

CFDA标准卡口

CFDA standard bayonet

部分尺寸(A)（不锈钢整体式A级刃口加工）

Some size(A) (Stainless steel solid A-grade cutting edge process)

（不锈钢整体式
加工,刃口A）
(stainless steel
integrated
machining,
edge A)

刃径 φD Diameter	柄径 φd Shank Dia.	總長L Overall length 総長さ	刃數 No. of flute	刃口头部材料 Head cutting edge material
1.40	2.35	34	6	① 超高防銹高耐磨不銹鋼系列(AA) (HRC54° ± 2° 斷面)(常規常備) ② 一般防銹超高耐磨不銹鋼系列(A) (HRC64° ± 2° 斷面)(常規常備)
2.30	2.35	34	8	① Super-high anti-rust high wear resistance stainless steel series(AA) (HRC54° ± 2° Section)(regular in stock) ② General anti-rust high wear resistance stainless steel series(A) (HRC64° ± 2° Section)(regular in stock)
3.10	2.35	34	12	

刃口頭部材料:

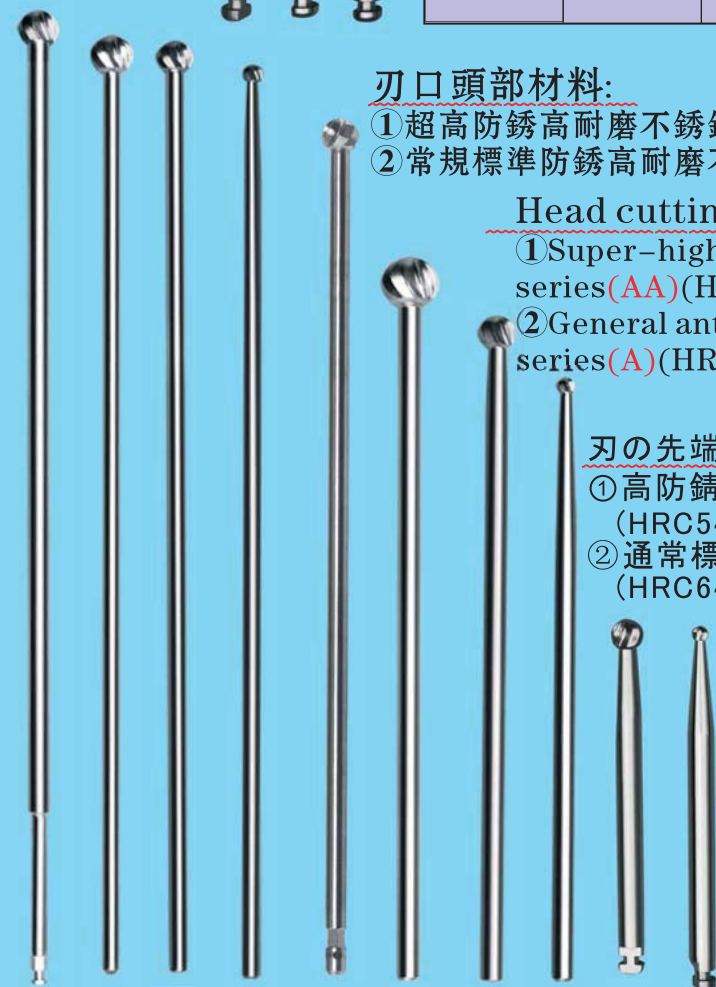
- ① 超高防銹高耐磨不銹鋼系列(AA)(HRC54° ± 2° 斷面)(常規常備)
- ② 常規標準防銹高耐磨不銹鋼系列(A)(HRC64° ± 2° 斷面)(常規常備)

Head cutting edge material:

- ① Super-high anti-rust high wear resistance stainless steel series(AA)(HRC54° ± 2° Section)(regular in stock)
- ② General anti-rust high wear resistance stainless steel series(A)(HRC64° ± 2° Section)(regular in stock)

刃の先端部材質

- ① 高防銹高耐磨耗ステンレスシリーズ(AA)
(HRC54° ± 2° 斷面)(通常常備)
- ② 通常標準防銹高耐磨耗ステンレスシリーズ(A)
(HRC64° ± 2° 斷面)(通常常備)





（钨钢对焊式加工，刃口AA）
Carbide butt welded process, edge AA

柄部為超高防銹高硬度高剛性不銹鋼（AA）
（HRC54° ± 2° 斷面）
Handle material is the super high rust-proof, high-hardness & high-rigidity stainless steel (AA) (HRC54° ± 2° section)

部分尺寸(AA)（鎢鋼對焊式AA級刃口加工）

some sizes(AA) Carbide butt welded AA grade cutting edge process

刃徑 ΦD Diameter	柄徑 Φd Shank Dia.	脖徑 Φd1 Neck Dia.	錐度長 L1 Length of taper 錐長	總長 L Overall length (也可依要求改短總長)	刃數 Z No. of flute	刃口頭部材料 Head cutting edge material
0.50	2.35	0.40	10	34	6	超高硬度超高耐磨(硬質合金) 鎢鋼對焊式AA系列(常規常備) Ultra High Hardness Ultra High Wear Resistant (Carbide) Tungsten Steel Butt Welded AA Grade Series (Regular Stock)
0.80	2.35	0.60	10	34	6	
1.00	2.35	0.65	10	34	6	
1.40	2.35	0.79	10	34	6	
1.80	2.35	0.92	10	34	8	
2.30	2.35	1.28	10	34	8	
3.10	2.35	1.68	10	34	12	

頭部刃口材料:

- ① 超高硬度超高耐磨鎢鋼(硬質合金)對焊式(AA)(常規常備)(整體式可定制)(HRA90° ~94° 系列)鎢鋼刃
- ② 高抗衝擊超高耐磨鎢鋼(硬質合金)對焊式(AA)(HRA82° ~87° 系列)鎢鋼刃(批量才可定制)
- ③ 超高防銹高耐磨不銹鋼系列(AA)(HRC54° ± 2° 斷面)
- ④ 常規標準防銹高耐磨不銹鋼系列(A)(HRC56° ~64° 斷面系列)

Head cutting edge material:

- ① High hardness & high wear-resisting carbide (hard alloy) (The general is welded AA)(regular stock) (Solid type can be customized) (HRA90° ~94° series).
- ② High impact resistant & ultra-high wear resistant tungsten steel (carbide) butt welding (AA) (HRA82° ~87° series) tungsten steel edge (It can only be customized with big quantity)
- ③ Super-high anti-rust high wear resistance stainless steel series(AA)(HRC54° ± 2° Section)
- ④ General anti-rust high wear resistance stainless steel series(A)(HRC56° ~64° Section series)

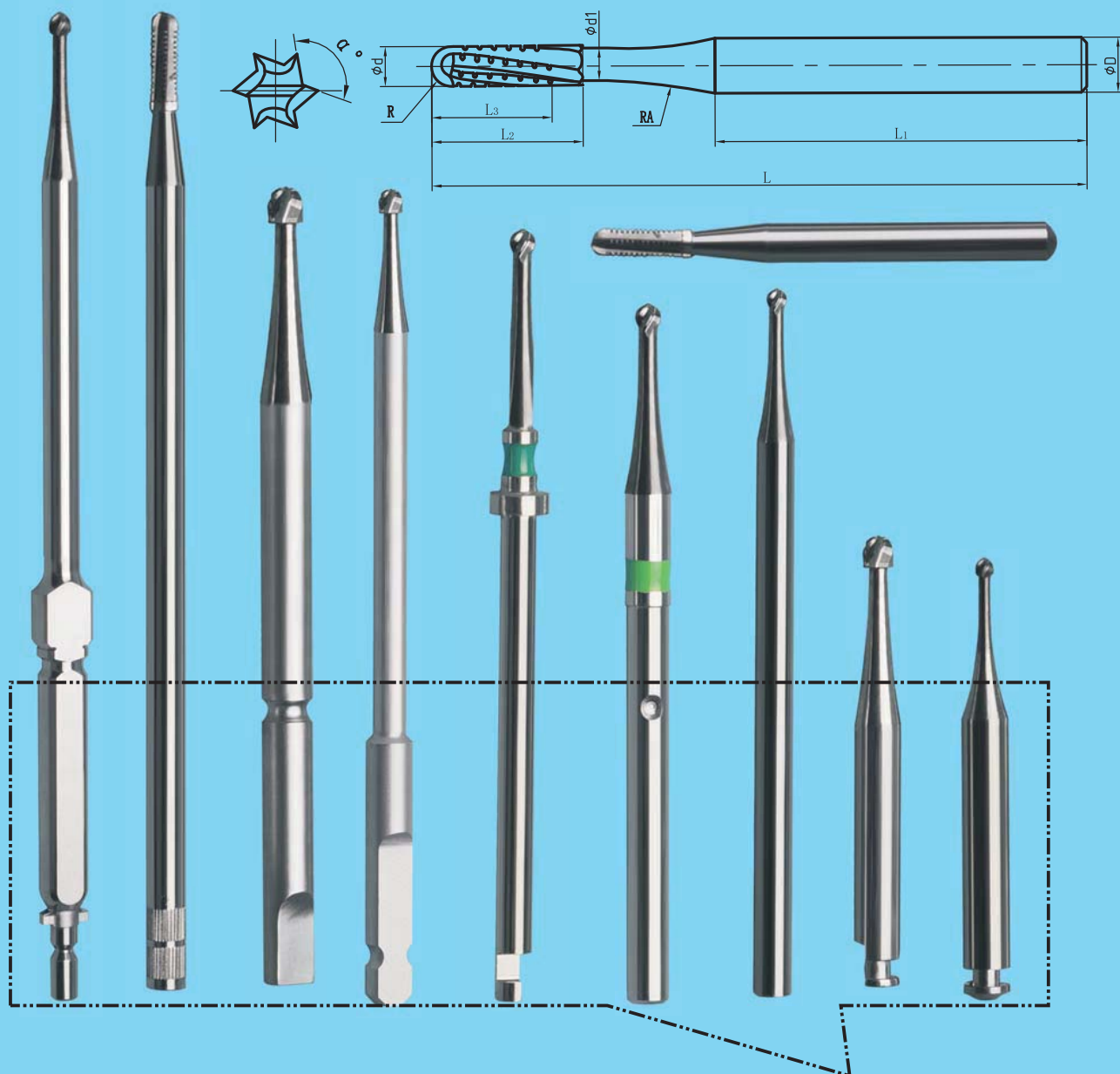


頭部刃口材料:

- ① 超高硬度超高耐磨鎢鋼(硬質合金)(常規常備為對焊式AA)(整體式可定制)(HRA90° ~94° 系列)鎢鋼刃
- ② 高抗衝擊超高耐磨鎢鋼(硬質合金)對焊式(AA)(HRA82° ~87° 系列)鎢鋼刃(批量才可定制)
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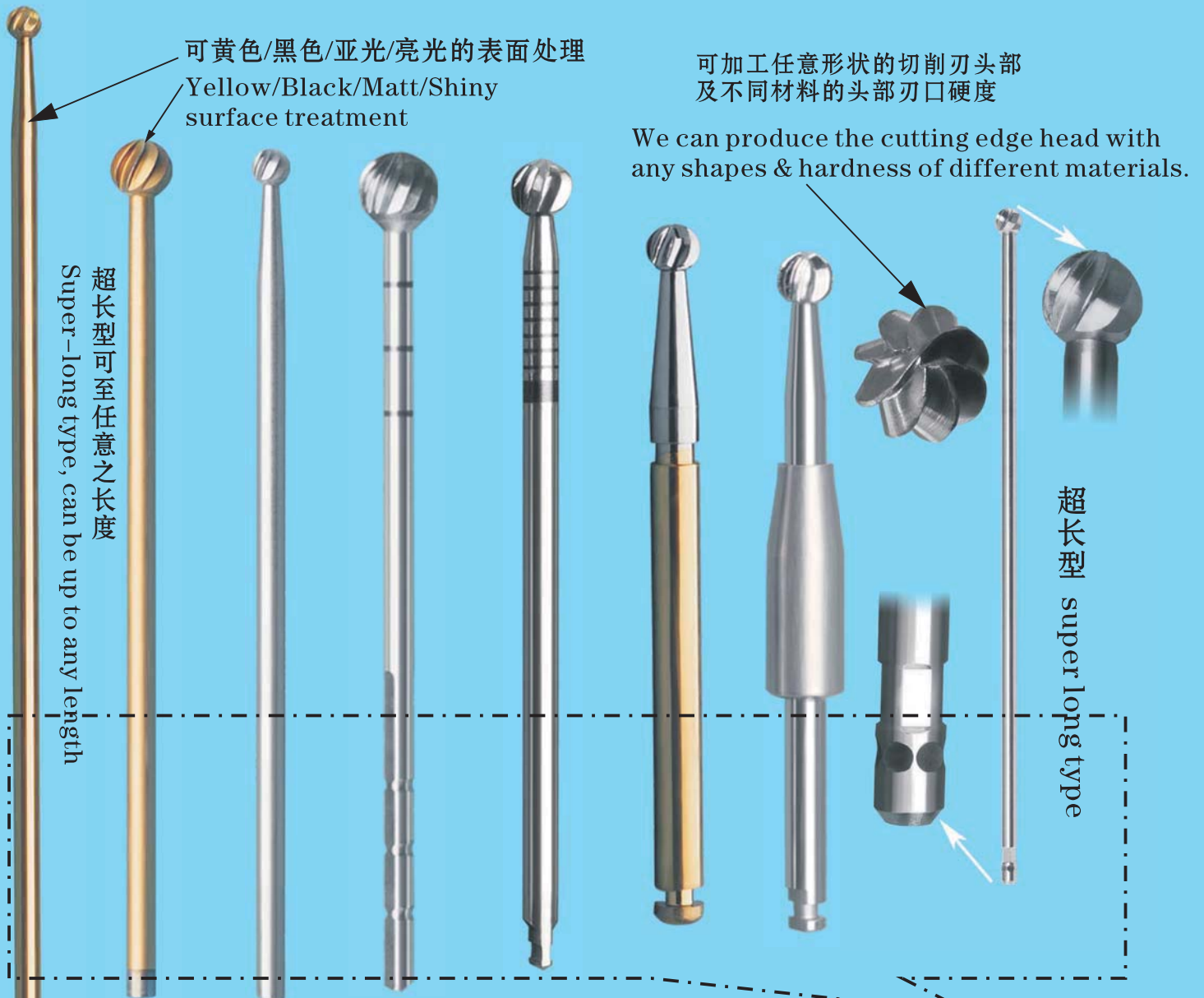
Head cutting edge material:

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(HRA82° ~87° series) tungsten steel edge (It can only be customized with big quantity)
- ③ Super-high anti-rust high wear resistance stainlesssteel series(AA)(HRC54° ± 2° Section)
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We can also process super-complicated shank shapes, structures, with inner cooling hole, finish, tolerance and super-long total length as customers' requirement

也可依要求加工超复杂的柄部形状、结构、带内冷却孔方式、精度、公差、超长的总长度等等



We can also process super-complicated shank shapes, structures, with inner cooling hole, finish, tolerance and super-long total length as customers' requirement

也可依要求加工超複雜的柄部形狀、結構、帶內冷卻孔方式、精度、公差、超總長度等

頭部刃口材料:

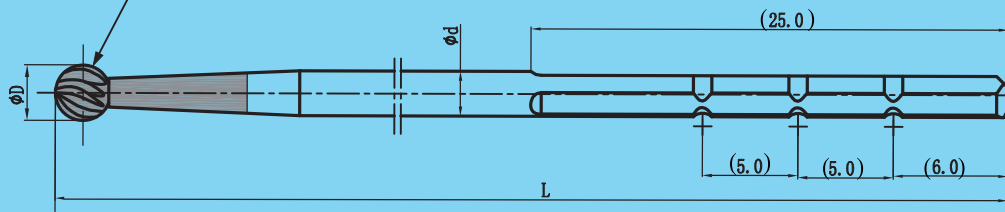
- ① 超高硬度超高耐磨鎢鋼(硬質合金)(常規常備為對焊式AA)(整體式可定制)(HRA90° ~94° 系列)鎢鋼刃
- ② 高抗衝擊超高耐磨鎢鋼(硬質合金)對焊式(AA)(HRA82° ~87° 系列)鎢鋼刃(批量才可定制)
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(HRA82° ~87° series) tungsten steel edge (It can only be customized with big quantity)
- ③ Super-high anti-rust high wear resistance stainless steel series(AA)(HRC54° ± 2° Section)
- ④ General anti-rust high wear resistance stainless steel series(A)(HRC56° ~64° Section series)

常规常备可加工刃径范围（Φ0.20～Φ20.0mm系列）

Regular stock can be processed into edge diameter of Φ0.20～Φ20.0mm series



（可定制任意柄部形状及长度，最长可加工至750mm）

（Any shank shape or length can be customized, the longest we can process is up to 750mm）

部分尺寸(AA)（鎢鋼對焊式AA級刃口加工）

some sizes(AA) Carbide butt welded AA grade cutting edge process

刃徑 ΦD Diameter	0.50	0.80	1.00	1.40	1.80	2.30	2.70	3.10	3.50	4.00	4.50	5.00	6.00	7.00
柄徑 Φd Shank Dia.	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35
總長L Overall length 總長さ	70	70	70	70	125	70	70	70/150	70	70	70	70	90	65

（刃口鎢鋼對焊式加工AA）
Carbide butt welded
process, edge AA



1. 柄部為超高防銹高硬度高剛性不銹鋼（AA）
（HRC54° ± 2° 斷面）
2. 也可依要求加工超複雜的柄部形狀、結構、帶內冷卻孔方式、精度、公差、超總長度等
1. Handle material is the super high rust-proof, high-hardness & high-rigidity stainless steel (AA)
(HRC54° ± 2° section)
2. We can also process super-complicated shank shapes, structures, with inner cooling hole, finish, tolerance and super-long total length as customers' requirement.

刃口頭部材料:

- ① 超高硬度超高耐磨鎢鋼(硬質合金)(常規常備為對焊式AA)(整體式可定制)(HRA90° ~94° 系列)鎢鋼刃
- ② 高抗衝擊超高耐磨鎢鋼(硬質合金)對焊式(AA)(HRA82° ~87° 系列)鎢鋼刃(批量才可定制)
- ③ 超高防銹高耐磨不銹鋼系列(AA)
(HRC54° ± 2° 斷面)
- ④ 常規標準防銹高耐磨不銹鋼系列(A)
(HRC56° ~64° 斷面系列)

Head cutting edge material:

- ① High hardness & high wear-resisting carbide (hard alloy)
(The **regular stock** is welded AA) (Solid type can be customized) (HRA90° ~94° series).
- ② High impact resistant & ultra-high wear resistant tungsten steel (carbide) butt welding (AA) (HRA82° ~87° series) tungsten steel edge (It can only be customized with big quantity)
- ③ Super-high anti-rust high wear resistance stainless steel series(AA)(HRC54° ± 2° Section)
- ④ General anti-rust high wear resistance stainless steel series(A)(HRC56° ~64° Section series)

可依要求加工刃數及超複雜的柄部形狀結構、公差

Can be processed according to the required number of blades

要求された刃の数及び超複雑な柄部形状構造、公差で加工できる

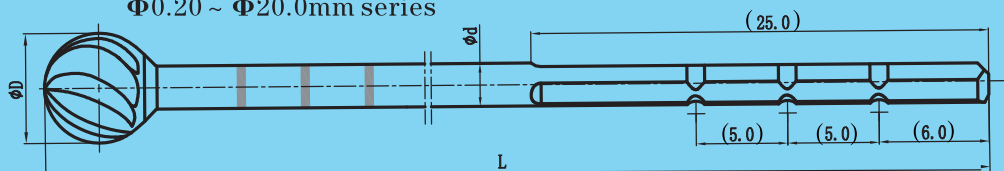
（可定制任意柄部形状及长度，最长可加工至750mm）

（Any shank shape or length can be customized, the longest we can process is up to 750mm）

常规常备可加工刃径范围（Φ0.20 ~ Φ20.0系列）

Regular stock can be processed into edge diameter of Φ0.20 ~ Φ20.0mm series

（刃口AA加工）
process edge AA



部分尺寸 some sizes

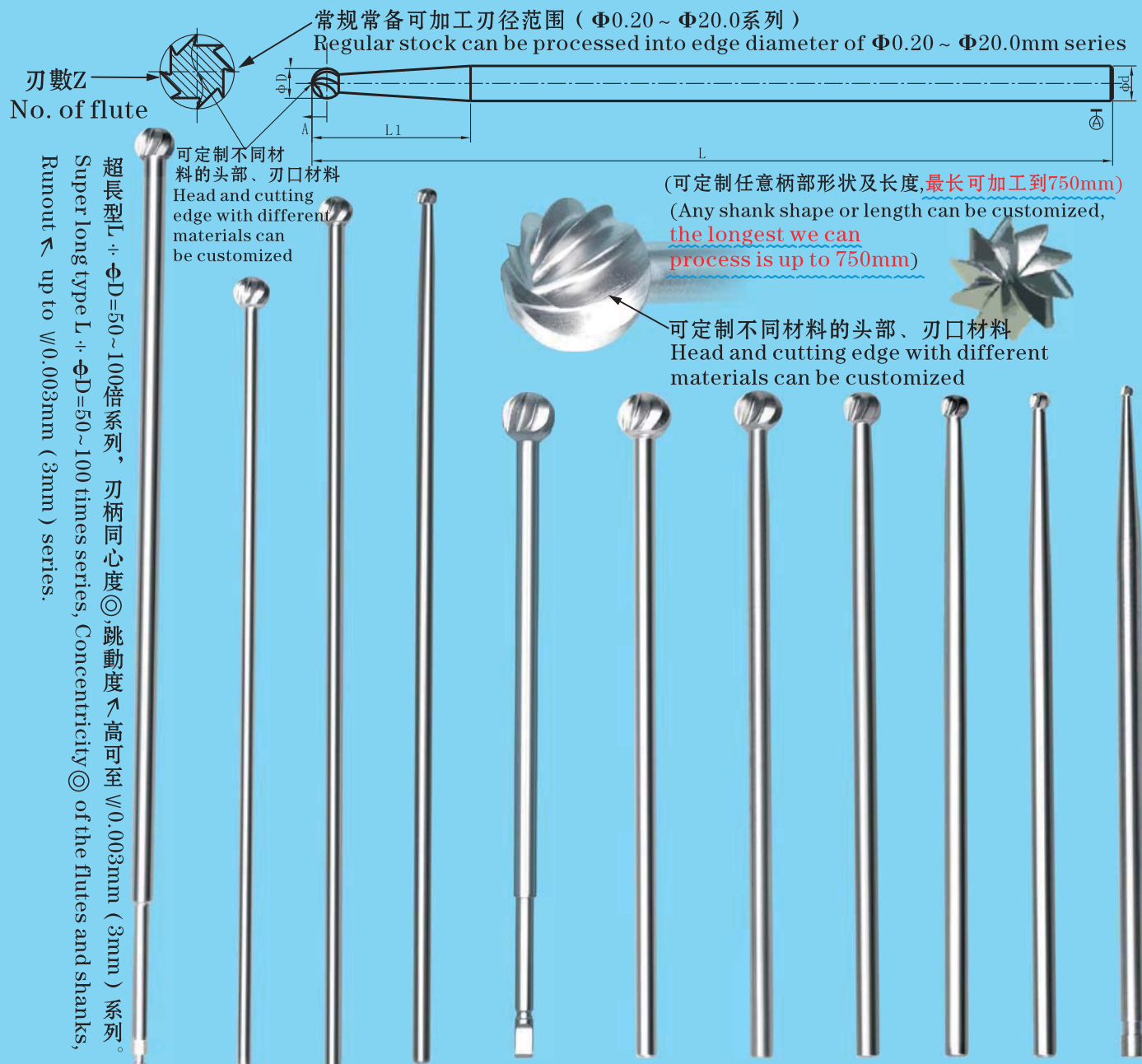
	刃徑 ΦD Diameter	4.0	6.0	6.0
	柄徑 Φd Shank Dia.	2.35	2.35	2.35
	總長 L Overall length 總長さ	70	65	70

頭部刃口材料:

- ① 超高硬度超高耐磨鎢鋼(硬質合金)(常規常備為對焊式AA)
(整體式可定制) (HRA90° ~94° 系列)
- ② 高抗衝擊超高耐磨鎢鋼(硬質合金)對焊式(AA)(HRA82° ~87° 系列)
鎢鋼刃(批量才可定制)
- ③ 超高防銹高耐磨不銹鋼系列(AA)(HRC54° ± 2° 斷面)
- ④ 常規標準防銹高耐磨不銹鋼系列(A)(HRC56° ~64° 斷面系列)

Head cutting edge material:

- ① High hardness & high wear-resisting carbide (hard alloy)
(The regular stock is welded AA) (Solid type can be customized)
(HRA90° ~94° series).
- ② High impact resistant & ultra-high wear resistant tungsten steel
(carbide) butt welding (AA) (HRA82° ~87° series) tungsten
steel edge (It can only be customized with big quantity)
- ③ Super-high anti-rust high wear resistance stainless steel series(AA)
(HRC54° ± 2° Section)
- ④ General anti-rust high wear resistance stainless steel series(A)
(HRC56° ~64° Section series)



部分尺寸 some sizes

刃徑 ΦD Diameter	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
柄徑 φd Shank Dia.	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35
總長 L Overall length 總長さ	70	70	70	70	70	70	125	125	125	125	125	125	165	165	165	165	165	165
刃數 No. of flute	6	8	10	14	16	16	6	8	10	14	16	16	6	8	10	14	16	16

- 1、刃徑常規是Φ1~Φ6，也可以任意刃徑。
- 2、柄可以簡單圓柱柄，或帶有卡槽，丁溝槽，圓凹槽頂珠配合夾緊，各種槽形都可以。
- 3、長度70、80、115、125、150、165或其它總長，可以按要求的長度生產。
- 1、Normal cutting edge diameters are Φ1~Φ6. Or any cutting edge diameters according to your requirement.
- 2、The shank can be designed as simple cylindrical type, or with neck, J-groove or round groove and top pearl to clamp, Or any groove shapes according to your requirement.
- 3、The total length 70、80、115、125、150、165 or other total length according to your requirement can be produced.



1. 柄部為超高防銹高硬度高剛性不銹鋼（AA）（HRC54° ± 2° 斷面）

2. 也可依要求加工超複雜的柄部形狀、結構、帶內冷却孔方式、精度、公差、超總長度等

1. Handle material is the super high rust-proof, high-hardness & high-rigidity stainless steel (AA) (HRC54° ± 2° section)

2. We can also process super-complicated shank shapes, structures, with inner cooling hole, finish, tolerance and super-long total length as customers' requirement.



超長型
super long type

醫用工具及配件系列（切割鋸）

Medical tools and parts series (Legend Ball-Fluted Bur)

医療器具及び部品シリーズ（切断やすり）

（超高耐磨型(A) & 超高防銹型(AA)）

(Super high wear resistance(A)

& Super high antirust(AA))

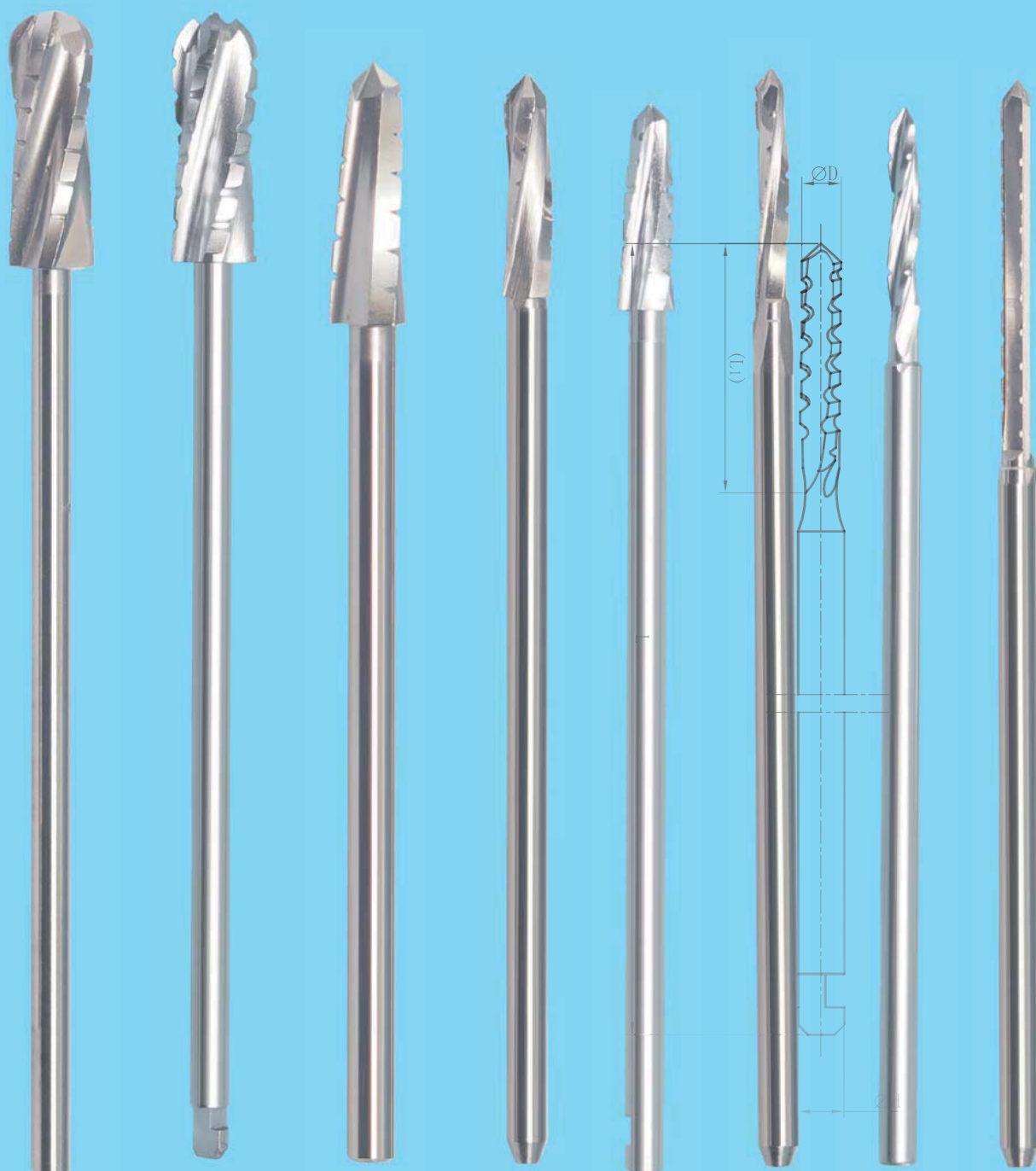
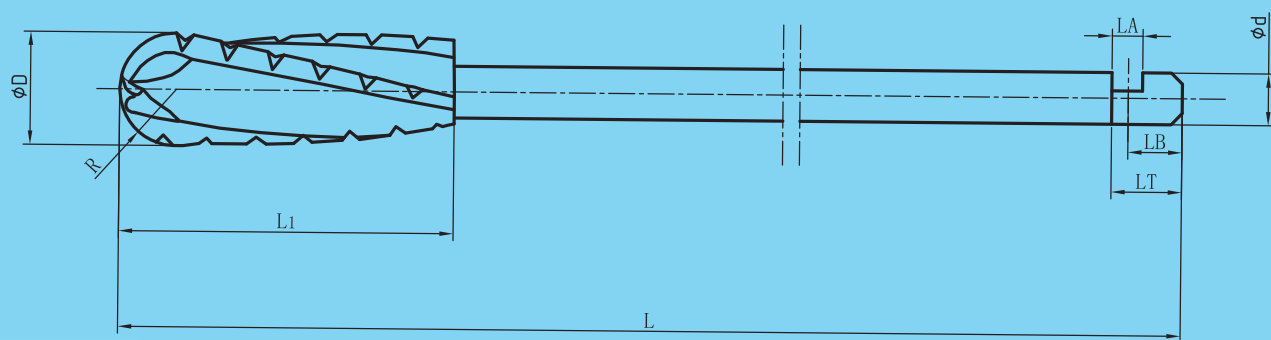
（超耐磨耗型(A) & 超防銹型(AA)）





醫用工具及配件系列（骨銼）
Medical tools and parts series(Orthopedic bur)
医療器具及び部品シリーズ（骨やすり）

超高防銹高耐磨型（AA）&常規標準防銹超耐磨型（A）
(ultra-high anti-rust high wear-resistant type (AA) &
general anti-rust high wear-resistant type (A))
超防銹高耐磨耗型(AA)&通常標準防銹超耐磨耗型(A)



★可超硬、超精研磨。任意的柄部類型、芯厚、容屑槽寬度、刃背方式、鑽尖方式、內冷卻孔方式、刃部結構、刃口角度、刃口鋒利程度之要求，及高可至 $\pm 0.003\text{mm}$ ($3\mu\text{m}$) 的尺寸公差要求 We can produce with super hard and super finish grinding and satisfy your requirement of any type of shank, web thickness, width of chip flute, land, drill tip, inner cooling hole, structure of cutting edge, angle of cutting edge, degree of sharpness of cutting edge, and the dimension tolerance can be up to $\pm 0.003\text{mm}$ ($3\mu\text{m}$)

※必要可帶穿透&不穿透，不同等級加工的中空、空芯內孔加工。
With or without penetration, hollow & hollow core inner hole
process with different grades.
必要に応じて、貫通付き&貫通なし、各レベル加工での中空、中空内穴加工。



★可超硬、超精研磨。任意的柄部類型。芯厚。容屑槽寬度。刃背方式。鑽尖方式。內冷卻孔方式。刃部結構。刃口角度。刃口鋒利程度之要求。及高可至 $\pm 0.003\text{mm}$ （ $3\mu\text{m}$ ）的尺寸公差要求。We can produce with super hard and super finish grinding and satisfy your requirement of any type of shank, web thickness, width of chip flute, land, drill tip, inner cooling hole, structure of cutting edge, angle of cutting edge, degree of sharpness of cutting edge, and the dimension tolerance can be up to $\pm 0.003\text{mm}$ （ $3\mu\text{m}$ ）

★、可依要求生產不同刃部材料類型 (陶瓷類、鎢鋼類、不銹鋼類、鈦及鈦合金類.....等系列)

★、We can produce cutting edges from various types of material as per the requirement, like ceramic, carbide, stainless steel, titanium and titanium alloy, etc.



※ 刃部加工等級:

AAA級: CNC超硬砂輪,鏡面研磨任意形狀之刃口,同心度◎,跳動↗,圓柱度 $\phi \leq 0.003\text{mm}$ ($3\mu\text{m}$),可任意的刃口鋒利程度。

A 級: CNC超硬砂輪,精研磨任意形狀之刃口,同心度◎,跳動↗,圓柱度 $\phi \leq 0.008\text{mm}$ ($8\mu\text{m}$),可任意的刃口鋒利程度。

A級: CNC超硬砂輪,一般研磨任意形狀之刃口同心度◎,跳動↗,圓柱度 $\phi \leq 0.012\text{mm}$ ($12\mu\text{m}$),可任意的刃口鋒利程度。

B級: CNC車削加工+熱處理+拋光處理,較差的刃口鋒利性,同心度◎,跳動↗,圓柱度 ϕ (0.10~0.20mm) ($100/\mu\text{m} \sim 200/\mu\text{m}$)

※ Cutting edge machining grades:

Class AAA: CNC super hard grinding wheel, mirror surface grinding for any shape of cutting edge. Concentricity ◎, runout ↗, cylindricity $\phi \leq 0.003\text{mm}$ ($3\mu\text{m}$), any sharpness of cutting edge.

Class A A: CNC super hard grinding wheel, finish grinding for any shape of cutting edge. Concentricity ◎, runout ↗, cylindricity $\phi \leq 0.008\text{mm}$ ($8\mu\text{m}$), any sharpness of cutting edge.

Class A: CNC super hard grinding wheel, general grinding for any shape of cutting edge. Concentricity ◎, runout ↗, cylindricity $\phi \leq 0.012\text{mm}$ ($12\mu\text{m}$), any sharpness of cutting edge.

Class B: CNC lathe work + heat treatment + polishing treatment, worse sharpness of cutting edge. Concentricity ◎, runout ↗, cylindricity ϕ (0.10~0.20mm) ($100/\mu\text{m} \sim 200/\mu\text{m}$).

*刃部材料類型:

1. 超高防銹不銹鋼類(AA)(HRC54° ± 2° 斷面)
(常規常備)

2. 常規標準防銹高耐磨不銹鋼(A)(HRC45° ~64° 斷面)
(常規常備)

3. 陶瓷類(HRA85° ~94°)系列, (HRC67° ~84°)系列。

4. 鎢鋼類(HRA81° ~94°)系列,

(HRC60° ~84°)系列。(常規常備)

Material of cutting edge:

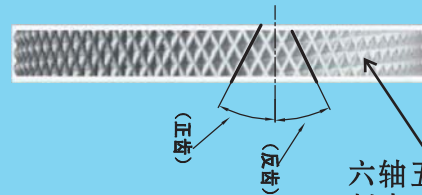
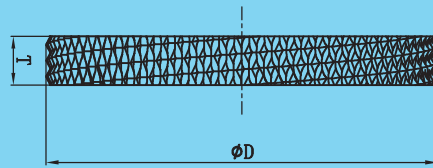
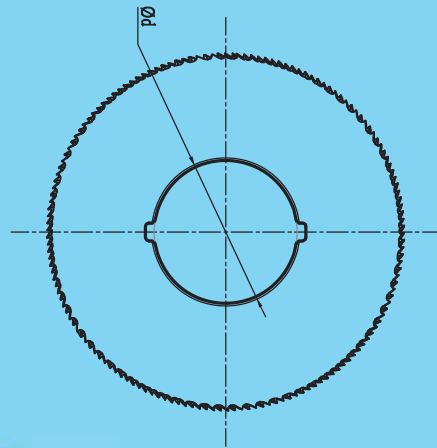
1. ultra-high anti-rust high wear-resistant stainless steel(AA)(HRC54° ± 2° Section)(regular stock)

2. general anti-rust high wear-resistant stainless steel(A)(HRC45° ~64° Section) series. (regular stock)

3. Ceramic (HRA85° ~94°) series, (HRC67° ~84°) series

4. Carbide (HRA81° ~94°) series,

(HRC60° ~84°) series. (regular stock)



六轴五联动CNC磨削中心超高速全精研磨

6-axis 5-linkage CNC grinding center ultra-high speed & full-precision grinding

部分尺寸(AA) (常规常备) some size:

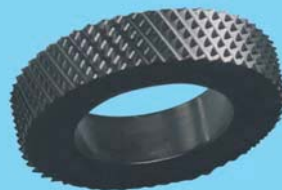
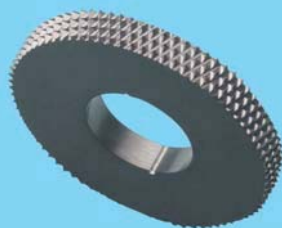
外径 ΦD Diameter	14	19.90	20	材料 Material
内径 Φd Diameter	8	8	8	陶瓷、钨钢、不锈钢系列, 均为常规常备材料 Ceramics, tungsten steel, stainless steel series are conventional stock materials
厚度 T Thickness	2.5	2.5	2.8	
正齿 Spur teeth	57	95	72	
反齿 Inverted teeth	52	88	66	

超锋利、超锐利齿刃, 可不同的齿刃螺旋角, 正、反齿齿数, 齿刃不同的前、后角等等结构形状的组合。

Ultra-sharp tooth can be with different edge helix angles, number of positive and negative teeth, rake and relief angles with different teeth edge, or any other structural shapes combination.

陶瓷系列, 超低密度, 超輕重量, 超高轉速下, 離心率超低, 以解决心軸剛性不足下, 易跳動、震動之方案。

Ceramic series, with ultra-low density, ultra-light weight, and ultra-low eccentricity under ultra-high rotate speed, to solve the problem of mandrel insufficient rigidity, easy-to-beat and vibration



醫用工具及配件系列(骨銼/切割銼)

Medical tools and parts series(Bone bur/Rotary bur)

医療器具及び部品シリーズ(骨やすり/切断やすり)

(超高銳利型&一般銳利型)

(Super sharp type®ular sharp type)

(超銳利型&一般銳利型)

帶標示、字母
with marking and letter

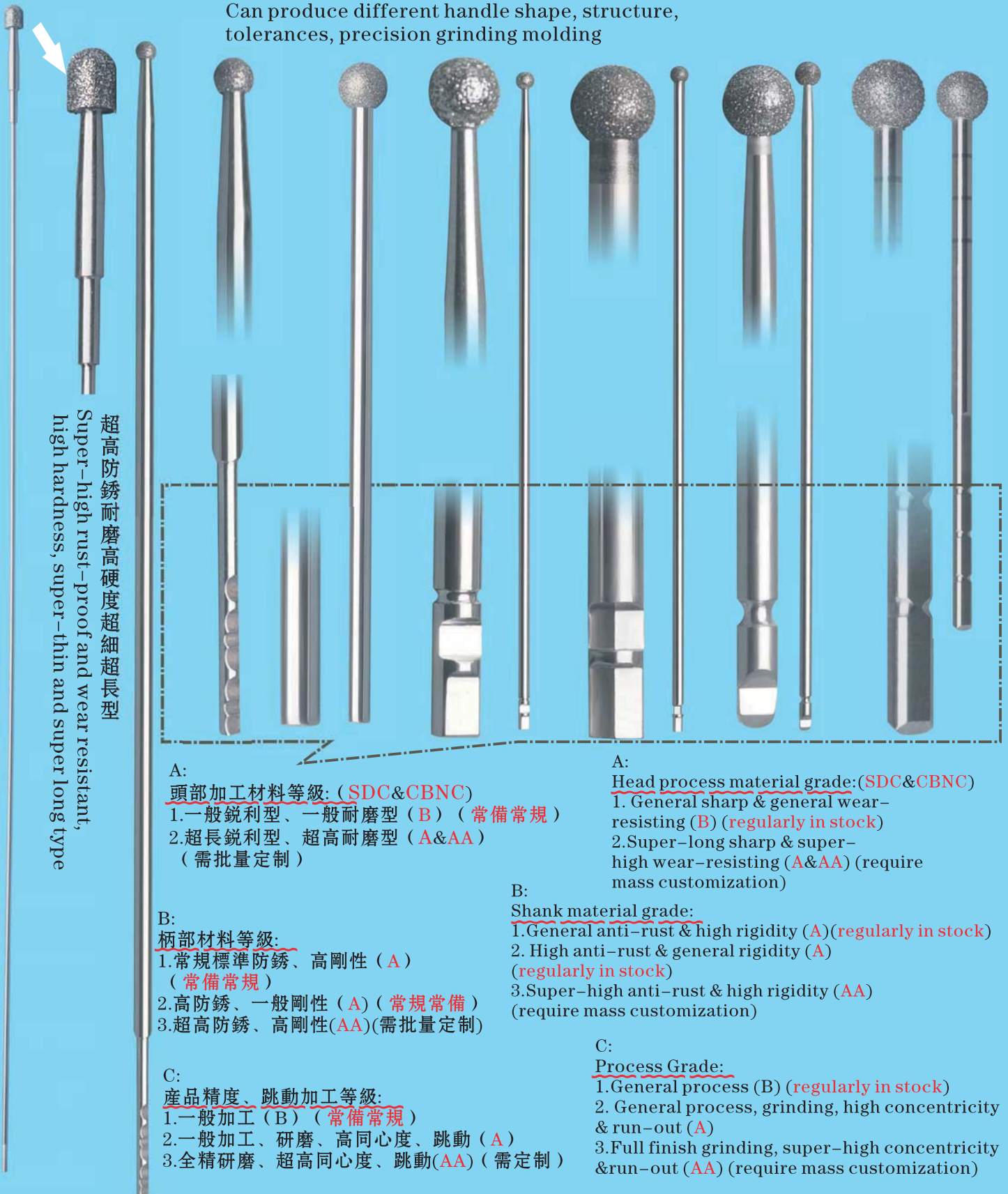


可依加工的轉速、
進給量配比需要，
研磨不同的齒型、
齒形角度、齒形
深淺度、齒形的
鋒利程度要求。

We can grind different
tooth profiles, tooth
angles, tooth depth
and tooth sharpness
according to the
process rotate
speed and feed
ratio.

可以生產不同超複雜的柄部形狀、結構方式、公差及精研磨成型。

Can produce different handle shape, structure, tolerances, precision grinding molding



超高防銹耐磨高硬度超細超長型
Super-high rust-proof and wear resistant,
high hardness, super-thin and super long type

A:
頭部加工材料等級: (SDC&CBNC)
1.一般銳利型、一般耐磨型 (B) (常備常規)
2.超長銳利型、超高耐磨型 (A&AA)
(需批量定制)

B:
柄部材料等級:
1.常規標準防銹、高剛性 (A)
(常備常規)
2.高防銹、一般剛性 (A) (常規常備)
3.超高防銹、高剛性(AA)(需批量定制)

C:
產品精度、跳動加工等級:
1.一般加工 (B) (常備常規)
2.一般加工、研磨、高同心度、跳動 (A)
3.全精研磨、超高同心度、跳動(AA) (需定制)

A:
Head process material grade:(SDC&CBNC)
1. General sharp & general wear-resisting (B) (regularly in stock)
2.Super-long sharp & super-high wear-resisting (A&AA) (require mass customization)

B:
Shank material grade:
1.General anti-rust & high rigidity (A)(regularly in stock)
2. High anti-rust & general rigidity (A) (regularly in stock)
3.Super-high anti-rust & high rigidity (AA) (require mass customization)

C:
Process Grade:
1.General process (B) (regularly in stock)
2. General process, grinding, high concentricity & run-out (A)
3.Full finish grinding, super-high concentricity & run-out (AA) (require mass customization)



A:

頭部加工材料等級: (SDC&CBNC)

1. 一般鋭利型、一般耐磨型 (B) (常備常規)
2. 超長鋭利型、超高耐磨型 (A&AA) (需批量定制)

A:

Head process material grade: (SDC&CBNC)

1. General sharp & general wear-resisting (B) (regularly in stock)
2. Super-long sharp & super-high wear-resisting (A&AA) (require mass customization)

B:

柄部材料等級:

1. 常規標準防銹、高剛性 (A) (常備常規)
2. 高防銹、一般剛性 (A) (常規常備)
3. 超高防銹、高剛性 (AA) (需批量定制)

B:

Shank material grade:

1. General anti-rust & high rigidity (A) (regularly in stock)
2. High anti-rust & general rigidity (A) (regularly in stock)
3. Super-high anti-rust & high rigidity (AA) (require mass customization)

C:

產品精度、跳動加工等級:

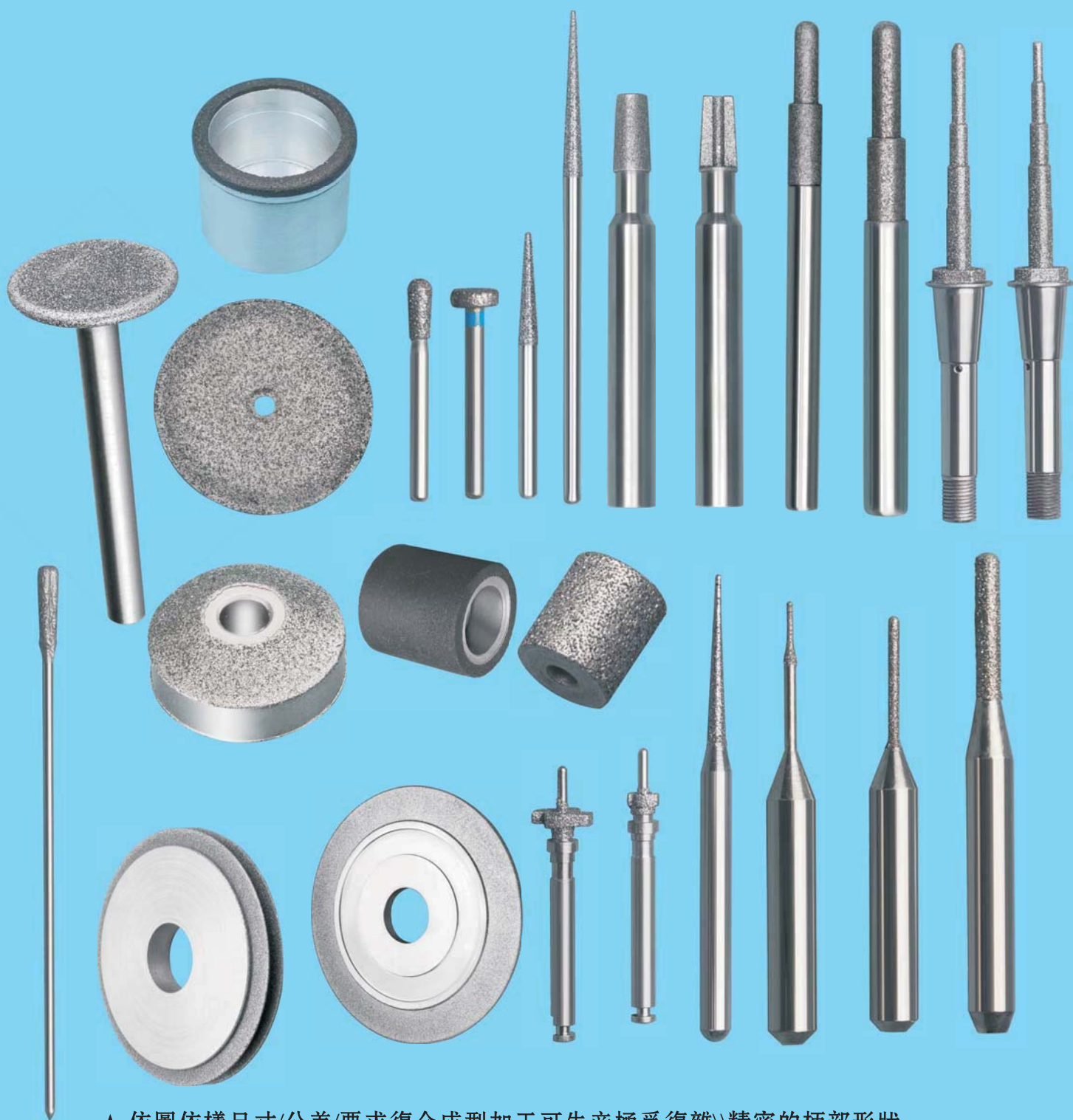
1. 一般加工 (B) (常備常規)
2. 一般加工、研磨、高同心度、跳動 (A)
3. 全精研磨、超高同心度、跳動 (AA) (需定制)

C:

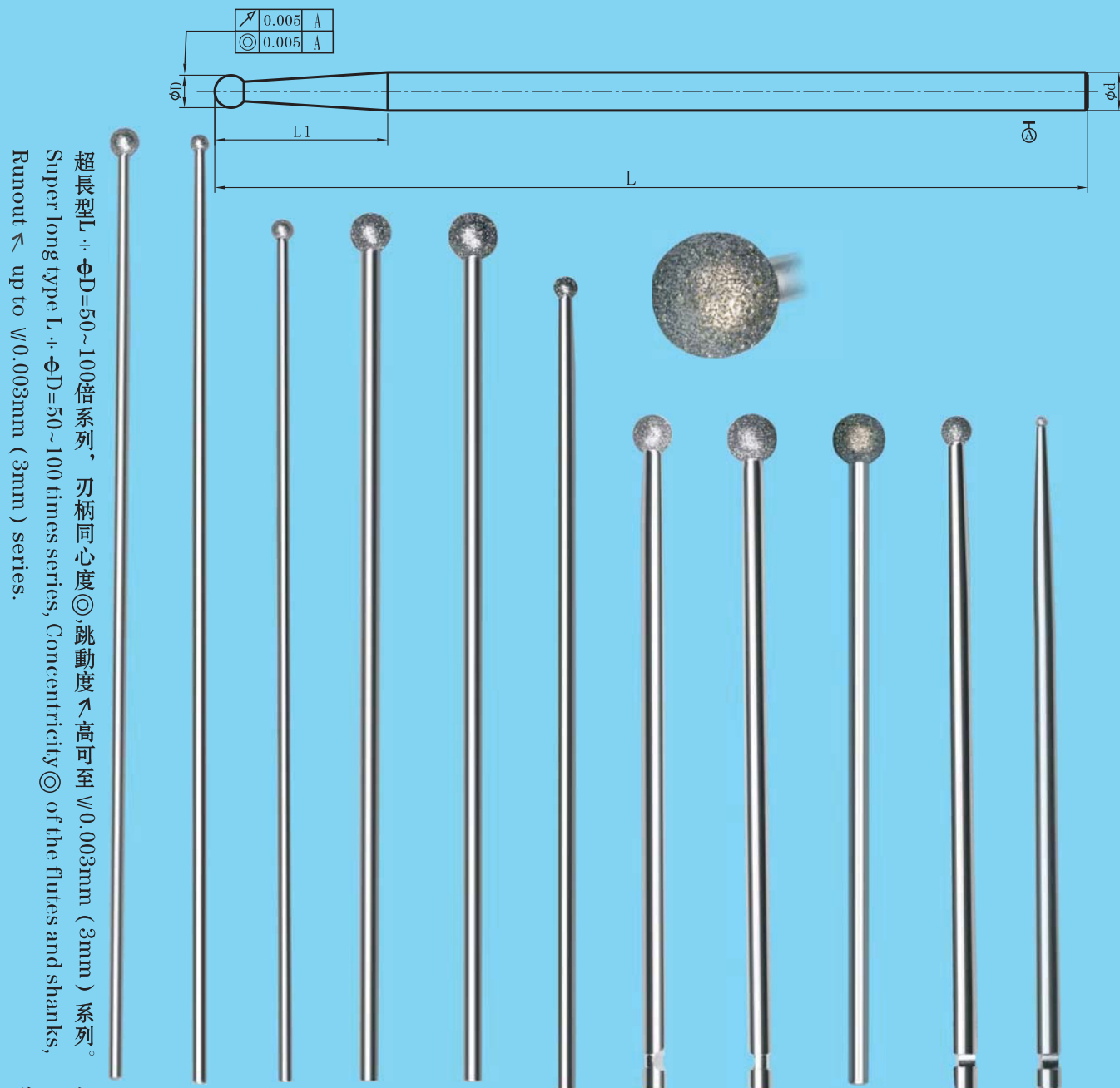
Process Grade:

1. General process (B) (regularly in stock)
2. General process, grinding, high concentricity & run-out (A)
3. Full finish grinding, super-high concentricity & run-out (AA) (require mass customization)





- ★.依圖依樣尺寸/公差/要求復合成型加工可生產極為複雜\\精密的柄部形狀。
 Compound contour machining according to the sizes/ tolerances/ requirements of drawings and samples, we can produce extremely complex and accurate holder profile.
 図面、サンプル、寸法または公差の要求により復合成型加工を行い、極めて複雑、精密な柄部の形状を生産できる。



部分尺寸 some sizes

刃徑 φD Diameter	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
柄徑 φd Shank Dia.	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35	2.35
總長 L Overall length 總長さ	70	70	70	70	70	70	125	125	125	125	125	125	165	165	165	165	165	165

1、刃徑常規是φ1~φ6, 也可以任意刃徑。

2、柄可以簡單圓柱柄, 或帶有卡槽, 丁溝槽, 圓凹槽頂珠配合夾緊, 各種槽形都可以。

3、長度70、80、115、125、150、165或其它總長, 可以按要求的長度生產。

1、Normal cutting edge diameters are φ1~φ6. Or any cutting edge diameters according to your requirement.

2、The shank can be designed as simple cylindrical type, or with neck, J-groove or round groove and top pearl to clamp, Or any groove shapes according to your requirement.

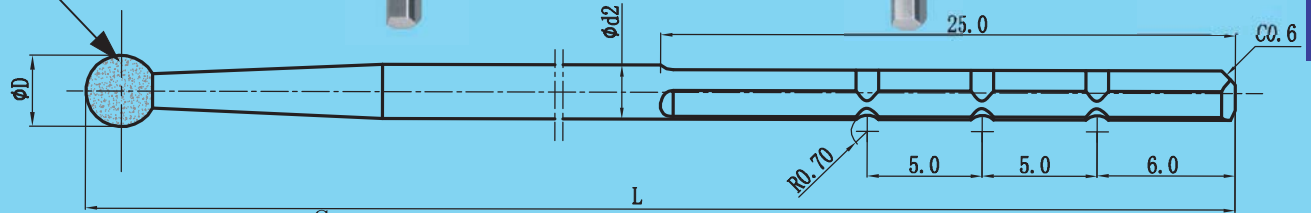
3、The total length 70、80、115、125、150、165 or other total length according to your requirement can all be produced.

- A:
頭部加工材料等級:(SDC&CBNC)
1.一般銳利型、一般耐磨型 (B)
(常規常備)
2.超長銳利型、超高耐磨型 (A&AA)
(需批量定制)

- A:
Head process material grade(SDC&CBNC)
1. General sharp & general wear-resisting (B) (regularly in stock)
2. Super-long sharp & super-high wear-resisting (A&AA) (require mass customization)

- B:
柄部材料等級:
1.常規標準防銹、高剛性 (A)
(常規常備)
2.高防銹、一般剛性 (A)
(常規常備)
3.超高防銹、高剛性(AA)
(需批量定制)

- B:
Shank material grade:
1.General anti-rust & high rigidity (A)(regularly in stock)
2. High anti-rust & general rigidity (A) (regularly in stock)
3.Super-high anti-rust & high rigidity (AA) (require mass customization)



部分尺寸some sizes

	刃徑 ϕD Diameter	1.0	3.1	5.0
	柄徑 ϕd Shank Dia.	2.35	2.35	2.35
	總長 L Overall length 總長さ	70	70	70

- C:
產品精度、跳動加工等級:
1.一般加工 (B) (常規常備)
2.一般加工、研磨、高同心度、跳動 (A)
3.全精研磨、超高同心度、跳動(AA) (需定制)

C:

Process Grade:

1. General process (B) (regularly in stock)
2. General process, grinding, high concentricity & run-out (A)
3. Full finish grinding, super-high concentricity & run-out (AA) (require mass customization)

1. 刃徑常規是 $\phi 1 \sim \phi 6$ ，也可以任意刃徑。
2. 柄可以簡單圓柱柄，或帶有卡槽，丁溝槽，圓凹槽頂珠配合夾緊，各種槽形都可以。
3. 長度70、80、115、125、150、165或其它總長，可以按要求的長度生產。
1. Normal cutting edge diameters are $\phi 1 \sim \phi 6$. Or any cutting edge diameters according to your requirement.
2. The shank can be designed as simple cylindrical type, or with neck, J-groove or round groove and top pearl to clamp, or any groove shapes according to your requirement.
3. The total length 70, 80, 115, 125, 150, 165 or other total length according to your requirement can all be produced.

醫用工具及配件系列(鑽石銼/打磨銼/磨鑽)

Medical tools and parts series(Legend Ball-Diamond Bur/Neurosurgical Bur)

医療器具及び部品シリーズ(ダイヤモンドやすり/研磨やすり/研磨回転ドリル)

(超高銳利型 & 耐磨型)
(Super sharp type & Wear-resistant type)
(超銳利型 & 耐磨耗型)

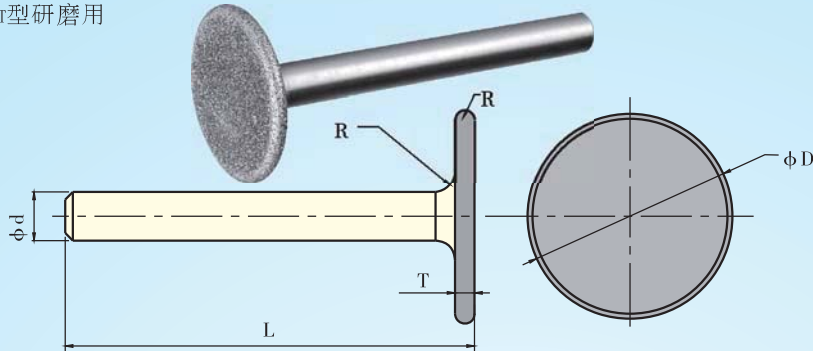


醫用工具及配件系列(磨銼/砂輪)
Medical tools and parts series(Grinding wheel)
医療器具及び部品シリーズ(研磨やすり/研削砥石)

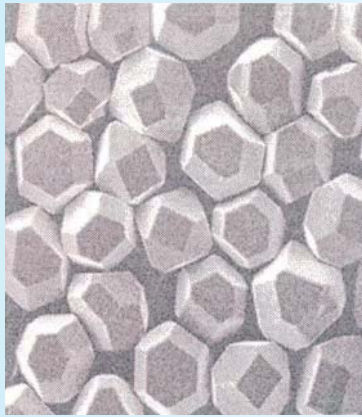
高品級SDC鑽石 (CBNC) 砂輪形狀分類
Profile classification of high quality SDC diamond (CBNC) grinding wheel
高品級SDCダイヤモンド (CBNC) 砥石車の形状区分

- ◆ 訂貨時必須確認以下砂輪形狀類別、詳細尺寸規格、公差、磨料種類、粒度、結合度、集中度、結合劑、數量等。
When placing order, must confirm the profile of grinding wheel, detailed size and specification, tolerance, type of abrasive material, grain size, combination, concentration, binder, quantity etc. 発注の時に以下の砥石車の形状区分、詳細な寸法規格、公差、研磨材料の種類、粒度、結合度、集中度、結合剤及び数量などを確認すること。

T型研磨用 For Type T grinding
T型研磨用



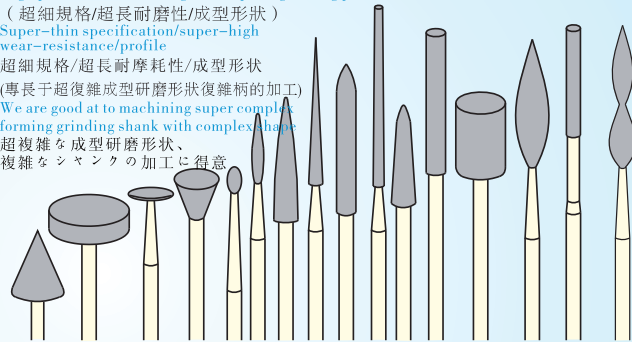
SDC鑽石&CBNC顯微放大
SDC diamond & CBNC microscope magnification
SDCダイヤモンド及びCBNC顯微拡大



高精度超強電鍍研磨製品: SDC/CBNC 高精度超強電氣メッキ研磨製品
High precision ultra strong electroplate grinding products

(超細規格/超長耐磨性/成型形狀)
Super-thin specification/super-high wear-resistance/profile

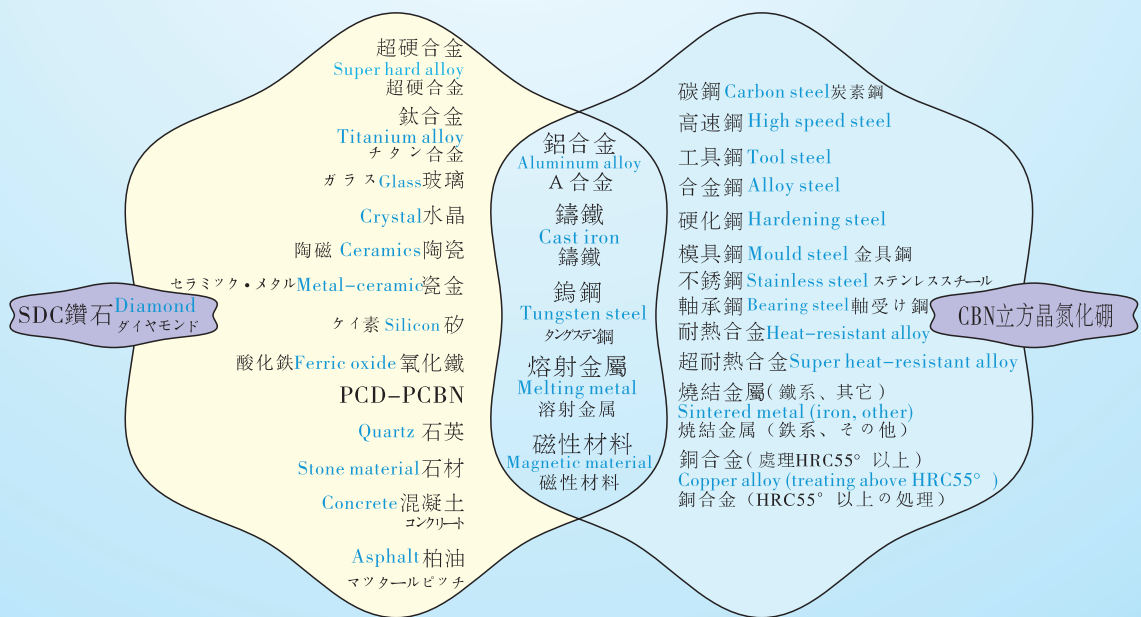
超細規格/超長耐磨性/成型形狀
(專長于超複雜成型研磨形狀復雜柄的加工)
We are good at to machining super complex forming grinding shank with complex shape
超複雜な成型研磨形狀、
複雑なシャングの加工に得意



● 針對加工物之使用區分

Use differentiation regarding objects to be machined

加工品向けの使用区分



- ★ 特殊成型砂輪可依圖紙要求尺寸公差或樣品快捷生產。特殊な成型の砥石車は図面、要求の寸法公差またはサンプルにより迅速に生産できる。
For special profile grinding wheel, we can produce quickly according to drawings, and size tolerance or samples

鑽石：碳的晶體形式之一（如圖所示）。歷史上稱為寶石，然而，這是已知的最硬的物質，現在廣泛用于工業上高生產率工具的研磨。鑽石還有其他顯著的物理特性：

Diamond: One of the crystalline forms of carbon(as the figure).It is historically known as a gemstone, however, it is the physically hardest substance known and is now widely used as an abrasive in high productivity tools in industry. Diamond also has other obvious physical characteristics:

ダイヤモンド：炭素結晶の1形態。歴史的には宝石用原石として知られていますが、物理的に既知の物質の中で最も硬く、現在では工業界において生産性の高い工具研磨材として広く使用されています。ダイヤモンドは他にも注目すべき物理特性を有しています：

鑽石的特性:	Characteristics of diamond:	ダイヤモンドの特性
密度（克/立方厘米）[g/cm ³]——3.52	Density [g/cm ³] ——3.52	密度 [g/cm ³] ——3.52
壓縮強度[GPa] ——8.68	Compressive strength [GPa] ——8.68	壓縮強度 [GPa] ——8.68
斷裂剛度[MPam ^{1/2}] ——3.40	Fracture toughness[MPam ^{1/2}] ——3.40	破壞韌性 [MPam ^{1/2}] ——3.40
努氏硬度[GPa] ——57-104	Knoop hardness [Gpa] ——57-104	ヌーブ硬度 [GPa] ——57 - 104
楊基模量[GPa] ——141	Young's modulus [GPa] ——1141	ヤング率 [GPa] ——1141
熱膨脹[10-6K-1] ——1.5-4.8	Thermal expansion [10-6K-1] ——1.5-4.8	熱膨張率 [10-6K-1] ——1.5 - 4.8
熱傳導率[Wm-1K-1] ——00-2000	Thermal conductivity [Wm-1K-1] ——500-2000	熱伝導率 [Wm-1K-1] ——500 - 2000
磨損系數 ——2.14-5.49	Coefficient of wear ——2.14-5.49	摩耗係數 ——2.14 - 5.49

鑽石是已知的最堅硬的材料,因其高耐磨損的能力,使其成為最常用的工業耐磨材料,切割和打磨石頭、玻璃以及其他硬質材料祇是其早期應用的一部分。鑽石在其應用方面有一個限制在于它高溫時會和鐵發生相互作用（導致石墨逆轉并導致高的磨損速率），這點在它和一些其他常規研磨劑，比如與鋁氧化合物和硅碳化合物比起來就顯得不經濟，成本偏高。

Diamond is the hardest known material. Due to its high wear-resistance, it has become the most frequently used industrial wear-resistant material. Cutting and grinding stones, glass and other hard materials is only part of its early application. Diamond has one limit in its application, that is, it can react with iron at high temperature (lead to reversion of graphite and cause high wear speed). Comparing with other general abrasives, like aluminum oxide and Si-C compound, it is not economical, it is of higher cost.

ダイヤモンドは知られている中で一番硬い素材であり、この特性と高い耐摩耗性により、工業用砥粒として使用されます。石材、ガラスおよびその他の硬質素材の切削および研磨は、早くからダイヤモンドが使用された分野でした。ダイヤモンドには、その使用に関して1つの限界があります。それは、高温で鉄と反応し(この状態ではダイヤモンドは黒鉛に戻ってしまい、その結果磨耗率が高くなります)、そのため酸化アルミニウムやシリコンカーバイドのような一般砥粒と比べて経済性の点で劣るということです。

鑽石由碳制成。高溫/高壓過程（HPHT）或高溫低壓沉降過程（如CVD）是常見的鑽石合成過程。

Diamond is made from carbon. High temperature/high pressure or high temperature low pressure settling (like CVD) is the ordinary combination of diamond.

ダイヤモンドは、炭素からできています。合成ダイヤモンドでは、高压高温(HPHT)あるいは低压/高温(CVDなど)のいずれかの方法で、炭素からダイヤモンドを生成するプロセスがダイヤモンド合成として一般に知られています。

立方氮化硼（CBN）不會發生這種相互作用，因此雖然它的硬度祇有鑽石硬度的一半，仍然比常規研磨劑要堅硬，因此它非常適合作為高性能研磨劑用于含鐵加工工件中。

CBN will not have this kind of reaction. Although its hardness is only half that of diamond, it is harder than general abrasives, so it is very suitable to be used in ferrous work-piece as a high property abrasives.

立方晶窒化ホウ素(CBN)は、このような反応を起こさないで、硬度の点においてはダイヤモンドの50%に止まるものの一般砥粒よりはるかに硬度が高いことから、鉄系被削材の加工に高い性能を発揮します。

集中度一詞是指連接材料中單元體積（CM³）所含的磨粒克拉的重量，例如：一個已經定義的集中度是每立方厘米連接材料中含0.44克拉磨粒。

Concentration means the weight of grain carat in unit volume of connecting material. For instance, a defined concentration is 0.44 carat grain per cubic centimeter in the connecting material.

コンク（集中度）は、ボンド素材の容積単位(cm³)中に含まれる研磨材のカラット重量で表されます。例えばコンクは、ボンド素材cm³当たり0.44カラットと定義されます。

(結合度の硬和軟不是砂輪磨粒的硬度，硬度高的砂輪通常是具有較強的抗磨損性；而硬度軟的砂輪是指抗磨損性小，因此打磨力較小。)

Hardness of combination is not hardness of grinding wheel grain. Grinding wheel with high hardness has stronger wear-resistance, but grinding wheel with low hardness has weak wear-resistance, so the grinding force is small.

結合度の硬さは砥石車の研磨顆粒の硬さではなく、普通、硬さの高い砥石車は強い耐研磨性があり、硬さの低い砥石車は耐摩耗性が低いので、研磨力が弱い。

◆ **SDC:** 由厚的鎳或銅層構成的金屬包層。它可達到60%的總粒子重量。這些包層粒子常用于樹脂連接的工具，如打磨輪，包層的作用是提高連接處的磨損阻力，并幫助散發在打磨時產生的熱量。因此提高了工具的性能。

SDC: the metal-clad composed by thick nickel or copper layer. It can reach 60% of total weight of grain. These clad grains are often applied in resin-connected tools, like grinding wheel. The function of cladding is to improve the wear resistance of connecting part, and help emit the heat produced during grinding, so the property of tool is improved.

SDC:メタルクラッディングとは、主としてニッケルまたは銅の厚い層でなり、全粒子重量の60%まで被覆が可能です。これ等の被覆粒子は一般に砥石などのレジンボンド工具に使用されます。被覆の効果はボンド中の粒子の保持力を向上させ、研削中に発生した熱を放散するヒートシンクの役割を果たし、従って工具の性能を改善します。

◆ **CBN** 是指立方晶氮化硼磨料，主要在磨輪和磨光工具中使用，以對堅硬的鐵工件材料進行機械加工。這些工具廣泛地在汽車和航天工業中應用，以生產諸如齒輪、軸承、凸輪軸、曲柄軸之類的高精密的部件以及範圍廣泛的工程部件。

CBN is CBN abrasive material, mainly applied in grinding wheel and polishing tools, mechanically machining hard iron workpieces. These tools are extensively applied in automobile and astronautic industries, to produce high precision parts such as gear, bearing, cam shaft, crank shaft as well as engineering parts.

CBN ホイールグリットとは主に硬質鉄系材加工用の研削砥石やホーニング工具に使用される、立方晶窒化ホウ素(CBN)砥粒のことです。自動車業界および航空宇宙産業において、ギア、ベアリング、カムシャフト、クランクシャフト、および様々な工學部品等の高精度部品の製造に幅広く使用されています。

鑽石 是指在用于對非鐵材料進行機械加工的精密磨輪、磨光工具、拋光工具中使用的金剛石磨料。這些工具在工業中廣泛地使用，以對範圍廣泛的材料進行機械加工，包括玻璃、碳化鎢和陶瓷。

Diamond means the diamond abrasive materials applied in precision grinding wheel, polishing tools that mechanically machine non-ferrous materials. These tools are extensively applied in industry to mechanically machine materials including glass, carbonized tungsten and ceramics.

ダイヤモンドホイールグリットとは、非鉄系素材加工用の精密砥石やホーニング工具、研磨工具に使用されるダイヤモンド砥粒のことです。これらの工具はガラス、超硬、セラミックス及などの様々な素材を加工するために工業界で広く使用されています。

集中度：在一個鑽石工具中，鑽石磨粒僅是其中的一個組成部分。

Concentration: in a diamond tool, diamond grain is only a part of it.

ダイヤモンド工具中のダイヤモンド砥粒は工具を構成する一要素に過ぎません。

立方氮化硼（CBN）是已知第二硬的材料，僅次于鑽石的硬度。CBN是以六邊形氮化硼為條件合成的，和類似于石墨合成金剛石。

Cubic Boron Nitride (CBN) is the known second hardest material, second only to hardness of diamond. CBN is composed by h-BN, similar as combing graphite into diamond.

立方晶窒化硼素（CBN）はダイヤモンドに次いで2番目に硬い物質です。CBNはグラファイトからダイヤモンドを合成するのに用いられるのと同様の条件下で六方晶窒化硼素から合成されます。

研磨劑的期望特徵包括高硬度、耐磨損、有力并能耐高溫和化學腐蝕，同時在使用過程中能保留鋒利的切割邊。和碳化硅以及氧化鋁等常規研磨劑相比較，CBN在大多數關鍵需求中超過了它的價值。其高耐熱性以及耐化學品腐蝕的特性使其最適用。加工含鐵材料，在含鐵環境中鑽石耐磨材料通常并不適用。

Expected characteristics of grinding agent include high hardness, wear-resistance, power and high temperature resistance and chemical corrosion resistance, keep sharp cutting side during using. Comparing with ordinary grinding agent like carbonized Silicon and aluminum oxide, CBN exceeds its value in most of key demand. Its high heat-resistance and chemical corrosion-resistance make it applied in machining ferrous material. Generally, diamond wear-resistant materials are not applied in ferrous environment.

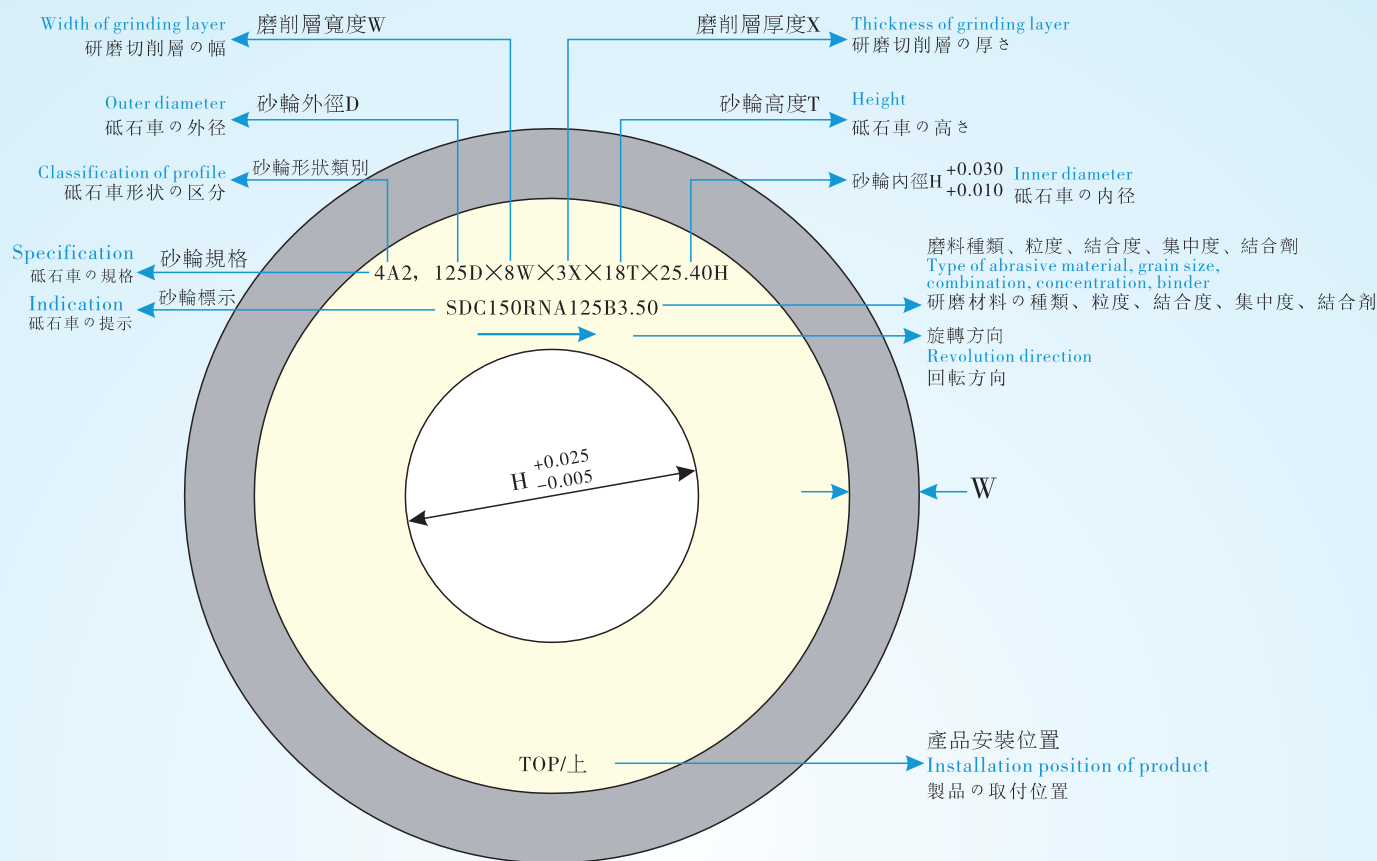
砥粒は、高硬度、耐摩耗性、強度、熱安定性、化学的安定性といった砥粒として望ましい特性を持つ上、使用中鋭い切れ刃を維持しつづけます。また、ほとんどの重要な要求事項において、CBNは炭化珪素やアルミナなどの一般砥粒を凌ぐ値を示します。高い熱安定性と化学的安定性により、ダイヤモンドが通常使用されない鉄系材の加工に適しています。

硬度是研磨材料的最重要的物理屬性。大多數研磨材料在高溫時都會失去硬度。和常規研磨材料相比，CBN的一個物理優勢在于，除了在極高溫度時具有更好的硬度外，還可在更高的溫度範圍內保持其硬度優勢。

Hardness is the most physical property of grinding materials. The majority of grinding materials will lose their hardness at high temperature. Comparing with ordinary grinding materials, one of CBN's physical strength lies in its hardness keeping at higher temperature range beside that it has better hardness at extreme high temperature.

砥粒にとって硬度は非常に重要な物理的特性です。ほとんどの砥粒は高温では硬度を失いますが、CBNの物理的利点の一つに、一般砥粒と比べて、室温での高い硬度に加え幅広い温度範囲でこの硬度を維持できることがあります。

超硬砂輪的表示方式
Expression method of super-hard grinding wheel
超硬砥石車の表示方法



◆.標示之表示法 Expression method of indication 標識の表示方法

磨料種類 Type of abrasive material 研磨材料の種類	#粒度 Grain size 節目 (JIS6002-63)	結合度(硬度) Combination (hardness) 結合度 (硬度)	集中度% (濃度) Concentration (thickness) 集中度 (濃度)	結合劑 Binder 結合劑	磨削層厚度X Thickness of grinding layer 研磨切削層の厚さ
ND:天然鑽石 Natural diamond 天然ダイヤモンド	36 240 1200	ND 軟 NC Soft NA 軟	25 低 Low	B:樹脂 Resin 樹脂	2.50mm
SD:合成鑽石 Synthesized diamond 合成ダイヤモンド	46 280 1500	RE ↑	50 低 ↑	V:陶瓷 Ceramics 陶磁	3.50mm
SDC:金屬被覆之合成鑽石 Metal covered with synthesized diamond 金屬被覆の合成ダイヤモンド	60 320 2000	RC	75	M:金屬 Metal 金屬	5.50mm
CBN:立方晶氮化硼* Cubic Boron Nitride 立方晶窒化硼素	70 400 2500	RS 中間 RP Middle RNA 中 間	100	P:電鍍 Electroplate 電気メッキ	10.50mm
CBNC:金屬被覆之立方晶氮化硼* Metal covered with CBN 金屬被覆の立方晶窒化硼素	80 500 3000	RN ↓	125 150		
(*:有以B來表示) (Can be expressed by B) (Bで表示)	100 600 4000	PK	175 ↓		
	120 700 5000	PH	200 高 High		
	150 800 8000	RH			
	180 1000 15000	RI 硬 RJ hard RV 硬			

鑽石磨料粒度尺寸範圍對比
Comparison of diamond abrasive material's grain size scope
ダイヤモンド研磨材料の粒度寸法範囲の対比

LZQ Japan (日本) JIS 6002-63		International 國際標準 ISO6106-79		West Europe 西歐共同體 FEPA		U.S.A. 美國 ANSI B74.16-71		China 中國 JB2808-79		West Germany 西德 DIN 848-65	
粒度號 Grain size 粒度番号 NO.	公稱尺寸 Nominal size 公称寸法 in μ	粒度號 I Grain size 粒度番号 NO. I	粒度號 II Grain size 粒度番号 NO. II	粒度號 Grain size 粒度番号 NO.	公稱尺寸 Nominal size 公称寸法 in μ	粒度號 Grain size 粒度番号 NO.	公稱尺寸 Nominal size 公称寸法 in μ	粒度號 Grain size 粒度番号 NO.	公稱尺寸 Nominal size 公称寸法 in μ	粒度號 Grain size 粒度番号 NO.	公稱尺寸 Nominal size 公称寸法 in μ
		501		D501	500/425	窄範圍 Narrow range 狭い範圍		36#	500/400	D450	400/500
46#	420/350	427	40/50	D427	455/302	20/25	841/707	46#	400/315	D350	315/400
60#	290/250	301	50/60	D301	322/255	25/30	707/595	60#	315/250	D280	250/315
70#	250/210	251		D251	271/213	30/35	595/500	70#	250/200	D220	200/250
80#	210/177	213		D213	227/181	35/40 (GE)	500/420	80#	200/160	D180	160/200
				D181	197/151	40/45	420/354				
100#	149/125	151	100/120	D151	165/127	45/50	354/297	100#	160/125	D140	125/160
120#	125/105	126	120/140	D126	139/107	50/60	297/250	120#	125/100	D110	100/125
				D107	116/90	60/70 (GE)	250/210				
150#	105/74	91	170/200	D91	97/75	70/80 (GE)	210/177	150#	100/80	D90	80/100
180#	88/63	76	200/230	D76	85/65	80/100	177/149	180#	80/63	D65	63/80
240#				D64	75/57	100/120	149/125				
280#	53/44	54	270/325	D54	65/49	120/140	125/105	240#	63/50	D55	50/63
320#	44/37	46	325/400	D46	57/41	140/170	108/88	280#	50/40	D45	40/50
400#	37/34			M63	42/84	170/200	88/74	W40	40-20	D30	32/40
500#	34/28			M40	27/53	200/230	74/63	W28	28-14	D25	25/32
600#	28/24			M25	16/34	230/270	63/53	W20	20-10	D20	25/40
700#	24/20			M16	10/22	270/325	63/44	W14	14-7.0	D20B	30/40
800#	20/16			M10	6/14	325/400	44/37	W10	10-5.0	D20A	25/30
1000#	16/13			M6.3	4/9	寬範圍 Wide range 広い範圍		W7	7.0-3.5	D15	10/25
1200#	13/10			M4.0	2.5/5.5	16/20	841/595	W5	5.0-2.5	D15C	20/25
1500#	10/8			M2.5	1.5/3.5	20/30	595/420	W3.5	3.5-1.5	D15B	15/20
2000#	8/6			M1.6	1/2.5	30/40	420/297	W2.5	2.5-1.0	D15A	10/15
2500#	6/5			M1.0	0.5/1.5	40/50	250/177	W1.5	1.5-0.5	D7	5/10
3000#	5/4					60/80	707/500	W1.0	1.0-0	D3.5	2/5
4000#	4/3					25/35	500/354	W0.5	0.5-0	D1	1/2
5000#	3/2					35/45	354/250			D0.7	0.5/1
8000#	2/1					60/70	250/210			D0.25	<0.5
15000#	1/0					70/100	210/149				

◆ 鑽石磨具各磨削工序的對應的粒度 Corresponding grain of diamond mould's grinding procedure
ダイヤモンド金具の各研磨切削工程に対応する粒度

磨削工序 Grinding procedure 研磨切削工程	粗磨 Rough grinding 荒研磨	半精磨 Semi-finish grinding 半分精細研磨	精磨 Finish grinding 精細研磨	拋光 Polishing 研磨
粒度 Grain size	50/60~80/100	120/140~200/230	230/270~400#-500#	400#-500#~3000#-4000#

◆ 粒度與表面粗度之關係 (參考資料) Relationship between grain size and surface roughness (reference data)

