○
SHBLR2-003030	R0.15	0.3	3	12°	50	2	4	○
SHBLR2-004010	R0.2	0.4	1	12°	50	2	4	○
SHBLR2-004020	R0.2	0.4	2	12°	50	2	4	○
SHBLR2-004030	R0.2	0.4	3	12°	50	2	4	○
SHBLR2-004040	R0.2	0.4	4	12°	50	2	4	○
SHBLR2-005010	R0.25	0.5	1	12°	50	2	4	○
SHBLR2-005020	R0.25	0.5	2	12°	50	2	4	○
SHBLR2-005040	R0.25	0.5	4	12°	50	2	4	○
SHBLR2-005060	R0.25	0.5	6	12°	50	2	4	○
SHBLR2-005080	R0.25	0.5	8	12°	50	2	4	○
SHBLR2-006020	R0.3	0.6	2	12°	50	2	4	○
SHBLR2-006040	R0.3	0.6	4	12°	50	2	4	○
SHBLR2-006060	R0.3	0.6	6	12°	50	2	4	○
SHBLR2-006080	R0.3	0.6	8	12°	50	2	4	○
SHBLR2-008020	R0.4	0.8	2	12°	50	2	4	○
SHBLR2-008040	R0.4	0.8	4	12°	50	2	4	○

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Model Number	D Outside Diameter	L1 Length Of cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLR2-008060	R0.4	0.8	6	12°	50	2	4	○
SHBLR2-008080	R0.4	0.8	8	12°	50	2	4	○
SHBLR2-009020	R0.45	0.9	2	12°	50	2	4	○
SHBLR2-009040	R0.45	0.9	4	12°	50	2	4	○
SHBLR2-009060	R0.45	0.9	6	12°	50	2	4	○
SHBLR2-009080	R0.45	0.9	8	12°	50	2	4	○
SHBLR2-010020	R0.5	1	2	12°	50	2	4	○
SHBLR2-010040	R0.5	1	4	12°	50	2	4	○
SHBLR2-010060	R0.5	1	6	12°	50	2	4	○
SHBLR2-010080	R0.5	1	8	12°	50	2	4	○
SHBLR2-010100	R0.5	1	10	12°	50	2	4	○
SHBLR2-010120	R0.5	1	12	12°	50	2	4	○
SHBLR2-010140	R0.5	1	14	12°	50	2	4	○
SHBLR2-010160	R0.5	1	16	12°	50	2	4	○
SHBLR2-015040	R0.75	1.5	4	12°	50	2	4	○
SHBLR2-015060	R0.75	1.5	6	12°	50	2	4	○
SHBLR2-015080	R0.75	1.5	8	12°	50	2	4	○
SHBLR2-015100	R0.75	1.5	10	12°	50	2	4	○
SHBLR2-015120	R0.75	1.5	12	12°	50	2	4	○
SHBLR2-015140	R0.75	1.5	14	12°	50	2	4	○
SHBLR2-015160	R0.75	1.5	16	12°	50	2	4	○
SHBLR2-020040	R1	2	4	12°	50	2	4	○
SHBLR2-020060	R1	2	6	12°	50	2	4	○
SHBLR2-020080	R1	2	8	12°	50	2	4	○
SHBLR2-020100	R1	2	10	12°	50	2	4	○
SHBLR2-020120	R1	2	12	12°	50	2	4	○
SHBLR2-020160	R1	2	16	12°	50	2	4	○
SHBLR2-020040-6	R1	2	4	12°	60	2	6	○
SHBLR2-020060-6	R1	2	6	12°	60	2	6	○
SHBLR2-020080-6	R1	2	8	12°	60	2	6	○
SHBLR2-020100-6	R1	2	10	12°	60	2	6	○
SHBLR2-020120-6	R1	2	12	12°	60	2	6	○
SHBLR2-020160-6	R1	2	16	12°	60	2	6	○
SHBLR2-030060	R1.5	3	6	12°	50	2	4	○

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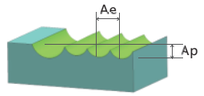
Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLR2-030080	R1.5	3	8	12°	50	2	4	○
SHBLR2-030100	R1.5	3	10	12°	50	2	4	○
SHBLR2-030120	R1.5	3	12	12°	50	2	4	○
SHBLR2-030160	R1.5	3	16	12°	50	2	4	○
SHBLR2-030200	R1.5	3	20	12°	50	2	4	○
SHBLR2-030060-6	R1.5	3	6	12°	60	2	6	○
SHBLR2-030080-6	R1.5	3	8	12°	60	2	6	○
SHBLR2-030100-6	R1.5	3	10	12°	60	2	6	○
SHBLR2-030120-6	R1.5	3	12	12°	60	2	6	○
SHBLR2-030160-6	R1.5	3	16	12°	60	2	6	○
SHBLR2-030200-6	R1.5	3	20	12°	60	2	6	○
SHBLR2-040080	R2	4	8	12°	50	2	4	○
SHBLR2-040100	R2	4	10	12°	50	2	4	○
SHBLR2-040120	R2	4	12	12°	50	2	4	○
SHBLR2-040160	R2	4	16	12°	50	2	4	○
SHBLR2-040200	R2	4	20	12°	50	2	4	○
SHBLR2-040080-6	R2	4	8	12°	60	2	6	○
SHBLR2-040100-6	R2	4	10	12°	60	2	6	○
SHBLR2-040120-6	R2	4	12	12°	60	2	6	○
SHBLR2-040160-6	R2	4	16	12°	60	2	6	○
SHBLR2-040200-6	R2	4	20	12°	60	2	6	○

*New size added from this series.　　○ Stocked items.



Work Material		Oxygen-free Copper Red Copper				HRC30-45 carbon steel and prehardened steel				HRC45-55 hardened steel			
Radius of Ball Nose	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth
R0.1	0.5	30000	150	0.006	0.006	30000	150	0.006	0.006	30000	120	0.006	0.006
R0.1	1	30000	100	0.006	0.006	30000	100	0.006	0.006	30000	100	0.003	0.003
R0.1	1.5	30000	100	0.003	0.003	30000	100	0.003	0.003	30000	100	0.003	0.003
R0.15	1	28000	300	0.01	0.01	28000	300	0.01	0.01	26000	200	0.006	0.006
R0.15	1.5	28000	300	0.008	0.008	28000	300	0.008	0.008	26000	200	0.004	0.004
R0.15	2	24000	200	0.007	0.007	24000	200	0.007	0.007	24000	150	0.003	0.003
R0.15	3	20000	100	0.005	0.005	20000	100	0.005	0.005	18000	100	0.003	0.003
R0.2	1	24000	600	0.01	0.02	24000	600	0.01	0.02	20000	500	0.01	0.01
R0.2	2	24000	400	0.01	0.015	24000	400	0.01	0.015	20000	400	0.008	0.01
R0.2	3	20000	300	0.008	0.008	20000	300	0.008	0.008	18000	300	0.006	0.006
R0.2	4	18000	150	0.005	0.005	18000	150	0.005	0.005	16000	150	0.003	0.003
R0.25	1	22000	800	0.015	0.02	22000	800	0.015	0.02	20000	600	0.01	0.01
R0.25	2	22000	800	0.015	0.02	22000	800	0.015	0.02	18000	600	0.01	0.01
R0.25	4	18000	400	0.01	0.01	18000	400	0.01	0.01	16000	300	0.008	0.008
R0.25	6	14000	200	0.005	0.005	14000	200	0.005	0.005	14000	150	0.008	0.008
R0.25	8	14000	100	0.003	0.003	14000	100	0.003	0.003	14000	100	0.003	0.003
R0.3	2	20000	1000	0.02	0.02	20000	1000	0.02	0.02	20000	800	0.02	0.02
R0.3	4	17000	500	0.015	0.02	17000	500	0.015	0.02	15000	500	0.01	0.01
R0.3	6	15000	400	0.01	0.02	15000	400	0.01	0.02	13000	300	0.008	0.008
R0.3	8	14000	200	0.005	0.01	14000	200	0.005	0.01	13000	150	0.005	0.005
R0.4	2	18000	1200	0.03	0.03	18000	1200	0.03	0.03	18000	1200	0.02	0.02
R0.4	4	18000	800	0.02	0.03	18000	800	0.02	0.03	18000	800	0.02	0.02
R0.4	6	14000	500	0.01	0.03	14000	500	0.01	0.03	16000	600	0.01	0.02
R0.4	8	14000	300	0.01	0.02	14000	300	0.01	0.02	15000	400	0.005	0.01
R0.45	2	17000	1400	0.03	0.04	17000	1400	0.03	0.04	17000	1300	0.02	0.03
R0.45	4	17000	1200	0.03	0.04	17000	1200	0.03	0.04	17000	1000	0.02	0.03
R0.45	6	15000	800	0.02	0.03	15000	800	0.02	0.03	13000	600	0.01	0.02
R0.45	8	13000	500	0.01	0.03	13000	500	0.01	0.03	12000	400	0.01	0.02
R0.5	2	16000	1500	0.03	0.05	16000	1500	0.03	0.05	14000	1200	0.02	0.03
R0.5	4	16000	1300	0.03	0.05	16000	1300	0.03	0.05	14000	1000	0.02	0.03
R0.5	6	16000	1000	0.03	0.05	16000	1000	0.03	0.05	14000	800	0.02	0.03
R0.5	8	14000	500	0.02	0.04	14000	500	0.02	0.04	12000	500	0.01	0.02
R0.5	10	12000	400	0.01	0.03	12000	400	0.01	0.03	12000	400	0.01	0.02
R0.5	12	11000	300	0.01	0.02	11000	300	0.01	0.02	10000	300	0.01	0.02
R0.5	14	10000	250	0.01	0.02	10000	250	0.01	0.02	10000	200	0.008	0.01

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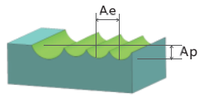

Work Material		Oxygen-free Copper Red Copper				HRC30-45 carbon steel and prehardened steel				HRC45-55 hardened steel			
Radius of Ball Nose	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth
R0.5	16	10000	200	0.01	0.01	110000	200	0.01	0.01	10000	200	0.005	0.01
R0.75	4	16000	1600	0.03	0.06	16000	1600	0.03	0.06	16000	1400	0.02	0.04
R0.75	6	16000	1400	0.03	0.06	16000	1400	0.03	0.06	14000	1200	0.02	0.04
R0.75	8	16000	1200	0.03	0.05	16000	1200	0.03	0.05	13000	1000	0.02	0.04
R0.75	10	12000	800	0.02	0.05	12000	800	0.02	0.05	12000	600	0.01	0.04
R0.75	12	10000	500	0.02	0.04	10000	500	0.02	0.04	11000	500	0.01	0.04
R0.75	14	10000	400	0.01	0.03	10000	400	0.01	0.03	10000	400	0.01	0.02
R0.75	16	8000	300	0.01	0.03	8000	300	0.01	0.03	9000	300	0.01	0.01
R1	4	16000	1800	0.03	0.06	16000	1800	0.03	0.06	16000	2000	0.03	0.06
R1	6	15000	1800	0.03	0.06	15000	1800	0.03	0.06	14000	1800	0.03	0.06
R1	8	15000	1800	0.03	0.06	15000	1800	0.03	0.06	14000	1800	0.03	0.06
R1	10	15000	1800	0.03	0.06	15000	1800	0.03	0.06	14000	1800	0.03	0.06
R1	12	13000	1600	0.03	0.06	13000	1600	0.03	0.06	12000	1400	0.02	0.06
R1	16	10000	1000	0.02	0.06	10000	1000	0.02	0.06	10000	1000	0.02	0.06
R1	4	16000	1800	0.03	0.06	16000	1800	0.03	0.06	16000	2000	0.03	0.06
R1	6	15000	1800	0.03	0.06	15000	1800	0.03	0.06	14000	1800	0.03	0.06
R1	8	15000	1800	0.03	0.06	15000	1800	0.03	0.06	14000	1800	0.03	0.06
R1	10	15000	1800	0.03	0.06	15000	1800	0.03	0.06	14000	1800	0.03	0.06
R1	12	13000	1600	0.03	0.06	13000	1600	0.03	0.06	12000	1400	0.02	0.06
R1	16	10000	1000	0.02	0.06	10000	1000	0.02	0.06	10000	1000	0.02	0.06
R1.5	6	14000	2200	0.05	0.07	14000	2200	0.05	0.07	13000	2200	0.03	0.07
R1.5	8	14000	2200	0.05	0.07	14000	2200	0.05	0.07	13000	2200	0.03	0.07
R1.5	10	14000	2200	0.05	0.07	14000	2200	0.05	0.07	13000	2200	0.03	0.07
R1.5	12	14000	2200	0.04	0.07	14000	2200	0.04	0.07	13000	2200	0.03	0.07
R1.5	16	12000	2000	0.03	0.07	12000	2000	0.03	0.07	11000	2000	0.03	0.07
R1.5	20	11000	1000	0.03	0.07	11000	1000	0.03	0.07	10000	1000	0.02	0.07
R1.5	6	14000	2200	0.05	0.07	14000	2200	0.05	0.07	13000	2200	0.03	0.07
R1.5	8	14000	2200	0.05	0.07	14000	2200	0.05	0.07	13000	2200	0.03	0.07
R1.5	10	14000	2200	0.05	0.07	14000	2200	0.05	0.07	13000	2200	0.03	0.07
R1.5	12	14000	2200	0.04	0.07	14000	2200	0.04	0.07	13000	2200	0.03	0.07
R1.5	16	12000	2000	0.03	0.07	12000	2000	0.03	0.07	11000	2000	0.03	0.07
R1.5	20	11000	1000	0.03	0.07	11000	1000	0.03	0.07	10000	1000	0.02	0.07
R2	8	14000	2400	0.05	0.07	14000	2400	0.05	0.07	12000	2200	0.03	0.07
R2	10	14000	2400	0.05	0.07	14000	2400	0.05	0.07	12000	2200	0.03	0.07
R2	12	14000	2400	0.05	0.07	14000	2400	0.05	0.07	12000	2200	0.03	0.07

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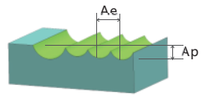
SHBLR2-000 Milling Conditions



Work Material		Oxygen-free Copper Red Copper				HRC30-45 carbon steel and prehardened steel				HRC45-55 hardened steel			
Radius of Ball Nose	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth	(min-1) Speed	(mm/min) Feed	Ap (mm) Axial depth	Ae (mm) Radidl depth
R2	16	14000	2400	0.04	0.07	14000	2400	0.04	0.07	12000	2200	0.03	0.07
R2	20	12000	2000	0.04	0.07	12000	2000	0.04	0.07	11000	2000	0.03	0.07
R2	8	14000	2400	0.05	0.07	14000	2400	0.05	0.07	12000	2200	0.03	0.07
R2	10	14000	2400	0.05	0.07	14000	2400	0.05	0.07	12000	2200	0.03	0.07
R2	12	14000	2400	0.05	0.07	14000	2400	0.05	0.07	12000	2200	0.03	0.07
R2	16	14000	2200	0.04	0.07	14000	2200	0.04	0.07	12000	2200	0.03	0.07
R2	20	12000	2000	0.04	0.07	12000	2000	0.04	0.07	11000	2000	0.03	0.07

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

2 Flutes

Long Neck Ball

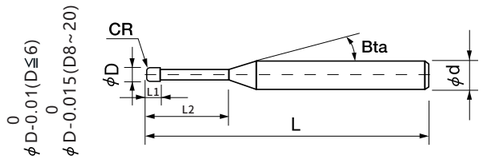
MG | HB Coating | 45 | SD 0-0.003 | R ±0.005 (R≤3) | R ±0.007 (R4~10)

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	◎
Alloy steels (SK/SCM/SUS)	◎
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	○
SPECIAL MATERIAL	
Aluminum alloys	○
Graphite	
Copper	◎
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special U-shapedchipevacuationgroove design;
*Tungsten steel with ultra-fine particles;
*Suitable for Automotive Mold milling.



Total 64 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBSR4-01001020	1	2	R0.1	12°	50	4	4	○
SHBSR4-01002020	1	2	R0.2	12°	50	4	4	○
SHBSR4-01502030	1.5	3	R0.2	12°	50	4	4	○
SHBSR4-01503030	1.5	3	R0.3	12°	50	4	4	○
SHBSR4-01505030	1.5	3	R0.5	12°	50	4	4	○
SHBSR4-02002040	2	4	R0.2	12°	50	4	4	○
SHBSR4-02003040	2	4	R0.3	12°	50	4	4	○
SHBSR4-02005040	2	4	R0.5	12°	50	4	4	○
SHBSR4-02002040-6	2	4	R0.2	12°	50	4	6	○
SHBSR4-02003040-6	2	4	R0.3	12°	50	4	6	○
SHBSR4-02005040-6	2	4	R0.5	12°	50	4	6	○
SHBSR4-03002060	3	6	R0.2	12°	50	4	4	○
SHBSR4-03003060	3	6	R0.3	12°	50	4	4	○
SHBSR4-03005060	3	6	R0.5	12°	50	4	4	○
SHBSR4-03002060-6	3	6	R0.2	12°	50	4	6	○
SHBSR4-03003060-6	3	6	R0.3	12°	50	4	6	○
SHBSR4-03005060-6	3	6	R0.5	12°	50	4	6	○
SHBSR4-04002080	4	8	R0.2	-	50	4	4	○
SHBSR4-04003080	4	8	R0.3	-	50	4	4	○
SHBSR4-04005080	4	8	R0.5	-	50	4	4	○
SHBSR4-04002080-6	4	8	R0.2	12°	50	4	6	○
SHBSR4-04003080-6	4	8	R0.3	12°	50	4	6	○

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Model Number	D Outside Diameter	L1 Length Of Cut	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBSR4-04005080-6	4	8	R0.5	12°	50	4	6	○
SHBSR4-04005080-75	4	8	R0.5	-	75	4	4	○
SHBSR4-04010080-75	4	8	R1	-	75	4	4	○
SHBSR4-05005100	5	10	R0.5	12°	50	4	6	○
SHBSR4-05010100	5	10	R1	12°	50	4	6	○
SHBSR4-06002120	6	12	R0.2	-	50	4	6	○
SHBSR4-06005120	6	12	R0.5	-	50	4	6	○
SHBSR4-06010120	6	12	R1	-	50	4	6	○
SHBSR4-06002120-75	6	12	R0.2	-	75	4	6	○
SHBSR4-06005120-75	6	12	R0.5	-	75	4	6	○
SHBSR4-06010120-75	6	12	R1	-	75	4	6	○
SHBSR4-06002120-100	6	12	R0.2	-	100	4	6	○
SHBSR4-06005120-100	6	12	R0.5	-	100	4	6	○
SHBSR4-06010120-100	6	12	R1	-	100	4	6	○
SHBSR4-08005160	8	16	R0.5	-	60	4	8	○
SHBSR4-08010160	8	16	R1	-	60	4	8	○
SHBSR4-08005160-75	8	16	R0.5	-	75	4	8	○
SHBSR4-08010160-75	8	16	R1	-	75	4	8	○
SHBSR4-08005200-100	8	20	R0.5	-	100	4	8	○
SHBSR4-08010200-100	8	20	R1	-	100	4	8	○
SHBSR4-08005200-150	8	20	R0.5	-	150	4	8	○
SHBSR4-08010200-150	8	20	R1	-	150	4	8	○
SHBSR4-10005200	10	20	R0.5	-	75	4	10	○
SHBSR4-10010200	10	20	R1	-	75	4	10	○
SHBSR4-10005250-100	10	25	R0.5	-	100	4	10	○
SHBSR4-10010250-100	10	25	R1	-	100	4	10	○
SHBSR4-10005250-150	10	25	R0.5	-	150	4	10	○
SHBSR4-10010250-150	10	25	R1	-	150	4	10	○
SHBSR4-12005240	12	24	R0.5	-	75	4	12	○
SHBSR4-12010240	12	24	R1	-	75	4	12	○
SHBSR4-12005300-100	12	30	R0.5	-	100	4	12	○
SHBSR4-12010300-100	12	30	R1	-	100	4	12	○
SHBSR4-12005300-150	12	30	R0.5	-	150	4	12	○
SHBSR4-12010300-150	12	30	R1	-	150	4	12	○
SHBSR4-14010350-150	14	35	R1	-	150	4	14	○
SHBSR4-14020350-150	14	35	R2	-	150	4	14	○
SHBSR4-16010400-150	16	40	R1	-	150	4	16	○
SHBSR4-16020400-150	16	40	R2	-	150	4	16	○

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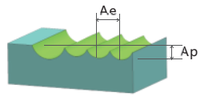
Total 64 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBSR4-18010450-150	18	45	R1	-	150	4	18	○
SHBSR4-18020450-150	18	45	R2	-	150	4	18	○
SHBSR4-20010400-150	20	40	R1	-	150	4	20	○
SHBSR4-20020400-150	20	40	R2	-	150	4	20	○

*New size added from this series. ○ Stocked items.



Work Material	Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter /Radius	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1 R0.1	15000	1000	15000	1000	12000	1000
D1 R0.2	15000	1000	15000	1000	12000	1000
D1.5 R0.2	14000	1500	14000	1500	12000	1200
D1.5 R0.3	14000	1500	14000	1500	12000	1200
D1.5 R0.5	14000	1500	14000	1500	12000	1200
D2 R0.2	14000	1500	14000	1500	12000	1500
D2 R0.3	14000	1500	14000	1500	12000	1500
D2 R0.5	14000	1500	14000	1500	12000	1500
D2 R0.2	14000	1800	14000	1800	12000	1800
D2 R0.3	14000	1800	14000	1800	12000	1800
D2 R0.5	14000	1800	14000	1800	12000	1800
D3 R0.2	13000	1800	13000	1800	11000	1800
D3 R0.3	13000	1800	13000	1800	11000	1800
D3 R0.5	13000	1800	13000	1800	11000	1800
D3 R0.2	13000	2000	13000	2000	11000	2000
D3 R0.3	13000	2000	13000	2000	11000	2000
D3 R0.5	13000	2000	13000	2000	11000	2000
D4 R0.2	12000	2000	12000	2000	10000	2000
D4 R0.3	12000	2000	12000	2000	10000	2000
D4 R0.5	12000	2000	12000	2000	10000	2000
D4 R0.2	12000	2200	12000	2200	10000	2000
D4 R0.3	12000	2200	12000	2200	10000	2000
D4 R0.5	12000	2200	12000	2200	10000	2000
D4 R0.5	12000	2000	12000	2000	10000	2000
D4 R1	12000	2000	12000	2000	10000	2000
D5 R0.5	12000	2200	12000	2200	10000	2200
D5 R1	12000	2200	12000	2200	10000	2200
D6 R0.2	11000	2400	11000	2400	9000	2400
D6 R0.5	11000	2400	11000	2400	9000	2400
D6 R1	11000	2400	11000	2400	9000	2400
D6 R0.2	11000	2400	11000	2400	9000	2400
D6 R0.5	11000	2400	11000	2400	9000	2400
D6 R1	11000	2400	11000	2400	9000	2400
D6 R0.2	11000	2400	11000	2400	9000	2400
D6 R0.5	11000	2400	11000	2400	9000	2400

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Work Material	Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter /Radius	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D6 R1	11000	2400	11000	2400	9000	2400
D8 R0.5	9000	2600	9000	2600	8000	2600
D8 R1	9000	2600	9000	2600	8000	2600
D8 R0.5	9000	2600	9000	2600	8000	2600
D8 R1	9000	2600	9000	2600	8000	2600
D8 R0.5	9000	2600	9000	2600	8000	2600
D8 R1	9000	2600	9000	2600	8000	2600
D8 R0.5	9000	2600	9000	2600	8000	2600
D8 R1	9000	2600	9000	2600	8000	2600
D10 R0.5	8000	2600	8000	2600	7000	2600
D10 R1	8000	2600	8000	2600	7000	2600
D10 R0.5	8000	2600	8000	2600	7000	2600
D10 R1	8000	2600	8000	2600	7000	2600
D10 R0.5	8000	2600	8000	2600	7000	2600
D10 R1	8000	2600	8000	2600	7000	2600
D12 R0.5	7500	3000	7500	3000	6500	2600
D12 R1	7500	3000	7500	3000	6500	2600
D12 R0.5	7500	3000	7500	3000	6500	2600
D12 R1	7500	3000	7500	3000	6500	2600
D12 R0.5	7500	3000	7500	3000	6500	2600
D12 R1	7500	3000	7500	3000	6500	2600
D14 R1	6500	3000	6500	3000	6000	2800
D14 R2	6500	3000	6500	3000	6000	2800
D16 R1	5500	3200	5500	3200	5000	2800
D16 R2	5500	3200	5500	3200	5000	2800
D18 R1	4500	3000	4500	3000	4000	2800
D18 R2	4500	3000	4500	3000	4000	2800
D20 R1	4000	2800	4000	2800	3500	2600
D20 R2	4000	2800	4000	2800	3500	2600

Note:
*The above milling parameters are calculated based on 3xD. Decrease both spindle speed and feed rate proportionally if the overhang length exceeds 3xD;
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

4 Flutes

Radius

MG | HB Coating | 35 | SD 0-0.003 | R ±0.005

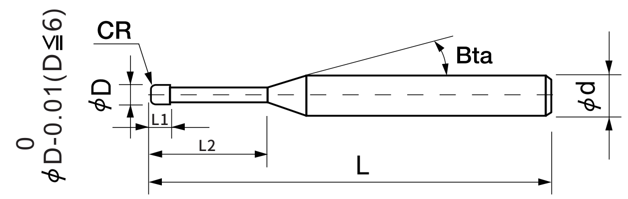
Highly recommend ★ ◎ ○ /Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	◎
Alloy steels (SK/SCM/SUS)	◎
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	○
SPECIAL MATERIAL	
Aluminum alloys	○
Graphite	
Copper	◎
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Unique U-shaped chip removal groove design can effectively reduce cutting load, have better chip removal performance, and obtain higher metal removal rate.
*Unique HB series coating for more wear resistance and higher heat resistance.
*Suitable for HRC28~ 52 die steel, stainless steel processing.

2 Flutes



Total 69 models | Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLSR2-002005005	D0.2	0.16	0.5	R0.05	12°	50	2	4	○
SHBLSR2-002005010	D0.2	0.16	1	R0.05	12°	50	2	4	○
SHBLSR2-002005015	D0.2	0.16	1.5	R0.05	12°	50	2	4	○
SHBLSR2-002005020	D0.2	0.16	2	R0.05	12°	50	2	4	○
SHBLSR2-003005005	D0.3	0.25	0.5	R0.05	12°	50	2	4	○
SHBLSR2-003005010	D0.3	0.25	1	R0.05	12°	50	2	4	○
SHBLSR2-003005015	D0.3	0.25	1.5	R0.05	12°	50	2	4	○
SHBLSR2-003005020	D0.3	0.25	2	R0.05	12°	50	2	4	○
SHBLSR2-003005030	D0.3	0.25	3	R0.05	12°	50	2	4	○
SHBLSR2-004005010	D0.4	0.32	1	R0.05	12°	50	2	4	○
SHBLSR2-004005020	D0.4	0.32	2	R0.05	12°	50	2	4	○
SHBLSR2-004005030	D0.4	0.32	3	R0.05	12°	50	2	4	○
SHBLSR2-004005040	D0.4	0.32	4	R0.05	12°	50	2	4	○
SHBLSR2-00401010	D0.4	0.32	1	R0.1	12°	50	2	4	○
SHBLSR2-00401020	D0.4	0.32	2	R0.1	12°	50	2	4	○
SHBLSR2-00401030	D0.4	0.32	3	R0.1	12°	50	2	4	○
SHBLSR2-00401040	D0.4	0.32	4	R0.1	12°	50	2	4	○
SHBLSR2-005005010	D0.5	0.4	1	R0.05	12°	50	2	4	○
SHBLSR2-005005020	D0.5	0.4	2	R0.05	12°	50	2	4	○
SHBLSR2-005005040	D0.5	0.4	4	R0.05	12°	50	2	4	○
SHBLSR2-005005060	D0.5	0.4	6	R0.05	12°	50	2	4	○
SHBLSR2-00501010	D0.5	0.4	1	R0.1	12°	50	2	4	○

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Long Neck Radius

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLSR2-00501020	D0.5	0.4	2	R0.1	12°	50	2	4	○
SHBLSR2-00501040	D0.5	0.4	4	R0.1	12°	50	2	4	○
SHBLSR2-00501060	D0.5	0.4	6	R0.1	12°	50	2	4	○
SHBLSR2-006005020	D0.6	0.5	2	R0.05	12°	50	2	4	○
SHBLSR2-006005040	D0.6	0.5	4	R0.05	12°	50	2	4	○
SHBLSR2-006005060	D0.6	0.5	6	R0.05	12°	50	2	4	○
SHBLSR2-006005080	D0.6	0.5	8	R0.05	12°	50	2	4	○
SHBLSR2-00601020	D0.6	0.5	2	R0.1	12°	50	2	4	○
SHBLSR2-00601040	D0.6	0.5	4	R0.1	12°	50	2	4	○
SHBLSR2-00601060	D0.6	0.5	6	R0.1	12°	50	2	4	○
SHBLSR2-00601080	D0.6	0.5	8	R0.1	12°	50	2	4	○
SHBLSR2-008005020	D0.8	0.65	2	R0.05	12°	50	2	4	○
SHBLSR2-008005040	D0.8	0.65	4	R0.05	12°	50	2	4	○
SHBLSR2-008005060	D0.8	0.65	6	R0.05	12°	50	2	4	○
SHBLSR2-008005080	D0.8	0.65	8	R0.05	12°	50	2	4	○
SHBLSR2-00801020	D0.8	0.65	2	R0.1	12°	50	2	4	○
SHBLSR2-00801040	D0.8	0.65	4	R0.1	12°	50	2	4	○
SHBLSR2-00801060	D0.8	0.65	6	R0.1	12°	50	2	4	○
SHBLSR2-00801080	D0.8	0.65	8	R0.1	12°	50	2	4	○
SHBLSR2-01001040	D1.0	1.0	4	R0.1	12°	50	2	4	○
SHBLSR2-01001060	D1.0	1.0	6	R0.1	12°	50	2	4	○
SHBLSR2-01001080	D1.0	1.0	8	R0.1	12°	50	2	4	○
SHBLSR2-01001100	D1.0	1.0	10	R0.1	12°	50	2	4	○
SHBLSR2-01002040	D1.0	1.0	4	R0.2	12°	50	2	4	○
SHBLSR2-01002060	D1.0	1.0	6	R0.2	12°	50	2	4	○
SHBLSR2-01002080	D1.0	1.0	8	R0.2	12°	50	2	4	○
SHBLSR2-01002100	D1.0	1.0	10	R0.2	12°	50	2	4	○
SHBLSR2-01501040	D1.5	1.5	4	R0.1	12°	50	2	4	○
SHBLSR2-01501060	D1.5	1.5	6	R0.1	12°	50	2	4	○
SHBLSR2-01501080	D1.5	1.5	8	R0.1	12°	50	2	4	○
SHBLSR2-01501100	D1.5	1.5	10	R0.1	12°	50	2	4	○
SHBLSR2-01502040	D1.5	1.5	4	R0.2	12°	50	2	4	○
SHBLSR2-01502060	D1.5	1.5	6	R0.2	12°	50	2	4	○
SHBLSR2-01502080	D1.5	1.5	8	R0.2	12°	50	2	4	○
SHBLSR2-01502100	D1.5	1.5	10	R0.2	12°	50	2	4	○
SHBLSR2-02001040	D2.0	2.0	4	R0.1	12°	50	2	4	○
SHBLSR2-02001060	D2.0	2.0	6	R0.1	12°	50	2	4	○
SHBLSR2-02001080	D2.0	2.0	8	R0.1	12°	50	2	4	○

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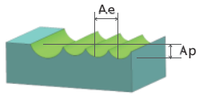
Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLSR2-02001100	D2.0	2.0	10	R0.1	12°	50	2	4	○
SHBLSR2-02001120	D2.0	2.0	12	R0.1	12°	50	2	4	○
SHBLSR2-02001160	D2.0	2.0	16	R0.1	12°	50	2	4	○
SHBLSR2-02002040	D2.0	2.0	4	R0.2	12°	50	2	4	○
SHBLSR2-02002060	D2.0	2.0	6	R0.2	12°	50	2	4	○
SHBLSR2-02002080	D2.0	2.0	8	R0.2	12°	50	2	4	○
SHBLSR2-02002100	D2.0	2.0	10	R0.2	12°	50	2	4	○
SHBLSR2-02002120	D2.0	2.0	12	R0.2	12°	50	2	4	○
SHBLSR2-02002160	D2.0	2.0	16	R0.2	12°	50	2	4	○

*New size added from this series.

○ Stocked items.



Work Material		Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D0.2 R0.05	0.5	30000	200	30000	200	30000	150
D0.2 R0.05	1	30000	150	30000	150	30000	100
D0.2 R0.05	1.5	30000	120	30000	120	27000	80
D0.2 R0.05	2	30000	90	30000	90	20000	60
D0.3 R0.05	0.5	30000	350	30000	350	28000	300
D0.3 R0.05	1	30000	240	30000	240	26000	200
D0.3 R0.05	1.5	30000	180	30000	180	26000	180
D0.3 R0.05	2	30000	120	30000	120	24000	120
D0.3 R0.05	3	24000	80	24000	80	18000	80
D0.4 R0.05	1	26000	300	26000	300	22000	300
D0.4 R0.05	2	24000	260	24000	260	20000	240
D0.4 R0.05	3	22000	180	22000	180	16000	160
D0.4 R0.05	4	18000	120	18000	120	14000	100
D0.4 R0.1	1	26000	300	26000	300	22000	300
D0.4 R0.1	2	24000	220	24000	220	20000	240
D0.4 R0.1	3	22000	180	22000	180	16000	160
D0.4 R0.1	4	18000	120	18000	120	14000	100
D0.5 R0.05	1	20000	500	20000	500	18000	400
D0.5 R0.05	2	18000	360	18000	360	15000	300
D0.5 R0.05	4	16000	200	16000	200	13000	180
D0.5 R0.05	6	14000	120	14000	120	12000	120
D0.5 R0.1	1	20000	500	20000	500	18000	400
D0.5 R0.1	2	18000	360	18000	360	15000	300
D0.5 R0.1	4	16000	200	16000	200	13000	180
D0.5 R0.1	6	14000	120	14000	120	12000	120
D0.6 R0.05	2	16000	700	16000	700	16000	600
D0.6 R0.05	4	13000	400	13000	400	12000	350
D0.6 R0.05	6	11000	200	11000	200	10000	200
D0.6 R0.05	8	10000	120	10000	120	10000	100
D0.6 R0.1	2	16000	700	16000	700	16000	600
D0.6 R0.1	4	13000	400	13000	400	12000	350
D0.6 R0.1	6	11000	200	11000	200	10000	200
D0.6 R0.1	8	10000	120	10000	120	10000	100
D0.8 R0.05	2	16000	1200	16000	1200	16000	1000
D0.8 R0.05	4	14000	800	14000	800	13000	600

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Work Material		Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D0.8 R0.05	6	13000	600	13000	600	12000	500
D0.8 R0.05	8	12000	300	12000	300	10000	200
D0.8 R0.1	2	16000	1200	16000	1200	16000	1000
D0.8 R0.1	4	14000	800	14000	800	13000	600
D0.8 R0.1	6	13000	500	13000	500	12000	400
D0.8 R0.1	8	12000	300	12000	300	10000	200
D1.0 R0.1	4	13000	1000	13000	1000	12000	800
D1.0 R0.1	6	11000	700	11000	700	10000	600
D1.0 R0.1	8	10000	500	10000	500	8500	400
D1.0 R0.1	10	8500	300	8500	300	7500	300
D1.0 R0.2	4	13000	1000	13000	1000	12000	800
D1.0 R0.2	6	11000	700	11000	700	10000	600
D1.0 R0.2	8	10000	500	10000	500	8500	400
D1.0 R0.2	10	8500	300	8500	300	7500	300
D1.5 R0.1	4	13000	1000	13000	1000	12000	1000
D1.5 R0.1	6	10000	1000	10000	1000	10000	900
D1.5 R0.1	8	9000	800	9000	800	8500	800
D1.5 R0.1	10	8500	700	8500	700	7500	600
D1.5 R0.2	4	13000	1000	13000	1000	12000	1000
D1.5 R0.2	6	10000	1000	10000	1000	10000	900
D1.5 R0.2	8	9000	800	9000	800	8500	800
D1.5 R0.2	10	8500	700	8500	700	7500	600
D2.0 R0.1	4	13000	1500	13000	1500	13000	1500
D2.0 R0.1	6	12000	1500	12000	1500	12000	1200
D2.0 R0.1	8	11000	1000	11000	1000	10000	1000
D2.0 R0.1	10	10000	900	10000	900	9000	800
D2.0 R0.1	12	9000	800	9000	800	8000	650
D2.0 R0.1	16	7500	600	7500	600	7000	500
D2.0 R0.2	4	13000	1500	13000	1500	13000	1500
D2.0 R0.2	6	12000	1500	12000	1500	12000	1200
D2.0 R0.2	8	11000	1000	11000	1000	10000	1000
D2.0 R0.2	10	10000	900	10000	900	9000	800
D2.0 R0.2	12	9000	800	9000	800	8000	650
D2.0 R0.2	16	7500	600	7500	600	7000	500

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

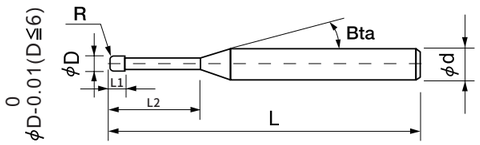
MG | HB Coating | 45 | SD 0-0.003 | R ±0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	◎
Alloy steels (SK/SCM/SUS)	◎
Prehardened steels (NAK/HPM)	◎
Hardened steels (~55/~60/~70HRC)	○
SPECIAL MATERIAL	
Aluminum alloys	○
Graphite	
Copper	◎
Plastics	
Carbon fiber	
Titanium alloys	○
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Unique U-shaped chip removal groove design can effectively reduce cutting load, have better chip removal performance, and obtain higher metal removal rate.
*Unique HB series coating for more wear resistance and higher heat resistance.
*Suitable for HRC28~ 52 die steel, stainless steel processing.



Total 79 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLSR4-01001040	D1.0	1.0	4	R0.1	12°	50	4	4	○
SHBLSR4-01001060	D1.0	1.0	6	R0.1	12°	50	4	4	○
SHBLSR4-01001080	D1.0	1.0	8	R0.1	12°	50	4	4	○
SHBLSR4-01001100	D1.0	1.0	10	R0.1	12°	50	4	4	○
SHBLSR4-01001120	D1.0	1.0	12	R0.1	12°	50	4	4	○
SHBLSR4-01002040	D1.0	1.0	4	R0.2	12°	50	4	4	○
SHBLSR4-01002060	D1.0	1.0	6	R0.2	12°	50	4	4	○
SHBLSR4-01002080	D1.0	1.0	8	R0.2	12°	50	4	4	○
SHBLSR4-01002100	D1.0	1.0	10	R0.2	12°	50	4	4	○
SHBLSR4-01002120	D1.0	1.0	12	R0.2	12°	50	4	4	○
SHBLSR4-01501060	D1.5	1.5	6	R0.1	12°	50	4	4	○
SHBLSR4-01501080	D1.5	1.5	8	R0.1	12°	50	4	4	○
SHBLSR4-01501100	D1.5	1.5	10	R0.1	12°	50	4	4	○
SHBLSR4-01501120	D1.5	1.5	12	R0.1	12°	50	4	4	○
SHBLSR4-01502060	D1.5	1.5	6	R0.2	12°	50	4	4	○
SHBLSR4-01502080	D1.5	1.5	8	R0.2	12°	50	4	4	○
SHBLSR4-01502100	D1.5	1.5	10	R0.2	12°	50	4	4	○
SHBLSR4-01502120	D1.5	1.5	12	R0.2	12°	50	4	4	○
SHBLSR4-02001060	D2.0	2.0	6	R0.1	12°	50	4	4	○
SHBLSR4-02001080	D2.0	2.0	8	R0.1	12°	50	4	4	○

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SAMHO

SHBLSR 4 Flutes Long Neck Radius

Model Number	D Outside Diameter	L1 Length of cut	L2 Effective length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number of flutes	d Shank Diameter	In Stock
SHBLSR4-02001100	D2.0	2.0	10	R0.1	12°	50	4	4	○
SHBLSR4-02001120	D2.0	2.0	12	R0.1	12°	50	4	4	○
SHBLSR4-02001160	D2.0	2.0	16	R0.1	12°	50	4	4	○
SHBLSR4-02002060	D2.0	2.0	6	R0.2	12°	50	4	4	○
SHBLSR4-02002080	D2.0	2.0	8	R0.2	12°	50	4	4	○
SHBLSR4-02002100	D2.0	2.0	10	R0.2	12°	50	4	4	○
SHBLSR4-02002120	D2.0	2.0	12	R0.2	12°	50	4	4	○
SHBLSR4-02002160	D2.0	2.0	16	R0.2	12°	50	4	4	○
SHBLSR4-03001060	D3.0	3.0	6	R0.1	12°	50	4	4	○
SHBLSR4-03001080	D3.0	3.0	8	R0.1	12°	50	4	4	○
SHBLSR4-03001100	D3.0	3.0	10	R0.1	12°	50	4	4	○
SHBLSR4-03001120	D3.0	3.0	12	R0.1	12°	50	4	4	○
SHBLSR4-03001160	D3.0	3.0	16	R0.1	12°	50	4	4	○
SHBLSR4-03001200	D3.0	3.0	20	R0.1	12°	50	4	4	○
SHBLSR4-03002060	D3.0	3.0	6	R0.2	12°	50	4	4	○
SHBLSR4-03002080	D3.0	3.0	8	R0.2	12°	50	4	4	○
SHBLSR4-03002100	D3.0	3.0	10	R0.2	12°	50	4	4	○
SHBLSR4-03002120	D3.0	3.0	12	R0.2	12°	50	4	4	○
SHBLSR4-03002160	D3.0	3.0	16	R0.2	12°	50	4	4	○
SHBLSR4-03002200	D3.0	3.0	20	R0.2	12°	50	4	4	○
SHBLSR4-03005060	D3.0	3.0	6	R0.5	12°	50	4	4	○
SHBLSR4-03005080	D3.0	3.0	8	R0.5	12°	50	4	4	○
SHBLSR4-03005100	D3.0	3.0	10	R0.5	12°	50	4	4	○
SHBLSR4-03005120	D3.0	3.0	12	R0.5	12°	50	4	4	○
SHBLSR4-03005160	D3.0	3.0	16	R0.5	12°	50	4	4	○
SHBLSR4-03005200	D3.0	3.0	20	R0.5	12°	50	4	4	○
SHBLSR4-03001060-6	D3.0	3.0	6	R0.1	12°	60	4	6	○
SHBLSR4-03001080-6	D3.0	3.0	8	R0.1	12°	60	4	6	○
SHBLSR4-03001100-6	D3.0	3.0	10	R0.1	12°	60	4	6	○
SHBLSR4-03001120-6	D3.0	3.0	12	R0.1	12°	60	4	6	○
SHBLSR4-03001160-6	D3.0	3.0	16	R0.1	12°	60	4	6	○
SHBLSR4-03001200-6	D3.0	3.0	20	R0.1	12°	60	4	6	○
SHBLSR4-03002060-6	D3.0	3.0	6	R0.2	12°	60	4	6	○
SHBLSR4-03002080-6	D3.0	3.0	8	R0.2	12°	60	4	6	○
SHBLSR4-03002100-6	D3.0	3.0	10	R0.2	12°	60	4	6	○
SHBLSR4-03002120-6	D3.0	3.0	12	R0.2	12°	60	4	6	○
SHBLSR4-03002160-6	D3.0	3.0	16	R0.2	12°	60	4	6	○
SHBLSR4-03002200-6	D3.0	3.0	20	R0.2	12°	60	4	6	○

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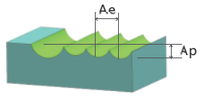
Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHBLSR4-03005060-6	D3.0	3.0	6	R0.5	12°	60	4	6	○
SHBLSR4-03005080-6	D3.0	3.0	8	R0.5	12°	60	4	6	○
SHBLSR4-03005100-6	D3.0	3.0	10	R0.5	12°	60	4	6	○
SHBLSR4-03005120-6	D3.0	3.0	12	R0.5	12°	60	4	6	○
SHBLSR4-03005160-6	D3.0	3.0	16	R0.5	12°	60	4	6	○
SHBLSR4-03005200-6	D3.0	3.0	20	R0.5	12°	60	4	6	○
SHBLSR4-04001080-6	D4.0	4.0	8	R0.1	12°	60	4	6	○
SHBLSR4-04001100-6	D4.0	4.0	10	R0.1	12°	60	4	6	○
SHBLSR4-04001120-6	D4.0	4.0	12	R0.1	12°	60	4	6	○
SHBLSR4-04001160-6	D4.0	4.0	16	R0.1	12°	60	4	6	○
SHBLSR4-04001200-6	D4.0	4.0	20	R0.1	12°	60	4	6	○
SHBLSR4-04002080-6	D4.0	4.0	8	R0.2	12°	60	4	6	○
SHBLSR4-04002100-6	D4.0	4.0	10	R0.2	12°	60	4	6	○
SHBLSR4-04002120-6	D4.0	4.0	12	R0.2	12°	60	4	6	○
SHBLSR4-04002160-6	D4.0	4.0	16	R0.2	12°	60	4	6	○
SHBLSR4-04002200-6	D4.0	4.0	20	R0.2	12°	60	4	6	○
SHBLSR4-04005080-6	D4.0	4.0	8	R0.5	12°	60	4	6	○
SHBLSR4-04005100-6	D4.0	4.0	10	R0.5	12°	60	4	6	○
SHBLSR4-04005120-6	D4.0	4.0	12	R0.5	12°	60	4	6	○
SHBLSR4-04005160-6	D4.0	4.0	16	R0.5	12°	60	4	6	○
SHBLSR4-04005200-6	D4.0	4.0	20	R0.5	12°	60	4	6	○

*New size added from this series. ○ Stocked items.



Work Material		Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D1.0 R0.1	4	13000	1300	13000	1300	12000	1000
D1.0 R0.1	6	11000	1000	11000	1000	10000	900
D1.0 R0.1	8	10000	800	10000	800	8500	700
D1.0 R0.1	10	8500	500	8500	500	7500	450
D1.0 R0.1	12	7500	300	7500	300	7000	200
D1.0 R0.2	4	13000	1300	13000	1300	12000	1000
D1.0 R0.2	6	11000	1000	11000	1000	10000	900
D1.0 R0.2	8	10000	800	10000	800	8500	700
D1.0 R0.2	10	8500	500	8500	500	7500	450
D1.5 R0.2	12	7500	300	7500	300	7000	200
D1.5 R0.1	6	12000	1300	12000	1300	10000	1200
D1.5 R0.1	8	10000	1000	10000	1000	9000	1000
D1.5 R0.1	10	9000	900	9000	900	8500	900
D1.5 R0.1	12	8500	800	8500	800	7500	750
D1.5 R0.2	6	12000	1500	12000	1500	10000	1200
D1.5 R0.2	8	10000	1000	10000	1000	9000	1000
D1.5 R0.2	10	9000	900	9000	900	8500	900
D2.0 R0.2	12	8500	800	8500	800	7500	750
D2.0 R0.1	6	13000	1800	13000	1800	12000	1500
D2.0 R0.1	8	11000	1500	11000	1500	10000	1100
D2.0 R0.1	10	10000	1200	10000	1200	9000	1000
D2.0 R0.1	12	9000	1000	9000	1000	8500	950
D2.0 R0.1	16	8000	800	8000	800	7000	700
D2.0 R0.2	6	13000	1800	13000	1800	12000	1500
D2.0 R0.2	8	11000	1500	11000	1500	10000	1100
D2.0 R0.2	10	10000	1200	10000	1200	9000	1000
D2.0 R0.2	12	9000	1000	9000	1000	8500	950
D3.0 R0.2	16	8000	800	8000	800	7000	700
D3.0 R0.1	6	13000	2200	13000	2200	12000	2000
D3.0 R0.1	8	12000	2200	12000	2200	11000	2000
D3.0 R0.1	10	11000	2000	11000	2000	10000	1800
D3.0 R0.1	12	10000	2000	10000	2000	10000	1800
D3.0 R0.1	16	9000	1600	9000	1600	8500	1400
D3.0 R0.1	20	8500	1400	8500	1400	8000	1200
D3.0 R0.2	6	13000	2200	13000	2200	12000	2000

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4 Flutes

Work Material		Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D3.0 R0.2	8	12000	2200	12000	2200	11000	2000
D3.0 R0.2	10	11000	2000	11000	2000	10000	1800
D3.0 R0.2	12	10000	2000	10000	2000	10000	1800
D3.0 R0.2	16	9000	1600	9000	1600	8500	1400
D3.0 R0.2	20	8500	1400	8500	1400	8000	1200
D3.0 R0.5	6	13000	2200	13000	2200	12000	2000
D3.0 R0.5	8	12000	2200	12000	2200	11000	2000
D3.0 R0.5	10	11000	2000	11000	2000	10000	1800
D3.0 R0.5	12	10000	2000	10000	2000	10000	1800
D3.0 R0.5	16	9000	1600	9000	1600	8500	1400
D3.0 R0.5	20	8500	1400	8500	1400	8000	1200
D3.0 R0.1	6	13000	2200	13000	2200	12000	2000
D3.0 R0.1	8	12000	2200	12000	2200	11000	2000
D3.0 R0.1	10	11000	2000	11000	2000	10000	1800
D3.0 R0.1	12	10000	2000	10000	2000	10000	1800
D3.0 R0.1	16	9000	1600	9000	1600	8500	1400
D3.0 R0.1	20	8500	1400	8500	1400	8000	1200
D3.0 R0.2	6	13000	2200	13000	2200	12000	2000
D3.0 R0.2	8	12000	2200	12000	2200	11000	2000
D3.0 R0.2	10	11000	2000	11000	2000	10000	1800
D3.0 R0.2	12	10000	2000	10000	2000	10000	1800
D3.0 R0.2	16	9000	1600	9000	1600	8500	1400
D3.0 R0.2	20	8500	1400	8500	1400	8000	1200
D3.0 R0.5	6	13000	2200	13000	2200	12000	2000
D3.0 R0.5	8	12000	2200	12000	2200	11000	2000
D3.0 R0.5	10	11000	2000	11000	2000	10000	1800
D3.0 R0.5	12	10000	2000	10000	2000	10000	1800
D3.0 R0.5	16	9000	1600	9000	1600	8500	1400
D4.0 R0.5	20	8500	1400	8500	1400	8000	1200
D4.0 R0.1	8	11000	2200	11000	2200	10000	2000
D4.0 R0.1	10	11000	2200	11000	2200	10000	2000
D4.0 R0.1	12	10000	2000	10000	2000	9000	2000
D4.0 R0.1	16	8500	1800	8500	1800	8000	1600
D4.0 R0.1	20	7500	1600	7500	1600	7000	1400
D4.0 R0.2	8	11000	2200	11000	2200	10000	2000
D4.0 R0.2	10	11000	2200	11000	2200	10000	2000
D4.0 R0.2	12	10000	2000	10000	2000	9000	2000

Next page

Long Neck Radius

4 Flutes

Work Material		Oxygen-free Copper Red Copper		HRC30-45 carbon steel and prehardened steel		HRC45-55 hardened steel	
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed	(min-1) Speed	(mm/min) Feed
D4.0 R0.2	16	8500	1800	8500	1800	8000	1600
D4.0 R0.2	20	7500	1600	7500	1600	7000	1400
D4.0 R0.5	8	11000	2200	11000	2200	10000	2000
D4.0 R0.5	10	11000	2200	11000	2200	10000	2000
D4.0 R0.5	12	10000	2000	10000	2000	9000	2000
D4.0 R0.5	16	8500	1800	8500	1800	8000	1600
D4.0 R0.5	20	7500	1600	7500	1600	7000	1400

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

Long Neck Radius

High precision SHD series

1. Shank diameter tolerance 0-0.003 mm
2. Test results for each end mill

Case Studies

★ Analysis Report:Copper

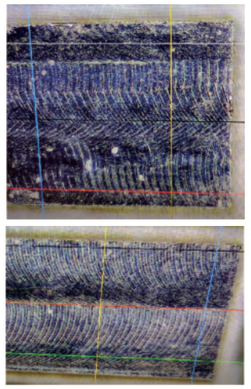
Purpose: Life and surface finish test
Processing machine: Beijing Jingdiao(26000rpm)
Coolant: Oil cooling
Test time: 2023-08-24

Milling Parameters

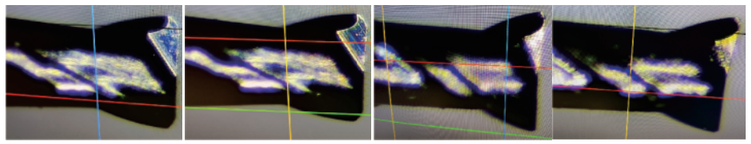
Tool	Spindle Speed	Feed Rate	Step	Axial Depth	Radial Depth	Cycle Time
D0.4R0.05	(min-1)	(mm/min)		(ap) mm	(ae) mm	
	20000	600		0.01	0.015	06:02:00

Tool	Spindle Speed	Feed Rate	Step	Axial Depth	Radial Depth	Cycle Time
D0.5	(min-1)	(mm/min)		(ap) mm	(ae) mm	
	20000	600		0.01	0.015	06:02:00

Milling Shape



Cutter Condition



Real Workpiece

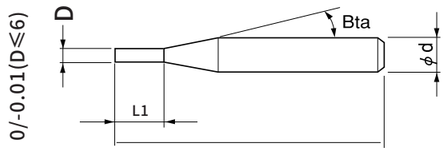
MG | DLC Coating | 30 | SD 0-0.003

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	◎
Graphite	
Copper	★
Plastics	◎
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Special geometry design, sharp cutting edge, highly efficient milling and chip evacuation;
* The coating, with good thermal stability, makes it maintain the hardness and mechanical properties under high temperature;
* Lower coefficient of friction reduces wear during cutting and provides better surface quality;



2 Flutes

Square

Total 16 models

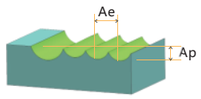
Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDS2-0010020	0.1	0.2	–	12°	50	2	4	○
SHDS2-0020040	0.2	0.4	–	12°	50	2	4	○
SHDS2-0030060	0.3	0.6	–	12°	50	2	4	○
SHDS2-0040080	0.4	0.8	–	12°	50	2	4	○
SHDS2-0050100	0.5	1	–	12°	50	2	4	○
SHDS2-0060150	0.6	1.5	–	12°	50	2	4	○
SHDS2-0070180	0.7	1.8	–	12°	50	2	4	○
SHDS2-0080200	0.8	2	–	12°	50	2	4	○
SHDS2-0100300	1.0	3	–	12°	50	2	4	○
SHDS2-0150400	1.5	4	–	12°	50	2	4	○
SHDS2-0200500	2.0	5	–	12°	50	2	4	○
SHDS2-0250600	2.5	6	–	12°	50	2	4	○
SHDS2-0300800-4	3	8	–	12°	50	2	4	○
SHDS2-0401000-4	4	10	–	–	50	2	4	○
SHDS2-0401000-6	4	10	–	12°	60	2	6	○
SHDS2-0601500	6	15	–	-	60	2	6	○

*New size added from this series. ○ Stocked items.

2 Flutes

Square



Side Milling

Work Material	Oxygen-free & Copper	
(mm) Diameter	(min-1) Speed	(mm/min) Feed
D1.0	10000	150
D1.5	8000	180
D2.0	8000	200
D2.5	6000	300
D3	7000	300
D4	7000	300
D4	7000	300
D6	7000	300

Milling Amount for Side Milling(mm)

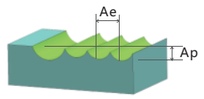
Length of Cut / Work Material	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
45HRC以下 Below 45HRC	ae=0.07D ap=2D	ae=0.07D ap=2D
45HRC以上 Above 45HRC	ae=0.03D ap=1.5D	ae=0.03D ap=1.5D

D: Diameter (mm)
ap: Axial Depth (mm)
ae: Radial Depth (mm)

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

2 Flutes

Square



Contour Milling

被削材 Work Material	無氧銅 & 紅銅 Oxygen-free & Copper	
直徑(mm) Diameter	轉速(min-1) Speed	進給速度(mm/min) Feed
D0.1	40000	180
D0.2	40000	300
D0.3	36000	500
D0.4	30000	700
D0.5	32000	800
D0.6	26000	800
D0.7	26000	800
D0.8	22000	1000
D1.0	18000	1200
D1.5	16000	1500
D2.0	16000	1800
D2.5	14000	1800
D3	12000	2200
D4	12000	2200
D4	12000	2200
D6	10000	2400

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering.

SAMHO

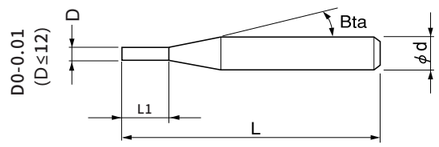
MG | DLC Coating | 37.5 | SD 0-0.003

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	◎
Graphite	
Copper	★
Plastics	◎
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Special geometry design, sharp cutting edge, highly efficient milling and chip evacuation;
* The coating, with good thermal stability, makes it maintain the hardness and mechanical properties under high temperature;
* Lower coefficient of friction reduces wear during cutting and provides better surface quality;



4 Flutes

Square

Total 24 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDS4-0100250	1.0	2.5	12°	50	4	4	○
SHDS4-0150450	1.5	4.5	12°	50	4	4	○
SHDS4-0200600	2.0	6	12°	50	4	4	○
SHDS4-0250700	2.5	7	12°	50	4	4	○
SHDS4-0300800-3	3	8	-	50	4	3	○
SHDS4-0300800-4	3	8	12°	50	4	4	○
SHDS4-0300800-6	3	8	12°	50	4	6	○
SHDS4-0401000-4	4	10	-	50	4	4	○
SHDS4-0401000-6	4	10	12°	50	4	6	○
SHDS4-0401200-75	4	12	12°	75	4	4	○
SHDS4-0501300	5	13	12°	50	4	6	○
SHDS4-0601500	6	15	-	50	4	6	○
SHDS4-0601800-75	6	18	-	75	4	6	○
SHDS4-0601800-100	6	18	-	100	4	6	○
SHDS4-0802000	8	20	-	60	4	8	○
SHDS4-0802400-75	8	24	-	75	4	8	○

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Total 24 models

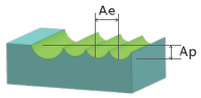
Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDS4-0802400-100	8	24	-	100	4	8	○
SHDS4-0802400-150	8	24	-	150	4	8	○
SHDS4-1002500	10	25	-	75	4	10	○
SHDS4-1003000-100	10	30	-	100	4	10	○
SHDS4-1003000-150	10	30	-	150	4	10	○
SHDS4-1203000	12	30	-	75	4	12	○
SHDS4-1205000-100	12	50	-	100	4	12	○
SHDS4-1205000-150	12	50	-	150	4	12	○

*New size added from this series. ○ Stocked items.

4 Flutes

Square



Side Milling

Work Material	Oxygen-free & Copper	
(mm) Diameter	(min-1) Speed	(mm/min) Feed
D1.0	10000	220
D1.5	8000	240
D2.0	8000	300
D2.5	8000	300
D3	7000	400
D4	7000	500
D5	7000	500
D6	7000	500
D8	6500	600
D10	5500	600
D12	5000	600

Milling Amount for Side Milling(mm)

Length of Cut / Work Material	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
45HRC以下 Below 45HRC	ae=0.07D ap=2D	ae=0.07D ap=2D
45HRC以上 Above 45HRC	ae=0.03D ap=1.5D	ae=0.03D ap=1.5D

D : Diameter (mm)
ap : Axial Depth (mm)
ae : Radial Depth (mm)

4 Flutes

Square

Contour Milling

Work Material	Oxygen-free & Copper	
(mm) Diameter	(min-1) Speed	(mm/min) Feed
D1.0	18000	1600
D1.5	16000	1800
D2.0	16000	1800
D2.5	14000	2200
D3	12000	2200
D4	10000	2200
D5	9000	2500
D6	9000	2500
D8	8000	2500
D10	7000	2500
D12	6000	2500

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering.

4 Flutes

Square

SAMHO

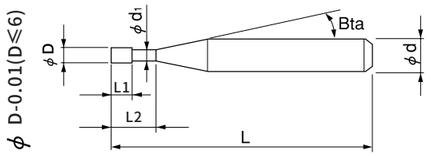
MG | DLC Coating | 30 | SD 0-0.003

Highly recommend★ ◎ ○
/Recommend/Suggest

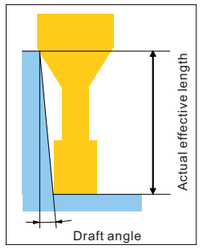
DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	◎
Graphite	
Copper	★
Plastics	◎
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

特長(Specialty)

* Special geometry design, sharp cutting edge, highly efficient milling and chip evacuation;
* The coating, with good thermal stability, makes it maintain the hardness and mechanical properties under high temperature;
* Lower coefficient of friction reduces wear during cutting and provides better surface quality;



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.



Total 34 models — Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLS2-001010	0.1	0.15	1	12°	50	2	4	○
SHDLS2-002005	0.2	0.3	0.5	12°	50	2	4	○
SHDLS2-002010	0.2	0.3	1	12°	50	2	4	○
SHDLS2-002015	0.2	0.3	1.5	12°	50	2	4	○
SHDLS2-003010	0.3	0.5	1	12°	50	2	4	○
SHDLS2-003015	0.3	0.5	1.5	12°	50	2	4	○
SHDLS2-003020	0.3	0.5	2	12°	50	2	4	○
SHDLS2-003030	0.3	0.5	3	12°	50	2	4	○
SHDLS2-003040	0.3	0.5	4	12°	50	2	4	○
SHDLS2-003050	0.3	0.5	5	12°	50	2	4	○

Next page ➟

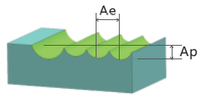
Total 34 models — Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLS2-004010	0.4	0.6	1	12°	50	2	4	○
SHDLS2-004020	0.4	0.6	2	12°	50	2	4	○
SHDLS2-004030	0.4	0.6	3	12°	50	2	4	○
SHDLS2-004040	0.4	0.6	4	12°	50	2	4	○
SHDLS2-005020	0.5	0.75	2	12°	50	2	4	○
SHDLS2-005030	0.5	0.75	3	12°	50	2	4	○
SHDLS2-005040	0.5	0.75	4	12°	50	2	4	○
SHDLS2-005050	0.5	0.75	5	12°	50	2	4	○
SHDLS2-005060	0.5	0.75	6	12°	50	2	4	○
SHDLS2-005080	0.5	0.75	8	12°	50	2	4	○
SHDLS2-006020	0.6	0.9	2	12°	50	2	4	○
SHDLS2-006030	0.6	0.9	3	12°	50	2	4	○
SHDLS2-006040	0.6	0.9	4	12°	50	2	4	○
SHDLS2-006060	0.6	0.9	6	12°	50	2	4	○
SHDLS2-006080	0.6	0.9	8	12°	50	2	4	○
SHDLS2-007020	0.7	1	2	12°	50	2	4	○
SHDLS2-007040	0.7	1	4	12°	50	2	4	○
SHDLS2-007060	0.7	1	6	12°	50	2	4	○
SHDLS2-007080	0.7	1	8	12°	50	2	4	○
SHDLS2-008030	0.8	1.2	3	12°	50	2	4	○
SHDLS2-008040	0.8	1.2	4	12°	50	2	4	○
SHDLS2-008060	0.8	1.2	6	12°	50	2	4	○
SHDLS2-008080	0.8	1.2	8	12°	50	2	4	○
SHDLS2-008100	0.8	1.2	10	12°	50	2	4	○

*New size added from this series. ○ Stocked items.

SHDLS2-000 Milling Conditions

SAMHO



Work Material		Oxygen-free & Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D 0.1	1	30000	100
D 0.2	0.5	36000	400
D 0.2	1	32000	300
D 0.2	1.5	28000	300
D 0.3	1	36000	500
D 0.3	1.5	36000	400
D 0.3	2	32000	350
D 0.3	3	26000	200
D 0.3	4	22000	150
D 0.3	5	20000	100
D 0.4	1	36000	700
D 0.4	2	36000	600
D 0.4	3	32000	400
D 0.4	4	26000	300
D 0.5	2	36000	800
D 0.5	3	32000	700
D 0.5	4	26000	500
D 0.5	5	20000	400
D 0.5	6	16000	300
D 0.5	8	14000	200
D 0.6	2	32000	800
D 0.6	3	30000	800
D 0.6	4	26000	700
D 0.6	6	20000	400
D 0.6	8	14000	200
D 0.7	2	32000	1000
D 0.7	4	26000	1000
D 0.7	6	20000	600
D 0.7	8	14000	300
D 0.8	3	30000	1300
D 0.8	4	24000	1100
D 0.8	6	20000	900
D 0.8	8	16000	600
D 0.8	10	12000	300

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point.

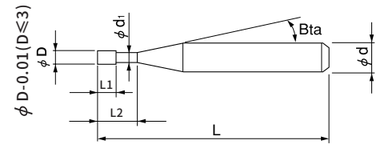
MG | DLC Coating | 37.5 | SD 0-0.003

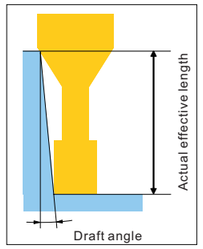
Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	◎
Graphite	
Copper	★
Plastics	◎
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Special geometry design, sharp cutting edge, highly efficient milling and chip evacuation;
* The coating, with good thermal stability, makes it maintain the hardness and mechanical properties under high temperature;
* Lower coefficient of friction reduces wear during cutting and provides better surface quality;





Total 24 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLS4-010040	1.0	1.5	4	12°	50	4	4	○
SHDLS4-010060	1.0	1.5	6	12°	50	4	4	○
SHDLS4-010080	1.0	1.5	8	12°	50	4	4	○
SHDLS4-010100	1.0	1.5	10	12°	50	4	4	○
SHDLS4-010120	1.0	1.5	12	12°	50	4	4	○
SHDLS4-015040	1.5	2.3	4	12°	50	4	4	○
SHDLS4-015060	1.5	2.3	6	12°	50	4	4	○
SHDLS4-015080	1.5	2.3	8	12°	50	4	4	○
SHDLS4-015100	1.5	2.3	10	12°	50	4	4	○
SHDLS4-015120	1.5	2.3	12	12°	50	4	4	○

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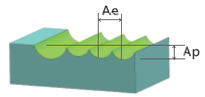
Total 24 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLS4-020060	2.0	3.0	6	12°	50	4	4	○
SHDLS4-020080	2.0	3.0	8	12°	50	4	4	○
SHDLS4-020100	2.0	3.0	10	12°	50	4	4	○
SHDLS4-020120	2.0	3.0	12	12°	50	4	4	○
SHDLS4-020160	2.0	3.0	16	12°	50	4	4	○
SHDLS4-020200	2.0	3.0	20	12°	50	4	4	○
SHDLS4-030100	3.0	4.5	10	12°	50	4	4	○
SHDLS4-030120	3.0	4.5	12	12°	50	4	4	○
SHDLS4-030160	3.0	4.5	16	12°	50	4	4	○
SHDLS4-030200	3.0	4.5	20	12°	50	4	4	○
SHDLS4-030100-6	3.0	4.5	10	12°	50	4	6	○
SHDLS4-030120-6	3.0	4.5	12	12°	50	4	6	○
SHDLS4-030160-6	3.0	4.5	16	12°	50	4	6	○
SHDLS4-030200-6	3.0	4.5	20	12°	50	4	6	○

*New size added from this series.

○ Stocked items.



Work Material		Oxygen-free & Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D1.0	4	18000	1500
D1.0	6	16000	1300
D1.0	8	12000	1000
D1.0	10	10000	800
D1.0	12	8000	500
D1.5	4	18000	1800
D1.5	6	18000	1800
D1.5	8	16000	1500
D1.5	10	16000	1300
D1.5	12	10000	800
D2.0	6	16000	2000
D2.0	8	16000	2000
D2.0	10	16000	1800
D2.0	12	16000	1800
D2.0	16	12000	1300
D2.0	20	8000	800
D3.0	10	14000	2000
D3.0	12	14000	2000
D3.0	16	12000	1800
D3.0	20	12000	1800
D3.0	10	14000	2000
D3.0	12	14000	2000
D3.0	16	12000	1800
D3.0	20	12000	1800

Note:

* Decrease both spindle speed and feed rate pro portionally when the milling para meters exceed the machine's maximum spindle speed;
* Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
* Recommend using a non-contact measuring device toavoid damaging the precision tip point.

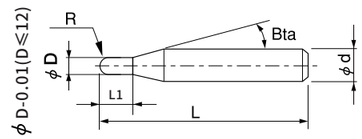
MG | DLC Coating | 30 | SD 0-0.003 | R ±0.005 (R≤3) | R ±0.007 (R4~10)

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	◎
Graphite	
Copper	★
Plastics	◎
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Special geometry design, sharp cutting edge, highly efficient milling and chip evacuation;
* The coating, with good thermal stability, makes it maintain the hardness and mechanical properties under high temperature;
* Lower coefficient of friction reduces wear during cutting and provides better surface quality;



Total 31 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDR2-002002	R0.1	0.2	12°	50	2	4	○
SHDR2-003003	R0.15	0.3	12°	50	2	4	○
SHDR2-004006	R0.2	0.6	12°	50	2	4	○
SHDR2-005008	R0.25	0.8	12°	50	2	4	○
SHDR2-006009	R0.3	0.9	12°	50	2	4	○
SHDR2-008012	R0.4	1.2	12°	50	2	4	○
SHDR2-010015	R0.5	1.5	12°	50	2	4	○
SHDR2-012018	R0.6	1.8	12°	50	2	4	○
SHDR2-015023	R0.75	2.3	12°	50	2	4	○
SHDR2-020030	R1	3	12°	50	2	4	○
SHDR2-030045-3	R1.5	4.5	-	50	2	3	○
SHDR2-030045-4	R1.5	4.5	12°	50	2	4	○
SHDR2-030045-6	R1.5	4.5	12°	50	2	6	○
SHDR2-040060	R2	6	-	50	2	4	○
SHDR2-040060-75	R2	6	-	75	2	4	○
SHDR2-040060-100	R2	6	-	100	2	4	○
SHDR2-040060-6	R2	6	12°	50	2	6	○
SHDR2-050075	R2.5	7.5	12°	50	2	6	○
SHDR2-060090	R3	9	-	50	2	6	○
SHDR2-060090-75	R3	9	-	75	2	6	○

Next page

Total 31 models

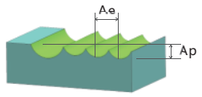
単位Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDR2-060090-100	R3	9	-	100	2	6	○
SHDR2-080120	R4	12	-	60	2	8	○
SHDR2-080120-75	R4	12	-	75	2	8	○
SHDR2-080160-100	R4	16	-	100	2	8	○
SHDR2-080160-150	R4	16	-	150	2	8	○
SHDR2-100150	R5	15	-	75	2	10	○
SHDR2-100200-100	R5	20	-	100	2	10	○
SHDR2-100200-150	R5	20	-	150	2	10	○
SHDR2-120180	R6	18	-	75	2	12	○
SHDR2-120240-100	R6	24	-	100	2	12	○
SHDR2-120240-150	R6	24	-	150	2	12	○

*New size added from this series.

○ Stocked items.

SHDR2-000 Milling Conditions



Work Material	Oxygen-free & Copper			
(mm) Diameter	(min-1) Speed	(mm/min) Feed	Ap(mm) Axial depth	Ae(mm) Radidl depth
D0.2	30000	150	0.006	0.006
D0.3	26000	300	0.01	0
D0.4	22000	400	0.015	0.015
D0.5	20000	400	0.015	0.015
D0.6	20000	800	0.02	0.02
D0.8	18000	1200	0.02	0.03
D1	16000	1200	0.03	0.04
D1.5	16000	1500	0.03	0.05
D2	15000	1800	0.03	0.05
D2	15000	1800	0.04	0.05
D3	14000	2200	0.04	0.07
D3	14000	2200	0.05	0.07
D3	14000	2200	0.04	0.07
D4	14000	2400	0.04	0.08
D4	14000	2400	0.05	0.08
D5	12000	2600	0.05	0.08
D6	12000	2600	0.05	0.08
D8	10000	3000	0.05	0.1
D10	9000	3000	0.05	0.12
D12	9000	3000	0.05	0.15

Note:
*The above milling parameters are calculated based on 3D. Decrease both spindle speed and feed rate proportionally if the overhang length exceeds 3xD;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys;
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.

SHDLR 2 Flutes Long Neck Ball

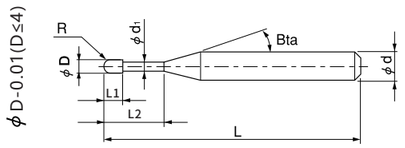
MG | DLC Coating | 30 | SD 0-0.003 | R ±0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	◎
Graphite	
Copper	★
Plastics	◎
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Special geometry design, sharp cutting edge, highly efficient milling and chip evacuation;
* The coating, with good thermal stability, makes it maintain the hardness and mechanical properties under high temperature;
* Lower coefficient of friction reduces wear during cutting and provides better surface quality;



Total 74 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLR2-002005	R0.1	0.16	0.5	12°	50	2	4	○
SHDLR2-002010	R0.1	0.16	1	12°	50	2	4	○
SHDLR2-002020	R0.1	0.16	2	12°	50	2	4	○
SHDLR2-003010	R0.15	0.25	1	12°	50	2	4	○
SHDLR2-003020	R0.15	0.25	2	12°	50	2	4	○
SHDLR2-003030	R0.15	0.25	3	12°	50	2	4	○
SHDLR2-003040	R0.15	0.25	4	12°	50	2	4	○
SHDLR2-003060	R0.15	0.25	6	12°	50	2	4	○
SHDLR2-004010	R0.2	0.32	1	12°	50	2	4	○
SHDLR2-004020	R0.2	0.32	2	12°	50	2	4	○
SHDLR2-004030	R0.2	0.32	3	12°	50	2	4	○
SHDLR2-004040	R0.2	0.32	4	12°	50	2	4	○
SHDLR2-004060	R0.2	0.32	6	12°	50	2	4	○
SHDLR2-005020	R0.25	0.4	2	12°	50	2	4	○
SHDLR2-005030	R0.25	0.4	3	12°	50	2	4	○
SHDLR2-005040	R0.25	0.4	4	12°	50	2	4	○
SHDLR2-005060	R0.25	0.4	6	12°	50	2	4	○
SHDLR2-005080	R0.25	0.4	8	12°	50	2	4	○
SHDLR2-006020	R0.3	0.45	2	12°	50	2	4	○
SHDLR2-006030	R0.3	0.45	3	12°	50	2	4	○
SHDLR2-006040	R0.3	0.45	4	12°	50	2	4	○
SHDLR2-006060	R0.3	0.45	6	12°	50	2	4	○

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Total 74 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLR2-006080	R0.3	0.45	8	12°	50	2	4	○
SHDLR2-006080	R0.3	0.45	10	12°	50	2	4	○
SHDLR2-008020	R0.4	0.6	2	12°	50	2	4	○
SHDLR2-008040	R0.4	0.6	4	12°	50	2	4	○
SHDLR2-008060	R0.4	0.6	6	12°	50	2	4	○
SHDLR2-008080	R0.4	0.6	8	12°	50	2	4	○
SHDLR2-008100	R0.4	0.6	10	12°	50	2	4	○
SHDLR2-010020	R0.5	0.8	2	12°	50	2	4	○
SHDLR2-010030	R0.5	0.8	3	12°	50	2	4	○
SHDLR2-010040	R0.5	0.8	4	12°	50	2	4	○
SHDLR2-010060	R0.5	0.8	6	12°	50	2	4	○
SHDLR2-010080	R0.5	0.8	8	12°	50	2	4	○
SHDLR2-010100	R0.5	0.8	10	12°	50	2	4	○
SHDLR2-010120	R0.5	0.8	12	12°	50	2	4	○
SHDLR2-010140	R0.5	0.8	14	12°	50	2	4	○
SHDLR2-010160	R0.5	0.8	16	12°	50	2	4	○
SHDLR2-015040	R0.75	1.2	4	12°	50	2	4	○
SHDLR2-015060	R0.75	1.2	6	12°	50	2	4	○
SHDLR2-015080	R0.75	1.2	8	12°	50	2	4	○
SHDLR2-015100	R0.75	1.2	10	12°	50	2	4	○
SHDLR2-015120	R0.75	1.2	12	12°	50	2	4	○
SHDLR2-015140	R0.75	1.2	14	12°	50	2	4	○
SHDLR2-015160	R0.75	1.2	16	12°	50	2	4	○
SHDLR2-020040	R1	1.6	4	12°	50	2	4	○
SHDLR2-020060	R1	1.6	6	12°	50	2	4	○
SHDLR2-020080	R1	1.6	8	12°	50	2	4	○
SHDLR2-020100	R1	1.6	10	12°	50	2	4	○
SHDLR2-020120	R1	1.6	12	12°	50	2	4	○
SHDLR2-020160	R1	1.6	16	12°	50	2	4	○
SHDLR2-020040-6	R1	1.6	4	12°	60	2	6	○
SHDLR2-020060-6	R1	1.6	6	12°	60	2	6	○
SHDLR2-020080-6	R1	1.6	8	12°	60	2	6	○
SHDLR2-020100-6	R1	1.6	10	12°	60	2	6	○
SHDLR2-020120-6	R1	1.6	12	12°	60	2	6	○

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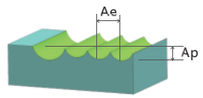
Total 74 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLR2-020140-6	R1	1.6	16	12°	60	2	6	○
SHDLR2-030060	R1.5	2.4	6	12°	50	2	4	○
SHDLR2-030080	R1.5	2.4	8	12°	50	2	4	○
SHDLR2-030100	R1.5	2.4	10	12°	50	2	4	○
SHDLR2-030120	R1.5	2.4	12	12°	50	2	4	○
SHDLR2-030160	R1.5	2.4	16	12°	50	2	4	○
SHDLR2-030200	R1.5	2.4	20	12°	50	2	4	○
SHDLR2-030060-6	R1.5	2.4	6	12°	60	2	6	○
SHDLR2-030080-6	R1.5	2.4	8	12°	60	2	6	○
SHDLR2-030100-6	R1.5	2.4	10	12°	60	2	6	○
SHDLR2-030120-6	R1.5	2.4	12	12°	60	2	6	○
SHDLR2-030160-6	R1.5	2.4	16	12°	60	2	6	○
SHDLR2-030200-6	R1.5	2.4	20	12°	60	2	6	○
SHDLR2-040080-6	R2	4	8	12°	60	2	6	○
SHDLR2-040100-6	R2	4	10	12°	60	2	6	○
SHDLR2-040120-6	R2	4	12	12°	60	2	6	○
SHDLR2-040160-6	R2	4	16	12°	60	2	6	○
SHDLR2-040200-6	R2	4	20	12°	60	2	6	○

*New size added from this series.

○ Stocked items.



Work Material	Oxygen-free & Copper				
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap(mm) Axial depth	Ae(mm) Radidl depth
D 0.2	0.5	30000	150	0.006	0.006
D 0.2	1	30000	100	0.006	0.006
D 0.2	1.5	30000	100	0.003	0.003
D 0.3	1	28000	300	0.01	0.01
D 0.3	1.5	28000	300	0.008	0.008
D 0.3	2	24000	200	0.007	0.007
D 0.3	3	20000	100	0.005	0.005
D 0.3	3	20000	100	0.005	0.005
D 0.4	1	24000	600	0.01	0.02
D 0.4	2	24000	400	0.01	0.015
D 0.4	3	20000	300	0.008	0.008
D 0.4	4	18000	150	0.005	0.005
D 0.4	4	18000	150	0.005	0.005
D 0.5	1	22000	800	0.015	0.02
D 0.5	2	22000	800	0.015	0.02
D 0.5	4	18000	400	0.01	0.01
D 0.5	6	14000	200	0.005	0.005
D 0.5	8	14000	100	0.003	0.003
D 0.6	2	20000	1000	0.02	0.02
D 0.6	4	17000	500	0.015	0.02
D 0.6	6	15000	400	0.01	0.02
D 0.6	8	14000	200	0.005	0.01
D 0.6	8	14000	200	0.005	0.01
D 0.6	8	14000	200	0.005	0.01
D 0.8	2	18000	1200	0.03	0.03
D 0.8	4	18000	800	0.02	0.03
D 0.8	6	14000	500	0.01	0.03
D 0.8	8	14000	300	0.01	0.02
D 0.8	8	14000	300	0.01	0.02
D 1.0	2	16000	1500	0.03	0.05
D 1.0	4	16000	1300	0.03	0.05
D 1.0	4	16000	1300	0.03	0.05
D 1.0	6	16000	1000	0.03	0.05
D 1.0	8	14000	500	0.02	0.04
D 1.0	10	12000	400	0.01	0.03

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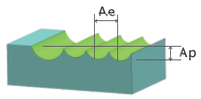
SAMHO

SHDLR2-000 Milling Conditions



Work Material	Oxygen-free & Copper				
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap(mm) Axial depth	Ae(mm) Radidl depth
D 1.0	12	11000	300	0.01	0.02
D 1.0	14	10000	250	0.01	0.02
D 1.0	16	10000	200	0.01	0.01
D 1.5	4	16000	1600	0.03	0.06
D 1.5	6	16000	1400	0.03	0.06
D 1.5	8	16000	1200	0.03	0.05
D 1.5	10	12000	800	0.02	0.05
D 1.5	12	10000	500	0.02	0.04
D 1.5	14	10000	400	0.01	0.03
D 1.5	16	8000	300	0.01	0.03
D 2	4	16000	1800	0.03	0.06
D 2	6	15000	1800	0.03	0.06
D 2	8	15000	1800	0.03	0.06
D 2	10	15000	1800	0.03	0.06
D 2	12	13000	1600	0.03	0.06
D 2	16	10000	1000	0.02	0.06
D 2	4	16000	1800	0.03	0.06
D 2	6	15000	1800	0.03	0.06
D 2	8	15000	1800	0.03	0.06
D 2	10	15000	1800	0.03	0.06
D 2	12	13000	1600	0.03	0.06
D 2	16	10000	1000	0.02	0.06
D 3	6	14000	2200	0.05	0.07
D 3	8	14000	2200	0.05	0.07
D 3	10	14000	2200	0.05	0.07
D 3	12	14000	2200	0.04	0.07
D 3	16	12000	2000	0.03	0.07
D 3	20	11000	1000	0.03	0.07
D 3	6	14000	2200	0.05	0.07
D 3	8	14000	2200	0.05	0.07
D 3	10	14000	2200	0.05	0.07
D 3	12	14000	2200	0.04	0.07
D 3	16	12000	2000	0.03	0.07
D 3	20	11000	1000	0.03	0.07
D 4	8	14000	2400	0.05	0.07

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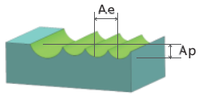
2 Flutes

Long Neck Ball

SHDLR2-000 Milling Conditions



Work Material	Oxygen-free & Copper				
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap(mm) Axial depth	Ae(mm) Radidl depth
D 4	10	14000	2400	0.05	0.07
D 4	12	14000	2400	0.05	0.07
D 4	16	14000	2200	0.04	0.07
D 4	20	12000	2000	0.04	0.07

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

SHDSR 4 Flutes Radius

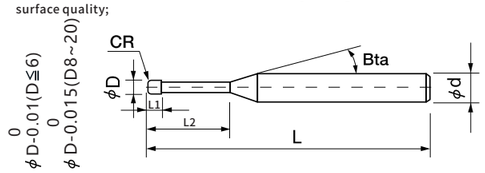
MG | DLC Coating | 37.5 | SD 0-0.003 | R ±0.005 (R≤3) | R ±0.007 (R4~10)

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	◎
Graphite	
Copper	★
Plastics	◎
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Special geometry design, sharp cutting edge, highly efficient milling and chip evacuation;
* The coating, with good thermal stability, makes it maintain the hardness and mechanical properties under high temperature;
* Lower coefficient of friction reduces wear during cutting and provides better surface quality;



Total 49 models — Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDSR4-01001020	1	2	R0.1	12°	50	4	4	○
SHDSR4-01002020	1	2	R0.2	12°	50	4	4	○
SHDSR4-01501030	1.5	3	R0.1	12°	50	4	4	○
SHDSR4-01502030	1.5	3	R0.2	12°	50	4	4	○
SHDSR4-02001040	2	4	R0.1	12°	50	4	4	○
SHDSR4-02002040	2	4	R0.2	12°	50	4	4	○
SHDSR4-02003040	2	4	R0.3	12°	50	4	4	○
SHDSR4-02005040	2	4	R0.5	12°	50	4	4	○
SHDSR4-03001060	3	6	R0.1	12°	50	4	4	○
SHDSR4-03002060	3	6	R0.2	12°	50	4	4	○
SHDSR4-03003060	3	6	R0.3	12°	50	4	4	○
SHDSR4-03005060	3	6	R0.5	12°	50	4	4	○
SHDSR4-04001080	4	8	R0.1	-	50	4	4	○
SHDSR4-04002080	4	8	R0.2	-	50	4	4	○
SHDSR4-04003080	4	8	R0.3	-	50	4	4	○
SHDSR4-04005080	4	8	R0.5	-	50	4	4	○
SHDSR4-04005080-75	4	8	R0.5	-	75	4	4	○
SHDSR4-04005080-100	4	8	R0.5	-	100	4	4	○
SHDSR4-05002100	5	10	R0.2	12°	50	4	6	○
SHDSR4-05005100	5	10	R0.5	12°	50	4	6	○
SHDSR4-06002120	6	12	R0.2	12°	50	4	6	○
SHDSR4-06005120	6	12	R0.5	12°	50	4	6	○

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SAMHO

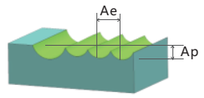
Total 49 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDSR4-06010120	6	12	R1	-	50	4	6	○
SHDSR4-06002120-75	6	12	R0.2	-	75	4	6	○
SHDSR4-06005120-75	6	12	R0.5	-	75	4	6	○
SHDSR4-06010120-75	6	12	R1	-	75	4	6	○
SHDSR4-06002120-100	6	12	R0.2	-	100	4	6	○
SHDSR4-06005120-100	6	12	R0.5	-	100	4	6	○
SHDSR4-06010120-100	6	12	R1	-	100	4	6	○
SHDSR4-08005160	8	16	R0.5	-	60	4	8	○
SHDSR4-08010160	8	16	R1	-	60	4	8	○
SHDSR4-08005160-75	8	16	R0.5	-	75	4	8	○
SHDSR4-08010160-75	8	16	R1	-	75	4	8	○
SHDSR4-08005200-100	8	20	R0.5	-	100	4	8	○
SHDSR4-08010200-100	8	20	R1	-	100	4	8	○
SHDSR4-08005200-150	8	20	R0.5	-	150	4	8	○
SHDSR4-08010200-150	8	20	R1	-	150	4	8	○
SHDSR4-10005200	10	20	R0.5	-	75	4	10	○
SHDSR4-10010200	10	20	R1	-	75	4	10	○
SHDSR4-10005250-100	10	25	R0.5	-	100	4	10	○
SHDSR4-10010250-100	10	25	R1	-	100	4	10	○
SHDSR4-10005250-150	10	25	R0.5	-	150	4	10	○
SHDSR4-10010250-150	10	25	R1	-	150	4	10	○
SHDSR4-12005240	12	24	R0.5	-	75	4	12	○
SHDSR4-12010240	12	24	R1	-	75	4	12	○
SHDSR4-12005300-100	12	30	R0.5	-	100	4	12	○
SHDSR4-12010300-100	12	30	R1	-	100	4	12	○
SHDSR4-12005300-150	12	30	R0.5	-	150	4	12	○
SHDSR4-12010300-150	12	30	R1	-	150	4	12	○

*New size added from this series.

○ Stocked items.



Work Material	Oxygen-free & Copper	
(mm) Diameter	(min-1) Speed	(mm/min) Feed
D1	15000	1000
D1	15000	1000
D1.5	14000	1500
D1.5	14000	1500
D2	14000	1500
D2	14000	1500
D2	14000	1500
D2	14000	1500
D3	13000	1800
D3	13000	1800
D3	13000	1800
D3	13000	1800
D4	12000	2000
D4	12000	2000
D4	12000	2000
D4	12000	2000
D4	12000	2000
D4	12000	2000
D5	12000	2200
D5	12000	2200
D6	11000	2400
D6	11000	2400
D6	11000	2400
D6	11000	2400
D6	11000	2400
D6	11000	2400
D6	11000	2400
D6	11000	2400
D8	9000	2600
D8	9000	2600
D8	9000	2600
D8	9000	2600
D8	9000	2600
D8	9000	2600
D8	9000	2600
D8	9000	2600

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Work Material	Oxygen-free & Copper	
(mm) Diameter	(min-1) Speed	(mm/min) Feed
D10	8000	2600
D10	8000	2600
D10	8000	2600
D10	8000	2600
D10	8000	2600
D10	8000	2600
D12	7500	3000
D12	7500	3000
D12	7500	3000
D12	7500	3000
D12	7500	3000
D12	7500	3000
D12	7500	3000

Note:
*The above milling parameters are calculated based on 3xD. Decrease both spindle speed and feed rate proportionally if the overhang length exceeds 3xD;
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

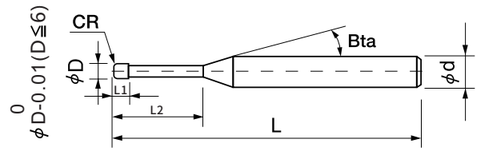
MG | DLC Coating | 30 | SD 0-0.003 | R ±0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	◎
Graphite	
Copper	★
Plastics	◎
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Special geometry design, sharp cutting edge, highly efficient milling and chip evacuation;
* The coating, with good thermal stability, makes it maintain the hardness and mechanical properties under high temperature;
* Lower coefficient of friction reduces wear during cutting and provides better surface quality;



Total 71 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLSR2-003005010	D0.3	0.25	1	R0.05	12°	50	2	4	○
SHDLSR2-003005020	D0.3	0.25	2	R0.05	12°	50	2	4	○
SHDLSR2-004005010	D0.4	0.32	1	R0.05	12°	50	2	4	○
SHDLSR2-004005020	D0.4	0.32	2	R0.05	12°	50	2	4	○
SHDLSR2-004005030	D0.4	0.32	3	R0.05	12°	50	2	4	○
SHDLSR2-004005040	D0.4	0.32	4	R0.05	12°	50	2	4	○
SHDLSR2-00401010	D0.4	0.32	1	R0.1	12°	50	2	4	○
SHDLSR2-00401020	D0.4	0.32	2	R0.1	12°	50	2	4	○
SHDLSR2-00401030	D0.4	0.32	3	R0.1	12°	50	2	4	○
SHDLSR2-00401040	D0.4	0.32	4	R0.1	12°	50	2	4	○
SHDLSR2-005005010	D0.5	0.4	1	R0.05	12°	50	2	4	○
SHDLSR2-005005020	D0.5	0.4	2	R0.05	12°	50	2	4	○
SHDLSR2-005005030	D0.5	0.4	3	R0.05	12°	50	2	4	○
SHDLSR2-005005040	D0.5	0.4	4	R0.05	12°	50	2	4	○
SHDLSR2-00501010	D0.5	0.4	1	R0.1	12°	50	2	4	○
SHDLSR2-00501020	D0.5	0.4	2	R0.1	12°	50	2	4	○
SHDLSR2-00501030	D0.5	0.4	3	R0.1	12°	50	2	4	○
SHDLSR2-00501040	D0.5	0.4	4	R0.1	12°	50	2	4	○
SHDLSR2-006005020	D0.6	0.5	2	R0.05	12°	50	2	4	○
SHDLSR2-006005030	D0.6	0.5	3	R0.05	12°	50	2	4	○
SHDLSR2-006005040	D0.6	0.5	4	R0.05	12°	50	2	4	○
SHDLSR2-006005060	D0.6	0.5	6	R0.05	12°	50	2	4	○

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Total 71 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLSR2-00601020	D0.6	0.5	2	R0.1	12°	50	2	4	○
SHDLSR2-00601030	D0.6	0.5	3	R0.1	12°	50	2	4	○
SHDLSR2-00601040	D0.6	0.5	4	R0.1	12°	50	2	4	○
SHDLSR2-00601060	D0.6	0.5	6	R0.1	12°	50	2	4	○
SHDLSR2-008005020	D0.8	0.65	2	R0.05	12°	50	2	4	○
SHDLSR2-008005030	D0.8	0.65	3	R0.05	12°	50	2	4	○
SHDLSR2-008005040	D0.8	0.65	4	R0.05	12°	50	2	4	○
SHDLSR2-008005060	D0.8	0.65	6	R0.05	12°	50	2	4	○
SHDLSR2-008005080	D0.8	0.65	8	R0.05	12°	50	2	4	○
SHDLSR2-00801020	D0.8	0.65	2	R0.1	12°	50	2	4	○
SHDLSR2-00801030	D0.8	0.65	3	R0.1	12°	50	2	4	○
SHDLSR2-00801040	D0.8	0.65	4	R0.1	12°	50	2	4	○
SHDLSR2-00801060	D0.8	0.65	6	R0.1	12°	50	2	4	○
SHDLSR2-00801080	D0.8	0.65	8	R0.1	12°	50	2	4	○
SHDLSR2-00802020	D0.8	0.65	2	R0.2	12°	50	2	4	○
SHDLSR2-00802030	D0.8	0.65	3	R0.2	12°	50	2	4	○
SHDLSR2-00802040	D0.8	0.65	4	R0.2	12°	50	2	4	○
SHDLSR2-00802060	D0.8	0.65	6	R0.2	12°	50	2	4	○
SHDLSR2-00802080	D0.8	0.65	8	R0.2	12°	50	2	4	○
SHDLSR2-01001040	D1.0	1.0	4	R0.1	12°	50	2	4	○
SHDLSR2-01001060	D1.0	1.0	6	R0.1	12°	50	2	4	○
SHDLSR2-01001080	D1.0	1.0	8	R0.1	12°	50	2	4	○
SHDLSR2-01001100	D1.0	1.0	10	R0.1	12°	50	2	4	○
SHDLSR2-01001120	D1.0	1.0	12	R0.1	12°	50	2	4	○
SHDLSR2-01002040	D1.0	1.0	4	R0.2	12°	50	2	4	○
SHDLSR2-01002060	D1.0	1.0	6	R0.2	12°	50	2	4	○
SHDLSR2-01002080	D1.0	1.0	8	R0.2	12°	50	2	4	○
SHDLSR2-01002100	D1.0	1.0	10	R0.2	12°	50	2	4	○
SHDLSR2-01002120	D1.0	1.0	12	R0.2	12°	50	2	4	○
SHDLSR2-01501040	D1.5	1.5	4	R0.1	12°	50	2	4	○
SHDLSR2-01501060	D1.5	1.5	6	R0.1	12°	50	2	4	○
SHDLSR2-01501080	D1.5	1.5	8	R0.1	12°	50	2	4	○
SHDLSR2-01501100	D1.5	1.5	10	R0.1	12°	50	2	4	○
SHDLSR2-01501120	D1.5	1.5	12	R0.1	12°	50	2	4	○
SHDLSR2-01502040	D1.5	1.5	4	R0.2	12°	50	2	4	○
SHDLSR2-01502060	D1.5	1.5	6	R0.2	12°	50	2	4	○
SHDLSR2-01502080	D1.5	1.5	8	R0.2	12°	50	2	4	○
SHDLSR2-01502100	D1.5	1.5	10	R0.2	12°	50	2	4	○

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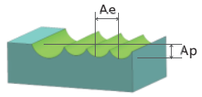
Total 71 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLSR2-01502120	D1.5	1.5	12	R0.2	12°	50	2	4	○
SHDLSR2-02001060	D2.0	2.0	6	R0.1	12°	50	2	4	○
SHDLSR2-02001080	D2.0	2.0	8	R0.1	12°	50	2	4	○
SHDLSR2-02001100	D2.0	2.0	10	R0.1	12°	50	2	4	○
SHDLSR2-02001120	D2.0	2.0	12	R0.1	12°	50	2	4	○
SHDLSR2-02001160	D2.0	2.0	16	R0.1	12°	50	2	4	○
SHDLSR2-02002060	D2.0	2.0	6	R0.2	12°	50	2	4	○
SHDLSR2-02002080	D2.0	2.0	8	R0.2	12°	50	2	4	○
SHDLSR2-02002100	D2.0	2.0	10	R0.2	12°	50	2	4	○
SHDLSR2-02002120	D2.0	2.0	12	R0.2	12°	50	2	4	○
SHDLSR2-02002160	D2.0	2.0	16	R0.2	12°	50	2	4	○

*New size added from this series.

○ Stocked items.



Work Material		Oxygen-free & Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D0.3	1	30000	240
D0.3	2	30000	120
D0.4	1	26000	300
D0.4	2	24000	260
D0.4	3	22000	180
D0.4	4	18000	120
D0.4	1	26000	300
D0.4	2	24000	220
D0.4	3	22000	180
D0.4	4	18000	120
D0.5	1	20000	500
D0.5	2	18000	360
D0.5	4	16000	200
D0.5	6	14000	120
D0.5	1	20000	500
D0.5	2	18000	360
D0.5	4	16000	200
D0.5	6	14000	120
D0.6	2	16000	700
D0.6	4	13000	400
D0.6	6	11000	200
D0.6	8	10000	120
D0.6	2	16000	700
D0.6	4	13000	400
D0.6	6	11000	200
D0.6	8	10000	120
D0.8	2	16000	1200
D0.8	4	14000	800
D0.8	6	13000	600
D0.8	8	12000	300
D0.8	2	16000	1200
D0.8	4	14000	800
D0.8	6	13000	500
D0.8	8	12000	300
D0.8	2	16000	1200
D0.8	4	14000	800

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SAMHO

SHDLSR2-000 Milling Conditions

Work Material		Oxygen-free & Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D0.8	6	13000	500
D0.8	8	12000	300
D1.0	4	13000	1000
D1.0	6	11000	700
D1.0	8	10000	500
D1.0	10	8500	300
D1.0	10	8500	300
D1.0	4	13000	1000
D1.0	6	11000	700
D1.0	8	10000	500
D1.0	10	8500	300
D1.0	10	8500	300
D1.5	4	13000	1000
D1.5	6	10000	1000
D1.5	8	9000	800
D1.5	10	8500	700
D1.5	10	8500	700
D1.5	4	13000	1000
D1.5	6	10000	1000
D1.5	8	9000	800
D1.5	10	8500	700
D1.5	10	8500	700
D2	6	12000	1500
D2	8	11000	1000
D2	10	10000	900
D2	12	9000	800
D2	16	7500	600
D2	6	12000	1500
D2	8	11000	1000
D2	10	10000	900
D2	12	9000	800
D2	16	7500	600

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

2 Flutes

Long Neck Radius

SAMHO

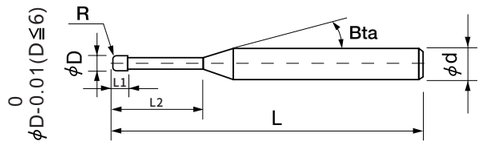
MG | DLC Coating | 37.5 | SD 0-0.003 | R ±0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	◎
Graphite	
Copper	★
Plastics	◎
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Special geometry design, sharp cutting edge, highly efficient milling and chip evacuation;
* The coating, with good thermal stability, makes it maintain the hardness and mechanical properties under high temperature;
* Lower coefficient of friction reduces wear during cutting and provides better surface quality;



Total 69 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLSR4-01001040	D1.0	1.0	4	R0.1	12°	50	4	4	○
SHDLSR4-01001060	D1.0	1.0	6	R0.1	12°	50	4	4	○
SHDLSR4-01001080	D1.0	1.0	8	R0.1	12°	50	4	4	○
SHDLSR4-01001100	D1.0	1.0	10	R0.1	12°	50	4	4	○
SHDLSR4-01001120	D1.0	1.0	12	R0.1	12°	50	4	4	○
SHDLSR4-01002040	D1.0	1.0	4	R0.2	12°	50	4	4	○
SHDLSR4-01002060	D1.0	1.0	6	R0.2	12°	50	4	4	○
SHDLSR4-01002080	D1.0	1.0	8	R0.2	12°	50	4	4	○
SHDLSR4-01002100	D1.0	1.0	10	R0.2	12°	50	4	4	○
SHDLSR4-01002120	D1.0	1.0	12	R0.2	12°	50	4	4	○
SHDLSR4-01501040	D1.5	1.5	4	R0.1	12°	50	4	4	○
SHDLSR4-01501060	D1.5	1.5	6	R0.1	12°	50	4	4	○
SHDLSR4-01501080	D1.5	1.5	8	R0.1	12°	50	4	4	○
SHDLSR4-01501100	D1.5	1.5	10	R0.1	12°	50	4	4	○
SHDLSR4-01501120	D1.5	1.5	12	R0.1	12°	50	4	4	○
SHDLSR4-01502040	D1.5	1.5	4	R0.2	12°	50	4	4	○
SHDLSR4-01502060	D1.5	1.5	6	R0.2	12°	50	4	4	○
SHDLSR4-01502080	D1.5	1.5	8	R0.2	12°	50	4	4	○
SHDLSR4-01502100	D1.5	1.5	10	R0.2	12°	50	4	4	○
SHDLSR4-01502120	D1.5	1.5	12	R0.2	12°	50	4	4	○

Next page

SAMHO

Total 69 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length of cut	L2 Effective length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number of flutes	d Shank Diameter	In Stock
SHDLSR4-02001060	D2.0	2.0	6	R0.1	12°	50	4	4	○
SHDLSR4-02001080	D2.0	2.0	8	R0.1	12°	50	4	4	○
SHDLSR4-02001100	D2.0	2.0	10	R0.1	12°	50	4	4	○
SHDLSR4-02001120	D2.0	2.0	12	R0.1	12°	50	4	4	○
SHDLSR4-02001160	D2.0	2.0	16	R0.1	12°	50	4	4	○
SHDLSR4-02002060	D2.0	2.0	6	R0.2	12°	50	4	4	○
SHDLSR4-02002080	D2.0	2.0	8	R0.2	12°	50	4	4	○
SHDLSR4-02002100	D2.0	2.0	10	R0.2	12°	50	4	4	○
SHDLSR4-02002120	D2.0	2.0	12	R0.2	12°	50	4	4	○
SHDLSR4-02002160	D2.0	2.0	16	R0.2	12°	50	4	4	○
SHDLSR4-03001080	D3.0	3.0	8	R0.1	12°	50	4	4	○
SHDLSR4-03001100	D3.0	3.0	10	R0.1	12°	50	4	4	○
SHDLSR4-03001120	D3.0	3.0	12	R0.1	12°	50	4	4	○
SHDLSR4-03001160	D3.0	3.0	16	R0.1	12°	50	4	4	○
SHDLSR4-03001200	D3.0	3.0	20	R0.1	12°	50	4	4	○
SHDLSR4-03002080	D3.0	3.0	8	R0.2	12°	50	4	4	○
SHDLSR4-03002100	D3.0	3.0	10	R0.2	12°	50	4	4	○
SHDLSR4-03002120	D3.0	3.0	12	R0.2	12°	50	4	4	○
SHDLSR4-03002160	D3.0	3.0	16	R0.2	12°	50	4	4	○
SHDLSR4-03002200	D3.0	3.0	20	R0.2	12°	50	4	4	○
SHDLSR4-03005080	D3.0	3.0	8	R0.5	12°	50	4	4	○
SHDLSR4-03005100	D3.0	3.0	10	R0.5	12°	50	4	4	○
SHDLSR4-03005120	D3.0	3.0	12	R0.5	12°	50	4	4	○
SHDLSR4-03005160	D3.0	3.0	16	R0.5	12°	50	4	4	○
SHDLSR4-03005200	D3.0	3.0	20	R0.5	12°	50	4	4	○
SHDLSR4-03001080-6	D3.0	3.0	8	R0.1	12°	50	4	6	○
SHDLSR4-03001100-6	D3.0	3.0	10	R0.1	12°	60	4	6	○
SHDLSR4-03001120-6	D3.0	3.0	12	R0.1	12°	60	4	6	○
SHDLSR4-03001160-6	D3.0	3.0	16	R0.1	12°	60	4	6	○
SHDLSR4-03001200-6	D3.0	3.0	20	R0.1	12°	60	4	6	○
SHDLSR4-03002080-6	D3.0	3.0	8	R0.2	12°	60	4	6	○
SHDLSR4-03002100-6	D3.0	3.0	10	R0.2	12°	60	4	6	○
SHDLSR4-03002120-6	D3.0	3.0	12	R0.2	12°	60	4	6	○
SHDLSR4-03002160-6	D3.0	3.0	16	R0.2	12°	60	4	6	○
SHDLSR4-03002200-6	D3.0	3.0	20	R0.2	12°	60	4	6	○
SHDLSR4-03005080-6	D3.0	3.0	8	R0.5	12°	60	4	6	○
SHDLSR4-03005100-6	D3.0	3.0	10	R0.5	12°	60	4	6	○
SHDLSR4-03005120-6	D3.0	3.0	12	R0.5	12°	60	4	6	○

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SAMHO

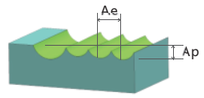
Total 69 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	CR Radius	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
SHDLSR4-03005160-6	D3.0	3.0	16	R0.5	12°	60	4	6	○
SHDLSR4-03005200-6	D3.0	3.0	20	R0.5	12°	60	4	6	○
SHDLSR4-04001120-6	D4.0	4.0	12	R0.1	12°	60	4	6	○
SHDLSR4-04001160-6	D4.0	4.0	16	R0.1	12°	60	4	6	○
SHDLSR4-04001200-6	D4.0	4.0	20	R0.1	12°	60	4	6	○
SHDLSR4-04002120-6	D4.0	4.0	12	R0.2	12°	60	4	6	○
SHDLSR4-04002160-6	D4.0	4.0	16	R0.2	12°	60	4	6	○
SHDLSR4-04002200-6	D4.0	4.0	20	R0.2	12°	60	4	6	○
SHDLSR4-04005120-6	D4.0	4.0	12	R0.5	12°	60	4	6	○
SHDLSR4-04005160-6	D4.0	4.0	16	R0.5	12°	60	4	6	○
SHDLSR4-04005200-6	D4.0	4.0	20	R0.5	12°	60	4	6	○

*New size added from this series.

○ Stocked items.



Work Material		Oxygen-free & Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D1.0	4	13000	1300
D1.0	6	11000	1000
D1.0	8	10000	800
D1.0	10	8500	500
D1.0	12	7500	300
D1.0	4	13000	1300
D1.0	6	11000	1000
D1.0	8	10000	800
D1.0	10	8500	500
D1.0	12	7500	300
D1.5	6	12000	1300
D1.5	8	10000	1000
D1.5	10	9000	900
D1.5	12	8500	800
D1.5	6	12000	1500
D1.5	8	10000	1000
D1.5	10	9000	900
D1.5	12	8500	800
D2.0	6	13000	1800
D2.0	8	11000	1500
D2.0	10	10000	1200
D2.0	12	9000	1000
D2.0	16	8000	800
D2.0	6	13000	1800
D2.0	8	11000	1500
D2.0	10	10000	1200
D2.0	12	9000	1000
D2.0	16	8000	800
D3.0	6	13000	2200
D3.0	8	12000	2200
D3.0	12	10000	2000
D3.0	16	9000	1600
D3.0	20	8500	1400
D3.0	6	13000	2200
D3.0	8	12000	2200

Next page

4 Flutes

Long Neck Radius

被削材 Work Material		無氧銅 & 紅銅 Oxygen-free & Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D3.0	12	10000	2000
D3.0	16	9000	1600
D3.0	20	8500	1400
D3.0	6	13000	2200
D3.0	8	12000	2200
D3.0	12	10000	2000
D3.0	16	9000	1600
D3.0	20	8500	1400
D3.0	6	13000	2200
D3.0	8	12000	2200
D3.0	12	10000	2000
D3.0	16	9000	1600
D3.0	20	8500	1400
D3.0	6	13000	2200
D3.0	8	12000	2200
D3.0	12	10000	2000
D3.0	16	9000	1600
D3.0	20	8500	1400
D3.0	6	13000	2200
D3.0	8	12000	2200
D3.0	12	10000	2000
D3.0	16	9000	1600
D3.0	20	8500	1400
D4.0	8	11000	2200
D4.0	10	11000	2200
D4.0	20	7500	1600
D4.0	8	11000	2200
D4.0	10	11000	2200
D4.0	20	7500	1600
D4.0	8	11000	2200
D4.0	10	11000	2200
D4.0	20	7500	1600

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend oil coolant for Stainless Steels and Heat Resistance Alloys.

Cutting Tools

For TungstenCopper

Square
- CGS2-000
- CGS4-000
- CGLS 2-000
- CGLS 4-000

Ball
- CGR2-000
- CGLR 2-000

Radius
- CGSR 4-000
- CGLSR 2-000
- CGLSR 4-000

Brand	Cu%(WT)	Density (Min)	Electrical conductivity (Min)	Hardness (Min)	Thermal conductivity	Coefficient of thermal expansion
CuW55	45±2	12.30g/cm3	49% IACS	125HB	~260(W/mK)	~11.7 (10-6/K)
CuW60	40±2	12.75g/cm3	47% IACS	140HB		
CuW65	35±2	3.30g/cm3	44% IACS	155HB		
CuW70	30±2	13.80g/cm3	42% IACS	175HB	~240(W/mK)	~9.7 (10-6/K)
CuW75	25±2	14.50g/cm3	38% IACS	195HB	200~230 (W/mK)	9.0~9.5 (10-6/K)
CuW80	20±2	15.15g/cm3	34% IACS	220HB	190~210 (W/mK)	8.0~8.5 (10-6/K)
CuW85	15±2	15.90g/cm3	30% IACS	240HB	180~200 (W/mK)	7.0~7.5 (10-6/K)

CGS Series (Tungsten Copper Special End Mill)

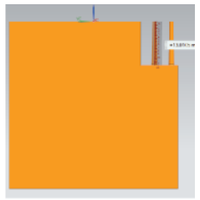
*High-precision version can be ordered;
*The measured outer diameter and R accuracy are marked on the label.

Example

★ Analysis Report:Material Tungsten copper (W75)

Purpose: D2 test
Processing machine: ROKU-ROKU machine (36000rpm)
Coolant: Oil coolant
Test time: 2021-12-28

Milling Shape:

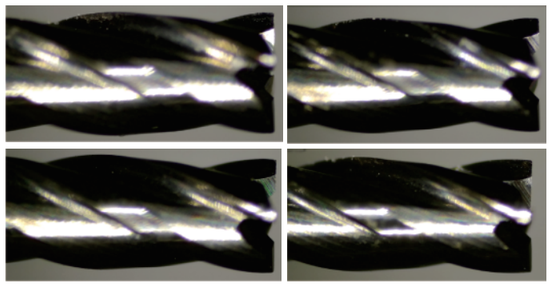


Milling Parameters

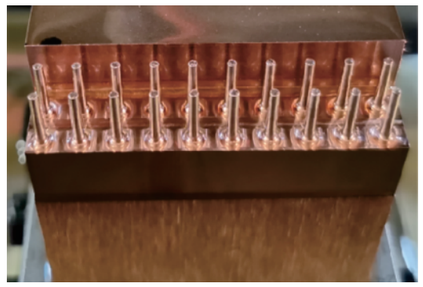
Tool	Spindle Speed	Feed Rate	Step	Axial Depth	Radial Depth	Cycle Time
CGLS4-020140D2*14 Contour processing	(min-1)	(mm/min)		(ap) mm	(ae) mm	
	8000	600		0.03	0.5	01:45:09

Summary: The tolerance of the workpiece is controlled less than 0.01. No deformation, no chattering, good surface finishing and no burrs.

Cutter Condition:



Real Workpiece:



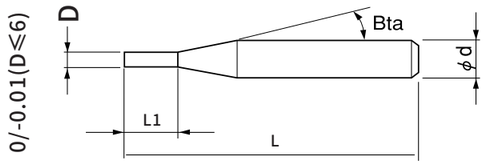
MG | DLC Coating | 30 | SD 0-0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Tungsten copper	★
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Ultra-fine micro-particles tungsten steel raw materials developed for tungsten copper;
* The special flute design and coating achieve high surface finish and ultra-long life of tungsten copper material.



2 Flutes

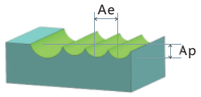
Square

Total 13 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
CGS2-0010030	0.1	0.3	–	15°	50	2	4	○
CGS2-0020060	0.2	0.6	–	15°	50	2	4	○
CGS2-0030090	0.3	0.9	–	15°	50	2	4	○
CGS2-0040120	0.4	1.2	–	15°	50	2	4	○
CGS2-0050150	0.5	1.5	–	15°	50	2	4	○
CGS2-0060180	0.6	1.8	–	15°	50	2	4	○
CGS2-0080240	0.8	2.4	–	15°	50	2	4	○
CGS2-0100300	1	3	–	15°	50	2	4	○
CGS2-0154500	1.5	4.5	–	15°	50	2	4	○
CGS2-0200600	2	6	–	15°	50	2	4	○
CGS2-0300900	3	9	–	15°	50	2	4	○
CGS2-0401200	4	12	–	-	50	2	4	○
CGS2-0601600	6	16	–	-	60	2	6	○

*New size added from this series. ○Stocked items.



Side Milling

Work Material	Tungsten Copper	
(mm) Diameter	(min-1) Spindle	(mm/min) Feed
D1.0	8000	100
D1.5	6000	150
D2.0	5000	200
D3.0	5000	300
D4.0	5000	400
D6.0	4000	400

Contour Milling

Work Material	Tungsten Copper	
(mm) Diameter	(min-1) Speed	(mm/min) Feed
D 0.1	30000	120
D 0.2	30000	150
D 0.3	30000	200
D 0.4	26000	200
D 0.5	24000	300
D 0.6	20000	500
D 0.8	16000	800
D 1.0	13000	1000
D 1.5	13000	1200
D 2.0	12000	1500
D 3.0	11000	1800
D 4.0	10000	2200
D 6.0	9000	2500

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering.

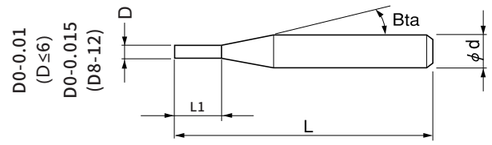
MG | DLC Coating | 30 | SD 0-0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Tungsten copper	★
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Ultra-fine micro-particles tungsten steel raw materials developed for tungsten copper;
* The special flute design and coating achieve high surface finish and ultra-long life of tungsten copper material.

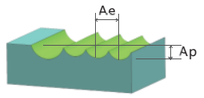


Total 16 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
CGS4-0100300	1	3	–	15°	50	4	4	○
CGS4-0150450	1.5	4.5	–	15°	50	4	4	○
CGS4-0200600	2	6	–	15°	50	4	4	○
CGS4-0300900-3	3	9	–	–	60	4	3	○
CGS4-0300900	3	9	–	15°	50	4	4	○
CGS4-0301200	3	12	–	15°	75	4	4	○
CGS4-0401200	4	12	–	15°	50	4	4	○
CGS4-0401600	4	16	–	15°	75	4	4	○
CGS4-0601600	6	16	–	-	50	4	6	○
CGS4-0601800	6	18	–	-	75	4	6	○
CGS4-0802000	8	20	–	-	60	4	8	○
CGS4-0802500	8	25	–	-	75	4	8	○
CGS4-0803000	8	30	–	-	100	4	8	○
CGS4-1002500	10	25	–	-	75	4	10	○
CGS4-1003000	10	30	–	-	100	4	10	○
CGS4-1204000	12	40	–	-	100	4	12	○

*New size added from this series. ○ Stocked items.



Side Milling

Work Material	Tungsten Copper	
(mm) Diameter	(min-1) Speed	(mm/min) Feed
D1.0	8000	150
D1.0	6000	150
D2.0	5000	200
D3.0	5000	200
D3.0	5000	300
D3.0	4000	200
D4.0	5000	400
D4.0	5000	300
D6.0	4000	400
D6.0	4000	300
D8.0	3000	400
D8.0	3000	300
D10.0	2000	300
D10.0	2000	300
D12.0	1800	300

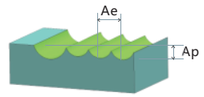
Milling Amount for Side Milling(mm)

Length of Cut / Work Material	2.5D (Length of Cut=Diameter*2.5)	4D (Length of Cut=Diameter*4)
45HRC以下 45HRC or below	ae=0.07D ap=2D	ae=0.07D ap=2D
45HRC以上 45HRC or above	ae=0.03D ap=1.5D	ae=0.03D ap=1.5D

D: Diameter (mm)
ap: Axial Depth (mm)
ae: Radial Depth (mm)

4 Flutes

Square



Contour Milling

Work Material	Tungsten Copper	
(mm) Diameter	(min-1) Speed	(mm/min) Feed
D1.0	13000	1000
D1.5	13000	1200
D2.0	12000	1500
D3.0	12000	1800
D3.0	12000	1800
D3.0	10000	1800
D4.0	10000	2200
D4.0	9000	2200
D6.0	9000	2500
D6.0	8000	2500
D8.0	8000	2500
D8.0	7000	2500
D10.0	7000	2800
D10.0	7000	2800
D12.0	6000	2500

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point;
*Decrease both spindle speed and feed rate proportionally in case of chattering.

4 Flutes

Square

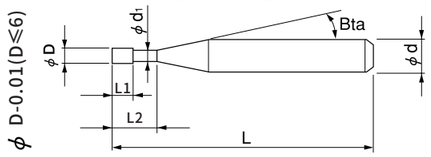
MG | DLC Coating | 30 | SD 0-0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

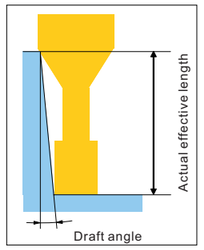
DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Tungsten copper	★
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Ultra-fine micro-particles tungsten steel raw materials developed for tungsten copper;
* The special flute design and coating achieve high surface finish and ultra-long life of tungsten copper material.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.



Total 31 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
CGLS2-002010	0.2	0.4	1	15°	50	2	4	○
CGLS2-002015	0.2	0.4	1.5	15°	50	2	4	○
CGLS2-003015	0.3	0.6	1.5	15°	50	2	4	○
CGLS2-003020	0.3	0.6	2	15°	50	2	4	○
CGLS2-004020	0.4	0.8	2	15°	50	2	4	○
CGLS2-004040	0.4	0.8	4	15°	50	2	4	○
CGLS2-004060	0.4	0.8	6	15°	50	2	4	○
CGLS2-005020	0.5	1.0	2	15°	50	2	4	○
CGLS2-005040	0.5	1.0	4	15°	50	2	4	○
CGLS2-005060	0.5	1.0	6	15°	50	2	4	○

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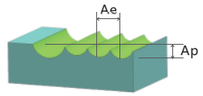
Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
CGLS2-006020	0.6	1.2	2	15°	50	2	4	○
CGLS2-006040	0.6	1.2	4	15°	50	2	4	○
CGLS2-006060	0.6	1.2	6	15°	50	2	4	○
CGLS2-006080	0.6	1.2	8	15°	50	2	4	○
CGLS2-006100	0.6	1.2	10	15°	50	2	4	○
CGLS2-010040	1.0	2	4	15°	50	2	4	○
CGLS2-010060	1.0	2	6	15°	50	2	4	○
CGLS2-010080	1.0	2	8	15°	50	2	4	○
CGLS2-010100	1.0	2	10	15°	50	2	4	○
CGLS2-010120	1.0	2	12	15°	50	2	4	○
CGLS2-010160	1.0	2	16	15°	50	2	4	○
CGLS2-010200	1.0	2	20	15°	50	2	4	○
CGLS2-015060	1.5	3	6	15°	50	2	4	○
CGLS2-015100	1.5	3	10	15°	50	2	4	○
CGLS2-015160	1.5	3	16	15°	50	2	4	○
CGLS2-015200	1.5	3	20	15°	50	2	4	○
CGLS2-020080	2.0	4	8	15°	50	2	4	○
CGLS2-020100	2.0	4	10	15°	50	2	4	○
CGLS2-020120	2.0	4	12	15°	50	2	4	○
CGLS2-020160	2.0	4	16	15°	50	2	4	○
CGLS2-020200	2.0	4	20	15°	50	2	4	○

*New size added from this series.

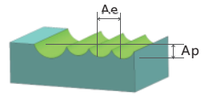
○ Stocked items.



Processing Parameters

Work Material		Tungsten Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D 0.2	1	30000	120
D 0.2	1.5	30000	100
D 0.3	1.5	26000	120
D 0.3	2	22000	100
D 0.4	2	24000	200
D 0.4	4	18000	150
D 0.4	6	16000	100
D 0.5	2	18000	200
D 0.5	4	16000	150
D 0.5	6	15000	100
D 0.6	2	20000	500
D 0.6	4	16000	200
D 0.6	6	16000	150
D 0.6	8	14000	100
D 0.6	10	14000	80
D 1.0	4	12000	800
D 1.0	6	10000	600
D 1.0	8	9000	300
D 1.0	10	8000	120
D 1.0	12	8000	100
D 1.0	16	7000	80
D 1.0	20	7000	60
D 1.5	6	11000	1000
D 1.5	10	9000	600
D 1.5	16	8000	300
D 1.5	20	7000	100
D 2.0	8	10000	1500
D 2.0	10	9000	1000
D 2.0	12	9000	800
D 2.0	16	8000	600
D 2.0	20	7000	300

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point.



Processing Parameters

Work Material		Tungsten Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D 0.2	1	30000	120
D 0.2	1.5	30000	100
D 0.3	1.5	26000	120
D 0.3	2	22000	100
D 0.4	2	24000	200
D 0.4	4	18000	150
D 0.4	6	16000	100
D 0.5	2	18000	200
D 0.5	4	16000	150
D 0.5	6	15000	100
D 0.6	2	20000	500
D 0.6	4	16000	200
D 0.6	6	16000	150
D 0.6	8	14000	100
D 0.6	10	14000	80
D 1.0	4	12000	800
D 1.0	6	10000	600
D 1.0	8	9000	300
D 1.0	10	8000	120
D 1.0	12	8000	100
D 1.0	16	7000	80
D 1.0	20	7000	60
D 1.5	6	11000	1000
D 1.5	10	9000	600
D 1.5	16	8000	300
D 1.5	20	7000	100
D 2.0	8	10000	1500
D 2.0	10	9000	1000
D 2.0	12	9000	800
D 2.0	16	8000	600
D 2.0	20	7000	300

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point.

CGLS 4 Flutes Long Neck Square

SAMHO

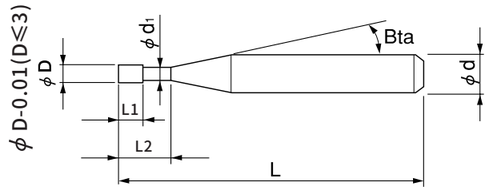
MG | DLC Coating | 30 | SD 0-0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Tungsten copper	★
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Ultra-fine micro-particles tungsten steel raw materials developed for tungsten copper;
* The special flute design and coating achieve high surface finish and ultra-long life of tungsten copper material.



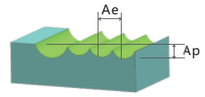
Total 19 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length Of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number Of Flutes	d Shank Diameter	In Stock
CGLS4-010040	1	2	4	15°	50	4	4	○
CGLS4-010060	1	2	6	15°	50	4	4	○
CGLS4-010080	1	2	8	15°	50	4	4	○
CGLS4-010100	1	2	10	15°	50	4	4	○
CGLS4-010120	1	2	12	15°	50	4	4	○
CGLS4-010160	1	2	16	15°	50	4	4	○
CGLS4-010200	1	2	20	15°	50	4	4	○
CGLS4-015060	1.5	3	6	15°	50	4	4	○
CGLS4-015100	1.5	3	10	15°	50	4	4	○
CGLS4-015160	1.5	3	16	15°	50	4	4	○
CGLS4-015200	1.5	3	20	15°	50	4	4	○
CGLS4-020080	2	4	8	15°	50	4	4	○
CGLS4-020100	2	4	10	15°	50	4	4	○
CGLS4-020120	2	4	12	15°	50	4	4	○
CGLS4-020160	2	4	16	15°	50	4	4	○
CGLS4-020200	2	4	20	15°	50	4	4	○
CGLS4-030120	3	9	12	15°	50	4	4	○
CGLS4-030160	3	9	16	15°	50	4	4	○
CGLS4-030200	3	9	20	15°	50	4	4	○

*New size added from this series. ○ Stocked items.

CGS4-000 Milling Conditions



Processing Parameters

Work Material		Tungsten Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D1.0	4	12000	800
D1.0	6	10000	600
D1.0	8	9000	300
D1.0	10	8000	120
D1.0	12	8000	100
D1.0	16	7000	80
D1.0	20	7000	60
D1.5	6	11000	1000
D1.5	10	9000	600
D1.5	16	8000	300
D1.5	20	7000	100
D2.0	8	10000	1500
D2.0	10	9000	1000
D2.0	12	9000	800
D2.0	16	8000	600
D2.0	20	7000	300
D3.0	12	10000	1800
D3.0	16	8000	1200
D3.0	20	7000	800

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point.

CGR 2 Flutes Ball

SAMHO

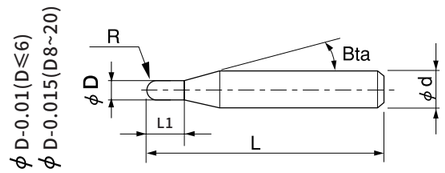
MG | DLC Coating | 30 | SD 0-0.005 | R ±0.005 (R≤3) | R ±0.007 (R4~10)

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Tungsten copper	★
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Ultra-fine micro-particles tungsten steel raw materials developed for tungsten copper;
* The special flute design and coating achieve high surface finish and ultra-long life of tungsten copper material.

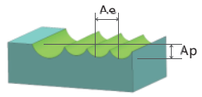


Total 21 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	BTa Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
CGR2-002004	R0.1	0.4	15°	50	2	4	○
CGR2-003006	R0.15	0.6	15°	50	2	4	○
CGR2-004008	R0.2	0.8	15°	50	2	4	○
CGR2-005010	R0.25	1	15°	50	2	4	○
CGR2-006012	R0.3	1.2	15°	50	2	4	○
CGR2-008016	R0.4	1.6	15°	50	2	4	○
CGR2-010020	R0.5	2	15°	50	2	4	○
CGR2-015030	R0.75	3	15°	50	2	4	○
CGR2-020040	R1	4	15°	70	2	4	○
CGR2-030060-3	R1.5	6	15°	60	2	3	○
CGR2-030060	R1.5	6	15°	60	2	4	○
CGR2-040080	R2	8	-	50	2	4	○
CGR2-040080-75	R2	8	-	75	2	4	○
CGR2-040080-100	R2	8	-	100	2	4	○
CGR2-060120	R3	12	-	60	2	6	○
CGR2-060120-75	R3	12	-	75	2	6	○
CGR2-060120-100	R3	12	-	100	2	6	○
CGR2-080180	R4	18	-	75	2	6	○
CGR2-080180-100	R4	18	-	100	2	8	○
CGR2-100200	R5	20	-	100	2	10	○
CGR2-120300	R6	30	-	100	2	12	○

*New size added from this series. ○ Stocked items.



Processing Parameters

Work Material	Tungsten Copper			
Radius of Ball Nose	(min-1) Speed	(mm/min) Feed	Ap (mm)	Ae (mm)
R0.1	30000	150	0.006	0.006
R0.15	26000	200	0.006	0.006
R0.2	26000	300	0.006	0.006
R0.25	22000	400	0.015	0.015
R0.3	20000	600	0.015	0.015
R0.4	20000	800	0.02	0.02
R0.5	18000	1000	0.02	0.03
R0.75	16000	1200	0.02	0.04
R1	14000	1800	0.02	0.05
R1.5	13000	2200	0.03	0.06
R1.5	13000	2200	0.03	0.06
R2	12000	2400	0.03	0.06
R2	12000	2400	0.03	0.06
R3	10000	2600	0.03	0.08
R4	9000	2800	0.03	0.1
R5	8000	2800	0.03	0.12
R6	7000	2800	0.03	0.12

Note:
* Decrease both spindle speed and feed rate proportionally ifoverhang length exceeds 3xd;
* Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.

SAMHO

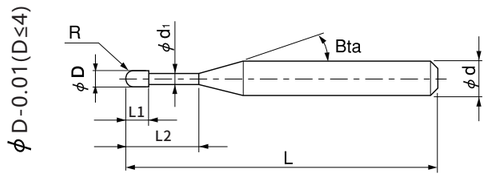
MG | DLC Coating | 30 | SD 0-0.005 | R ±0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Tungsten copper	★
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Ultra-fine micro-particles tungsten steel raw materials developed for tungsten copper;
* The special flute design and coating achieve high surface finish and ultra-long life of tungsten copper material.



Total 56 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
CGLR2-002005	R0.1	0.2	0.5	15°	50	2	4	○
CGLR2-002010	R0.1	0.2	1	15°	50	2	4	○
CGLR2-002015	R0.1	0.2	1.5	15°	50	2	4	○
CGLR2-003010	R0.15	0.3	1	15°	50	2	4	○
CGLR2-003015	R0.15	0.3	1.5	15°	50	2	4	○
CGLR2-003020	R0.15	0.3	2	15°	50	2	4	○
CGLR2-003030	R0.15	0.3	3	15°	50	2	4	○
CGLR2-004010	R0.2	0.4	1	15°	50	2	4	○
CGLR2-004020	R0.2	0.4	2	15°	50	2	4	○
CGLR2-004030	R0.2	0.4	3	15°	50	2	4	○
CGLR2-004040	R0.2	0.4	4	15°	50	2	4	○
CGLR2-005010	R0.25	0.5	1	15°	50	2	4	○
CGLR2-005020	R0.25	0.5	2	15°	50	2	4	○
CGLR2-005040	R0.25	0.5	4	15°	50	2	4	○
CGLR2-005060	R0.25	0.5	6	15°	50	2	4	○
CGLR2-005080	R0.25	0.5	8	15°	50	2	4	○
CGLR2-006020	R0.3	0.6	2	15°	50	2	4	○
CGLR2-006040	R0.3	0.6	4	15°	50	2	4	○
CGLR2-006060	R0.3	0.6	6	15°	50	2	4	○
CGLR2-006080	R0.3	0.6	8	15°	50	2	4	○
CGLR2-008020	R0.4	0.8	2	15°	50	2	4	○
CGLR2-008040	R0.4	0.8	4	15°	50	2	4	○

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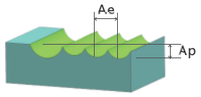
Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	BTa Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
CGLR2-008060	R0.4	0.8	6	15°	50	2	4	○
CGLR2-008080	R0.4	0.8	8	15°	50	2	4	○
CGLR2-010020	R0.5	1	2	15°	50	2	4	○
CGLR2-010040	R0.5	1	4	15°	50	2	4	○
CGLR2-010060	R0.5	1	6	15°	50	2	4	○
CGLR2-010080	R0.5	1	8	15°	50	2	4	○
CGLR2-010100	R0.5	1	10	15°	50	2	4	○
CGLR2-010120	R0.5	1	12	15°	50	2	4	○
CGLR2-010140	R0.5	1	14	15°	50	2	4	○
CGLR2-010160	R0.5	1	16	15°	50	2	4	○
CGLR2-015040	R0.75	1.5	4	15°	50	2	4	○
CGLR2-015060	R0.75	1.5	6	15°	50	2	4	○
CGLR2-015080	R0.75	1.5	8	15°	50	2	4	○
CGLR2-015100	R0.75	1.5	10	15°	50	2	4	○
CGLR2-015120	R0.75	1.5	12	15°	50	2	4	○
CGLR2-015140	R0.75	1.5	14	15°	50	2	4	○
CGLR2-015160	R0.75	1.5	16	15°	50	2	4	○
CGLR2-020040	R1	2	4	15°	50	2	4	○
CGLR2-020060	R1	2	6	15°	50	2	4	○
CGLR2-020080	R1	2	8	15°	50	2	4	○
CGLR2-020100	R1	2	10	15°	50	2	4	○
CGLR2-020120	R1	2	12	15°	50	2	4	○
CGLR2-020160	R1	2	16	15°	50	2	4	○
CGLR2-030060	R1.5	3	6	15°	50	2	4	○
CGLR2-030080	R1.5	3	8	15°	50	2	4	○
CGLR2-030100	R1.5	3	10	15°	50	2	4	○
CGLR2-030120	R1.5	3	12	15°	50	2	4	○
CGLR2-030160	R1.5	3	16	15°	50	2	4	○
CGLR2-030200	R1.5	3	20	15°	50	2	4	○
CGLR2-040080	R2	4	8	--	50	2	4	○
CGLR2-040100	R2	4	10	--	50	2	4	○
CGLR2-040120	R2	4	12	--	50	2	4	○
CGLR2-040160	R2	4	16	--	50	2	4	○
CGLR2-040200	R2	4	20	–	50	2	4	○

*New size added from this series.　　○ Stocked items.



Processing Parameters

Work Material		Tungsten Copper			
Radius of Ball Nose	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap (mm)	Ae (mm)
R0.1	0.5	30000	120	0.006	0.006
R0.1	1	30000	100	0.003	0.003
R0.1	1.5	30000	100	0.003	0.003
R0.15	1	26000	200	0.006	0.006
R0.15	1.5	26000	200	0.004	0.004
R0.15	2	24000	150	0.003	0.003
R0.15	3	18000	100	0.003	0.003
R0.2	1	2400	300	0.01	0.01
R0.2	2	20000	200	0.008	0.01
R0.2	3	18000	150	0.006	0.006
R0.2	4	16000	150	0.003	0.003
R0.25	1	20000	600	0.01	0.01
R0.25	2	18000	600	0.01	0.01
R0.25	4	16000	300	0.008	0.008
R0.25	6	14000	150	0.008	0.008
R0.25	8	14000	100	0.003	0.003
R0.3	2	20000	800	0.02	0.02
R0.3	4	15000	500	0.01	0.01
R0.3	6	13000	300	0.008	0.008
R0.3	8	13000	150	0.005	0.005
R0.4	2	18000	1200	0.02	0.02
R0.4	4	18000	800	0.02	0.02
R0.4	6	16000	600	0.01	0.02
R0.4	8	15000	400	0.005	0.01
R0.5	2	14000	1200	0.02	0.03
R0.5	4	14000	1000	0.02	0.03
R0.5	6	14000	800	0.02	0.03
R0.5	8	12000	500	0.01	0.02
R0.5	10	12000	400	0.01	0.02
R0.5	12	10000	300	0.01	0.02
R0.5	14	10000	200	0.008	0.01
R0.5	16	10000	200	0.005	0.01
R0.75	4	16000	1400	0.02	0.04

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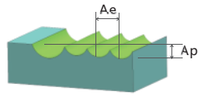


Processing Parameters

Work Material		Tungsten Copper			
Radius of Ball Nose	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap (mm)	Ae (mm)
R0.75	6	14000	1200	0.02	0.04
R0.75	8	13000	1000	0.02	0.04
R0.75	10	12000	600	0.01	0.04
R0.75	12	11000	500	0.01	0.04
R0.75	14	10000	400	0.01	0.02
R0.75	16	9000	300	0.01	0.01
R1	4	16000	2000	0.03	0.06
R1	6	14000	1800	0.03	0.06
R1	8	14000	1800	0.03	0.06
R1	10	14000	1800	0.03	0.06
R1	12	12000	1400	0.02	0.06
R1	16	10000	1000	0.02	0.06
R1.5	6	16000	2000	0.03	0.06
R1.5	8	14000	1800	0.03	0.06
R1.5	10	14000	1800	0.03	0.06
R1.5	12	14000	1800	0.03	0.06
R1.5	16	12000	1400	0.02	0.06
R1.5	20	10000	1000	0.02	0.06
R2	8	12000	2200	0.03	0.07
R2	10	12000	2200	0.03	0.07
R2	12	12000	2200	0.03	0.07
R2	16	12000	2200	0.03	0.07
R2	20	11000	2000	0.03	0.07

Note:
*Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed;
*Recommend using a non-contact measuring device to avoid damaging the precision tip point.

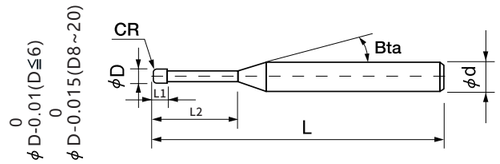
MG | DLC Coating | 30 | SD 0-0.005 | R ±0.005 (D≤6) | R ±0.007 (D8~12)

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Tungsten copper	★
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Ultra-fine micro-particles tungsten steel raw materials developed for tungsten copper;
* The special flute design and coating achieve high surface finish and ultra-long life of tungsten copper material.



Total 35 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	CR Corner Radius	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
CGSR4-03002090-3	3	9	0.2	–	50	4	3	○
CGSR4-03002090	3	9	0.2	15°	50	4	4	○
CGSR4-03005090-3	3	9	0.5	15°	50	4	3	○
CGSR4-03005090	3	9	0.5	15°	50	4	4	○
CGSR4-04001120	4	12	0.1	–	50	4	4	○
CGSR4-04001120-75	4	12	0.1	–	75	4	4	○
CGSR4-04001120-100	4	12	0.1	–	100	4	4	○
CGSR4-04002120	4	12	0.2	–	50	4	4	○
CGSR4-04002120-75	4	12	0.2	–	75	4	4	○
CGSR4-04002120-100	4	12	0.2	–	100	4	4	○
CGSR4-04005120	4	12	0.5	–	50	4	4	○
CGSR4-04005120-75	4	12	0.5	–	75	4	4	○
CGSR4-04005120-100	4	12	0.5	–	100	4	4	○
CGSR4-06002160	6	16	0.2	–	60	4	6	○
CGSR4-06002160-75	6	16	0.2	–	75	4	6	○
CGSR4-06002160-100	6	16	0.2	–	100	4	6	○
CGSR4-06005160	6	16	0.5	–	50	4	6	○
CGSR4-06005160-75	6	16	0.5	–	75	4	6	○
CGSR4-06005160-100	6	16	0.5	–	100	4	6	○
CGSR4-08005200-75	8	20	0.5	–	75	4	8	○
CGSR4-08005000-100	8	20	0.5	–	100	4	8	○
CGSR4-08005200-150	8	20	0.5	–	150	4	8	○

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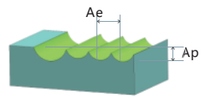
Total 35 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	CR Corner Radius	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
CGSR4-08010200-75	8	20	1	–	75	4	8	○
CGSR4-08010200-100	8	20	1	–	100	4	8	○
CGSR4-08010200-150	8	20	1	–	150	4	8	○
CGSR4-10005250-75	10	25	0.5	–	75	4	10	○
CGSR4-10005250-100	10	25	0.5	–	100	4	10	○
CGSR4-10005250-150	10	25	0.5	–	150	4	10	○
CGSR4-10010250-75	10	25	1	–	75	4	10	○
CGSR4-10010250-100	10	25	1	–	100	4	10	○
CGSR4-10010250-150	10	25	1	–	150	4	10	○
CGSR4-12005300-100	12	30	0.5	–	100	4	12	○
CGSR4-12005300-150	12	30	0.5	–	150	4	12	○
CGSR4-12010300-100	12	30	1	–	100	4	12	○
CGSR4-12010300-150	12	30	1	–	150	4	12	○

*New size added from this series.　　○ Stocked items.



Side Milling

Work Material	Tungsten Copper	
(mm) Diameter	(min-1) Speed	(mm/min) Feed
D3	11000	1800
D4	10000	2000
D6	9000	2400
D8	8000	2600
D10	7000	2600
D12	6500	2600

Note:
* Decrease both spindle speed and feed rate proportionally ifoverhang length exceeds 3xd;
* Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.

CGLSR 2Flutes Long Neck Radius)

SAMHO

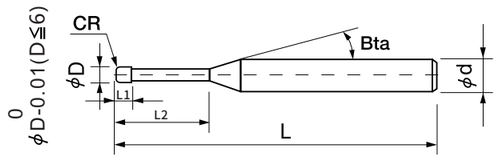
MG | DLC Coating | 30 | SD 0-0.005 | R ±0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Tungsten copper	★
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Ultra-fine micro-particles tungsten steel raw materials developed for tungsten copper;
* The special flute design and coating achieve high surface finish and ultra-long life of tungsten copper material.



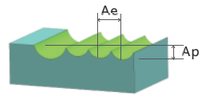
Total 22 models — Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	CR Corner Radius	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
CGLSR2-002005005	D0.2	0.4	0.5	R0.05	15°	50	2	4	○
CGLSR2-002005010	D0.2	0.4	1	R0.05	15°	50	2	4	○
CGLSR2-003005005	D0.3	1	0.5	R0.05	15°	50	2	4	○
CGLSR2-003005010	D0.3	1	1	R0.05	15°	50	2	4	○
CGLSR2-005005020	D0.5	1	2	R0.05	15°	50	2	4	○
CGLSR2-005005040	D0.5	1	4	R0.05	15°	50	2	4	○
CGLSR2-005005060	D0.5	1	6	R0.05	15°	50	2	4	○
CGLSR2-00501020	D0.5	1	2	R0.1	15°	50	2	4	○
CGLSR2-00501040	D0.5	1	4	R0.1	15°	50	2	4	○
CGLSR2-00501060	D0.5	1	6	R0.1	15°	50	2	4	○
CGLSR2-006005020	D0.6	1	2	R0.05	15°	50	2	4	○
CGLSR2-006005040	D0.6	1	4	R0.05	15°	50	2	4	○
CGLSR2-006005060	D0.6	1	6	R0.05	15°	50	2	4	○
CGLSR2-00601020	D0.6	1	2	R0.1	15°	50	2	4	○
CGLSR2-00601040	D0.6	1	4	R0.1	15°	50	2	4	○
CGLSR2-00601060	D0.6	1	6	R0.1	15°	50	2	4	○
CGLSR2-008005020	D0.8	1	2	R0.05	15°	50	2	4	○
CGLSR2-008005040	D0.8	1	4	R0.05	15°	50	2	4	○
CGLSR2-008005060	D0.8	1	6	R0.05	15°	50	2	4	○
CGLSR2-00801020	D0.8	1	2	R0.1	15°	50	2	4	○
CGLSR2-00801040	D0.8	1	4	R0.1	15°	50	2	4	○
CGLSR2-00801060	D0.8	1	6	R0.1	15°	50	2	4	○

*New size added from this series. ○ Stocked items.

SAMHO

CGLSR2-000 Milling Conditions



Work Material		Tungsten Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D0.2	0.5	30000	150
D0.2	1	30000	100
0.3	0.5	28000	300
0.3	1	26000	200
D0.5	2	15000	300
D0.5	4	13000	180
D0.5	6	12000	120
D0.5	2	15000	300
D0.5	4	13000	180
D0.5	6	12000	120
D0.6	2	16000	600
D0.6	4	12000	350
D0.6	6	10000	200
D0.6	2	16000	600
D0.6	4	12000	350
D0.6	6	10000	200
D0.8	2	16000	1000
D0.8	4	13000	600
D0.8	6	12000	500
D0.8	2	16000	1000
D0.8	4	13000	600
D0.8	6	12000	400

Note:
* Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.

SAMHO

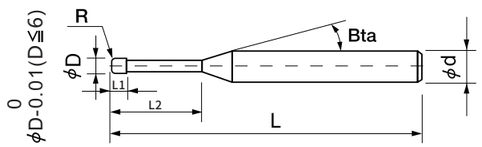
MG | DLC Coating | 30 | SD 0-0.005 | R ±0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	
Copper	
Plastics	
Tungsten copper	★
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

* Ultra-fine micro-particles tungsten steel raw materials developed for tungsten copper;
* The special flute design and coating achieve high surface finish and ultra-long life of tungsten copper material.



Total 51 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	CR Corner Radius	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
CGLSR4-010005040	1	2	4	0.05	15°	50	4	4	○
CGLSR4-010005060	1	2	6	0.05	15°	50	4	4	○
CGLSR4-010005080	1	2	8	0.05	15°	50	4	4	○
CGLSR4-010005100	1	2	10	0.05	15°	50	4	4	○
CGLSR4-01001040	1	2	4	0.1	15°	50	4	4	○
CGLSR4-01001060	1	2	6	0.1	15°	50	4	4	○
CGLSR4-01001080	1	2	8	0.1	15°	50	4	4	○
CGLSR4-01001100	1	2	10	0.1	15°	50	4	4	○
CGLSR4-01501060	1.5	3	6	0.1	15°	50	4	4	○
CGLSR4-01501080	1.5	3	8	0.1	15°	50	4	4	○
CGLSR4-01501100	1.5	3	10	0.1	15°	50	4	4	○
CGLSR4-01501120	1.5	3	12	0.1	15°	50	4	4	○
CGLSR4-01501160	1.5	3	16	0.1	15°	50	4	4	○
CGLSR4-01502060	1.5	3	6	0.2	15°	50	4	4	○
CGLSR4-01502080	1.5	3	8	0.2	15°	50	4	4	○
CGLSR4-01502100	1.5	3	10	0.2	15°	50	4	4	○
CGLSR4-01502120	1.5	3	12	0.2	15°	50	4	4	○
CGLSR4-01502160	1.5	3	16	0.2	15°	50	4	4	○
CGLSR4-02001060	2	4	6	0.1	15°	50	4	4	○

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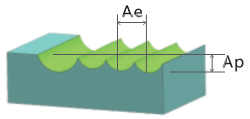
SAMHO
CGLSR 4 Flutes Long Neck Radius

Total 51 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	CR Corner Radius	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
CGLSR4-02001080	2	4	8	0. 1	15°	50	4	4	○
CGLSR4-02001100	2	4	10	0.1	15°	50	4	4	○
CGLSR4-02001120	2	4	12	0.1	15°	50	4	4	○
CGLSR4-02001160	2	4	16	0.1	15°	50	4	4	○
CGLSR4-02001200	2	4	20	0.1	15°	50	4	4	○
CGLSR4-02002060	2	4	6	0.2	15°	50	4	4	○
CGLSR4-02002080	2	4	8	0.2	15°	50	4	4	○
CGLSR4-02002100	2	4	10	0.2	15°	50	4	4	○
CGLSR4-02002120	2	4	12	0.2	15°	50	4	4	○
CGLSR4-02002160	2	4	16	0.2	15°	50	4	4	○
CGLSR4-02002200	2	4	20	0.2	15°	50	4	4	○
CGLSR4-02005060	2	4	6	0.5	15°	50	4	4	○
CGLSR4-02005080	2	4	8	0.5	15°	50	4	4	○
CGLSR4-02005100	2	4	10	0.5	15°	50	4	4	○
CGLSR4-02005120	2	4	12	0.5	15°	50	4	4	○
CGLSR4-02005160	2	4	16	0.5	15°	50	4	4	○
CGLSR4-02005200	2	4	20	0.5	15°	50	4	4	○
CGLSR4-03001120	3	6	12	0.1	15°	50	4	4	○
CGLSR4-03001160	3	6	16	0.1	15°	50	4	4	○
CGLSR4-03001200	3	6	20	0.1	15°	50	4	4	○
CGLSR4-03001250	3	6	25	0.1	15°	60	4	4	○
CGLSR4-03001300	3	6	30	0.1	15°	75	4	4	○
CGLSR4-03002120	3	6	12	0.2	15°	50	4	4	○
CGLSR4-03002160	3	6	16	0.2	15°	50	4	4	○
CGLSR4-03002200	3	6	20	0.2	15°	50	4	4	○
CGLSR4-03002250	3	6	25	0.2	15°	60	4	4	○
CGLSR4-03002300	3	6	30	0.2	15°	75	4	4	○
CGLSR4-03005120	3	6	12	0.5	15°	50	4	4	○
CGLSR4-03005160	3	6	16	0.5	15°	50	4	4	○
CGLSR4-03005200	3	6	20	0.5	15°	50	4	4	○
CGLSR4-03005250	3	6	25	0.5	15°	60	4	4	○
CGLSR4-03005300	3	6	30	0.5	15°	75	4	4	○

*New size added from this series. ○ Stocked items.



Work Material		Tungsten Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D1	4	12000	800
D1	6	10000	600
D1	8	8500	400
D1	10	7500	300
D1	4	12000	800
D1	6	10000	600
D1	8	8500	400
D1	10	7500	300
D1.5	6	10000	1200
D1.5	8	8500	800
D1.5	10	7500	500
D1.5	12	7000	300
D1.5	16	6000	300
D1.5	6	10000	1200
D1.5	8	8500	800
D1.5	10	7500	500
D1.5	12	7000	300
D1.5	16	6000	300
D2.0	6	12000	1500
D2.0	8	10000	1100
D2.0	10	9000	1000
D2.0	12	8500	800
D2.0	16	7000	600
D2.0	20	7000	400
D2.0	6	12000	1500
D2.0	8	10000	1100
D2.0	10	9000	1000
D2.0	12	8500	800
D2.0	16	7000	600
D2.0	20	7000	400
D2.0	6	12000	1500
D2.0	8	10000	1100
D2.0	10	9000	1000
D2.0	12	8500	800
D2.0	16	7000	600

Next page

4 Flutes

Long Neck Radius

Work Material		Tungsten Copper	
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed
D2.0	20	7000	400
D3.0	12	10000	1800
D3.0	16	8500	1400
D3.0	20	8000	1200
D3.0	25	7000	800
D3.0	30	6000	500
D3.0	12	10000	1800
D3.0	16	8500	1400
D3.0	20	8000	1200
D3.0	25	7000	800
D3.0	30	6000	500
D3.0	12	10000	1800
D3.0	16	8500	1400
D3.0	20	8000	1200
D3.0	25	7000	800
D3.0	30	6000	500

Note:
* Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.

4 Flutes

Long Neck Radius

Product Application Field

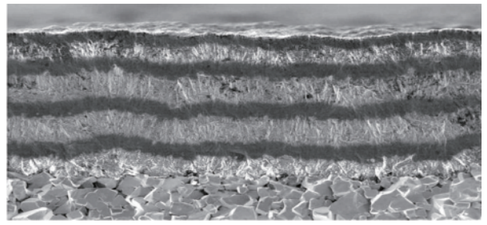
SAMHO series diamond-coated milling cutters use unique multi-layer nano-diamond coating technology, It has high hardness, lowest friction coefficient, highest thermal conductivity, and lowest chemical reaction characteristics. It is coated with a 6-10um thickened coating to ensure strong wear resistance.

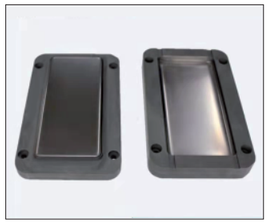
GRAS Series (Graphite Special End Mill)

*High-precision version can be ordered;
*Diameter and Ball R accuracy measurement are printedon the label.

Coating

Layer surface is smooth, multi-layer diamond Coating.





SAMHO

GRAS 2 Flutes Square

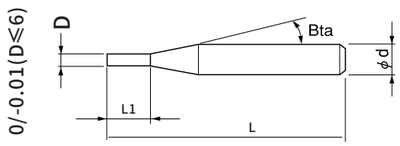
MG | DIA Coating | 30 | SD 0-0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	★
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*2 Flute square end mills for milling graphite;
*New diamond coating offers excellent wear resistance.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

2 Flutes

Square

Total 8 models

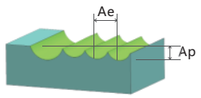
Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRAS2-0020060	0.2	0.6	–	15°	50	2	4	○
GRAS2-0050150	0.5	1.5	–	15°	50	2	4	○
GRAS2-0100300	1	3	–	15°	50	2	4	○
GRAS2-0150450	1.5	4.5	–	15°	50	2	4	○
GRAS2-0200600	2	6	–	15°	50	2	4	○
GRAS2-0300900	3	9	–	15°	50	2	4	○
GRAS2-0401200	4	12	–	-	50	2	4	○
GRAS2-0601800	6	18	–	-	60	2	6	○

*New size added from this series. *Stocked items.

GRAS2-000 Milling Conditions

SAMHO



Work Material		Graphite					
(mm) Diameter	(mm) Overhang	(min-1) Speed	(mm/min) Feed	Side Milling		Slotting	
				Ap(mm)	Ae(mm)	Ap(mm)	Ae(mm)
D0.2	4D	28000	800	1D	0.05D	0.05D	--
D0.2	15D	28000	800	0.5D	0.05D	0.05D	--
D0.2	25D	26000	800	0.5D	0.05D	0.05D	--
D0.5	4D	28000	1000	1D	0.05D	0.1D	--
D0.5	15D	26000	1000	0.5D	0.05D	0.1D	--
D0.5	25D	24000	1000	0.5D	0.05D	0.1D	--
D1	4D	24000	1200	1D	0.05D	0.3D	--
D1	15D	24000	1200	0.4D	0.04D	0.2D	--
D1	25D	20000	1200	0.2D	0.03D	0.15D	--
D1.5	4D	22000	1500	1D	0.05D	0.3D	--
D1.5	10D	22000	1500	0.5D	0.05D	0.2D	--
D1.5	15D	18000	1500	0.5D	0.05D	0.15D	--
D2	4D	20000	1800	1D	0.05D	0.3D	--
D2	10D	20000	1800	0.5D	0.05D	0.2D	--
D2	15D	16000	1200	0.2D	0.04D	0.2D	--
D3	4D	20000	3000	1D	0.05D	0.3D	--
D3	10D	20000	2400	0.5D	0.05D	0.2D	--
D3	15D	18000	2000	0.3D	0.05D	0.2D	--
D4	4D	18000	2200	1.5D	0.05D	0.3D	--
D4	8D	15000	2000	0.7D	0.05D	0.2D	--
D4	12D	12000	1600	0.4D	0.05D	0.2D	--
D6	4D	13000	3000	2D	0.05D	0.3D	--
D6	8D	13000	3000	1D	0.05D	0.2D	--
D6	12D	8000	2000	0.6D	0.03D	0.2D	--

Notes:
*Use a milling machine dedicated for graphite;
*Recommend air blow for graphite.

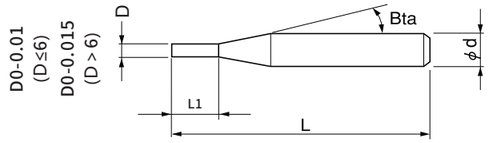
MG | DIA Coating | 30 | SD 0-0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	★
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*4 Flute square end mills for milling graphite;
*New diamond coating offers excellent wear resistance.



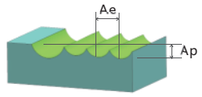
The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Total 20 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRAS4-0100300	1	3	–	15°	50	4	4	○
GRAS4-0150450	1.5	4.5	–	15°	50	4	4	○
GRAS4-0200600	2	6	–	15°	50	4	4	○
GRAS4-0300900-3	3	9	–	15°	60	4	3	○
GRAS4-0300900	3	9	–	15°	50	4	4	○
GRAS4-0301200	3	12	–	15°	75	4	4	○
GRAS4-0401200	4	12	–	15°	60	4	4	○
GRAS4-0401600	4	16	–	15°	75	4	4	○
GRAS4-0602000	6	20	–	-	60	4	6	○
GRAS4-0602500	6	25	–	-	75	4	6	○
GRAS4-0603000	6	30	–	-	100	4	6	○
GRAS4-0802500	8	25	–	-	75	4	8	○
GRAS4-0803000	8	30	–	-	100	4	8	○
GRAS4-0803500	8	35	–	-	150	4	8	○
GRAS4-1003000	10	30	–	-	75	4	10	○
GRAS4-1003000-100	10	30	–	-	100	4	10	○
GRAS4-1004000-150	10	40	–	-	150	4	10	○
GRAS4-1204000-100	12	40	–	-	100	4	12	○
GRAS4-1205000-150	12	50	–	-	150	4	12	○
GRAS4-1205000-180	12	50	–	-	180	4	12	○

*New size added from this series. *Stocked items.



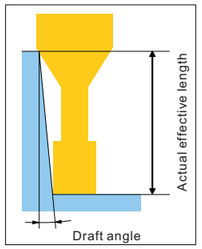
Work Material		Graphite					
(mm) Diameter	(mm) Overhang	(min-1) Speed	(mm/min) Feed	Side Milling		Slotting	
				Ap(mm)	Ae(mm)	Ap(mm)	Ae(mm)
D1	4D	24000	1200	1D	0.05D	0.3D	--
D1	15D	24000	1200	0.5D	0.05D	0.2D	--
D1	25D	20000	1200	0.5D	0.05D	0.2D	--
D1.5	4D	22000	1500	1D	0.05D	0.3D	--
D1.5	10D	22000	1500	0.5D	0.05D	0.2D	--
D1.5	15D	18000	1500	0.5D	0.05D	0.2D	--
D2	4D	20000	1800	1D	0.05D	0.3D	--
D2	10D	20000	1800	0.5D	0.05D	0.2D	--
D2	15D	16000	1200	0.3D	0.05D	0.2D	--
D3	4D	20000	3000	1D	0.05D	0.3D	--
D3	10D	20000	2400	0.5D	0.05D	0.2D	--
D3	15D	18000	2000	0.3D	0.05D	0.2D	--
D4	4D	18000	2200	1.5D	0.05D	0.3D	--
D4	8D	15000	2000	0.7D	0.05D	0.2D	--
D4	12D	12000	1600	0.4D	0.05D	0.2D	--
D6	4D	13000	3000	2D	0.05D	0.3D	--
D6	8D	13000	3000	1D	0.05D	0.2D	--
D6	12D	8000	2000	0.6D	0.03D	0.2D	--
D8	4D	10000	3000	2D	0.05D	0.5D	--
D8	8D	10000	3000	1D	0.05D	0.3D	--
D8	12D	6000	2000	0.6D	0.03D	0.2D	--
D10	4D	8500	1600	2D	0.05D	0.5D	--
D10	8D	8500	1600	1D	0.05D	0.3D	--
D10	12D	6000	1200	0.6D	0.03D	0.2D	--
D12	4D	7500	1600	2D	0.05D	0.5D	--
D12	8D	7000	1600	1D	0.05D	0.3D	--
D12	12D	6000	1200	0.6D	0.03D	0.2D	--

Notes:
*Use a milling machine dedicated for graphite;
*Recommend air blow for graphite.

MG | DIA Coating | 30 | SD 0-0.005

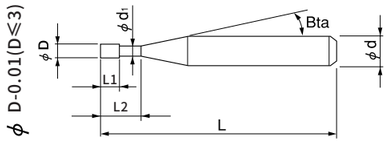
Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	★
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	



Specialty

*2 flutes long neck square end mills for milling graphite;
*New diamond coating offers excellent wear resistance.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Total 30 models

Unit (mm)

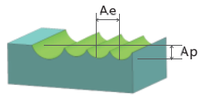
Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRALS2-002010	0.2	0.4	1	15°	50	2	4	○
GRALS2-003020	0.3	0.6	2	15°	50	2	4	○
GRALS2-004020	0.4	0.8	2	15°	50	2	4	○
GRALS2-004040	0.4	0.8	4	15°	50	2	4	○
GRALS2-004060	0.4	0.8	6	15°	50	2	4	○
GRALS2-005020	0.5	1	2	15°	50	2	4	○
GRALS2-005040	0.5	1	4	15°	50	2	4	○
GRALS2-005060	0.5	1	6	15°	50	2	4	○
GRALS2-006020	0.6	1.2	2	15°	50	2	4	○
GRALS2-006040	0.6	1.2	4	15°	50	2	4	○

Next page

Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRALS2-006060	0.6	1.2	6	15°	50	2	4	○
GRALS2-006080	0.6	1.2	8	15°	50	2	4	○
GRALS2-006100	0.6	1.2	10	15°	50	2	4	○
GRALS2-010040	1	2	4	15°	50	2	4	○
GRALS2-010060	1	2	6	15°	50	2	4	○
GRALS2-010080	1	2	8	15°	50	2	4	○
GRALS2-010100	1	2	10	15°	50	2	4	○
GRALS2-010160	1	2	16	15°	50	2	4	○
GRALS2-010210	1	2	21	15°	55	2	4	○
GRALS2-015060	1.5	3	6	15°	50	2	4	○
GRALS2-015100	1.5	3	10	15°	50	2	4	○
GRALS2-015160	1.5	3	16	15°	50	2	4	○
GRALS2-015210	1.5	3	21	15°	55	2	4	○
GRALS2-020060	2	4	6	15°	50	2	4	○
GRALS2-020100	2	4	10	15°	50	2	4	○
GRALS2-020160	2	4	16	15°	50	2	4	○
GRALS2-020210	2	4	21	15°	55	2	4	○
GRALS2-020260	2	4	26	15°	55	2	4	○
GRALS2-030160	3	6	16	15°	70	2	3/4	○
GRALS2-030320	3	6	32	15°	80	2	3/4	○

*New size added from this series.

*Stocked items.



Work Material		Graphite					
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Side Milling		Slotting	
				Ap(mm)	Ae(mm)	Ap(mm)	Ae(mm)
D0.2	1	32000	300	0.2	0.01	0.006	--
D0.3	2	32000	300	0.3	0.015	0.01	--
D0.4	2	32000	350	0.4	0.02	0.02	--
D0.4	4	32000	200	0.4	0.02	0.02	--
D0.4	6	32000	150	0.4	0.02	0.02	--
D0.5	2	32000	600	0.5	0.02	0.02	--
D0.5	4	32000	450	0.5	0.02	0.02	--
D0.5	6	32000	300	0.5	0.02	0.02	--
D0.6	2	32000	700	0.6	0.03	0.03	--
D0.6	4	32000	600	0.6	0.03	0.03	--
D0.6	6	32000	400	0.6	0.03	0.03	--
D0.6	8	26000	200	0.6	0.03	0.03	--
D0.6	10	24000	100	0.6	0.03	0.03	--
D1	4	32000	1000	1	0.05	0.05	--
D1	6	26000	800	1	0.05	0.05	--
D1	8	20000	600	1	0.05	0.05	--
D1	10	20000	400	1	0.05	0.05	--
D1	16	15000	300	1	0.05	0.05	--
D1	21	12000	150	1	0.05	0.05	--
D1.5	6	22000	1500	1.5	0.075	0.1	--
D1.5	10	18000	1200	1.5	0.075	0.1	--
D1.5	16	15000	600	1.5	0.075	0.075	--
D1.5	21	10000	300	1.5	0.075	0.075	--
D2	6	24000	1800	2	0.1	0.15	--
D2	10	20000	1800	2	0.1	0.15	--
D2	16	18000	1200	2	0.1	0.15	--
D2	21	15000	600	2	0.1	0.1	--
D2	26	12000	400	2	0.1	0.1	--
D3	16	22000	2000	3	0.15	0.3	--
D3	32	15000	1000	3	0.15	0.2	--

Notes:
*Use a milling machine dedicated for graphite;
*Recommend air blow for graphite.

GRALS 4 Flutes Long Neck Square

SAMHO

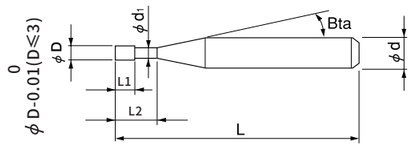
MG | DIA Coating | 30 | SD 0-0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	★
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*Special blade design + newly developed diamond coating;
*Superior performance in deep cavity processing.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Total 23 models

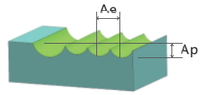
Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRALS4-010040	1	3	4	15°	50	4	4	○
GRALS4-010060	1	3	6	15°	50	4	4	○
GRALS4-010100	1	3	10	15°	50	4	4	○
GRALS4-010150	1	3	15	15°	50	4	4	○
GRALS4-010200-60	1	3	20	15°	60	4	4	○
GRALS4-010060-60	1	3	6	15°	60	4	4	○
GRALS4-010100-60	1	3	10	15°	60	4	4	○
GRALS4-010150-60	1	3	15	15°	60	4	4	○
GRALS4-010100-75	1	3	10	15°	75	4	4	○
GRALS4-010150-75	1	3	15	15°	75	4	4	○
GRALS4-010200-75	1	3	20	15°	75	4	4	○
GRALS4-015060	1.5	4	6	15°	50	4	4	○
GRALS4-015100	1.5	4	10	15°	50	4	4	○
GRALS4-015150	1.5	4	15	15°	50	4	4	○
GRALS4-015200	1.5	4	20	15°	50	4	4	○
GRALS4-020080	2	6	8	15°	50	4	4	○
GRALS4-020100	2	6	10	15°	50	4	4	○
GRALS4-020150	2	6	15	15°	50	4	4	○
GRALS4-020200	2	6	20	15°	60	4	4	○
GRALS4-020250	2	6	25	15°	60	4	4	○
GRALS4-030150	3	9	15	15°	50	4	3/4	○
GRALS4-030200	3	9	20	15°	60	4	3/4	○
GRALS4-030300	3	9	30	15°	75	4	3/4	○

*New size added from this series. *Stocked items.

SAMHO

GRALS4-000 Milling Conditions



Work Material	Graphite						
(mm) Diameter	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Side Milling		Slotting	
				Ap(mm)	Ae(mm)	Ap(mm)	Ae(mm)
D1	4	26000	1200	1.5	0.05	0.075	--
D1	6	24000	1000	1	0.05	0.075	--
D1	10	20000	600	1	0.05	0.05	--
D1	15	15000	400	1	0.05	0.05	--
D1	20	12000	150	1	0.05	0.05	--
D1	6	24000	1000	1	0.05	0.075	--
D1	10	20000	600	1	0.05	0.05	--
D1	15	15000	400	1	0.05	0.05	--
D1	10	18000	500	1	0.05	0.05	--
D1	15	15000	300	1	0.05	0.05	--
D1	20	10000	150	1	0.05	0.05	--
D1.5	6	22000	1500	2	0.075	0.15	--
D1.5	10	18000	1200	1.5	0.075	0.1	--
D1.5	15	15000	600	1.5	0.075	0.1	--
D1.5	20	10000	300	1.5	0.075	0.1	--
D2	8	20000	1800	3	0.1	0.2	--
D2	10	20000	1800	2	0.1	0.15	--
D2	15	18000	1200	2	0.1	0.15	--
D2	20	12000	600	2	0.1	0.1	--
D2	25	10000	400	2	0.1	0.1	--
D3	15	20000	2000	3	0.15	0.3	--
D3	20	18000	1600	3	0.15	0.2	--
D3	30	15000	1000	3	0.15	0.2	--

Notes:
*Use a milling machine dedicated for graphite;
*Recommend air blow for graphite.

SAMHO

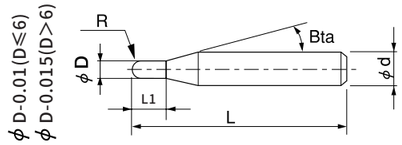
MG | DIA Coating | 30 | SD 0-0.005 | R ±0.005 (D≤6) | R ±0.007 (D8~12)

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	★
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*2 flutes ball type for graphite machining;
*New diamond coating offers excellent resistance to wear and abrasion;
*Ultra-fine diamond coating particles.

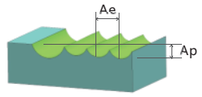


Total 20 models

Unit (mm)

Model Number	D Radius of Ball Nose	L1 Length of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number of flutes	d Shank Diameter	In Stock
GRAR2-0100300	R0.5	3	-	15°	50	2	4	○
GRAR2-0150500	R0.75	5	-	15°	50	2	4	○
GRAR2-0200600	R1	6	-	15°	50	2	4	○
GRAR2-0300600	R1.5	6	-	15°	60	2	3/4	○
GRAR2-0301000	R1.5	10	-	15°	75	2	3/4	○
GRAR2-0301500	R1.5	15	-	15°	100	2	3/4	○
GRAR2-0400800	R2	8	-	-	60	2	4	○
GRAR2-0401000	R2	10	-	-	75	2	4	○
GRAR2-0401500	R2	15	-	-	100	2	4	○
GRAR2-0601200	R3	12	-	-	75	2	6	○
GRAR2-0601500	R3	15	-	-	100	2	6	○
GRAR2-0801800	R4	18	-	-	75	2	6	○
GRAR2-0801800-100	R4	18	-	-	100	2	8	○
GRAR2-0802500	R4	25	-	-	150	2	8	○
GRAR2-1002000	R5	20	-	-	100	2	10	○
GRAR2-1003000	R5	30	-	-	150	2	10	○
GRAR2-1003000-180	R5	30	-	-	180	2	10	○
GRAR2-1203000	R6	30	-	-	100	2	12	○
GRAR2-1203000-150	R6	30	-	-	150	2	12	○
GRAR2-1203000-180	R6	30	-	-	180	2	12	○

*New size added from this series.
*Stocked items.



Work Material		Graphite							
		Roughing				Finishing			
(mm) Diameter /Radius	(mm) Overhang	(min-1) Speed	(mm/min) Feed	Ap(mm)	Ae(mm)	(min-1) Speed	(mm/min) Feed	Ap(mm)	Ae(mm)
R0.5	3	22000	800	0.07	0.2	22000	1500	0.1	0.06
R0.75	5	22000	1200	0.15	0.4	22000	1800	0.1	0.06
R1	6	18000	2500∽1800	0.15	0.5	18000	2000	0.1	0.08
R1.5	16∽40	18000∽10000	3500∽2000	0.3	0.9	18000∽10000	3500∽2000	0.1	0.1
R1.5	16∽40	18000∽10000	3500∽2000	0.3	0.9	18000∽10000	3500∽2000	0.1	0.1
R1.5	40∽70	10000∽5500	2000∽1200	0.2	0.7	10000∽5500	2000∽1200	0.1	0.1
R2	16∽40	18000∽10000	3500∽2000	0.4	1.2	18000∽10000	3500∽2000	0.1	0.1
R2	16∽40	18000∽10000	3500∽2000	0.4	1.2	18000∽10000	3500∽2000	0.1	0.1
R2	40∽70	10000∽5500	2000∽1200	0.25	0.8	10000∽5500	2000∽1200	0.1	0.1
R3	24∽36	17000∽10000	3500∽3000	0.6	1.8	17000∽10000	3500∽3000	0.15	0.12
R3	36∽70	10000∽5500	3000∽1600	0.4	1.5	9000∽5500	3000∽1600	0.15	0.12
R4	20∽40	15000∽12000	4000∽3000	0.8	2.5	15000∽12000	4000∽3000	0.18	0.15
R4	40∽70	12000∽6000	3000∽2500	0.8	2.5	12000∽6000	3500∽2500	0.18	0.15
R4	70∽110	6000∽4000	2500∽1200	0.4	1.2	6000∽4000	2500∽1200	0.18	0.15
R5	40∽60	12000∽6000	3500∽2500	1	3	120000∽6000	4000∽2500	0.2	0.2
R5	60∽110	6000∽4000	2500∽1800	0.8	2.5	6000∽4000	2500∽1800	0.2	0.2
R5	110∽150	4000∽2000	1500∽450	0.6	1.9	4000∽2000	1800∽900	0.2	0.2
R6	48∽72	10000∽6000	3500∽2500	1.2	3.6	10000∽6000	4000∽2500	0.2	0.24
R6	72∽110	6000∽4000	2500∽1800	1.2	3.6	6000∽4000	2500∽1800	0.2	0.24
R6	110∽150	4000∽2000	1800∽450	0.9	2.8	4000∽2000	2000∽1000	0.2	0.24

Remark:
*Decrease both spindle speed and feed rate proprotionally when the milling parameters exceed the machine's maximum spindle speed;
*Decrease feed rate by 50% when slot machining;
*Recommend air blow.

MG | DIA Coating | 30 | SD 0-0.005 | R ±0.005

Highly recommend★ ◎ ○
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DIE STEEL	Grade
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Alloy steels (SK/SCM/SUS)	
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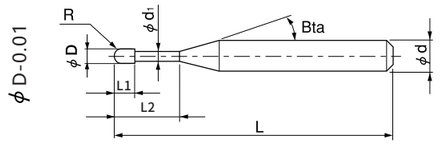
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	★
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*2 flutes long neck ball type for graphite machining
*New diamond coating offers excellent resistance to wear and abrasion;
*Ultra-fine diamond coating particles.



Total 52 models

Unit (mm)

Model Number	D Radius of Ball Nose	L1 Length of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRALR2-002020	R0.1	0.15	2	15°	50	2	4	○
GRALR2-003020	R0.15	0.2	2	15°	50	2	4	○
GRALR2-004020	R0.2	0.32	2	15°	50	2	4	○
GRALR2-004030	R0.2	0.32	3	15°	50	2	4	○
GRALR2-004040	R0.2	0.32	4	15°	50	2	4	○
GRALR2-004050	R0.2	0.32	5	15°	50	2	4	○
GRALR2-005020	R0.25	0.4	2	15°	50	2	4	○
GRALR2-005030	R0.25	0.4	3	15°	50	2	4	○
GRALR2-005060	R0.25	0.4	6	15°	50	2	4	○
GRALR2-005100	R0.25	0.4	10	15°	50	2	4	○
GRALR2-006020	R0.3	0.48	2	15°	50	2	4	○
GRALR2-006030	R0.3	0.48	3	15°	50	2	4	○
GRALR2-006040	R0.3	0.48	4	15°	50	2	4	○
GRALR2-006060	R0.3	0.48	6	15°	50	2	4	○
GRALR2-006100	R0.3	0.48	10	15°	50	2	4	○
GRALR2-006120	R0.3	0.48	12	15°	50	2	4	○
GRALR2-008100	R0.4	0.64	10	15°	50	2	4	○
GRALR2-008120	R0.4	0.64	12	15°	50	2	4	○
GRALR2-008160	R0.4	0.64	16	15°	50	2	4	○
GRALR2-010030	R0.5	0.8	3	15°	50	2	4	○

*New size added from this series.

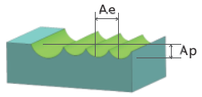
*Stocked items.

Next page ➞

Model Number	D Radius of Ball Nose	L1 Length of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRALR2-010050	R0.5	0.8	5	15°	50	2	4	○
GRALR2-010060	R0.5	0.8	6	15°	50	2	4	○
GRALR2-010080	R0.5	0.8	8	15°	50	2	4	○
GRALR2-010100	R0.5	0.8	10	15°	60	2	4	○
GRALR2-010120	R0.5	0.8	12	15°	50	2	4	○
GRALR2-010160	R0.5	0.8	16	15°	50	2	4	○
GRALR2-010200	R0.5	1.5	20	15°	60	2	4	○
GRALR2-015060	R0.75	1.2	6	15°	50	2	4	○
GRALR2-015100	R0.75	1.2	10	15°	50	2	4	○
GRALR2-015160	R0.75	1.2	16	15°	50	2	4	○
GRALR2-020040	R1	1.6	4	15°	50	2	4	○
GRALR2-020080	R1	1.6	8	15°	50	2	4	○
GRALR2-020100	R1	1.6	10	15°	50	2	4	○
GRALR2-020120	R1	1.6	12	15°	50	2	4	○
GRALR2-020160	R1	1.6	16	15°	50	2	4	○
GRALR2-020200	R1	3	20	15°	70	2	4	○
GRALR2-020250	R1	1.6	25	15°	65	2	4	○
GRALR2-020300	R1	3	30	15°	70	2	4	○
GRALR2-020350	R1	3	35	15°	70	2	4	○
GRALR2-020400	R1	1.6	40	15°	80	2	4	○
GRALR2-030160	R1.5	2.4	16	15°	60	2	4	○
GRALR2-030200	R1.5	2.4	20	15°	60	2	4	○
GRALR2-030250	R1.5	2.4	25	15°	70	2	4	○
GRALR2-030300	R1.5	4.5	30	15°	80	2	4	○
GRALR2-030400	R1.5	4.5	40	15°	80	2	4	○
GRALR2-040160	R2	3.2	16	15°	70	2	4	○
GRALR2-040200	R2	3.2	20	15°	70	2	4	○
GRALR2-040250	R2	3.2	25	15°	70	2	4	○
GRALR2-040300	R2	3.2	30	15°	70	2	4	○
GRALR2-040400	R2	6	40	15°	100	2	4	○
GRALR2-040500	R2	6	50	-	100	2	4	○
GRALR2-040600	R2	6	60	-	100	2	4	○

*New size added from this series.

*Stocked items.



Work Material		Graphite							
		Roughing				Finishing			
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap(mm)	Ae(mm)	(min-1) Speed	(mm/min) Feed	Ap(mm)	Ae(mm)
R0.1	2	26000	300	0.02	0.05	28000	500	0.015	0.015
R0.15	2	26000	300	0.02	0.05	28000	500	0.02	0.02
R0.2	2	26000	400	0.03	0.08	28000	600	0.04	0.03
R0.2	3	26000	400	0.03	0.06	28000	600	0.03	0.03
R0.2	4	26000	400	0.03	0.06	28000	600	0.02	0.03
R0.2	5	26000	400	0.03	0.06	28000	600	0.02	0.03
R0.25	2	26000	400	0.03	0.1	28000	800	0.05	0.04
R0.25	3	26000	400	0.03	0.1	28000	800	0.05	0.04
R0.25	6	26000	400	0.03	0.08	28000	800	0.03	0.04
R0.25	10	24000	400	0.03	0.06	28000	800	0.02	0.04
R0.3	2	26000	600	0.03	0.1	28000	800	0.06	0.04
R0.3	3	26000	400	0.03	0.1	28000	800	0.06	0.04
R0.3	4	26000	400	0.03	0.1	28000	800	0.04	0.04
R0.3	6	26000	400	0.03	0.1	28000	800	0.03	0.04
R0.3	10	24000	400	0.03	0.08	28000	800	0.02	0.04
R0.3	12	22000	400	0.03	0.08	28000	800	0.02	0.04
R0.4	10	24000	600	0.07	0.15	28000	1000	0.05	0.06
R0.4	12	22000	400	0.05	0.12	28000	1000	0.05	0.06
R0.4	16	20000	500	0.03	0.1	28000	1000	0.03	0.06
R0.5	3	26000	1200	0.1	0.3	28000	1500	0.1	0.06
R0.5	5	26000	1200	0.1	0.3	28000	1500	0.08	0.06
R0.5	6	26000	1000	0.1	0.3	28000	1200	0.05	0.06
R0.5	8	24000	1000	0.1	0.2	28000	1200	0.05	0.06
R0.5	10	24000	800	0.1	0.2	28000	1200	0.05	0.06
R0.5	12	22000	600	0.07	0.2	28000	1000	0.05	0.06
R0.5	16	20000	500	0.07	0.18	28000	1000	0.05	0.06
R0.5	20	18000	500	0.07	0.15	28000	1000	0.03	0.06
R0.75	6	26000	1800	0.15	0.45	26000	1800	0.08	0.08
R0.75	10	26000	1500	0.15	0.45	26000	1800	0.08	0.08
R0.75	16	26000	1200	0.15	0.45	26000	1800	0.06	0.08
R1	4	24000	2000	0.2	0.6	24000	2000	0.1	0.08
R1	8	24000	2000	0.2	0.6	24000	2000	0.1	0.08
R1	10	24000	2000	0.2	0.6	24000	2000	0.1	0.08
R1	12	24000	2000	0.2	0.6	24000	2000	0.08	0.08

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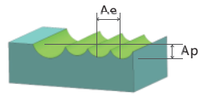

Work Material		Graphite							
		Roughing				Finishing			
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap(mm)	Ae(mm)	(min-1) Speed	(mm/min) Feed	Ap(mm)	Ae(mm)
R1	16	22000	1800	0.2	0.6	24000	2000	0.08	0.08
R1	20	18000	1300	0.2	0.6	24000	1800	0.06	0.08
R1	25	15000	1200	0.15	0.5	24000	1800	0.06	0.08
R1	30	15000	1000	0.15	0.5	24000	1500	0.06	0.08
R1	35	9000	1000	0.1	0.3	24000	1500	0.06	0.08
R1	40	7000	800	0.1	0.3	24000	1200	0.04	0.08
R1.5	16	18000	2000	0.3	0.9	22000	2500	0.12	0.1
R1.5	20	18000	2000	0.3	0.9	22000	2500	0.1	0.1
R1.5	25	15000	1700	0.2	0.7	20000	2200	0.07	0.1
R1.5	30	15000	1700	0.2	0.7	18000	2200	0.07	0.1
R1.5	40	12000	1500	0.2	0.7	18000	2200	0.05	0.1
R2	16	18000	2500	0.4	1.2	18000	2500	0.12	0.1
R2	20	18000	2500	0.4	1.2	18000	2500	0.1	0.1
R2	25	15000	2500	0.4	1.2	18000	2500	0.1	0.1
R2	30	15000	2500	0.4	1.2	18000	2500	0.1	0.1
R2	40	10000	1700	0.3	1	15000	2200	0.08	0.1
R2	50	9000	1500	0.25	0.8	15000	2200	0.08	0.1
R2	60	8000	1500	0.25	0.8	15000	2000	0.08	0.1

Remark:
*Decrease both spindle speed and feed rate proprotionally when the milling parameters exceed the machine's maximum spindle speed;
*Decrease feed rate by 50% when slot machining;
*Recommend air blow.

MG | DIA Coating | 30 | SD 0-0.005 | R ±0.005 (D≤6) | R ±0.01 (D8~12)

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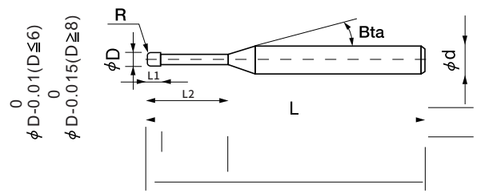
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	★
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

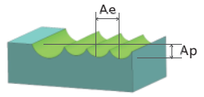
*4 flutes radius type end mills for graphite machining;
*New diamond coating offers excellent resistance to wear and abrasion;
*Ultra-fine diamond coating particles.



Total 42 models — Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	Radius	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRASR4-0302100-60	3	10	–	0.2	15°	60	4	3/4	○
GRASR4-0302100-75	3	10	–	0.2	15°	75	4	3/4	○
GRASR4-0302100-100	3	10	–	0.2	15°	100	4	3/4	○
GRASR4-0305100-60	3	10	–	0.5	15°	60	4	3/4	○
GRASR4-0305100-75	3	10	–	0.5	15°	75	4	3/4	○
GRASR4-0305100-100	3	10	–	0.5	15°	100	4	3/4	○
GRASR4-04001120-60	4	12	–	0	–	60	4	4	○
GRASR4-04001120-75	4	12	–	0	–	75	4	4	○
GRASR4-04001120-100	4	12	–	0	–	100	4	4	○
GRASR4-04002120-60	4	12	–	0.2	–	60	4	4	○
GRASR4-04002120-75	4	12	–	0.2	–	75	4	4	○
GRASR4-04002120-100	4	12	–	0.2	–	100	4	4	○
GRASR4-04005120-60	4	12	–	0.5	–	60	4	4	○
GRASR4-04005120-75	4	12	–	0.5	–	75	4	4	○
GRASR4-04005120-100	4	12	–	0.5	–	100	4	4	○
GRASR4-06002200-60	6	20	–	0.2	–	60	4	6	○
GRASR4-06002200-75	6	20	–	0.2	–	75	4	6	○
GRASR4-06002250-100	6	25	–	0.2	–	100	4	6	○
GRASR4-06003200-60	6	20	–	0.3	–	60	4	6	○
GRASR4-06003200-75	6	20	–	0.3	–	75	4	6	○

Next page

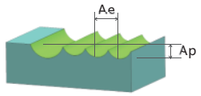


Total 42 models — Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	Radius	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRASR4-06003250-100	6	25	–	0.3	–	100	4	6	○
GRASR4-06005200-60	6	20	–	0.5	–	60	4	6	○
GRASR4-06005200-75	6	20	–	0.5	–	75	4	6	○
GRASR4-06005250-100	6	25	–	0.5	–	100	4	6	○
GRASR4-08005250-75	8	25	–	0.5	–	75	4	8	○
GRASR4-08005300-100	8	30	–	0.5	–	100	4	8	○
GRASR4-08005350-150	8	35	–	0.5	–	150	4	8	○
GRASR4-08010250-75	8	30	–	1	–	75	4	8	○
GRASR4-08010300-100	8	30	–	1	–	100	4	8	○
GRASR4-08010350-150	8	35	–	1	–	150	4	8	○
GRASR4-10005250-75	10	25	–	0.5	–	75	4	10	○
GRASR4-10005300-100	10	30	–	0.5	–	100	4	10	○
GRASR4-10005400-150	10	40	–	0.5	–	150	4	10	○
GRASR4-10010250-75	10	25	–	1	–	75	4	10	○
GRASR4-10010300-100	10	30	–	1	–	100	4	10	○
GRASR4-10010400-150	10	40	–	1	–	150	4	10	○
GRASR4-12005400-100	12	40	–	0.5	–	100	4	12	○
GRASR4-12005500-150	12	50	–	0.5	–	150	4	12	○
GRASR4-12005500-180	12	50	–	0.5	–	180	4	12	○
GRASR4-12010400-100	12	40	–	1	–	100	4	12	○
GRASR4-12010500-150	12	50	–	1	–	150	4	12	○
GRASR4-12010500-180	12	50	–	1	–	180	4	12	○

*New size added from this series.
*Stocked items.

SAMHO



Work Material		Graphite							
(mm) Diameter /Radius	(mm) Overhang	Roughing				Finishing			
		(min-1) Speed	(mm/min) Feed	Ap(mm)	Ae(mm)	(min-1) Speed	(mm/min) Feed	Ap(mm)	Ae(mm)
3R0.2	12∽24	15000∽12000	3000∽2500	0.3	1.8	15000∽12000	3000∽2500	0.12	0.12
3R0.2	24∽42	12000∽6000	2500∽1500	0.2	1.8	12000∽6000	2500∽1500	0.12	0.12
3R0.2	42∽70	6000∽4000	1500∽1000	0.15	1.8	6000∽4000	1500∽1000	0.12	0.12
3R0.5	12∽24	15000∽12000	3000∽2500	0.3	1.8	15000∽12000	3000∽2500	0.12	0.12
3R0.5	24∽42	12000∽6000	2500∽1500	0.2	1.8	12000∽6000	2500∽1500	0.12	0.12
3R0.5	42∽70	6000∽4000	1500∽1000	0.15	1.8	6000∽4000	1500∽1000	0.12	0.12
4R0.1	18∽24	14000∽12000	3000∽2500	0.3	2	14000∽12000	3000∽2500	0.08	0.12
4R0.1	24∽42	12000∽6000	2500∽1500	0.3	2	12000∽6000	2500∽1500	0.08	0.12
4R0.1	42∽70	6000∽4000	1500∽1000	0.2	2	6000∽4000	1500∽1000	0.08	0.12
4R0.2	18∽24	14000∽12000	3000∽2500	0.3	2	14000∽12000	3000∽2500	0.12	0.12
4R0.2	24∽42	12000∽6000	2500∽1500	0.3	2	12000∽6000	2500∽1500	0.12	0.12
4R0.2	42∽70	6000∽4000	1500∽1000	0.2	2	6000∽4000	1500∽1000	0.12	0.12
6R0.5	18∽24	14000∽12000	3000∽2500	0.3	2	14000∽12000	3000∽2500	0.12	0.12
6R0.5	24∽42	12000∽6000	2500∽1500	0.3	2	12000∽6000	2500∽1500	0.12	0.12
6R0.5	42∽70	6000∽4000	1500∽1000	0.2	2	6000∽4000	1500∽1000	0.12	0.12
6R0.2	18∽30	12000∽9000	4000∽3500	1	2.4	12000∽9000	4000∽3500	0.1	0.12
6R0.2	30∽42	9000∽7000	3500∽2500	1	2.4	9000∽7000	3500∽2500	0.1	0.12
6R0.2	42∽70	7000∽4000	25000∽1500	0.6	2.4	7000∽4000	25000∽1500	0.1	0.12
6R0.3	18∽30	12000∽9000	4000∽3500	1	2.4	12000∽9000	4000∽3500	0.12	0.12
6R0.3	30∽42	9000∽7000	3500∽2500	1	2.4	9000∽7000	3500∽2500	0.12	0.12
6R0.3	42∽70	7000∽4000	25000∽1500	0.6	2.4	7000∽4000	25000∽1500	0.12	0.12
8R0.5	18∽30	12000∽9000	4000∽3500	1.5	3.6	12000∽9000	4000∽3500	0.15	0.12
8R0.5	30∽42	9000∽7000	3500∽2500	1.2	3.6	9000∽7000	3500∽2500	0.15	0.12
8R0.5	42∽70	7000∽4000	25000∽1500	1.2	3.6	7000∽4000	25000∽1500	0.15	0.12
8R0.5	24∽32	10000∽8000	4000∽3500	1.8	4.8	10000∽8000	4000∽3500	0.18	0.12
8R0.5	32∽56	8000∽5000	3500∽2000	1.8	4.8	8000∽5000	3500∽2000	0.18	0.12
8R0.5	56∽110	5000∽2000	2000∽1000	1.8	4.8	5000∽2000	2000∽1000	0.18	0.12
10R1	24∽32	10000∽8000	4000∽3500	1.8	4.8	10000∽8000	4000∽3500	0.18	0.12
10R1	32∽56	8000∽5000	3500∽2000	1.8	4.8	8000∽5000	3500∽2000	0.18	0.12
10R1	56∽110	5000∽2000	2000∽1000	1.8	4.8	5000∽2000	2000∽1000	0.18	0.12
10R0.5	24∽40	10000∽8000	4000∽3500	2	6	10000∽8000	4000∽3500	0.18	0.12
10R0.5	40∽70	8000∽5000	3500∽2000	2	6	8000∽5000	3500∽2000	0.18	0.12
10R0.5	70∽110	5000∽2000	2000∽1000	2	6	5000∽2000	2000∽1200	0.18	0.12
R1	24∽40	10000∽8000	4000∽3500	2	6	10000∽8000	4000∽3500	0.18	0.12
R1	40∽70	8000∽5000	3500∽2000	2	6	8000∽5000	3500∽2000	0.18	0.12
10R1	70∽110	5000∽2000	2000∽1000	2	6	5000∽2000	2000∽1000	0.18	0.12
12R0.5	48∽72	7000∽5000	3500∽2500	3	8	7000∽5000	3500∽2500	0.18	0.12
12R0.5	72∽110	5000∽4000	2500∽1800	3	8	5000∽4000	2500∽1800	0.18	0.12
12R0.5	110∽150	4000∽2000	1800∽450	3	8	4000∽2000	1800∽1200	0.18	0.12
12R1	48∽72	7000∽5000	3500∽2500	3	8	7000∽5000	3500∽2500	0.18	0.12
12R1	72∽110	5000∽4000	2500∽1800	3	8	5000∽4000	2500∽1800	0.18	0.12
12R1	110∽150	4000∽2000	1800∽450	3	8	4000∽2000	1800∽1200	0.18	0.12

SAMHO

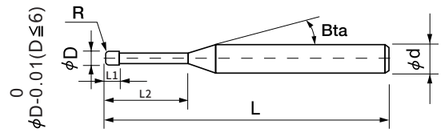
MG | DIA Coating | 30 | SD 0-0.005 | R ±0.005

Highly recommend★ ◎ ○
/Recommend/Suggest

DIE STEEL	Grade
Carbon steels (S45C/S55C)	
Alloy steels (SK/SCM/SUS)	
Prehardened steels (NAK/HPM)	
Hardened steels (~55/~60/~70HRC)	
SPECIAL MATERIAL	
Aluminum alloys	
Graphite	★
Copper	
Plastics	
Carbon fiber	
Titanium alloys	
Heat resistant alloys	
Cemented carbide	
Hard brittle (non-metallic)material	

Specialty

*2/4 flutes long neck radius end mills for graphite machining;
*New diamond coating offers excellent resistance to wear and abrasion;
*Ultra-fine diamond coating particles.



Total 39 models

Unit (mm)

Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	Radius	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRALSR2-005005040	0.5	1	4	0.05	15°	50	2	4	○
GRALSR4-010005060	1	3	6	0.05	15°	60	4	4	○
GRALSR4-010005100	1	3	10	0.05	15°	60	4	4	○
GRALSR4-010005150	1	3	15	0.05	15°	60	4	4	○
GRALSR4-010005200	1	3	20	0.05	15°	50	4	4	○
GRALSR4-01001060	1	3	6	0.1	15°	60	4	4	○
GRALSR4-01001100	1	3	10	0.1	15°	60	4	4	○
GRALSR4-01001150	1	3	15	0.1	15°	60	4	4	○
GRALSR4-01001200	1	3	20	0.1	15°	50	4	4	○
GRALSR4-01501100	1.5	3	10	0.1	15°	60	4	4	○
GRALSR4-01501150	1.5	3	15	0.1	15°	60	4	4	○
GRALSR4-01501200	1.5	3	20	0.1	15°	50	4	4	○
GRALSR4-01502100	1.5	3	10	0.2	15°	60	4	4	○
GRALSR4-01502150	1.5	3	15	0.2	15°	60	4	4	○
GRALSR4-01502200	1.5	3	20	0.2	15°	50	4	4	○
GRALSR4-02001100	2	6	10	0.1	15°	50	4	4	○
GRALSR4-02001150	2	6	15	0.1	15°	60	4	4	○
GRALSR4-02001200	2	6	20	0.1	15°	60	4	4	○
GRALSR4-02001250	2	6	25	0.1	15°	80	4	4	○
GRALSR4-02002100	2	6	10	0.2	15°	50	4	4	○

*New size added from this series.
*Stocked items.

Next page

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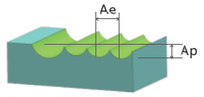
Model Number	D Outside Diameter	L1 Length of Cut	L2 Effective Length	Radius	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRALSR4-02002150	2	6	15	0.2	15°	60	4	4	○
GRALSR4-02002200	2	6	20	0.2	15°	60	4	4	○
GRALSR4-02002250	2	6	25	0.2	15°	80	4	4	○
GRALSR4-02005100	2	6	10	0.5	15°	50	4	4	○
GRALSR4-02005150	2	6	15	0.5	15°	60	4	4	○
GRALSR4-02005200	2	6	20	0.5	15°	60	4	4	○
GRALSR4-02005250	2	6	25	0.5	15°	80	4	4	○
GRALSR4-03001150	3	9	15	0.1	15°	60	4	4	○
GRALSR4-03001200	3	9	20	0.1	15°	60	4	4	○
GRALSR4-03001250	3	9	25	0.1	15°	80	4	4	○
GRALSR4-03001300	3	9	30	0.1	15°	80	4	4	○
GRALSR4-03002150	3	9	15	0.2	15°	60	4	4	○
GRALSR4-03002200	3	9	20	0.2	15°	60	4	4	○
GRALSR4-03002250	3	9	25	0.2	15°	80	4	4	○
GRALSR4-03002300	3	9	30	0.2	15°	80	4	4	○
GRALSR4-03005150	3	9	15	0.5	15°	60	4	4	○
GRALSR4-03005200	3	9	20	0.5	15°	60	4	4	○
GRALSR4-03005250	3	9	25	0.5	15°	80	4	4	○
GRALSR4-03005300	3	9	30	0.5	15°	80	4	4	○

*New size added from this series.

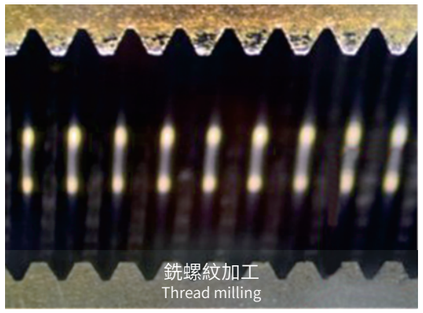
*Stocked items.

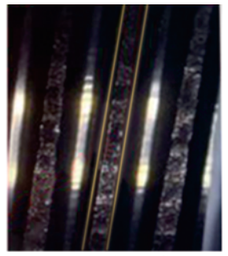


Work Material		Graphite							
		Roughing				Finishing			
(mm) Diameter /Radius	(mm) Effective Length	(min-1) Speed	(mm/min) Feed	Ap(mm)	Ae(mm)	(min-1) Speed	(mm/min) Feed	Ap(mm)	Ae(mm)
0.5R0.5	4	24000	800	0.05	0.3	24000	800	0.03	0.1
1R0.05	6	20000	1500	0.1	0.4	20000	1500	0.04	0.12
1R0.05	10	20000	1200	0.1	0.4	20000	1200	0.04	0.12
1R0.05	15	14000	1000	0.08	0.4	14000	1000	0.04	0.12
1R0.05	20	12000	800	0.06	0.4	12000	800	0.02	0.12
1R0.1	6	20000	1500	0.1	0.4	20000	1500	0.04	0.12
1R0.1	10	20000	1200	0.1	0.4	20000	1200	0.04	0.12
1R0.1	15	14000	1000	0.08	0.4	14000	1000	0.04	0.12
1R0.1	20	12000	800	0.06	0.4	12000	800	0.02	0.12
1.5R0.1	10	16000	1500	0.12	0.6	16000	1500	0.06	0.12
1.5R0.1	15	14000	1500	0.12	0.6	14000	1500	0.06	0.12
1.5R0.1	20	14000	1200	0.1	0.6	14000	1200	0.04	0.12
1.5R0.2	10	16000	1500	0.12	0.6	16000	1500	0.06	0.12
1.5R0.2	15	14000	1500	0.12	0.6	14000	1500	0.06	0.12
1.5R0.2	20	14000	1200	0.1	0.6	14000	1200	0.04	0.12
2R0.1	10	16000	2000	0.2	1.2	16000	2000	0.08	0.12
2R0.1	15	14000	1600	0.15	1.2	14000	1600	0.08	0.12
2R0.1	20	10000	1200	0.12	0.8	10000	1200	0.08	0.12
2R0.1	25	10000	1000	0.1	0.8	10000	1000	0.06	0.12
2R0.2	10	16000	2000	0.2	1.2	16000	2000	0.08	0.12
2R0.2	15	14000	1600	0.15	1.2	14000	1600	0.08	0.12
2R0.2	20	10000	1200	0.12	0.8	10000	1200	0.08	0.12
2R0.2	25	10000	1000	0.1	0.8	10000	1000	0.06	0.12
2R0.5	10	16000	2000	0.2	1.2	16000	2000	0.08	0.12
2R0.5	15	14000	1600	0.15	1.2	14000	1600	0.08	0.12
2R0.5	20	10000	1200	0.12	0.8	10000	1200	0.08	0.12
2R0.5	25	10000	1000	0.1	0.8	10000	1000	0.06	0.12
3R0.1	15	16000	3000	0.3	1.8	16000	3000	0.08	0.12
3R0.1	20	12000	2500	0.2	1.8	12000	2500	0.08	0.12
3R0.1	25	12000	2500	0.2	1.2	12000	2500	0.08	0.12
3R0.1	30	10000	2000	0.12	1.2	10000	2000	0.06	0.12
3R0.2	15	16000	3000	0.3	1.8	16000	3000	0.08	0.12
3R0.2	20	12000	2500	0.2	1.8	12000	2500	0.08	0.12
3R0.2	25	12000	2500	0.2	1.2	12000	2500	0.08	0.12
3R0.2	30	10000	2000	0.12	1.2	10000	2000	0.06	0.12
3R0.5	15	16000	3000	0.3	1.8	16000	3000	0.08	0.12
3R0.5	20	12000	2500	0.2	1.8	12000	2500	0.08	0.12
3R0.5	25	12000	2500	0.2	1.2	12000	2500	0.08	0.12
3R0.5	30	10000	2000	0.12	1.2	10000	2000	0.06	0.12

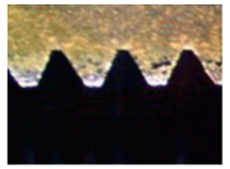
Remark:
*Decrease both spindle speed and feed rate proprotionally when the milling parameters exceed the machine's maximum spindle speed;
*Decrease feed rate by 50% when slot machining;
*Recommend air blow.

Product Advantages

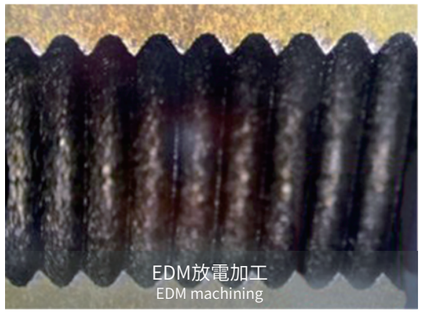


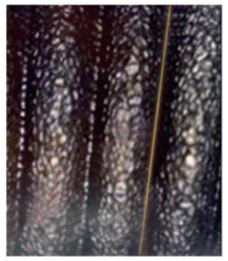


Keep the bore flat

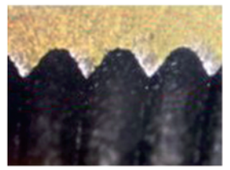


Good thread strength and clear tooth shape





Only one the is kept in the bore



Poor thread strength and deformed tooth, would cause loose thread and even scrapped workpiece possibly

Case Studies

★ Analysis Report:Material SKD11 (HRC60-62)

Purpose: M4*0.7 thread life test
Processing machine: Makino（20000rpm)
Coolant: Air -16 Cooling
Test time: 2021-04-16

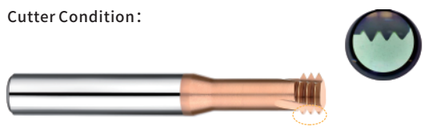
Milling Parameters

M4*0.7 HRC65 Three Teeth Thread Cutter	Spindle Speed	Feed Rate	Step	Axial Depth	Radial Depth	Radial Toolpath	Cycle Time
M4*0.7 (Depth 6mm)	(min-1)	(mm/min)	(mm/min)	(ap) mm	(ae) mm		1 min/hole
	4500	70			0.06	5	

Summary: M4 screw can be turned into 6mm depth smoothly. It can be still used after milling 15 threads..

Cutter Condition：

Cutter Condition：

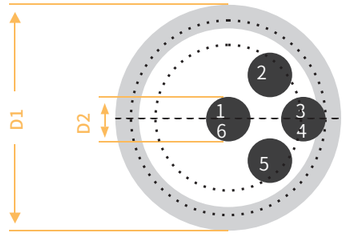


Guidelines on Processing

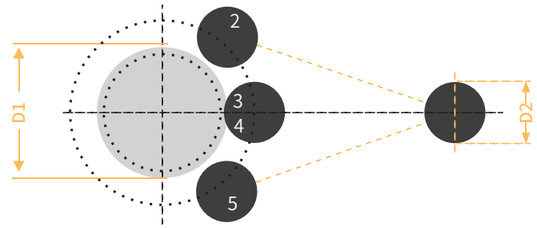
一、Arc Cut In

With this method, the cutter can cut the workpiece smoothly, leave no cutting marks and won't cause vibration, even when machining hard materials. The programming is more complicated than that for radial cutting. It's recommended to be used for milling precision threads.

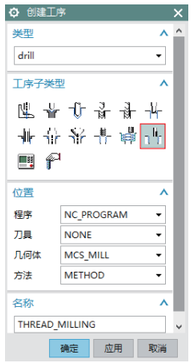
Internal thread



External thread



二、Processing method for UG10.0 threadmilling



Cutter Condition：

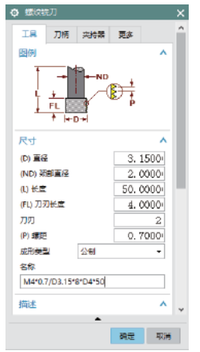
① Designated thread hole

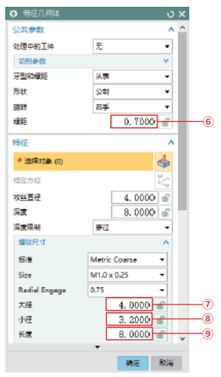
② Designated cutter for threading knife

③ The number of turns of the tool shaft in the Z-axis direction

④ Number of toolpaths in radial direction

⑤ Tick





Cutter Condition：

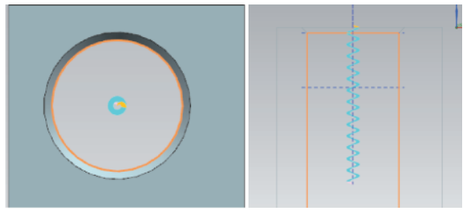
⑥ The setting of the pitch should be consistent with the pitch of the thread cutter

⑦ Adjust the outside diameter of thread

⑧ Bottom hole can be set larger than the diameter of thread cutter and smaller than the outside diameter.

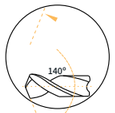
⑨ Processing depth

Cutter Condition：



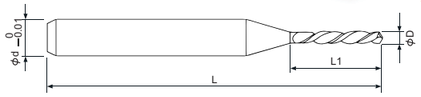
MG

HG Coating



Specialty

*Can drill HRC62 hardened material;
*Drill point 140°, sharp and wear-resistant;
*Have the function of central water outlet.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

HRC65 Super Hard Drill Bits with Drill Point 140° (3D)

Model Number	D Diameter of Drill	L1 Length of Drill	d Shank Diameter	L Overall Length	Type 1	In Stock
HRC65 Super Hard Drill Bits 1	1	6	4	50	solid	○
HRC65 Super Hard Drill Bits 1.05	1.05	6	4	50	solid	○
HRC65 Super Hard Drill Bits 1.1	1.1	7	4	50	solid	○
HRC65 Super Hard Drill Bits 1.15	1.15	7	4	50	solid	○
HRC65 Super Hard Drill Bits 1.2	1.2	7	4	50	solid	○
HRC65 Super Hard Drill Bits 1.25	1.25	7	4	50	solid	○
HRC65 Super Hard Drill Bits 1.3	1.3	7	4	50	solid	○
HRC65 Super Hard Drill Bits 1.35	1.35	9	4	50	solid	○
HRC65 Super Hard Drill Bits 1.4	1.4	9	4	50	solid	○
HRC65 Super Hard Drill Bits 1.45	1.45	9	4	50	solid	○
HRC65 Super Hard Drill Bits 1.5	1.5	9	4	50	solid	○
HRC65 Super Hard Drill Bits 1.55	1.55	10	4	50	solid	○
HRC65 Super Hard Drill Bits 1.6	1.6	10	4	50	olid	○
HRC65 Super Hard Drill Bits 1.65	1.65	10	4	50	solid	○
HRC65 Super Hard Drill Bits 1.7	1.7	10	4	50	solid	○
HRC65 Super Hard Drill Bits 1.75	1.75	11	4	50	solid	○
HRC65 Super Hard Drill Bits 1.8	1.8	11	4	50	solid	○
HRC65 Super Hard Drill Bits 1.85	1.85	11	4	50	solid	○
HRC65 Super Hard Drill Bits 1.9	1.9	11	4	50	solid	○
HRC65 Super Hard Drill Bits 1.95	1.95	12	4	50	solid	○
HRC65 Super Hard Drill Bits 2	2	12	4	50	solid	○
HRC65 Super Hard Drill Bits 2.05	2.05	13	4	50	solid	○
HRC65 Super Hard Drill Bits 2.1	2.1	13	4	50	solid	○
HRC65 Super Hard Drill Bits 2.15	2.15	14	4	50	solid	○
HRC65 Super Hard Drill Bits 2.2	2.2	14	4	50	olid	○
HRC65 Super Hard Drill Bits 2.25	2.25	14	4	50	solid	○
HRC65 Super Hard Drill Bits 2.3	2.3	14	4	50	solid	○
HRC65 Super Hard Drill Bits 2.35	2.35	15	4	50	solid	○
HRC65 Super Hard Drill Bits 2.4	2.4	15	4	50	solid	○
HRC65 Super Hard Drill Bits 2.45	2.45	15	4	50	solid	○
HRC65 Super Hard Drill Bits 2.5	2.5	15	4	50	solid	○
HRC65 Super Hard Drill Bits 2.55	2.55	16	6	55	solid	○

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HRC65 Super Hard Drill Bits with Drill Point 140° (3D)

Model Number	D Diameter of Drill	L1 Length of Drill	d Shank Diameter	L Overall Length	Type 1	Type 2	In Stock
HRC65 Super Hard Drill Bits 2.6	2.6	16	4	55	solid		○
HRC65 Super Hard Drill Bits 2.65	2.65	16	4	55	solid		○
HRC65 Super Hard Drill Bits 2.7	2.7	17	4	55	solid		○
HRC65 Super Hard Drill Bits 2.75	2.75	17	4	55	solid		○
HRC65 Super Hard Drill Bits 2.8	2.8	17	4	55	solid		○
HRC65 Super Hard Drill Bits 2.85	2.85	18	4	55	solid		○
HRC65 Super Hard Drill Bits 2.9	2.9	18	4	55	solid		○
HRC65 Super Hard Drill Bits 2.95	2.95	18	4	55	solid		○
HRC65 Super Hard Drill Bits 3	3	20	4	62	solid	Internal Cooling)	○
HRC65 Super Hard Drill Bits 3.05	3.05	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.1	3.1	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.15	3.15	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.2	3.2	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.25	3.25	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.3	3.3	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.35	3.35	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.4	3.4	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.45	3.45	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.5	3.5	20	4	62	solid	nternal Cooling)	○
HRC65 Super Hard Drill Bits 3.55	3.55	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.6	3.6	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.65	3.65	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.7	3.7	20	4	62	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.75	3.75	24	4	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.8	3.8	24	4	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.85	3.85	24	4	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.9	3.9	24	4	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.95	3.95	24	4	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4	4	24	4	66	solid	nternal Cooling)	○
HRC65 Super Hard Drill Bits 4.05	4.05	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.1	4.1	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.15	4.15	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.2	4.2	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.25	4.25	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.3	4.3	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.35	4.35	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.4	4.4	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.45	4.45	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.5	4.5	24	6	66	solid	nternal Cooling)	○
HRC65 Super Hard Drill Bits 4.55	4.55	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.6	4.6	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.65	4.65	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.7	4.7	24	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.75	4.75	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.8	4.8	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.85	4.85	28	6	66	solid		○

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HRC65 Super Hard Drill Bits with Drill Point 140° (3D)

Model Number	D Diameter of Drill	L1 Length of Drill	d Shank Diameter	L Overall Length	Type 1	Type 2	In Stock
HRC65 Super Hard Drill Bits 4.9	4.9	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.95	4.95	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5	5	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.05	5.05	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.1	5.1	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.15	5.15	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.2	5.2	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.25	5.25	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.3	5.3	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.35	5.35	28	6	88	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.4	5.4	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.45	5.45	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.5	5.5	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.55	5.55	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.6	5.6	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.65	5.65	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.7	5.7	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.75	5.75	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.8	5.8	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.85	5.85	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.9	5.9	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.95	5.95	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6	6	28	6	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.05	6.05	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.1	6.1	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.15	6.15	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.2	6.2	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.25	6.25	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.3	6.3	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.35	6.35	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.4	6.4	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.45	6.45	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.5	6.5	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.55	6.55	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.6	6.6	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.65	6.65	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.7	6.7	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.75	6.75	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.8	6.8	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.85	6.85	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.9	6.9	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.95	6.95	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7	7	34	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.05	7.05	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.1	7.1	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.15	7.15	41	8	79	solid	Internal Cooling	○

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HRC65 Super Hard Drill Bits with Drill Point 140° (3D)

Model Number	D Diameter of Drill	L1 Length of Drill	d Shank Diameter	L Overall Length	Type 1	Type 2	In Stock
HRC65 Super Hard Drill Bits 7.2	7.2	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.25	7.25	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.3	7.3	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.35	7.35	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.4	7.4	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.45	7.45	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.5	7.5	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.55	7.55	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.6	7.6	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.65	7.65	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.7	7.7	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.75	7.75	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.8	7.8	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.85	7.85	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.9	7.9	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.95	7.95	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8	8	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.05	8.05	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.1	8.1	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.15	8.15	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.2	8.2	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.25	8.25	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.3	8.3	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.35	8.35	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.4	8.4	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.45	8.45	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.5	8.5	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.55	8.55	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.6	8.6	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.65	8.65	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.7	8.7	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.75	8.75	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.8	8.8	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.85	8.85	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.9	8.9	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.95	8.95	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9	9	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.05	9.05	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.1	9.1	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.15	9.15	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.2	9.2	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.25	9.25	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.3	9.3	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.35	9.35	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.4	9.4	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.45	9.45	47	10	89	solid	Internal Cooling	○

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HRC65 Super Hard Drill Bits with Drill Point 140° (3D)

Model Number	D Diameter of Drill	L1 Length of Drill	d Shank Diameter	L Overall Length	Type 1	Type 2	In Stock
HRC65 Super Hard Drill Bits 9.5	9.5	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.55	9.55	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.6	9.6	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.65	9.65	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.7	9.7	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.75	9.75	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.8	9.8	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.85	9.85	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.9	9.9	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.95	9.95	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10	10	47	10	89	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.1	10.1	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.2	10.2	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.3	10.3	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.4	10.4	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.5	10.5	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.6	10.6	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.7	10.7	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.8	10.8	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.9	10.9	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11	11	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.1	11.1	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.2	11.2	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.3	11.3	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.4	11.4	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.5	11.5	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.6	11.6	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.7	11.7	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.8	11.8	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.9	11.9	55	12	102	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 12	12	55	12	102	solid	Internal Cooling	○

Standard in stock

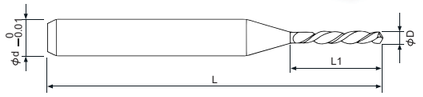
*Contact customer service to confirm and place an order

MG

HG Coating

Specialty

*Can drill HRC62 hardened material;
*Drill point 140°, sharp and wear-resistant;
*Have the function of central water outlet.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

HRC65 Super Hard Drill Bits with Drill Point 140° (5D)

Model Number	D Diameter of Drill	L1 Length of Drill	d Shank Diameter	L Overall Length	Type 1	Type 2	In Stock
HRC65 Super Hard Drill Bits 1	1	9	4	50	solid		○
HRC65 Super Hard Drill Bits 1.05	1.05	10	4	50	solid		○
HRC65 Super Hard Drill Bits 1.1	1.1	10	4	50	solid		○
HRC65 Super Hard Drill Bits 1.15	1.15	10	4	50	solid		○
HRC65 Super Hard Drill Bits 1.2	1.2	10	4	50	solid		○
HRC65 Super Hard Drill Bits 1.25	1.25	11	4	50	solid		○
HRC65 Super Hard Drill Bits 1.3	1.3	11	4	50	solid		○
HRC65 Super Hard Drill Bits 1.35	1.35	12	4	50	solid		○
HRC65 Super Hard Drill Bits 1.4	1.4	12	4	50	solid		○
HRC65 Super Hard Drill Bits 1.45	1.45	13	4	50	solid		○
HRC65 Super Hard Drill Bits 1.5	1.5	13	4	50	solid		○
HRC65 Super Hard Drill Bits 1.55	1.55	14	4	50	solid		○
HRC65 Super Hard Drill Bits 1.6	1.6	14	4	50	solid		○
HRC65 Super Hard Drill Bits 1.65	1.65	14	4	50	solid		○
HRC65 Super Hard Drill Bits 1.7	1.7	14	4	50	solid		○
HRC65 Super Hard Drill Bits 1.75	1.75	15	4	50	solid		○
HRC65 Super Hard Drill Bits 1.8	1.8	15	4	50	solid		○
HRC65 Super Hard Drill Bits 1.85	1.85	16	4	55	solid		○
HRC65 Super Hard Drill Bits 1.9	1.9	16	4	55	solid		○
HRC65 Super Hard Drill Bits 1.95	1.95	17	4	55	solid		○
HRC65 Super Hard Drill Bits 2	2	17	4	55	solid		○
HRC65 Super Hard Drill Bits 2.05	2.05	18	4	55	solid		○
HRC65 Super Hard Drill Bits 2.1	2.1	18	4	55	solid		○
HRC65 Super Hard Drill Bits 2.15	2.15	19	4	55	solid		○
HRC65 Super Hard Drill Bits 2.2	2.2	19	4	55	solid		○
HRC65 Super Hard Drill Bits 2.25	2.25	20	4	55	solid		○
HRC65 Super Hard Drill Bits 2.3	2.3	20	4	55	solid		○
HRC65 Super Hard Drill Bits 2.35	2.35	20	4	55	solid		○
HRC65 Super Hard Drill Bits 2.4	2.4	20	4	55	solid		○
HRC65 Super Hard Drill Bits 2.45	2.45	21	4	55	solid		○
HRC65 Super Hard Drill Bits 2.5	2.5	21	4	55	solid		○
HRC65 Super Hard Drill Bits 2.55	2.55	22	6	62	solid		○

Next page

HRC65 Super Hard Drill Bits with Drill Point 140°(5D)

Model Number	D Diameter of Drill	L1 Length of Drill	d Shank Diameter	L Overall Length	Type 1	Type 2	In Stock
HRC65 Super Hard Drill Bits 2.6	2.6	22	4	62	solid		○
HRC65 Super Hard Drill Bits 2.65	2.65	23	4	62	solid		○
HRC65 Super Hard Drill Bits 2.7	2.7	23	4	62	solid		○
HRC65 Super Hard Drill Bits 2.75	2.75	24	4	62	solid		○
HRC65 Super Hard Drill Bits 2.8	2.8	24	4	62	solid		○
HRC65 Super Hard Drill Bits 2.85	2.85	25	4	62	solid		○
HRC65 Super Hard Drill Bits 2.9	2.9	25	4	62	solid		○
HRC65 Super Hard Drill Bits 2.95	2.95	25	4	62	solid		○
HRC65 Super Hard Drill Bits 3	3	28	4	66	solid	Internal Cooling)	○
HRC65 Super Hard Drill Bits 3.05	3.1	28	4	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.2	3.2	28	4	66	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.3	3.3	28	4	68	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.4	3.4	28	4	68	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.5	3.5	28	4	68	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.6	3.6	28	4	68	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.8	3.8	36	4	74	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 3.9	3.9	36	4	74	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4	4	36	4	74	solid	Internal Cooling)	○
HRC65 Super Hard Drill Bits 4.1	4.1	36	6	74	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.2	4.2	36	6	74	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.3	4.3	36	6	74	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.4	4.4	36	6	74	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.5	4.5	36	6	74	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.6	4.6	36	6	74	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.7	4.7	36	6	74	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.8	4.8	44	6	82	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 4.9	4.9	44	6	82	solid	Internal Cooling)	○
HRC65 Super Hard Drill Bits 5	5	44	6	82	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.1	5.1	44	6	82	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.2	5.2	44	6	82	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.3	5.3	44	6	82	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.4	5.4	44	6	82	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.5	5.5	44	6	82	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.6	5.6	44	6	82	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.7	5.7	44	6	82	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 5.8	5.8	44	6	82	solid	Internal Cooling)	○
HRC65 Super Hard Drill Bits 5.9	5.9	44	6	82	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6	6	44	6	82	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.1	6.1	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.2	6.2	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.3	6.3	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.4	6.4	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.5	6.5	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.6	6.6	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.7	6.7	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 6.8	6.8	53	8	91	solid	Internal Cooling	○

Next page

HRC65 Super Hard Drill Bits with Drill Point 140°(5D)

Model Number	D Diameter of Drill	L1 Length of Drill	d Shank Diameter	L Overall Length	Type 1	Type 2	In Stock
HRC65 Super Hard Drill Bits 6.9	6.9	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7	7	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.1	7.1	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.2	7.2	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.3	7.3	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.4	7.4	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.5	7.5	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.6	7.6	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.7	7.7	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.8	7.8	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 7.9	7.9	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8	8	53	8	91	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.1	8.1	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.2	8.2	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.3	8.3	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.4	8.4	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.5	8.5	41	8	79	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.6	8.6	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.7	8.7	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.8	8.8	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 8.9	8.9	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9	9	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.1	9.1	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.2	9.2	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.3	9.3	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.4	9.4	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.5	9.5	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.6	9.6	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.7	9.7	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.8	9.8	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 9.9	9.9	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10	10	61	10	103	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.1	10.1	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.2	10.2	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.3	10.3	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.4	10.4	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.5	10.5	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.6	10.6	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.7	10.7	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.8	10.8	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 10.9	10.9	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11	11	71	12	118	solid	Internal Cooling	○

Next page

HRC65 Super Hard Drill Bits with Drill Point 140° (5D)

Model Number	D Diameter of Drill	L1 Length of Drill	d Shank Diameter	L Overall Length	Type 1	Type 2	In Stock
HRC65 Super Hard Drill Bits 11.1	11.1	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.2	11.2	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.3	11.3	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.4	11.4	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.5	11.5	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.6	11.6	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.7	11.7	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.8	11.8	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 11.9	11.9	71	12	118	solid	Internal Cooling	○
HRC65 Super Hard Drill Bits 12	12	71	12	118	solid	Internal Cooling	○

*Standard in stock

*Contact customer service to confirm and place an order

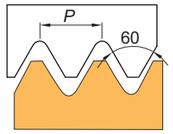
MG

HG Coating

Specialty

*New design, fine grinding;
*Optimal bar material, excellent performance.

The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.



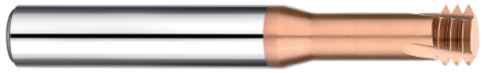
Metric Coarse Thread

Model Number	P Tooth Pitch	D Diameter of Cut	L1 Effective Length	d Shank Diameter	L Overall Length	T Number Of Flutes	Type	In Stock
HRC70 Superhard Thread Milling Cutter M1.6*0.35	0.35	D1.2	3.2	6	50	3	2 Tooth	○
HRC70 Superhard Thread Milling Cutter M2.0*0.4	0.4	D1.55	4	6	50	4	2 Tooth	○
HRC70 Superhard Thread Milling Cutter M2.5*0.45	0.45	D1.96	5	6	50	4	2 Tooth	○
HRC70 Superhard Thread Milling Cutter M3*0.5	0.5	D2.4	6	6	50	4	2 Tooth	○
HRC70 Superhard Thread Milling Cutter M4*0.7	0.7	D3.15	8	6	50	4	2 Tooth	○
HRC70 Superhard Thread Milling Cutter M5*0.8	0.8	D4.05	10	6	50	4	2 Tooth	○
HRC70 Superhard Thread Milling Cutter M6*1.0	1	D4.8	12	6	50	5	2 Tooth	○
HRC70 Superhard Thread Milling Cutter M8*1.25	1.25	D6.5	16	8	60	6	2 Tooth	○
HRC70 Superhard Thread Milling Cutter M10*1.5	1.5	D8.2	20	10	75	6	2 Tooth	○
HRC70 Superhard Thread Milling Cutter M12*1.75	1.75	D9.9	24	10	75	6	2 Tooth	○

○ Standard in stock

*Contact customer service to confirm and place an order

HRC65 Three-teeth Thread Cutter(Metric)



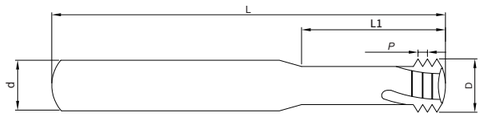
MG

HG Coating

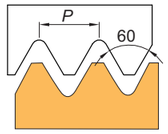
3

Specialty

*Can mill HRC62 hardened material;
*The latest high-hardness,high-temperature resistant coating.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.



HRC65 three-teeth thread milling cutter (metric)

Model Number	P Tooth Pitch	D Diameter of Cut	L1 Effective Length	d Shank Diameter	L Overall Length	T Number Of Flutes	Type	In Stock
HRC65 Three-teeth Thread Cutter M1.2*0.25	0.25	D0.92	2.4	4	50	3	3 Teeth	○
HRC65 Three-teeth Thread Cutter M1.4*0.3	0.3	D1.05	3	4	50	3	3 Teeth	○
HRC65 Three-teeth Thread Cutter M1.6*0.35	0.35	D1.22	3.2	4	50	3	3 Teeth	○
HRC65 Three-teeth Thread Cutter M2.0*0.4	0.4	D1.55	4	4	50	3	3 Teeth	○
HRC65 Three-teeth Thread Cutter M2.5*0.45	0.45	D1.96	5.5	4	50	3	3 Teeth	○
HRC65 Three-teeth Thread Cutter M3*0.5	0.5	D2.4	6	4	50	3	3 Teeth	○
HRC65 Three-teeth Thread Cutter M4*0.7	0.7	D3.15	8	4	50	3	3 Teeth	○
HRC65 Three-teeth Thread Cutter M4.5*0.75	0.75	D3.5	11	4	50	3	3 Teeth	○
HRC65 Three-teeth Thread Cutter M5*0.8	0.8	D3.95	10	4	50	3	3 Teeth	○
HRC65 Three-teeth Thread Cutter M6*1.0	1	D4.8	13	6	50	3	3 Teeth	○
HRC65 Three-teeth Thread Cutter M8*1.25	1.25	D6.5	16	8	60	3	3 Teeth	○
HRC65 Three-teeth Thread Cutter M10*1.5	1.5	D7.9	20	8	60	3	3 Teeth	○

○ Standard in stock

*Contact customer service to confirm and place an order

HRC65 Full Tooth Thread Cutter(Metric)

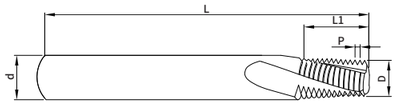
MG

HG Coating

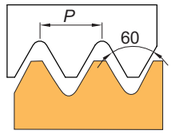
3 4

Specialty

*New design, fine grinding;
*Optimal bar material, excellent performance.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.



Metric Coarse Thread

Model Number	P Tooth Pitch	D Diameter of Cut	L1 Effective Length	d Shank Diameter	L Overall Length	T Number Of Flutes	Type	In Stock
HRC65 Full Tooth Thread Cutter M3*0.5	0.5	2.3	6	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M3.5*0.6	0.6	2.7	7	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M4*0.7	0.7	3	8	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M4.5*0.75	0.75	3.4	9	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M5*0.8	0.8	4	10	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M6*1.0	1	4.8	12	6	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M8*1.25	1.25	6	16	6	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M10*1.5	1.5	8	20	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M12*1.75	1.75	9.8	30	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter M14*2.0	2	10	30	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter	2	12	30	12	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter M18*2.5	2.5	14	36	14	80	4	Full Tooth	○

○ Standard in stock

*Contact customer service to confirm and place an order

Metric Fine Thread

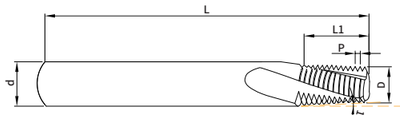
Model Number	P Tooth Pitch	D Diameter of Cut	L1 Effective Length	d Shank Diameter	L Overall Length	T Number Of Flutes	Type	In Stock
HRC65 Full Tooth Thread Cutter M6*0.5	0.5	4	10	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M8*0.5	0.5	6	13	6	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M6*0.75	0.75	4.8	12	6	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M10*0.75	0.75	8	20	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M8*1.0	1	6	16	6	55	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M10*1.0	1	8	20	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M12*1.0	1	10	22	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter M16*1.0	1	12	22	12	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter M20*1.0	1	16	30	16	90	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter M10*1.25	1.25	8	20	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter M12*1.25	1.25	10	25	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter M12*1.5	1.5	10	28	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter M14*1.5	1.5	12	28	12	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter M20*1.5	1.5	16	30	16	90	4	Full Tooth	○

○ Standard in stock

*Contact customer service to confirm and place an order

MG

HG Coating

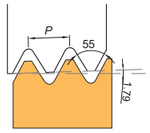


The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Specialty

*New design, fine grinding;

*Extend life and reduce costs.



Inch Taper Pipe Thread PT BSPT (RC)

Model Number	P Tooth Pitch	d1 Length of cut	D Diameter of Cut	L1 Effective Length	d Shank Diameter	L Overall Length	T Number Of Blades	Type	In Stock
HRC65 Full Tooth Thread Cutter RC1/16,1/8-28	0.907	5.25	6	12	6	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter RC1/8-28	0.907	7.25	8	12	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter RC1/4, 3/8-19	1.337	8.88	10	18	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter RC3/8-19	1.337	10.75	12	20	12	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter RC1/2-14	1.814	14.5	16	24	16	90	4	Full Tooth	○

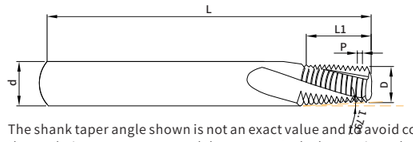
○ Standard in stock

*Contact customer service to confirm and place an order

SAMHO

MG

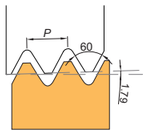
HG Coating



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Specialty

*Wide range of applicable materials;
*Extend life and reduce costs.



American Tapered Pipe Thread NPT NPTF

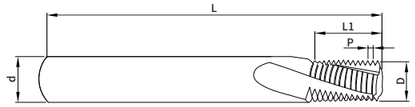
Model Number	P Tooth Pitch	d1 Diameter of Cut	D Blade Diameter	L1 Effective Length	d Shank Diameter	L Overall Length	T Number Of Blades	Type	In Stock
HRC65 Full Tooth Thread Cutter NPT1/16, 1/8-27	0.941	5.250	6	12	6	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter NPT1/8-27	0.941	7.250	8	12	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter NPT1/8-27	1.411	8.750	10	20	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter NPT3/8-18	1.411	10.630	12	22	12	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter NPT1/2, 3/4-14	1.814	14.440	16	25	16	90	4	Full Tooth	○

○ Standard in stock

*Contact customer service to confirm and place an order

MG

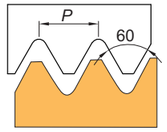
HG Coating



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Specialty

*New design, fine grinding;
*Extend life and reduce costs.



American Straight Pipe Thread Coarse Thread UNC

Model Number	P Tooth Pitch	D Diameter of Cut	L1 Effective Length	d Shank Diameter	L Overall Length	T Number Of Flutes	Type	In Stock
HRC65 Full Tooth Thread Cutter UNCNO.10-24	1.058	3.2	10.6	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNCNO.12-24	1.058	4	11.6	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNC1/4-20	1.270	4	12.7	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNC5/16-18	1.411	5.8	16.9	6	55	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNC3/8-16	1.588	7.6	19.1	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNC7/16-14	1.814	8	20	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNC1/2-13	1.954	8	20	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNC9/16-12	2.117	10	28	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNC5/8-11	2.309	12	30	12	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNC3/4-10	2.540	12	30	12	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNC7/8-9	2.822	16	38	16	90	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNC1-8	3.175	16	40	16	90	4	Full Tooth	○

Next page

American Straight Pipe Thread Fine Thread UNF

Model Number	P Tooth Pitch	D Diameter of Cut	L1 Effective Length	d Shank Diameter	L Overall Length	T Number Of Flutes	Type	In Stock
HRC65 Full Tooth Thread Cutter UNFNO.8-36	0.706	3	8.5	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNFNO.8-36	0.794	3.5	11.1	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNFNO.12-28,1/4-28	0.907	4	11.8	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF1/4-28	0.907	5	12.7	6	55	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF5/16,3/8-24	1.058	4	11.6	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF3/8-24	1.058	7.8	19.1	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF7/16,1/2-20	1.27	4	12.7	4	50	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF1/2-20	1.27	10	25.4	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF9/16-18	1.41	5.8	16.9	6	55	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF9/16,5/8-18	1.41	10	29.6	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF3/4-16	1.59	7.6	19.1	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF3/4-16L	1.59	12	28	12	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF7/8-14	1.81	8	20	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF7/8-14L	1.81	16	39.9	16	90	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF1-12	2.12	10	28	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNF1-12L	2.12	16	40	16	90	4	Full Tooth	○

○ Standard in stock

*Contact customer service to confirm and place an order

American Straight Pipe Thread Fine Thread UNEF

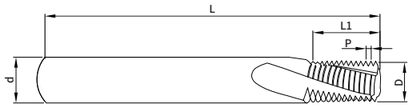
Model Number	P Tooth Pitch	D Diameter of Cut	L1 Effective Length	d Shank Diameter	L Overall Length	T Number Of Flutes	Type	In Stock
HRC65 Full Tooth Thread Cutter UNEFNO.12,3/8-32	0.794	3.5	11.1	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNEF7/16,1/2-28	0.907	4	11.8	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNEF7/16,1/2-28L	0.907	9.2	22.7	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNEF9/16,11/16-24	1.058	4	11.6	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNEF9/16,11/16-24L	1.058	7.8	19.1	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNEF3/4,1-20	1.27	4	12.7	4	50	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNEF3/4,1-20L	1.27	10	25.4	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNEF11/16-18	1.41	5.8	16.9	6	55	3	Full Tooth	○
HRC65 Full Tooth Thread Cutter UNEF11/16-18L	1.41	10	29.6	10	75	4	Full Tooth	○

○ Standard in stock

*Contact customer service to confirm and place an order

MG

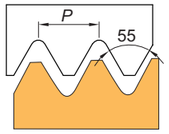
HG Coating



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Specialty

*New design, fine grinding;
*Optimal bar material, excellent performance.



British Straight Pipe Thread G (PF) 55°

Model Number	P Tooth Pitch	D Diameter of Cut	L1 Effective Length	d Shank Diameter	L Overall Length	T Number Of Flutes	Type	In Stock
HRC65 Full Tooth Thread Milling Cutter G1/16,1/8-28	0.907	6	12	6	60	3	Full Tooth	○
HRC65 Full Tooth Thread Milling Cutter G1/8-28	0.907	8	12	8	60	3	Full Tooth	○
HRC65 Full Tooth Thread Milling Cutter G1/4,3/8-19	1.337	10	15	10	75	4	Full Tooth	○
HRC65 Full Tooth Thread Milling Cutter G3/8-19	1.337	12	22	12	75	4	Full Tooth	○
HRC65 Full Tooth Thread Milling Cutter G1/2-14	1.814	16	30	16	90	4	Full Tooth	○
HRC65 Full Tooth Thread Milling Cutter G1-11	2.309	16	34	16	90	4	Full Tooth	○

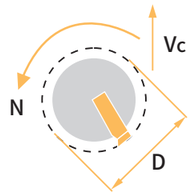
○ Standard in stock

*Contact customer service to confirm and place an order

Calculation Example of Thread Milling Conditions

$n = \frac{1000*Vc}{\pi*D}$ $n = Vf=fzxnxZ$

Vc=Velocity(m/min)
n=Spindle Speed(RPM)
D=Outside Diameter(mm)
Vf=Feed Rate(mm)
Z=Number of Flutes
fz=Feed per tooth per revolution(mm/r)



1-2: Quick positioning
2-3: 360° full circle for thread interpolation movement, onelead of axial movement
3-4: radial retraction

Thread milling data calculation example

1. Spindle speed (n) calculation
Application formula Vc=(π*D*n)/1000
Vc: Velocity (m/min)
π: Pi 3.14159
D: Outside Diameter (mm)
n: Spindle Speed (rpm)

Example: Using a thread milling cutter with a diameter of 25mm, the recommended speed is 100m/min

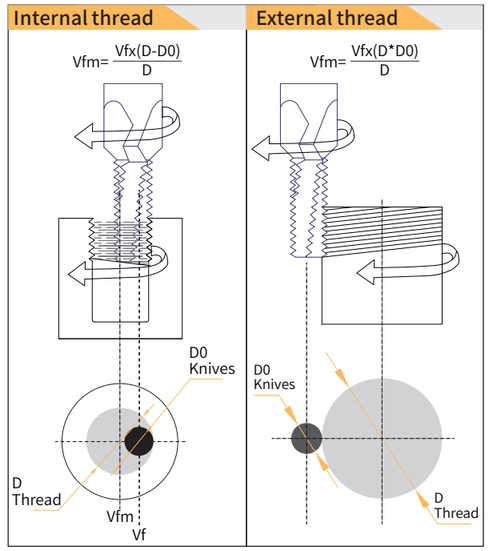
Vc=πdn/1000
Vc：Velocity（m/min）
n：1000*100/π*25=1280rpm

2.Feed amount F calculation Vf=f*n*z
Feed amount F calculation Vf=f*n*z(Feed amount F calculation Vf=f*n*z)
Vf: Feed Rate (mm/min)
n: Spindle Speed (rpm)
Z: Number of Flutes
fz: feed per tooth

Example: A single flute thread milling cutter is cutting a workpiece at a speed of 1500rpm. What is the feed rate (F value)? f recommended value 0.05mm
Vf=f*n*Z
Vf=0.05*1500*1=75mm/min

Most CNC machines require programming by using the tool center feed. The feed rate of the tool is determined by the feed rate of the tool center. And the feed rate of the tool center is not directly given, but can be calculated by the relational formula between feed rate and center feed rate.

Vfm=Center Feed Rate (mm/min)
Vf= Feed Amount (mm/min)
D=Nominal Diameter Of Thread (mm)
D0=Thread Milling Cutter Diameter (mm)



"G" code (ISO) for CNC programs

Code	Features	Code	Features
· ·	Identification code (ISO or EIA), end of tape	H	Tool length compensation number
000	Quickly identify instructions	D	Tool radius compensation number
001	Linear interpolation command	X	X axis coordinate
002	Clockwise arc/helical interpolation command	Y	Y axis coordinate
003	Counterclockwise arc/helical interpolation command	Z	X axis coordinate
040	Tool radius compensation command	R	Circular interpolation radius
041	Left offset tool radius compensation command	M3	Spindle forward
042	Right deviation tool radius compensation command	M5	Spindle stop
043	Tool and length compensation commands	M30	Main program end/reset
049	Tool length compensation side pin command	O	Program number
G57	Work coordinate system selection	N	Block number
G90	Absolute coordinates-given relative to the origin of the workpiece coordinate system	I	The incremental size of the X axis of the arc starting point relative to the center of the arc
G91	Incremental coordinates-given relative to the tool position	J	The incremental size of the Y axis of the arc starting point relative to the center of the arc
F	Feed rate（mm/min）	(	Comment start
S	Spindle speed（RPM）	)	End of comment

Case Studies

★ Analysis Report: Material Tungsten Steel(HRA91.5)

Purpose: grinding head M8*1.25 life test
Processing machine: Taiwan YCM (15000rpm)
Cooling method: Air Cooling
Test time: 2021-3-2

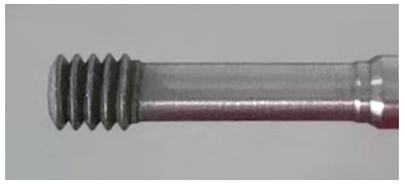
Milling Parameters

Tool	Spindle Speed	Feed Rate	Step	Axial Depth	Radial Depth	Cycle Time
DIAGM8*1.25 (D6.15*24*D6*60) (M8*1.25 thread depth 8mm)	(min-1)	(mm/min)		(ap) ㎜	(ae) ㎜	min
	11000	150	--	--	0.01	48 minutes (6minutes/hole)

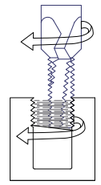
Summary: 1. High efficiency, 6 minutes per hole; 2. The processed thread has good fastening effect, and the tightness can be adjusted; 3. The grinding head is slight worn after test and can be continued for milling.

Workpiece (8 holes)

Grinding head after use:



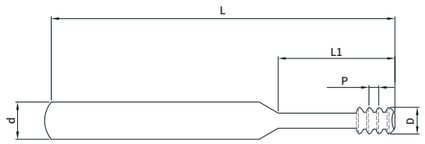
Processing methods



Emery thread grinding head 150#

Specialty

*High efficiency, 5-10 minutes/hole;
*The processed thread has good fastening effect, and the tightness can be adjusted;
*High-speed steel bar material +150# imported emery, long life and low cost.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Emery thread grinding head 150#

Model Number	D Diameter of Drill	L1 Effective Length	d Shank Diameter	L Overall Length	Type	In Stock
DIAGM3*0.5	2.4	8	4	40	4牙(Teeth)	○
DIAGM4*0.7	2.95	10	4	45	4牙(Teeth)	○
DIAGM5*0.8	3.85	18	6	50	4牙(Teeth)	○

Next page

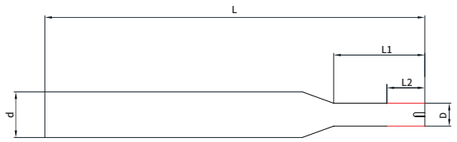
Model Number	D Diameter of Drill	L1 Effective Length	d Shank Diameter	L Overall Length	Type	In Stock
DIAGM6*1.0	4.8	20	6	60	4牙(Teeth)	○
DIAGM8*1.25	6.6	25	8	65	8牙(Teeth)	○
DIAGM10*1.5	8.2	24	10	70	8牙(Teeth)	○

○ Standard in stock *Contact customer service to confirm and place an order

Emery Scrub Head 150#

Specialty

*Adopt the most advanced electroplating process, high speed steel shank with high precision.
*Especially suitable for rough machining for tungsten steel, ceramics, glass and other hard and brittle materials .



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Emery Scrub Head 150#

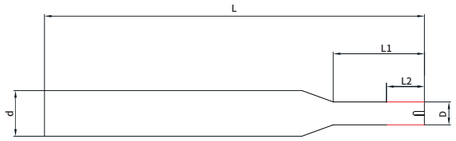
Model Number	D1 Diameter of Drill	L2 Sand length	L1 Effective Length	d Shank Diameter	L Overall Length	Type	In Stock
GRID1-506-D4	1	5	6	4	50	Solid	○
GRID1.5-506-D4	1.5	5	6	4	50	Solid	○
GRID2-508-D4	2	5	8	4	50	Solid	○
GRID3-510-D6	3	10	/	6	50	Chip Flute	○
GRID4-100-D6	4	10	/	6	50	Chip Flute	○
GRID5-100-D6	5	10	20	6	75	Chip Flute	○
GRID6-100-D6	6	10	20	6	75	Chip Flute	○
GRID8-100-D8	8	10	25	8	75	Chip Flute	○
GRID10-100-D10	10	10	25	10	75	Chip Flute	○
GRID12-100-D12	12	10	25	12	75	Chip Flute	○

○ Standard in stock *Contact customer service to confirm and place an order

Sintered grinding head#

Specialty

*The whole grinding head is made by sintering with emery, instead of electroplating!
*The groove design for chip removal on the front and tungsten steel shank offer longer tool life!



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the workpiece.

Sintered grinding head

Model Number	D Diameter of Drill	L2 Sand length	L1 Effective Length	d Shank Diameter	L Overall Length	Type	In Stock
GRI0.3-020-4	0.3	0.6	2	4	50	(400# sand tungsten steel shank)	○
GRI0.5-030-4	0.5	0.8	3	4	50	(300# sand tungsten steel shank)	○
GRI0.6-030-4	0.6	1	3	4	50	(300# sand tungsten steel shank)	○
GRI0.8-040-4	0.8	1	4	4	50	(250# sand tungsten steel shank)	○
GRI1-040-6	1	1.5	4	6	50	(150# sand tungsten steel shank)	○
GRI1.5-040-6	1.5	2	4	6	50	(150# sand tungsten steel shank)	○
GRI2-060-6	2	2.5	6	6	50	(150# sand tungsten steel shank)	○
GRI3-100-6	3	3	10	6	50	(150# sand tungsten steel shank)	○
GRI4-120-6	4	4	12	6	50	(150# sand tungsten steel shank)	○
GRI5-165-6	5	6	16.5	6	50	100# Sand	○
GRI6-165-6	6	6	16.5	6	50	100# Sand	○
GRI8-165-8	8	6	16.5	8	50	100# Sand	○
GRI10-215-10	10	10	21.5	10	50	100# Sand	○
GRI12-100-12	12	10	/	12	50	100# Sand	○

○ Standard in stock *Contact customer service to confirm and place an order

Next page

Calculation of milling condition

①.Velocity：V_c (m/min)

$$V_c = \frac{\pi \times D \times n}{1000}$$

π =3.14 (Circular constant)
D =Outside diameter (mm)
n =Spindle speed (min^{-1})

②.Spindle speed：n (m/min^{-1})

$$n = \frac{1000 \times V_c}{\pi \times D}$$

v_c =Velocity (m/min)
π =3.14 (Circular constant)
D =Outside diameter (mm)

③.Feed rate：V_f (mm/min)

$$V_f = n \times z \times f_z$$

n =Spindle speed (min^{-1})
z =Number of flutes
f_z=Feed per tooth (mm/t)

④.Feed per tooth：f_z (mm/t)

$$f_z = \frac{V_f}{n \times z}$$

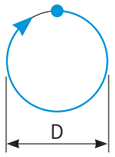
v_f =Feed rate (mm/min)
n =Spindle speed (min^{-1})
z =Number of flutes

Explanation of terms used in parameters

①.Velocity V_c【unit: m/min】: the milling distance of an optional point on the circumference per unit (1 minute)

Related value	Diameter ϕ D(mm)	Twice the distance from the center of a circle (radius)	
	π	Circular constant =3.14(unit:no)	
	n =Spindle Speed (min^{-1})	Revolutions per minute【min(1Minute)】	【min^{-1}】=【rpm ; revolutions per minute】

*Length of circumference = diameter X Circular Constant：π D (mm)
*Velocity V_c: Milling length per minute = Length of circumference X Spindle rotation speed



$V_c = \pi \times D\ (mm) \times n\ (min^{-1})$ → $V_c = \frac{\pi \times D\ (mm) \times n\ (min^{-1})}{1000}$ (m/min)

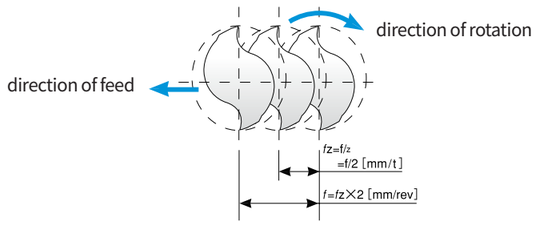
Unit conversion : 1mm = 1/1000m
D (mm) = D/1000 (m)

②.Feed per tooth f_z【Unit mm/t】

Related Value	Feed rate V_f (mm/min)	Amount of feed per minute	
	Spindle speed n (min^{-1})	Revolutions per minute (min^{-1})	【min^{-1}】=【rpm ; revolutions per minute】
	Number of flutes Z	Number of flutes	

*The amount of feed per rotation is discribed below【rev = revolution】

***In case of 2 flutes**



$$f = \frac{V_f\ (mm/min)}{n\ (rev/min)} = \frac{V_f}{n}\ (\frac{mm}{min}) \times (\frac{min}{rev})$$
$$= \frac{V_f}{n}\ (mm/rev)$$
* (min^{-1}) = (rev/min)

*The amount of feed per flute is calculated by using the feed rate divided by the number of flutes

$$f_z = \frac{f\ (mm/rev)}{z} = \frac{V_f}{n \times z}\ (mm/t)$$