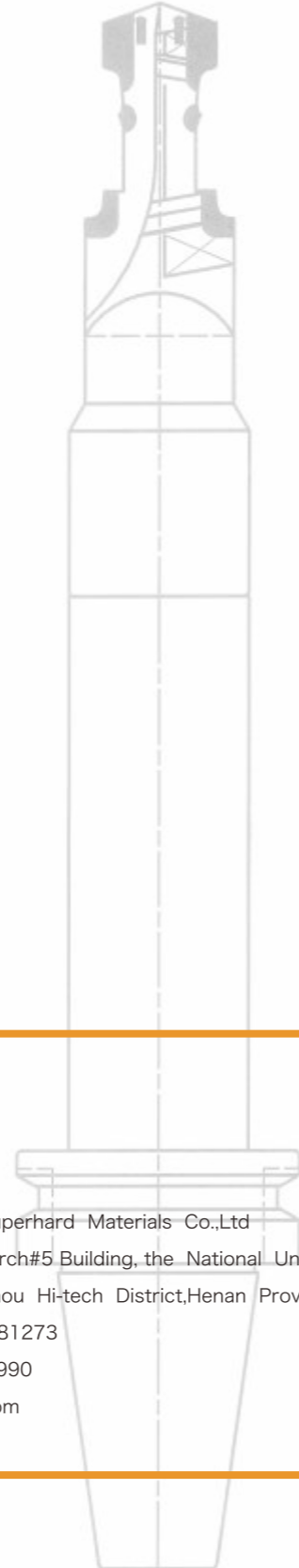


让世界不再有难加工材料



金刚石刀具样册

PCD TOOLS

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让世界不再有难加工材料
Let the world no longer have hard-to-machine materials



企业简介

华菱超硬，作为我国超硬刀具国产化的先驱，以国家超硬材料重点实验室和河南科技大学为技术依托，自备超硬刀具研发中心，专注于脆硬材料和难切削材料加工用立方氮化硼刀具和高品级金刚石的研究方向，在以车代磨、精密加工、高速加工，难加工材料切削等细分领域独具优势。同时，依据河南超硬材料研究所的先天资源，在3C行业、航空航天、核能军工领域不断推陈出新CBN/PCD刀具和其他新材料工具，用户覆盖了中国大陆、中国台湾、德国、意大利、美国、韩国、日本等多个国家和地区。

Enterprise Introduction

Halnn Superhard, as the pioneer of superhard cutting tools in China, make national Key Laboratory of Superhard Materials and Henan University of Science and technology as technical support, have our own research center, focus on CBN cutting tools and high grade diamond tools for machining brittle and hard materials, have special advantages of turning instead of grinding, high-precision machining, high-speed machining, heavy-duty machining and other high-hardness fields. We have launched a series of new cbn/pcd cutting tools and other material tools in Automobile, 3C, aerospace and Nuclear energy military field, depending on the research center of Henan Superhard Materials Institute. Our tools have earned high reputation in many industries in South America, German, Italy, Turkey, Southeast Asia and etc.

华菱超硬特色优势 Advantages of Halnn Tools

- 复合材料/难加工材料领域行业领先。
Be in the lead to process composite/hard processing materials using PCD tools.
- 河南省精密电化学领域重点产学研单位。
The key research and development Enterprise in precision electro-chemical field, Henan Province, China.
- 光学/精密加工领域国家重大专项定点单位。
The key industry, studying and research institute centre in optical/ultra-precision processing field in Henan Province, China.
- 铣、钻、铰、切槽类PCD/PCBN刀具可快速交货。
Fast delivery for PCD/PCBN Mill/ drill / Reamer/ Grooving Tools.




PCD刀片
PCD Inserts




单晶金刚石刀具
Single Crystal Diamond Tool




PCD铣刀
PCD End Mill




单点金刚石车床专
用车刀
Single Crystal Diamond
Special Turning tools




PCD钻头
PCD Drill Bit




金刚石铰刀
Diamond Reamers




PCD雕刻刀
PCD Engraving Tools




其他非标刀具定制
Other Non-standard
Customized Tools



形状代号 Shape code	刀片 Inserts	刀片形状 Shape	角度 Angle
S		正方形 square	90°
T		正三角形 regular triangle	60°
C		菱形 rhombus (宝石形)	80°
D			55°
V			35°
W		凸三角形 chimb triangle	80°
R		圆形 round	-

代号 Code	刀片高度m 公差 (mm)	内接圆φ I.C 公差 (mm)	厚度S 公差 (mm)	代号 Code	刀片高度m 公差 (mm)	内接圆φ I.C 公差 (mm)	厚度S 公差 (mm)
A	+0.005	±0.025	±0.025	J	±0.005	±0.05-±0.13	±0.025
F	+0.005	±0.013	±0.025	K	±0.013	±0.05-±0.13	±0.025
C	±0.013	±0.025	±0.025	L	±0.025	±0.05-±0.13	±0.025
H	±0.013	±0.013	±0.013	M	±0.08-±0.2	±0.05-±0.15	±0.13
E	±0.025	±0.025	±0.025	N	±0.08-±0.18	±0.05-±0.13	±0.025
G	±0.025	±0.025	±0.13	U	±0.08-±0.18	±0.05-±0.13	±0.13

*厚度指刀片底面与切削刃最高部分之间的高度
*Thickness is height between the insert floor and the highest of cutting edge.

代号 Code	刀片厚度 (mm) Thickness	代号 Code	刀片厚度 (mm) Thickness
01	1.59	06	6.35
T1	1.98	07	7.94
02	2.38	08	8.0
T2	2.58	09	9.52
03	3.18	10	10.0
T3	3.97	11	11.11
04	4.76	12	12.0
05	5.56	12	12.7

代号 Code	角度 Angle
无 None	标准型平角 Standard Flat Angle (0°)
-3°	3°
-5°	5°
-7°	7°
-10°	10°

C C G W 09

T3 04 -7° HS CB

代号 Code	刀片法后角 clearance angle
N	
A	
B	
C	
P	
D	
E	
F	
G	
O	其他 other

代号 Code	有无孔及孔型 With or without hole	示意图 Sketch
N	无 without	
A	圆形直孔 round straight hole	
W	单面有40° -60° 沉孔 40° -60° counter bore on single side	
T		
X	其他形式, 需附图或加以说明 Other type, need drawing or specification details	

内接圆 (mm) Inscribed circle	切削刃长度 Cutting edge length					
	C	D	S	T	V	W
3.97				06		
5.0						
5.56				09		
6.0						
6.35	06	07		11	11	
8.0						
9.525	09	11	09	16	16	06
10.0						
12.0						
12.7	12	15	12	22	22	08
15.875	16		15	27		
16.0		19				
19.05	19		19	33		
20.0						
25	25	25				
25.4			25			
31.75						
32						

代号 code	刀尖圆弧半径 (mm) Corner radius Arc
00	无圆角或圆形刀片 Sharp or round insert
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
32	3.2
X	其他 other


代号 code	刀片结构 Insert Structure
无 None	标准复合片 Standard
HS	整边型 With Full Side
HF	全贴面 With Full Face

代号 code	刃口形式 Edge Type
无 None	标准型 Standard
WG	修光型 With Wiper
CB	断屑槽型 With Chipbreaker


工件材料		推荐材质				切削参数		
						切削速度 Vc (m/min)	进给量 Fr (mm/r)	切削深度 ap (mm)
铝合金	4-8%Si	CDW010	CDW302	CDW005	CDW850 (CDW20-1)	100-5000	0.03-0.5	0.1-3.0
	9-13%Si	CDW010	CDW302		CDW850 (CDW20-1)	100-3000	0.03-0.5	0.1-3.0
	> 13%Si	CDW010	CDW302	CDW025	CDW850 (CDW20-1)	100-2500	0.03-0.4	0.1-2.5
铜合金	铜、锌、黄铜	CDW010	CDW302	CDW025	CDW850 (CDW20-1)	100-1000	0.03-0.3	0.1-3.0
钛合金		CDW850 (CDW20-1)	CDW005			100-200	0.05-0.2	0.1-2.0
碳化钨硬质合金	Co < 16%	CDW302	CDW025	CDW010		15-40	0.1-0.25	0.1-1.0
	Co > 16%	CDW302	CDW025	CDW010		10-30	0.03-0.1	0.05-0.3
强化塑料		CDW010	CDW302	CDW025	CDW002	100-1000	0.05-0.3	0.1-2.0
木材		CDW010	CDW302	CDW005	CDW002	100-4000	0.1-0.4	0.1-3.0
石墨		CDW302	CDW025	CDW010		100-600	0.1-0.5	0.05-2.0
金属基复合材料	A1/10-20%Si	CDW302	CDW025	CDW010		300-600	0.1-0.4	0.2-1.5
复合材料	碳纤维	CDW302	CDW025	CDW010		200-2000	0.05-0.3	0.1-3.0

PCD Cutting Parameters for Reference


Material of workpiece		Recommended PCD Grade				Cutting Parameter		
						Vc (m/min)	Fr (mm/r)	ap (mm)
Aluminum alloy	4-8%Si	CDW010	CDW302	CDW005	CDW850 (CDW20-1)	100-5000	0.03-0.5	0.1-3.0
	9-13%Si	CDW010	CDW302		CDW850 (CDW20-1)	100-3000	0.03-0.5	0.1-3.0
	> 13%Si	CDW010	CDW302	CDW025	CDW850 (CDW20-1)	100-2500	0.03-0.4	0.1-2.5
Copper alloy	Copper, zinc, brass	CDW010	CDW302	CDW025	CDW850 (CDW20-1)	100-1000	0.03-0.3	0.1-3.0
Titanium alloy		CDW850 (CDW20-1)	CDW005			100-200	0.05-0.2	0.1-2.0
Tungsten Carbide	Co < 16%	CDW302	CDW025	CDW010		15-40	0.1-0.25	0.1-1.0
	Co > 16%	CDW302	CDW025	CDW010		10-30	0.03-0.1	0.05-0.3
Reinforced plastic					100-1000	0.05-0.3	0.1-2.0	0.1-2.0
Wood		CDW010	CDW302	CDW005	CDW002	100-4000	0.1-0.4	0.1-3.0
Graphite		CDW302	CDW025	CDW010		100-600	0.1-0.5	0.05-2.0
Metal matrix composites	A1/10-20%Si	CDW302	CDW025	CDW010		300-600	0.1-0.4	0.2-1.5
Composite	Carbon Finber	CDW302	CDW025	CDW010		200-2000	0.05-0.3	0.1-3.0



型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
CNMX120402	12.7	4.76	5.16	0.2	3° - 10°	—	⊙	—	●	⊙	⊙
CNMX120404	12.7	4.76	5.16	0.4		—	⊙	—	●	⊙	⊙
CNMX120408	12.7	4.76	5.16	0.8		—	⊙	—	●	⊙	⊙
CNMX120412	12.7	4.76	5.16	1.2		—	⊙	—	●	⊙	⊙




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
CCGW060201	6.35	2.38	2.8	0.1	0°	—	⊙	—	●	⊙	⊙
CCGW060202	6.35	2.38	2.8	0.2		—	⊙	—	●	⊙	⊙
CCGW060204	6.35	2.38	2.8	0.4		—	⊙	—	●	⊙	⊙
CCGW09T302	9.525	3.97	4.4	0.2		—	⊙	—	●	⊙	⊙
* CCGW09T304	9.525	3.97	4.4	0.4		—	⊙	—	●	⊙	⊙
* CCGW09T308	9.525	3.97	4.4	0.8		—	⊙	—	●	⊙	⊙




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
CCGW060201HS	6.35	2.38	2.8	0.1	0°	—	⊙	—	●	⊙	⊙
CCGW060202HS	6.35	2.38	2.8	0.2		—	⊙	—	●	⊙	⊙
CCGW060204HS	6.35	2.38	2.8	0.4		—	⊙	—	●	⊙	⊙
CCGW09T302HS	9.525	3.97	4.4	0.2		—	⊙	—	●	⊙	⊙
CCGW09T304HS	9.525	3.97	4.4	0.4		—	⊙	—	●	⊙	⊙
CCGW09T308HS	9.525	3.97	4.4	0.8		—	⊙	—	●	⊙	⊙




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
CCGT060201	6.35	2.38	2.8	0.1	3° - 10°	—	⊙	—	●	⊙	⊙
CCGT060202	6.35	2.38	2.8	0.2		—	⊙	—	●	⊙	⊙
* CCGT060204	6.35	2.38	2.8	0.4		—	⊙	—	●	⊙	⊙
CCGT09T302	9.525	3.97	4.4	0.2		—	⊙	—	●	⊙	⊙
* CCGT09T304	9.525	3.97	4.4	0.4		—	⊙	—	●	⊙	⊙
CCGT09T308	9.525	3.97	4.4	0.8		—	⊙	—	●	⊙	⊙




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
DCGW070202	6.35	2.38	2.8	0.2	0°	—	⊙	—	●	⊙	⊙
DCGW070204	6.35	2.38	2.8	0.4		—	⊙	—	●	⊙	⊙
* DCGW11T302	9.525	3.97	4.4	0.2		—	⊙	—	●	⊙	⊙
* DCGW11T304	9.525	3.97	4.4	0.4		—	⊙	—	●	⊙	⊙
* DCGW11T308	9.525	3.97	4.4	0.8		—	⊙	—	●	⊙	⊙




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
CPGT080202	7.94	2.38	2.8	0.2	3° - 10°	—	⊙	—	●	⊙	⊙
CPGT080204	7.94	2.38	2.8	0.4		—	⊙	—	●	⊙	⊙
CPGT080206	7.94	2.38	2.8	0.6		—	⊙	—	●	⊙	⊙
CPGT080208	7.94	2.38	2.8	0.8		—	⊙	—	●	⊙	⊙
CPGT090302	9.525	3.18	4.4	0.2		—	⊙	—	●	⊙	⊙
CPGT090304	9.525	3.18	4.4	0.4		—	⊙	—	●	⊙	⊙
CPGT090306	9.525	3.18	4.4	0.6		—	⊙	—	●	⊙	⊙
CPGT090308	9.525	3.18	4.4	0.8		—	⊙	—	●	⊙	⊙




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
DCGT070202	6.35	2.38	2.8	0.2	3° - 10°	—	⊙	—	●	⊙	⊙
* DCGT070204	6.35	2.38	2.8	0.4		—	⊙	—	●	⊙	⊙
* DCGT11T302	9.525	3.97	4.4	0.2		—	⊙	—	●	⊙	⊙
* DCGT11T304	9.525	3.97	4.4	0.4		—	⊙	—	●	⊙	⊙
DCGT11T308	9.525	3.97	4.4	0.8		—	⊙	—	●	⊙	⊙




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
DNMX150402	12.7	4.76	5.16	0.2	3° - 10°	—	⊙	—	●	⊙	⊙
DNMX150404	12.7	4.76	5.16	0.4		—	⊙	—	●	⊙	⊙
DNMX150408	12.7	4.76	5.16	0.8		—	⊙	—	●	⊙	⊙
DNMX150412	12.7	4.76	5.16	1.2		—	⊙	—	●	⊙	⊙




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
VNMX160402	9.525	4.76	3.81	0.2	3° - 10°	—	⊙	—	●	⊙	⊙
VNMX160404	9.525	4.76	3.81	0.4		—	⊙	—	●	⊙	⊙
VNMX160408	9.525	4.76	3.81	0.8		—	⊙	—	●	⊙	⊙
VNMX160412	9.525	4.76	3.81	1.2		—	⊙	—	●	⊙	⊙




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
VBGT110204	6.35	2.38	2.8	0.4	3° - 10°	—	○	—	●	○	○
VBGT160404	9.525	4.76	4.4	0.4		—	○	—	●	○	○
* VBGT160408	9.525	4.76	4.4	0.8		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
VCGW110301	6.35	3.18	2.8	0.1	0°	—	○	—	●	○	○
* VCGW110302	6.35	3.18	2.8	0.2		—	○	—	●	○	○
* VCGW110304	6.35	3.18	2.8	0.4		—	○	—	●	○	○
VCGW160404	9.525	4.76	4.4	0.4		—	○	—	●	○	○
VCGW160408	9.525	4.76	4.4	0.8		—	○	—	●	○	○
VCGW160412	9.525	4.76	4.4	1.2		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
TNMX160402	9.525	4.76	3.81	0.2	3° - 10°	—	○	—	●	○	○
TNMX160404	9.525	4.76	3.81	0.4		—	○	—	●	○	○
TNMX160408	9.525	4.76	3.81	0.8		—	○	—	●	○	○
TNMX160412	9.525	4.76	3.81	1.2		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
VCGT110301	6.35	3.18	2.8	0.1	3° - 10°	—	○	—	●	○	○
VCGT110302	6.35	3.18	2.8	0.2		—	○	—	●	○	○
VCGT110304	6.35	3.18	2.8	0.4		—	○	—	●	○	○
* VCGT160404	9.525	4.76	4.4	0.4		—	○	—	●	○	○
VCGT160408	9.525	4.76	4.4	0.8		—	○	—	●	○	○
VCGT160412	9.525	4.76	4.4	1.2		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
TCGW090202	5.56	2.38	2.5	0.2	0°	—	○	—	●	○	○
TCGW090204	5.56	2.38	2.5	0.4		—	○	—	●	○	○
TCGW090208	5.56	2.38	2.5	0.8		—	○	—	●	○	○
TCGW110202	6.35	2.38	2.8	0.2		—	○	—	●	○	○
TCGW110204	6.35	2.38	2.8	0.4		—	○	—	●	○	○
TCGW110208	6.35	2.38	2.8	0.8		—	○	—	●	○	○
TCGW110302	6.35	3.18	2.8	0.2		—	○	—	●	○	○
TCGW110304	6.35	3.18	2.8	0.4		—	○	—	●	○	○
TCGW110308	6.35	3.18	2.8	0.8		—	○	—	●	○	○
TCGW16T304	9.525	3.97	4.4	0.4		—	○	—	●	○	○
TCGW16T308	9.525	3.97	4.4	0.8		—	○	—	●	○	○
TCGW16T312	9.525	3.97	4.4	1.2		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
VBGW110304	6.35	3.18	2.8	0.4	0°	—	○	—	●	○	○
VBGW160404	9.525	4.76	4.4	0.4		—	○	—	●	○	○
VBGW160408	9.525	4.76	4.4	0.8		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
TCGW090202HS	5.56	2.38	2.5	0.2	0°	—	○	—	●	○	○
TCGW090204HS	5.56	2.38	2.5	0.4		—	○	—	●	○	○
TCGW090208HS	5.56	2.38	2.5	0.8		—	○	—	●	○	○
TCGW110202HS	6.35	2.38	2.8	0.2		—	○	—	●	○	○
TCGW110204HS	6.35	2.38	2.8	0.4		—	○	—	●	○	○
TCGW110208HS	6.35	2.38	2.8	0.8		—	○	—	●	○	○
TCGW110302HS	6.35	3.18	2.8	0.2		—	○	—	●	○	○
TCGW110304HS	6.35	3.18	2.8	0.4		—	○	—	●	○	○
TCGW110308HS	6.35	3.18	2.8	0.8		—	○	—	●	○	○
TCGW16T304HS	9.525	3.97	4.4	0.4		—	○	—	●	○	○
TCGW16T308HS	9.525	3.97	4.4	0.8		—	○	—	●	○	○
TCGW16T312HS	9.525	3.97	4.4	1.2		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
TPGT080202	4.76	2.38	2.4	0.2	3° - 10°	—	○	—	●	○	○
TPGT080204	4.76	2.38	2.4	0.4		—	○	—	●	○	○
TPGT090202	5.56	2.38	2.8	0.2		—	○	—	●	○	○
TPGT090204	5.56	2.38	2.8	0.4		—	○	—	●	○	○
TPGT110202	6.35	2.38	2.8	0.2		—	○	—	●	○	○
TPGT110204	6.35	2.38	2.8	0.4		—	○	—	●	○	○
TPGT110302	6.35	3.18	3.4	0.2		—	○	—	●	○	○
TPGT110304	6.35	3.18	3.4	0.4		—	○	—	●	○	○
TPGT110308	6.35	3.18	3.4	0.8		—	○	—	●	○	○
TPGT160302	9.525	3.18	4.4	0.2		—	○	—	●	○	○
TPGT160304	9.525	3.18	4.4	0.4		—	○	—	●	○	○
TPGT16T304	9.525	3.97	4.4	0.4		—	○	—	●	○	○
TPGT16T308	9.525	3.97	4.4	0.8		—	○	—	●	○	○
TPGT16T312	9.525	3.97	4.4	1.2		—	○	—	●	○	○
TPGT160402	9.525	4.76	4.4	0.2		—	○	—	●	○	○
TPGT160404	9.525	4.76	4.4	0.4		—	○	—	●	○	○
TPGT160408	9.525	4.76	4.4	0.8		—	○	—	●	○	○
TPGT160412	9.525	4.76	4.4	1.2		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
TCGT090202	5.56	2.38	2.5	0.2	3° - 10°	—	○	—	●	○	○
TCGT090204	5.56	2.38	2.5	0.4		—	○	—	●	○	○
TCGT090208	5.56	2.38	2.5	0.8		—	○	—	●	○	○
TCGT110202	6.35	2.38	2.8	0.2		—	○	—	●	○	○
TCGT110204	6.35	2.38	2.8	0.4		—	○	—	●	○	○
TCGT110208	6.35	2.38	2.8	0.8		—	○	—	●	○	○
TCGT110302	6.35	3.18	2.8	0.2		—	○	—	●	○	○
TCGT110304	6.35	3.18	2.8	0.4		—	○	—	●	○	○
TCGT110308	6.35	3.18	2.8	0.8		—	○	—	●	○	○
TCGT16T304	9.525	3.97	4.4	0.4		—	○	—	●	○	○
TCGT16T308	9.525	3.97	4.4	0.8		—	○	—	●	○	○
TCGT16T312	9.525	3.97	4.4	1.2		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
SCGT060202	6.35	2.38	2.2	0.2	3° - 10°	—	○	—	●	○	○
SCGT060204	6.35	2.38	2.2	0.4		—	○	—	●	○	○
SCGT070202	7.94	2.38	3.4	0.2		—	○	—	●	○	○
SCGT070204	7.94	2.38	3.4	0.4		—	○	—	●	○	○
SCGT09T302	9.525	3.97	4.4	0.2		—	○	—	●	○	○
SCGT09T304	9.525	3.97	4.4	0.4		—	○	—	●	○	○
SCGT09T308	9.525	3.97	4.4	0.8		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
TPGW080202	4.76	2.38	2.4	0.2	0°	—	○	—	●	○	○
TPGW080204	4.76	2.38	2.4	0.4		—	○	—	●	○	○
TPGW090202	5.56	2.38	2.8	0.2		—	○	—	●	○	○
TPGW090204	5.56	2.38	2.8	0.4		—	○	—	●	○	○
TPGW090208	5.56	2.38	2.8	0.8		—	○	—	●	○	○
TPGW110202	6.35	2.38	2.8	0.2		—	○	—	●	○	○
TPGW110204	6.35	2.38	2.8	0.4		—	○	—	●	○	○
TPGW110208	6.35	2.38	2.8	0.8		—	○	—	●	○	○
TPGW110302	6.35	3.18	3.4	0.2		—	○	—	●	○	○
* TPGW110304	6.35	3.18	3.4	0.4		—	○	—	●	○	○
TPGW110308	6.35	3.18	3.4	0.8		—	○	—	●	○	○
TPGW160302	9.525	3.18	4.4	0.2		—	○	—	●	○	○
TPGW160304	9.525	3.18	4.4	0.4		—	○	—	●	○	○
TPGW160308	9.525	3.18	4.4	0.8		—	○	—	●	○	○
TPGW16T302	9.525	3.97	4.4	0.2		—	○	—	●	○	○
TPGW16T304	9.525	3.97	4.4	0.4		—	○	—	●	○	○
TPGW16T308	9.525	3.97	4.4	0.8		—	○	—	●	○	○
TPGW160402	9.525	4.76	4.4	0.2		—	○	—	●	○	○
TPGW160404	9.525	4.76	4.4	0.4		—	○	—	●	○	○
TPGW160408	9.525	4.76	4.4	0.8		—	○	—	●	○	○
TPGW160412	9.525	4.76	4.4	1.2	—	○	—	●	○	○	




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
TPGW080202HS	4.76	2.38	2.4	0.2	0°	—	○	—	●	○	○
TPGW080204HS	4.76	2.38	2.4	0.4		—	○	—	●	○	○
TPGW090202HS	5.56	2.38	2.8	0.2		—	○	—	●	○	○
TPGW090204HS	5.56	2.38	2.8	0.4		—	○	—	●	○	○
TPGW090208HS	5.56	2.38	2.8	0.8		—	○	—	●	○	○
TPGW110202HS	6.35	2.38	2.8	0.2		—	○	—	●	○	○
TPGW110204HS	6.35	2.38	2.8	0.4		—	○	—	●	○	○
TPGW110208HS	6.35	2.38	2.8	0.8		—	○	—	●	○	○
TPGW110302HS	6.35	3.18	3.4	0.2		—	○	—	●	○	○
TPGW110304HS	6.35	3.18	3.4	0.4		—	○	—	●	○	○
TPGW110308HS	6.35	3.18	3.4	0.8		—	○	—	●	○	○
TPGW160302HS	9.525	3.18	4.4	0.2		—	○	—	●	○	○
TPGW160304HS	9.525	3.18	4.4	0.4		—	○	—	●	○	○
TPGW160308HS	9.525	3.18	4.4	0.8		—	○	—	●	○	○
TPGW16T302HS	9.525	3.97	4.4	0.2		—	○	—	●	○	○
TPGW16T304HS	9.525	3.97	4.4	0.4		—	○	—	●	○	○
TPGW16T308HS	9.525	3.97	4.4	0.8		—	○	—	●	○	○
TPGW160402HS	9.525	4.76	4.4	0.2		—	○	—	●	○	○
TPGW160404HS	9.525	4.76	4.4	0.4		—	○	—	●	○	○
TPGW160408HS	9.525	4.76	4.4	0.8		—	○	—	●	○	○
TPGW160412HS	9.525	4.76	4.4	1.2	—	○	—	●	○	○	




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
WNMX090302	9.525	3.18	4.4	0.2	3°-10°	—	○	—	●	○	○
WNMX090304	9.525	3.18	4.4	0.4		—	○	—	●	○	○
WNMX090308	9.525	3.18	4.4	0.8		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
SPGW090302	9.525	3.18	4.4	0.2	0°	—	○	—	●	○	○
SPGW090304	9.525	3.18	4.4	0.4		—	○	—	●	○	○
SPGW090308	9.525	3.18	4.4	0.8		—	○	—	●	○	○




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
SNMX120404	12.7	4.76	5.16	0.4	3° - 10°	—	◎	—	●	◎	◎
SNMX120408	12.7	4.76	5.16	0.8		—	◎	—	●	◎	◎




型号 Type	尺寸 Dimension (mm)		前角 Rake Angle	牌号 Grades					
	s	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
* APKT160404	4.76	0.4	/	—	◎	—	●	◎	◎
* APKT160408	4.76	0.8		—	◎	—	●	◎	◎




型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
WCGW06T302	9.525	3.97	4.4	0.2	0°	—	◎	—	●	◎	◎
WCGW06T304	9.525	3.97	4.4	0.4		—	◎	—	●	◎	◎
WCGW06T308	9.525	3.97	4.4	0.8		—	◎	—	●	◎	◎
WCGW080402	12.7	4.76	5.5	0.2		—	◎	—	●	◎	◎
WCGW080404	12.7	4.76	5.5	0.4		—	◎	—	●	◎	◎
WCGW080408	12.7	4.76	5.5	0.8		—	◎	—	●	◎	◎



型号 Type	尺寸 Dimension (mm)		前角 Rake Angle	牌号 Grades					
	I. C	s		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
SEET12T3PF	12.7	3.97	/	—	◎	—	●	◎	◎
* SEHT1204AFFN	12.7	4.76		—	◎	—	●	◎	◎



型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
RCGW060200	6	2.38	2.8	/	—	◎	—	●	◎	◎	
RCGW080300	8	3.18	3.4		—	◎	—	●	◎	◎	
RCGW100300	10	3.18	3.6		—	◎	—	●	◎	◎	
RCGW120400	12	4.76	4.2		—	◎	—	●	◎	◎	



型号 Type	尺寸 Dimension (mm)				前角 Rake Angle	牌号 Grades					
	I. C	s	d	r		CDW850	CDW002	CDW005	CDW010	CDW025	CDW302
RPGW080300	8	3.18	3.4	/	—	◎	—	●	◎	◎	
RPGW100400	10	4.76	3.6		—	◎	—	●	◎	◎	
RPGW120400	12	4.76	4.2		—	◎	—	●	◎	◎	
RPGW160400	16	4.76	5.2		—	◎	—	●	◎	◎	

注: ● 表示第一推荐; ◎ 表示第二推荐; — 表示不推荐, 可按需生产; * 表示热销产品。
Noted: ● First choice; ◎ Second choice; — Not recommend, can be produced. * Hot sales product

PCD切槽刀片 PCD Grooving Insert

图样 Drawing	订货编码 Order Code	刃口数量 Edges No.	尺寸参数 Dimension (mm)	
			W	r
	MGGN200-02	1	2	0.2
	MGGN300-02	1	3	0.2
	MGGN300-04	1	3	0.4
	MGGN300-08	1	3	0.8
	MGGN400-02	1	4	0.2
	MGGN400-04	1	4	0.4
	MGGN400-08	1	4	0.8
	MGGN500-02	1	5	0.2
	MGGN500-04	1	5	0.4
	MGGN500-08	1	5	0.8
	MGGN600-02	1	6	0.2
	MGGN600-04	1	6	0.4
	MGGN600-08	1	6	0.8

图样 Drawing	订货编码 Order Code	刃口数量 Edges No.	尺寸参数 Dimension (mm)	
			W	r
	MRGN200-R1.0	1	2	1.0
	MRGN300-R1.5	1	3	1.5
	MRGN400-R2.0	1	4	2.0
	MRGN500-R2.5	1	5	2.5
	MRGN600-R3.0	1	6	3.0

图样 Drawing	订货编码 Order Code	刃口数量 Cutting Edges	尺寸参数 (mm) Dimension				
			φ I.C	S1	W	La _{max}	r
	TGR/L-1.25	1	12.7	4.76	1.25	2.5	0.2
	TGR/L-1.50	1			1.50	3.9	
	TGR/L-2.00	1			2.00	3.9	
	TGR/L-2.50	1			2.50	5.4	0.3
	TGR/L-3.00	1			3.00	5.4	
	TGR/L-3.50	1			3.50	5.4	
	TGR/L-4.00	1			4.00	5.4	

备注：槽刀刀片及配套刀杆可根据加工尺寸要求定制，请填写下表指定内容，可获得对应设计方案及报价；刀片材料选择另咨询刀具销售工程师。

Note: Grooving Inserts and corresponding tool holder can be offered based on the dimension requirements, please fill the following form, then you can obtain the solutions and the quotation. About selected the insert materials, you can consult our engineer.

非标切槽刀 Non-standard CBN Grooving Tools

图样 Drawing	订货编码 Order Code	尺寸 Dimension (mm)			
		L	W	H	R
	HG01-1.0	70	1.0	12	0.1, 0.2, 0.3
	HG01-1.5	70	1.5	15	0.1, 0.2, 0.3
	HG01-2.0	70	2.0	18	0.1, 0.2, 0.3
	HG01-2.5	70	2.5	20	0.1, 0.2, 0.3

图样 Drawing	订货编码 Order Code	尺寸 (mm) Dimension					
		L	B	W	a1	a2	H
	HG02-4.0	70	1.575	4	7°30'	15°±5'	12, 15, 18, 20
	HG02-5.0	70	2.058	5	7°30'	15°±5'	12, 15, 18, 20

备注：华菱超硬提供来图来样加工。

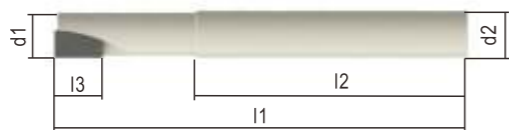
Note: Halnn offer customization with given drawings.

高精度内孔刀 (小孔专用) High Precision Internal Cutter (Special for small hole)

图样 Drawing	型号 Type	尺寸(mm) Dimension					
		最小加工孔径F Min Internal Diameter	A	B	R	L	L1
	1.5mm内孔刀	1.5内孔	φ6	5.7	0.2	50	8
	2mm内孔刀	2.0内孔	φ6	5.7	0.2	50	10
	2.5mm内孔刀	2.5内孔	φ6	5.7	0.2	50	10

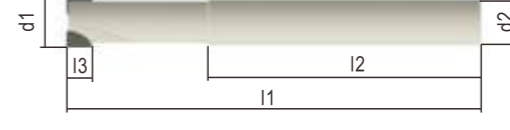
图样 Drawing	型号 Type	尺寸(mm) Dimension					
		最小加工孔径F Min Internal Diameter	A	B	R	C	E
	3mm内孔刀	3.4内孔	φ3	2.8	0.2	70	1.5
	4mm内孔刀	4.5内孔	φ4	3.7	0.2	70	2
	5mm内孔刀	5.5内孔	φ5	4.7	0.2	70	2.5
	6mm内孔刀	6.5内孔	φ6	5.7	0.2	70	3
	8mm内孔刀	8.6内孔	φ8	7.6	0.2	70	4
	10mm内孔刀	10.6内孔	φ10	9.6	0.2	70	5

PCD单刃螺旋立铣刀 (钻孔铣削深度1*d1)
PCD Helical End Mill with Single Flute (Drilling/Milling Depth up to 1*d1)



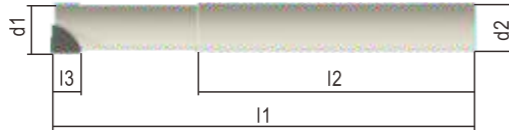
订货编码 Order Code	d1	l3	d2	l2	l1	齿数 Teeth No.
SM030560-1S	3	5	4	40	60	1
SM040660-1S	4	6	4	40	60	1
SM050760-1S	5	7	6	40	60	1
SM060860-1S	6	8	6	40	60	1
* SM081072-1S	8	10	8	40	72	1
SM101272-1S	10	12	10	40	72	1

PCD双刃螺旋立铣刀 (铣削深度0.5*d1)
PCD Helical End Mill with 2-Flute (Milling Depth up to 0.5*d1)



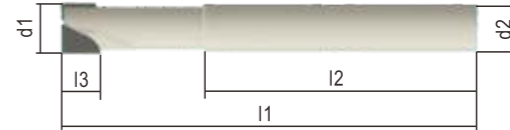
订货编码 Order Code	d1	l3	d2	l2	l1	齿数 Teeth No.
* DM060460-2S	6	4	6	40	60	2
DM080472-2S	8	4	8	40	72	2
DM100572-2S	10	5	10	40	72	2
DM120697-2S	12	6	12	50	97	2
DM140797-2S	14	7	14	50	97	2
DM160897-2S	16	8	16	50	97	2
DM180997-2S	18	9	18	50	97	2
DM201097-2S	20	10	20	50	97	2

PCD双刃螺旋立铣刀 (钻孔铣削深度0.5*d1)
PCD Helical End Mill with 2-Flute (Drilling/Milling Depth up to 0.5*d1)



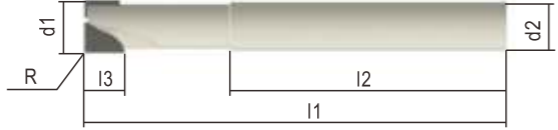
订货编码 Order Code	d1	l3	d2	l2	l1	齿数 Teeth No.
* DM060560-2S	6	5	6	40	60	2
DM080572-2S	8	5	8	40	72	2
* DM100672-2S	10	6	10	40	72	2
DM120897-2S	12	8	12	50	97	2
DM140997-2S	14	9	14	50	97	2
DM161097-2S	16	10	16	50	97	2
DM181197-2S	18	11	18	50	97	2
DM201297-2S	20	12	20	50	97	2

PCD双刃螺旋立铣刀 (钻孔铣削深度1*d1)
PCD Helical End Mill with 2-Flute (Drilling/Milling Depth up to 1*d1)



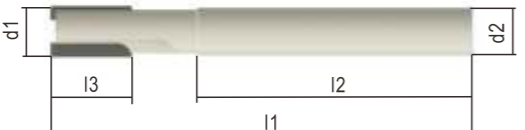
订货编码 Order Code	d1	l3	d2	l2	l1	齿数 Teeth No.
DM060860-2S	6	8	6	40	60	2
DM081172-2S	8	11	8	40	72	2
DM101397-2S	10	13	10	50	97	2
DM121597-2S	12	15	12	50	97	2
DM141697-2S	14	16	14	50	97	2
DM161897-2S	16	18	16	50	97	2
DM182097-2S	18	20	18	50	97	2
DM202297-2S	20	22	20	50	97	2

PCD双刃螺旋立铣刀 (钻孔铣削深度1*d1, 不同圆弧角)
PCD Helical End Mill with 2-Flute (Drilling/Milling Depth up to 1*d1,different Radius corner)



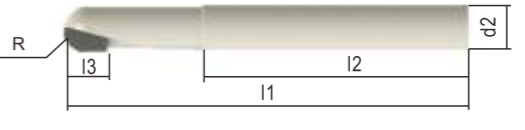
订货编码 Order Code	R	d1	l3	d2	l2	l1	齿数 Teeth No.
DMR005060660-2S	0.5	6	6	6	50	60	2
DMR010060660-2S	1.0	6	6	6	50	60	2
DMR010080872-2S	1.0	8	8	8	50	72	2
DMR020080872-2S	2.0	8	8	8	50	72	2
DMR010101072-2S	1.0	10	10	10	50	72	2
* DMR020101072-2S	2.0	10	10	10	50	72	2
DMR010121297-2S	1.0	12	12	12	50	97	2
DMR020121297-2S	2.0	12	12	12	50	97	2
DMR030121297-2S	3.0	12	12	12	50	97	2

PCD双刃螺旋立铣刀 (铣削深度2*d1)
PCD Helical End Mill with 2-Flute (Milling Depth up to 2*d1)



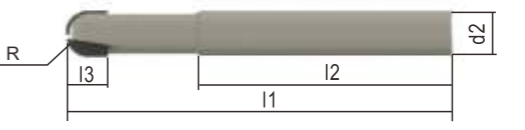
订货编码 Order Code	d1	l3	d2	l2	l1	齿数 Teeth No.
DM061360-2S	6	13	6	40	60	2
DM081872-2S	8	18	8	40	72	2
DM102297-2S	10	22	10	40	72	2
DM122597-2S	12	25	12	50	97	2
DM143097-2S	14	30	14	50	97	2
DM163497-2S	16	34	16	50	97	2
DM183897-2S	18	38	18	50	97	2
DM204297-2S	20	42	20	50	97	2

PCD单刃球头铣刀 (单刃)
PCD Ball Nose End Mill with single flute



订货编码 Order Code	R	l3	d2	l2	l1	齿数 Teeth No.
BMR015050660-1S	1.5	5	6	40	60	1
BMR020060660-1S	2.0	6	6	40	60	1
BMR025070660-1S	2.5	7	6	40	60	1
BMR030080660-1S	3.0	8	6	40	60	1
BMR040100872-1S	4.0	10	8	40	72	1
BMR050121072-1S	5.0	12	10	40	72	1

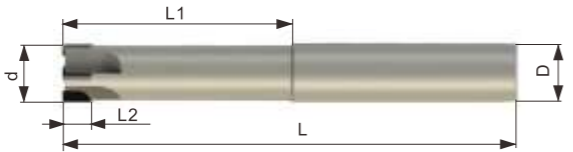
PCD双刃球头铣刀
PCD Ball Nose End Mill with double flute



订货编码 Order Code	R	l3	d2	l2	l1	齿数 Teeth No.
BMR030080660-2S	3	8	6	40	60	2
BMR040110872-2S	4	11	8	40	72	2
BMR050131097-2S	5	13	10	50	97	2
BMR060151297-2S	6	15	12	50	97	2
BMR070161497-2S	7	16	14	50	97	2
BMR080181697-2S	8	18	16	50	97	2
BMR090201897-2S	9	20	18	50	97	2
BMR100222097-2S	10	22	20	50	97	2

注: * 表示热销产品。
Noted: * Hot sales product

PCD直柄铰刀
PCD straight shank reamer



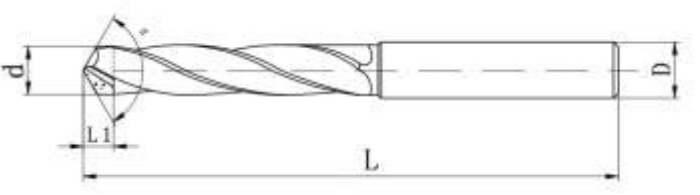
订货编码 Order Code	基本尺寸 Dimension					
	D	d	L	L1	L2	齿数 Teeth No.
DR0604804006-2S	6	4	80	40	6	2
DR0605804006-2S	6	5	80	40	6	2
DR0606804006-2S	6	6	80	40	6	2
DR0807804006-2S	8	7	80	40	6	2
DR0808804006-2S	8	8	80	40	6	2
DR1009804006-2S	10	9	80	40	6	2~4
DR1010804006-2S	10	10	80	40	6	2~4
DR1212804006-2S	12	12	80	40	6	2~4
DR1414804006-2S	14	14	80	40	6	2~4
DR1615804006-2S	16	15	80	40	6	2~4
DR2020804006-2S	20	20	80	40	6	2~4
DR2625804006-2S	26	25	80	40	6	2~4
DR3230804006-2S	32	30	80	40	6	2~4

PCD直柄钻铰刀
PCD straight shank drill reamer



订货编码 Order Code	基本尺寸 Dimension					
	D	d	L	L1	α	齿数 Teeth No.
SDR06048040-2S	6	4	80	40	130°	2
SDR06058040-2S	6	5	80	40	130°	2
SDR06068040-2S	6	6	80	40	130°	2
SDR08078040-2S	8	7	80	40	130°	2
SDR08088040-2S	8	8	80	40	130°	2
SDR10098040-2S	10	9	80	40	130°	2
SDR10108040-2S	10	10	80	40	130°	2
SDR12128040-2S	12	12	80	40	130°	2
SDR14148040-2S	14	14	80	40	130°	2
SDR16158040-2S	16	15	80	40	130°	2

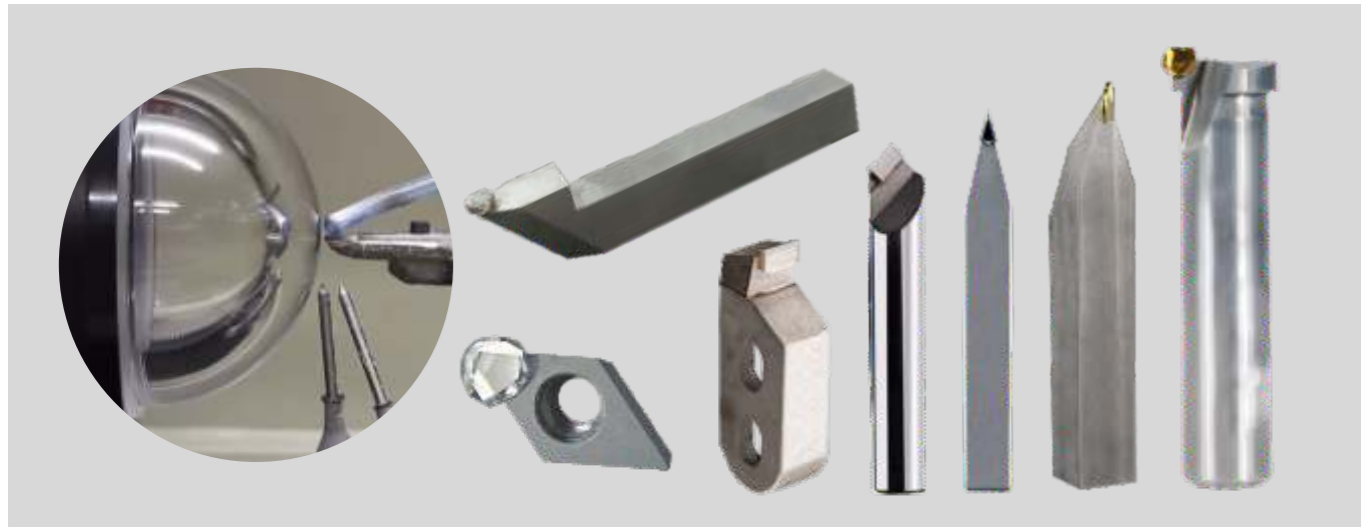
PCD麻花钻
PCD twist drill



订货编码 Order Code	基本尺寸 Dimension				
	D	d	L	L1	α
TD06056005-90°	6	5	60	5	90°
TD06056005-130°	6	5	60	5	130°
TD06066005-90°	6	6	60	5	90°
TD06066005-130°	6	6	60	5	130°
TD08086005-90°	8	8	80	5	90°
TD08086005-130°	8	8	80	5	130°
TD10106005-90°	10	10	80	5	90°
TD10106005-130°	10	10	80	5	130°



备注：华菱超硬提供来图来样加工。
Note: Halnn offer customization with given drawings.



华菱超硬精密单晶刀-国内超精密加工领域的领航者

Halnn Precision single crystal tools --Ultra-precision process field's leader in China

- 中科院高精密加工领域合作企业。
- 光学/超精密加工领域重点科研项目支持单位。
- 波纹度达到100nm以内，圆弧半径最小可做到0.001mm。
- 量体裁衣式的售前方案和售后跟踪,用规范化的流程让客户感受到价值超越契约。
- Cooperative research with Chinese Academy of Sciences
- The optical/ultra-precision processing field is a key scientific research project supporting enterprise in China
- The waviness is within 100nm, and the minimum arc radius can be 0.001mm.
- Tailor-made pre-sales solutions and post-sales tracking, with a standardized process to make customers feel value beyond the contract.

单晶金刚石刀具的应用领域

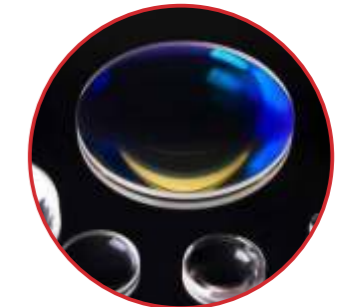
Application Fields Of Single Crystal Diamond Tools



超精密加工
Ultra Precision Machining



光学领域
Optical Field



眼镜领域
Glasses Field



汽车领域
Automotive Field



航空军工领域
Aerospace Field



其他领域
Other fields

单晶金刚石刀具

Single Crystal Diamond tools

华菱超硬单晶金刚石刀具波纹度达到100nm以内，光洁度10nm以内，圆弧半径最小可做到0.001mm。

目前合作单位有：中科院，浙江大学，华东理工大学，天津大学，长春理工大学，南昌大学研究所及高等院校，同时为中国航空工业集团公司等企业提供高精单晶金刚石刀具。

The waviness of Halnn superhard Single Crystal Diamond tools is within 100nm, the finish is within 10nm, and the minimum arc radius can be 0.001mm.

The Cooperative Partners currently: Chinese Academy of Sciences, Zhejiang University, East China University of Science and Technology, Tianjin University, Changchun University of Science and Technology, Nanchang University Research Institute and higher education institutions. At the same time, it provides high-precision single crystal diamond tools for China Aviation Industry Corporation and other companies.

单晶金刚石刀具和PCD刀具的差异性

The difference between Single Crystal Diamond tools and PCD tools

- 在金相显微镜100X下的状况：
The condition under the metallographic microscope 100X:

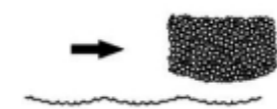


聚晶PCD刀具
Polycrystalline PCD Tools



单晶金刚石刀具
Single Crystal Diamond Tool

- 在加工方面的差异性：
Different processing effects



PCD刀具加工工件时，被加工物表面会呈现一颗颗小晶粒所造成的痕迹
Surface of Components have small Grainy traces when using PCD Tools



单晶金刚石刀具可以将刀刃完美的状态，直接复制到被加工物上
Perfect of surface roughness when using Single Crystal Diamond Tools



金刚石铰刀和PCD铰刀的区别

The difference between Diamond Reamers and PCD Reamers

名称 Name	PCD铰刀 PCD Reamers	金刚石铰刀 Diamond Reamer
产品图样 Product Drawing		
加工方式 Machining Method	切削 Cutting	磨削 Grinding
生产工艺 Production Process	焊接 Welding	电镀 Plating
配套设备 Matching equipment	加工中心 Machining Center	珩磨机, 加工中心均可 Honing machines, machining centers all can work

精度保障

Precision guarantee

- 镀层结合力, 金刚石粘结牢度, 金刚石颗粒分布均匀, 外观质量高;
- 金刚石铰刀前后导向圆度达到0.005mm, 圆柱度为0.005mm/100mm, 前导向外圆粗糙度Ra0.63微米, 后导向外圆粗糙度Ra0.16um, 刀柄与前后导向部分同轴度达到0.015mm;
- 被铰孔工件圆柱度小于0.003, 粗糙度可达Ra0.4-0.2, 精度高, 效率高, 使用寿命长;
- Coating adhesion, diamond bond fastness, uniform distribution of diamond particles, high appearance quality
- The roundness of the front and rear guide of diamond reamer is up to 0.005mm, and the cylindricity is 0.005mm/100mm. The roughness of the front guide outer circle is Ra0.63 micron, and that of the rear guide outer circle is RA0.16um. The coaxiality of the shank with the front and rear guide parts is up to 0.015mm.
- Reamed workpiece's cylindricity is less than 0.003, roughness can reach RA0.4-0.2, high precision, high efficiency, long service life

华菱超硬电镀铰刀的行业地位优势

Halnn superhard company has top position in the electroplating reamer industry

- 国内规模化精密电镀定点单位。
- 河南省精密电化学领域重点产学研单位。
- 被铰孔工件圆柱度小于0.003, 粗糙度可达Ra0.4-0.2。
- 量体裁衣式的售前方案和售后跟踪, 用规范化的流程让客户感受到价值超越契约。
- Halnn superhard is the designated cooperative partner for large-scale precision electroplating operation business in China
- Halnn superhard is the key industry, studying and research institute centre in precision electro-chemistry field in Henan Province, China
- The reamed workpiece's cylindricity is less than 0.003, and the roughness can reach Ra0.4-0.2.
- Tailor-made pre-sales solutions and post-sales tracking, with a standardized process to make customers feel value beyond the contract.



华菱超硬技术服务团队
Halnn strong technical & service team



客户覆盖世界500强企业
customers cover the world's top 500 companies



7*24小时客服热线
7*24 customer service hotline

应用案例

Application cases

