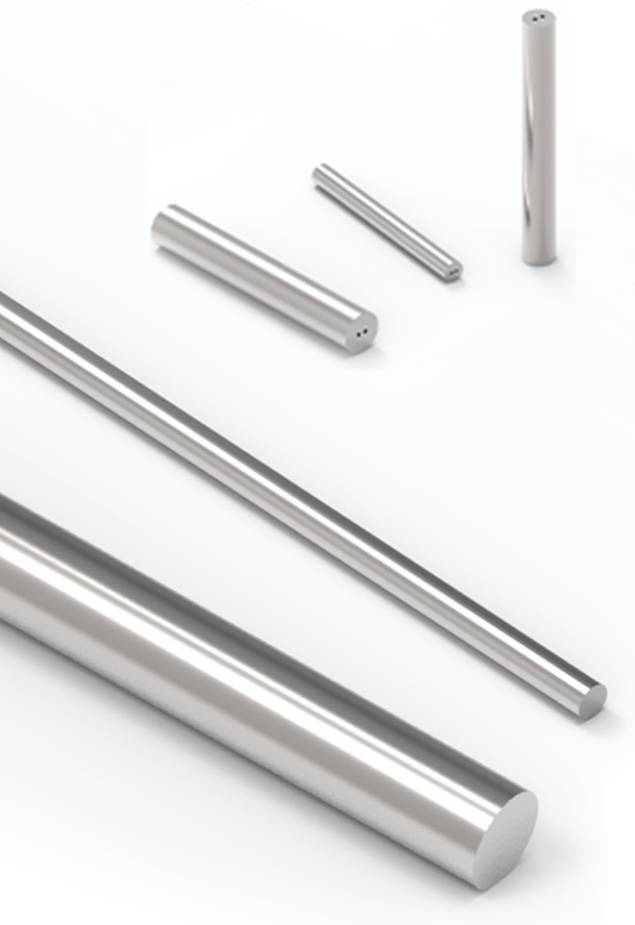


TUNGSTEN CARBIDE RODS



CEMENTED CARBIDE RODS

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Solid Rods

- Solid Long Rods-Metric 03-05

Rods with Coolant Holes

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牌号介绍

GRADE INTRODUCTION

牌号 Grade	晶粒度 Grain size(um)	钴含量 Cobalt content(%)	密度 Density {g/cm ³ }	硬度 Hardness {HRA}	抗弯强度 TRS {N/mm ² }	断裂韧性 KIC {MPa.m ^{1/2} }	性能及用途 FEATURES AND USES
YU20	0.7	10	14.45	91.8	3800	10.5	亚细晶粒，中速加工，通用性能好，用于制作加工钻头，立铣刀，适合加工普通合金钢、铝合金、耐热合金、铸铁等。 Sub-fine grain size, processing by medium speed, good general performance, drill bits and end mills are recommended, suitable for cutting Ordinary alloy steel, aluminum alloy, heat resistant alloy, cast iron, etc.
YR10Z	0.6	10	14.45	92.2	4000	10.7	超细晶粒，耐热性极佳，适合于高速铣削和钻孔，重点应用于整体合金钻头制作。适用于加工合金钢、耐热合金、铸铁、有色金属、不锈钢等材料。 Ultra-fine grain size, excellent heat resistance, suitable for high-speed milling and drilling, especially suit for making overall drill bits. Suitable to process alloy steel, heat-resistant alloy, cast iron, non-ferrous metals, stainless steel and other materials.
YU25	0.4	12	14.12	92.5	4200	10.2	超细晶粒，兼容了良好的耐磨性和韧性，特别适合于精加工以及加工合金钢、铝合金等。适用于做立铣刀和铰刀。 Ultra-fine grain size, with good wear resistant and toughness, especially suitable for finishing and processing alloy steel, aluminum alloy, titanium alloy etc. Suitable for making endmills and reamer.
YU409	0.4	9	14.50	93.2	4000	9.60	超细晶粒，适合于加工淬火硬钢、铝合金、碳纤维增强塑料、高耐磨材料不锈钢、复合材料石墨、PCB、塑胶。 Ultra-fine grain size, Suitable for processing hardened hard steel, aluminum alloy, CFRP, high wear resistant material stainless steel, composite graphite, PCB, plastic.
YU10	0.4	6	14.80	94.0	3800	8.70	超细晶粒，具有较好的耐磨性，推荐制作具有高耐磨性要求的铣刀，雕刻刀，高光刀。适合于加工铝镁合金、复合板材、PCB、塑料、碳纤维增强塑料等。 Ultra-fine grain size, with good wear resistant, higher wear resistant end mills, engraving tool and high mirror polished cutting tool are recommended, suitable for processing Aluminum-magnesium alloy, composite sheet, PCB, plastic, CFRP etc.
YU209	0.2	9	14.45	94.0	4200	9.20	纳米晶粒，具有极高的耐磨性和韧性，可用于淬火钢的精加工、石墨、塑料、碳纤维增强塑料及不锈钢、铝合金的高精度高镜面加工，适用于制作0.3-0.5mm的钻头。 Nano grain size, with high wear resistance and toughness, suitable for finishing of hardened steel, high-precision and high-mirror processing of graphite, plastic, CFRP, stainless steel and aluminum alloy. Suitable for making 0.3-0.5mm drills.
YU30	0.7	15	13.98	89.6	4500	13.8	亚细晶粒，具有较好的耐磨性和极佳的韧性，适用于制作冲压整体模具、抗震刀杆及加工低硬度材料的重切削刀具。 Sub-fine grain size, with good wear resistant and toughness, suitable for making punching of mould, anti-vibration boring bar and machining low-hardness material with deep cutting tools.

注：表中数据为典型值，仅供参考

牌号推荐

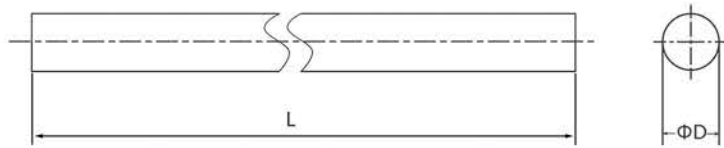
GRADE SELECTION GUIDE

加工材料 Workpiece		刀具种类 Type of cutting tools		YU209	YU10	YU409	YU25	YR10Z	YU20	YU30
P	钢 Steel	立铣刀 Endmill	粗加工 Roughing					★	★	
			精加工 Finishing			★	★	★	●	
		钻头 Drill						★	★	
M	不锈钢 Stainless steel	立铣刀 Endmill	粗加工 Roughing					●	★	
			精加工 Finishing	●			★	●		
		钻头 Drill						★	★	
K	铸铁 Cast iron	立铣刀 Endmill	粗加工 Roughing					★	★	
			精加工 Finishing					●	●	
		钻头 Drill						★	★	
N	有色金属 Nonferrous material	立铣刀 Endmill	粗加工 Roughing					●	★	
			精加工 Finishing	●			★	●	●	
		钻头 Drill						★	★	
S	耐热合金 Heat resistance Material	立铣刀 Endmill	粗加工 Roughing					★	●	
			精加工 Finishing				★	●	●	
		钻头 Drill						★	●	
H	高硬材料 Hard Material	立铣刀 Endmill	粗加工 Roughing			★	●	●	●	
			精加工 Finishing	★	●	●				
		钻头 Drill					●	★	●	
其他 others	印刷电路板PCB			●	★	●				
	碳纤维增强塑料CFRP			●	●	●				
	冲针及抗震刀杆、低硬度材料重切削刀具 Punching anti-vibration boring bar machining low-hardness material with deep cutting tool									

★ 首选 First choice ● 备选 Second choice

实心硬质合金毛坯棒

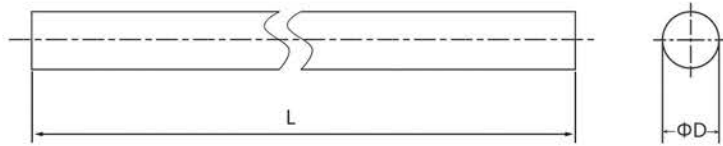
UNGROUND SOLID CARBIDE ROD



型号 TYPE	直径 Diameter(mm)	外径公差Tol.of Diameter(mm)	长度 L(mm)	长度公差Tol.of Length(mm)
Φ0.7x330	0.7	+0.40/+0.15	330/310	-0~+5.0
Φ0.9x330	0.9	+0.40/+0.15	330/310	-0~+5.0
Φ1.0x330	1.0	+0.40/+0.15	330/310	-0~+5.0
Φ1.2x330	1.2	+0.40/+0.20	330/310	-0~+5.0
Φ1.5x330	1.5	+0.40/+0.20	330/310	-0~+5.0
Φ1.6x330	1.6	+0.40/+0.20	330/310	-0~+5.0
Φ1.8x330	1.8	+0.40/+0.20	330/310	-0~+5.0
Φ2.0x330	2.0	+0.40/+0.20	330/310	-0~+5.0
Φ2.3x330	2.3	+0.40/+0.20	330/310	-0~+5.0
Φ2.5x330	2.5	+0.40/+0.20	330/310	-0~+5.0
Φ2.8x330	2.8	+0.40/+0.20	330/310	-0~+5.0
Φ3.0x330	3.0	+0.50/+0.20	330/310	-0~+5.0
Φ3.5x330	3.5	+0.50/+0.20	330/310	-0~+5.0
Φ4.0x330	4.0	+0.50/+0.20	330/310	-0~+5.0
Φ4.5x330	4.5	+0.50/+0.20	330/310	-0~+5.0
Φ5.0x330	5.0	+0.50/+0.20	330/310	-0~+5.0
Φ5.5x330	5.5	+0.50/+0.20	330/310	-0~+5.0
Φ6.0x330	6.0	+0.50/+0.20	330/310	-0~+5.0
Φ6.5x330	6.5	+0.50/+0.20	330/310	-0~+5.0
Φ7.0x330	7.0	+0.60/+0.20	330/310	-0~+5.0
Φ7.5x330	7.5	+0.60/+0.20	330/310	-0~+5.0
Φ8.0x330	8.0	+0.60/+0.20	330/310	-0~+5.0
Φ8.5x330	8.5	+0.60/+0.20	330/310	-0~+5.0
Φ9.0x330	9.0	+0.60/+0.20	330/310	-0~+5.0
Φ9.5x330	9.5	+0.60/+0.20	330/310	-0~+5.0

实心硬质合金毛坯棒

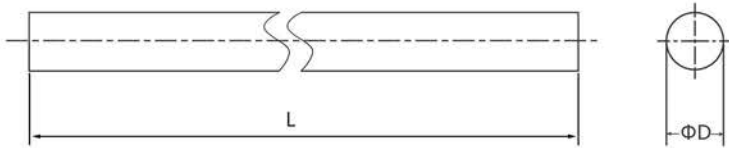
UNGROUND SOLID CARBIDE ROD



型号 TYPE	直径 Diameter(mm)	外径公差Tol.of Diameter(mm)	长度 L(mm)	长度公差Tol.of Length(mm)
Φ10.0x330	10.0	+0.60/+0.20	330/310	-0~+5.0
Φ10.5x330	10.5	+0.60/+0.20	330/310	-0~+5.0
Φ11.0x330	11.0	+0.60/+0.20	330/310	-0~+5.0
Φ11.5x330	11.5	+0.60/+0.20	330/310	-0~+5.0
Φ12.0x330	12.0	+0.60/+0.20	330/310	-0~+5.0
Φ12.5x330	12.5	+0.70/+0.30	330/310	-0~+5.0
Φ13.0x330	13.0	+0.70/+0.30	330/310	-0~+5.0
Φ14.0x330	14.0	+0.70/+0.30	330/310	-0~+5.0
Φ15.0x330	15.0	+0.70/+0.30	330/310	-0~+5.0
Φ16.0x330	16.0	+0.70/+0.30	330/310	-0~+5.0
Φ17.0x330	17.0	+0.80/+0.30	330/310	-0~+5.0
Φ18.0x330	18.0	+0.80/+0.30	330/310	-0~+5.0
Φ19.0X330	19.0	+0.80/+0.30	330/310	-0~+5.0
Φ20.0X330	20.0	+0.80/+0.30	330/310	-0~+5.0
Φ21.0X330	21.0	+0.80/+0.30	330/310	-0~+5.0
Φ22.0X330	22.0	+0.80/+0.30	330/310	-0~+5.0
Φ23.0X330	23.0	+0.80/+0.30	330/310	-0~+5.0
Φ24.0X330	24.0	+0.80/+0.30	330/310	-0~+5.0
Φ25.0X330	25.0	+0.80/+0.30	330/310	-0~+5.0
Φ26.0X330	26.0	+0.80/+0.30	330/310	-0~+5.0
Φ27.0X330	27.0	+0.80/+0.30	330/310	-0~+5.0
Φ28.0X330	28.0	+0.80/+0.30	330/310	-0~+5.0
Φ29.0X330	29.0	+0.80/+0.30	330/310	-0~+5.0
Φ30.0X330	30.0	+0.80/+0.30	330/310	-0~+5.0
Φ31.0X330	31.0	+1.20/+0.60	330/310	-0~+5.0

实心硬质合金毛坯棒

UNGROUND SOLID CARBIDE ROD

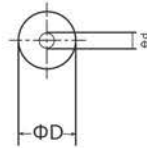
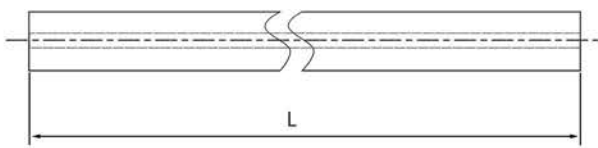


型号 TYPE	直径 Diameter(mm)	外径公差Tol.of Diameter(mm)	长度 L(mm)	长度公差Tol.of Length(mm)
Φ32.0X330	32.0	+1.20/+0.60	330/310	-0~+5.0
Φ33.0X330	33.0	+1.20/+0.60	330/310	-0~+5.0
Φ34.0X330	34.0	+1.20/+0.60	330/310	-0~+5.0
Φ35.0X330	35.0	+1.20/+0.60	330/310	-0~+5.0
Φ36.0X330	36.0	+1.20/+0.60	330/310	-0~+5.0
Φ37.0X330	37.0	+1.20/+0.60	330/310	-0~+5.0
Φ38.0X330	38.0	+1.20/+0.60	330/310	-0~+5.0
Φ39.0X330	39.0	+1.20/+0.60	330/310	-0~+5.0
Φ40.0X330	40.0	+1.20/+0.60	330/310	-0~+5.0
Φ41.0X330	41.0	+1.20/+0.60	330/310	-0~+5.0
Φ42.0X330	42.0	+1.20/+0.60	330/310	-0~+5.0
Φ43.0X330	43.0	+1.20/+0.60	330/310	-0~+5.0
Φ44.0X330	44.0	+1.20/+0.60	330/310	-0~+5.0
Φ45.0X330	45.0	+1.20/+0.60	330/310	-0~+5.0
Φ46.0X330	46.0	+1.20/+0.60	330/310	-0~+5.0
Φ47.0X330	47.0	+1.20/+0.60	330/310	-0~+5.0
Φ48.0X330	48.0	+1.20/+0.60	330/310	-0~+5.0
Φ49.0X330	49.0	+1.20/+0.60	330/310	-0~+5.0
Φ50.0X330	50.0	+1.20/+0.60	330/310	-0~+5.0

★ Φ4-Φ25可定制1000mm长

单直孔棒

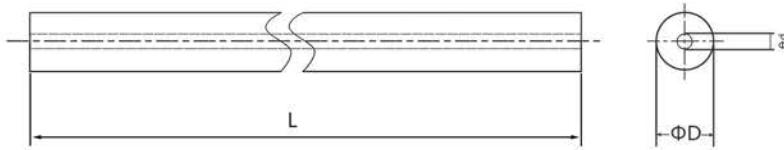
RODS WITH CENTRAL COOLANT HOLE



型号 TYPE	直径 Diameter(mm)	外径公差Tol.of Diameter(mm)	孔径 D(mm)	孔径公差 Dol.of.d(mm)	长度 L(mm)	长度公差Tol.of Length(mm)
Φ2.0XΦ0.2X330	2.0	+0.50/+0.25	0.2	±0.10	330	-0~+5.0
Φ2.0XΦ0.3X330	2.0	+0.50/+0.25	0.3	±0.10	330	-0~+5.0
Φ2.0XΦ0.4X330	2.0	+0.50/+0.25	0.4	±0.10	330	-0~+5.0
Φ2.0XΦ0.5X330	2.0	+0.50/+0.25	0.5	±0.10	330	-0~+5.0
Φ2.0XΦ0.6X330	2.0	+0.50/+0.25	0.6	±0.10	330	-0~+5.0
Φ2.0XΦ0.8X330	2.0	+0.50/+0.25	0.8	±0.10	330	-0~+5.0
Φ2.0XΦ1.0X330	2.0	+0.50/+0.25	1.0	±0.15	330	-0~+5.0
Φ3.0XΦ0.1X330	3.0	+0.50/+0.25	0.1	±0.10	330	-0~+5.0
Φ3.0XΦ0.2X330	3.0	+0.50/+0.25	0.2	±0.10	330	-0~+5.0
Φ3.0XΦ0.3X330	3.0	+0.50/+0.25	0.3	±0.10	330	-0~+5.0
Φ3.0XΦ0.4X330	3.0	+0.50/+0.25	0.4	±0.10	330	-0~+5.0
Φ3.0XΦ0.5X330	3.0	+0.50/+0.25	0.5	±0.10	330	-0~+5.0
Φ3.0XΦ0.6X330	3.0	+0.50/+0.25	0.6	±0.10	330	-0~+5.0
Φ3.0XΦ0.7X330	3.0	+0.50/+0.25	0.7	±0.10	330	-0~+5.0
Φ3.0XΦ0.8X330	3.0	+0.50/+0.25	0.8	±0.10	330	-0~+5.0
Φ3.0XΦ0.9X330	3.0	+0.50/+0.25	0.9	±0.10	330	-0~+5.0
Φ3.0XΦ1.0X330	3.0	+0.50/+0.25	1.0	±0.15	330	-0~+5.0
Φ3.0XΦ1.1X330	3.0	+0.50/+0.25	1.1	±0.15	330	-0~+5.0
Φ3.0XΦ1.2X330	3.0	+0.50/+0.25	1.2	±0.15	330	-0~+5.0
Φ3.0XΦ1.3X330	3.0	+0.50/+0.25	1.3	±0.15	330	-0~+5.0
Φ3.0XΦ1.4X330	3.0	+0.50/+0.25	1.4	±0.15	330	-0~+5.0
Φ3.0XΦ1.5X330	3.0	+0.50/+0.25	1.5	±0.15	330	-0~+5.0
Φ3.0XΦ1.6X330	3.0	+0.50/+0.25	1.6	±0.15	330	-0~+5.0

单直孔棒

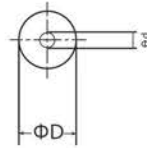
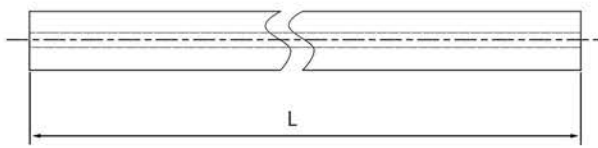
RODS WITH CENTRAL COOLANT HOLE



型号 TYPE	直径 Diameter(mm)	外径公差Tol.of Diameter(mm)	孔径 D(mm)	孔径公差 Dol.of.d(mm)	长度 L(mm)	长度公差Tol.of Length(mm)
Φ3.0XΦ1.7X330	3.0	+0.50/+0.25	1.7	±0.15	330	-0~+5.0
Φ3.0XΦ1.8X330	3.0	+0.50/+0.25	1.8	±0.15	330	-0~+5.0
Φ3.0XΦ2.0X330	3.0	+0.50/+0.25	2.0	±0.20	330	-0~+5.0
Φ4.0XΦ0.1X330	4.0	+0.50/+0.25	0.1	±0.10	330	-0~+5.0
Φ4.0XΦ0.2X330	4.0	+0.50/+0.25	0.2	±0.10	330	-0~+5.0
Φ4.0XΦ0.3X330	4.0	+0.50/+0.25	0.3	±0.10	330	-0~+5.0
Φ4.0XΦ0.4X330	4.0	+0.50/+0.25	0.4	±0.10	330	-0~+5.0
Φ4.0XΦ0.5X330	4.0	+0.50/+0.25	0.5	±0.10	330	-0~+5.0
Φ4.0XΦ0.6X330	4.0	+0.50/+0.25	0.6	±0.10	330	-0~+5.0
Φ4.0XΦ0.8X330	4.0	+0.50/+0.25	0.8	±0.10	330	-0~+5.0
Φ4.0XΦ1.0X330	4.0	+0.50/+0.25	1.0	±0.15	330	-0~+5.0
Φ4.0XΦ1.2X330	4.0	+0.50/+0.25	1.2	±0.15	330	-0~+5.0
Φ4.0XΦ1.3X330	4.0	+0.50/+0.25	1.3	±0.15	330	-0~+5.0
Φ4.0XΦ1.4X330	4.0	+0.50/+0.25	1.4	±0.15	330	-0~+5.0
Φ4.0XΦ1.5X330	4.0	+0.50/+0.25	1.5	±0.15	330	-0~+5.0
Φ4.0XΦ1.6X330	4.0	+0.50/+0.25	1.6	±0.15	330	-0~+5.0
Φ4.0XΦ1.9X330	4.0	+0.50/+0.25	1.9	±0.15	330	-0~+5.0
Φ4.0XΦ2.0X330	4.0	+0.50/+0.25	2.0	±0.20	330	-0~+5.0
Φ4.0XΦ2.5X330	4.0	+0.50/+0.25	2.5	±0.25	330	-0~+5.0
Φ5.0XΦ0.3X330	5.0	+0.50/+0.25	0.3	±0.10	330	-0~+5.0
Φ5.0XΦ0.4X330	5.0	+0.50/+0.25	0.4	±0.10	330	-0~+5.0
Φ5.0XΦ0.5X330	5.0	+0.50/+0.25	0.5	±0.10	330	-0~+5.0
Φ5.0XΦ0.6X330	5.0	+0.50/+0.25	0.6	±0.10	330	-0~+5.0

单直孔棒

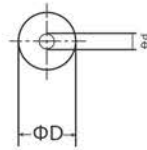
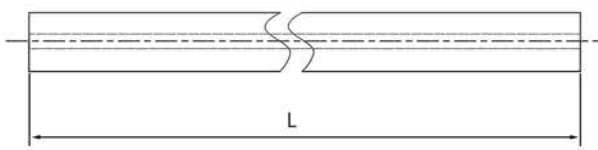
RODS WITH CENTRAL COOLANT HOLE



型号 TYPE	直径 Diameter(mm)	外径公差Tol.of Diameter(mm)	孔径 D(mm)	孔径公差 Dol.of.d(mm)	长度 L(mm)	长度公差Tol.of Length(mm)
Φ5.0XΦ0.8X330	5.0	+0.50/+0.25	0.8	±0.10	330	-0~+5.0
Φ5.0XΦ0.9X330	5.0	+0.50/+0.25	0.9	±0.10	330	-0~+5.0
Φ5.0XΦ1.0X330	5.0	+0.50/+0.25	1.0	±0.15	330	-0~+5.0
Φ5.0XΦ1.1X330	5.0	+0.50/+0.25	1.1	±0.15	330	-0~+5.0
Φ5.0XΦ1.2X330	5.0	+0.50/+0.25	1.2	±0.15	330	-0~+5.0
Φ5.0XΦ1.5X330	5.0	+0.50/+0.25	1.5	±0.15	330	-0~+5.0
Φ5.0XΦ1.6X330	5.0	+0.50/+0.25	1.6	±0.15	330	-0~+5.0
Φ5.0XΦ2.0X330	5.0	+0.50/+0.25	2.0	±0.20	330	-0~+5.0
Φ6.0XΦ0.2X330	6.0	+0.50/+0.25	0.2	±0.10	330	-0~+5.0
Φ6.0XΦ0.3X330	6.0	+0.50/+0.25	0.3	±0.10	330	-0~+5.0
Φ6.0XΦ0.5X330	6.0	+0.50/+0.25	0.5	±0.10	330	-0~+5.0
Φ6.0XΦ0.6X330	6.0	+0.50/+0.25	0.6	±0.10	330	-0~+5.0
Φ6.0XΦ0.8X330	6.0	+0.50/+0.25	0.8	±0.10	330	-0~+5.0
Φ6.0XΦ1.0X330	6.0	+0.50/+0.25	1.0	±0.15	330	-0~+5.0
Φ6.0XΦ1.2X330	6.0	+0.50/+0.25	1.2	±0.15	330	-0~+5.0
Φ6.0XΦ1.5X330	6.0	+0.50/+0.25	1.5	±0.15	330	-0~+5.0
Φ6.0XΦ1.6X330	6.0	+0.50/+0.25	1.6	±0.15	330	-0~+5.0
Φ6.0XΦ1.8X330	6.0	+0.50/+0.25	1.8	±0.15	330	-0~+5.0
Φ6.0XΦ2.0X330	6.0	+0.50/+0.25	2.0	±0.20	330	-0~+5.0
Φ7.0XΦ0.5X330	7.0	+0.60/+0.25	0.5	±0.10	330	-0~+5.0
Φ7.0XΦ0.6X330	7.0	+0.60/+0.25	0.6	±0.10	330	-0~+5.0
Φ7.0XΦ1.0X330	7.0	+0.60/+0.25	1.0	±0.15	330	-0~+5.0
Φ7.0XΦ1.5X330	7.0	+0.60/+0.25	1.5	±0.15	330	-0~+5.0

单直孔棒

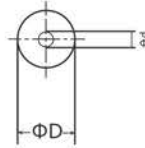
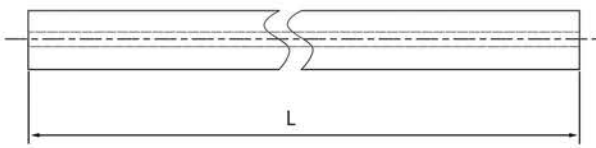
RODS WITH CENTRAL COOLANT HOLE



型号 TYPE	直径 Diameter(mm)	外径公差Tol.of Diameter(mm)	孔径 D(mm)	孔径公差 Dol.of.d(mm)	长度 L(mm)	长度公差Tol.of Length(mm)
Φ7.0XΦ3.0X330	7.0	+0.60/+0.25	3.0	±0.30	330	-0~+5.0
Φ8.0XΦ0.5X330	8.0	+0.60/+0.25	0.5	±0.10	330	-0~+5.0
Φ8.0XΦ0.6X330	8.0	+0.60/+0.25	0.6	±0.10	330	-0~+5.0
Φ8.0XΦ0.8X330	8.0	+0.60/+0.25	0.8	±0.10	330	-0~+5.0
Φ8.0XΦ1.0X330	8.0	+0.60/+0.25	1.0	±0.15	330	-0~+5.0
Φ8.0XΦ1.2X330	8.0	+0.60/+0.25	1.2	±0.15	330	-0~+5.0
Φ8.0XΦ1.5X330	8.0	+0.60/+0.25	1.5	±0.15	330	-0~+5.0
Φ8.0XΦ1.8X330	8.0	+0.60/+0.25	1.8	±0.15	330	-0~+5.0
Φ8.0XΦ2.0X330	8.0	+0.60/+0.25	2.0	±0.20	330	-0~+5.0
Φ8.0XΦ2.5X330	8.0	+0.60/+0.25	2.5	±0.25	330	-0~+5.0
Φ8.0XΦ3.0X330	8.0	+0.60/+0.25	3.0	±0.25	330	-0~+5.0
Φ8.0XΦ3.5X330	8.0	+0.60/+0.25	3.5	±0.25	330	-0~+5.0
Φ8.0XΦ4.0X330	8.0	+0.60/+0.25	4.0	±0.30	330	-0~+5.0
Φ9.0XΦ0.5X330	9.0	+0.60/+0.25	0.5	±0.10	330	-0~+5.0
Φ9.0XΦ1.5X330	9.0	+0.60/+0.25	1.5	±0.15	330	-0~+5.0
Φ9.0XΦ2.0X330	9.0	+0.60/+0.25	2.0	±0.20	330	-0~+5.0
Φ9.0XΦ2.5X330	9.0	+0.60/+0.25	2.5	±0.25	330	-0~+5.0
Φ10.0XΦ0.5X330	10.0	+0.60/+0.25	0.5	±0.10	330	-0~+5.0
Φ10.0XΦ1.0X330	10.0	+0.60/+0.25	1.0	±0.15	330	-0~+5.0
Φ10.0XΦ1.2X330	10.0	+0.60/+0.25	1.2	±0.15	330	-0~+5.0
Φ10.0XΦ1.5X330	10.0	+0.60/+0.25	1.5	±0.15	330	-0~+5.0
Φ10.0XΦ1.8X330	10.0	+0.60/+0.25	1.8	±0.15	330	-0~+5.0
Φ10.0XΦ2.0X330	10.0	+0.60/+0.25	2.0	±0.20	330	-0~+5.0
Φ10.0XΦ2.5X330	10.0	+0.60/+0.25	2.5	±0.25	330	-0~+5.0

单直孔棒

RODS WITH CENTRAL COOLANT HOLE

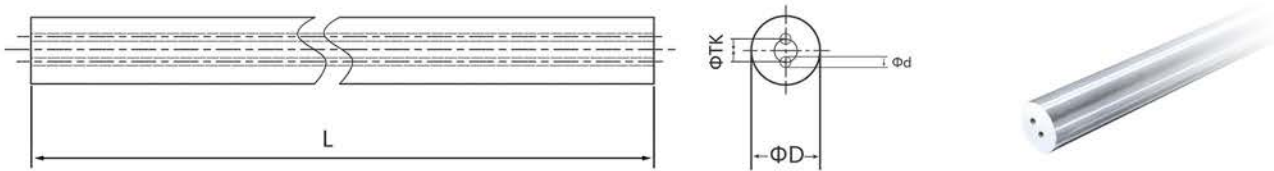


型号 TYPE	直径 Diameter(mm)	外径公差Tol.of Diameter(mm)	孔径 D(mm)	孔径公差 Dol.of.d(mm)	长度 L(mm)	长度公差Tol.of Length(mm)
Φ10.0XΦ3.0X330	10.0	+0.60/+0.25	3.0	±0.30	330	-0~+5.0
Φ10.0XΦ6.0X330	10.0	+0.60/+0.25	6.0	±0.40	330	-0~+5.0
Φ12.0XΦ1.5X330	12.0	+0.60/+0.25	1.5	±0.15	330	-0~+5.0
Φ12.0XΦ2.0X330	12.0	+0.60/+0.25	2.0	±0.20	330	-0~+5.0
Φ12.0XΦ2.5X330	12.0	+0.60/+0.25	2.5	±0.25	330	-0~+5.0
Φ12.0XΦ3.0X330	12.0	+0.60/+0.25	3.0	±0.30	330	-0~+5.0
Φ12.0XΦ6.0X330	12.0	+0.60/+0.25	6.0	±0.40	330	-0~+5.0
Φ12.0XΦ6.5X330	12.0	+0.60/+0.25	6.5	±0.40	330	-0~+5.0
Φ13.0XΦ3.5X330	13.0	+0.70/+0.25	3.5	±0.20	330	-0~+5.0
Φ14.0XΦ3.0X330	14.0	+0.70/+0.25	3.0	±0.30	330	-0~+5.0
Φ15.0XΦ1.3X330	15.0	+0.70/+0.25	1.3	±0.15	330	-0~+5.0
Φ15.0XΦ1.5X330	15.0	+0.70/+0.25	1.5	±0.15	330	-0~+5.0
Φ16.0XΦ1.0X330	16.0	+0.70/+0.25	1.0	±0.15	330	-0~+5.0
Φ16.0XΦ2.0X330	16.0	+0.70/+0.25	2.0	±0.20	330	-0~+5.0
Φ16.0XΦ3.0X330	16.0	+0.70/+0.25	3.0	±0.30	330	-0~+5.0
Φ18.0XΦ3.0X330	18.0	+0.80/+0.30	3.0	±0.30	330	-0~+5.0
Φ20.0XΦ3.0X330	20.0	+0.80/+0.25	3.0	±0.30	330	-0~+5.0
Φ20.0XΦ4.0X330	20.0	+0.80/+0.25	4.0	±0.30	330	-0~+5.0
Φ22.0XΦ3.0X330	22.0	+0.80/+0.25	3.0	±0.30	330	-0~+5.0
Φ24.0XΦ4.0X330	24.0	+0.80/+0.25	4.0	±0.30	330	-0~+5.0
Φ25.0XΦ3.0X330	25.0	+0.80/+0.25	3.0	±0.30	330	-0~+5.0
Φ26.0XΦ4.0X330	26.0	+0.80/+0.30	4.0	±0.30	330	-0~+5.0
Φ28.0XΦ4.0X330	28.0	+0.80/+0.25	4.0	±0.30	330	-0~+5.0
Φ32.0XΦ5.0X330	32.0	+1.20/+0.30	5.0	±0.40	330	-0~+5.0

★ 标准外径：Φ2-Φ32，其他规格可接受定制
★ 标准长度：330mm，其他长度可接受定制

双直孔棒

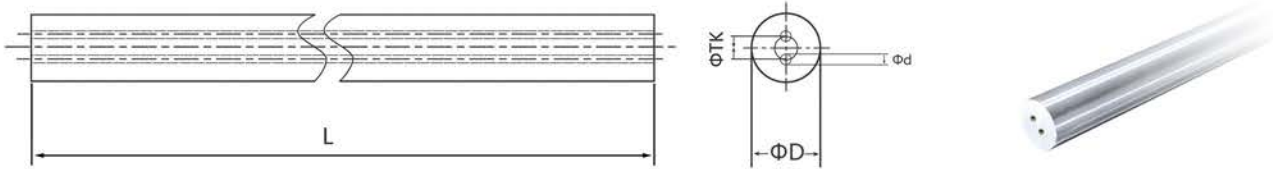
RODS WITH TWO STRAIGHT COOLANT HOLES



型号 TYPE	直径及公差 Diameter and Tol (mm)		外径公差 D and Tol (mm)		孔间距及公差 TK and Tol (mm)		长度及公差 Length and Tol (mm)	
	直径ΦD	公差Tol	直径Φd	公差Tol	孔间距TK	公差Tol	长度L	公差Tol
Φ4.0x2Φ0.8x1.8x330	4.0	+0.5/+0.3	0.8	±0.10	1.8	+0/-0.15	330	-0~+5.00
Φ5.0x2Φ0.8x2.0x330	5.0	+0.5/+0.3	0.8	±0.10	2.0	+0/-0.15	330	-0~+5.00
Φ6.0x2Φ1.0x3.0x330	6.0	+0.5/+0.3	1.0	±0.15	3.0	+0/-0.20	330	-0~+5.00
Φ7.0x2Φ1.0x3.5x330	7.0	+0.6/+0.3	1.0	±0.15	3.5	+0/-0.20	330	-0~+5.00
Φ8.0x2Φ1.0x4.0x330	8.0	+0.6/+0.3	1.0	±0.15	4.0	+0/-0.30	330	-0~+5.00
Φ9.0x2Φ1.4x4.0x330	9.0	+0.6/+0.3	1.4	±0.15	4.0	+0/-0.30	330	-0~+5.00
Φ10.0x2Φ1.4x5.0x330	10.0	+0.6/+0.3	1.4	±0.15	5.0	+0/-0.30	330	-0~+5.00
Φ11.0x2Φ1.4x5.0x330	11.0	+0.6/+0.3	1.4	±0.15	5.0	+0/-0.30	330	-0~+5.00
Φ12.0x2Φ1.75x6.0x330	12.0	+0.6/+0.3	1.75	±0.15	6.0	+0/-0.30	330	-0~+5.00
Φ13.0x2Φ1.75x6.0x330	13.0	+0.7/+0.3	1.75	±0.15	6.0	+0/-0.30	330	-0~+5.00
Φ14.0x2Φ1.75x7.0x330	14.0	+0.7/+0.3	1.75	±0.15	7.0	+0/-0.30	330	-0~+5.00
Φ15.0x2Φ2.0x7.0x330	15.0	+0.7/+0.3	2.0	±0.20	7.0	+0/-0.30	330	-0~+5.00
Φ16.0x2Φ2.0x8.0x330	16.0	+0.7/+0.3	2.0	±0.20	8.0	+0/-0.30	330	-0~+5.00
Φ17.0x2Φ2.0x8.0x330	17.0	+0.8/+0.3	2.0	±0.20	8.0	+0/-0.30	330	-0~+5.00
Φ18.0x2Φ2.0x9.0x330	18.0	+0.8/+0.3	2.0	±0.20	9.0	+0/-0.30	330	-0~+5.00
Φ19.0x2Φ2.0x9.0x330	19.0	+0.8/+0.3	2.0	±0.20	9.0	+0/-0.30	330	-0~+5.00
Φ20.0x2Φ2.5x10x330	20.0	+0.8/+0.3	2.5	±0.25	10	+0/-0.40	330	-0~+5.00
Φ21.0x2Φ2.5x10x330	21.0	+0.8/+0.3	2.5	±0.25	10	+0/-0.40	330	-0~+5.00
Φ22.0x2Φ2.5x11x330	22.0	+0.8/+0.3	2.5	±0.25	11	+0/-0.40	330	-0~+5.00
Φ23.0x2Φ2.5x11x330	23.0	+0.8/+0.3	2.5	±0.25	11	+0/-0.40	330	-0~+5.00
Φ24.0x2Φ3.0x12x330	24.0	+0.8/+0.3	3.0	±0.25	12	+0/-0.50	330	-0~+5.00
Φ25.0x2Φ3.0x12x330	25.0	+0.8/+0.3	3.0	±0.25	12	+0/-0.50	330	-0~+5.00
Φ26.0x2Φ3.0x13x330	26.0	+0.8/+0.3	3.0	±0.25	13	+0/-0.50	330	-0~+5.00

双直孔棒

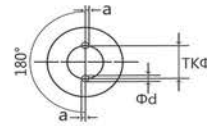
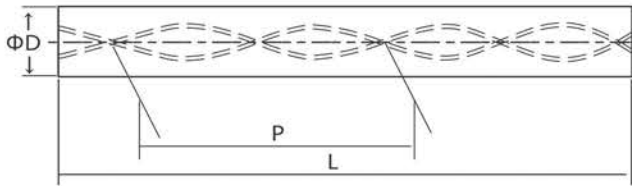
RODS WITH TWO STRAIGHT COOLANT HOLES



型号 TYPE	直径及公差 Diameter and Tol (mm)		外径公差 D and Tol (mm)		孔间距及公差 TK and Tol (mm)		长度及公差 Length and Tol (mm)	
	直径ΦD	公差Tol	直径Φd	公差Tol	孔间距TK	公差Tol	长度L	公差Tol
Φ6.0x2Φ0.8x1.5x330	6.0	+0.5/+0.3	0.8	±0.15	1.5	+0/-0.20	330	-0~+5.00
Φ7.0x2Φ0.8x1.5x330	7.0	+0.6/+0.3	0.8	±0.15	1.5	+0/-0.20	330	-0~+5.00
Φ8.0x2Φ1.0x1.5x330	8.0	+0.6/+0.3	1.0	±0.15	1.5	+0/-0.30	330	-0~+5.00
Φ9.0x2Φ1.0x2.6x330	9.0	+0.6/+0.3	1.0	±0.15	2.6	+0/-0.30	330	-0~+5.00
Φ10.0x2Φ1.0x2.6x330	10.0	+0.6/+0.3	1.0	±0.15	2.6	+0/-0.30	330	-0~+5.00
Φ11.0x2Φ1.2x3.6x330	11.0	+0.6/+0.3	1.2	±0.15	3.6	+0/-0.30	330	-0~+5.00
Φ12.0x2Φ1.2x3.6x330	12.0	+0.6/+0.3	1.2	±0.15	3.6	+0/-0.30	330	-0~+5.00
Φ13.0x2Φ1.2x3.6x330	13.0	+0.7/+0.3	1.2	±0.15	3.6	+0/-0.30	330	-0~+5.00
Φ14.0x2Φ1.5x5.0x330	14.0	+0.7/+0.3	1.5	±0.15	5.0	+0/-0.30	330	-0~+5.00
Φ15.0x2Φ1.5x5.0x330	15.0	+0.7/+0.3	1.5	±0.15	5.0	+0/-0.30	330	-0~+5.00
Φ16.0x2Φ1.5x5.0x330	16.0	+0.7/+0.3	1.5	±0.15	5.0	+0/-0.30	330	-0~+5.00
Φ17.0x2Φ2.0x6.2x330	17.0	+0.8/+0.3	2.0	±0.20	6.2	+0/-0.30	330	-0~+5.00
Φ18.0x2Φ2.0x6.2x330	18.0	+0.8/+0.3	2.0	±0.20	6.2	+0/-0.30	330	-0~+5.00
Φ19.0x2Φ2.0x6.2x330	19.0	+0.8/+0.3	2.0	±0.20	6.2	+0/-0.30	330	-0~+5.00
Φ20.0x2Φ2.0x6.2x330	20.0	+0.8/+0.3	2.0	±0.25	6.2	+0/-0.40	330	-0~+5.00
Φ21.0x2Φ2.0x6.2x330	21.0	+0.8/+0.3	2.0	±0.25	6.2	+0/-0.40	330	-0~+5.00
Φ22.0x2Φ2.0x6.2x330	22.0	+0.8/+0.3	2.0	±0.25	6.2	+0/-0.40	330	-0~+5.00
Φ23.0x2Φ2.0x7.5x330	23.0	+0.8/+0.3	2.0	±0.25	7.5	+0/-0.40	330	-0~+5.00
Φ24.0x2Φ2.0x7.5x330	24.0	+0.8/+0.3	2.0	±0.30	7.5	+0/-0.50	330	-0~+5.00
Φ25.0x2Φ2.0x7.5x330	25.0	+0.8/+0.3	2.0	±0.30	7.5	+0/-0.50	330	-0~+5.00
Φ26.0x2Φ2.0x7.5x330	26.0	+0.8/+0.3	2.0	±0.30	7.5	+0/-0.50	330	-0~+5.00

30°双螺旋孔棒

RODS WITH 2 HELICAL COOLANT HOLES (30°)

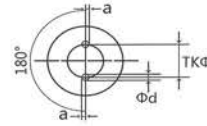
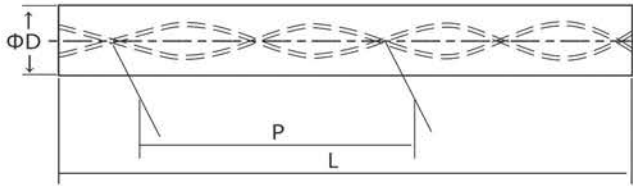


直径ΦD	长度L (公差 Tol0/+5)	内孔径 Φ d	孔间距 Bolt Circle TK	螺距 (±0.5°) Pitch		孔中心偏离 Hole Deviation a
				P	Tol	
3	330	0.4	1.7	16.32	-0.32/+0.33	0.15
4	330	0.6	2.2	21.77	-0.43/+0.45	0.15
5	330	0.7	2.6	27.21	-0.54/+0.56	0.15
6	330	0.7	2.6	32.65	-0.65/+0.67	0.15
7	330	1.0	3.7	38.09	-0.76/+0.78	0.15
8	330	1.0	4.0	43.53	-0.86/+0.89	0.15
9	330	1.4	4.8	48.97	-0.97/+1.00	0.20
10	330	1.4	4.8	54.41	-1.08/+1.11	0.20
11	330	1.4	5.3	59.86	-1.19/+1.22	0.30
12	330	1.4	6.25	65.30	-1.30/+1.34	0.30
13	330	1.75	6.5	70.74	-1.40/+1.45	0.37
14	330	1.75	7.1	76.18	-1.51/+1.56	0.40
14	330	1.90	6.7	76.18	-1.51/+1.56	0.40
15	330	1.75	7.7	81.62	-1.62/+1.67	0.40

毛坯 Unground ΦD(mm)		内孔径 Φd (mm)		孔间距 Bolt Circle TK(mm)	
范围 range	公差 Tol	范围 range	公差 Tol	范围 range	公差 Tol
3 ≤ ΦD ≤ 6	+1.0/+0.6	0.4 ≤ Φd ≤ 0.9	±0.10	TK ≤ 4	+0/-0.4
6 ≤ ΦD ≤ 16	+1.1/+0.7	0.9 ≤ Φd ≤ 1.7	±0.15	4 < TK ≤ 5	+0/-0.6
16 ≤ ΦD ≤ 24	+1.1/+0.7	Φd=1.75	±0.20	5 < TK ≤ 10.1	+0/-0.8
ΦD=25	+1.2/+0.8	Φd=1.75	±0.25	10.1 < TK ≤ 13.3	+0/-1.0

30°双螺旋孔棒

RODS WITH 2 HELICAL COOLANT HOLES (30°)

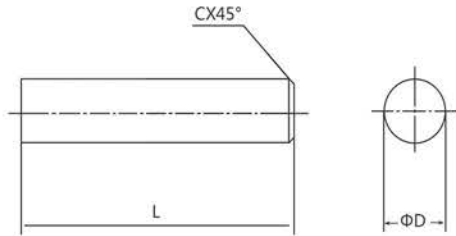


直径ΦD	长度L (公差 Tol 0/+5)	内孔径 Φ d	孔间距 Bolt Circle TK	螺距 (±0.5°) Pitch		孔中心偏离 Hole Deviation a
				P	Tol	
16	330	1.75	8.3	87.06	-1.73/+1.78	0.40
16	330	2.1	8.0	87.07	-1.73/+1.78	0.45
16	330	2.5	8.8	87.06	-1.73/+1.78	0.45
17	330	1.75	8.9	92.50	-1.84/+1.89	0.45
18	330	2.0	9.55	97.95	-1.94/+2.00	0.50
18	330	2.8	9.90	97.95	-1.95/+2.00	0.50
19	330	2.0	10.10	103.39	-2.05/+2.21	0.50
20	330	2.0	10.40	108.83	-2.16/+2.23	0.50
20	330	2.5	10.00	108.83	-2.16/+2.23	0.50
21	330	2.0	11.15	114.27	-2.27/+2.34	0.50
22	330	2.0	11.60	119.71	-2.38/+2.45	0.50
23	330	2.0	12.20	125.15	-2.48/+2.56	0.50
24	330	2.0	12.80	130.59	-2.59/+2.67	0.50
25	330	2.0	13.30	136.03	-2.70/+2.87	0.50

毛坯 Unground ΦD(mm)		内孔径 Φd (mm)		孔间距 Bolt Circle TK(mm)	
范围 range	公差 Tol	范围 range	公差 Tol	范围 range	公差 Tol
3 ≤ ΦD ≤ 6	+1.0/+0.6	0.4 ≤ Φd ≤ 0.9	±0.10	TK ≤ 4	+0/-0.4
6 ≤ ΦD ≤ 16	+1.1/+0.7	0.9 ≤ Φd ≤ 1.7	±0.15	4 < TK ≤ 5	+0/-0.6
16 ≤ ΦD ≤ 24	+1.1/+0.7	Φd=1.75	±0.20	5 < TK ≤ 10.1	+0/-0.8
ΦD=25	+1.2/+0.8	Φd=1.75	±0.25	10.1 < TK ≤ 13.3	+0/-1.0

公制精磨倒角短棒(h5/h6)

GROUND CARBIDE RODS WITH CHAMFER-METRIC

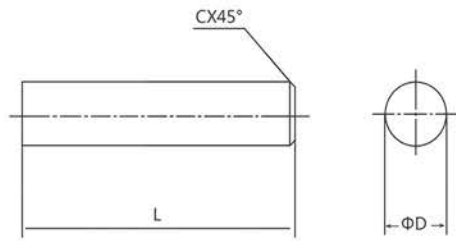


型号TYPE	尺寸Dimension(mm)		
	直径ΦD	长度L	倒角尺寸C
Φ3x50	3	50	0.4
Φ3x100	3	100	0.4
Φ4x50	4	50	0.4
Φ4x75	4	75	0.4
Φ4x100	4	100	0.4
Φ5x50	5	50	0.5
Φ5x100	5	100	0.5
Φ6x50	6	50	0.5
Φ6x75	6	75	0.5
Φ6x100	6	100	0.5
Φ7x100	7	100	0.6
Φ8x60	8	60	0.6
Φ8x75	8	75	0.6
Φ8x100	8	100	0.6
Φ10x75	10	75	0.6
Φ10x100	10	100	0.6
Φ12x75	12	75	0.8
Φ12x100	12	100	0.8
Φ14x75	14	75	0.8
Φ14x100	14	100	0.8
Φ16x100	16	100	0.8
Φ18x100	18	100	0.8
Φ18x150	18	150	0.8
Φ20x100	20	100	1.0
Φ20x150	20	150	1.0

★ 标准外径：Φ3~Φ20，其他直径可定制
★ 标准长度：公制长度，其他长度可定制

DIN精磨倒角短棒(h5/h6)

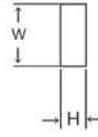
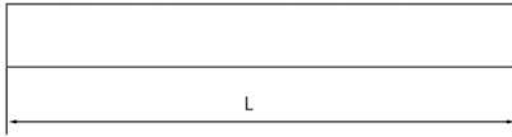
GROUND CARBIDE RODS WITH CHAMFER-DIN



型号TYPE	尺寸Dimension(mm)		
	直径ΦD	长度L	倒角尺寸C
Φ3.0x39	3.0	39	0.4
Φ3.5x51	3.5	51	0.4
Φ4.0x51	4.0	51	0.4
Φ4.5x51	4.5	51	0.4
Φ5.0x51	5.0	51	0.5
Φ5.5x58	5.5	58	0.5
Φ6.0x51	6.0	51	0.5
Φ6.0x55	6.0	55	0.5
Φ6.0x58	6.0	58	0.5
Φ6.5x61	6.5	61	0.6
Φ7.0x61	7.0	61	0.6
Φ8.0x59	8.0	59	0.6
Φ8.0x64	8.0	64	0.6
Φ8.5x68	8.5	68	0.6
Φ9.0x68	9.0	68	0.6
Φ10x67	10	67	0.6
Φ10x73	10	73	0.6
Φ11x84	11	84	0.8
Φ12x74	12	74	0.8
Φ12x84	12	84	0.8
Φ13x84	13	84	0.8
Φ14x76	14	76	0.8
Φ14x84	14	84	0.8
Φ15x93	15	93	0.8
Φ16x83	16	83	0.8
Φ16x93	16	93	0.8
Φ18x85	18	85	0.8
Φ18x93	18	93	0.8
Φ20x93	20	93	1.0
Φ20x105	20	105	1.0

硬质合金长条

TUNGSTEN CARBIDE STRIP



型号TYPE	尺寸Dimension(mm)		
	L	W	H
2.0X330X(2-5)	330	2	2-5
4.0X330X(2-5)	330	4	2-5
6.0X330X(2-5)	330	6	2-5
8.0X330X(2-5)	330	8	2-5
10.0X330X(2-5)	330	10	2-5
12.0X330X(2-5)	330	12	3-5
15.0X330X(2-5)	330	15	3-5
18.0X330X(2-5)	330	18	3-5
20.0X330X(2-5)	330	20	3-5
22.0X330X(2-5)	330	22	3-5
24.0X330X(2-5)	330	24	3-5
26.0X330X(2-5)	330	26	3-5

公差等级

CARBIDE ROD TOLERANCE

精磨外径公差

TOL.OF GROUND RODS'S DIAMETER

直径ΦD	公差Tol			
	h4	h5	h6	h7
0-3.0mm 0-0.11811in	0.003mm 0.00012in	0.004mm 0.00015in	0.006mm 0.00024in	0.010mm 0.00039in
3.001-6.0mm 0.118212-0.23622in	0.004mm 0.00015in	0.005mm 0.00020in	0.008mm 0.00031in	0.012mm 0.00047in
6.001-10.0mm 0.23623-0.3937in	0.004mm 0.00015in	0.006mm 0.00024in	0.009mm 0.00035in	0.015mm 0.00059in
10.001-18.0mm 0.39371-0.70866in	0.005mm 0.00020in	0.008mm 0.00031in	0.011mm 0.00043in	0.018mm 0.00071in
18.001-30.0mm 0.90867-1.1811in	0.006mm 0.00024in	0.009mm 0.00035in	0.013mm 0.00051in	0.021mm 0.00083in
30.001-50.0mm 1.8111-1.9685in	0.007mm 0.00028in	0.011mm 0.00043in	0.016mm 0.00063in	0.025mm 0.00098in

★ "h" 的公差均为 +0.0/-
★ "h" Tolerance is +0.0/-

材质性能名词解释

DEFINITIONS OF PHYSICAL PROPERTIES

◆ 硬度 Hardness

金属材料抵抗其它更硬物体压入表面的能力称为硬度，主要采用洛氏或维氏硬度测量法，两种硬度值转换时需要注意换算。

The Hardness of material is defined as the ability to fight against the hard pressed into surface of the object, mainly using measurements of Rockwell and Vickers. As the principles of the Vickers and Rockwell tests are different, care must be taken when converting from one system to the other.

◆ 矫顽磁力 Coercive Field Strength

矫顽磁力测量的是合金试样完全去磁化所需的反向磁场大小，它可用来评定合金的组织状况，矫顽力随钴含量降低而增大，当钴含量一定时，碳化钨晶粒越细，钴相分散程度越高，矫顽力也越大。

Coercive Field Strength is a measure of the residual magnetism in the hysteresis loop when the Cobalt (Co) binder in grade of cemented carbide is magnetized and then demagnetized. It can be used to assess the status of alloy organization. The finer the grain size of the carbide phase the higher will be the coercive force value.

◆ 磁饱和Magnetic Saturation

磁饱和是最大磁化强度与质量的比值。通过测定硬质合金中具有磁性的钴 (Co) 粘结相的磁饱和，可以评定合金组份。低磁饱和值表示合金含碳量低，或者含有 η 相碳化物，高磁饱和值表示存在“游离碳或石墨”。

Magnetic Saturation: is the ratio of magnetic intensity to quality. Magnetic Saturation measurements on the Cobalt (Co) binder phase in cemented carbide are used by the industry to evaluate its composition. Low Magnetic Saturation values indicate a low carbon level and/or the presence of Eta-Phase Carbides. High Magnetic Saturation values indicate the presence of 'free-carbon' or Graphite.

◆ 密度Density

材料的密度(比重)是材料质量与其体积的比率，使用液体置换法进行测定，硬质合金密度随WC Co相中钴含量增加而减小。

The Density (specific gravity) of a material is the ratio of its mass to its volume. It is measured using a water displacement technique. Cemented carbide density decreases linearly with increasing Cobalt content for the Wc-Co grades.

◆ 抗弯强度Transverse Rupture Strength

抗弯强度是表征材料抵抗弯曲不断裂的能力，即试样跨距中点加载负荷至断裂时，单位面积上所受的力大小。

Transverse Rupture Strength (TRS) is the ability of material to resist bending, measured at the breaking point of a material in a standard three point bend test.

◆ 金相Metallographic Analysis

硬质合金烧结钴相粘结后，过量钴可能在某些结构区域中存在，形成“钴池”；而当粘结相不完全粘结，则将形成一些少量残余孔隙，合金中钴池及孔隙率使用金相显微镜检验得到。

Cobalt Lakes will bond after sintering, excess cobalt may exist in certain area of the structure, forming the cobalt pool; If bonding phase is incompletely adhesive, there will form some residual pores. Cobalt pools and porosity can be detected by using metallographic microscope.



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