GANZHOU ACHTECK TOOL TECHNOLOGY CO.,LTD.
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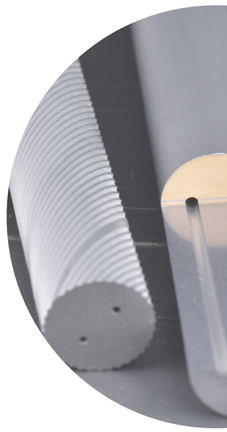
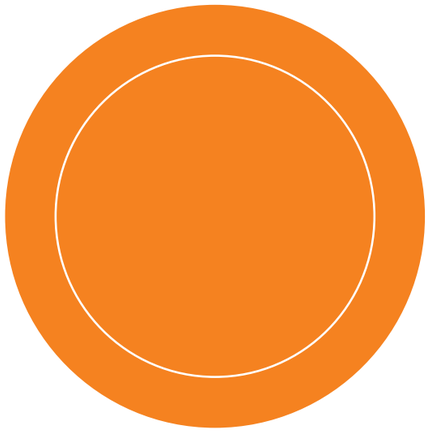
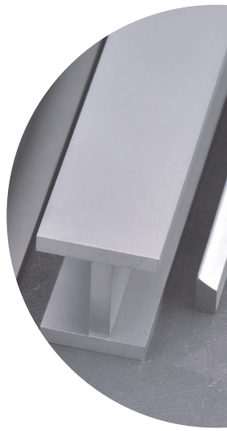
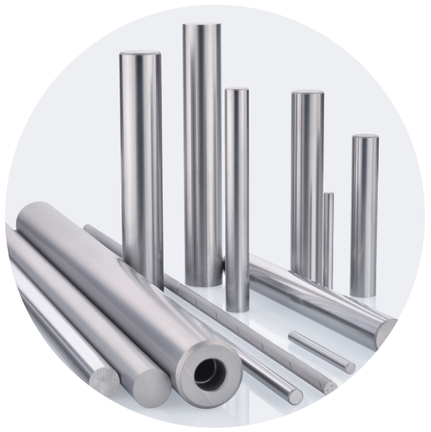
ACHTECK

CEMENTED CARBIDE RODS





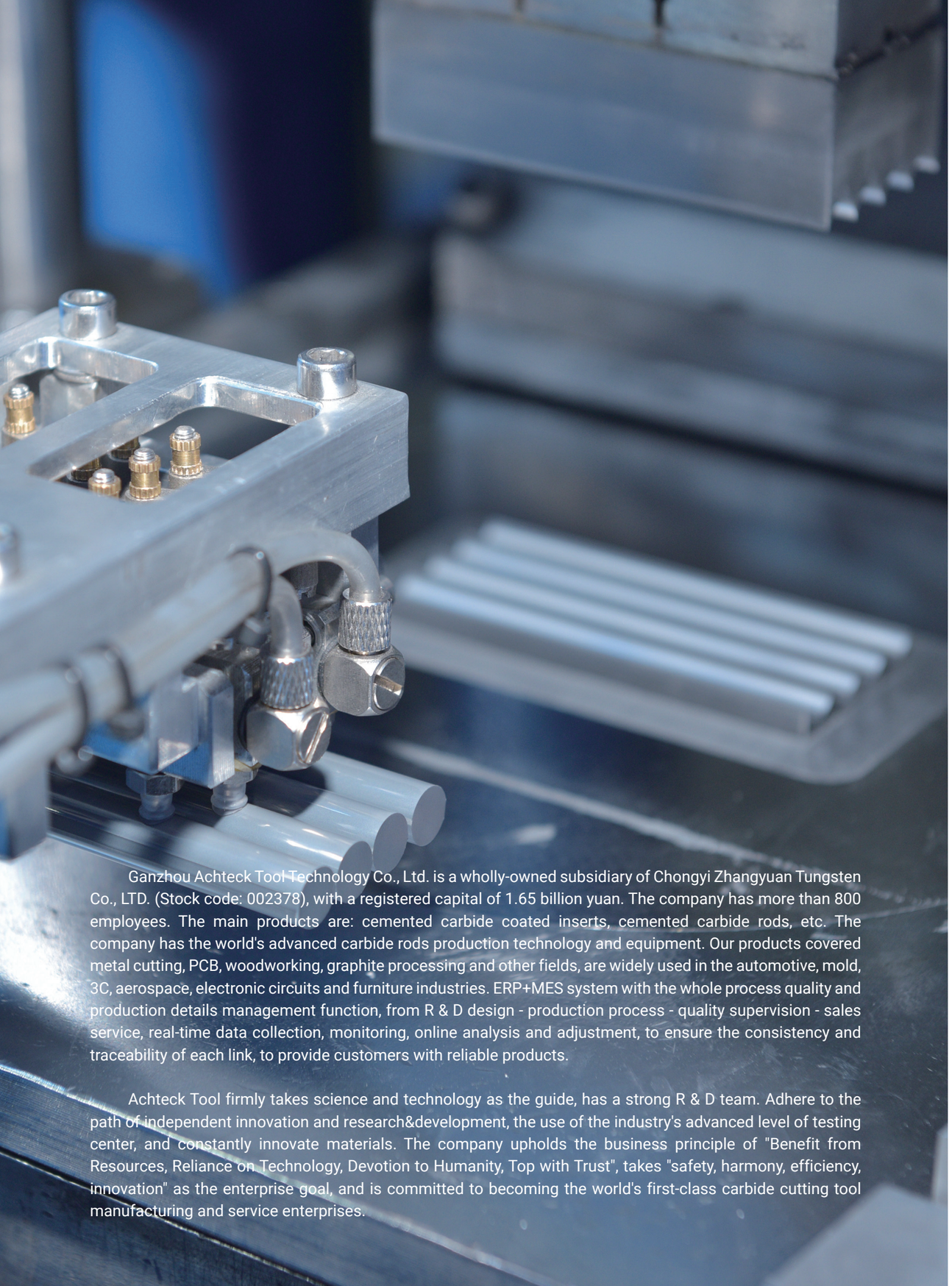




GANZHOU ACHTECK TOOL TECHNOLOGY CO.,LTD.

Address: No. 198 Jinfeng West Road, Economic and Technological Development Zone, Ganzhou City, Jiangxi Province Tel: 0086-797-8166368 Fax: 0086-797-8166100

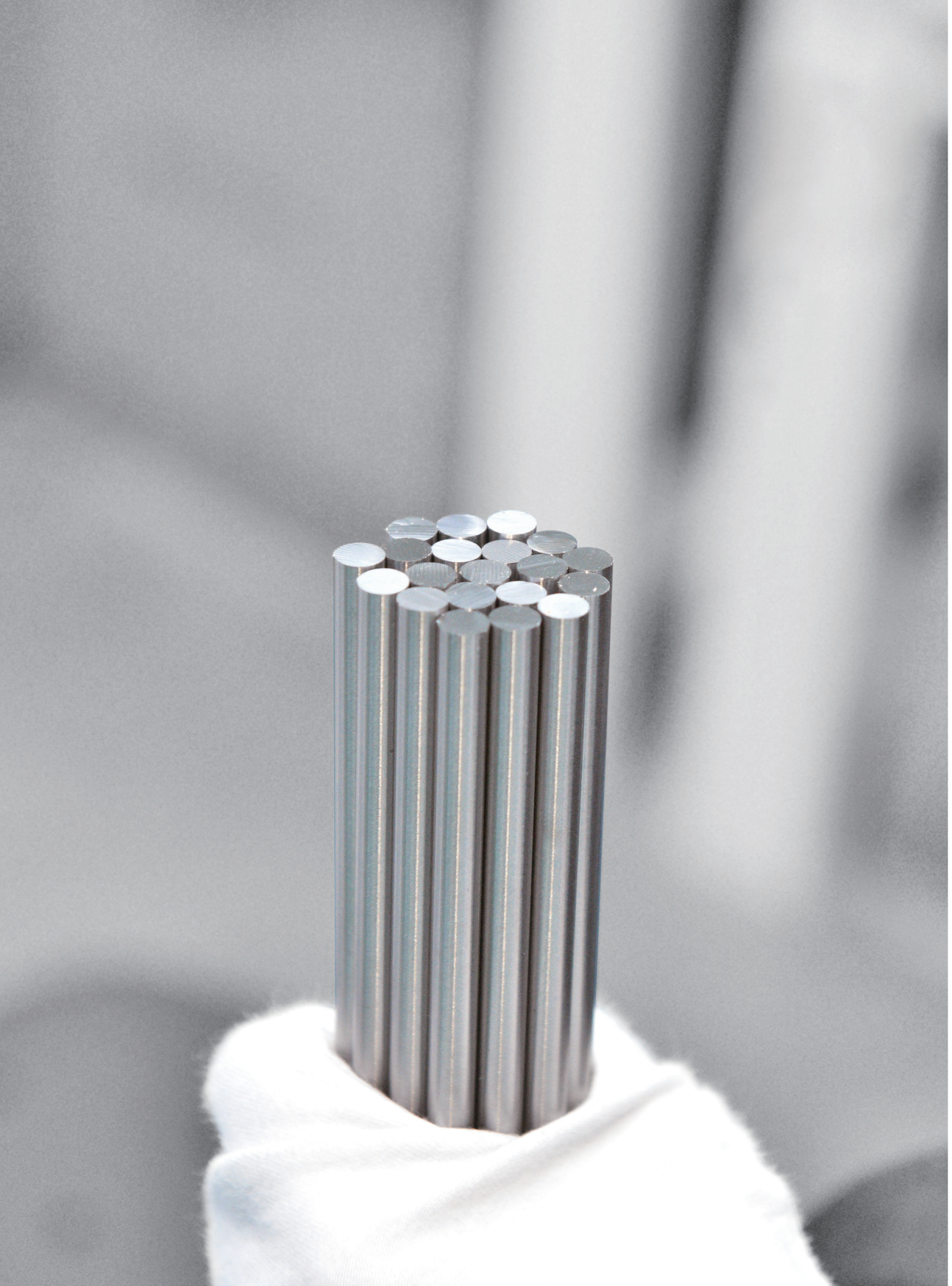
V2.0



Ganzhou Achteck Tool Technology Co., Ltd. is a wholly-owned subsidiary of Chongyi Zhangyuan Tungsten Co., LTD. (Stock code: 002378), with a registered capital of 1.65 billion yuan. The company has more than 800 employees. The main products are: cemented carbide coated inserts, cemented carbide rods, etc. The company has the world's advanced carbide rods production technology and equipment. Our products covered metal cutting, PCB, woodworking, graphite processing and other fields, are widely used in the automotive, mold, 3C, aerospace, electronic circuits and furniture industries. ERP+MES system with the whole process quality and production details management function, from R & D design - production process - quality supervision - sales service, real-time data collection, monitoring, online analysis and adjustment, to ensure the consistency and traceability of each link, to provide customers with reliable products.

Achteck Tool firmly takes science and technology as the guide, has a strong R & D team. Adhere to the path of independent innovation and research&development, the use of the industry's advanced level of testing center, and constantly innovate materials. The company upholds the business principle of "Benefit from Resources, Reliance on Technology, Devotion to Humanity, Top with Trust", takes "safety, harmony, efficiency, innovation" as the enterprise goal, and is committed to becoming the world's first-class carbide cutting tool manufacturing and service enterprises.

Content



Denomination for Rod

Shape	Surface condition	Unit	Chamfer	Coolant* hole	Diameter		Diameter of* coolant holes		Distance between* coolant holes		Length	Grade
R	B	M	N	2H30	2000	-	320	-	1070	-	330	AK10F
1	2	3	4	5	6		7		8		9	10

1-Shape	
R	Round Rods

2-Surface Condition	
B	Sintered Rods
G	Ground to h6
P	Ground to h5

3-Unit	
M	Metric
I	Inch

4-Chamfer	
C	with chamfer
N	without chamfer

5-Coolant Hole	
1S	1 Straight hole
2S	2 Straight holes
2H30	2 Helix Holes (30°)
3H30	3 Helix Holes (30°)

6-Diameter Note: In the metric system, the first digit is ten and the decimal digit is increased	
0400	Diameter 4mm
2000	Diameter 20mm
03175	Diameter 3.175mm
17/64	Diameter of Inch 17/64

7-Diameter of Coolant Holes Note: In the metric system, the first digit is the one digit	
320	Diameter of Coolant Hole 3.2mm

8-Distance Between Coolant Holes Note: In the metric system, the first digit is ten	
1070	Distance Between Coolant Holes is 10.7mm

9-Length Note: In the metric system, the first digit is hundreds and the decimal digit is increased	
330	Length 330mm
050	Length 50mm
0381	Length 38.1mm
1225	Length of Inch 12.25

10-Grade	
AK10F	Carbide Grade

Notes: * Solid rods without this option

Example: RBMN 1600-330 AK10F:Sintered rod without chamfer, diameter: 16mm, length:330mm, grade: AK10F

RGMC 1600-150 AK10F: Cut-to-length rod with chamfer, ground to h6, diameter: 16mm, length: 150mm, grade: AK10F

RBIN 17/64-1225 AK10F: Sintered rod without chamfer, diameter: 17/64inch, length: 12.25inch, grade: AK10F

RGMN2S 1600-200-0800-330 AK10F: Rod with 2 straight holes, no chamfer, ground to h6, diameter: 16mm, diameter of holes: 2mm, distance between holes: 8mm, length: 330mm, grade: AK10F

RBMN2H30 2000-320-1070-330 AK10F: Sintered rod with 2 helix holes (30°), no chamfer, diameter: 20mm, diameter of holes:3. 2mm, distance between holes: 10.7mm, length:330mm, grade: AK10F

RGMC 03175-0381 AK10F: Cut-to-length rod with chamfer, ground to h6, diameter: 3.175mm, length:38.1mm, grade: AK10F

Cemented Carbide Production Process

It has the whole production line of cemented carbide covered tungsten mine - metallurgy - powder making - cemented carbide production-mold manufacturing -tool/tool manufacturing and application.

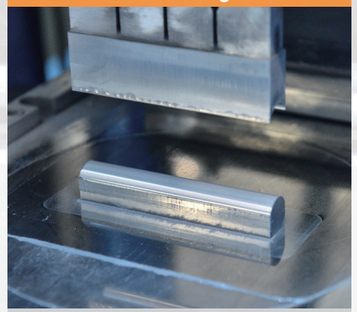
Mining

The main materials of cemented carbide are coming from tungsten concentrate. We ensured the powder source quality from our own wolframite mines to whole supply chains since the process of exploring and dressing process.

Powder preparation

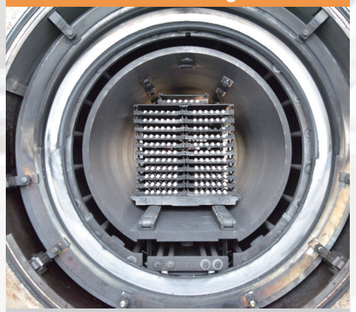
After series of complicated process as metallurgical, hydrogen reduction and carbonization, the tungsten carbide powder is our raw material of RTP powder.Over 30years rich experiences and technoloy developing on metallurgy,we owned comprehensive grades which almost coverd all the machining applications, included the upgrade nano grain size made of tungsten carbide powder as fine as 0.2um.

Pressing



Using traditional molding pressing, CIP and extrusion methods, RTP powders pressed to sintered blanks. Matching with good shapping ability, we can get the blanks which closed to the geometric construction of final products.

Sintering

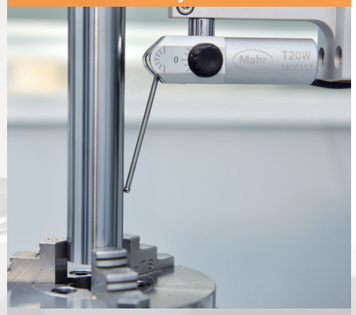


After high temperature sintering, the carbide blanks came out as high hardness cemented carbide. Equiped with advanced import PVA furnaces, unique sintering technology ensured the high compactness and uniformity of sinterd products.

Grinding

According to different applications and customer requirements, cemented carbide products need to go through finishing processes such as grinding to meet the required size and accuracy. We always control the grinding accuracy with more tight tolerance.

Quality Control



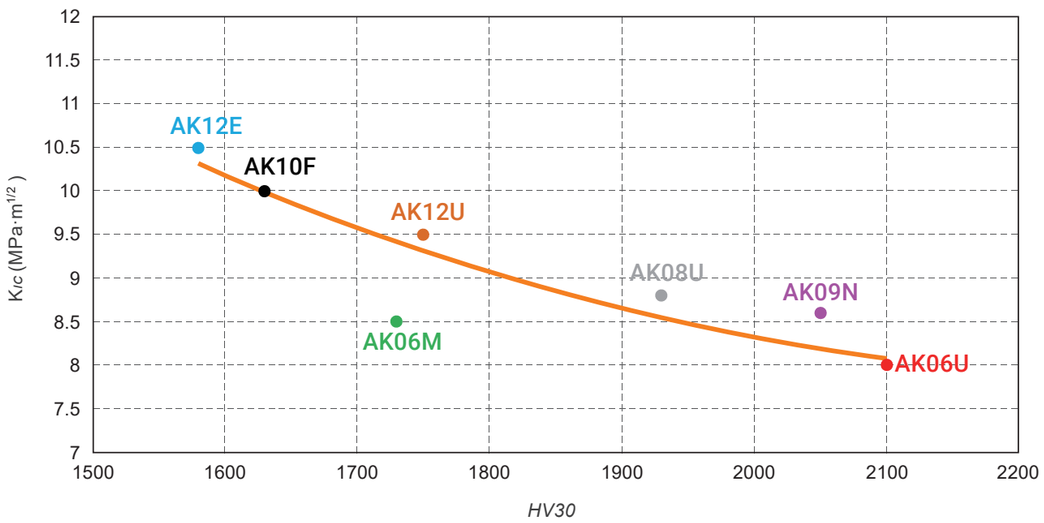
Any minor defect may greatlly affect the final performance of carbide products. The advantages of owned with whole produtction line ensured strictly quality controll on all production process which maintain the stability and consistency of carbide product performance.

Achteck Grades

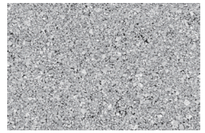
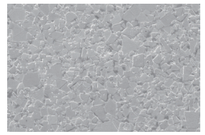
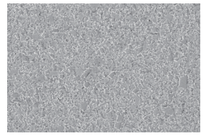
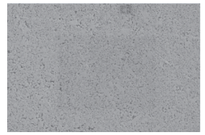
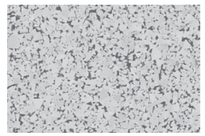
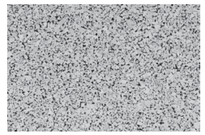
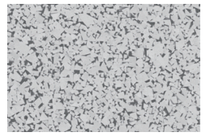
Grade	ISO code	Co%	Grain size (μm)	Hardness		Density (g/cm³)	TRS (Mpa)
				HRA	HV30		
AK06U	K05-K10	6	0.4	94	2100	14.7	3800
AK06M	K10-K20	6	1.0	92.6	1750	14.9	3000
AK08U	K10-K20	8.5	0.4	93.2	1930	14.5	3800
AK09N	K05-K10	9	0.2	94	2050	14.35	4200
AK10F	K20-K40	10	0.7	91.8	1630	14.4	4000
AK12U	K20-K40	12	0.4	92.6	1750	14.1	4200
AK12E	K30-K40	12	0.6	91.5	1580	14.1	4000

*The data in the table represent the typical values of the main parameters of the material. The data obtained under different experimental environments may be different due to the influence of sample preparation method, measurement method and measurement equipment.

Hardness & Fracture toughness



Grade Specifications

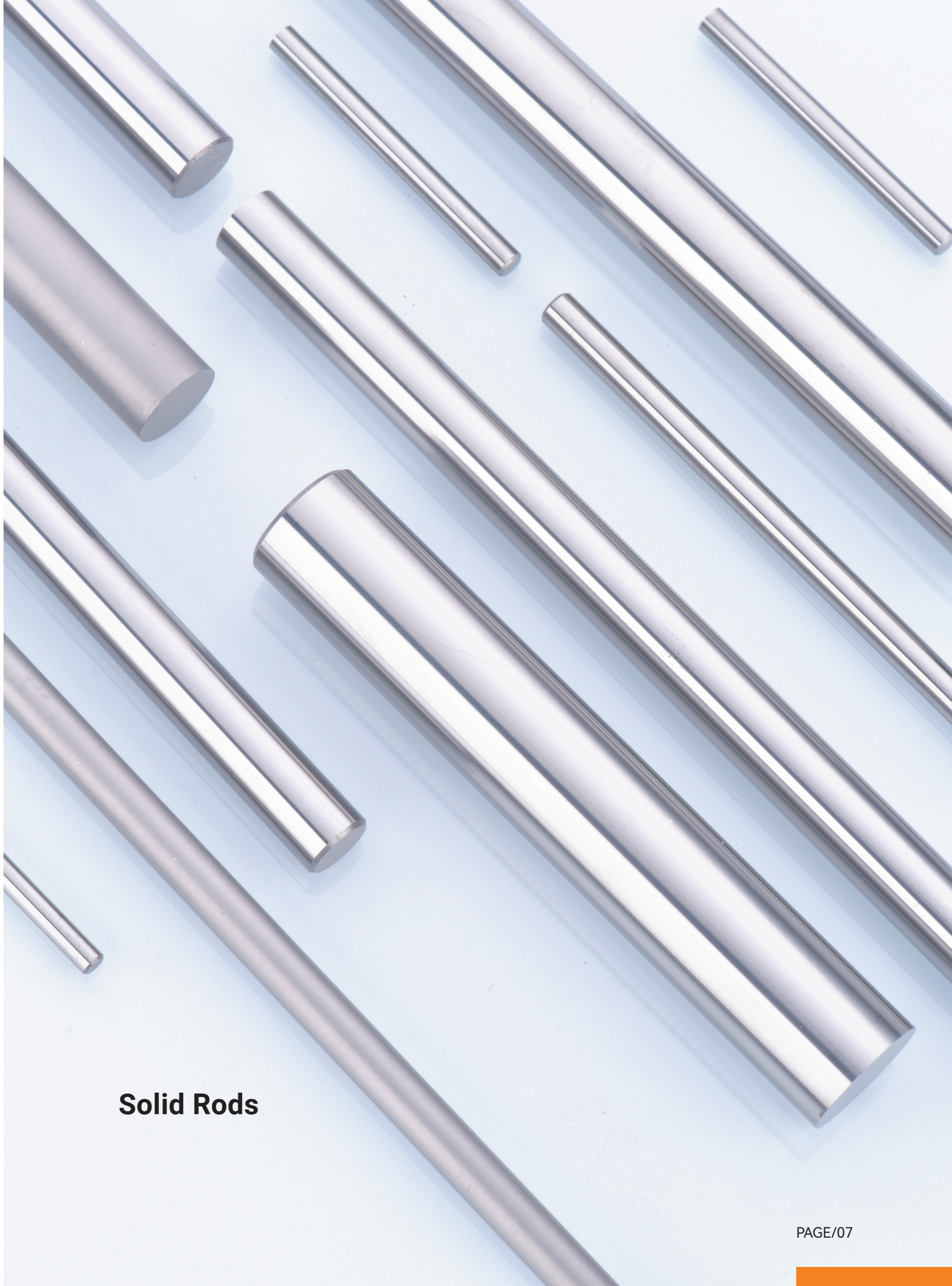
Grade	Microstructure (5000×)	Specifications and Applications
AK06U		• Ultrafine WC powder(0.4um), Co:6% • High wearability ➢Milling, drilling ➢PCB milling cutter, woodworking cutter, plastic processing
AK06M		• Fine size WC powder(1.0um),Co:6% • High bonding strength with diamond coating ➢Milling ➢Diamond coating tools
AK08U		• Ultra fine size WC powder(0.4um),Co:8.5% • High wear resistance, excellent resistance to plastic compression and deformation ➢Milling, drilling ➢HRC50-HRC60 high hard material processing, composite material processing, carving knife, PCB drill
AK09N		• Nano size WC powder(0.2um),Co:9% • High wear resistance and strength ➢Milling ➢HRC55 and above high hard material finishing, surface high gloss treatment, carbon fiber and glass fiber reinforced material processing
AK10F		• Subfine size WC powder(0.7um),Co:10% • Excellent resistance to collapse ➢Milling, drilling, and reaming ➢Steel parts, cast iron, non-ferrous metals, stainless steel, titanium alloy, superalloy and other materials general processing
AK12U		• Ultra fine size WC powder(0.4um),Co:12% • Combined wear resistance and collapse resistance ➢Milling, drilling, and reaming ➢Alloy steel, non-ferrous metals, stainless steel, titanium alloy and superalloy and other materials processing
AK12E		• Subfine size WC powder(0.6um),Co:12% • Excellent impact resistance and thermal fatigue resistance ➢Milling, drilling ➢Machining for stainless steel and titanium alloy materials

Application recommendation

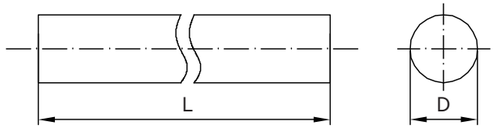
ISO Materials Classification	Machining		AK06U	AK06M	AK08U	AK09N	AK10F	AK12U	AK12E
P Steel	Drilling						●		
	Milling	Roughing					●	○	
		Finishing					●	●	
M Stainless Steel	Drilling						●		
	Milling	Roughing					○	○	●
		Finishing				○	●	●	
K Cast Iron	Drilling						●		
	Milling	Roughing					●	○	
		Finishing					○	●	
N Non-ferrous metals	Drilling						●		
	Milling	Roughing					●	○	
		Finishing			○		●	●	
S Heat Resistant Material	Drilling						●	○	
	Milling	Roughing			○		●		●
		Finishing					○	●	○
H Hardened Material	Drilling				○	○	●		
	Milling	Roughing			●	●		○	
		Finishing			○	●			
PCB			●		○	●			
Graphite				☆					
Composite material			●	☆	●	○			
Wood						○			

● 1st Choice ○ 2nd Choice ☆ Diamond Coating

*Note: Grade recommendation is for reference only, please consider the tool structure, coating and processing conditions for grade selection



Solid Long Rods
Raw, Metric



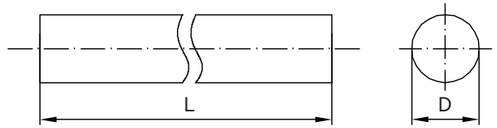
D mm		L mm		Type
1.00	+0.3/+0.5	310/330	+0.5/+6	RBMN 0100-310/330
2.00	+0.3/+0.5	310/330	+0.5/+6	RBMN 0200-310/330
3.00	+0.3/+0.5	310/330	+0.5/+6	RBMN 0300-310/330
4.00	+0.3/+0.5	310/330	+0.5/+6	RBMN 0400-310/330
5.00	+0.3/+0.5	310/330	+0.5/+6	RBMN 0500-310/330
6.00	+0.3/+0.5	310/330	+0.5/+6	RBMN 0600-310/330
7.00	+0.3/+0.5	310/330	+0.5/+6	RBMN 0700-310/330
8.00	+0.3/+0.5	310/330	+0.5/+6	RBMN 0800-310/330
9.00	+0.3/+0.55	310/330	+0.5/+6	RBMN 0900-310/330
10.00	+0.3/+0.55	310/330	+0.5/+6	RBMN 1000-310/330
11.00	+0.3/+0.55	310/330	+0.5/+6	RBMN 1100-310/330
12.00	+0.3/+0.55	310/330	+0.5/+6	RBMN 1200-310/330
13.00	+0.3/+0.55	310/330	+0.5/+6	RBMN 1300-310/330
14.00	+0.3/+0.55	310/330	+0.5/+6	RBMN 1400-310/330
15.00	+0.3/+0.6	310/330	+0.5/+6	RBMN 1500-310/330
16.00	+0.3/+0.6	310/330	+0.5/+6	RBMN 1600-310/330
17.00	+0.3/+0.6	310/330	+0.5/+6	RBMN 1700-310/330
18.00	+0.3/+0.6	310/330	+0.5/+6	RBMN 1800-310/330
19.00	+0.3/+0.6	310/330	+0.5/+6	RBMN 1900-310/330
20.00	+0.3/+0.6	310/330	+0.5/+6	RBMN 2000-310/330
21.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 2100-310/330
22.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 2200-310/330
23.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 2300-310/330
24.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 2400-310/330
25.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 2500-310/330
26.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 2600-310/330
27.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 2700-310/330
28.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 2800-310/330
29.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 2900-310/330
30.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 3000-310/330
31.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 3100-310/330
32.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 3200-310/330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Tolerance:

Diameter(mm)	Straightness(mm)
3≤D≤14	0.30
D＞14	0.35

Solid Long Rods
Raw, Metric



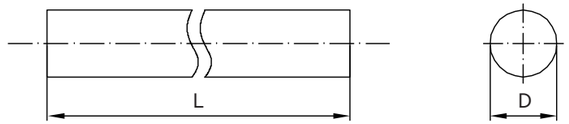
D mm		L mm		Type
33.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 3300-310/330
34.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 3400-310/330
35.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 3500-310/330
36.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 3600-310/330
37.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 3700-310/330
38.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 3800-310/330
39.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 3900-310/330
40.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 4000-310/330
41.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 4100-310/330
42.00	+0.35/+0.75	310/330	+0.5/+6	RBMN 4200-310/330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Tolerance:

Diameter(mm)	Straightness(mm)
3≤D≤14	0.30
D＞14	0.35

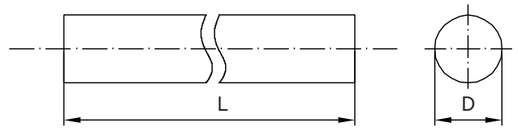
Solid Long Rods
Raw, Inch



D inch		L inch		Type
1/8	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 1/8-1225/1300
9/64	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 9/64-1225/1300
5/32	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 5/32-1225/1300
11/64	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 11/64-1225/1300
3/16	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 3/16-1225/1300
13/64	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 13/64-1225/1300
3/32	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 3/32-1225/1300
15/64	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 15/64-1225/1300
1/4	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 1/4-1225/1300
9/32	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 9/32-1225/1300
19/64	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 19/64-1225/1300
5/16	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 5/16-1225/1300
21/64	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 21/64-1225/1300
11/32	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 11/32-1225/1300
23/64	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 23/64-1225/1300
3/8	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 3/8-1225/1300
25/64	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 25/64-1225/1300
13/32	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 13/32-1225/1300
27/64	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 27/64-1225/1300
7/16	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 7/16-1225/1300
29/64	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 29/64-1225/1300
15/32	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 15/32-1225/1300
31/64	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 31/64-1225/1300
1/2	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 1/2-1225/1300
17/32	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 17/32-1225/1300
9/16	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 9/16-1225/1300
5/8	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 5/8-1225/1300
11/16	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 11/16-1225/1300
3/4	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 3/4-1225/1300
13/16	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 13/16-1225/1300
7/8	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 7/8-1225/1300
15/16	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 15/16-1225/1300
1	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 1-1225/1300
1-1/4	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 1-1/4-1225/1300
1-1/2	+0.010/+0.025	12.25/13	0.02/+0.25	RBIN 1-1/2-1225/1300

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

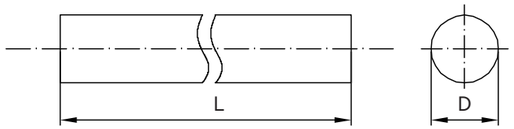
Cut to length Rods
Raw, Metric



D mm		L mm		Type
3.00	+0.15/+0.50	38	+0.5/+1.6	RBMN 0300-038
3.00	+0.15/+0.50	40	+0.5/+1.6	RBMN 0300-040
3.00	+0.15/+0.50	45	+0.5/+1.6	RBMN 0300-045
3.00	+0.15/+0.50	50	+0.5/+1.6	RBMN 0300-050
3.00	+0.15/+0.50	60	+0.5/+1.6	RBMN 0300-060
3.00	+0.15/+0.50	65	+0.5/+1.6	RBMN 0300-065
3.00	+0.15/+0.50	70	+0.5/+1.6	RBMN 0300-070
3.00	+0.15/+0.50	75	+0.5/+1.6	RBMN 0300-075
3.00	+0.20/+0.50	100	+0.5/+2.0	RBMN 0300-100
3.00	+0.20/+0.50	101.6	+0.5/+2.0	RBMN 0300-1016
3.25	+0.15/+0.50	38.3	+0.5/+1.6	RBMN 03250-0383
3.25	+0.15/+0.50	45	+0.5/+1.6	RBMN 03250-045
3.25	+0.15/+0.50	50	+0.5/+1.6	RBMN 03250-050
3.25	+0.15/+0.50	55	+0.5/+1.6	RBMN 03250-055
4.00	+0.15/+0.50	40	+0.5/+1.6	RBMN 0400-040
4.00	+0.15/+0.50	45	+0.5/+1.6	RBMN 0400-045
4.00	+0.15/+0.50	50	+0.5/+1.6	RBMN 0400-050
4.00	+0.15/+0.50	55	+0.5/+1.6	RBMN 0400-055
4.00	+0.15/+0.50	60	+0.5/+1.6	RBMN 0400-060
4.00	+0.15/+0.50	65	+0.5/+1.6	RBMN 0400-065
4.00	+0.15/+0.50	70	+0.5/+1.6	RBMN 0400-070
4.00	+0.15/+0.50	75	+0.5/+1.6	RBMN 0400-075
4.00	+0.20/+0.50	100	+0.5/+2.0	RBMN 0400-100
4.00	+0.25/+0.50	150	+0.5/+2.5	RBMN 0400-150
5.00	+0.15/+0.50	45	+0.5/+1.6	RBMN 0500-045
5.00	+0.15/+0.50	50	+0.5/+1.6	RBMN 0500-050
5.00	+0.15/+0.50	55	+0.5/+1.6	RBMN 0500-055
5.00	+0.15/+0.50	60	+0.5/+1.6	RBMN 0500-060
5.00	+0.15/+0.50	62	+0.5/+1.6	RBMN 0500-062
5.00	+0.15/+0.50	65	+0.5/+1.6	RBMN 0500-065
5.00	+0.15/+0.50	70	+0.5/+1.6	RBMN 0500-070
5.00	+0.15/+0.50	75	+0.5/+1.6	RBMN 0500-075
5.00	+0.15/+0.50	80	+0.5/+1.6	RBMN 0500-080
5.00	+0.20/+0.50	100	+0.5/+2.0	RBMN 0500-100
5.00	+0.25/+0.50	150	+0.5/+2.5	RBMN 0500-150
6.00	+0.15/+0.50	45	+0.5/+1.6	RBMN 0600-045
6.00	+0.15/+0.50	46.2	+0.5/+1.6	RBMN 0600-0462

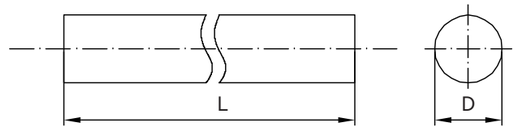
*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Cut to length Rods
Raw, Metric



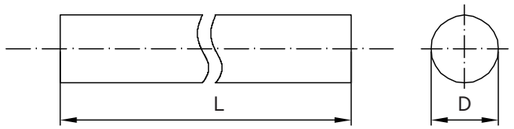
D mm		L mm		Type
6.00	+0.15/+0.50	50	+0.5/+1.6	RBMN 0600-050
6.00	+0.15/+0.50	51	+0.5/+1.6	RBMN 0600-051
6.00	+0.15/+0.50	57	+0.5/+1.6	RBMN 0600-057
6.00	+0.15/+0.50	58.2	+0.5/+1.6	RBMN 0600-0582
6.00	+0.15/+0.50	60	+0.5/+1.6	RBMN 0600-060
6.00	+0.15/+0.50	64	+0.5/+1.6	RBMN 0600-064
6.00	+0.15/+0.50	65	+0.5/+1.6	RBMN 0600-065
6.00	+0.15/+0.50	70	+0.5/+1.6	RBMN 0600-070
6.00	+0.15/+0.50	75	+0.5/+1.6	RBMN 0600-075
6.00	+0.15/+0.50	80	+0.5/+1.6	RBMN 0600-080
6.00	+0.20/+0.50	82	+0.5/+2.0	RBMN 0600-082
6.00	+0.20/+0.50	85	+0.5/+2.0	RBMN 0600-085
6.00	+0.20/+0.50	90	+0.5/+2.0	RBMN 0600-090
6.00	+0.20/+0.50	100	+0.5/+2.0	RBMN 0600-100
6.00	+0.20/+0.50	120	+0.5/+2.0	RBMN 0600-120
6.00	+0.25/+0.50	150	+0.5/+2.5	RBMN 0600-150
7.00	+0.15/+0.50	50	+0.5/+1.6	RBMN 0700-050
7.00	+0.15/+0.50	55	+0.5/+1.6	RBMN 0700-055
7.00	+0.15/+0.50	60	+0.5/+1.6	RBMN 0700-060
7.00	+0.15/+0.50	74	+0.5/+1.6	RBMN 0700-074
7.00	+0.15/+0.50	80	+0.5/+1.6	RBMN 0700-080
7.00	+0.20/+0.50	100	+0.5/+2.0	RBMN 0700-100
8.00	+0.15/+0.50	50	+0.5/+1.6	RBMN 0800-050
8.00	+0.15/+0.50	60	+0.5/+1.6	RBMN 0800-060
8.00	+0.15/+0.50	63	+0.5/+1.6	RBMN 0800-063
8.00	+0.15/+0.50	70	+0.5/+1.6	RBMN 0800-070
8.00	+0.15/+0.50	75	+0.5/+1.6	RBMN 0800-075
8.00	+0.15/+0.50	79	+0.5/+1.6	RBMN 0800-079
8.00	+0.15/+0.50	80	+0.5/+1.6	RBMN 0800-080
8.00	+0.20/+0.50	90	+0.5/+2.0	RBMN 0800-090
8.00	+0.20/+0.50	100	+0.5/+2.0	RBMN 0800-100
8.00	+0.20/+0.50	110	+0.5/+2.0	RBMN 0800-110
8.00	+0.20/+0.50	120	+0.5/+2.0	RBMN 0800-120
8.00	+0.25/+0.50	150	+0.5/+2.5	RBMN 0800-150
9.00	+0.20/+0.55	80	+0.5/+1.6	RBMN 0900-080
9.00	+0.25/+0.55	84	+0.5/+2.0	RBMN 0900-084
9.00	+0.25/+0.55	152.4	+0.5/+2.5	RBMN 0900-1524

Cut to length Rods
Raw, Metric



D mm		L mm		Type
10.00	+0.15/+0.55	50	+0.5/+1.6	RBMN 1000-050
10.00	+0.15/+0.55	60	+0.5/+1.6	RBMN 1000-060
10.00	+0.20/+0.55	64	+0.5/+1.6	RBMN 1000-064
10.00	+0.20/+0.55	65	+0.5/+1.6	RBMN 1000-065
10.00	+0.20/+0.55	70	+0.5/+1.6	RBMN 1000-070
10.00	+0.20/+0.55	72	+0.5/+1.6	RBMN 1000-072
10.00	+0.20/+0.55	75	+0.5/+1.6	RBMN 1000-075
10.00	+0.20/+0.55	76	+0.5/+1.6	RBMN 1000-076
10.00	+0.20/+0.55	80	+0.5/+1.6	RBMN 1000-080
10.00	+0.25/+0.55	89	+0.5/+2.0	RBMN 1000-089
10.00	+0.25/+0.55	90	+0.5/+2.0	RBMN 1000-090
10.00	+0.25/+0.55	96.2	+0.5/+2.0	RBMN 1000-0962
10.00	+0.25/+0.55	100	+0.5/+2.0	RBMN 1000-100
10.00	+0.25/+0.55	103	+0.5/+2.0	RBMN 1000-103
10.00	+0.25/+0.55	120	+0.5/+2.0	RBMN 1000-120
10.00	+0.25/+0.55	125	+0.5/+2.5	RBMN 1000-125
10.00	+0.25/+0.55	150	+0.5/+2.5	RBMN 1000-150
11.00	+0.20/+0.55	75	+0.5/+1.6	RBMN 1100-075
11.00	+0.25/+0.55	110	+0.5/+2.0	RBMN 1100-110
12.00	+0.15/+0.55	50	+0.5/+1.6	RBMN 1200-050
12.00	+0.15/+0.55	60	+0.5/+1.6	RBMN 1200-060
12.00	+0.20/+0.55	75	+0.5/+1.6	RBMN 1200-075
12.00	+0.20/+0.55	80	+0.5/+1.6	RBMN 1200-080
12.00	+0.25/+0.55	83	+0.5/+2.0	RBMN 1200-083
12.00	+0.25/+0.55	84.2	+0.5/+2.0	RBMN 1200-0842
12.00	+0.25/+0.55	90	+0.5/+2.0	RBMN 1200-090
12.00	+0.25/+0.55	100	+0.5/+2.0	RBMN 1200-100
12.00	+0.25/+0.55	120	+0.5/+2.0	RBMN 1200-120
12.00	+0.25/+0.55	125	+0.5/+2.5	RBMN 1200-125
12.00	+0.25/+0.55	150	+0.5/+2.5	RBMN 1200-150
13.00	+0.25/+0.55	100	+0.5/+2.0	RBMN 1300-100
14.00	+0.20/+0.55	75	+0.5/+1.6	RBMN 1400-075
14.00	+0.25/+0.55	83	+0.5/+2.0	RBMN 1400-083
14.00	+0.25/+0.55	100	+0.5/+2.0	RBMN 1400-100
14.00	+0.25/+0.55	110	+0.5/+2.0	RBMN 1400-110
14.00	+0.25/+0.55	120	+0.5/+2.0	RBMN 1400-120
14.00	+0.25/+0.55	125	+0.5/+2.5	RBMN 1400-125

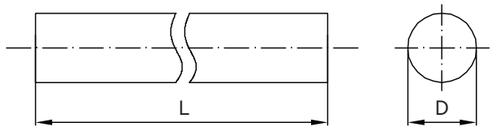
Cut to length Rods
Raw, Metric



D mm		L mm		Type
14.00	+0.25/+0.55	150	+0.5/+2.5	RBMN 1400-150
16.00	+0.25/+0.65	83	+0.5/+2.0	RBMN 1600-083
16.00	+0.25/+0.65	88	+0.5/+2.0	RBMN 1600-088
16.00	+0.25/+0.65	89	+0.5/+2.0	RBMN 1600-089
16.00	+0.25/+0.65	92	+0.5/+2.0	RBMN 1600-092
16.00	+0.25/+0.65	93.2	+0.5/+2.0	RBMN 1600-0932
16.00	+0.25/+0.65	100	+0.5/+2.0	RBMN 1600-100
16.00	+0.25/+0.65	125	+0.5/+2.5	RBMN 1600-125
16.00	+0.25/+0.65	150	+0.5/+2.5	RBMN 1600-150
18.00	+0.25/+0.65	92	+0.5/+2.0	RBMN 1800-092
18.00	+0.25/+0.65	100	+0.5/+2.0	RBMN 1800-100
18.00	+0.25/+0.65	150	+0.5/+2.5	RBMN 1800-150
20.00	+0.25/+0.65	50	+0.5/+1.6	RBMN 2000-050
20.00	+0.25/+0.65	75	+0.5/+1.6	RBMN 2000-075
20.00	+0.25/+0.65	100	+0.5/+2.0	RBMN 2000-100
20.00	+0.25/+0.65	104	+0.5/+2.0	RBMN 2000-104
20.00	+0.25/+0.65	105	+0.5/+2.0	RBMN 2000-105
20.00	+0.25/+0.65	120	+0.5/+2.0	RBMN 2000-120
20.00	+0.25/+0.65	142.2	+0.5/+2.5	RBMN 2000-1422
20.00	+0.25/+0.65	150	+0.5/+2.5	RBMN 2000-150
22.00	+0.25/+0.75	120	+0.5/+2.0	RBMN 2200-120
22.00	+0.25/+0.75	150	+0.5/+2.5	RBMN 2200-150
25.00	+0.25/+0.75	100	+0.5/+2.0	RBMN 2500-100
25.00	+0.25/+0.75	125	+0.5/+2.5	RBMN 2500-125
25.00	+0.25/+0.75	150	+0.5/+2.5	RBMN 2500-150

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Solid Long Rods
Ground, Metric (h5/h6)



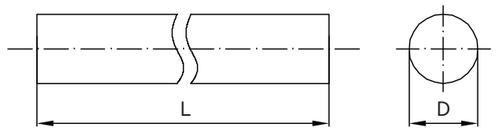
D mm		L mm		Type
1.00	h6	310/330	0/+2	RGMN 0100-310/330
2.00	h6	310/330	0/+2	RGMN 0200-310/330
3.00	h6	310/330	0/+2	RGMN 0300-310/330
4.00	h6	310/330	0/+2	RGMN 0400-310/330
5.00	h6	310/330	0/+2	RGMN 0500-310/330
6.00	h6	310/330	0/+2	RGMN 0600-310/330
7.00	h6	310/330	0/+2	RGMN 0700-310/330
8.00	h6	310/330	0/+2	RGMN 0800-310/330
9.00	h6	310/330	0/+2	RGMN 0900-310/330
10.00	h6	310/330	0/+2	RGMN 1000-310/330
11.00	h6	310/330	0/+2	RGMN 1100-310/330
12.00	h6	310/330	0/+2	RGMN 1200-310/330
13.00	h6	310/330	0/+2	RGMN 1300-310/330
14.00	h6	310/330	0/+2	RGMN 1400-310/330
15.00	h6	310/330	0/+2	RGMN 1500-310/330
16.00	h6	310/330	0/+2	RGMN 1600-310/330
17.00	h6	310/330	0/+2	RGMN 1700-310/330
18.00	h6	310/330	0/+2	RGMN 1800-310/330
19.00	h6	310/330	0/+2	RGMN 1900-310/330
20.00	h6	310/330	0/+2	RGMN 2000-310/330
21.00	h6	310/330	0/+2	RGMN 2100-310/330
22.00	h6	310/330	0/+2	RGMN 2200-310/330
23.00	h6	310/330	0/+2	RGMN 2300-310/330
24.00	h6	310/330	0/+2	RGMN 2400-310/330
25.00	h6	310/330	0/+2	RGMN 2500-310/330
26.00	h6	310/330	0/+2	RGMN 2600-310/330
27.00	h6	310/330	0/+2	RGMN 2700-310/330
28.00	h6	310/330	0/+2	RGMN 2800-310/330
29.00	h6	310/330	0/+2	RGMN 2900-310/330
30.00	h6	310/330	0/+2	RGMN 3000-310/330
31.00	h6	310/330	0/+2	RGMN 3100-310/330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Tolerance:

Diameter(mm)	Straightness(mm)
3≤D＜5	0.15
5≤D＜42	0.12

Solid Long Rods
Ground, Metric (h5/h6)



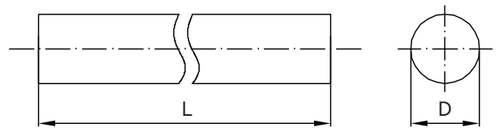
D mm		L mm		Type
32.00	h6	310/330	0/+2	RGMN 3200-310/330
33.00	h6	310/330	0/+2	RGMN 3300-310/330
34.00	h6	310/330	0/+2	RGMN 3400-310/330
35.00	h6	310/330	0/+2	RGMN 3500-310/330
36.00	h6	310/330	0/+2	RGMN 3600-310/330
37.00	h6	310/330	0/+2	RGMN 3700-310/330
38.00	h6	310/330	0/+2	RGMN 3800-310/330
39.00	h6	310/330	0/+2	RGMN 3900-310/330
40.00	h6	310/330	0/+2	RGMN 4000-310/330
41.00	h6	310/330	0/+2	RGMN 4100-310/330
42.00	h6	310/330	0/+2	RGMN 4200-310/330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Tolerance:

Diameter(mm)	Straightness(mm)
3≤D＜5	0.15
5≤D＜42	0.12

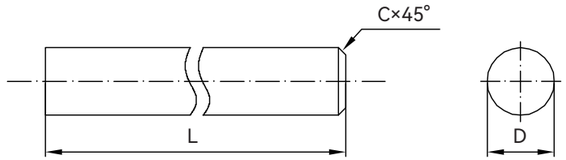
Solid Long Rods
Ground, Inch(h5/h6)



D inch		L inch		Type
1/8	h6	12.25/13	0/+0.08	RGIN 1/8-1225/1300
9/64	h6	12.25/13	0/+0.08	RGIN 9/64-1225/1300
5/32	h6	12.25/13	0/+0.08	RGIN 5/32-1225/1300
11/64	h6	12.25/13	0/+0.08	RGIN 11/64-1225/1300
3/16	h6	12.25/13	0/+0.08	RGIN 3/16-1225/1300
13/64	h6	12.25/13	0/+0.08	RGIN 13/64-1225/1300
7/32	h6	12.25/13	0/+0.08	RGIN 7/32-1225/1300
15/64	h6	12.25/13	0/+0.08	RGIN 15/64-1225/1300
1/4	h6	12.25/13	0/+0.08	RGIN 1/4-1225/1300
9/32	h6	12.25/13	0/+0.08	RGIN 9/32-1225/1300
19/64	h6	12.25/13	0/+0.08	RGIN 19/64-1225/1300
5/16	h6	12.25/13	0/+0.08	RGIN 5/16-1225/1300
21/64	h6	12.25/13	0/+0.08	RGIN 21/64-1225/1300
11/32	h6	12.25/13	0/+0.08	RGIN 11/32-1225/1300
23/64	h6	12.25/13	0/+0.08	RGIN 23/64-1225/1300
3/8	h6	12.25/13	0/+0.08	RGIN 3/8-1225/1300
25/64	h6	12.25/13	0/+0.08	RGIN 25/64-1225/1300
13/32	h6	12.25/13	0/+0.08	RGIN 13/32-1225/1300
27/64	h6	12.25/13	0/+0.08	RGIN 27/64-1225/1300
7/16	h6	12.25/13	0/+0.08	RGIN 7/16-1225/1300
29/64	h6	12.25/13	0/+0.08	RGIN 29/64-1225/1300
15/32	h6	12.25/13	0/+0.08	RGIN 15/32-1225/1300
31/64	h6	12.25/13	0/+0.08	RGIN 31/64-1225/1300
1/2	h6	12.25/13	0/+0.08	RGIN 1/2-1225/1300
17/32	h6	12.25/13	0/+0.08	RGIN 17/32-1225/1300
9/16	h6	12.25/13	0/+0.08	RGIN 9/16-1225/1300
5/8	h6	12.25/13	0/+0.08	RGIN 5/8-1225/1300
11/16	h6	12.25/13	0/+0.08	RGIN 11/16-1225/1300
3/4	h6	12.25/13	0/+0.08	RGIN 3/4-1225/1300
13/16	h6	12.25/13	0/+0.08	RGIN 13/16-1225/1300
7/8	h6	12.25/13	0/+0.08	RGIN 7/8-1225/1300
15/16	h6	12.25/13	0/+0.08	RGIN 15/16-1225/1300
1	h6	12.25/13	0/+0.08	RGIN 1-1225/1300
1-1/4	h6	12.25/13	0/+0.08	RGIN 1-1/4-1225/1300
1-1/2	h6	12.25/13	0/+0.08	RGIN 1-1/2-1225/1300

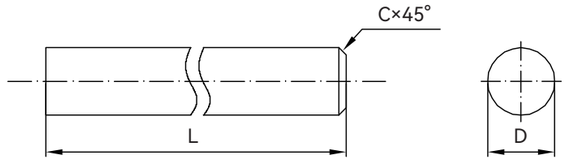
*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Cut to length Rods
Ground, Metric (h5/h6)



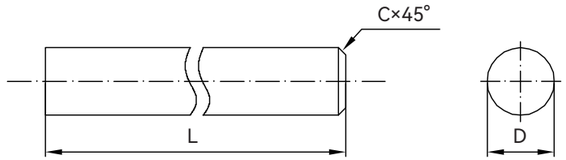
D mm		L mm		C mm	Type
3.00	h6	38	0/+1.0	0.4	RGMC 0300-038
3.00	h6	40	0/+1.0	0.4	RGMC 0300-040
3.00	h6	45	0/+1.0	0.4	RGMC 0300-045
3.00	h6	50	0/+1.0	0.4	RGMC 0300-050
3.00	h6	60	0/+1.0	0.4	RGMC 0300-060
3.00	h6	65	0/+1.0	0.4	RGMC 0300-065
3.00	h6	70	0/+1.0	0.4	RGMC 0300-070
3.00	h6	75	0/+1.0	0.4	RGMC 0300-075
3.00	h6	100	0/+1.0	0.4	RGMC 0300-100
3.00	h6	101.6	0/+1.0	0.4	RGMC 0300-1016
3.175	h6	38.1	0/+1.0	0.4	RGMC 03175-0381
3.175	h6	45	0/+1.0	0.4	RGMC 03175-045
3.175	h6	50	0/+1.0	0.4	RGMC 03175-050
4.00	h6	40	0/+1.0	0.4	RGMC 0400-040
4.00	h6	45	0/+1.0	0.4	RGMC 0400-045
4.00	h6	50	0/+1.0	0.4	RGMC 0400-050
4.00	h6	55	0/+1.0	0.4	RGMC 0400-055
4.00	h6	60	0/+1.0	0.4	RGMC 0400-060
4.00	h6	65	0/+1.0	0.4	RGMC 0400-065
4.00	h6	70	0/+1.0	0.4	RGMC 0400-070
4.00	h6	75	0/+1.0	0.4	RGMC 0400-075
4.00	h6	100	0/+1.0	0.4	RGMC 0400-100
4.00	h6	150	0/+1.0	0.4	RGMC 0400-150
5.00	h6	45	0/+1.0	0.5	RGMC 0500-045
5.00	h6	50	0/+1.0	0.5	RGMC 0500-050
5.00	h6	55	0/+1.0	0.5	RGMC 0500-055
5.00	h6	60	0/+1.0	0.5	RGMC 0500-060
5.00	h6	62	0/+1.0	0.5	RGMC 0500-062
5.00	h6	65	0/+1.0	0.5	RGMC 0500-065
5.00	h6	70	0/+1.0	0.5	RGMC 0500-070
5.00	h6	75	0/+1.0	0.5	RGMC 0500-075
5.00	h6	80	0/+1.0	0.5	RGMC 0500-080
5.00	h6	100	0/+1.0	0.5	RGMC 0500-100
5.00	h6	150	0/+1.0	0.5	RGMC 0500-150
6.00	h6	45	0/+1.0	0.5	RGMC 0600-045
6.00	h6	46.2	0/+1.0	0.5	RGMC 0600-0462
6.00	h6	50	0/+1.0	0.5	RGMC 0600-050

Cut to length Rods
Ground, Metric (h5/h6)



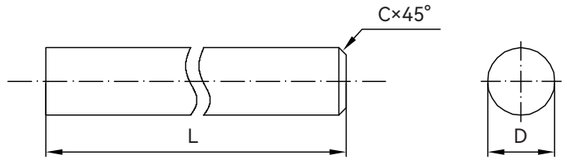
D mm		L mm		C mm	Type
6.00	h6	51	0/+1.0	0.5	RGMC 0600-051
6.00	h6	57	0/+1.0	0.5	RGMC 0600-057
6.00	h6	58.2	0/+1.0	0.5	RGMC 0600-0582
6.00	h6	60	0/+1.0	0.5	RGMC 0600-060
6.00	h6	64	0/+1.0	0.5	RGMC 0600-064
6.00	h6	65	0/+1.0	0.5	RGMC 0600-065
6.00	h6	70	0/+1.0	0.5	RGMC 0600-070
6.00	h6	75	0/+1.0	0.5	RGMC 0600-075
6.00	h6	80	0/+1.0	0.5	RGMC 0600-080
6.00	h6	82	0/+1.0	0.5	RGMC 0600-082
6.00	h6	85	0/+1.0	0.5	RGMC 0600-085
6.00	h6	90	0/+1.0	0.5	RGMC 0600-090
6.00	h6	100	0/+1.0	0.5	RGMC 0600-100
6.00	h6	120	0/+1.0	0.5	RGMC 0600-120
6.00	h6	150	0/+1.0	0.5	RGMC 0600-150
7.00	h6	50	0/+1.0	0.6	RGMC 0700-050
7.00	h6	55	0/+1.0	0.6	RGMC 0700-055
7.00	h6	60	0/+1.0	0.6	RGMC 0700-060
7.00	h6	74	0/+1.0	0.6	RGMC 0700-074
7.00	h6	80	0/+1.0	0.6	RGMC 0700-080
7.00	h6	100	0/+1.0	0.6	RGMC 0700-100
8.00	h6	50	0/+1.0	0.6	RGMC 0800-050
8.00	h6	60	0/+1.0	0.6	RGMC 0800-060
8.00	h6	63	0/+1.0	0.6	RGMC 0800-063
8.00	h6	70	0/+1.0	0.6	RGMC 0800-070
8.00	h6	75	0/+1.0	0.6	RGMC 0800-075
8.00	h6	79	0/+1.0	0.6	RGMC 0800-079
8.00	h6	80	0/+1.0	0.6	RGMC 0800-080
8.00	h6	90	0/+1.0	0.6	RGMC 0800-090
8.00	h6	100	0/+1.0	0.6	RGMC 0800-100
8.00	h6	110	0/+1.0	0.6	RGMC 0800-110
8.00	h6	120	0/+1.0	0.6	RGMC 0800-120
8.00	h6	150	0/+1.0	0.6	RGMC 0800-150
9.00	h6	80	0/+1.0	0.6	RGMC 0900-080
9.00	h6	84	0/+1.0	0.6	RGMC 0900-084
9.00	h6	152.4	0/+1.0	0.6	RGMC 0900-1524
10.00	h6	50	0/+1.0	0.6	RGMC 1000-050

Cut to length Rods
Ground, Metric (h5/h6)



D mm	L mm	C mm	Type
10.00 h6	60 0/+1.0	0.6	RGMC 1000-060
10.00 h6	64 0/+1.0	0.6	RGMC 1000-064
10.00 h6	65 0/+1.0	0.6	RGMC 1000-065
10.00 h6	70 0/+1.0	0.6	RGMC 1000-070
10.00 h6	72 0/+1.0	0.6	RGMC 1000-072
10.00 h6	75 0/+1.0	0.6	RGMC 1000-075
10.00 h6	76 0/+1.0	0.6	RGMC 1000-076
10.00 h6	80 0/+1.0	0.6	RGMC 1000-080
10.00 h6	89 0/+1.0	0.6	RGMC 1000-089
10.00 h6	90 0/+1.0	0.6	RGMC 1000-090
10.00 h6	96.2 0/+1.0	0.6	RGMC 1000-0962
10.00 h6	100 0/+1.0	0.6	RGMC 1000-100
10.00 h6	103 0/+1.0	0.6	RGMC 1000-103
10.00 h6	120 0/+1.0	0.6	RGMC 1000-120
10.00 h6	125 0/+1.0	0.8	RGMC 1000-125
10.00 h6	150 0/+1.0	0.6	RGMC 1000-150
11.00 h6	75 0/+1.0	0.8	RGMC 1100-075
11.00 h6	110 0/+1.0	0.8	RGMC 1100-110
12.00 h6	50 0/+1.0	0.8	RGMC 1200-050
12.00 h6	60 0/+1.0	0.8	RGMC 1200-060
12.00 h6	75 0/+1.0	0.8	RGMC 1200-075
12.00 h6	80 0/+1.0	0.8	RGMC 1200-080
12.00 h6	83 0/+1.0	0.8	RGMC 1200-083
12.00 h6	84.2 0/+1.0	0.8	RGMC 1200-0842
12.00 h6	90 0/+1.0	0.8	RGMC 1200-090
12.00 h6	100 0/+1.0	0.8	RGMC 1200-100
12.00 h6	120 0/+1.0	0.8	RGMC 1200-120
12.00 h6	125 0/+1.0	0.8	RGMC 1200-125
12.00 h6	150 0/+1.0	0.8	RGMC 1200-150
13.00 h6	100 0/+1.0	0.8	RGMC 1300-100
14.00 h6	75 0/+1.0	0.8	RGMC 1400-075
14.00 h6	83 0/+1.0	0.8	RGMC 1400-083
14.00 h6	100 0/+1.0	0.8	RGMC 1400-100
14.00 h6	110 0/+1.0	0.8	RGMC 1400-110
14.00 h6	120 0/+1.0	0.8	RGMC 1400-120
14.00 h6	125 0/+1.0	0.8	RGMC 1400-125
14.00 h6	150 0/+1.0	0.8	RGMC 1400-150

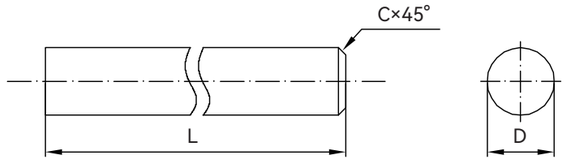
Cut to length Rods
Ground, Metric (h5/h6)



D mm	L mm	C mm	Type
16.00 h6	83 0/+1.0	0.8	RGMC 1600-083
16.00 h6	88 0/+1.0	0.8	RGMC 1600-088
16.00 h6	89 0/+1.0	0.8	RGMC 1600-089
16.00 h6	92 0/+1.0	0.8	RGMC 1600-092
16.00 h6	93.2 0/+1.0	0.8	RGMC 1600-0932
16.00 h6	100 0/+1.0	0.8	RGMC 1600-100
16.00 h6	125 0/+1.0	0.8	RGMC 1600-125
16.00 h6	150 0/+1.0	0.8	RGMC 1600-150
18.00 h6	92 0/+1.0	0.8	RGMC 1800-092
18.00 h6	100 0/+1.0	0.8	RGMC 1800-100
18.00 h6	150 0/+1.0	0.8	RGMC 1800-150
20.00 h6	50 0/+1.0	1	RGMC 2000-050
20.00 h6	75 0/+1.0	1	RGMC 2000-075
20.00 h6	100 0/+1.0	1	RGMC 2000-100
20.00 h6	100 0/+1.0	1	RGMC 2000-100
20.00 h6	104 0/+1.0	1	RGMC 2000-104
20.00 h6	105 0/+1.0	1	RGMC 2000-105
20.00 h6	120 0/+1.0	1	RGMC 2000-120
20.00 h6	142.2 0/+1.0	1	RGMC 2000-1422
20.00 h6	150 0/+1.0	1	RGMC 2000-150
22.00 h6	120 0/+1.0	1	RGMC 2200-120
22.00 h6	150 0/+1.0	1	RGMC 2200-150
25.00 h6	100 0/+1.0	1	RGMC 2500-100
25.00 h6	125 0/+1.0	1	RGMC 2500-125
25.00 h6	150 0/+1.0	1	RGMC 2500-150

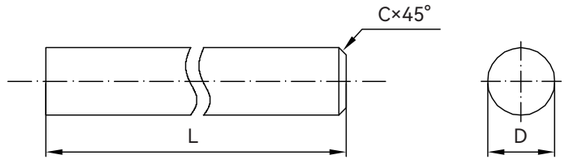
*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Cut to length Rods
Ground, Inch (h5/h6)



D inch		L inch		C inch	Type
1/8	h6	1.5	0/+0.039	0.016	RGIC 1/8-0150
1/8	h6	2	0/+0.039	0.016	RGIC 1/8-0200
1/8	h6	2.25	0/+0.039	0.016	RGIC 1/8-0225
1/8	h6	2.5	0/+0.039	0.016	RGIC 1/8-0250
1/8	h6	3	0/+0.039	0.016	RGIC 1/8-0300
1/8	h6	4	0/+0.039	0.016	RGIC 1/8-0400
3/16	h6	1.5	0/+0.039	0.02	RGIC 3/16-0150
3/16	h6	2	0/+0.039	0.02	RGIC 3/16-0200
3/16	h6	2.25	0/+0.039	0.02	RGIC 3/16-0225
3/16	h6	2.5	0/+0.039	0.02	RGIC 3/16-0250
3/16	h6	2.75	0/+0.039	0.02	RGIC 3/16-0275
3/16	h6	3	0/+0.039	0.02	RGIC 3/16-0300
3/16	h6	4	0/+0.039	0.02	RGIC 3/16-0400
1/4	h6	2	0/+0.039	0.024	RGIC 1/4-0200
1/4	h6	2.5	0/+0.039	0.024	RGIC 1/4-0250
1/4	h6	3	0/+0.039	0.024	RGIC 1/4-0300
1/4	h6	4	0/+0.039	0.024	RGIC 1/4-0400
5/16	h6	2	0/+0.039	0.024	RGIC 5/16-0200
5/16	h6	2.5	0/+0.039	0.024	RGIC 5/16-0250
5/16	h6	3	0/+0.039	0.024	RGIC 5/16-0300
5/16	h6	4	0/+0.039	0.024	RGIC 5/16-0400
3/8	h6	2	0/+0.039	0.024	RGIC 3/8-0200
3/8	h6	2.5	0/+0.039	0.024	RGIC 3/8-0250
3/8	h6	3	0/+0.039	0.024	RGIC 3/8-0300
3/8	h6	3.5	0/+0.039	0.024	RGIC 3/8-0350
3/8	h6	4	0/+0.039	0.024	RGIC 3/8-0400
3/8	h6	6	0/+0.039	0.024	RGIC 3/8-0600
7/16	h6	2.5	0/+0.039	0.031	RGIC 7/16-0250
7/16	h6	4	0/+0.039	0.031	RGIC 7/16-0400
7/16	h6	4.5	0/+0.039	0.031	RGIC 7/16-0450
1/2	h6	2.5	0/+0.039	0.031	RGIC 1/2-0250
1/2	h6	3	0/+0.039	0.031	RGIC 1/2-0300
1/2	h6	3.5	0/+0.039	0.031	RGIC 1/2-0350
1/2	h6	4	0/+0.039	0.031	RGIC 1/2-0400
1/2	h6	4.5	0/+0.039	0.031	RGIC 1/2-0450
1/2	h6	5	0/+0.039	0.031	RGIC 1/2-0500
1/2	h6	6	0/+0.039	0.031	RGIC 1/2-0600

Cut to length Rods
Ground, Inch (h5/h6)

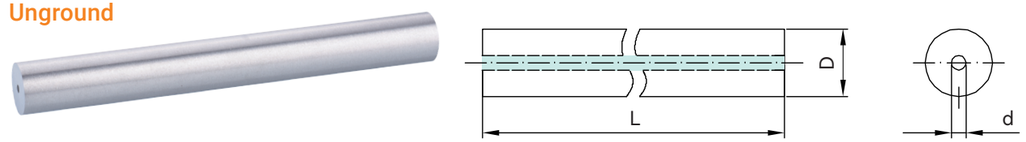


D inch		L inch		C inch	Type
5/8	h6	3.5	0/+0.039	0.031	RGIC 5/8-0350
5/8	h6	4	0/+0.039	0.031	RGIC 5/8-0400
5/8	h6	5	0/+0.039	0.031	RGIC 5/8-0500
5/8	h6	6	0/+0.039	0.031	RGIC 5/8-0600
3/4	h6	3	0/+0.039	0.039	RGIC 3/4-0300
3/4	h6	4	0/+0.039	0.039	RGIC 3/4-0400
3/4	h6	5	0/+0.039	0.039	RGIC 3/4-0500
3/4	h6	6	0/+0.039	0.039	RGIC 3/4-0600
7/8	h6	4	0/+0.039	0.039	RGIC 7/8-0400
1	h6	4	0/+0.039	0.039	RGIC 1-0400
1	h6	5	0/+0.039	0.039	RGIC 1-0500
1	h6	6	0/+0.039	0.039	RGIC 1-0600

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Coolant Rods

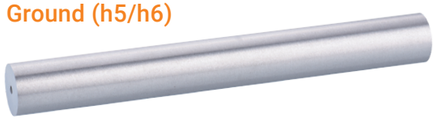
Central Coolant Holes
Unground

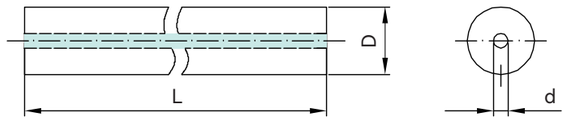


D mm	L mm	d mm	Type
6.00 +0.3/+0.6	330 +1.0/+5.0	1.0 ±0.15	RBMN1S 0600-100-330
6.00 +0.3/+0.6	330 +1.0/+5.0	1.5 ±0.15	RBMN1S 0600-150-330
8.00 +0.3/+0.6	330 +1.0/+5.0	1.0 ±0.15	RBMN1S 0800-100-330
8.00 +0.3/+0.6	330 +1.0/+5.0	1.5 ±0.15	RBMN1S 0800-150-330
10.00 +0.3/+0.6	330 +1.0/+5.0	1.4 ±0.15	RBMN1S 1000-140-330
10.00 +0.3/+0.6	330 +1.0/+5.0	2.0 ±0.2	RBMN1S 1000-200-330
12.00 +0.3/+0.7	330 +1.0/+5.0	1.75 ±0.15	RBMN1S 1200-175-330
12.00 +0.3/+0.7	330 +1.0/+5.0	2.0 ±0.2	RBMN1S 1200-200-330
14.00 +0.3/+0.7	330 +1.0/+5.0	1.75 ±0.15	RBMN1S 1400-175-330
14.00 +0.3/+0.7	330 +1.0/+5.0	2.0 ±0.2	RBMN1S 1400-200-330
16.00 +0.3/+0.8	330 +1.0/+5.0	2.0 ±0.25	RBMN1S 1600-200-330
16.00 +0.3/+0.8	330 +1.0/+5.0	3.0 ±0.25	RBMN1S 1600-300-330
18.00 +0.3/+0.8	330 +1.0/+5.0	3.0 ±0.25	RBMN1S 1800-300-330
20.00 +0.3/+0.8	330 +1.0/+5.0	3.0 ±0.25	RBMN1S 2000-300-330
20.00 +0.3/+0.8	330 +1.0/+5.0	4.0 ±0.25	RBMN1S 2000-400-330
22.00 +0.3/+0.8	330 +1.0/+5.0	3.0 ±0.25	RBMN1S 2200-300-330
22.00 +0.3/+0.8	330 +1.0/+5.0	4.0 ±0.25	RBMN1S 2200-400-330
25.00 +0.3/+0.8	330 +1.0/+5.0	3.0 ±0.25	RBMN1S 2500-300-330
25.00 +0.3/+0.8	330 +1.0/+5.0	4.0 ±0.25	RBMN1S 2500-400-330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Central Coolant Holes
Ground (h5/h6)

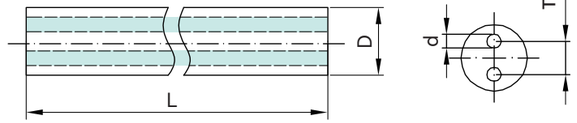




D mm	L mm	d mm	Type
6.00 h6	330 +1.0/+5.0	1.0 ±0.15	RGMN1S 0600-100-330
6.00 h6	330 +1.0/+5.0	1.5 ±0.15	RGMN1S 0600-150-330
8.00 h6	330 +1.0/+5.0	1.0 ±0.15	RGMN1S 0800-100-330
8.00 h6	330 +1.0/+5.0	1.5 ±0.15	RGMN1S 0800-150-330
10.00 h6	330 +1.0/+5.0	1.4 ±0.15	RGMN1S 1000-140-330
10.00 h6	330 +1.0/+5.0	2.0 ±0.2	RGMN1S 1000-200-330
12.00 h6	330 +1.0/+5.0	1.75 ±0.15	RGMN1S 1200-175-330
12.00 h6	330 +1.0/+5.0	2.0 ±0.2	RGMN1S 1200-200-330
14.00 h6	330 +1.0/+5.0	1.75 ±0.15	RGMN1S 1400-175-330
14.00 h6	330 +1.0/+5.0	2.0 ±0.2	RGMN1S 1400-200-330
16.00 h6	330 +1.0/+5.0	2.0 ±0.25	RGMN1S 1600-200-330
16.00 h6	330 +1.0/+5.0	3.0 ±0.25	RGMN1S 1600-300-330
18.00 h6	330 +1.0/+5.0	3.0 ±0.25	RGMN1S 1800-300-330
20.00 h6	330 +1.0/+5.0	3.0 ±0.25	RGMN1S 2000-300-330
20.00 h6	330 +1.0/+5.0	4.0 ±0.25	RGMN1S 2000-400-330
22.00 h6	330 +1.0/+5.0	3.0 ±0.25	RGMN1S 2200-300-330
22.00 h6	330 +1.0/+5.0	4.0 ±0.25	RGMN1S 2200-400-330
25.00 h6	330 +1.0/+5.0	3.0 ±0.25	RGMN1S 2500-300-330
25.00 h6	330 +1.0/+5.0	4.0 ±0.25	RGMN1S 2500-400-330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

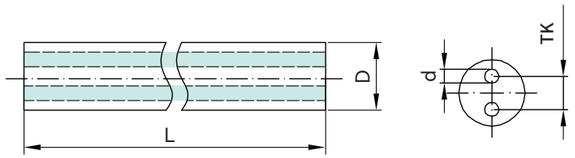
Two Straight Coolant Holes
Unground



D mm	L mm	d mm	TK mm	Type
6.00 +0.3/+0.6	330 +1.0/+5.0	0.8 ±0.1	3.0 0/+0.2	RBMN2S 0600-080-0300-330
8.00 +0.3/+0.6	330 +1.0/+5.0	1.0 ±0.15	4.0 0/+0.3	RBMN2S 0800-100-0400-330
10.00 +0.3/+0.6	330 +1.0/+5.0	1.4 ±0.15	5.0 0/+0.3	RBMN2S 1000-140-0500-330
10.00 +0.3/+0.6	330 +1.0/+5.0	1.0 ±0.15	2.6 0/+0.3	RBMN2S 1000-100-0260-330
12.00 +0.3/+0.7	330 +1.0/+5.0	1.75 ±0.15	3.5 0/+0.3	RBMN2S 1200-175-0350-330
12.00 +0.3/+0.7	330 +1.0/+5.0	1.75 ±0.15	6.0 0/+0.3	RBMN2S 1200-175-0600-330
12.00 +0.3/+0.7	330 +1.0/+5.0	1.2 ±0.15	6.0 0/+0.3	RBMN2S 1200-120-0600-330
14.00 +0.3/+0.7	330 +1.0/+5.0	1.2 ±0.15	7.0 0/+0.3	RBMN2S 1400-120-0700-330
14.00 +0.3/+0.7	330 +1.0/+5.0	1.75 ±0.15	7.0 0/+0.3	RBMN2S 1400-175-0700-330
14.00 +0.3/+0.7	330 +1.0/+5.0	1.75 ±0.15	5.0 0/+0.3	RBMN2S 1400-175-0500-330
16.00 +0.3/+0.7	330 +1.0/+5.0	1.5 ±0.15	8.0 0/+0.3	RBMN2S 1600-150-0800-330
18.00 +0.3/+0.8	330 +1.0/+5.0	2.0 ±0.2	9.0 0/+0.3	RBMN2S 1800-200-0900-330
18.00 +0.3/+0.8	330 +1.0/+5.0	2.0 ±0.2	6.2 0/+0.3	RBMN2S 1800-200-0620-330
20.00 +0.3/+0.8	330 +1.0/+5.0	2.5 ±0.25	10.0 0/+0.4	RBMN2S 2000-250-1000-330
20.00 +0.3/+0.8	330 +1.0/+5.0	2 ±0.2	6.2 0/+0.4	RBMN2S 2000-200-0620-330
22.00 +0.3/+0.8	330 +1.0/+5.0	2.5 ±0.25	11 0/+0.4	RBMN2S 2200-250-1100-330
22.00 +0.3/+0.8	330 +1.0/+5.0	2.0 ±0.2	6.2 0/+0.4	RBMN2S 2200-200-0620-330
25.00 +0.3/+0.8	330 +1.0/+5.0	3.0 ±0.25	12 0/+0.5	RBMN2S 2500-300-1200-330
25.00 +0.3/+0.8	330 +1.0/+5.0	2.0 ±0.3	7.5 0/+0.5	RBMN2S 2500-200-0750-330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

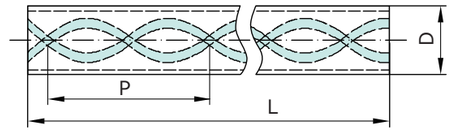
Two Straight Coolant Holes Ground (h5/h6)

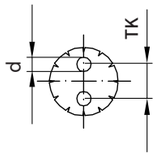


D mm		L mm		d mm		TK mm		Type
6.00	h6	330	0/+2	0.8	±0.1	3.0	0/+0.2	RGMN2S 0600-080-0300-330
8.00	h6	330	0/+2	1.0	±0.15	4.0	0/+0.3	RGMN2S 0800-100-0400-330
10.00	h6	330	0/+2	1.4	±0.15	5.0	0/+0.3	RGMN2S 1000-140-0500-330
10.00	h6	330	0/+2	1.0	±0.15	2.6	0/+0.3	RGMN2S 1000-100-0260-330
12.00	h6	330	0/+2	1.75	±0.15	3.5	0/+0.3	RGMN2S 1200-175-0350-330
12.00	h6	330	0/+2	1.75	±0.15	6.0	0/+0.3	RGMN2S 1200-175-0600-330
12.00	h6	330	0/+2	1.2	±0.15	6.0	0/+0.3	RGMN2S 1200-120-0600-330
14.00	h6	330	0/+2	1.2	±0.15	7.0	0/+0.3	RGMN2S 1400-120-0700-330
14.00	h6	330	0/+2	1.75	±0.15	7.0	0/+0.3	RGMN2S 1400-175-0700-330
14.00	h6	330	0/+2	1.75	±0.15	5.0	0/+0.3	RGMN2S 1400-175-0500-330
16.00	h6	330	0/+2	1.5	±0.15	8.0	0/+0.3	RGMN2S 1600-150-0800-330
18.00	h6	330	0/+2	2.0	±0.2	9.0	0/+0.3	RGMN2S 1800-200-0900-330
18.00	h6	330	0/+2	2.0	±0.2	6.2	0/+0.3	RGMN2S 1800-200-0620-330
20.00	h6	330	0/+2	2.5	±0.25	10.0	0/+0.4	RGMN2S 2000-250-1000-330
20.00	h6	330	0/+2	2	±0.2	6.2	0/+0.4	RGMN2S 2000-200-0620-330
22.00	h6	330	0/+2	2.5	±0.25	11	0/+0.4	RGMN2S 2200-250-1100-330
22.00	h6	330	0/+2	2.0	±0.2	6.2	0/+0.4	RGMN2S 2200-200-0620-330
25.00	h6	330	0/+2	3.0	±0.25	12	0/+0.5	RGMN2S 2500-300-1200-330
25.00	h6	330	0/+2	2.0	±0.3	7.5	0/+0.5	RGMN2S 2500-200-0750-330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Two Coolant Holes 30° Raw

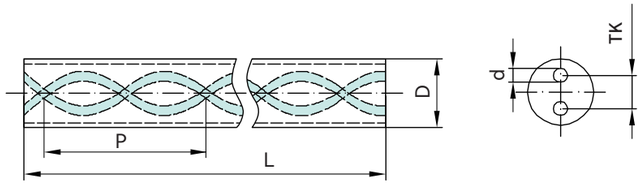




D mm		L mm		d mm		TK mm		P mm		Hole Deviation	Type
3.00	+0.6/+1.0	330	+1.0/+5.0	0.4	±0.15	1.2	±0.15	16.32	-0.51/+0.53	0.15	RBMN2H30 0300-040-0120-330
3.00	+0.6/+1.0	330	+1.0/+5.0	0.4	±0.15	1.6	±0.2	16.32	-0.51/+0.53	0.15	RBMN2H30 0300-040-0160-330
4.00	+0.6/+1.0	330	+1.0/+5.0	0.6	±0.15	2.1	±0.15	21.77	-0.69/+0.72	0.15	RBMN2H30 0400-060-0210-330
4.00	+0.6/+1.0	330	+1.0/+5.0	0.5	±0.15	1.8	±0.15	21.77	-0.69/+0.72	0.15	RBMN2H30 0400-050-0180-330
6.00	+0.6/+1.0	330	+1.0/+5.0	0.7	±0.15	2.4	±0.2	32.65	-1.0/+1.07	0.15	RBMN2H30 0600-070-0240-330
8.00	+0.6/+1.0	330	+1.0/+5.0	1.0	±0.2	3.8	±0.25	43.53	-1.38/+1.42	0.15	RBMN2H30 0800-100-0380-330
10.00	+0.6/+1.0	330	+1.0/+5.0	1.4	±0.2	4.5	±0.35	54.41	-1.73/+1.78	0.2	RBMN2H30 1000-140-0450-330
12.00	+0.7/+1.1	330	+1.0/+5.0	1.4	±0.22	5.85	±0.45	65.3	-2.08/+2.14	0.3	RBMN2H30 1200-140-0585-330
14.00	+0.7/+1.1	330	+1.0/+5.0	1.75	±0.22	6.7	±0.45	76.18	-2.42/+2.50	0.4	RBMN2H30 1400-175-0670-330
16.00	+0.7/+1.1	330	+1.0/+5.0	1.75	±0.22	7.9	±0.45	87.06	-2.77/+2.85	0.4	RBMN2H30 1600-175-0790-330
18.00	+0.7/+1.1	330	+1.0/+5.0	2.0	±0.22	9.15	±0.45	97.95	-3.10/+3.20	0.5	RBMN2H30 1800-200-0915-330
20.00	+0.7/+1.1	330	+1.0/+5.0	2.0	±0.25	9.9	±0.55	108.83	-3.63/+3.74	0.5	RBMN2H30 2000-200-0990-330
22.00	+0.7/+1.1	330	+1.0/+5.0	2.0	±0.25	11.1	±0.55	119.71	-4.32/+4.45	0.5	RBMN2H30 2200-200-1110-330
25.00	+0.7/+1.2	330	+1.0/+5.0	2.0	±0.25	12.8	±0.55	136.03	-4.32/+4.45	0.5	RBMN2H30 2500-200-1280-330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

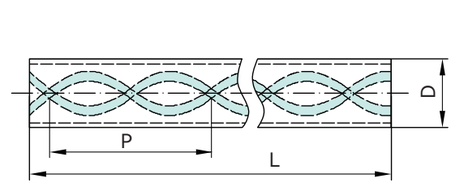
Two Coolant Holes 30°
Ground (h5/h6)

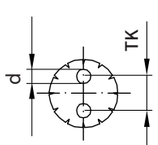


D mm	L mm	d mm	TK mm	P mm	Hole Deviation	Type
3.00 h6	330 0/+2	0.4 ±0.15	1.2 ±0.15	16.32 -0.51/+0.53	0.15	RGMN2H30 0300-040-0120-330
3.00 h6	330 0/+2	0.4 ±0.15	1.6 ±0.2	16.32 -0.51/+0.53	0.15	RGMN2H30 0300-040-0160-330
4.00 h6	330 0/+2	0.6 ±0.15	2.1 ±0.15	21.77 -0.69/+0.72	0.15	RGMN2H30 0400-060-0210-330
4.00 h6	330 0/+2	0.5 ±0.15	1.8 ±0.15	21.77 -0.69/+0.72	0.15	RGMN2H30 0400-050-0180-330
6.00 h6	330 0/+2	0.7 ±0.15	2.4 ±0.2	32.65 -1.0/+1.07	0.15	RGMN2H30 0600-070-0240-330
8.00 h6	330 0/+2	1.0 ±0.2	3.8 ±0.25	43.53 -1.38/+1.42	0.15	RGMN2H30 0800-100-0380-330
10.00 h6	330 0/+2	1.4 ±0.2	4.5 ±0.35	54.41 -1.73/+1.78	0.2	RGMN2H30 1000-140-0450-330
12.00 h6	330 0/+2	1.4 ±0.22	5.85 ±0.45	65.3 -2.08/+2.14	0.3	RGMN2H30 1200-140-0585-330
14.00 h6	330 0/+2	1.75 ±0.22	6.7 ±0.45	76.18 -2.42/+2.50	0.4	RGMN2H30 1400-175-0670-330
16.00 h6	330 0/+2	1.75 ±0.22	7.9 ±0.45	87.06 -2.77/+2.85	0.4	RGMN2H30 1600-175-0790-330
18.00 h6	330 0/+2	2.0 ±0.22	9.15 ±0.45	97.95 -3.10/+3.20	0.5	RGMN2H30 1800-200-0915-330
20.00 h6	330 0/+2	2.0 ±0.25	9.9 ±0.55	108.83 -3.63/+3.74	0.5	RGMN2H30 2000-200-0990-330
22.00 h6	330 0/+2	2.0 ±0.25	11.1 ±0.55	119.71 -4.32/+4.45	0.5	RGMN2H30 2200-200-1110-330
25.00 h6	330 0/+2	2.0 ±0.25	12.8 ±0.55	136.03 -4.32/+4.45	0.5	RGMN2H30 2500-200-1280-330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Two Coolant Holes 40°
Raw

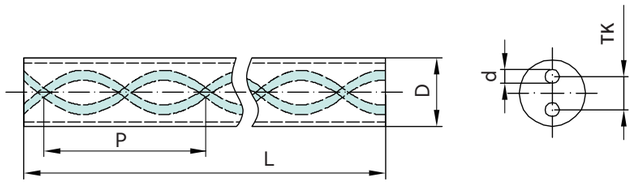




D mm	L mm	d mm	TK mm	P mm	Type
6.00 +0.6/+1.0	330 +1.0/+5.0	0.7 ±0.15	1.9 ±0.20	22.46 -0.63/+0.66	RBMN2H40 0600-070-0190-330
6.00 +0.6/+1.0	330 +1.0/+5.0	0.5 ±0.15	2.0 ±0.20	22.46 -0.63/+0.66	RBMN2H40 0600-050-0200-330
8.00 +0.6/+1.0	330 +1.0/+5.0	0.65 ±0.2	2.4 ±0.35	29.95 -0.83/+0.86	RBMN2H40 0800-065-0240-330
10.00 +0.6/+1.0	330 +1.0/+5.0	0.8 ±0.2	3.1 ±0.45	37.44 -1.06/+1.07	RBMN2H40 1000-080-0310-330
12.00 +0.7/+1.1	330 +1.0/+5.0	0.9 ±0.22	3.8 ±0.45	44.93 -1.27/+1.28	RBMN2H40 1200-090-0380-330
14.00 +0.7/+1.1	330 +1.0/+5.0	1.0 ±0.22	4.3 ±0.45	52.42 -1.47/+1.50	RBMN2H40 1400-100-0430-330
16.00 +0.7/+1.1	330 +1.0/+5.0	1.2 ±0.22	5.1 ±0.45	59.9 -1.68/+1.73	RBMN2H40 1600-120-0510-330
18.00 +0.7/+1.1	330 +1.0/+5.0	1.4 ±0.22	5.9 ±0.45	67.39 -1.89/+1.94	RBMN2H40 1800-140-0590-330
20.00 +0.7/+1.1	330 +1.0/+5.0	1.5 ±0.25	6.6 ±0.55	74.88 -2.10/+2.14	RBMN2H40 2000-150-0660-330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

Two Coolant Holes 40° Ground (h5/h6)



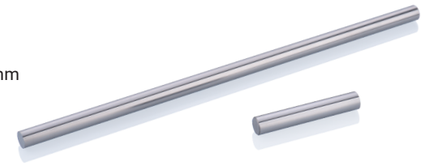
D mm	L mm	d mm	TK mm	P mm	Type
6.00 h6	330 0/+2.0	0.7 ±0.15	1.9 ±0.20	22.46 -0.63/+0.66	RGMN2H40 0600-070-0190-330
6.00 h6	330 0/+2.0	0.5 ±0.15	2.0 ±0.20	22.46 -0.63/+0.66	RGMN2H40 0600-050-0200-330
8.00 h6	330 0/+2.0	0.65 ±0.2	2.4 ±0.35	29.95 -0.83/+0.86	RGMN2H40 0800-065-0240-330
10.00 h6	330 0/+2.0	0.8 ±0.2	3.1 ±0.45	37.44 -1.06/+1.07	RGMN2H40 1000-080-0310-330
12.00 h6	330 0/+2.0	0.9 ±0.22	3.8 ±0.45	44.93 -1.27/+1.28	RGMN2H40 1200-090-0380-330
14.00 h6	330 0/+2.0	1.0 ±0.22	4.3 ±0.45	52.42 -1.47/+1.50	RGMN2H40 1400-100-0430-330
16.00 h6	330 0/+2.0	1.2 ±0.22	5.1 ±0.45	59.9 -1.68/+1.73	RGMN2H40 1600-120-0510-330
18.00 h6	330 0/+2.0	1.4 ±0.22	5.9 ±0.45	67.39 -1.89/+1.94	RGMN2H40 1800-140-0590-330
20.00 h6	330 0/+2.0	1.5 ±0.25	6.6 ±0.55	74.88 -2.10/+2.14	RGMN2H40 2000-150-0660-330

*The product with the name beginning with RB is the blank rod, RG is h6 tolerance, RP is h5 tolerance.

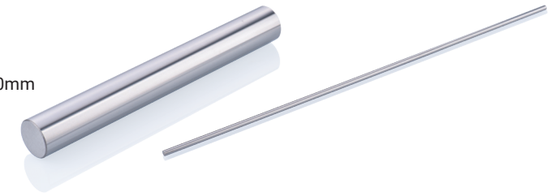
Customized Products

Achteck can provide customized products and services to meet the diversified needs for customers, such as additional carbide grades, other product sizes and structures.

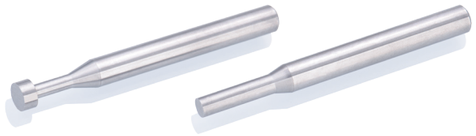
Length from10mm to 800 mm



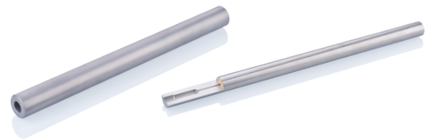
Diameter from 1mm to 50mm



Stepped Rods



Anti-seismic Tool Blanks



Customized Cemented Carbide Bar

Tolerance

Diameter Tolerance (h5/h6)

Metric			Inch		
Diameter	ISO h5	ISO h6	Diameter	ISO h5	ISO h6
0＜ϕ≤3 mm	+0/-0.004 mm	+0/-0.006 mm	0＜ϕ≤0.118 inch	+0/-0.00015 inch	+0/-0.00024 inch
3＜ϕ≤6 mm	+0/-0.005 mm	+0/-0.008 mm	0.118＜ϕ≤0.236 inch	+0/-0.00020 inch	+0/-0.00031 inch
6＜ϕ≤10 mm	+0/-0.006 mm	+0/-0.009 mm	0.236＜ϕ≤0.394 inch	+0/-0.00024 inch	+0/-0.00035 inch
10＜ϕ≤18 mm	+0/-0.008 mm	+0/-0.011 mm	0394＜ϕ≤0.709 inch	+0/-0.00031 inch	+0/-0.00043 inch
18＜ϕ≤30 mm	+0/-0.009 mm	+0/-0.013 mm	0.709＜ϕ≤1.181 inch	+0/-0.00035 inch	+0/-0.00051 inch
30＜ϕ≤50 mm	+0/-0.011 mm	+0/-0.016 mm	1.181＜ϕ≤1.969 inch	+0/-0.00043 inch	+0/-0.00063 inch

Roundness for Ground Rods

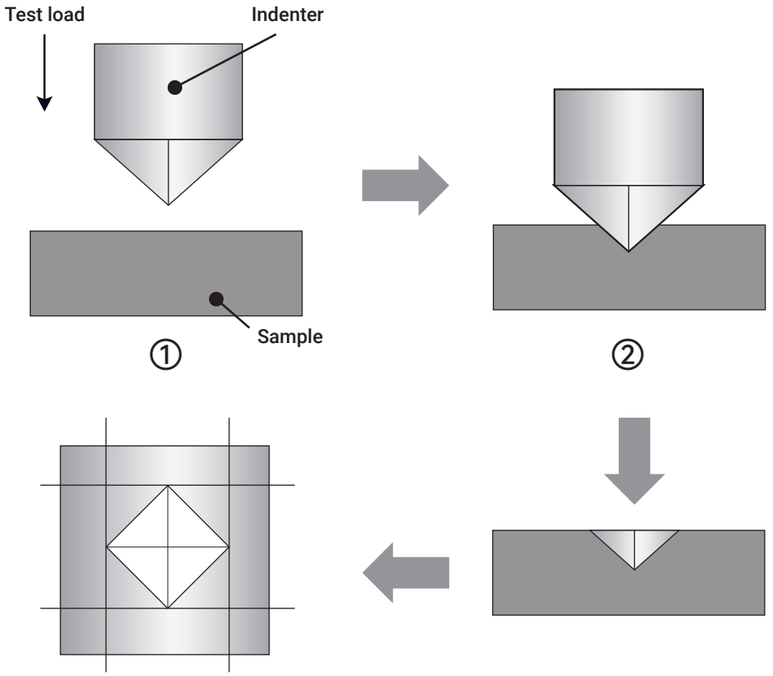
Metric	Inch
≤0.003 mm	≤0.0001 inch

Surface Roughness for Ground Rods

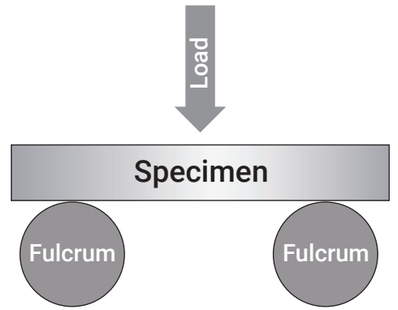
Metric	Inch
0.05-0.13 μm	0.0020-0.0051 inch

Physical Properties of Cemented Carbide

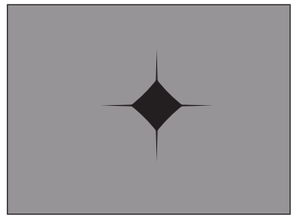
Hardness: The ability of metal materials to resist other harder objects pressed into the surface is called hardness, and the industry mainly uses the Rockwell (HRA) or Vickers hardness (HV30/HV10) measurement method. Usually the lower the cobalt content, the finer the particle size, the higher the hardness.



Flexural strength: It is the ability of the material to resist bending without breaking. In general, the higher the cobalt content in the alloy, the higher the bending strength of the alloy; The finer the particle size, the higher the bending strength.

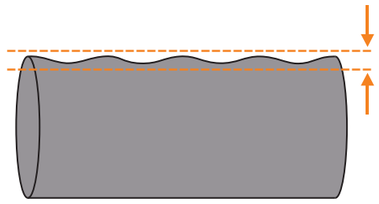


Transverse rupture strength: The ability of a material to prevent crack propagation is a quantitative index to measure the toughness of a material. Generally, the higher the cobalt content, the coarser the particle size, the better the fracture toughness.

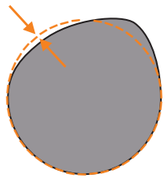


Density: The ratio of an object's mass to its volume, usually determined by the liquid displacement method; The theoretical density of tungsten carbide WC is 15.7g/cm³, and the theoretical density of cobalt Co =8.9g/cm³; YG alloys are mainly composed of these two parts, and the cobalt content can be roughly estimated by density.

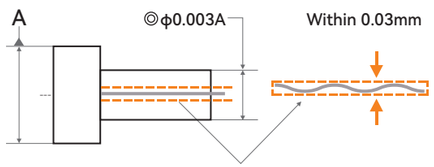
Dimension item Noun



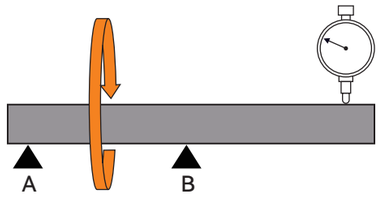
Straightness refers to the condition that the actual shape of the straight line element on the part remains an ideal straight line, which is usually called the degree of straightness. The straightness tolerance is the maximum allowable variation of the actual line from the ideal straight line, which is used to control the shape error of the plane or space straight line.



Roundness is a type of shape tolerance that describes the condition in which the actual shape of a circular feature on a part is equidistant from its center. On the same cross section, when the difference between the maximum radius and the minimum radius is 0, the roundness is 0. Roundness is used to limit the shape accuracy requirements of circular contours on parts.



Concentricity is used to describe the position constraint of a point feature on the diameter direction of a rotating body relative to the datum center feature. Concentricity focuses on the position relationship of the axis or center of a rotating body relative to the datum center feature. This position relationship is defined by a tolerance zone, where the tolerance zone is centered on the datum center axis and a circle or cylinder is drawn with the tolerance value as the diameter. If the center or axis of the measured feature is within this circle or cylinder, the concentricity or coaxiality of the feature is considered to be qualified.



Circular runout refers to the difference between the maximum and minimum readings measured by a fixed indicator in a given direction when the measured element rotates around the reference axis. The circular runout tolerance is the maximum allowable change in the measured element when it rotates around the reference axis at a fixed reference point.

Vickers Hardness VS Rockwell Hardness

HV10	HV30	HRA	HV10	HV30	HRA	HV10	HV30	HRA
790	780	83.3	1260	1250	88.9	1730	1700	92.5
800	790	83.4	1270	1260	89.1	1740	1710	92.6
810	800	83.6	1280	1270	89.2	1750	1720	92.6
820	810	83.7	1290	1280	89.3	1760	1730	92.7
830	820	83.9	1300	1290	89.4	1770	1740	92.7
840	830	84.0	1310	1300	89.5	1780	1750	92.8
850	840	84.2	1320	1310	89.6	1790	1760	92.8
860	850	84.3	1330	1320	89.7	1800	1770	92.9
870	860	84.4	1340	1330	89.8	1810	1780	92.9
880	870	84.5	1350	1340	89.9	1820	1790	93.0
890	880	84.6	1360	1350	90.0	1830	1800	93.0
900	890	84.7	1370	1355	90.0	1840	1810	93.1
910	900	84.8	1380	1360	90.1	1850	1820	93.1
920	910	85.0	1390	1370	90.2	1860	1830	93.2
930	920	85.1	1400	1380	90.3	1870	1840	93.2
940	930	85.2	1410	1390	90.3	1880	1850	93.3
950	940	85.3	1420	1400	90.4	1890	1860	93.3
960	950	85.5	1430	1410	90.5	1900	1870	93.4
970	960	85.6	1440	1420	90.6	1910	1880	93.4
980	970	85.8	1450	1430	90.7	1920	1885	93.4
990	980	85.9	1460	1440	90.8	1930	1890	93.5
1000	990	86.0	1470	1450	90.8	1940	1900	93.5
1010	1000	86.1	1480	1460	90.9	1950	1910	93.6
1020	1010	86.3	1490	1470	91.0	1960	1920	93.6
1030	1020	86.4	1500	1480	91.1	1970	1930	93.7
1040	1030	86.5	1510	1490	91.2	1980	1940	93.7
1050	1040	86.6	1520	1500	91.2	1990	1950	93.8
1060	1050	86.7	1530	1510	91.3	2000	1960	93.8
1070	1060	86.8	1540	1520	91.4	2010	1970	93.8
1080	1070	87.0	1550	1530	91.5	2020	1980	93.9
1090	1080	87.2	1560	1540	91.5	2030	1990	93.9
1100	1090	87.3	1570	1550	91.6	2040	2000	94.0
1110	1100	87.3	1580	1560	91.6	2050	2010	94.0
1120	1110	87.5	1590	1570	91.7	2060	2020	94.0
1130	1120	87.6	1600	1580	91.8	2070	2030	94.1
1140	1130	87.7	1610	1590	91.9	2080	2040	94.1
1150	1140	87.8	1620	1600	91.9	2090	2050	94.2
1160	1150	87.9	1630	1610	92.0	2100	2060	94.2
1170	1160	88.0	1640	1620	92.1	2110	2070	94.2
1180	1170	88.1	1650	1630	92.1	2120	2080	94.3
1190	1180	88.2	1660	1640	92.2	2130	2090	94.3
1200	1190	88.2	1670	1650	92.2	2140	2100	94.3
1210	1200	88.3	1680	1660	92.3	2150	2110	94.4
1220	1210	88.5	1690	1670	92.3	2200	2130	94.8
1230	1220	88.6	1700	1680	92.4	2300	2200	95.2
1240	1230	88.7	1710	1685	92.4	2350	2250	95.4
1250	1240	88.8	1720	1690	92.5			

* Note: Due to the different testing principles of Vickers hardness and Rockwell hardness, the two data will show discrepancy under different experimental environments, and it is for reference only.

Note