



MG

DIA
CoatingSD
0-0.005R
±0.005

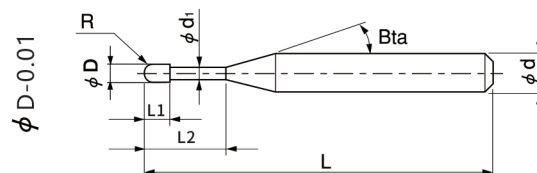
Highly recommend ★ ○ ○
/Recommend/Suggest

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.



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	

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.

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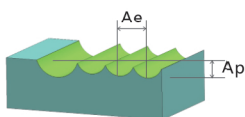
Model Number	D Radius of Ball Nose	L1 Length of Cut	L2 Effective Length	Bta Shank Taper Angle	L Overall Length	T Number of Flutes	d Shank Diameter	In Stock
GRALR2-010050	R0.5	0.8	5	15°	50	2	4	○
GRALR2-010060	R0.5	0.8	6	15°	50	2	4	○
GRALR2-010080	R0.5	0.8	8	15°	50	2	4	○
GRALR2-010100	R0.5	0.8	10	15°	60	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.

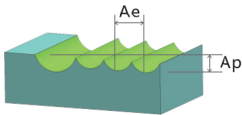
2 Flutes

Long Neck
Ball



Work Material		Graphite							
(mm) Diameter /Radius	(mm) Effective Length	Roughing				Finishing			
		(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							
(mm) Diameter /Radius	(mm) Effective Length	Roughing				Finishing			
		(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

2 Flutes

Long Neck
Ball

Remark:

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