



SSDC

SEA SHORE DIAMOND INDUSTRIAL CO., LTD.

DIAMOND / CBN TOOLS MANUFACTORY

Excellent Products From Taiwan



Efficiency

Service

Quality



• www.ssdic.com.tw



Contents:

About us	pag 1
Abrasive Type	pag 2
Electroplated Products	pag 3
Resin Bond Products	pag 15
PCD Turning Tools	pag 20
PCBN Turning Tools	pag 22



INTRODUCTION

SSDC – Sea Shore Diamond Industrial Co., Ltd.

founded in Taiwan on 1987, having more than 30 years experiences on Custom manufacturing electroplated diamond grinding wheels and mounted points for Cutting, Forming, and Polishing, offering you the best quality, not only in our main production line but in our cutting tools, saw blades, dressers and more.

Having expended our product lines to bonded superabrasives such as Resin, Metal, and vitrified wheels and other tools.

We as industry leaders in manufacturing, we will provide your business quality, efficiency in quality control, personalize service and excellent lead time to fulfill yours and your customers demand.





ABRASIVE TYPE

Super abrasive includes **DIAAMOND** and **CBN**. There are two kinds of diamond powder: natural diamond (ND) and synthetic diamond (SD).

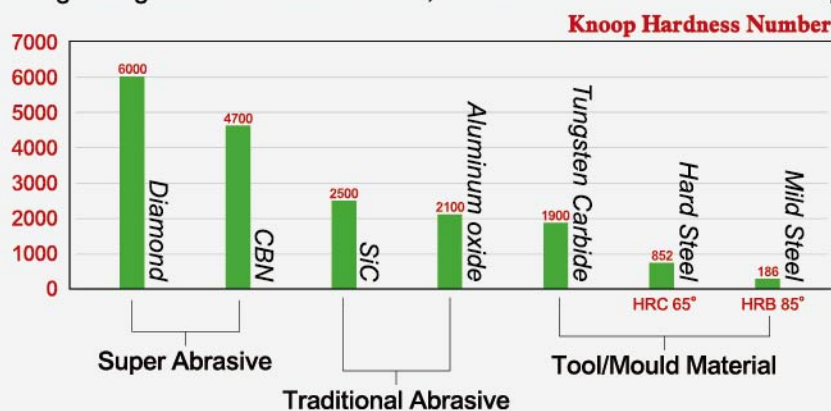
SD has been used more and more widely since it was invented in 1957, almost replacing ND.

Cubic boron nitride (CBN) was invented in 1969.

The hardness and abrasive resistance of CBN cannot compare with those of diamonds, but they are much higher than those of traditional abrasives. (aluminium oxide, carborundum) (as shown below)

Due to the strong resistance to high temperature and the chemical effect to Fe, Co and Ni,

CBN becomes the best grinding wheel for the hard steel, cobalt-based and nickel-based super alloy.



▪ The application of Diamond Wheels Grinding

DIAMOND
Tool material : Tungsten Carbide, Cermet, Ceramic (Aluminum oxide and so on), Tungsten Carbide
Electronic component : Ceramic (Aluminum oxide, talc and so on), Silicon, Germanium, Ceramics, Refractory
Magnetic material : Oxide, Rare earth cobalt, Ferric Oxide
Hard brittle material : Glass, Quartz, Ceramic, Glass, Quartz
Stone and ceramic product : Stone, Fire-resistant brick, Tile, Asphalt, Concrete, Stones, Gem Stones, Marble
Traditional grinding wheel : Aluminum oxide, SiC, Plastics, Fiber Glass
Abrasive-resistant metal material : Reinforced plastic, Graphite, Gem, Semi-gem Magnetic material, Carbide, Graphite

CBN
Tool material : SKH, SKS, SK, HSS, High-speed Tool Steels
Abrasive-resistant material : SKD, Cobalt-chromium-tungsten alloy, Metal material with harden layer, Die Steel, Heat-resisting Steels
Structural element : SCM, SNCM, SCr, Suj, High Alloy Steels, Cast iron
Corrosion-resistant metal material : SUS, Stainless Steels
High-heat-resistant metal material : SUH, Nickel-based super alloy, Titanium alloy, Casting Steels



ELECTROPLATED PUODUCTS

Super abrasive electroplated diamond tool combines the super abrasive and the surface of the alloy (usually iron material) firmly through by using the method of electroplating.

The thickness of the abrasive layer is the diameter of the abrasive. (Single Layer)



■ Features of Super Abrasive Electroplated Diamond Tool

1. Formed grinding wheel with low cost

The formed grinding wheel with super abrasive electroplated costs less than the one formed complexly by resin and metallic bond.

Electroplated formed wheel is very suitable for hi-mix low quantities manufacture.

2. Fewer Errors in Shape

Compared with the grinding wheel formed complexly by resin and metallic bond, electroplated formed wheel has high concentration degree so that the shape is relatively stable.

3. High Cutting and Grinding Ability

The blade is made of intensive super abrasive which has superior cutting and grinding ability.

Processing with it can reach standard precision and surface.

4. Embedded Quantity of Abrasive

Electroplated tools are classified by the applications and the processed materials.

There are three types of embedded quantity: 50%, 60% and 70%.

Low embedded quantity is designed for special requirement of cutting and grinding ability.

High embedded quantity is for heavy grinding and usually it is applied in the grinding with long service life.

▪ Machinery

Vibration-free, high-horsepower machinery is preferred for it's used.

If there is vibration or under-power it might cause damages to the Superabrasive, shortening the grinding wheel life time.

▪ Design Method of Electroplated Tool

1. Abrasives Thickness

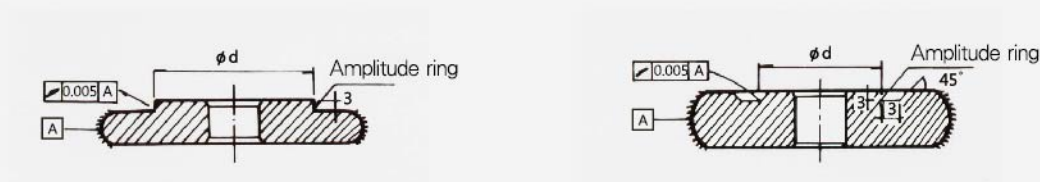
The abrasive thickness indication as follows:

Code	Indication method of diamond abrasive grit	Mesh	Abrasive layer thickness	
B	30	30/40	0.65	1.3
C	40	40/50	0.5	1
D	50	50/60	0.4	0.8
F	60	60/80	0.35	0.7
G	80	80/100	0.26	0.52
H	100	100/120	0.21	0.42
I	120	120/140	0.2	0.4
J	150	140/170	0.15	0.3
K	180	170/200	0.13	0.26
L	200	200/230	0.11	0.22
M	250	230/270	0.09	0.18
N	300	270/325	0.08	0.16
P	400	325/400	0.07	0.14
Q	500	400/500	0.06	0.12
R	600	40/60 μ	0.05	0.1
S	700	30/40 μ	0.04	0.08
T	800	20/30 μ	0.03	0.06
V	1000	15/25 μ	0.03	0.06
X	1200	10/20 μ	0.02	0.04
Y	1500	8/16 μ	0.01	0.02

single / double

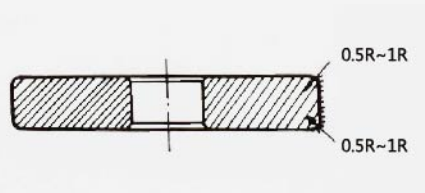
2. Amplitude Ring

The Superabrasives, is electrodeposited on the periphery and sides of the metal base



3. Shapes and Forms

Grinding wheels are available in a wide range of shapes.



▪ Assembly and Disassembly of Super Grinding Wheel

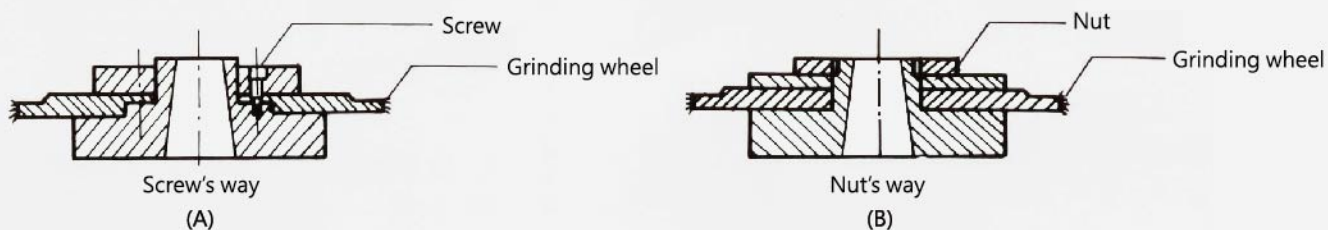
Without a proper installation, the wheel might present problems such as scratch on the workpiece, grinding noise increases, and other issues that will shorten the life of the grinding wheel.

Therefore the wheel has to be properly installed, making sure that:

1. The wheel is stabilize
2. Check the measure of the wheel to be the correct one
3. Adjust the wheel properly
4. Make sure all the above steps are correct before tasting the machinery

■ Design of the Flange

When assembling the grinding wheel, there are two ways to install the flange.



■ Revolution(s) Per Minute

The revolution speed of the grinding wheel is closely related with the service life of the wheel, the grinding speed of the processed material and the roughness of the grinding surface. The proper rotating speeds are shown in the figure.

Notes: It works well for the steel materials under faster speed if the condition of the machinery allows.

Grinding Wheel	Processed Material	Wheel's Rotated Speed (m/min)
Common grinding wheel	Super hard alloy	1000~1600
	Glass	1500~1600
	Oxide with magnetic center	1500~1800
	Hard rubber	3000~4000
	Reinforced plastic	4000~5000
	Shell	1500~2000
Internal points	Super hard alloy	100~1300
Cutoff wheel	Super hard semi-sintered material	1000~2000
	Shell	2000~2500
Drill pipe	Glass	100~150
	Shell	200~400

▪ Cutting Depth

As any other process mention above, the cutting depth is critical to preserve the high performance and life time of the wheel. Here the recommended work patterns

Abrasive grit	Feeding depth (mm)
100~120	0.02~0.03
140~200	0.01~0.02
230~below	0.01~below

▪ Tips

During the work, if the wheel got stock used WA (Aluminum oxide) or GC (Silicon Carbide) dressing stick to fix it.

▪ Diamond grit sizes measurement

The grits are usually given a numerical values that stand for their sizes, these values also give you an insight into the type of work or finishing you expected from the grinding wheel:

The smaller the grit value asignation is, the actual diamond particle will be larger (coarse grit) providing rough/coarse cut.

If you are hoping for a smooth and finest finishing, the grit value assignation should be higher.

Grit measurement

Coarser: #30 ~ #120

Moderate: #150 ~ #200

Fine: #250 ~ up to.....

▪ Types of grinding according to machinery usage

Non-Precision Grinding Machine:

1. Bench Grinder
2. Pedestal Grinder
3. Swing Frame Grinder
4. Portable Grinder

Precision Grinding Machine:

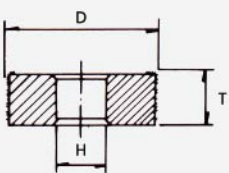
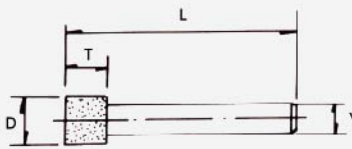
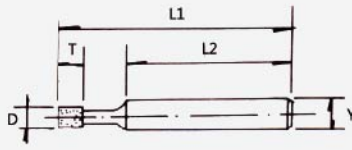
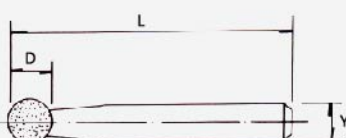


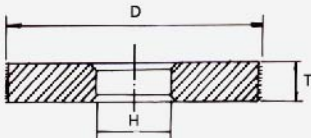
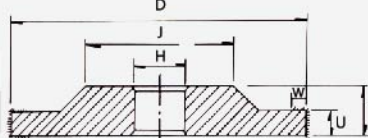
1. Tool and Cutter Grinder
2. Cylindrical Grinder
3. Surface Grinder
4. Centerless Grinder

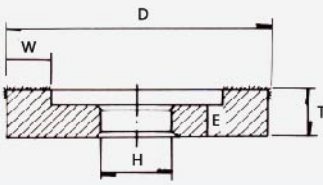
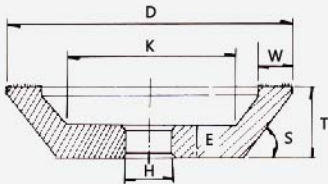
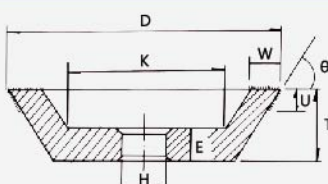
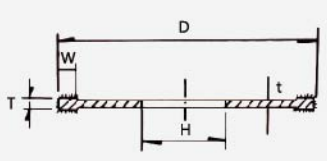
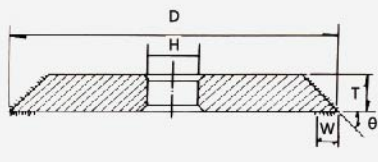
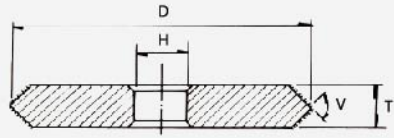
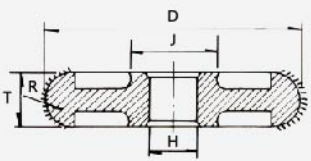
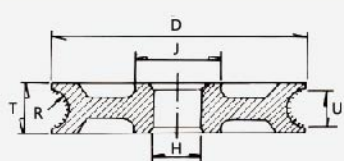
▪ Other grinding Machine

This can be Precision or Non-Precision grinding machines:

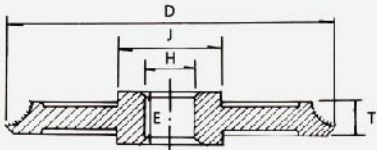
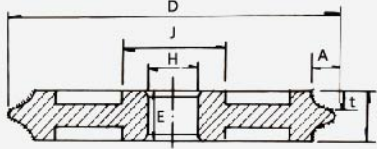
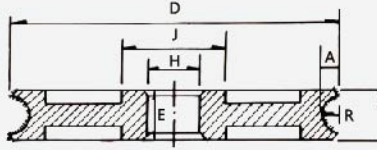
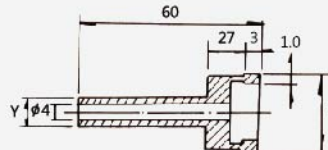
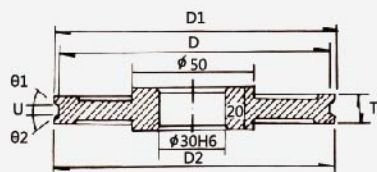
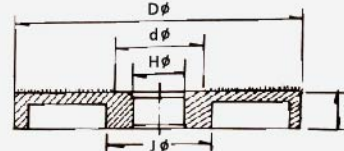
- WET (Using Coolant)
- DRY (Without Coolant)

Electroplated Wheel Specifications

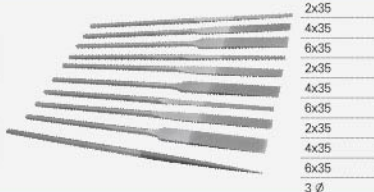


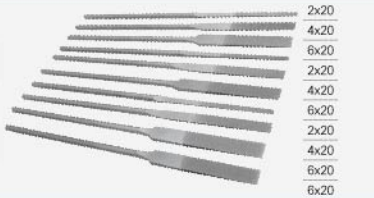


Model	Cutaway drawing	Common size (mm)				
SE 1-1 Small grinding wheel		D	T	H		
		10~45	1~20	specify		
SE 1-2 Burnisher with handle		D	T	Y	L	
		3.5~15	5~10	3 or 6	50~100	
		D	T	Y	L1	L2
		1~3	2~5	3	30~60	25~35
SE 2-1 Ball-shape burnisher		D	Y	L		
		1~20	2.35~6	25~60		
SE 2-2 Inverse trapezoidal burnisher		D	T	Y	L	θ
		1~20	specify	2.35~6	45~60	$0^{\circ}\sim 90^{\circ}$
SE 2-3 Triangle burnisher		D	T	Y	L	θ
		1~20	specify	2.35~6	45~60	$0^{\circ}\sim 90^{\circ}$
SE 3-1 Straight-shape		D	T	H		
		50~400	5~60	specify		
SE 3-2 Unilateral straight-shape		D	U	W	H	T
		50~350	1~15	2	specify	7~25
		J				
		40~220				

Model	Cutaway drawing	Common size (mm)				
SE 4 Flat-bowl		D	W	H	T	E
		50~150	3~20	specify	20~25	10~15
SE 5 Bowl-shape		D	W	S	H	T
		50~150	3~20	0~90	specify	12~35
		E	K			
		7~10	35~85			
SE 6 Horn bowl		D	W	U	H	T
		75~150	2~20	2~20	specify	25~35
		E	K	theta		
		10	35~85	0°~90°		
SE 7 Slice		D	Y	H		
		50~150	1	specify		
SE 8-1 Monoclinic		D	T	W	H	theta
		50~350	5~20	2~20	specify	0°~90°
SE 8-2 Diclinic		D	T	H	theta	
		50~350	5~20	specify	0°~90°	
SE 9-1 Arc convex		D	T	R	H	J
		50~350	5~160	specify	specify	specify
		U				
		specify				
SE 9-2 Arc concave		D	T	R	H	J
		50~350	5~160	specify	specify	specify
		U				
		specify				

Diamond-Saw-Blades

Model	Cutaway drawing	Common size (mm)				
SE 10-1 Single ring		D	T	R	H	E
		155	7~60	specify	16	7~60
SE 10-2 Double ring		D	T	R	H	E
		155	7~60	specify	16	7~60
SE 10-3 Rotating ball		D	T	R	H	E
		155	7~60	specify	16	7~60
SE 11 Drill bit		D	Y			
		6~100	6~13			
SE 12 Inverse grinding wheel		D	D1	D2	U	T
		100~160	101~165	101~165	2~10	6~14
		θ 1	θ 2			
		45°	45°			
SE 13 Grinding disk		D	d	H	T	J
		100~400	30~100	specify	8~15	specify



Model	Picture	Common size (mm)
5H0 Precise flat file (10 a set)	 <div> 2x35 4x35 6x35 2x35 4x35 6x35 2x35 4x35 6x35 3 Ø </div>	Total length 130 / shank diameter 3 / diamond length 30 Standard grit : #200 / #400 / #600 Diamond type : SD / CBN (specify)
5D5 File for iron (5 a set)	 <div> Triangle Flat Quadrangle Circle Semicircle </div>	Total length 215 / square shank / diamond length 80 Standard grit : #80 / #100 Diamond type : SD / CBN (specify)
5S0 Precise file (10 a set)	 <div> Flat Semicircle Triangle Circle Quadrangle </div>	Total length 140 / shank diameter 3 / diamond length 50 Standard grit : #100 / #150 / #200 Diamond type : SD / CBN (specify)
5M0 Flat file for machinery (10 a set)	 <div> 2x20 4x20 6x20 2x20 4x20 6x20 2x20 4x20 6x20 6x20 </div>	Total length 72 / shank diameter 3 / diamond length 15 or 20 Standard grit : #150 / #200 / #400 / #600 Diamond type : SD / CBN (specify)
5S5 Precise file (5 a set)	 <div> Triangle Quadrangle Circle Semicircle Flat </div>	Total length 200 / shank diameter 4 / diamond length 70 Standard grit : #80 / #100 Diamond type : SD / CBN (specify)
5B5 Precise flat file (5 a set)	 <div> 10x60 8x60 6x60 4x60 2x60 </div>	Total length 180 / square shank / diamond length 60 Standard grit : #150 / #200 / #400 Diamond type : SD / CBN (specify)

Diamond Dressers

Model	Picture	Common size (mm)
S E 1 Single point diamond dressers		Diamond NO. #5 / #10 / #20 / #25 / #33 / #50 / #75 Shank diameter : 8 / 10 / 12 mm Total length : 80 ~ 100 mm
S E 2 Coned diamond dressers		Diamond angle : 60° Diamond tip : 0.02-0.03 R Shank diameter : $\frac{1}{8}$ $\frac{1}{4}$ $\frac{3}{8}$ 10 mm Total length : 2 ~ 50 mm
S E 2-1 Diamond forming dressers (axe)		Natural diamond-angle : 55° / 60° Diamond tip : 0.2 / 0.5 R Synthetic diamond-angle : 45° / 55° / 60° Diamond tip : 0.2 / 0.5 R Total length : 80~100 mm Shank diameter : 10 or 12 mm
S E 3 Impregnated diamond dressers		Grit : rough (#16/36) moderate (#40/54) fine (#80/100) Total length : 80 mm Shank diameter : 12mm Diamond specification : A13x6x11 mm / B10x10 mm or specify 
S E 4 Multi-point diamond dressers		Single layer polylithic has three types : 3 / 5 / 7 diamonds Weight is about 1 cts Base : 16 ϕ / 14 ϕ Shank diameter : 10 or 12 Total length : 80
S D 1-1 Diamond cloth		Dot net diamond abrasive cloth design for the ease of removing chip used for grinding and polishing of stone used with other grinding tool. Specification : 50x100 mm
S D 2 Diamond powder		R-level : irregular shape, fragile, sharp, good cutting and grinding ability M-level : regular, hard blade, suitable for polishing various super hard alloys and ceramics Packaging: 10 cts/tank or 50 cts/ tank

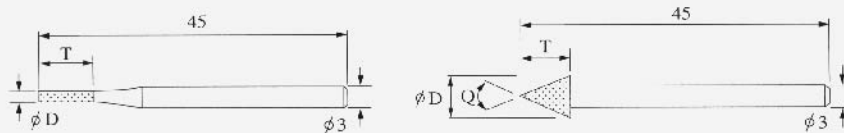
Specifications of Diamond Mounted

Shank diameter : 3mm

Total length : 45mm

Diamond grit : #150-100

Diamond (code : E3) CBN (code : H3)



Code: 300A1 (30 every case)

Shape																														
D ϕ	1.0	2.0	3.0	4.0	5.0	1.0	1.5	2.0	2.5	3.0	4.0	5.0	1.5	2.0	2.5	3.0	4.0	5.0	1.0	2.0	2.0	3.0	4.0	5.0	2.0	1.0	2.0	2.0	3.0	3.0
T/Q						8	8	8	10	10	10	10	8	8	10	10	10	10	5.5°	5.5°	10	10	10	10	10	15	7°	7°	10°	10°
NO	B010	B020	B030	B040	B050	A010	A015	A020	A025	A030	A040	A050	C015	C020	C025	C030	C040	C050	D025	D035	J020	J030	J040	J050	K308	K309	K207	K207	K300	K300















Code: 300A2 (30 every case)

Shape																														
D ϕ	2.0	3.0	4.0	3.5	1.0	2.0	1.0	2.5	3.0	3.5	1.5	2.5	3.0	3.5	2.0	3.0	3.5	2.0	1.0	5.0	6.0	3.0	3.0	3.0	6.0	2.0	2.0	3.0	3.0	6.0
T/Q				10	5.5°	5.5°	8	10	10	10	8	10	10	10	10	15	16	10	15	3.5	3.5	5	6	6	1.5	7°	7°	10°	10°	1
NO	B020	B030	B040	E035	D025	D035	A010	A025	A030	A035	C015	C025	C030	C035	J020	J031	J032	K308	K309	B06A	B08B	J03A	J03B	J03C	T060	K207	K207	K300	K300	S060

Code: 300A3 (30 every case)

Shape																														
D ϕ	1.5	2.5	3.0	2.5	3.0	3.5	1.0	1.5	2.0	2.5	3.0	3.5	1.5	2.0	2.5	3.0	3.5	3.0	3.0	2.0	3.0	3.5	1.0	2.0	2.0	1.0	2.0	2.0	3.0	3.0
T/Q				10	10	10	8	8	10	10	10	10	8	8	10	10	10	5	6	10	15	16	5.5°	5.5°	10	15	7°	7°	10°	10°
NO	B015	B025	B030	E025	E030	E035	A010	A015	A020	A025	A030	A035	C015	C020	C025	C030	C035	J03A	J03B	J020	J031	J032	D025	D035	K308	K309	K207	K207	K300	K300

Code: 300A4 (30 every case)

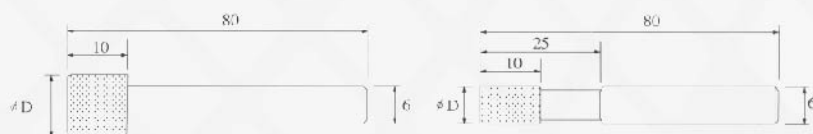
Shape														
D ^φ	1.0	0.7 1.5	5.0	6.0	5.0	6.0	6.0	7.0	8.0	6.0	7.0	8.0	10.0	12.0
T/Q	8	3°	28°	33°	19°	23°	10	10	10					
NO	C010	K103	K328	K633	K519	K623	A060	A070	A080	B060	B070	B080	B100	B120

Specifications of Diamond Mounted

Shank diameter : 6mm Total length : 80mm

Diamond surface length : 10mm

(Customization for special specification)



D ^φ /mm	Diamond Model code	Grit	D ^φ /mm	CBN Model code	Grit
1.0	E6A010	#140/170	1.0	H6A010	#140/170
1.5	E6A015	#140/170	1.5	H6A015	#140/170
2.0	E6A020	#100/120	2.0	H6A020	#100/120
2.5	E6A025	#100/120	2.5	H6A025	#100/120
3.0	E6A030	#100/120	3.0	H6A030	#100/120
3.5	E6A035	#100/120	3.5	H6A035	#100/120
4.0	E6A040	#100/120	4.0	H6A040	#100/120
4.5	E6A045	#100/120	4.5	H6A045	#100/120
5.0	E6A050	#100/120	5.0	H6A050	#100/120
5.5	E6A055	#100/120	5.5	H6A055	#100/120
6.0	E6A060	#100/120	6.0	H6A060	#100/120
6.5	E6A065	#100/120	6.5	H6A065	#100/120
7.0	E6A070	#100/120	7.0	H6A070	#100/120
7.5	E6A075	#100/120	7.5	H6A075	#100/120
8.0	E6A080	#100/120	8.0	H6A080	#100/120
8.5	E6A085	#100/120	8.5	H6A085	#100/120
9.0	E6A090	#100/120	9.0	H6A090	#100/120
9.5	E6A095	#100/120	9.5	H6A095	#100/120
10.0	E6A100	#100/120	10.0	H6A100	#100/120
11.0	E6A110	#80/100	11.0	H6A110	#80/100
12.0	E6A120	#80/100	12.0	H6A120	#80/100
13.0	E6A130	#80/100	13.0	H6A130	#80/100
14.0	E6A140	#80/100	14.0	H6A140	#80/100
15.0	E6A150	#80/100	15.0	H6A150	#80/100
16.0	E6A160	#80/100	16.0	H6A160	#80/100
17.0	E6A170	#80/100	17.0	H6A170	#80/100
18.0	E6A180	#80/100	18.0	H6A180	#80/100
19.0	E6A190	#80/100	19.0	H6A190	#80/100
20.0	E6A200	#80/100	20.0	H6A200	#80/100



RESIN BOND DIAMOND AND CBN WHEELS

Resin Bond diamond and CBN grinding wheels are made of either phenolic or polyimide resins. Combination of Pressure and heat are utilized to bond the resin to the substrate. This wheel is a great option for precision equipment, semiconductors, machinery.



- **Abrasive**

The resin bond is relatively soft, so the abrasive is easy to fall off which will generate unnecessary waste.

- **Grit**

The granularity is classified by mesh. For example, #150 uses mesh of #140/170.

The micro powder can be also indicated by the sieve mesh like #1500, #3000

We can design grinding wheels according to customers' requirement.

- **Grinding Liquid**

Diamond grinding wheel: usually use light (2~3%) water-soluble oil and adopt wet grinding if possible.

CBN grinding wheel: usually use heavy (5~10%) water-soluble oil.

CBN grinding wheel can perform well if chlorine and sulfone or vulcanized pure grinding liquid are applied.

■ Concentration Ratio

Concentration ratio refers to the amount of abrasive contained in the wheel in certain volume, as shown below.

Concentration ratio	Abrasive weight per cubic cm	Abrasive volume	Abrasive cover volume
25	1.1	6.3	8.9
50	2.2	12.6	18.6
75	3.3	19	28
100	4.4	25	37
125	5.5	31	47
150	6.6	38	56

■ Wheel Appearance

Both the grinding method and the processed material can polish the surface.

The surface of super hard alloys can be fully polished because of their hardness.

Under usual processing conditions, the relationship between the roughness of super hard alloys' surface and the grit is shown below: (For machinery, grinding and feeding, methods to assemble and disassemble and so on, please refer to introduction of the electroplated tool)

Surface roughness (um)		Suitable Grit
Ra	Rmax	
0.25~1 a	1~4 s	Rough grinding : #80 ~ #150
0.2~0.4 a	0.8~1.6 s	Moderate grinding : #180~ #200
0.05~0.2 a	0.2~0.8 s	Fine grinding : #400 #600
min~0.05 a	min~0.2 s	Mirror grinding : #1000 #1500

▪ Rotated Speed of the Grinding Wheel

The rotate speed of the grinding wheel is closely related with the service life of the wheel, the grinding speed of the processed material and the roughness of the grinding surface. The most suitable rotated speeds of super resinoid grinding wheel are shown in the figure.

Diamond grinding wheel

Wet grinding 1400-2000 m/min, Dry grinding 900-1200 m/min

Low speed, great cutting and grinding ability, but easy to wear

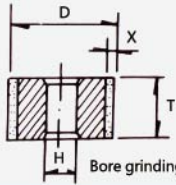
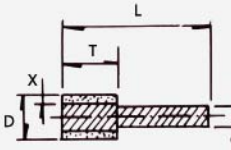
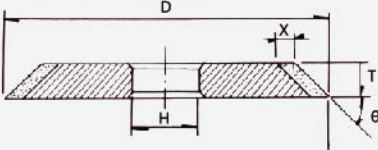
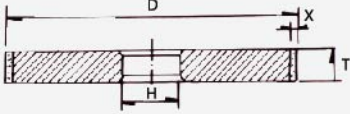
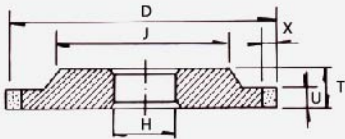
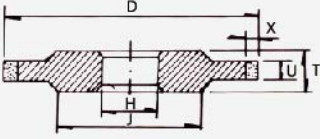
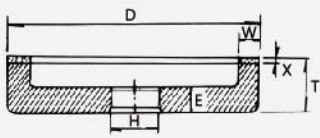
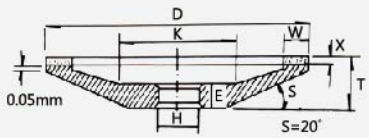
CBN grinding wheel

Higher speed makes greater cutting and grinding ability and longer service life

The faster the better under the condition that the machinery can bear the load



Resin Bonded Wheels Specifications •

Model	Cutaway drawing	Common size (mm)				
SB 1-1 Small grinding wheel 1A1		D	T	X	H	
		10~45	3~10	2 or 3	specify	
SB 1-2 Burnisher with handle 1A1W		D	T	Y	X	L
		6~25	6~12	2~10	2	40~100
SB 2 Umbrella-shape 14V1		D	T	Y	X	H
		75~150	5 or 10	30° or 45°	2 or 3	specify
SB 3-1 Straight-shape 1A1		D	Y	L	H	
		5~350	3~25	2~5	specify	
SB 3-2 Unilateral straight-shape 3A1		D	U	X	H	T
		50~350	3~20	2~5	specify	7~30
		J				
		40~220				
SB 3-3 Bilateral saight-shape 14A1		D	U	X	H	T
		50~350	3~20	2~5	specify	7~30
		J				
		30~200				
SB 4 Flat bowl 6A2		D	W	X	H	T
		75~250	5~20	1~3	specify	20~25
		E				
		10~15				
SB 5-1 Disk 12A2		D	W	X	S	H
		100~200	3~10	1~3	0°~45°	specify
		T	E	K		
		12~18	7~10	35~85		

Model	Cutaway drawing	Common size (mm)				
SB 5-2 Bowl-shape 11A2		D	W	X	S	H
		75~250	3~10	1~3	45°~90°	specify
		T	E	K		
		25~35	10	35~85		
SB 6 Horn bowl 11V9		D	U	X	H	T
		75~150	5~10	1~5	specify	25~35
		E	K	θ		
		10	35~85	70°		
SB 7-1 Regular L bowl 12C9		D	W	U	X	H
		75~150	10	5	2	specify
		T	E	K		
		25~35	10	35~85		
SB 7-2 Inclined L bowl 12V2		D	W	U	X	H
		75~150	10	5	2	specify
		T	E	K		
		25~35	10	35~85		
SB 8 Arc shape 14FF1		D	T	R	X	H
		50~300	5~25	specify	3 or 6	specify
SB 9 V-plane 14EE1		D	T	θ	X	H
		75~200	3~20	60°~90°	2 or 3	specify
SB 10 Single-V-plane 12A2		D	W	θ	X	H
		100~200	5 or 10	15°~30°	2	specify
SB 11 Double-double 9A3		D	W	X	H	T
		50~350	5~15	1~3	specify	20 or 25
		E				
		10~15				



PCD (Polycrystalline Diamond) and CBN Tools

PCD has a uniform hardness, toughness and shock resistance. These qualities enable exceptionally high cutting speeds on non-metallic materials and non-ferrous metals.



■ Application

Non Ferrous	Non Metallic
Aluminum alloys	Epoxy resins
Silicon-Aluminum alloys	Fiberglass composites
Brass & Bronze alloys	Carbon-Phenolic
Copper alloys	Hard Rubber
Zinc alloys	Plastics
Magnesium alloys	Ceramics
Presintered or Sintered Tungsten Carbide	Graphite
	Wood,Compound wood

▪ Advantages

While the costs of PCD tools are high, the returns of investment are often greater. Moreover, PCD tools come with perks that no other tools can replicate.

- High cutting and grinding force
- Longer lifespan
- Consistent results

▪ Turning Conditions

1. It should use precise high speed lathe with little vibration.
2. When turning on or off the working machinery, please do not place the turning tool on the processed material.
3. If the turning tool protrudes too much, the tool nose might be broken (chipping).
Therefore, do not protrude the tool when setting it up if there are no special requirements.
4. Do not directly use the caliper to measure the blade when setting up the tool or the blade might be damaged.
5. Use degreasing cotton with ethyl alcohol or paint oil to clean the blade.
Do not touch the blade with dirty cloth, finger, fingernail to prevent chipping.
6. When taking the turning tool, do not touch the blade.
7. It is too late to repair the turning tool when it has heavily wear. Repairing it in advance can prolong its service life.

▪ Suggested processing parameter

	Metallic	Non metallic	Note
Cutting depth	0.02 ~ 0.6 mm	0.2 ~ 1.5 mm	
Feeding speed	0.02 ~ 0.1 mm/rev	0.2 ~ 0.5 mm/rev	Depend on the roughness of the processed surface
Cutting and grinding speed	65 ~ 3000 m/min	30 ~ m/min	Free choose except the speed at the mechanical resonance
Cutting and grinding oil	Usually dry grinding Titanium alloy can use light oil	Dry grinding	Usually not use grinding oil



PCBN TURNING TOOLS

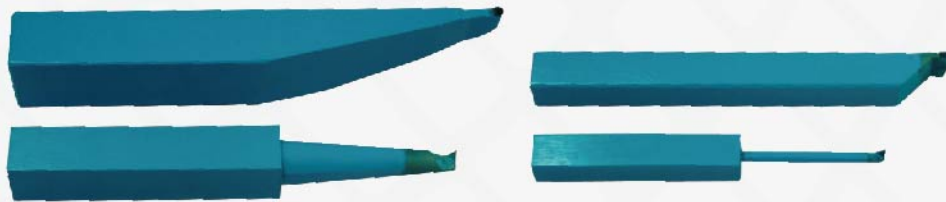
Polycrystalline CBN tools use cemented tungsten carbide which has been through high pressure and high temperature to combine with polycrystalline cubic boron nitride (CBN).

This turning tool has cemented tungsten carbide's strength and shock resistance as well as CBN's hardness and wear resistance.

It is especially suitable for processing the hard iron series material and the high-temperature alloy.

So far, CBN is the second hard material only to diamond.

General Electric which invented CBN tools calls it BZN tool for short.



▪ Advantages of CBN Tool

A. It increases productivity

1. Use turning instead of grinding
2. Has higher speed and removal rate thus increasing productivity
3. Keep stable tolerance in long time thus increasing the processing precision
4. Reduce the downtime of high investment machinery
5. High productivity of every blade than tungsten carbide's or ceramic cutting tool's productivity

B. It has precision

1. Get great surface roughness on the hard alloy through the cutting method
2. Reduce the metallographical harm
3. No need to adjust or replenish the blade during processing because the blade is wear-resisting
4. With wear resistance, the blade helps keep the tolerance time

▪ Application

Materials suitable for PCBN turning tools


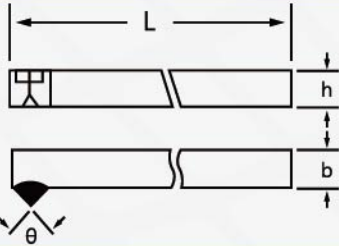
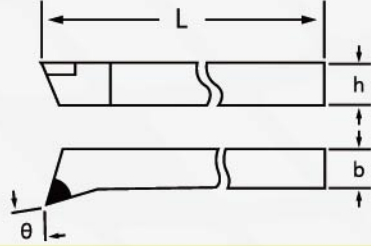
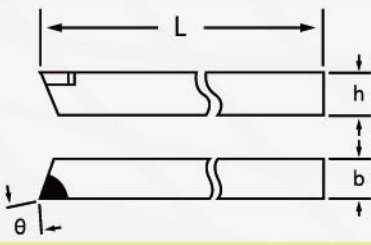
Hardened iron metal (HRC >45)	High temperature alloy (HRC >35)
Alloy steel (AISI/SAE)	Nickel base alloy
1055 , 4140 , 4340 , 8620 , 52100	Inconel , Rene , Monel ,
(JIS) (S55C , SCM440H , SNCM220 , SUJ2)	Incoloy , Waspalloy
Tool steel : (AISI/SAE)	Cobalt base alloy
M-2 , M-42 , T-15 , O-2	Stellite , Colmonoy , Wallex
(JIS) (SKH9 , SKH10)	High cobalt powder metal
A-2 , D-2 , S-5	
(SKD12 , SKD11)	
Cast iron : chilled cast iron, hard wire cast iron	

Industry for PCBN turning tools

Area	Part	Material
Automobile	Gear	8620 carburizing steel
	Axis	8620 carburizing steel
	Valve seat	High cobalt steel, cast iron, nickel steel
Aviation	Disc	Inconel 718 alloy steel
	Axis	In-100 alloy, Rene 95 alloy
Steelmaking	Steel chilled roll	Cast iron 52100
earing (pump / valve)	Race	Bearing steel
	Wearing parts	Hard nickel cast iron
	Surface hardening alloy	Satellite, Waspalloy, Colmonoy



Specification of PCD & PCBN Turning Tools

Shape	Size						
	Model	condition	L	h	b	θ	Blade diameter
	A-1		80	10	10	90°	>0.2
	A-2		100	13	13	90°	>0.2
	A-3		120	16	16	90°	>0.2
	A-4		140	19	19	90°	>0.2
	B-1	R · L	80	10	10	90°	>0.2
	B-2	R · L	100	13	13	90°	>0.2
	B-3	R · L	120	16	16	90°	>0.2
	B-4	R · L	140	19	19	90°	>0.2
	C-1	R · L	80	10	10	60°	>0.2
	C-2	R · L	100	13	13	60°	>0.2
	C-3	R · L	120	16	16	60°	>0.2
	C-4	R · L	140	19	19	60°	>0.2
	D-1	R · L	80	10	10	80°	>0.2
	D-2	R · L	100	13	13	80°	>0.2
	D-3	R · L	120	16	16	80°	>0.2
	D-4	R · L	140	19	19	80°	>0.2

Ordering Instruction

Please inform us the following details :

- 1. The processed material (Detailed composition)
- 2. The processing conditions: Operation method (manual or auto or semi-auto)
Operation type (boring or milling) Cutting and grinding speed (m/min) Amount of feeding (m.m/rev) Deep cutting (m.m)
Cutting and grinding way (dry or wet) Requirement for the surface roughness.
- 3. Shape and size of the tool (please offer detailed drawing)

Date : / /

Customer				
Tel		Fax		
Address				
Abrasives	<input type="checkbox"/> Diamond (SD)		<input type="checkbox"/> Cubic Boron Nitride (CBN)	
Grit Size		Quantity		
Grinding Method	<input type="checkbox"/> Dry <input type="checkbox"/> Wet <input type="checkbox"/> Both			
Bonding Method	<input type="checkbox"/> Electroplating <input type="checkbox"/> Resin Bonding <input type="checkbox"/> Vitrified Bonding <input type="checkbox"/> Metal Bonding			
Work material	<input type="checkbox"/> Tungsten Carbide <input type="checkbox"/> Ceramic <input type="checkbox"/> Cermet <input type="checkbox"/> Steel HRC <input type="checkbox"/> Glass <input type="checkbox"/> Other			
Grinding Speed		Grinding Depth		
Detailed Dimensions				
Diameter :		Thickness :		
Width :	Hole :	E :	R :	Q :
T :	Y :	L :	X :	
Detailed print or sketch				