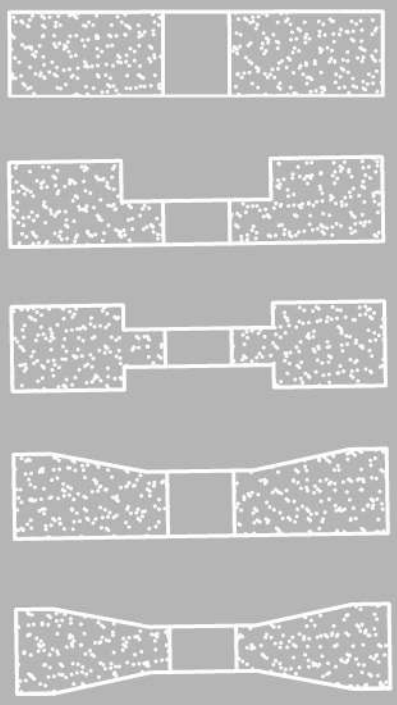
BAY UNION



Precision Grinding Wheels

BAY UNION

2018/12

BAYUNION PHILOSOPHY

We believe grinding is the key to precision.
Pursuing the perfection of every detail
is our way to provide the best grinding solution.

COMPANY HISTORY

Bay Union Abrasive Technology Co., Ltd. was founded in 1987. We have focused on producing vitrified bonded grinding wheels for many years. Bay Union has advanced vitrified bonds and special self-developed equipment, so we can supply high quality mounted wheels in a very fast and steady way. We have supplied worldwide famous customers with a good reputation for years, especially in North America and Europe market.

Since 2010, Bay Union has produced precision grinding wheels based on unique producing technique and expanded the business to precision machining industry in Taiwan. High performance, high-quality stability, and fast delivery are our strength, and that is why we can expand very fast in the internal grinding market at the beginning. After years of R&D, we successfully developed new low-temperature vitrified bonds. The series of SG wheels and CBN wheels were launched soon after the new bond development, so to speak, Bay Union entered the high-end market.

In order to satisfy customers' various needs, Bay Union started to produce surface grinding and cylindrical grinding wheels in 2018, and our target is to be the high-end import substitution. For all product series of other brands, we have corresponding wheels for replacement with more value. We believe BAYUNION is the best grinding wheel choice for all customers.

BAYUNION ENERGY

Grinding wheel industry has a centennial foundation, and predecessors have accumulated a good knowledge of grinding wheel; we carefully retain the essence and keep the know-how of making grinding wheel. Meantime, with many new technologies quickly developed, such as outstanding machines from equipment supplier, new alloy material from the R&D department, and precision demand from the client, the grinding challenge of grinding wheel becomes bigger and bigger.

We keep studying of

- Property of new abrasive materials.
- Matching between abrasives and grinding application.
- Stability of grinding wheels production.
- Integration of precision factors on machining application.

All of this is for only one purpose: Provide a better grinding solution for the customers.

GENERAL INFORMATION

Standard Wheel Markings

Our company complies with the standard designation of wheel specification which was developed by ISO, standards such as CNS, JIS and AS all use this uniform standard.

50A	80	K	8	V
Abrasive	Grit	Grade	Structure	Bond

Abrasives

	Raw Material / Application
10A	Brown fused regular aluminum oxide Unhardened steel / Cast iron.
20A	Semi-friable aluminum oxide Carbon steel / Cast iron
30A	Monocrystalline aluminum oxide Tool steel / Alloy steel
40A	White aluminum oxide All kinds of steel
50A	Pink aluminum oxide Tool steel / Hardened steel / Bearing steel
60A	Ruby aluminum oxide Tool steel / Hardened steel (heat sensitive)
80A	Micro-crystalline aluminum oxide-Blue High hardness alloy steel
90A	Micro-crystalline aluminum oxide-White High hardness alloy steel
10C	Black silicon carbide Stone / Marble / Rubber / Ceramics
20C	Green silicon carbide Cemented carbide alloy / Titanium / Nonferrous metal

GENERAL INFORMATION

Grits

	Grit mesh	Grit Avg. size μm	Max. infeed μm	Max. infeed μm	*surface roughness μm
Medium	#36	500	125.0	41.7	0.5~1.6
	#40	425	106.3	35.4	
	#46	355	88.8	29.6	0.3~0.8
	#54	305	76.3	25.4	
	#60	250	62.5	20.8	0.14~0.45
	#70	210	52.5	17.5	
	#80	180	45.0	15.0	0.07~0.25
	#90	150	37.5	12.5	
	#100	125	31.3	10.4	
Fine	#120	106	26.5	8.8	0.06~0.16
	#150	75	18.8	6.3	
	#180	66	16.5	5.5	0.05~0.09
	#220	55	13.8	4.6	
Fine	#240	45	11.3	3.8	0.03~0.06
	#280	36.5	9.1	3.0	
	#320	29.2	7.3	2.4	
	#400	17.3	4.3	1.4	

*Actual grinding results will change due to different conditions, Ra range only for reference.

Grades

Very Soft	D	E	F	G
Soft	H	I	J	K
Medium	L	M	N	O
Hard	P	Q	R	S
Very Hard	T	U	V	W

Structure

Symbol	0	1	2	3	4	5	6	7
Abrasive Ratio %	62	60	58	56	54	52	50	48

Symbol	8	9	10	11	12	13	14
Abrasive Ratio %	46	44	42	40	38	36	34

Bond Type

Vitrified Bond (Ceramic Bond) is the select bond for precision grinding applications requiring high accuracy and tense dimensional tolerances, wheels made with this bond give high stock removal and their rigidity helps to attain high precision.
Not affected by water, acid, oil or ordinary temperature variations.

PRECISION GRINDING WHEEL

Precision grinding has few types such as surface grinding, cylindrical grinding, internal grinding, and profile grinding. The different grinding type has its own key points.

To select a proper specification of grinding wheel, there are few steps:

* Abrasive type is decided by workpiece material.
* Grit size is decided by the precision and surface roughness request of the workpiece.
* Grade and structure are decided by the equipment and working parameters.

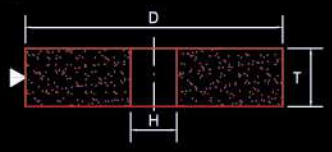
84A	80	H	9	V
Abrasive	Grit	Grade	Structure	Bond

Due to the different component ratio of aluminum oxide grain, the hardness and toughness of the grain are different; the grain property will affect grinding performance, versatility, and wheel life. We will help you select suitable grinding wheel spec according to your specific requirements.

The following figures are standard shapes, and special shape can also be customized.

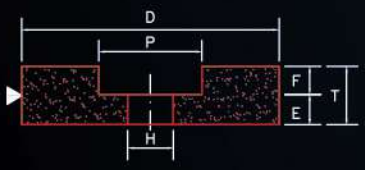
5A	30 x 25 x 6 x	12 x 10
Shape/Face	D x T x H x	P x F

1



D x T x H

5

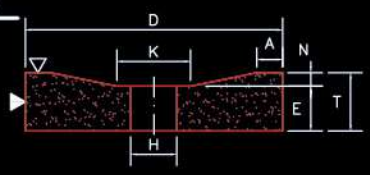


E≧F D x T x H x P x F

7

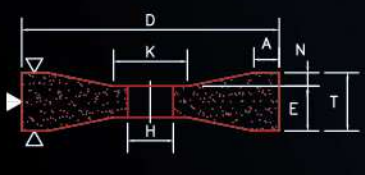
E≧½T D x T x H x P1 x F x P2 x G

20



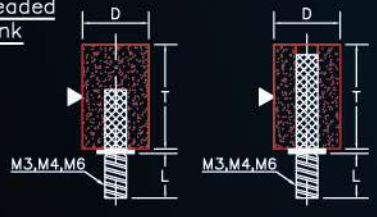
D x T x H x K x N x A

21



D x T x H x K x N x A

Threaded Shank



D x T x M3,M4,M6 x L

SURFACE GRINDING WHEEL

Surface grinding is a process that uses grinding wheel to grind for a smooth, contour or angle requirements on a horizontal surface. According to different needs for workpiece property, surface roughness, precision requirement or cost-oriented, you can select from the following specifications to benefit your .

Key factor: **Processing / Efficiency / Versatility**

Best : 84A 46 I 8 V / 84A 46 J 10 V

Main feature :

High process efficiency

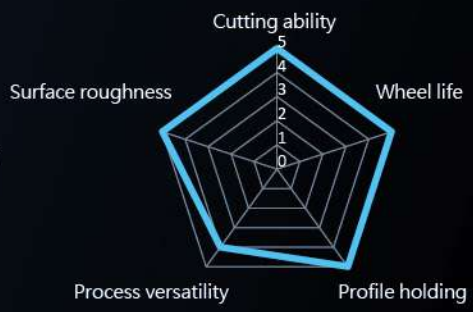
Longer wheel life

Suitable application :

Precision machining industry

Hardened workpiece

Highest productivity



Better : 30A 46 I 8 V / 32A 46 J 11 V

Main feature :

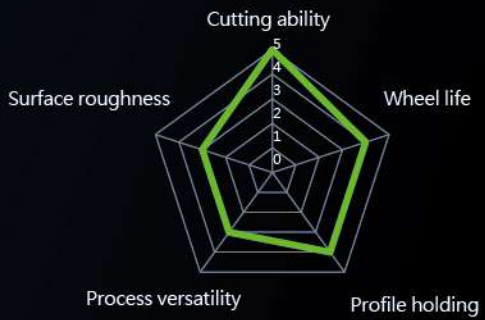
High process efficiency

Suitable application :

Precision parts industry

Hard & tough workpiece

High productivity



Good : 40A 46 I 8 V / 41A 46 J 11 V

Main feature :

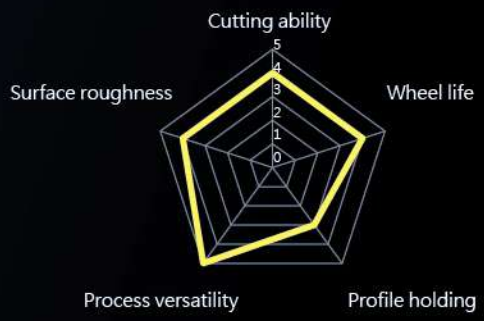
High versatility

Suitable application :

Machining industry

All kinds of workpiece

Cost-oriented



CYLINDRICAL GRINDING WHEEL

Cylindrical grinding is to grind the outer surface of the workpiece, a grinding machine that clips the workpiece and rotates, with the grinding wheel rotating simultaneously in a traverse grinding or feed-in grinding way to grind peripheral of the workpiece. Two main purposes of cylindrical grinding: High precision and surface roughness. Such like crankshaft, camshaft, all kinds of spindles and small precision components.

Key factor : Precision / Stability / Surface roughness

Best : 84A 80 H 8 V / 84A 80 J 8 V

Main feature :

- High process efficiency
- High stability
- Higher productivity

Suitable application :

- Precision machining industry
- Highest productivity

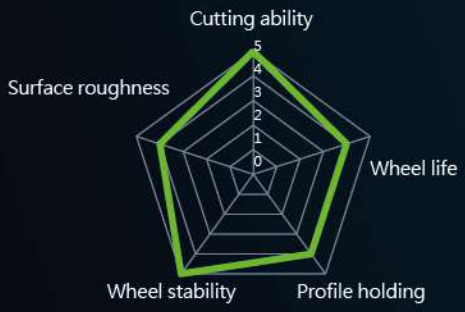
Better : 54A 80 H 9 V / 54A 80 J 9 V

Main feature :

- High process efficiency
- High stability

Suitable application :

- Precision parts industry
- High productivity



Good : 40A 46 H 9 V / 40A 46 H 11 V

Main feature :

- High versatility

Suitable application :

- Machining industry
- Cost-oriented

INTERNAL GRINDING WHEEL

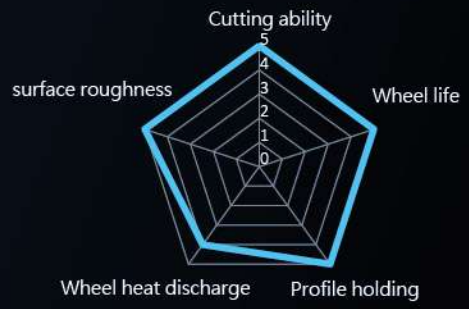
Internal grinding is to grind the hole of the workpiece to meet size precision and surface roughness. Some hard and brittle steels are hard to achieve precision requirement by lathe processing, especially when processing a taper hole, deep hole or blind hole, so a proper grinding process is needed. When grinding an internal hole, the inner space of the hole is usually small, so the stock removal and heat discharge become significant.

Key factor : Precision / Stability / Surface roughness / Stock removal / Heat discharge

Best : 84A 80 H 9 V

Main feature :
- High process efficiency
- High stability
- Higher productivity

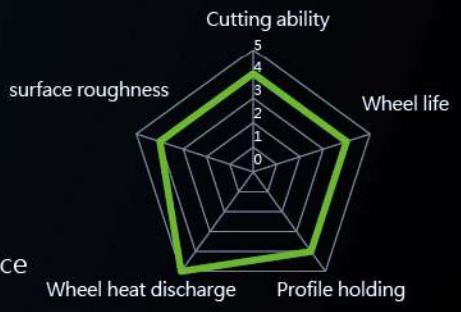
Suitable application :
- Precision processing industry
- Highest productivity



Better : 50A 80 H 9 V / 60A 80 H 9 V

Main feature :
- High stability
- Good stock removal
- Heat discharge

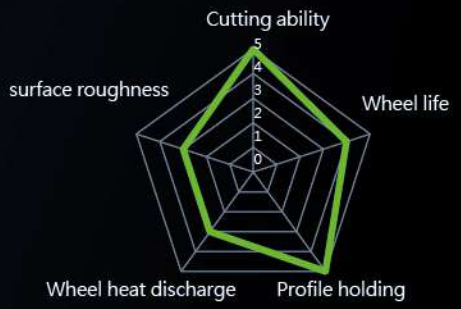
Suitable application :
- Precision machining industry
- Temperature sensitive workpiece



Better : 32A 80 H 9 V

Main feature :
- Good profile holding
- Faster processing

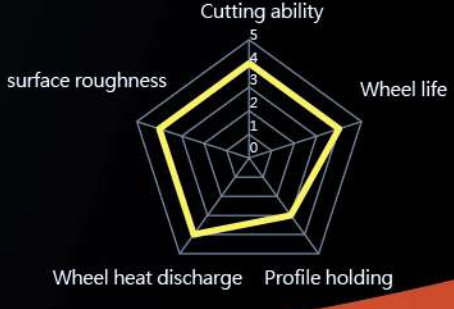
Suitable application :
- Precision parts industry
- High stock removal rate



Good : 40A 80 H 9 V

Main feature :
- High versatility

Suitable application :
- Machining industry
- Cost-oriented

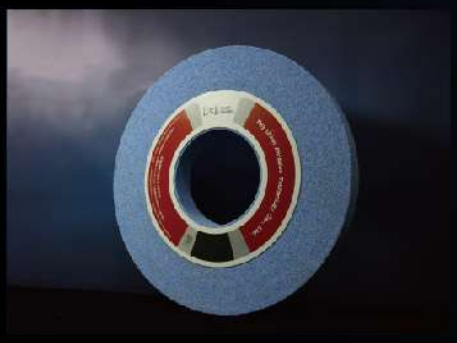


PROFILE GRINDING WHEEL

Profile grinding refers to the grinding of curved or grooved surfaces on the workpiece, which means the grinding wheel and the workpiece have a larger contact area. When grinding a workpiece, you need a good heat discharge and good profile holding wheel to achieve great processing shape, without overheat and physical characteristic change. Such process as bearing grinding, gear grinding and thread grinding.

Key factor : Precision / Stability / Surface roughness

Best : 84A 80 I 9 V



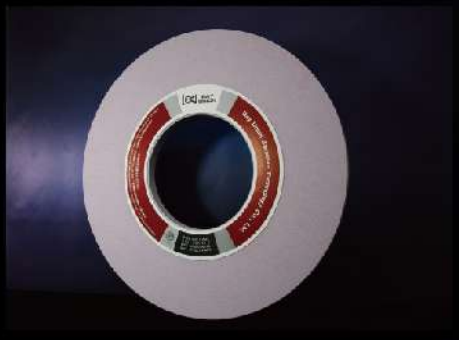
Main feature :

- Good profile holding
- Higher productivity

Suitable application :

- Precision parts industry
- Highest productivity
- High Profiling shape

Better : 54A 80 I 9 V



Main feature :

- Good stock removal
- Heat discharge

Suitable application :

- Precision parts industry
- Temperature sensitive workpiece

Good : 32A 80 I 9 V

Main feature :

- Good profile holding
- Faster processing

Suitable application :

- Precision parts industry
- High profiling shape
- Stock removal efficiency

PERIPHERAL SPEED & RPM

Wheel Dia.(mm)	Peripheral Speed (m/s)									
	15	20	25	30	35	40	50	63	80	100
10	28648	38197	47747	57296	66845	76394	95493	120321	152789	190986
20	14324	19099	23873	28648	33423	38197	47747	60161	76394	95493
30	9549	12732	15916	19099	22282	25465	31831	40107	50930	63662
40	7162	9549	11937	14324	16711	19099	23873	30080	38197	47747
50	5730	7639	9549	11459	13369	15279	19099	24064	30558	38197
60	4775	6366	7958	9549	11141	12732	15916	20054	25465	31831
70	4093	5457	6821	8185	9549	10913	13642	17189	21827	27284
80	3581	4775	5968	7162	8356	9549	11937	15040	19099	23873
90	3183	4244	5305	6366	7427	8488	10610	13369	16977	21221
100	2865	3820	4775	5730	6685	7639	9549	12032	15279	19099
150	1910	2546	3183	3820	4456	5093	6366	8021	10186	12732
200	1432	1910	2387	2865	3342	3820	4775	6016	7639	9549
250	1146	1528	1910	2292	2674	3056	3820	4813	6112	7639
300	955	1273	1592	1910	2228	2546	3183	4011	5093	6366
350	819	1091	1364	1637	1910	2183	2728	3438	4365	5457
400	716	955	1194	1432	1671	1910	2387	3008	3820	4775
450	637	849	1061	1273	1485	1698	2122	2674	3395	4244
500	573	764	955	1146	1337	1528	1910	2406	3056	3820
550	521	694	868	1042	1215	1389	1736	2188	2778	3472
600	477	637	796	955	1114	1273	1592	2005	2546	3183

*Color labelling follows EN12413 standard.

NOTE