

JIS

JAPANESE INDUSTRIAL STANDARD

**Shapes and Dimensions
of Grinding Wheels**

JIS R 6211 —1986

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JAPANESE INDUSTRIAL STANDARD

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Shapes and Dimensions of Grinding Wheels

R 6211-1986

1. Scope

This Japanese Industrial Standard specifies the shapes, dimensions and uses of the grinding wheels.

2. Specified Items

The specified items in this standard shall be as given in the following:

- (1) Shapes
- (2) Basic dimensions
- (3) Dimensions according to uses and shapes
- (4) Limits on shapes and dimensions according to maximum operating peripheral speeds

3. Shapes

3.1 Shapes, working surfaces, symbols and designations shall be as given in Figs. 1 to 23.

Fig. 1. No. 1 Straight Type

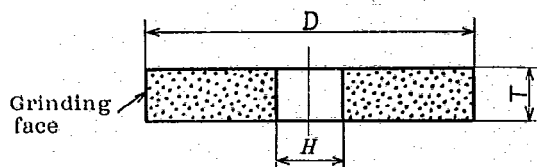
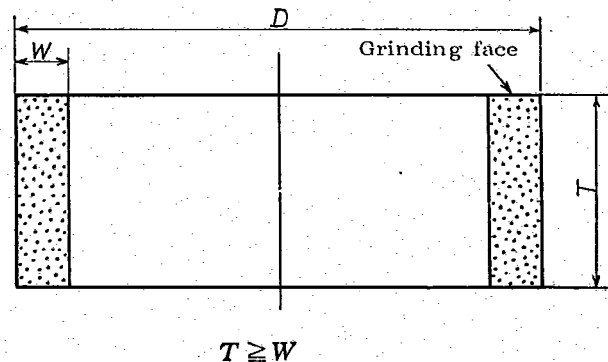


Fig. 2. No. 2 Ring Type



Applicable Standard:

JIS R 6241-Maximum Operating Speed of Grinding Wheels

Fig. 3. No. 3 Taper Type

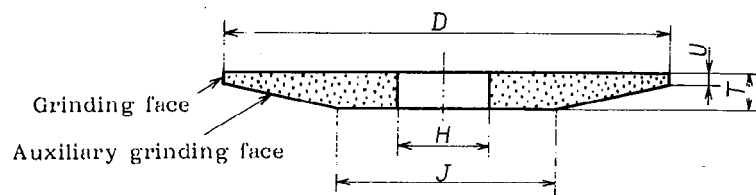
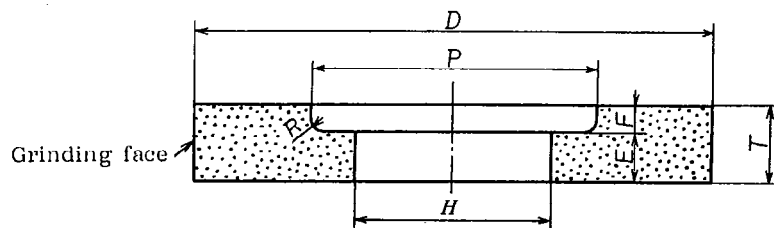
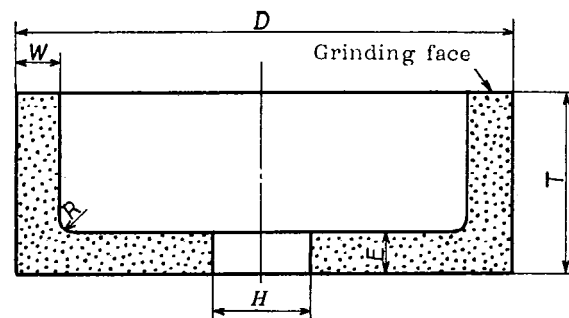


Fig. 4. No. 5 Single Concaved Type



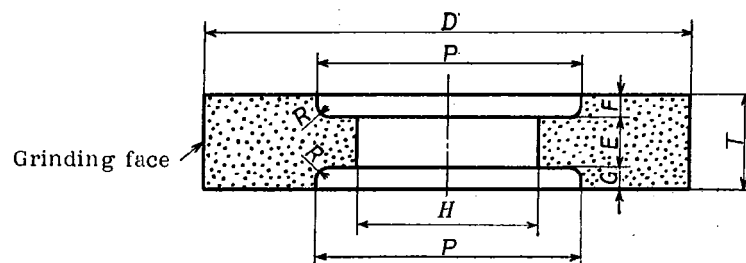
$$E \geq \frac{T}{2}$$

Fig. 5. No. 6 Straight Cup Type



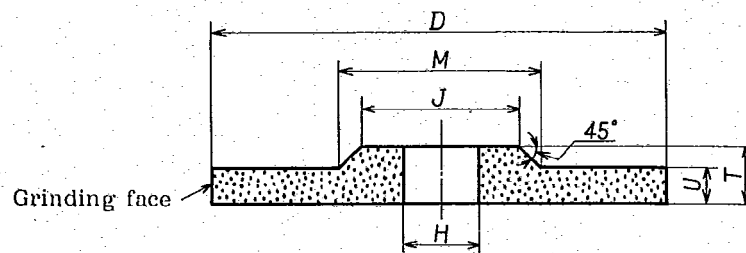
$$E \geq \frac{T}{4} \quad W \leq E$$

Fig. 6. No. 7 Double Concaved Type



$$E \geq \frac{T}{2}$$

Fig. 7. No. 10 Dovetail Type
Single Dovetail Type



Double Dovetail Type

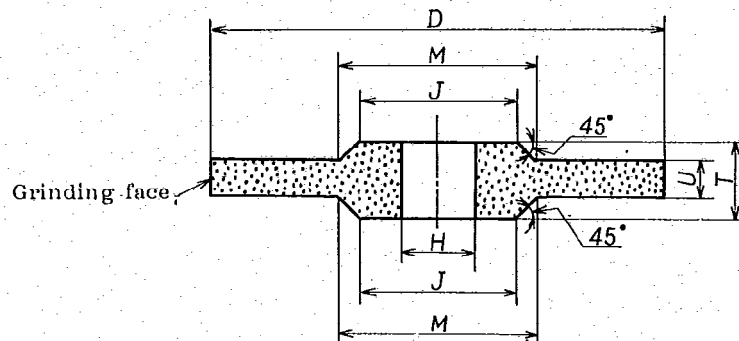
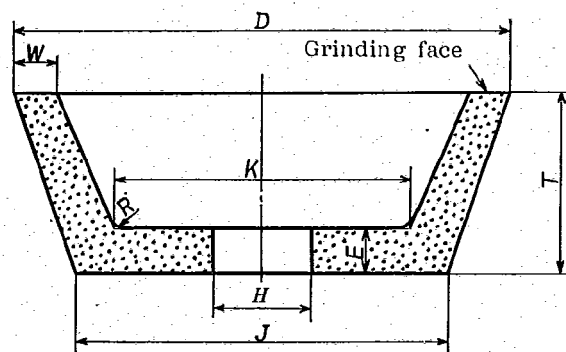
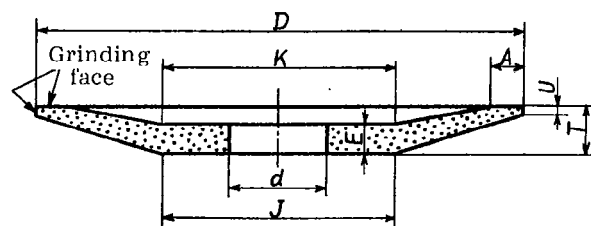


Fig. 8. No. 11 Taper Cup Type



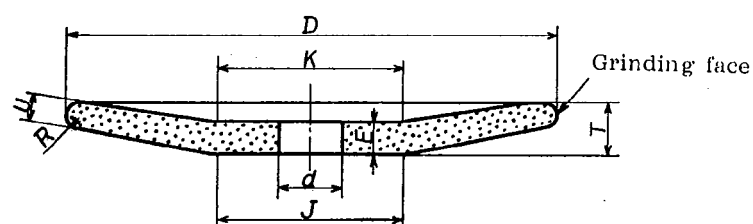
$$E \geq \frac{T}{4} \quad W \leq E$$

Fig. 9. No. 12 Dished Type



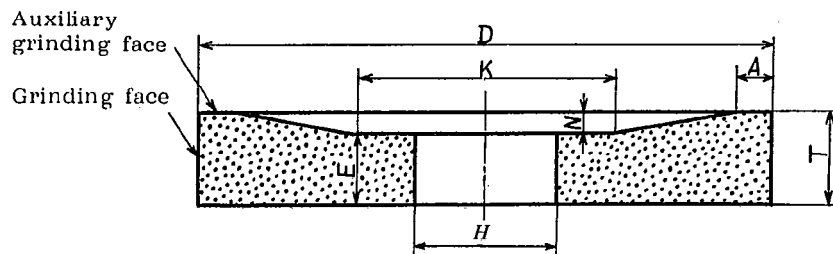
$$E \geq \frac{T}{2}$$

Fig. 10. No. 13 Dished Type for Saw



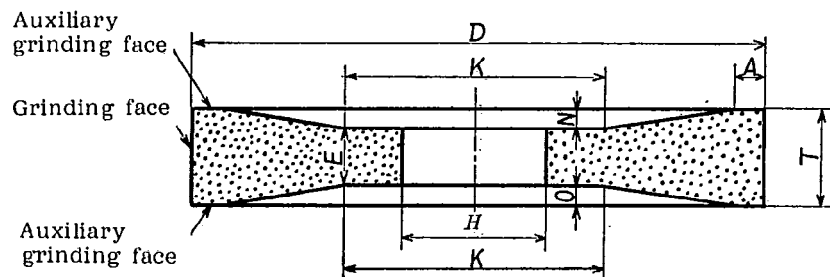
$$U = E \quad R = \frac{U}{2}$$

Fig. 11. No. 20 Single Recessed Type



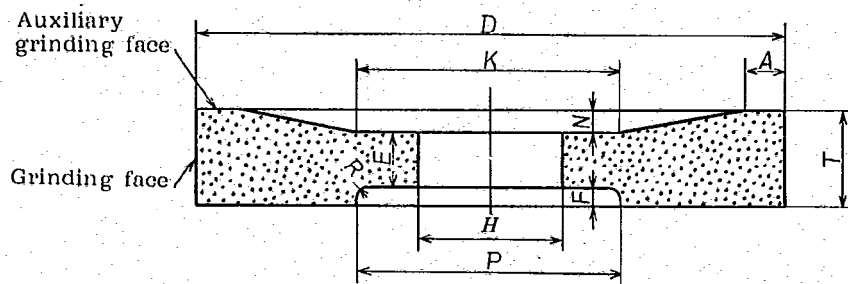
$$E \geq \frac{T}{2}$$

Fig. 12. No. 21 Double Recessed Type



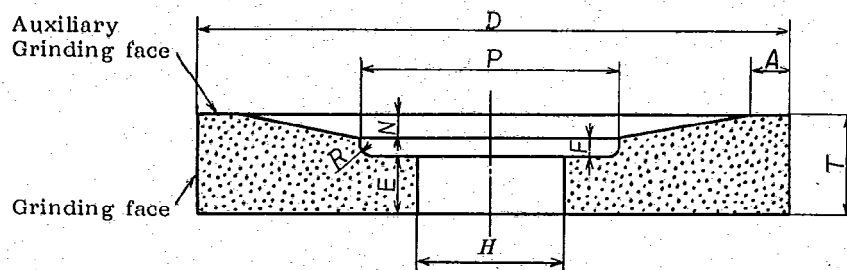
$$E \geq \frac{T}{2}$$

Fig. 13. No. 22 Single Recessed and Single Concaved Type



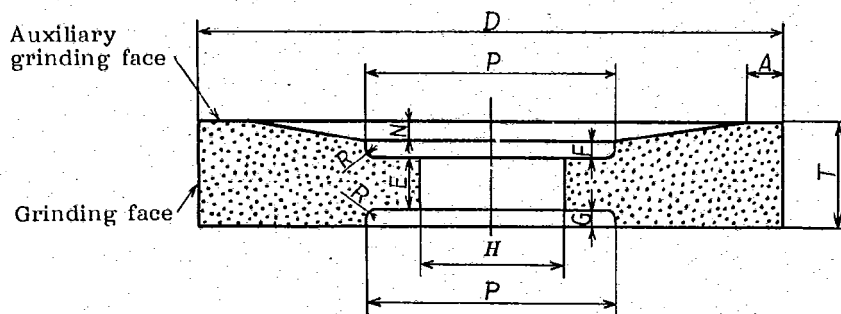
$$E \geq \frac{T}{2}$$

Fig. 14. No. 23 Single Concaved and Recessed Type



$$E \geq \frac{T}{2}$$

Fig. 15. No. 24 Single Recessed and Double Concaved Type



$$E \geq \frac{T}{2}$$

Fig. 16. No. 25 Double Recessed and Single Concaved Type

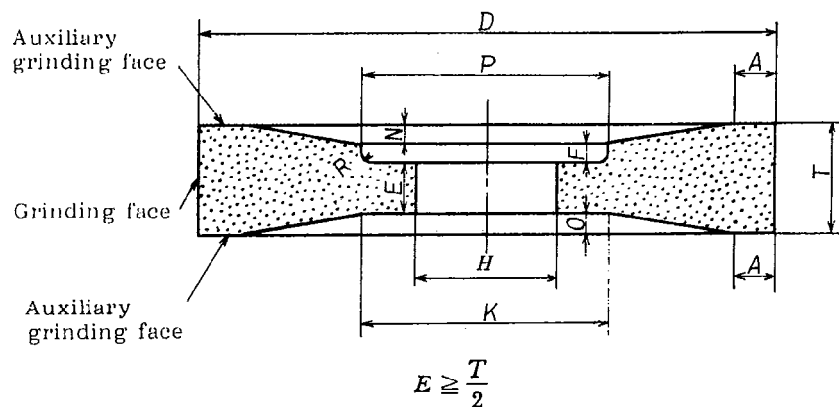


Fig. 17. No. 26 Double Recessed and Double Concaved Type

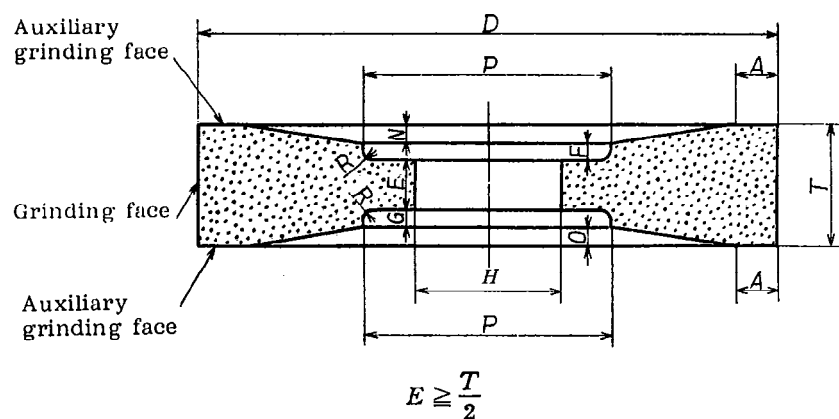


Fig. 18. No. 27 Depressed Centre Type

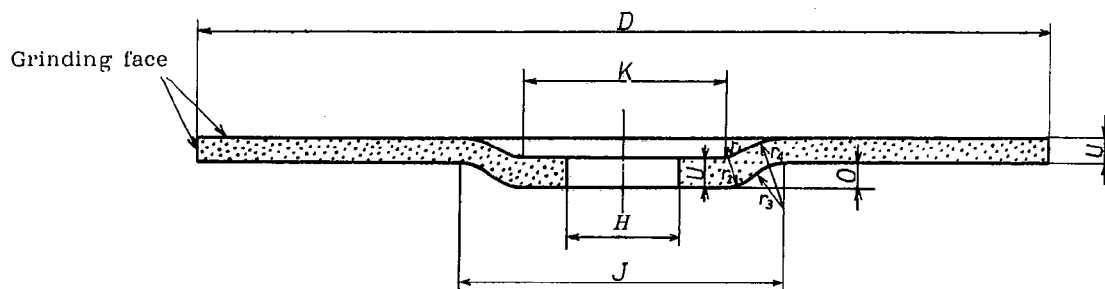


Fig. 19. No. 28 Depressed Centre Type

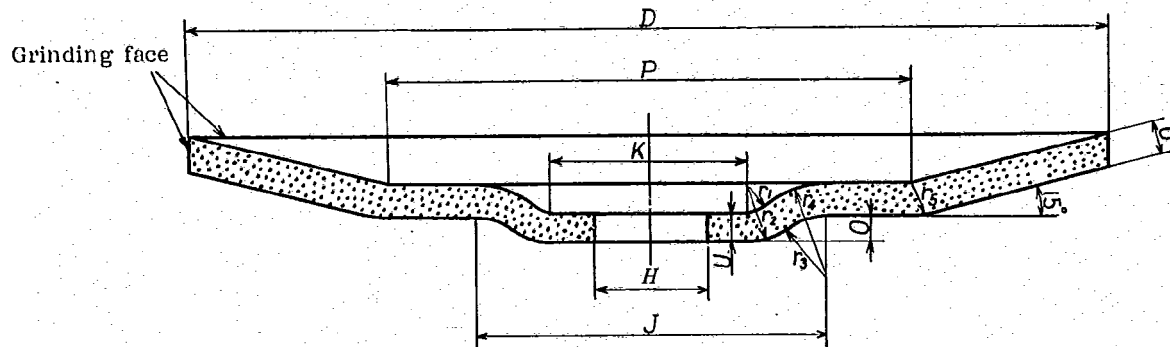


Fig. 20. Straight Type for Cutting-off

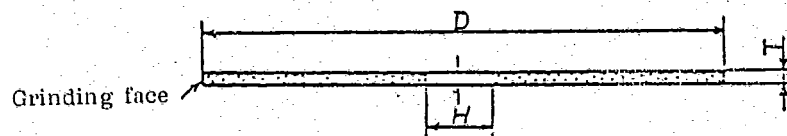


Fig. 21. Inserted Nut Ring Type

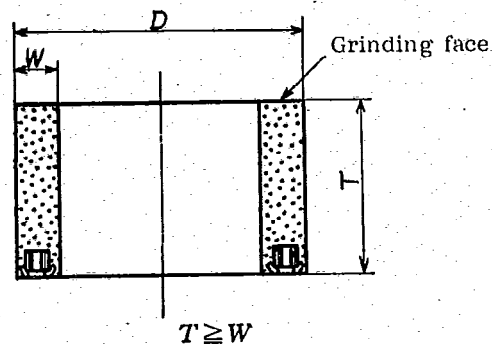


Fig. 22. Inserted Nut Disc Type

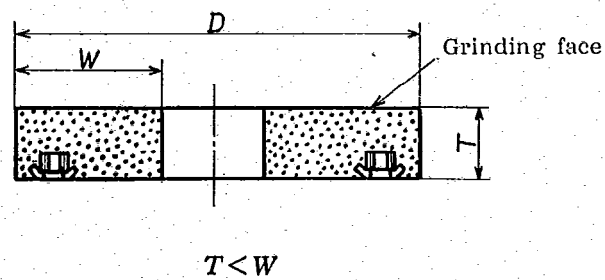
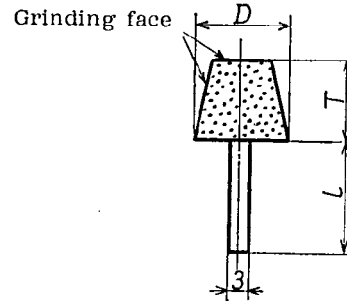
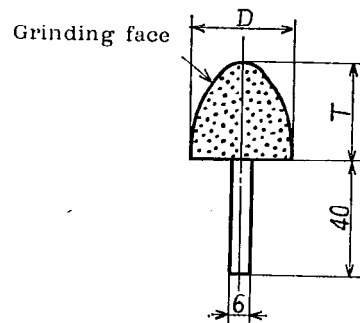
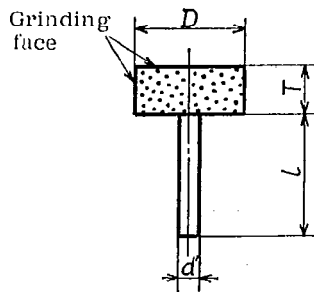


Fig. 23. Mounted Wheels

(1) Flat Type
(Type W, Type WJ)(2) Deformed Type
(Type A, Type AJ)(3) Deformed Type
(Type B, Type BJ)

3.2 The rim types of the grinding wheels and their designations shall be as given in Figs. 24 to 38, and these shall be applicable to No. 1 plain type, No. 5 single concaved type, and No. 7 double concaved type.

Fig. 24. Rim Type A

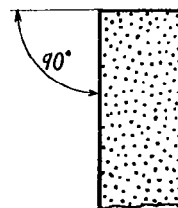
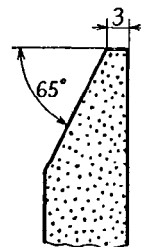
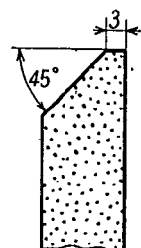


Fig. 25. Rim Type B



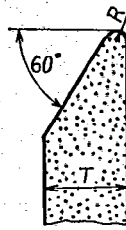
Unit: mm

Fig. 26. Rim Type C



Unit: mm

Fig. 27. Rim Type D



$$R = \frac{3}{10} T$$

Fig. 28. Rim Type E

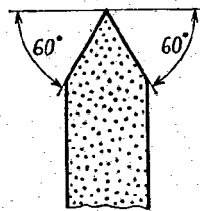
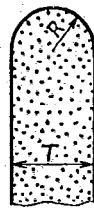
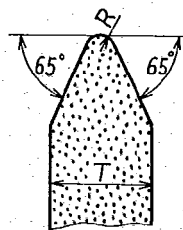


Fig. 29. Rim Type F



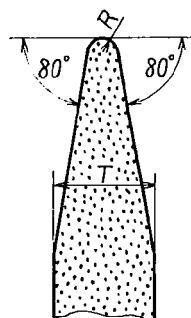
$$R = \frac{1}{2} T$$

Fig. 30. Rim Type G



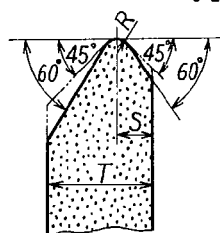
$$R = \frac{1}{8} T$$

Fig. 31. Rim Type H



$$R = \frac{1}{8} T$$

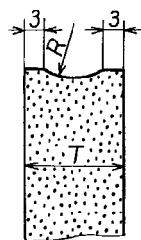
Fig. 32. Rim Type I



$$R = \frac{1}{8} T$$

$$S = \frac{1}{3} T$$

Fig. 33. Rim Type J



Unit: mm

$$R = \frac{7}{10} T$$

Fig. 34. Rim Type K

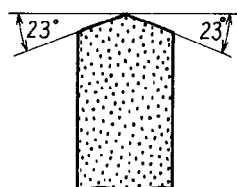
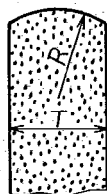
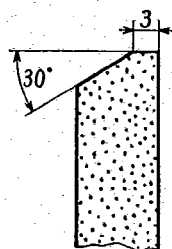


Fig. 35. Rim Type L



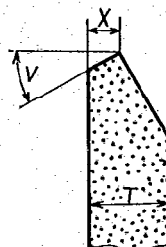
$$R = T$$

Fig. 36. Rim Type M



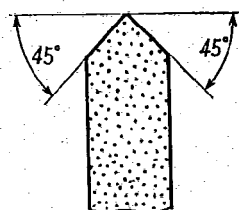
Unit: mm

Fig. 37. Rim Type N



Remark: v and x shall be as agreed between the parties concerned.

Fig. 38. Rim Type P



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4. Basic Dimensions

The basic dimensions of the grinding wheels shall be as given in Table 1.

Table 1

Unit: mm

Outside diameter (<i>D</i>)		Thickness (<i>T</i>)		Bore diameter (<i>H</i>)		Concave diameter (<i>P</i>)
A	B	A	B	A	B	
3	3		0.3 ⁽²⁾	1.60	1.59	10
4	4	0.6	0.5		2.38	13
5	5	0.8	0.8	2.50		16
6	6	1.0	1.0		3.18	19
8	8	1.25		4.00	3.97	25
10	10	1.6	1.5		4.77	32
13	13	2.0	2.0	5.00		40
16	16	2.5	2.5	6.00	6.35	45
20	19	3.2	3	10.00	9.53	50
	22		3.5 ⁽²⁾	13.00	12.70	63
25	25	4	4		15.00 ⁽¹⁾⁽²⁾	80
	28		4.5 ⁽²⁾	16.00	15.88	90
32	32	5	5	20.00	19.05	100
40	38		5.5 ⁽²⁾		22.00 ⁽¹⁾⁽²⁾	120
	45	6	6		22.23	125
50	50	8	8	25.00	25.40	135
63	65	10	10		30.00 ⁽²⁾	150
80	75	13	13	32.00	31.75	160
	90	16	16	40.00	38.10	190
100	100	20	19		44.45	205
	115		22	50.80	50.80	215
125	125	25	25		63.50	220
150	150		28 ⁽²⁾	76.20	76.20	235
	180	32	32		101.60	250
200	205	40	38	127.00	127.00	280
	230		45	152.40	152.40	300
250	255	50	50		177.80	310
	280 ⁽⁴⁾	63	65	203.20	203.20	330
300	305	80	75		228.60	350
350	355		90		254.00	370
	380	100	100	304.80	304.80	390
400	405	125	125		355.60	400
450	455	160	150		406.40	450
500	510	200	205	508.00	508.00	510
	560	250	255			585
	585	315	305			630
600	610	400	405			760
	660	500	510			
750	760	600	610			
900	915					
1060	1065					
1250	1250					
1500	1500					

Notes ⁽¹⁾ These are applicable only to the depressed centre type wheels.

⁽²⁾ These are applicable only to the cutting-off wheels.

⁽³⁾ This is applicable only to the mounted wheels and dished type for saw.

⁽⁴⁾ This is applicable only to the inserted nut ring type wheels.

Remarks 1. Dimensions shall be selected for A series only from A series, and for B series only from B series.

2. E, W and others shall be in accordance with basic dimension of T.

5. Dimensions of Grinding Wheels According to Uses and Shapes

The dimensions of grinding wheels according to uses and shapes shall be in accordance with Attached Fig. 1. (1) and Attached Table 1. (1) to Attached Fig. 9 and Attached Table 9. However, in the case where these are used under other peripheral speeds than the ordinary speed specified in 2.1 of JIS R 6241, only the dimensions of within the limits of the shapes and dimensions according to the maximum operating peripheral speed specified in 6. shall be applied.

Furthermore, the system of the dimensions according to uses and shapes of grinding wheels is given in Informative Figure.

6. Limits of Shape and Dimensions According to Maximum Operating Peripheral Speeds

The shape and dimensions of grinding wheels according to maximum peripheral speeds shall be within the range of Table 2.

Table 2

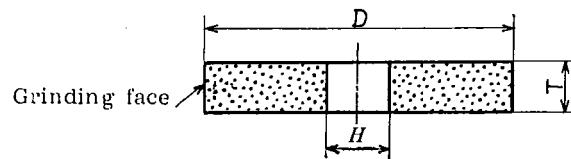
Unit: mm

Division of maximum operating peripheral speeds of grinding wheel	Type of bond	Shape of grinding wheel	Dimensions						
			Outside diameter D	Thickness T	Bore diameter H	Concave diameter P	Thickness at centre E	Diameter at centre J, K	Rim thickness W
Those which are the peripheral speed of Table 1 of JIS R 6241 or under	Inorganic	All shapes (excluding those for cut-off)	—	—	$0.7 D$ max.	$1.02 D_f + 4$ min.	No. 6, No. 11 $T/4$ min., No. 5, No. 7, No. 12, No. 13, $T/2$ min.	$D_f + 2R$ min.	E max.
	Organic	No. 1 for cut-off	1500 max.	—	—	—	—	—	—
Those exceeding the peripheral speed of Table 1 of JIS R 6241	2700 m/min. or under	Inorganic	1065 max.	$D/75$ min. $D (D \leq 610)$ max.	$0.6 D$ max.	$1.02 D_f + 4$ min.	$2/3 T$ min.	$D_f + 2R$ min.	—
		Organic							E max.
	Over 2700 m/min. to 3600 m/min. incl.	Inorganic	1065 max.	$D/50$ min. 305 max.	$0.5 D$ max.	$1.02 D_f + 4$ min.	$2/3 T$ min.	$D_f + 2R$ min.	—
		Organic							—
	Over 3600 m/min. to 4800 m/min. incl.	Inorganic	760 max.	$D/50$ min. 80 max.	$0.33 D$ max.	—	—	$D_f + 2R$ min.	—
		Organic							—
		No. 1 for cut-off	1500 max.	—	—	—	—	—	—
	Over 4800 m/min. to 6000 m/min. incl.	Inorganic	760 max.	$D/50$ min. 80 max.	$0.2 D$ max.	—	—	$D_f + 2R$ min.	—
		Organic							—
		No. 1 for cut-off	1500 max.	—	—	—	—	—	—

Remark: In this Table, D_f indicates the diameter of the flange and R indicates the inside radius of rounding at corner of the concaved part.

Attached Fig. 1. For Free Grinding

(1) No.1 Straight Type (Portable)



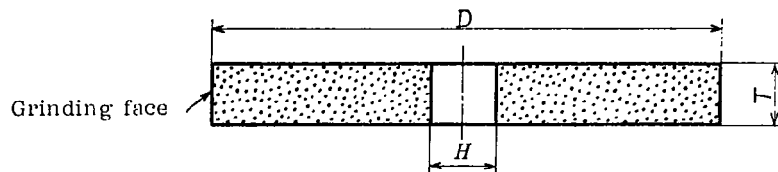
Attached Table 1 (1)

Unit: mm

D	T					H				
50	10	13	—	—	—	9.53	12.70	—	—	—
65	10	13	—	—	—	9.53	12.70	—	—	—
75	10	13	16	—	—	9.53	12.70	—	—	—
100	10	13	16	19	—	—	12.70	15.88	—	—
125	—	13	16	19	25	—	12.70	15.88	—	—
150	—	—	—	19	25	—	—	15.88	19.05	—
180	—	—	—	19	25	—	—	15.88	19.05	—
205	—	—	—	19	25	—	—	15.88	19.05	25.40
255	—	—	—	—	25	—	—	—	19.05	25.40

Attached Fig. 1. For Free Grinding

(2) No.1 Straight Type (On table, on floor, waggon, swing)



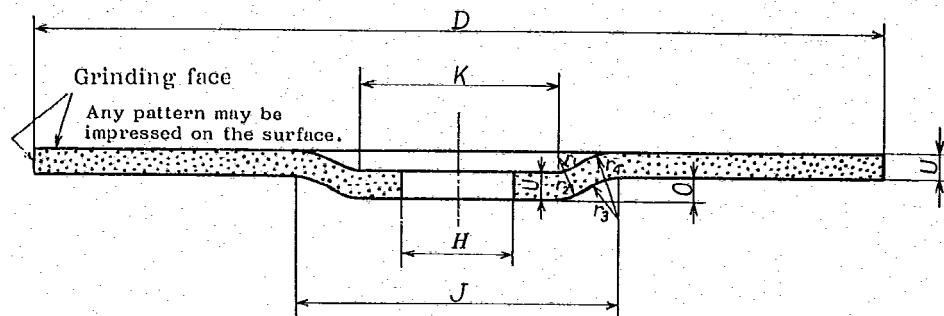
Attached Table 1 (2)

Unit: mm

D	T									H										
150	13	16	19	25	—	—	—	—	—	12.70	15.88	—	—	—	—	—	—	—	—	—
205	—	—	19	25	32	38	—	—	—	—	15.88	19.05	—	—	—	—	—	—	—	—
255	—	—	19	25	32	38	—	—	—	—	—	19.05	25.40	—	—	—	—	—	—	—
305	—	—	—	25	32	38	50	—	—	—	—	—	25.40	31.75	38.10	—	50.80	—	—	—
355	—	—	—	25	32	38	50	—	—	—	—	—	—	31.75	38.10	—	50.80	—	—	—
405	—	—	—	25	32	38	50	65	75	—	—	—	—	31.75	38.10	—	50.80	—	—	—
455	—	—	—	—	32	38	50	65	75	—	—	—	—	—	—	44.45	50.80	—	152.40	—
510	—	—	—	—	—	38	50	65	75	—	—	—	—	—	—	—	50.80	—	152.40	203.20
560	—	—	—	—	—	—	50	65	—	—	—	—	—	—	—	—	50.80	—	—	203.20
610	—	—	—	—	—	—	50	65	75	—	—	—	—	—	—	—	—	63.50	—	203.20 304.80

Attached Fig. 1. For Free Grinding

(3) No.27 Depressed Centre Type



Attached Table 1 (3) (a)

Unit: mm

D	U	H	J	K	O	r_1	r_2	r_3	r_4
100	1	15.00	46	33	4.0	1.5	(3)	(3)	(3)
100	6	15.00	46	33	4.0	1.5	(3)	(3)	(3)
125	3	22.23	68	42	4.8	(4)	10	10	(16)
125	4	22.23	68	42	4.8	(4)	10	10	(16)
125	6	22.23	68	42	4.8	(4)	10	10	(16)
150	3	22.23	68	42	4.8	(4)	10	10	(16)
150	6	22.23	68	42	4.8	(4)	10	10	(16)
150	8	22.23	68	42	4.8	(4)	10	10	(16)
180	3	22.23	68	42	4.8	(4)	10	10	(16)
180	6	22.23	68	42	4.8	(4)	10	10	(16)
180	8	22.23	68	42	4.8	(4)	10	10	(16)
205	6	22.23	68	42	4.8	(4)	10	10	(16)
205	8	22.23	68	42	4.8	(4)	10	10	(16)
230	6	22.23	68	42	4.8	(4)	10	10	(16)
230	8	22.23	68	42	4.8	(4)	10	10	(16)

- Remarks 1. For ordinary peripheral speed exceeding D 100 it is applicable excluding to H 22.00.
2. Numerical values given in parentheses are for informative values.

Attached Table 1 (3) (b)

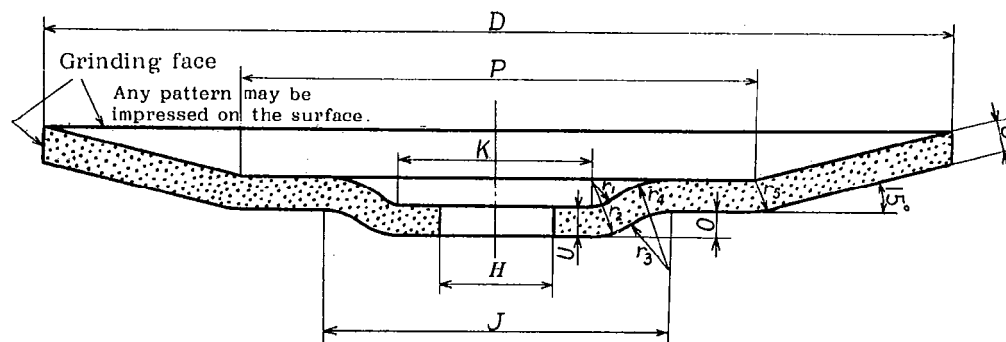
Unit: mm

D	U	H	J	K	O	r_1	r_2	r_3	r_4
100	3	15.00	52	35	6	2.5	(6.5)	(2.5)	(6.5)
100	4	15.00	52	35	6	2.5	(6.5)	(2.5)	(6.5)
100	6	15.00	52	35	6	2.5	(6.5)	(2.5)	(6.5)
125	3	22.00	70	48	6	2.5	(8.5)	(2.5)	(8.5)
125	4	22.00	70	48	6	2.5	(8.5)	(2.5)	(8.5)
125	6	22.00	70	48	6	2.5	(8.5)	(2.5)	(8.5)
150	3	22.00	70	48	6	2.5	(8.5)	(2.5)	(8.5)
150	6	22.00	70	48	6	2.5	(8.5)	(2.5)	(8.5)
150	8	22.00	70	48	6	2.5	(8.5)	(2.5)	(8.5)
180	3	22.00	70	48	6	2.5	(8.5)	(2.5)	(8.5)
180	6	22.00	70	48	6	2.5	(8.5)	(2.5)	(8.5)
180	8	22.00	70	48	6	2.5	(8.5)	(2.5)	(8.5)
205	6	22.00	70	48	6	2.5	(8.5)	(2.5)	(8.5)
205	8	22.00	70	48	6	2.5	(8.5)	(2.5)	(8.5)
230	6	22.00	103	81	6	2.5	(8.5)	(2.5)	(8.5)
230	8	22.00	103	81	6	2.5	(8.5)	(2.5)	(8.5)

- Remarks 1. These are limited for the ordinary speed specified in 2.1 of JIS R 6241.
2. Numerical values given in parentheses are for informative values.

Attached Fig. 1. For Free Grinding

(4) No.28 Depressed Centre Type



Attached Table 1 (4)

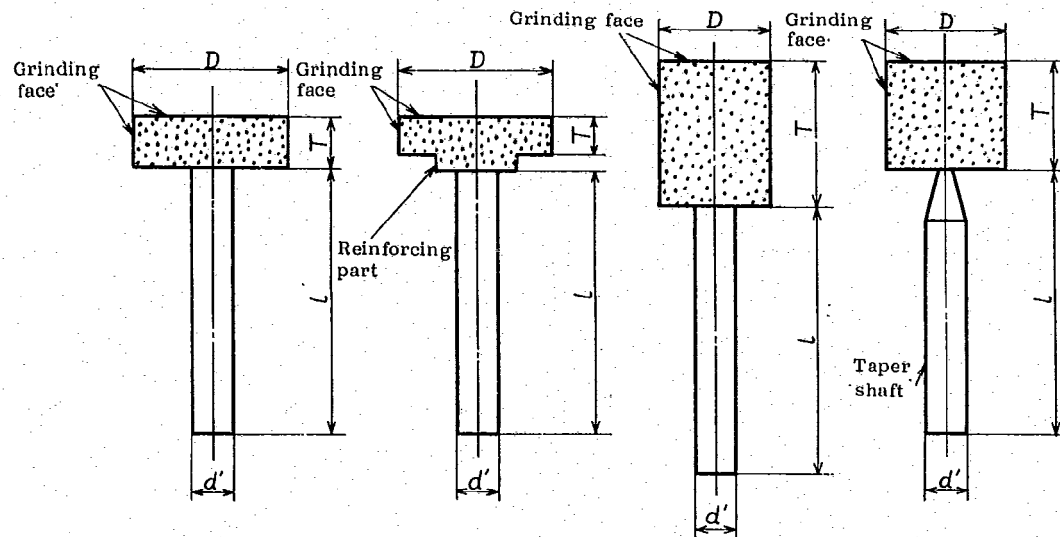
Unit: mm

D	U	H	J	K	O	P	r_1	r_2	r_3	r_4	r_5
180	6	22.23	68	42	4.8	102	(4)	10	10	(16)	(6)
230	6	22.23	68	42	4.8	102	(4)	10	10	(16)	(6)

Remark: Numerical values given in parentheses are for informative values.

Attached Fig. 1. For Free Grinding

(5) Mounted Straight Type (Type W, Type WJ)



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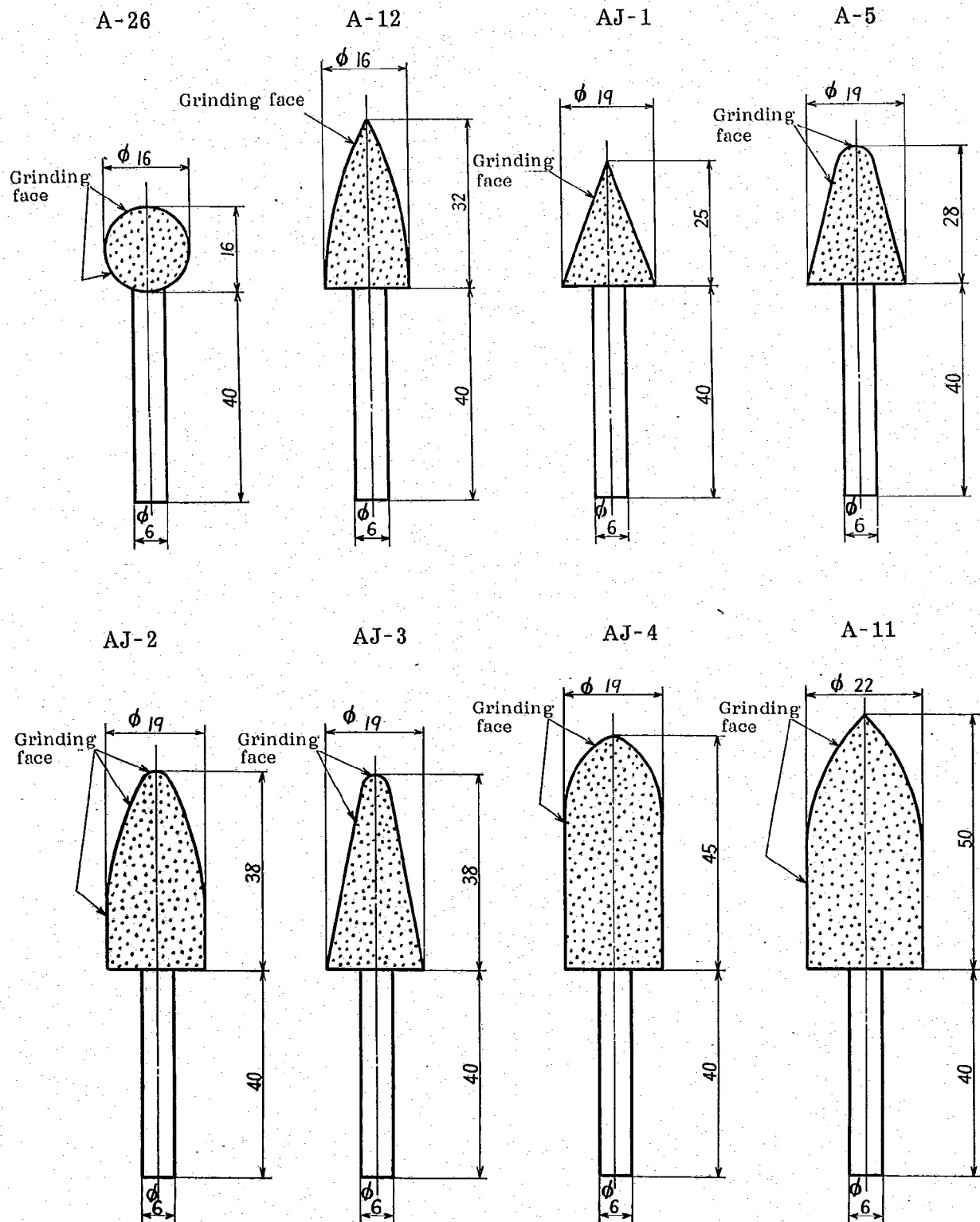
Attached Table 1 (5) Mounted Straight Type (Type W, Type WJ)
Unit: mm

Type Number	Outside diameter D	Thickness T	Shaft diameter d'	Shaft length l		Type number	Outside diameter D	Thickness T	Shaft diameter d'	Shaft length l	
W 144	3	6	3	30	40	WJ 4	16	32	6	—	40
W 145	3	10	3	30	40	W 197	16	50	6	—	40
W 146	3	13	3	30	40	W 200	19	3	3	30	40
W 149	4	6	3	30	40	W 201	19	6	3	30	40
WJ 1	4	10	3	30	40	W 202	19	10	3	30	40
WJ 2	4	13	3	30	40	W 203	19	13	3	30	40
W 152	5	6	3	30	40	W 204	19	19	6	—	40
W 153	5	10	3	30	40	W 205	19	25	6	—	40
W 154	5	13	3	30	40	W 207	19	38	6	—	40
W 160	6	6	3	30	40	W 208	19	50	6	—	40
W 162	6	10	3	30	40	W 215	25	3	3	30	40
W 163	6	13	3	30	40	W 216	25	6	3	30	40
W 164	6	19	3	30	40	W 217	25	10	6	—	40
W 169	8	10	3	30	40	W 218	25	13	6	—	40
W 170	8	13	3	30	40	W 219	25	19	6	—	40
W 174	10	6	3	30	40	W 220	25	25	6	—	40
W 175	10	10	3	30	40	W 221	25	38	6	—	40
W 176	10	13	3	30	40	W 222	25	50	6	—	40
W 177	10	19	3	30	40	W 225	32	6	6	—	40
W 178	10	25	3	30	40	W 226	32	10	6	—	40
W 182	13	3	3	30	40	W 228	32	19	6	—	40
W 183	13	6	3	30	40	W 230	32	32	6	—	40
W 184	13	10	3	30	40	W 232	32	50	6	—	40
W 185	13	13	3	30	40	W 235	38	6	6	—	40
W 186	13	19	3	30	40	W 236	38	13	6	—	40
W 187	13	25	3	30	40	WJ 5	38	19	6	—	40
W 188	13	38	6	—	40	W 237	38	25	6	—	40
W 194	16	13	3	30	40	W 238	38	38	6	—	40
WJ 3	16	16	6	—	40	WJ 6	50	13	6	—	40
W 196	16	25	6	—	40	W 242	50	25	6	—	40

Attached Fig. 1. For Free Grinding

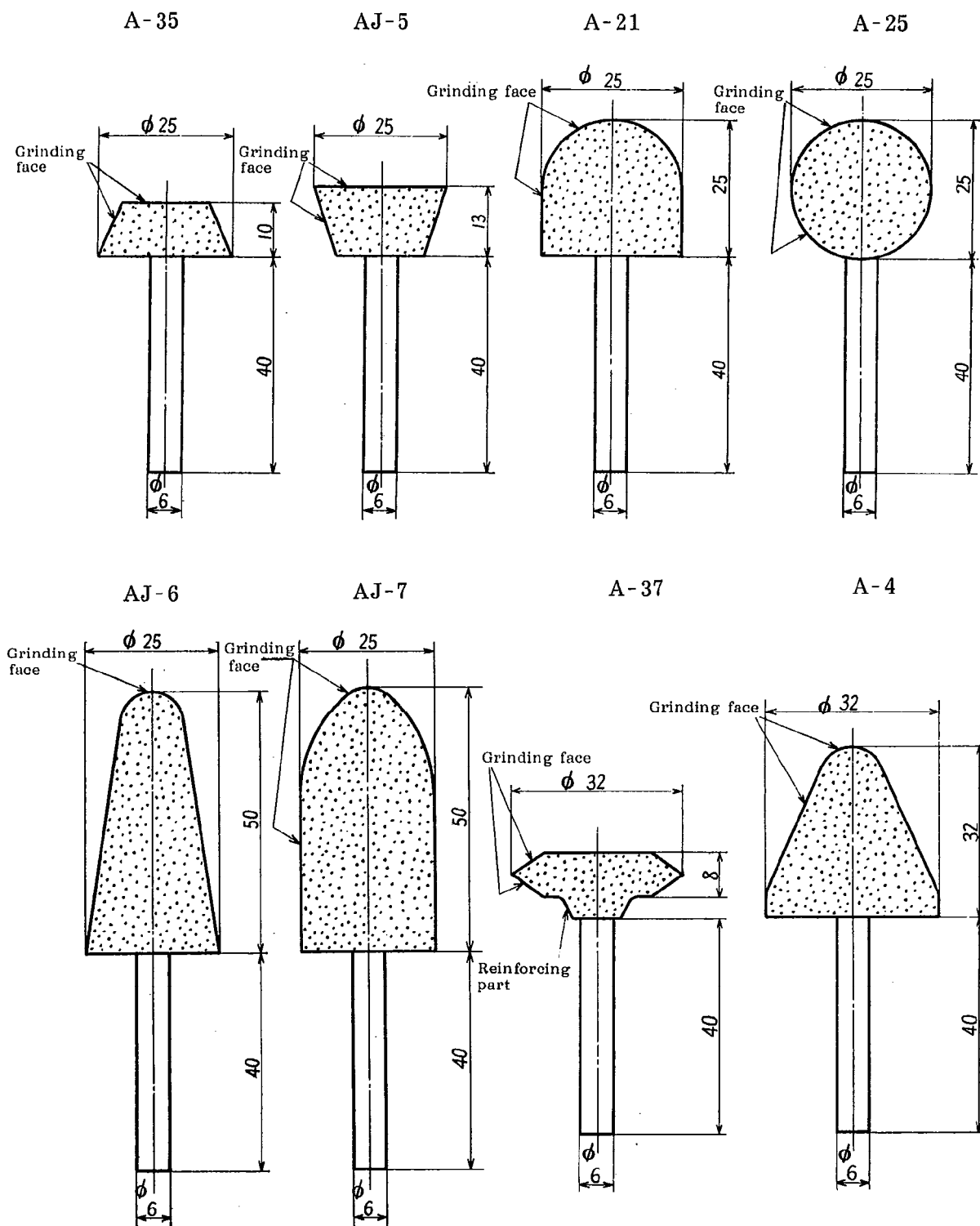
(6) Mounted Deformed Type (Type A, Type AJ) (6 mm Shaft)

Unit: mm



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Unit: mm



Attached Table 1 (6) Mounted Deformed Type (Type A, Type AJ) (6mm Shaft)

Unit: mm

Type number	Outside diameter D	Thickness T	Shaft diameter d'	Shaft length l	Type number	Outside diameter D	Thickness T	Shaft diameter d'	Shaft length l
A 26	16	16	6	40	A 35	25	10	6	40
A 12	16	32	6	40	AJ 5	25	13	6	40
AJ 1	19	25	6	40	A 21	25	25	6	40
A 5	19	28	6	40	A 25	25	25	6	40
AJ 2	19	38	6	40	AJ 6	25	50	6	40
AJ 3	19	38	6	40	AJ 7	25	50	6	40
AJ 4	19	45	6	40	A 37	32	8	6	40
A 11	22	50	6	40	A 4	32	32	6	40

Attached Fig. 1. For Free Grinding

(7) Mounted Deformed Type (Type B, Type BJ) (3 mm shaft)

Unit: mm

