

JIS

JAPANESE INDUSTRIAL STANDARD

**Diamond or cubic boron
nitride grinding wheels**

JIS B 4131—1993

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

JAPANESE INDUSTRIAL STANDARD

J I S

Diamond or cubic boron nitride grinding wheels

B 4131-1993

1. Scope This Japanese Industrial Standard specifies the diamond or cubic boron nitride grinding wheels (hereafter referred to as "wheels") to be used generally for grinding the metals, ceramics, glasses, plastics, rubber, composite materials, etc.

Remarks 1. The standards cited in this Standard are as given in the following:

JIS B 0401 System of limits and fits

JIS B 0905 Rotating machines - Balance quality requirements of rigid rotors

JIS B 4130 Grain sizes of diamond or cubic boron nitride

JIS B 7420 Limit gauges

JIS B 7502 Micrometer callipers for external measurement

JIS B 7503 Dial gauges

JIS B 7507 Vernier, dial and digital callipers

JIS B 7508 Micrometer callipers for internal measurement (Tubular type)

JIS G 4051 Carbon steels for machine structural use

JIS G 4401 Carbon tool steels

JIS H 3110 Phosphor bronze and nickel silver sheets, plates and strips

JIS H 5202 Aluminium alloy castings

JIS R 6001 Abrasive grain sizes

JIS R 6210 Vitrified grinding wheels

JIS R 6212 Resinoid grinding wheels

2. The International standards corresponding to this Standard are as given in the following:

ISO 6104: 1979 Abrasive products—Diamond or cubic boron nitride grinding wheels and saws—General survey, designation and multilingual nomenclature

ISO 6106: 1979 Abrasive products—Grain sizes of diamond or cubic boron nitride

ISO 6168: 1980 Abrasive products—Diamond or cubic boron nitride grinding wheels—Dimensions

3. The units and numerical values given in { } in this Standard are based on the traditional units, and are appended for informative reference.

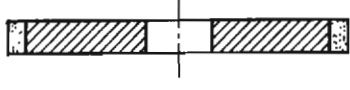
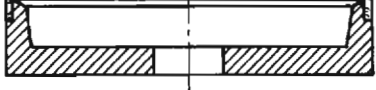
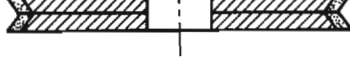
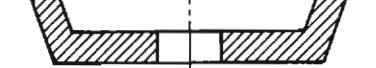
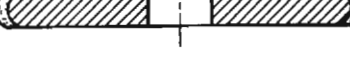
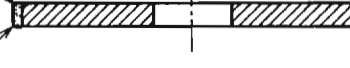
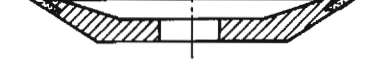
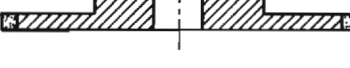
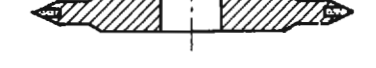
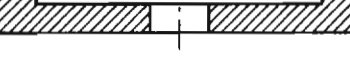
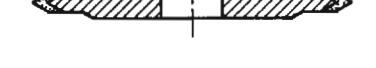
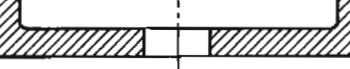
2. Definitions For the purposes of this Standard, the main definitions given in the following apply.

- (1) wheel That grinding wheel having a layer of abrasive grains mainly on the periphery or end face of a metallic core. It is called the "wheel", discriminating from the grinding wheels specified in JIS R 6210, JIS R 6212 and others, and the wheel having the abrasive grain layer in which diamond grains have been retained with bonding agent is called the "diamond wheel", and the wheel having the abrasive grain layer in which CBN grains have been retained with bonding agent is called the "CBN wheel".
- (2) metal core That base plate mainly made of metal which constitutes the basic shape of the wheel. It is also called the core, base, body, or the like.
- (3) abrasive grain layer with bonding agent That layer in which abrasive grains have been retained with bonding agent. It constitutes the working face of the wheel and is made with a limited thickness, and consists of various sectional shapes according to the purpose of use. In particular, the abrasive grain layer of the rim part (side face) of the metal core is called the "rim".
- (4) bonding grade The degree of retaining force with which the bonding agent retains the abrasive grains.
- (5) concentration That indicates the mass of abrasive grains contained in the unit volume of abrasive grain layer. When 880 mg {4.4 carats (ct)} is contained in 1 cm³, it is indicated as 100.
- (6) bonding agent That material which retains the abrasive grains and forms the abrasive grain layer part.
- (7) modification That have been processed with additional working, correction, etc. to the basic shape of the wheel.

3. Qualities

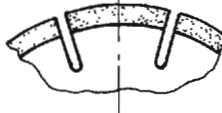
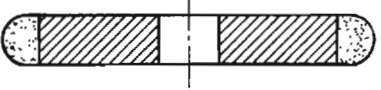
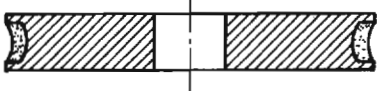
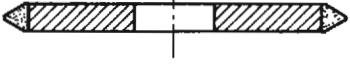
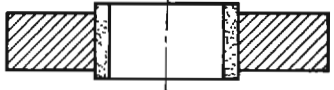
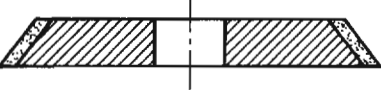
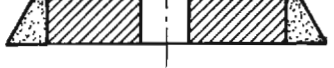
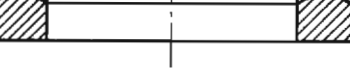
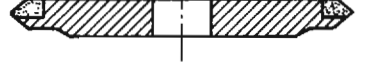
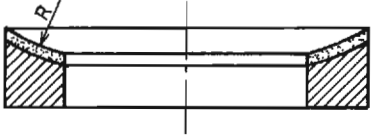
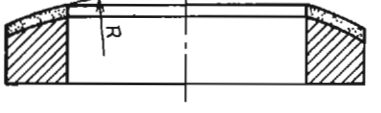
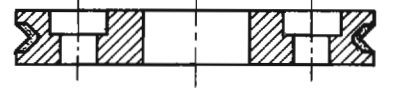
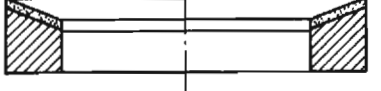
3.1 Types according to shapes The types according to the shapes of the wheels shall be in compliance with Table 1, and the designation of the type symbols shall be in compliance with the Annex.

Table 1. Types according to shapes of wheels

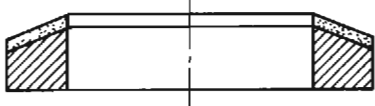
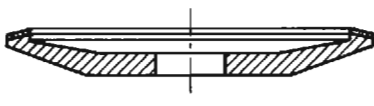
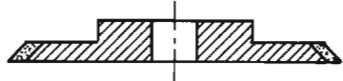
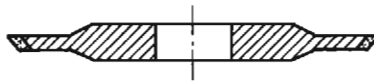
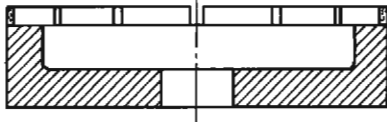
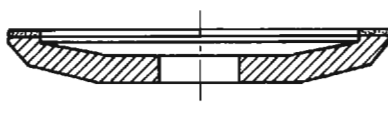
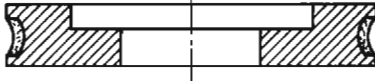
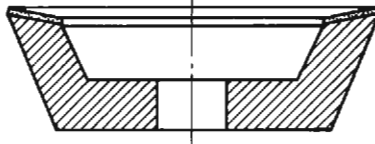
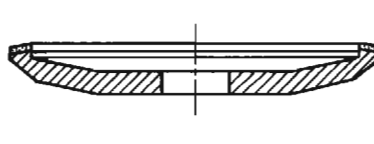
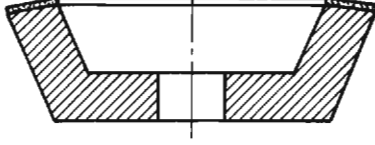
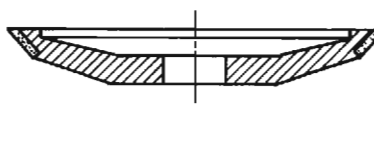
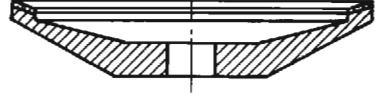
Type symbol	Shape	Table	Type symbol	Shape	Table
1A1		Table 2	6A9		Table 12
1A1R		Table 3	9A3		Table 13
1E6Q		Table 4	11A2		Table 14
1EE1V		Table 5	11V9		Table 15
1FF1		Table 6	12A2		Table 16 Table 17
1L1		Table 7	12V9		Table 18
1V9		Table 8	14A1		Table 19
3A1		Table 9	14E6Q		Table 20
6A2		Table 10	14EE1		Table 21
6A7S		Table 11			

Informative reference: The types according to the shapes of the wheels, other than those given in Table 1, are shown in Informative reference Table 1.

Informative reference Table 1

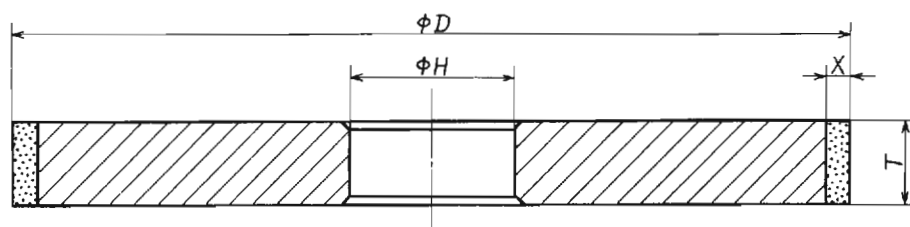
Type symbol	Shape	Type symbol	Shape
1A1RSS		1F1	
		1FF6Y	
1A6Q		1K1	
1A8		1LL6YB	
1A10R		1V1	
1B1		2A2	
1E1		2FF2	
1E9		2P4V	
1EE1		2P5	
1EE6YB		2V4	

Informative reference Table 1. (continued)

Type symbol	Shape	Type symbol	Shape
2V5		12V5	
3V1		14V1	
6A2S		15A2	
6FF6Y		15V4	
11V4		15V5	
11V5		15V9	
12V4			

3.2 Shapes and dimensions The shapes and dimensions of the wheels shall be in accordance with Tables 2 to 21.

Table 2. Shapes and dimensions of 1A1

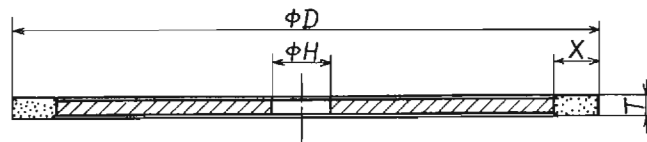


Unit: mm

Outside diameter D	Thickness of wheel T	Thickness of abrasive grain layer X	Bore diameter H	
20	4, 6, 8, 10, 12	1.5, 2, 3	6.00, 8.00, 9.53, 10.00, 12.70	
25				
40			12.70, 20.00	
50				
75	3, 4, 5, 6, 10, 12		16.00, 20.00, 31.75	
100				
125	3, 4, 5, 6, 10, 12, 15		3, 6	20.00, 25.40, 30.00, 31.75, 38.10
150	3, 4, 5, 6, 10, 12, 15, 20			25.00, 30.00, 31.75, 38.10, 50.00, 50.80
175	6, 10, 12, 15, 20	25.00, 30.00, 31.75, 38.10, 50.80		
200				
250	10, 12, 15, 20, 40, 60	50.80, 76.20, 100.00, 127.00		
300				
350		127.00, 152.40, 203.20		
400	20, 40, 60	3, 6, 10		
450			152.40, 203.20, 304.80	
500				
600	20, 40, 60, 100		254.00, 304.80	
750				

Remarks: The tolerances on bore diameter (H) shall be H7 specified in JIS B 0401.

Table 3. Shapes and dimensions of 1A1R

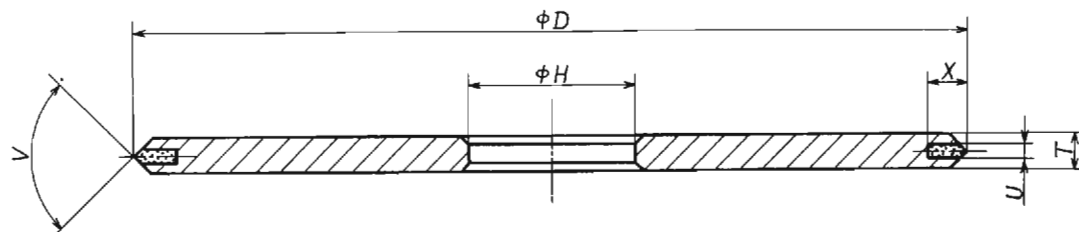


Unit: mm

Outside diameter D	Thickness of wheel T	Thickness of abrasive grain layer X	Bore diameter H
50	0.3	3, 5, 6	12.70, 20.00, 25.40
75			
100	0.4		20.00, 25.40, 31.75, 40.00
125	0.5		
150	0.7		
200	1.0		20.00, 25.40, 31.75, 38.00, 40.00, 50.80
250	1.5		
300	2.0		
350	2.5		
400	3.0		25.40, 30.00, 40.00, 50.80, 76.20

Remarks: The tolerances on bore diameter (H) shall be H7 specified in JIS B 0401.

Table 4. Shapes and dimensions of 1E6Q

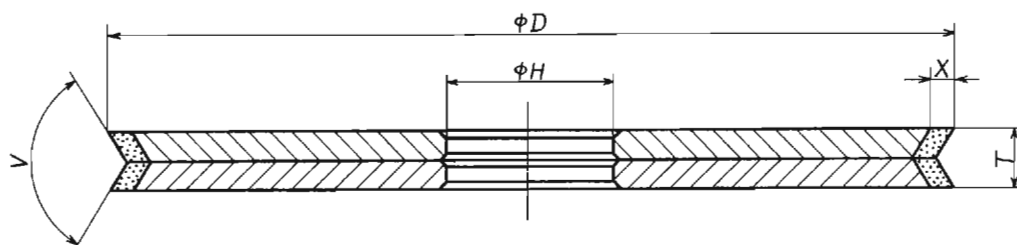


Unit: mm

Outside diameter D	Thickness of wheel T	Width of abrasive grain layer U	Thickness of abrasive grain layer X	Angle of working face V	Bore diameter H
40	6	1, 2	6	35°, 45° 60°, 90°	12.70
50					
75					16.00, 20.00, 31.75
100					
125	8				20.00, 25.40, 30.00, 31.75, 38.10
150					25.00, 30.00, 31.75, 38.10, 50.00, 50.80
220	12				25.00, 30.00, 31.75, 38.10, 50.80

Remarks: The tolerances on bore diameter (H) shall be H7 specified in JIS B 0401.

Table 5. Shapes and dimensions of 1EE1V

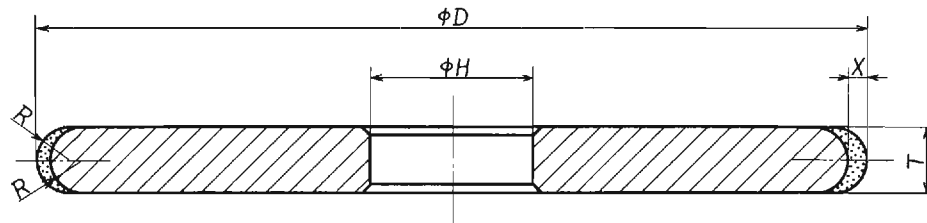


Unit: mm

Outside diameter D	Thickness of wheel T	Angle of working face V	Thickness of abrasive grain layer X	Bore diameter H
100	7	120°	1.5, 3	16.00, 20.00, 31.75
110				
150	10, 12	125°, 135°		25.00, 30.00, 31.75, 38.10, 50.00, 50.80
	15	135°		

Remarks: The tolerances on bore diameter (H) shall be H7 specified in JIS B 0401.

Table 6. Shapes and dimensions of 1FF1

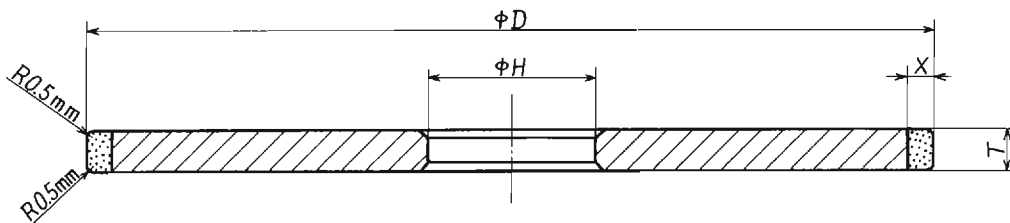


Unit: mm

Outside diameter D	Thickness of wheel T	Radius R	Thickness of abrasive grain layer X	Bore diameter H
50	4 to 20	2 to 10	2, 3, 4	12.70, 20.00
75				16.00, 20.00, 31.75
100				
125				20.00, 25.40, 30.00, 31.75, 38.10
150				25.00, 30.00, 31.75, 38.10, 50.00, 50.80

Remarks: The tolerances on bore diameter (H) shall be H7 specified in JIS B 0401.

Table 7. Shapes and dimensions of 1L1



Unit: mm

Outside diameter D	Thickness of wheel T	Thickness of abrasive grain layer X	Bore diameter H
75	3, 4, 5	1.5, 2, 3	16.00, 20.00, 31.75
100			
125	3, 4, 5, 6	3, 6	20.00, 25.40, 30.00, 31.75, 38.10
150			25.00, 30.00, 31.75, 38.10, 50.00, 50.80

Remarks: The tolerances on bore diameter (H) shall be H7 specified in JIS B 0401.