

## 圆棒 Carbide Rod



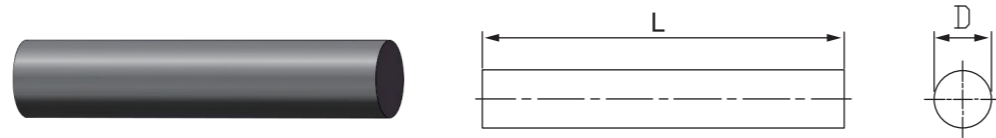
牌号表 Grade table

牌号 Grade	钴含量 Co%	晶粒度 Grain Size ( $\mu\text{m}$ )	比重 Density ( $\text{g}/\text{cm}^3$ )	硬度 Hardness (HRA)	抗弯强度 TRS	推荐用途 Application	金相 Micro structure
TU08	8.0	0.4	14.52	93.5	4800	PCB微钻、微型铣刀 Material for PCB micro-drill, mini milling cutter.	
TU08S	8.0	0.3	14.50	93.6	5000	淬硬精加工 (HRC60-65) 微小径PCB钻头, 316L不锈钢精加工, 高光片, 电机硅钢片 Material for Micro PCB drill, cutting tools finish machining quenched material (HRC60-65), 316L stainless steel, high polishing metal sheet and silicon steel sheet of motor.	
TU40	10.0	0.8	14.40	91.7	4600	通用钻头、立铣刀、冲模材料 Material for common drill bit, end mill and punching die.	
TU40F	10.0	0.6	14.45	92.3	4600	通用钻头、立铣刀、钛合金、不锈钢、灰铸铁加工 Material for cutting tools machining common drill bit, end mill, titanium alloy, stainless steel and gray cast iron.	
TU40S	10.0	0.5	14.50	92.5	4800	不锈钢316L加工、最佳通用圆切片材料 Material for cutting tools machining 316L stainless steel, best material for common circular cutter.	
TU44	12.0	0.4	14.10	92.6	4800	钛合金、耐热合金、不锈钢、淬硬钢 (HRC55以上)、灰铸铁加工 Material for cutting tools machining titanium alloy, heat resistant alloy, stainless steel, quenched steel(HRC55 and above), gray cast iron.	
TU25	12.0	0.6	14.06	92.3	4200	热处理钢材 (HRC45以上), 铸铁, 不锈钢加工 Material for cutting tools machining heat treated steel(Hardness HRC45 and above), cast iron, stainless steel.	
TU45	13.0	0.3	13.95	92.7	4800	钛合金、耐热合金、不锈钢、淬硬钢 (HRC55以上) 加工 Material for cutting tools machining titanium, heat resistant alloy, stainless steel, quenched steel (HRC55 and above).	

牌号表 Grade table

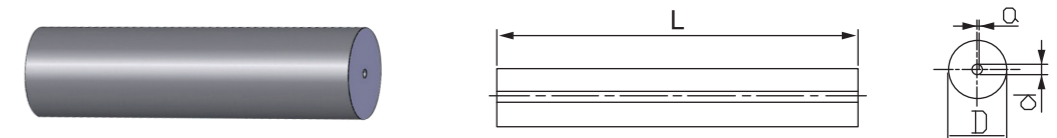
牌号 Grade	钴含量 Co%	晶粒度 Grain Size ( $\mu\text{m}$ )	比重 Density ( $\text{g}/\text{cm}^3$ )	硬度 Hardness (HRA)	抗弯强度 TRS	推荐用途 Application	金相 Micro structure
TU90	9.0	0.2	14.35	94.1	5200	HRC70 左右淬硬材料, 硬木, 高光刀加工, 不锈钢316L精加工。 Material for cutting tools machining quenched materials (HRC65-70), hardwood and high polishing cutters. Finish machining 316L stainless steel.	
TF06	6.0	0.6	14.81	93.1	4000	石墨、碳纤维复合材料、铝镁合金加工 Material for cutting tools machining aluminum magnesium alloy, graphite and composite carbon fiber.	
TU06	6.0	0.4	14.8	94.3	4600	PCB微钻、高硬度加工立铣刀 Material for PCB micro-drill and end mill machining super high hardness material.	

实心圆棒 Solid carbide rod



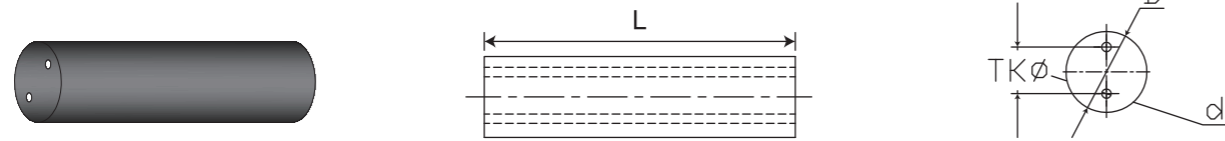
Dia. Ø (mm)	Tolerance. (mm)	Length (mm)	Tolerance Tol. (mm)	Dia.Ø (mm)	Tolerance. (mm)	Length (mm)	Tolerance Tol. (mm)
2	+0.30/+0.15	330	1.5	16.5	+0.8/+0.3	330	1.5
2.5	+0.30/+0.15	330	1.5	17	+0.8/+0.3	330	1.5
3	+0.40/+0.20	330	1.5	17.5	+0.8/+0.3	330	1.5
3.5	+0.40/+0.20	330	1.5	18	+0.8/+0.3	330	1.5
4	+0.40/+0.20	330	1.5	18.5	+0.8/+0.3	330	1.5
4.5	+0.40/+0.20	330	1.5	19	+0.8/+0.3	330	1.5
5	+0.40/+0.20	330	1.5	19.5	+0.8/+0.3	330	1.5
5.5	+0.40/+0.20	330	1.5	20	+0.8/+0.3	330	1.5
6	+0.40/+0.20	330	1.5	20.5	+0.8/+0.3	330	1.5
6.5	+0.50/+0.30	330	1.5	21	+0.8/+0.3	330	1.5
7	+0.50/+0.30	330	1.5	21.5	+0.8/+0.3	330	1.5
7.5	+0.50/+0.30	330	1.5	22	+0.8/+0.3	330	1.5
8	+0.50/+0.30	330	1.5	22.5	+0.8/+0.3	330	1.5
8.5	+0.50/+0.30	330	1.5	23	+0.8/+0.3	330	1.5
9	+0.60/+0.30	330	1.5	23.5	+0.8/+0.3	330	1.5
9.5	+0.60/+0.30	330	1.5	24	+0.8/+0.3	330	1.5
10	+0.60/+0.30	330	1.5	24.5	+0.8/+0.3	330	1.5
10.5	+0.60/+0.30	330	1.5	25	+0.8/+0.3	330	1.5
11	+0.60/+0.30	330	1.5	25.5	+0.8/+0.3	330	1.5
11.5	+0.60/+0.30	330	1.5	26	+0.8/+0.3	330	1.5
12	+0.60/+0.30	330	1.5	26.5	+0.8/+0.3	330	1.5
12.5	+0.60/+0.30	330	1.5	27	+0.8/+0.3	330	1.5
13	+0.60/+0.30	330	1.5	27.5	+0.8/+0.3	330	1.5
13.5	+0.60/+0.30	330	1.5	28	+0.8/+0.3	330	1.5
14	+0.70/+0.30	330	1.5	28.5	+0.8/+0.3	330	1.5
14.5	+0.70/+0.30	330	1.5	29	+0.8/+0.3	330	1.5
15	+0.70/+0.30	330	1.5	29.5	+0.8/+0.3	330	1.5
15.5	+0.70/+0.30	330	1.5	30	+0.8/+0.3	330	1.5
16	+0.70/+0.30	330	1.5	30.5	+0.8/+0.3	330	1.5

单直孔圆棒 Carbide rod with one straight hole



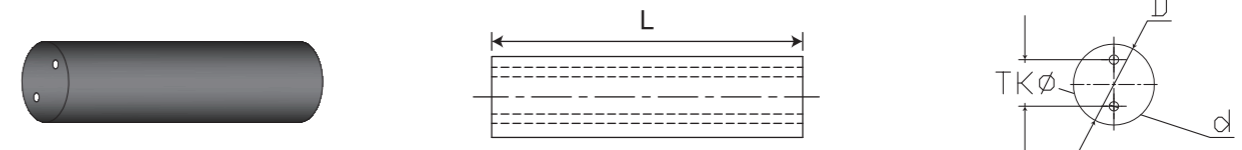
Outer D(mm)	OD Tol.(mm)	Inner Hole d(mm)	ID Tol.(mm)	Hole center diviation value α	Length (mm)	L Tol.(mm)
3.0	+0.40/+0.20	0.5	±0.10	0.10	330	+1.5
4.0	+0.40/+0.20	0.8	±0.10	0.10	330	+1.5
5.0	+0.40/+0.20	0.8	±0.10	0.13	330	+1.5
6.0	+0.40/+0.20	1.0	±0.15	0.15	330	+1.5
7.0	+0.60/+0.30	1.0	±0.15	0.15	330	+1.5
8.0	+0.60/+0.30	1.0	±0.15	0.15	330	+1.5
9.0	+0.60/+0.30	1.4	±0.15	0.20	330	+1.5
10.0	+0.60/+0.30	1.4	±0.15	0.20	330	+1.5
11.0	+0.60/+0.30	1.4	±0.15	0.28	330	+1.5
12.0	+0.60/+0.30	1.8	±0.15	0.30	330	+1.5
13.0	+0.70/+0.30	1.8	±0.15	0.34	330	+1.5
14.0	+0.70/+0.30	1.8	±0.15	0.37	330	+1.5
15.0	+0.70/+0.30	2.0	±0.20	0.40	330	+1.5
16.0	+0.70/+0.30	2.0	±0.20	0.40	330	+1.5
17.0	+0.80/+0.30	2.0	±0.20	0.47	330	+1.5
18.0	+0.80/+0.30	2.0	±0.20	0.50	330	+1.5
19.0	+0.80/+0.30	2.0	±0.20	0.50	330	+1.5
20.0	+0.80/+0.30	2.5	±0.25	0.50	330	+1.5
21.0	+0.80/+0.30	2.5	±0.25	0.50	330	+1.5
22.0	+0.80/+0.30	2.5	±0.25	0.50	330	+1.5
23.0	+0.80/+0.30	3.0	±0.25	0.50	330	+1.5
24.0	+0.80/+0.30	3.0	±0.25	0.50	330	+1.5
25.0	+0.80/+0.30	3.0	±0.25	0.50	330	+1.5
26.0	+0.80/+0.30	3.0	±0.25	0.50	330	+1.5
27.0	+0.80/+0.30	3.0	±0.25	0.50	330	+1.5
28.0	+0.80/+0.30	3.0	±0.25	0.50	330	+1.5
29.0	+0.80/+0.30	3.0	±0.25	0.50	330	+1.5
30.0	+0.80/+0.30	3.0	±0.25	0.50	330	+1.5

双直孔圆棒 Carbide rod with two straight holes



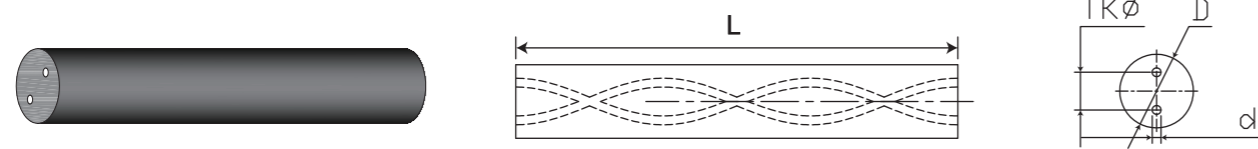
Outside Dia. Ø (mm)	OD Tol. (mm)	Inner d (mm)	ID Tol. (mm)	Distance between holes		Hole center diviation value α	L (mm)	Tol. (mm)
				mm	Tol.(mm)			
4.0	+0.40/+0.20	0.8	±0.10	1.8	+0/-0.15	0.10	330/310	+1.5
5.0	+0.40/+0.20	0.8	±0.10	2.0	+0/-0.15	0.13	330/310	+1.5
6.0	+0.40/+0.20	1.0	±0.15	3.0	+0/-0.20	0.15	330/310	+1.5
7.0	+0.60/+0.30	1.0	±0.15	3.5	+0/-0.20	0.15	330/310	+1.5
8.0	+0.60/+0.30	1.0	±0.15	4.0	+0/-0.30	0.15	330/310	+1.5
9.0	+0.60/+0.30	1.4	±0.15	4.0	+0/-0.30	0.20	330/310	+1.5
10.0	+0.60/+0.30	1.4	±0.15	5.0	+0/-0.30	0.20	330/310	+1.5
11.0	+0.60/+0.30	1.4	±0.15	5.0	+0/-0.30	0.28	330/310	+1.5
12.0	+0.60/+0.30	1.8	±0.15	6.0	+0/-0.30	0.30	330/310	+1.5
13.0	+0.70/+0.30	1.8	±0.15	6.0	+0/-0.30	0.34	330/310	+1.5
14.0	+0.70/+0.30	1.8	±0.15	7.0	+0/-0.30	0.37	330/310	+1.5
15.0	+0.70/+0.30	2.0	±0.20	7.0	+0/-0.30	0.40	330/310	+1.5
16.0	+0.70/+0.30	2.0	±0.20	8.0	+0/-0.30	0.40	330/310	+1.5
17.0	+0.80/+0.30	2.0	±0.20	8.0	+0/-0.30	0.47	330/310	+1.5
18.0	+0.80/+0.30	2.0	±0.20	9.0	+0/-0.30	0.50	330/310	+1.5
19.0	+0.80/+0.30	2.0	±0.20	9.0	+0/-0.30	0.50	330/310	+1.5
20.0	+0.80/+0.30	2.5	±0.25	10.0	+0/-0.40	0.50	330/310	+1.5
21.0	+0.80/+0.30	2.5	±0.25	10.0	+0/-0.40	0.50	330/310	+1.5
22.0	+0.80/+0.30	2.5	±0.25	11.0	+0/-0.40	0.50	330/310	+1.5
23.0	+0.80/+0.30	2.5	±0.25	11.0	+0/-0.40	0.50	330/310	+1.5
24.0	+0.80/+0.30	3.0	±0.25	12.0	+0/-0.50	0.50	330/310	+1.5
25.0	+0.80/+0.30	3.0	±0.25	12.0	+0/-0.50	0.50	330/310	+1.5
26.0	+0.80/+0.30	3.0	±0.25	13.0	+0/-0.50	0.50	330/310	+1.5

双直孔圆棒 Carbide rod with two straight holes



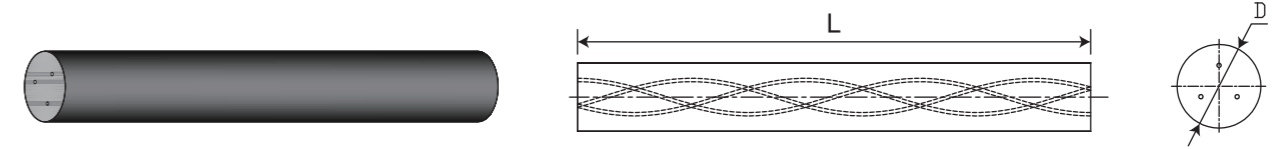
Outside Dia. Ø (mm)	OD Tol. (mm)	Inner d (mm)	ID Tol. (mm)	Distance between holes		Hole center diviation value α	L (mm)	Tol. (mm)
				mm	Tol. (mm)			
6.0	+0.40/+0.20	0.8	±0.10	1.5	+0/-0.20	0.15	330	+1.5
7.0	+0.60/+0.30	0.8	±0.10	1.5	+0/-0.20	0.15	330	+1.5
8.0	+0.60/+0.30	1.0	±0.15	1.5	+0/-0.30	0.15	330	+1.5
9.0	+0.60/+0.30	1.0	±0.15	2.6	+0/-0.30	0.20	330	+1.5
10.0	+0.60/+0.30	1.0	±0.15	2.6	+0/-0.30	0.20	330	+1.5
11.0	+0.60/+0.30	1.2	±0.15	3.6	+0/-0.30	0.28	330	+1.5
12.0	+0.60/+0.30	1.2	±0.15	3.6	+0/-0.30	0.30	330	+1.5
13.0	+0.70/+0.30	1.2	±0.15	3.6	+0/-0.30	0.34	330	+1.5
14.0	+0.70/+0.30	1.5	±0.15	5.0	+0/-0.30	0.37	330	+1.5
15.0	+0.70/+0.30	1.5	±0.15	5.0	+0/-0.30	0.40	330	+1.5
16.0	+0.70/+0.30	1.5	±0.15	5.0	+0/-0.30	0.40	330	+1.5
17.0	+0.80/+0.30	2.0	±0.20	6.2	+0/-0.30	0.47	330	+1.5
18.0	+0.80/+0.30	2.0	±0.20	6.2	+0/-0.30	0.50	330	+1.5
19.0	+0.80/+0.30	2.0	±0.20	6.2	+0/-0.30	0.50	330	+1.5
20.0	+0.80/+0.30	2.0	±0.20	6.2	+0/-0.40	0.50	330	+1.5
21.0	+0.80/+0.30	2.0	±0.20	6.2	+0/-0.40	0.50	330	+1.5
22.0	+0.80/+0.30	2.0	±0.20	6.2	+0/-0.40	0.50	330	+1.5
23.0	+0.80/+0.30	2.0	±0.20	7.5	+0/-0.40	0.50	330	+1.5
24.0	+0.80/+0.30	2.0	±0.20	7.5	+0/-0.50	0.50	330	+1.5
25.0	+0.80/+0.30	2.0	±0.20	7.5	+0/-0.50	0.50	330	+1.5
26.0	+0.80/+0.30	2.0	±0.20	7.5	+0/-0.50	0.50	330	+1.5

**双螺旋孔圆棒 (30°)** Carbide rod with two helix holes (30°)



外径 mm Dia.	外径公差 Tol.	孔距 Hole distance	孔距公差 Tol	内孔 mm Hole dia.	内孔公差 Hole tol	螺距长度 Pitch
3.0	+0.5/+0.9	1.60	+/-0.15	0.40	+/-0.1	16.32
4.0	+0.6/+0.9	2.10	+/-0.15	0.60	+/-0.15	21.77
5.0	+0.6/+0.9	2.40	+/-0.20	0.70	+/-0.15	27.21
6.0	+0.7/+1.3	1.60	+/-0.15	0.40	+/-0.15	32.65
6.0	+0.7/+1.3	1.80	+/-0.15	0.50	+/-0.15	32.65
6.0	+0.7/+1.3	2.10	+/-0.15	0.60	+/-0.15	32.65
6.0	+0.7/+1.3	2.25	+/-0.15	0.70	+/-0.15	32.65
6.0	+0.7/+1.3	2.40	+/-0.15	0.70	+/-0.15	32.65
7.0	+0.7/+1.3	3.50	+/-0.15	1.00	+/-0.15	36.46
7.0	+0.7/+1.3	3.50	+/-0.15	1.00	+/-0.15	38.09
8.0	+0.7/+1.3	2.80	+/-0.15	0.60	+/-0.15	43.53
8.0	+0.7/+1.3	3.80	+/-0.15	1.00	+/-0.15	43.53
9.0	+0.7/+1.3	4.50	+/-0.15	1.40	+/-0.15	47.34
9.0	+0.7/+1.3	4.50	+/-0.15	1.40	+/-0.15	48.97
10.0	+0.7/+1.3	4.50	+/-0.15	1.40	+/-0.15	54.41
11.0	+0.7/+1.3	4.90	+/-0.15	1.40	+/-0.15	58.22
11.0	+0.7/+1.3	4.90	+/-0.15	1.40	+/-0.15	59.86
12.0	+0.6/+1.4	5.85	+/-0.15	1.40	+/-0.15	65.3
13.0	+0.6/+1.4	6.10	+/-0.15	1.4/1.75/2	+/-0.20	69.11
13.0	+0.6/+1.4	6.10	+/-0.15	1.4/1.75/2	+/-0.20	70.74
14.0	+0.7/+1.5	6.70	+/-0.15	1.4/1.75/2	+/-0.20	76.18
15.0	+0.7/+1.5	7.30	+/-0.15	1.4/1.75/2	+/-0.20	79.45
16.0	+0.6/+1.6	7.90	+/-0.15	1.4/1.75/2	+/-0.20	87.06
18.0	+0.7/+1.7	9.15	+/-0.15	1.4/1.75/2/2.5	+/-0.25	97.95
20.0	+0.7/+1.7	9.90	+/-0.15	1.4/1.75/2/2.5	+/-0.25	108.83
25.0	+0.7/+1.7	12.80	+/-0.15	1.4/1.75/2/2.5	+/-0.25	136.03

**三螺旋孔圆棒** Carbide rod with three helix holes (30°)

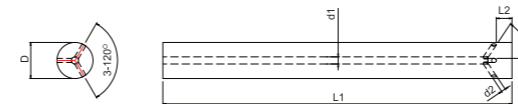
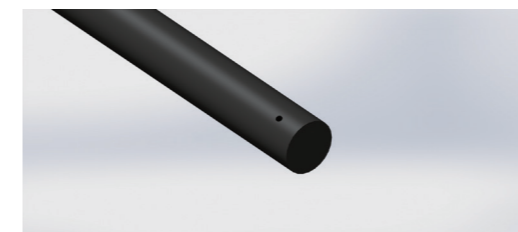


Outer D (mm)	OD Tol. (mm)	TK (mm)	Distance Tol. (mm)	Inner Dia. (mm)	ID (mm)	Pitch (mm)	Pitch Tol. (mm)
6	+1.0/+0.6	2.75	-0.4	0.7	±0.10	32.7	-0.7 0.62
8	+1.4/+0.7	3	-0.4	1	±0.15	43.53	-0.86 0.89
10	+1.4/+0.7	5	-0.6	1.4	±0.15	54.41	-1.08 1.12
12	+1.4/+0.7	6	-0.6	1.4	±0.15	65.3	-1.3 1.33
14	+1.5/+0.7	7	-0.8	1.75	±0.20	76.18	-1.51 1.56
16	+1.6/+0.7	8	-0.8	1.75	±0.20	87.06	-1.73 1.78
18	+1.7/+0.7	9.55	-0.8	2	±0.25	97.95	-1.95 2.00
20	+1.7/+0.7	10	-1	2	±0.25	108.83	-2.16 2.22

Length: 330+0/+1.5mm

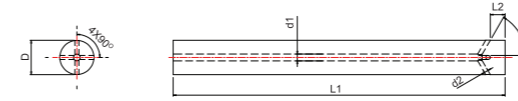
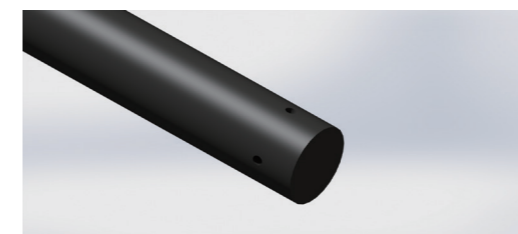
**Y型孔圆棒** Carbide rod with Y shaped holes

**3Y孔**



外径D	长度L1	盲孔d1	斜孔d2	长度L2
6	58	1.2	0.7	3
8	64	1.6	0.9	4
10	74	2.0	1.2	5
12	84	2.2	1.3	6
14	84	2.4	1.4	7
16	93	2.6	1.5	8
18	93	2.8	1.6	9
20	105	3.0	1.7	10

**4Y孔**



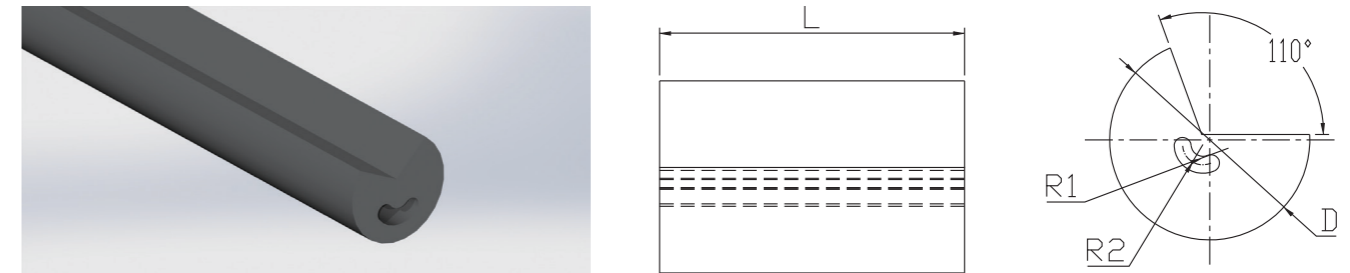
外径D	长度L1	盲孔d1	斜孔d2	长度L2
6	58	1.2	0.6	3
8	64	1.6	0.8	4
10	74	2.0	1.0	5
12	84	2.2	1.1	6
14	84	2.4	1.2	7
16	93	2.6	1.3	8
18	93	2.8	1.4	9
20	105	3.0	1.5	10

圆棒技术资料 Technical informations for rod grinding

精磨公差标准 Grinding tolerance

直径 Diameter	h4	h5	h6	h7
0<Ø≤3mm 0<Ø≤0.1181in	0.003mm 0.00012in	0.004mm 0.00015in	0.006mm 0.00024in	0.010mm 0.00039in
3<Ø≤6mm 0.11812<Ø≤0.23622in	0.004mm 0.00016in	0.005mm 0.00020in	0.008mm 0.00024in	0.012mm 0.00047in
6<Ø≤10.0mm 0.23623<Ø≤0.3937in	0.004mm 0.00016in	0.006mm 0.00024in	0.009mm 0.00035in	0.015mm 0.00059in
10<Ø≤18.0mm 0.39371<Ø≤0.70866in	0.005mm 0.00020in	0.008mm 0.0003in	0.011mm 0.00043in	0.018mm 0.00071in
18<Ø≤30.0mm 0.90867<Ø≤1.18110in	0.006mm 0.00024in	0.009mm 0.00035in	0.013mm 0.0005in	0.021mm 0.00083in
30<Ø≤50mm 1.8111<Ø≤1.96850in	0.007mm 0.00028in	0.011mm 0.00043in	0.016mm 0.00063in	0.025mm 0.00098in

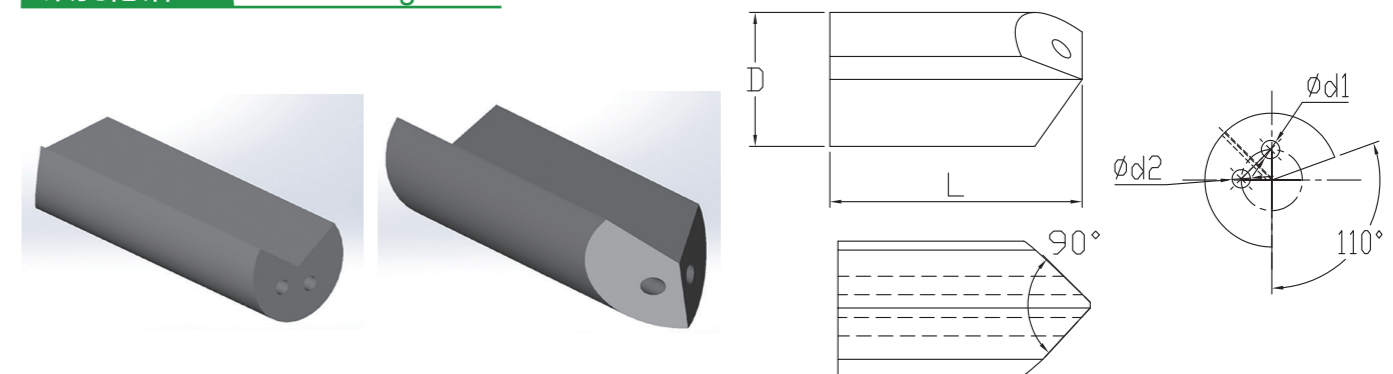
腰型孔枪钻 Waist hole gun drill



标准规格 Standard size

ØD (mm)	公差 Tol.(mm)	R1 (mm)	公差 Tol.(mm)	R2 (mm)	公差 Tol.(mm)	L (mm)	公差 Tol.(mm)
6.9	-0.1/+0.4	1.7	-0.15/+0.15	1.2	-0.20/+0.20	32	0/+3.0
4.5	-0.1/+0.4	1.1	-0.15/+0.15	0.7	-0.20/+0.20	32	0/+3.0
5.5	-0.1/+0.4	1.3	-0.15/+0.15	0.8	-0.20/+0.20	32	0/+3.0
6.3	-0.1/+0.4	1.6	-0.15/+0.15	0.9	-0.20/+0.20	32	0/+3.0
7.6	-0.1/+0.4	1.7	-0.15/+0.15	1.2	-0.20/+0.20	34	0/+3.0
8	-0.1/+0.4	1.8	-0.15/+0.15	1.3	-0.20/+0.20	34	0/+3.0
8.6	-0.1/+0.4	1.9	-0.15/+0.15	1.3	-0.20/+0.20	36	0/+3.0
9	-0.1/+0.4	2	-0.15/+0.15	1.4	-0.20/+0.20	36	0/+3.0
9.7	-0.1/+0.4	2.2	-0.15/+0.15	1.4	-0.20/+0.20	36	0/+3.0

双孔枪钻 Two holes gun drill

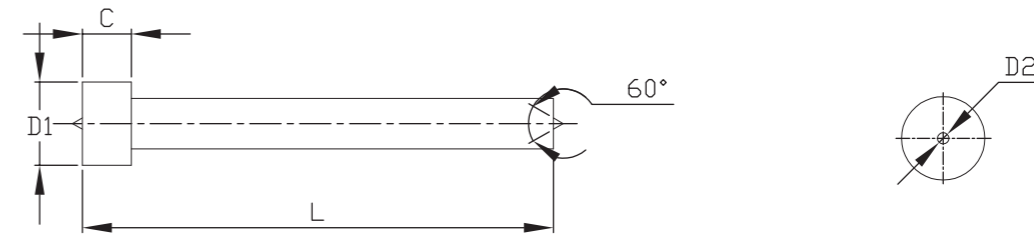


标准规格 Standard size

ØD (mm)	公差 Tol.(mm)	R1 (mm)	公差 Tol.(mm)	R2 (mm)	公差 Tol.(mm)	L (mm)	公差 Tol.(mm)
10.5	-0.10/+0.45	1.9	-0.20/+0.20	2.3	-0.20/+0.20	36	0/+3.0
15.0	-0.10/+0.45	2.4	-0.20/+0.20	3.3	-0.20/+0.20	42	0/+3.0
20.0	-0.10/+0.45	3.5	-0.20/+0.20	4.2	-0.20/+0.20	55	0/+3.0
30.0	-0.10/+0.45	5.0	-0.20/+0.20	6.0	-0.20/+0.20	65	0/+3.0
35.0	-0.10/+0.45	5.5	-0.20/+0.20	6.5	-0.20/+0.20	65	0/+3.0

# T型刀胚 Preforms

## T型刀胚 Preforms



ØD1	L	C	ØD2	ØD1	L	C	ØD2	
17	104	4	10.3	33	158	8	16.3	
	106	6			160	10		
	108	8		37	104	4	16.3	
	110	10			106	6		
21	104	4	10.3		108	8		16.3
	106	6			110	10		
	108	8		154	4			
	110	10		156	6			
27	104	4	12.3	158	8	16.3		
	106	6		160	10			
	108	8		41.3	104		4	16.3
	110	10			106		6	
33	104	4	16.3		108	8	16.3	
	106	6			110	10		
	108	8		154	4			
	110	10		156	6			
	154	4		158	8			
	156	6		160	10			

尺寸范围 Size range:  
 外径 Dia:15-42mm 长度 Length: 100-160mm  
 其他定制尺寸 Other customized size

公差范围 Tolerance:  
 D+/-0.2mm d+/-0.3mm  
 Length: +1.0/+2.0mm C+0.2/+0.4mm