



山西☆晋亿

山西晋亿磨料有限公司

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山西晋亿磨料有限公司
Shanxi Jinyi Grinding Co. Ltd

陶瓷结合剂金刚石砂轮简介

随着科学技术的发展，特别是材料科学的突飞猛进，高刚度、高耐磨、高硬质，耐高温和轻质新型材料的不断出现，同时机械加工也在向高质量、高精度、高效率和高自动化的方向不断发展，树脂结合剂金刚石砂轮因其自身的材料局限性，已经越来越不能满足上述要求。陶瓷结合剂金刚石砂轮在这一情况下应运而生，基本上解决了上述难题。

顾名思义，陶瓷结合剂金刚石砂轮即为采用无机陶瓷类材料作为结合剂，混合一定颗粒度的金刚石微粒，经过压制成型和一定温度的煅烧而形成的硬质砂轮，相比传统树脂结合剂金刚石砂轮，具有更好的机械强度、耐热性能好、切削锋利、磨削效率高，磨削过程中不易堆积热量和产生堵塞、热膨胀小、易控制加工精度、解决了树脂结合剂金刚石砂轮普遍存在的低寿命、磨削低效率和使用过程中易产生形变等问题。

基于陶瓷结合剂金刚石砂轮的上述优势，它的出现立即被欧美发达国家广泛应用在圆晶（半导体用硅片和太阳能硅片）、金刚石复合片、金刚石聚晶、金刚石刀具、立方氮化硼刀具、硬质合金、工程结构陶瓷、宝石、水晶和稀土磁性材料等高硬脆材料的机械加工中，为用户创造了良好的经济效益。也为此类材料的机械加工工艺发展奠定了坚实的基础。



Brief Introduction of Ceramic Vitrified Bond Diamond Grinding Wheels

Along the development of science and technology, especially the rapid development of material sciences, various of new materials with high rigidity, high abrasion durability, high hardness, heat resistant and light weight characteristics have been emerging widely, whilst the mechanical process is steadily developing along the path to achieve high quality, high precision, high efficiency and high atomization conditions, resin bond diamond grinding wheels could not satisfy the said needs anymore because of its nature of material limitation. Ceramic vitrified bond diamond grinding wheels are brought into being under this circumstances, basically eliminated the problems mentioned above.

As the name implied, ceramic vitrified bond diamond grinding wheels are hard grinding wheels that employed inorganic ceramic based materials as binding agents, mix with fine diamond grits, pressed into shapes and sintered in certain temperature and atmosphere. Compare to resin bond diamond grinding wheels, it owns better mechanical strength, better heat resistance, sharper cutting performance, higher grinding efficiency, do not accumulate heat and blocking, lower thermal dilation, simpler grasp of processing precision, it resolved the problems of shorter service life, low grinding efficiency and shape changes that generally applied to resin bond diamond grinding wheels.

Based on the abovementioned advantages, the emerging of ceramic vitrified bond diamond grinding wheels has been widely applied to mechanical process of hard and brittle materials such as silicon wafer (semiconductor silicon slices and solar power silicon slices), PDC(polycrystalline diamond composite), PCD (Polycrystalline Diamond), Diamond tools, CBN (Cubic Boron Nitride) tools, tungsten steels, structural engineer ceramics, gemstones, quartz crystals and rare earth based magnetic materials in many European and American countries, enables users to generate better economic benefit and created solid foundation to development of mechanical process of hard and brittle materials.





最高使用速度可达160m/s
高标准的出厂精度控制
主要磨削性能已达到进口同类产品水平
可以自制各类砂轮基体

Maximum speed can reach 160m/s
High precision control standard
Main performances reach the international advanced level
Grinding wheels can match with various grinders

主要配套磨床

Main grinders

NAXOS:NAXOS-UNION, P310×1250, GF70

TOTODA:GC563, GL5P-63, GL6P-100, GCH120B, GC32M-63, GCH63B, GL63M-T

JUNKER:JUCAM5002/10, JUCAM500, JUCRANK5000, 6000

SCHAUDT:CF41, CF61, ZEUSMX, ZXII

LANDIS:LT1, LT2

凸轮轴、曲轴、齿轮轴磨削用高速陶瓷CBN砂轮

Vitrified Bond CBN Grinding Wheels with High Speed for Camshaft, Crankshaft and Gear Shaft

主要特点

- 磨削效率高 / 磨削工件精度高，表面质量好 / 使用金刚石滚轮修整，易于修整。

应用领域

汽车发动机凸轮轴桃形面的高速高效磨削。

汽车发动机曲轴连杆颈、主轴颈、法兰颈、止推面及端面的高速高效磨削。

适用磨削材料

铸铁类：冷激铸铁、球磨铸铁、灰口铸铁、合金铸铁等。

钢件类：20Cr、GCr15、CF53、45钢、55钢、80B高碳钢等。

Main features

- High grinding efficiency / High precision and good surface quality
- Easy to dress with an electroplated dressing roller

Application

Mainly used for the precise grinding of the camshaft of CAM.

Mainly used for the precise grinding of crankpin, main journal, flange neck, thrust face and end face.

Applied material

Cast iron: Chilled cast iron, nodular cast iron, grey cast iron, alloy cast iron etc.

Steel: 20Cr, GCr15, CF53, 45# steel, 55# steel, 80B high carbon steel etc.



凸轮轴 camshaft

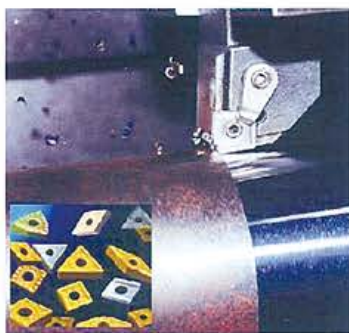
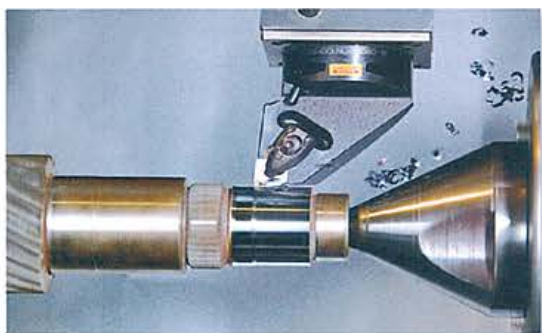


齿轮轴 gear shaft



曲轴 crankshaft

硬质合金的磨削加工



使用陶瓷结合剂金刚石砂轮磨削硬质合金工件具有以下特性：

1. 磨削效率高
2. 砂轮的耐磨性能高,磨粒消耗少,特别是在磨削硬、脆工件时表现尤为明显
3. 磨削力分布均匀、磨削温度低
4. 磨削的工件精度高、表面质量好、工件的形状保持好
5. 选用陶瓷结合剂金刚石砂轮可以在不增加人员、设备、厂房及单位产品加工成本降低的条件下,轻松提高磨削加工的质量,降低综合成本,极大地提高生产效率。



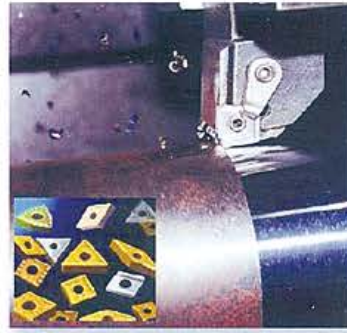
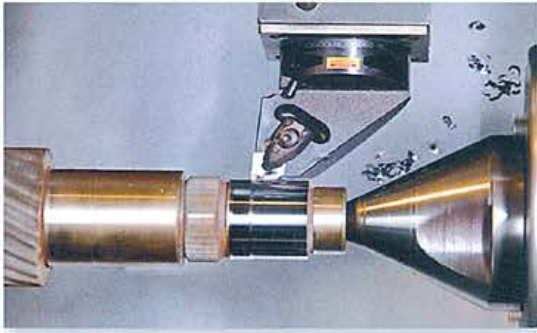
11A2 碗形砂轮



6A2 杯形砂轮



Grinding of Tungsten-Carbide



Grinding Tungsten-carbide objects by using vitrified bond diamond grinding wheels shall have the following characteristics,

1. High grinding efficiency
2. High durability, minimized wastage of grinding grits, especially applicable to grind hard and fragile objects.
3. Evenly distributed grinding force, cooler grinding surface temperature.
4. High precision of grinding objects, better surface quality, good maintenance of the shape of object.
5. Using ceramic vitrified bond diamond grinding wheels will increase the quality of grinding process, lowering comprehensive cost and dramatically increase the production efficiency with no addition of labour forces, equipments, workspaces and decrease of unit process costs.



11A2 Bowl wheel



6A2 Cup wheel



单晶钻石的磨削加工



陶瓷结合剂金刚石砂轮即为采用无机陶瓷类材料作为结合剂，混合一定颗粒度的金刚石微粒，经过压制成型和一定温度的煅烧而形成的硬质砂轮，相比传统树脂结合剂金刚石砂轮，具有更好的机械强度、耐热性能好、切削锋利、磨削效率高，磨削过程中不易堆积热量和产生堵塞、热膨胀小、易控制加工精度。可以为用户带来更好的工作效率和质量控制。经过研究钻石的工艺特性，我们为钻石加工行业专门研制的单晶钻石磨削用陶瓷结合剂金刚石砂轮，该型砂轮具有以下特点：

砂轮具有更高的耐磨性，磨粒消耗少，研磨效率高。

磨削进给力小，砂轮自身具有更好的散热导热性能，降低工作面的磨削温度，降低了烧蚀消耗。

磨削的工件精度高，表面质量好，工件形状保持好



1A1平型砂轮



6A2杯型砂轮

Grinding of single crystal diamond

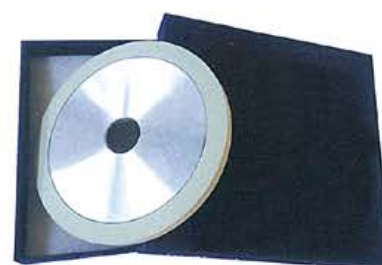


Ceramic vitrified bond diamond grinding wheels use inorganic ceramic materials as binding agent, mixed with diamond grits, pressed into shape and hardening in furnace with certain temperature, results a hard textured grinding wheel, this type of grinding wheels having better mechanical strength, better resistance to heat, sharper cutting performance, higher grinding efficiency, less accumulation of heat and blockage, lower thermal dilation, easy to control processing precision, could bring better working efficiency and quality control. by studying the nature of the mono-crystalline diamonds, we have developed the ceramic vitrified diamond grinding wheels fdedicated to grinding process of monocrytalline diamonds, such type of grinding wheels having the following characteristics,

Better abrasion resistance, less consumption of abrasive grits, higher grinding efficiency.

Lower feeding forces, the grinding wheels having better heat dissipation and conduction performance, that will lower the heat accumulation on the work face, eventually lowers the ablative consumptions.

Higher grinding precision to the workpieces, better surface fineness, better maintenance of the shape of the workpieces.

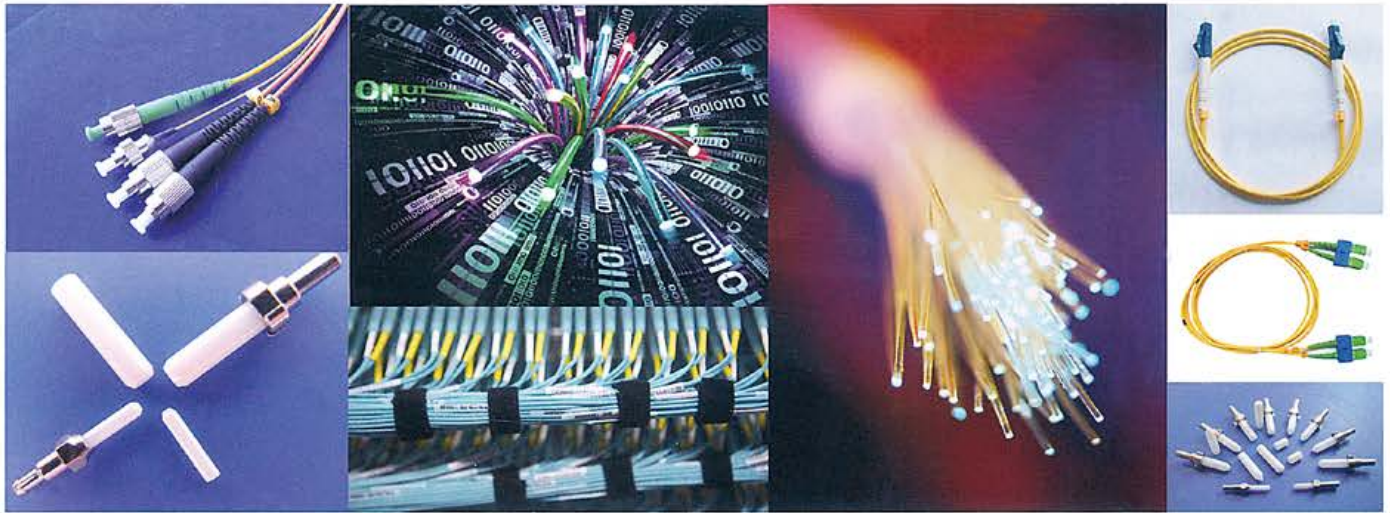


1A1 flat shape grinding wheel



6A2 Cup shape grinding wheel

光纤陶瓷插芯的磨削



在信息化和高速互联网大范围应用的今天，光纤通信因其超大的数据承载能力越来越得到重视，但光纤连接精度会严重影响激光在光纤两端的传输准确性能，进而影响数据的传输性能。根据光纤通信的这一特性，我公司专门研发的专用于光纤连接器、零部件以及陶瓷插芯研磨的陶瓷结合剂金刚石砂轮，可以给用户带来更高的研磨效率，更加精准的加工尺寸以达到更加优质的外径研磨效果。



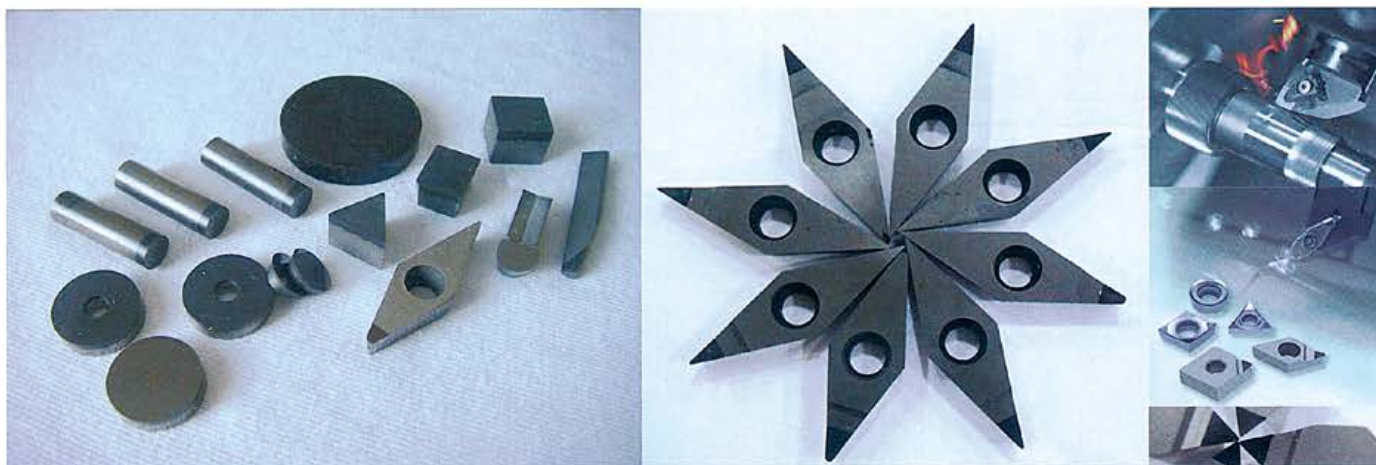
Grinding of Fibre-optic ferrules



At the present, the information technologies and high speed internet have been deployed widely, fibre optics has been highly valued due to its super large data bearing capacity, however, the fineness of the connection of the fibre optics may seriously affect the precision of laser transmitting through the fibre, and eventually affect the data transmitting capacity. According to the unique feature of fibre optics technology, we have developed the ceramic vitrified bond diamond grinding wheels that specialized in grinding process of fibre optics connectors, accessories and ceramic ferrules, which will bring better grinding precision, more accurate processing specifications and premium grinding effect to clients.



PCD、PDC刀具的磨削

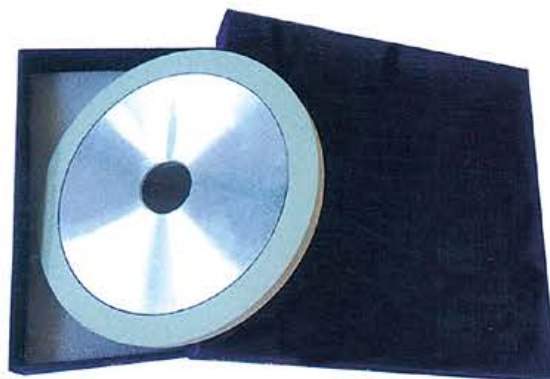


针对普遍应用于金刚石聚晶和金刚石刀具磨削中的树脂结合剂金刚石砂轮在使用中存在的诸多问题,结合国际上在PCD、PDC磨削加工工艺上的技术发展趋势,本公司研制推出了专用于PCD和PDC磨削加工的陶瓷结合剂金刚石砂轮,该产品在实际使用中具有如下特性:

1. 磨削寿命长,磨削PDC工件时砂轮寿命是普通树脂结合剂砂轮的2.5至3倍,磨削PCD时磨削寿命是树脂结合剂砂轮的3倍以上
2. 磨削效率高,大约为普通树脂结合剂砂轮的1.5倍至2倍,磨削PCD时效率至少为4倍。
3. 磨削精度高,磨削加工PDC工件时锥度大约0.01mm。
4. 无污染,劳动强度低。陶瓷砂轮在使用中不会产生可能污染空气的烟雾,在使用中基本不需要修型,免除了传统树脂砂轮需要反复修整的时间和成本损耗,同时也能降低工作强度。相比较普通树脂砂轮,陶瓷砂轮拥有更好的锋利度,需要的进给力较小,可以延长车床的使用寿命。
5. 选用陶瓷结合剂金刚石砂轮可以在不增加人员、设备、厂房及单位产品加工成本降低的条件下,轻松实现机加工产品的产量翻番。

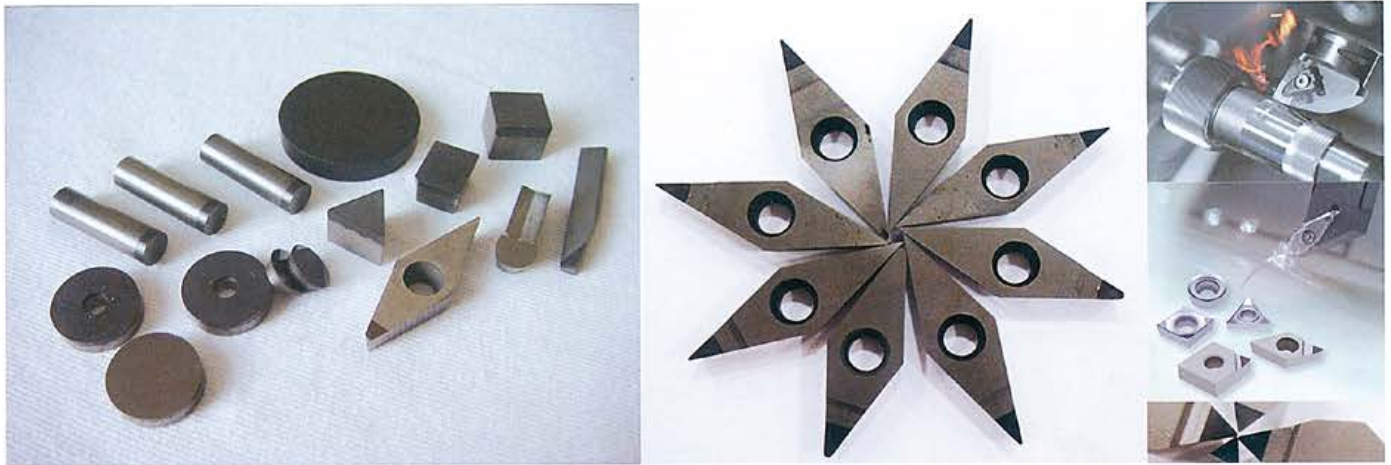


6A2 杯形砂轮



1A1 平型砂轮

Grinding of PCD/PDC tools

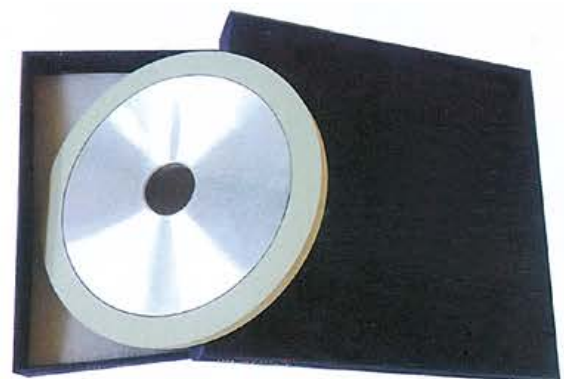


Aiming to resolve the problems that arose among the using of resin bond diamond grinding wheels in PCD and diamond tools, taking in consideration of the development trend of PCD and PDC grinding techniques, we have developed the ceramic vitrified bond diamond grinding wheels that specialized for PCD and PDC tools, such specialized products own the following characteristics,

1. the grinding life is 2.5 to 3 times longer than the traditional resin bond wheels in grinding of PDC objects and the life is at least 3 times longer in grinding of PCD objects.
2. High efficiency, 1.5 to 2 times higher for PDC grinding compare with resin bond wheels, at least 4 times higher than resin bond wheels in grinding of PCD objects.
3. Higher grinding precision, the taper can be controlled within 0.01mm.
4. pollution free, lower labour intensity. Ceramic vitrified bond diamond grinding wheels do not generate fume or smoke that may pollute air, no dressing needed, avoids the time and cost waste that traditionally applied to dressing of resin bond wheels, also reduces working intensity. Compare to resin bond wheels, the ceramic vitrified wheels have better sharpening performance, the feeding force can be reduced eventually extend the service life of the grinder.
5. Using ceramic vitrified bond diamond grinding wheels enable the users to double the production efficiency with no addition of labour forces, equipments, workspaces and decrease of unit process costs.

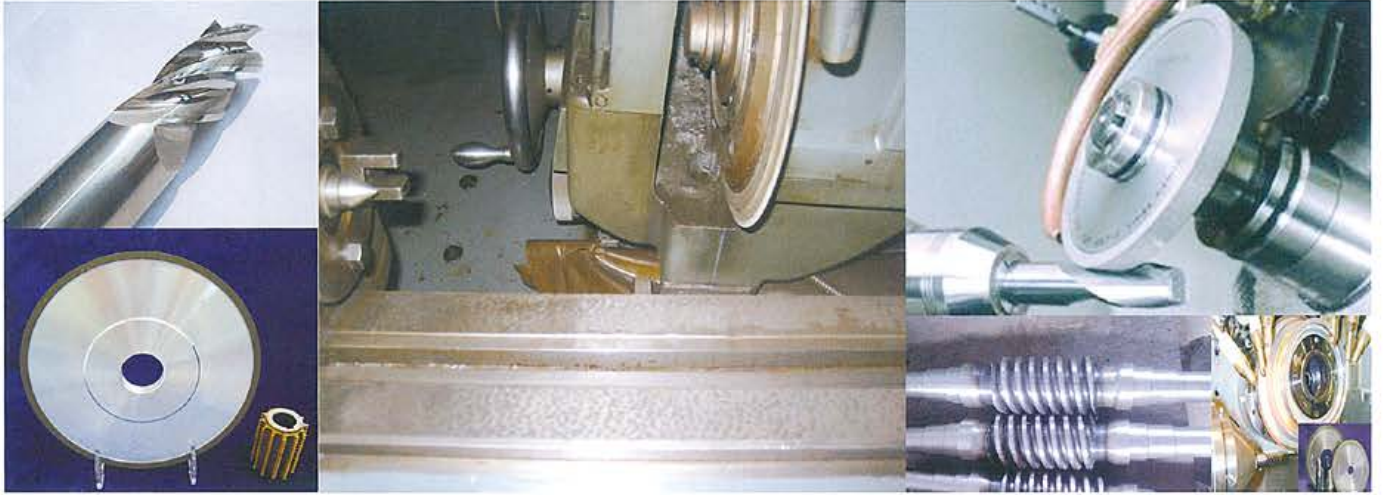


6A2 Cup wheel



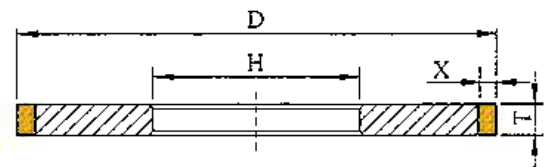
1A1 flat wheel

开槽、磨槽砂轮

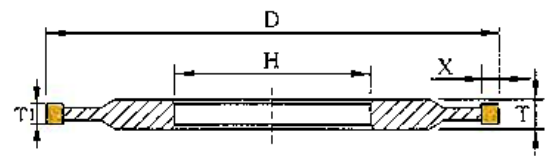


该类型砂轮适用于旋叶式压缩机、转向泵、叶片泵转子槽的磨削以及其他需要对工件进行开槽、磨槽的行业，例如钻头或硬质合金工具。主要配套各类数控槽磨机床，砂轮使用线速度不太高，一般在35m/s至80m/s之间。

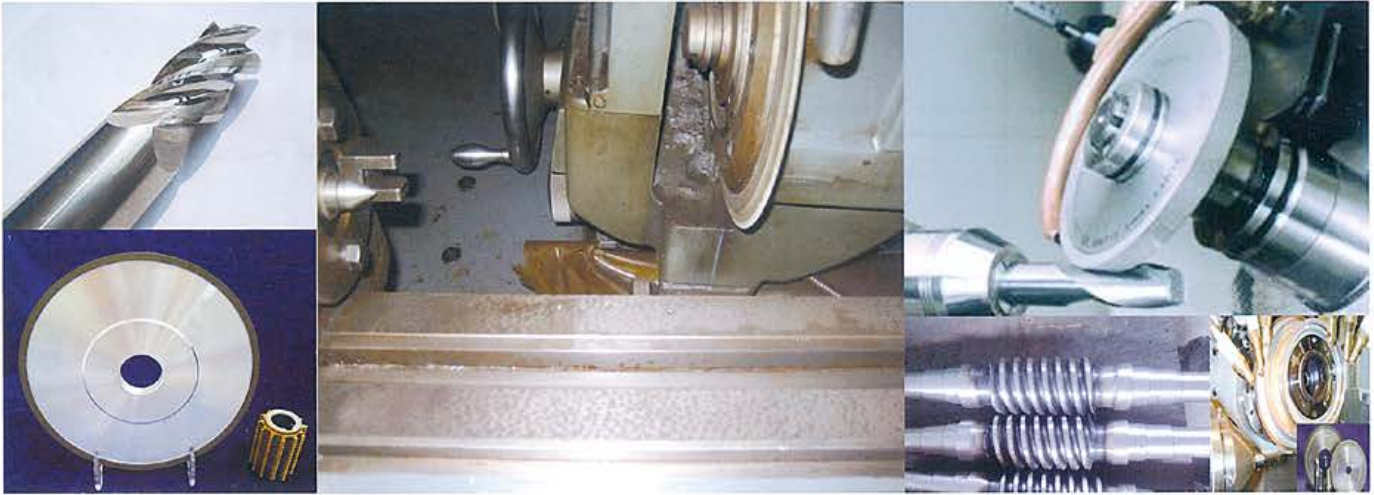
常用形状代码	1A1
D (mm)	100, 203
T (mm)	12, 1.2
H (mm)	20, 127
X (mm)	3, 5, 6
特规尺寸可按客户要求订制	



常用形状代码	14E6Q
D (mm)	210, 250, 300, 350, 357, 360, 400
T (mm)	10, 12, 15, 16, 20
H (mm)	32, 127, 152.4, 180, 203, 203.2
T1 (mm)	1.2, 1.4, 1.6, 1.7, 2.9
X (mm)	3, 5, 7, 10
特规尺寸可按客户要求订制	

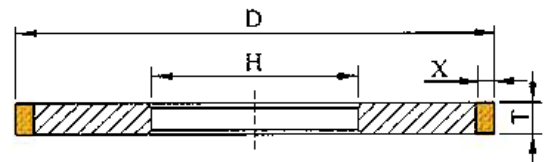


The vitrified CBN grinding wheels for groove slotting

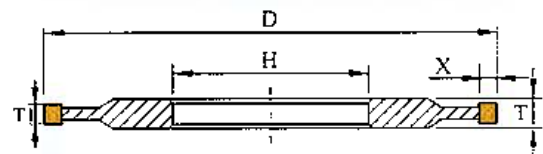


This type of vitrified CBN grinding wheels are developed for the purpose of precision groove slotting for hard metallic objects such as rotors in rotary vane compressor, power steering pump, vane pumps, also applied to other industries which need slotting grooves on working object, such as drill bits and tungsten-carbide tools. mainly installed and works with various CNC grinding machines with linear velocity generally between 35m-80m/s.

Common Used shape code:	1A1
D (mm)	100, 203
T (mm)	12, 1.2
H (mm)	20, 127
X (mm)	3, 5, 6
Special specification are customizable	



Common Used shape code:	14E6Q
D (mm)	210, 250, 300, 350, 357, 360, 400
T (mm)	10, 12, 15, 16, 20
H (mm)	32, 127, 152.4, 180, 203, 203.2
T1 (mm)	1.2, 1.4, 1.6, 1.7, 2.9
X (mm)	3, 5, 7, 10
Special specification are customizable	

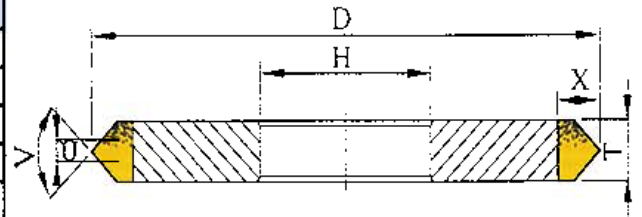


磨螺纹砂轮



该类型陶瓷结合剂CBN砂轮为合金钢或其他硬质金属工件上的精细螺纹磨削之用途而开发，例如螺栓、机械轴件，螺杆等等。主要适配数控螺纹磨床

常用形状代码	1E6Q
D (mm)	150, 200, 250, 300, 350, 400
T (mm)	8, 10, 12, 14, 15
H (mm)	20, 32, 75, 127, 160, 203
U (mm)	2.5, 2.8, 3.0
X (mm)	5, 10
V (°)	60°, 90°
特规尺寸可按客户要求订制	

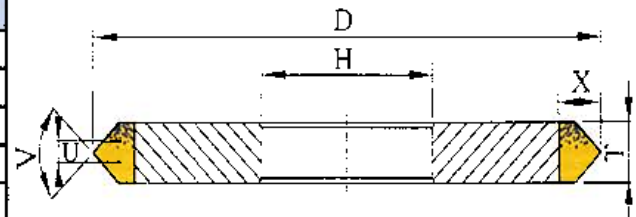


The Vitrified CBN grinding wheels for threads grind



This type of vitrified CBN grinding wheel are developed for the purpose of precise threads grinding on hard steels or other hard metallic objects such as screws, mechanical shafts, screws rods etc. mainly installed and works with CNC threads grinders.

Common Used shape code:	1E6Q
D (mm)	150, 200, 250, 300, 350, 400
T (mm)	8, 10, 12, 14, 15
H (mm)	20, 32, 75, 127, 160, 203
U (mm)	2.5, 2.8, 3.0
X (mm)	5, 10
V (°)	60°, 90°
Special specification are customizable	



主要特点

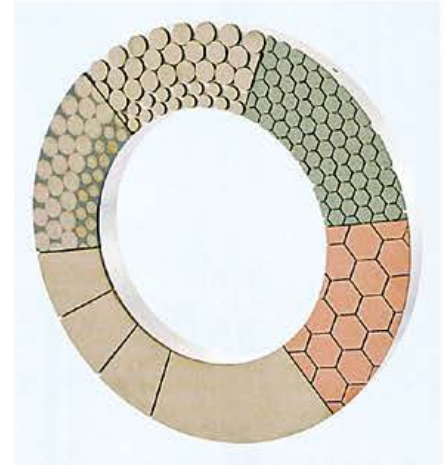
- rpm \leq 120低速研磨用磨盘，磨盘平面度 \leq 0.02mm/1000mm。
- 针对性开发磨盘配方，设计圆片、马赛克等不同盘面结构，满足不同材料的磨削要求。
- 磨盘直径范围 ϕ 534mm \sim ϕ 1200mm，规格可订制，交货期10个工作日以内。
- 工件加工精度高：平行度、平面度 \leq 0.003mm；表面质量好，Ra \leq 0.1 μ m。
- 配套STAHLI、PETER-WALTERS、AM和新乡日升等机床，在国内外企业成熟应用。

应用领域

主要用于汽车转向泵（叶片、定子、转子等）、汽车轴承和汽车变速齿轮箱等零件的双端面精密磨削。

加工材质

工件材质包括铁基粉末冶金、铸铁（灰铸铁、FC-250、镍铬钼合金铸铁等）、淬火轴承钢和高速钢等。



Main features

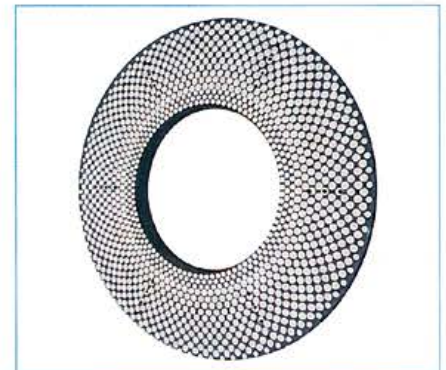
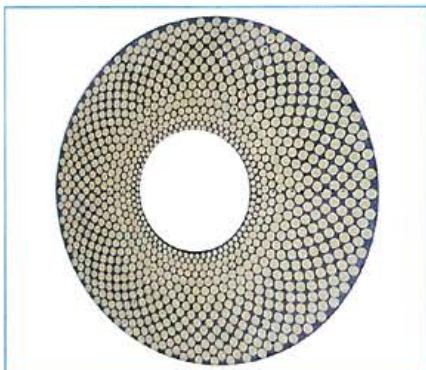
- Grinding disc rpm \leq 120,disc flatness \leq 0.02mm/1000mm.
- Grinding disc diameter:534-1200mm,leading time:10days.
- Work piece flatness tolerance \leq 0.003mm,Ra \leq 0.1 μ m.
- Verious of formula and brick shape, meet different requirements.
- Suitable for various of grinder machines, such as STAHLI, PETER-WALTERS,AM and so on.

Application

Double side grinding of auto steering pump(vane,stator,totor),bearing,speed change gear box.

Work piece material

Powder metallurgy alloy,bearing steel,HSS and cast iron(gray cast iron,FC-250,NiCrMo alloy).



主要特点

- rpm \leq 1500磨削用磨盘，磨盘平面度 \leq 0.01mm/600mm。
- 磨盘直径范围 ϕ 250mm \sim ϕ 600mm，规格可订制。
- 工件加工精度高：平行度、平面度 \leq 0.003mm；表面质量好，Ra \leq 0.2 μ m。
- 针对性开发磨盘配方，设计不同盘面结构，可满足不同材料的磨削要求。
- 配套KOYO、NESSEI、杭州机床和宁江机床等机床，在国内外企业成熟应用。

应用领域

主要用于空调、冰箱制冷压缩机零件（气缸、滑片、活塞和阀板等）的双端面精密磨削。

加工材质

工件材质包括铁基粉末冶金、高速钢、铸铁（灰铸铁、FC-250、镍铬铝合金铸铁等）、不锈钢（含氮化）、硬质合金等。

Main features

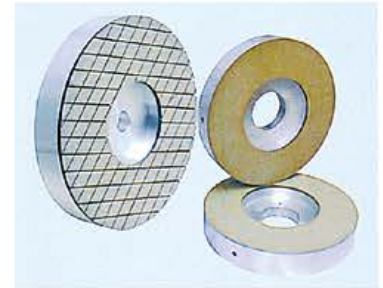
- Grinding disc rpm \leq 1500,disc flatness \leq 0.01mm/600mm.
- Grinding disc diameter:250-600mm.
- Work piece flatness tolerance \leq 0.003mm, Ra \leq 0.2 μ m.
- Various of formula and brick shape, meet different requirements.
- Suitable for various of grinder machines, such as KOYO, NESSEI and so on.

Application

Double side grinding of compressor parts(cylinder,gleithretter, piston and valve plate).

Work piece material

Powder metallurgy alloy,HSS and cast iron(gray cast iron,FC-250, NiCrMo alloy),stainless steel,carbide alloy ,etc.



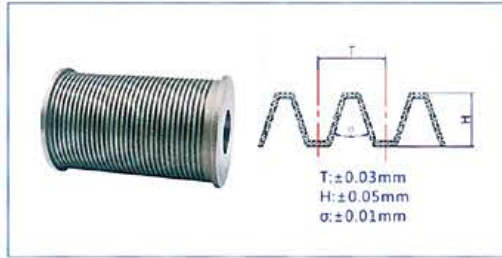
形状代号 Model	剖面简图 Profile Sketches	常用规格 Common Specs	
6A2M		书写格式(format):6A2M D \times T \times H \times W \times X	
		D	—
		T	—
		H	—
		W	—
6A2H		书写格式(format):6A2H D \times T \times H \times W \times X	
		D	—
		T	—
		H	—
		W	—
		X	—

注：除以上所有规格型号外，可以根据用户要求来设计和制造各种其它规格的砂轮。

Note: We can design and produce grinding wheels of others specifications according to the customers' requirement.



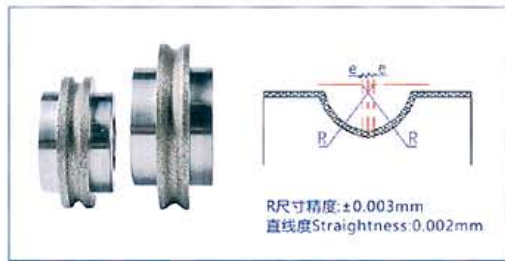
加工气门用金刚石滚轮
Diamond dressing rollers for valve



加工方向机齿条用金刚石滚轮
Diamond dressing roller for rack steering gear



加工水泵轴承用金刚石滚轮
Diamond dressing roller for water pump bearing



加工方向机螺杆用金刚石滚轮
Diamond dressing rollers for screw of steering gear



加工活塞环用金刚石滚轮
Diamond dressing rollers for piston ring

电镀金属结合剂超硬材料砂轮

Electroplated Metal Bond Superabrasive Grinding Wheels



发动机活塞缸珩磨用砂轮
Grinding wheels for engine piston honing



发动机活塞缸珩磨用砂轮
Grinding wheels for engine piston honing



空调压缩机叶片磨削用砂轮
Grinding wheels for air conditioning compressor blades

高精度成形磨削用金刚石修整滚轮

Diamond Dressing Rollers for High Precision Form Grinding

产品概述

公司采用内镀法生产的高精度滚轮，可以制作R0.1小圆弧面、小于1mm齿距的多齿复杂型面滚轮及高径比大于15、高度大于200mm的强力磨削用大型面滚轮，产品轮廓精度高，是高精度、高效成形磨削的最佳修整工具。

公司采用外镀法生产的各类滚轮，用于陶瓷CBN砂轮、内圆磨头的修整，具有修整效率高、直线度好等特点。

主要特点

- 修整效率高
- 型面一致性好
- 加工的工件质量稳定

应用领域与适用范围

广泛应用方向器螺杆、万向节、气门、轴承内外圈，凸轮轴、曲轴、连杆等诸多产品加工砂轮的修整。



加工凸轮轴用陶瓷CBN砂轮修整滚轮
Dressing roller for vitrified CBN wheels for grinding camshaft

Main features

We can produce high precision dressing rollers with inner galvanizing (UZ) methods. For example, we can supply complicated multi-teeth rollers with small radius R0.1 and teeth distance less than 1mm and heavy grinding rollers with height more than 200mm and height diameter ratio bigger than 1.5.

Our dressing rollers produced with outer galvanizing methods are used for dressing vitrified CBN grinding wheels and internal mounted points. Its features are high dressing efficiency and good straightness.

Main features

- High dressing efficiency
- Good profile consistency
- Stable workpiece quality

Application

They are widely used for dressing the grinding wheels for processing screw of steering gear, universal joint, valve, bearing inner and outer raceway, camshaft, crankshaft and connecting rods and so on.

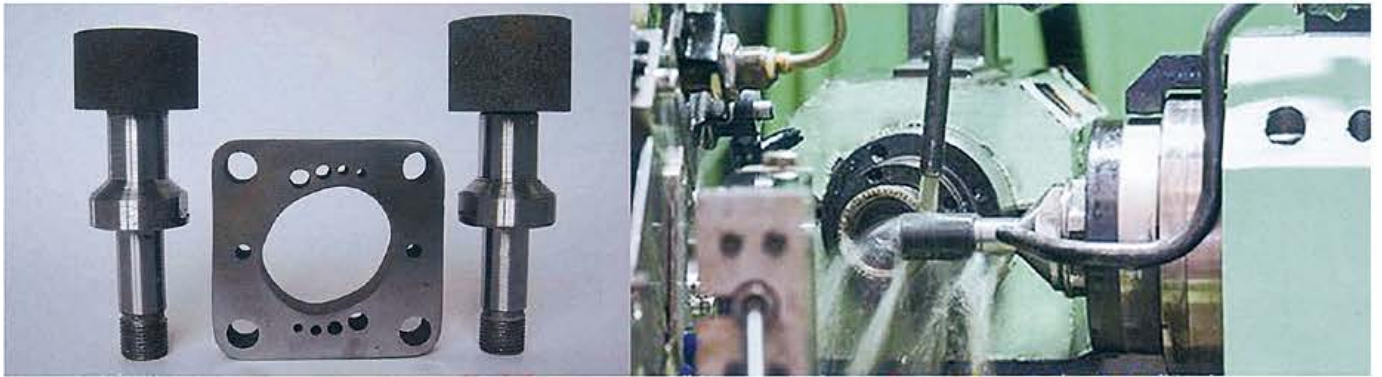


加工曲轴用金刚石滚轮
Diamond dressing roller for crankshaft

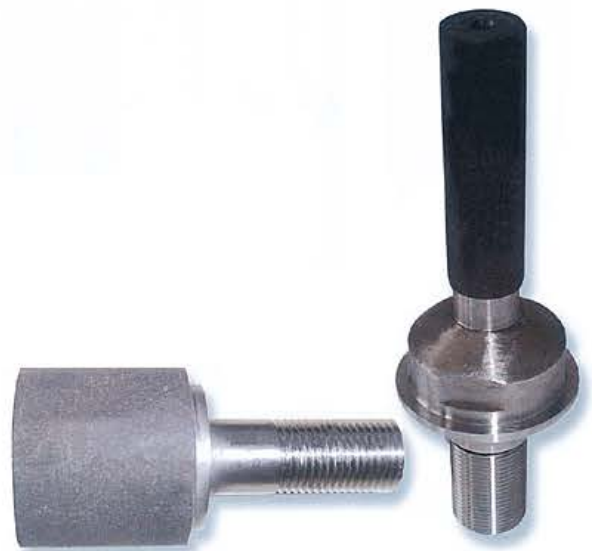


加工万向节用金刚石滚轮
Diamond dressing roller for universal joint

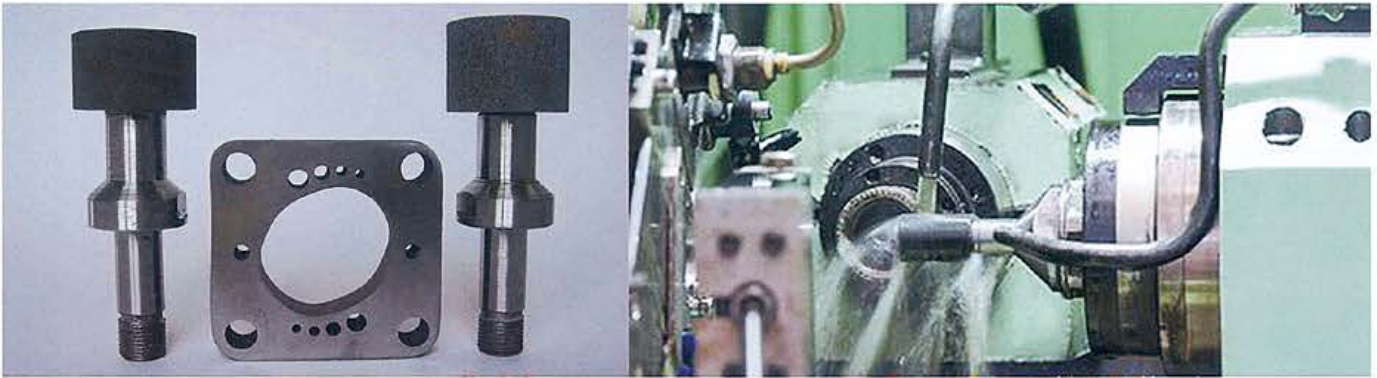
内圆及沟道磨砂轮



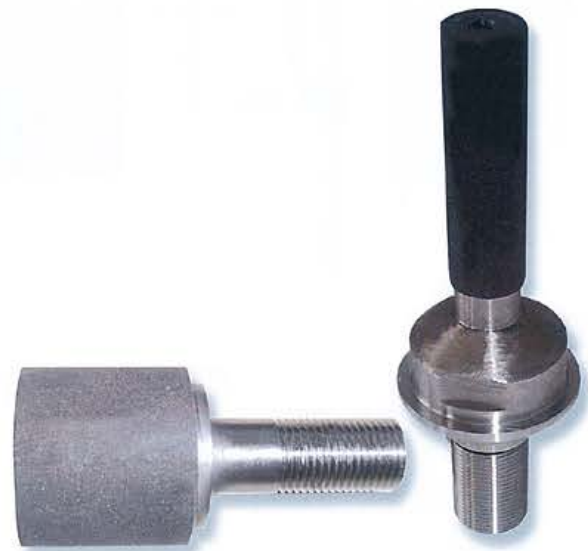
该类型砂轮适用于轴承内圈磨削、活塞式制冷压缩机气缸内孔及轴孔的内圆磨削、汽车转向泵、旋叶式压缩机转子内圆磨削，也适用于轴承的内外沟道磨削、汽车传动轴等速万向节球笼内外沟道磨削、钟形罩等。主要配套高线速度、高精度数控CBN内圆磨床。



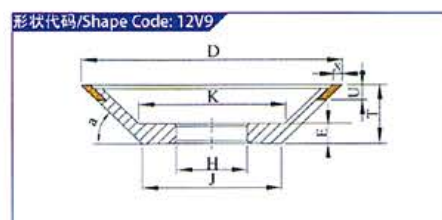
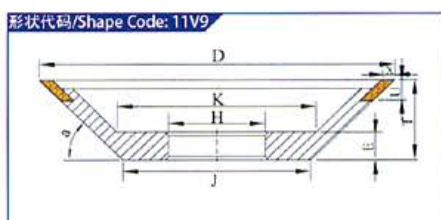
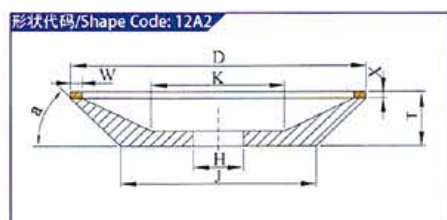
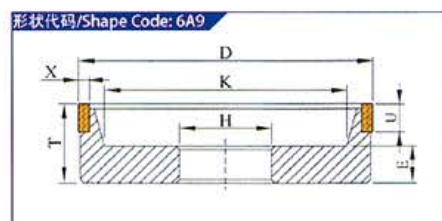
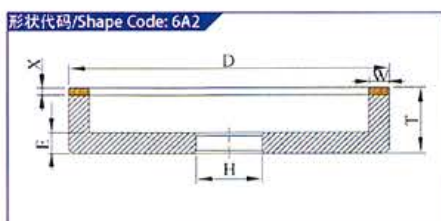
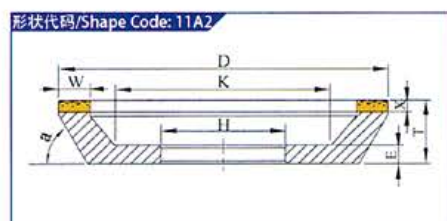
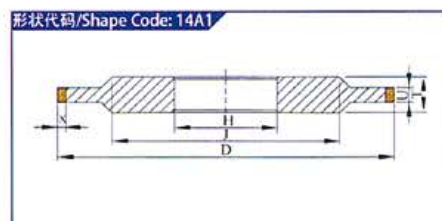
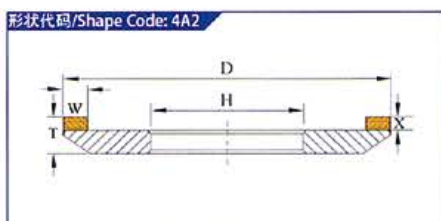
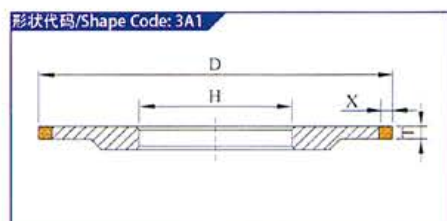
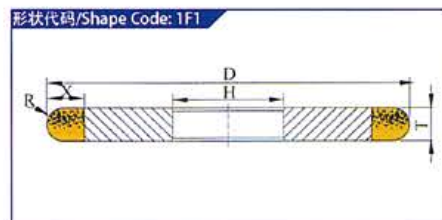
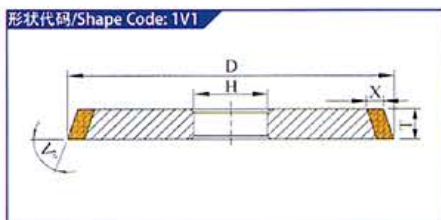
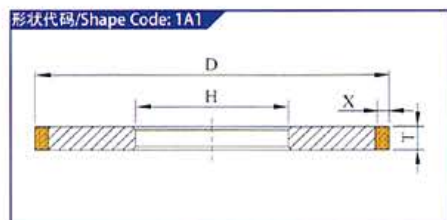
The Vitrified CBN grinding wheels for inner circle and groove grind



This Ceramic bond CBN grinding wheels are developed for grinding process of the inner ring of mechanical bearings, piston refrigeration compressor cylinder hole and shaft holes, steering pump for motor vehicles, spindle of rotary vane compressors, also applied to grinding process of inner and outer grooves of the mechanical shafts, inner and outer grooves of constant velocity joints and bell shaped yokes. mainly works with high speed, high precision CNC internal grinders.



砂轮标准形状及参数标记/Standard Shape Code and Spec.



订购示例/Example of purchase order

形状代码/ Shape Code	D (mm)	T (mm)	H (mm)	W (mm)	U (mm)	X (mm)	R (mm)	V (°)	J (mm)	K (mm)	a (°)	E (mm)	粒度/ Grits
1A1	175	10	32	15	/	/	/	/	/	/	/	/	#175/200
6A2	150	50	28	15	/	10	/	/	/	/	/	20	#175/200
6A9	150	50	28	/	15	10	/	/	/	/	/	25	#175/200
11A2	170	40	32	15	/	10	/	/	/	/	50°	20	W40
12V9	160	45	32	/	20	8	/	/	90	80	45°	20	W40