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Specification for

Wire brushes

Amendments issued since publication

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Contents

Foreword

This British Standard was originally issued at the request of the Local Authorities and Hospital Authorities Standards Advisory Committees of BSI and of large scale users.

In the present revision of the standard dimensions are given in metric units. The wire sizes used are those set out in BS 4391, 'Recommendations for metric basic sizes for metal wire'.

The table covering scrubs filled with non-ferrous wire and bassine has been omitted as these brushes are no longer manufactured. Apart from this there is no appreciable change in the brushes specified, either in the overall sizes or in the diameter of the wire used.

Certification. Attention is drawn to the certification facilities described on the inside back cover of this standard.

British Standard Specification for

Wire brushes

1. Scope

Clause 2 of this British Standard specifies requirements for the materials and manufacture of a range of wire-filled hand brushes, both hand-drawn and machine filled, as purchased by local authorities, public institutions and industrial users. The types of brushes described include burnishing and fettling brushes, wire brooms and jewellers' and silversmiths' brushes.

Clause 3 of this British Standard specifies requirements for the materials and manufacture of a range of wire-filled rotary brushes, as purchased by local authorities, public institutions and industrial users. The brushes described include rotary cup brushes, decarbonizing brushes, pencil brushes, valve guide brushes, plug cleaners, scratch brushes and narrow and wide-faced brushes for the removal of carbon, scale, paint or burrs from metal and other surfaces, suitable for mounting on portable pneumatic or electric tools and stationary grinders.

NOTE. Wire fillings of diameters other than those prescribed in the tables may be supplied if specified by the purchaser.

2. Wire-filled hand brushes

2.1 Materials

2.1.1 *Filling.* The filling wire shall be uniform in quality and temper and shall be clean and free from any injurious defects.

Steel wire used in filling shall be capable of being bent double and straightened without fracture, and when doubled over a mandrel having a diameter of 6 mm shall, on release, return to an angle of approximately 45 ° from the original.

2.1.2 *Wood.* The wood used in the construction of the brushes shall be properly seasoned and free from decay, splits and other defects.

2.2 **Manufacture.** The brushes shall be manufactured in accordance with the requirements specified in Tables 1 to 5.

Table 1. Requirements for miscellaneous wire brushes (machine filled)*

BS ref. no.	Handle or stock				Steel wire for knots					Finish etc.
	Description	Board material and thickness	Approximate measurements (length and breadth)	Number of knot holes (minimum)	Description	Mass per finished brush (minimum)	Approximate number of wires in each knot	Height out of board	Thickness and width or diameter (nominal)	
		mm	mm			g		mm	mm	
M 1	Casting		175 x 73	60		255	5	76		Straight stock with square ends fitted with web strap 50 mm wide secured to board by six wire nails
M 2	Casting, with handle		356 x 66	70		298	10 (doubled in each pair of knot holes)	76	1.25 x 0.45 18x26	Straight stock with shaped handle. Back of stock fitted with two tinplate strips 19 mm x 100 mm each secured by four wire nails
M 3	Flat, 45 mm	Beech, 22	190 x 57	60	Hardened and tempered flat steel brush wire	177	8	45		Straight stock with rounded ends. Hole for 6.3 mm dia. bolt in centre
M 4	Flat, 50 mm		203 x 63	111		255	7	50	1.25 x 0.28	Straight stock with rounded ends. Roached back
M 5	Flat, 75 mm		190 x 57	74		213	6	76	19x32	Stock of dumb-bell pattern with rounded ends and bevelled edges.

*Some typical patterns which may be supplied against these specifications are illustrated by Fig. 1*a*, *b*, *c* and *d*. These illustrations are for guidance only and do not constitute part of the standard requirements.

Table 1. Requirements for miscellaneous wire brushes (machine filled)* (*continued*)

BS ref. no.	Handle or stock				Steel wire for knots					Finish etc.
	Description	Board material and thickness	Approximate measurements (length and breadth)	Number of knot holes (minimum)	Description	Mass per finished brush (minimum)	Approximate number of wires doubled in each knot	Height out of board	Thickness and width or diameter (nominal)	
		mm	mm			g		mm	mm	
M 6	Flat, with handle		215 x 60	81	Hardened and tempered flat steel brush wire	260	7	42	1.25 x 0.45 18/26	Bent stock with square ends fitted with iron handle secured to stock with iron screw
M 7	Curved handle		370 x 22 length filled 140	55	Hardened and tempered bright round steel brush wire	54	15	22	0.425	Bent stock
M 8	Narrow	Beech, 22	300 x 10 length filled 138	27		15	28	32	0.25	Straight stock
M 9	Surface cleaning		300 x 40	60		170	50	40	0.32	Wire to be left with irregular surface and not ground off smooth. Bent stock with pointed ends and shaped handle. Back of brush covered with japanned sheet iron secured to stock with wire nails
M 9A	Surface cleaning (narrow)		300 x 25	31		100				

*Some typical patterns which may be supplied against these specifications are illustrated by Fig. 1*a*, *b*, *c* and *d*. These illustrations are for guidance only and do not constitute part of the standard requirements.

Table 2. Requirements for burnishing brushes*

BS ref no.	Handle or stock				Steel wire for knots				Finish etc.
	Description	Board material and thickness	Approximate measurement (length and breadth)	Number of knot holes (minimum)	Description	Mass per finished brush (minimum)	Height out of board	Diameter (nominal)	
		mm	mm			g	mm	mm	
Bu 1	One row, bent		300 x 15	16		28	25		
Bu 1A	One row, bent short cut		300 x 15	16		21	16		
Bu 2	Two row double bent		300 x 22	33		56	25		
Bu 2A	Two row, double bent short cut		300 x 22	33		50	16		
Bu 3	Three row double bent		300 x 30	46		84	25		
Bu 3A	Three row, double bent short cut	Beech, 19	300 x 30	46	Hardened and tempered round steel brush wire	72	16	0.25	Hand-drawn brushes to be drawn with 0.5 mm phosphor bronze drawing wire. Drawing wires covered with japanned tinplate
Bu 4	Four row, double bent		300 x 35	64		113	25		
Bu 4A	Four row, double bent short cut		300 x 35	64		100	16		
Bu 5	Five row, double bent		300 x 40	98		170	25		
Bu 5A	Five row, double bent short cut		300 x 40	98		142	16		

*Some typical patterns which may be supplied against these specifications are illustrated by Fig. 1*a*, *b*, *c* and *d*. These illustrations are for guidance only and do not constitute part of the standard requirements.

Table 3. Requirements for wire brooms*

BS ref. no.	Handle or stock				Steel wire for knots					Finish etc.
	Description	Board material and thickness	Approximate measurement (length and breadth)	Number of knot holes (minimum)	Description	Mass per finished brush (minimum)	Number of wires doubled in each knot	Height out of board	Thickness and width (nominal)	
		mm	mm			g		mm	mm	
BR 1	Straight		230 x 75	96		340	8	75		Ends of back cut away from centre. 25 mm staff hole
BR 2	Straight		250 x 70	100		368	8	75		
BR 3	Straight		300 x 70	134		450	8	75		
BR 4	Splayed	Beech, 22	300 x 70	128	Hardened and tempered flat steel brush wire	450	8	65	1.25 x 0.28	Centre of back covered with 0.25 mm japanned tinplate, secured by 10 nails, 13 mm x 1.25 mm. 25 mm staff hole
BR 5	Splayed		350 x 70	178		800	4	100	2.36 x 0.25	Centre of back and all round face of broom covered with 0.25 mm japanned tinplate secured by 26 nails 13 mm x 1.25 mm. 25 mm staff hole

*A typical pattern which may be supplied against these specifications is illustrated by Fig. 1*f*. This illustration is for guidance only and does not constitute part of the standard requirements.

Table 4. Requirements for fettling brushes*

BS ref. no.	Handle or stock				Steel wire for knots					Finish etc
	Description	Board material and thickness	Approximate measurement (length and breadth)	Number of knot holes (minimum)	Description	Mass per finished brush (minimum)	Number of wires doubled in each knot	Height out of board	Thickness and width of diameter (nominal)	
		mm	mm			g		mm	mm	
F 1	Three row, with handle		300 x 40 (blade 150 handle 150)	42		140	9	55		
F 2	Four row, with handle		310 x 50 (blade 155 handle 155)	56		170	8	55		
F 3	Five row, with handle	Beech, 22	310 x 60 (blade 155 handle 155)	70	Hardened and tempered flat steel wire	205	8	55	1.25 x 0.25	
F 4	Six row, with handle		310 x 75 (blade 155 handle 155)	84		235	8	55		
F 5	Fan shape in steel ferrule	–	120 x 19 dia. ferrule	–	Hardened and and tempered round steel wire	85	–	50	0.315	Steel wire secured by two wood dowels. End of ferrule flattened to form fan shape

*Some typical patterns which may be supplied against these specifications are illustrated by Fig. 1*a*, *b*, *c* and *d*. These illustrations are for guidance only and do not constitute part of the standard requirements.

Table 4. Requirements for fettling brushes* *(continued)*

BS ref. no.	Handle or stock				Steel wire for knots					Finish etc.
	Description	Board material and thickness	Approximate measurement (length and breadth)	Number of knot holes (minimum)	Description	Mass per finished brush (minimum)	Number of wires doubled in each knot	Height out of board	Thickness and width (nominal)	
		mm	mm			g		mm	mm	
F 6	Dumb-bell three row		190 x 40	46		130	9	55		
F 7	Dumb-bell four row		190 x 50	61		160	8	55		Rounded ends, sides of board grooved to form finger-grip
F 8	Dumb-bell five row	Beech, 22	190 x 60	77	Hardened and tempered flat steel wire	200	8	55	1.25 x 0.28	
F 9	Dumb-bell six row		190 x 75	88		225	8	55	1⅛ x 3₂	
F 10	Five row		200 x 60	90		280	8	55		Slightly bundled ends

*Some typical patterns which may be supplied against these specifications are illustrated by Fig. 1*a*, *b*, *c* and *d*. These illustrations are for guidance only and do not constitute part of the standard requirements.

Table 5. Requirements for jewellers' and silversmiths' brushes*

BS ref. no.	Wire	Rows	Overall length	Width	Length of cut	Brush length	Wire diameter
			mm	mm	mm	mm	mm
JS 1	Straight brass	4	300	22	22	150	0.1
JS 2	Crimped brass	3	180	19	22	60	0.13
JS 3	Crimped brass	2	255	12	19	125	0.13
JS 4	Crimped brass	3	255	19	19	125	0.13
JS 5	Crimped brass	4	255	25	19	125	0.13
JS 6	Crimped brass	4	300	22	22	150	0.13

*A typical pattern which may be supplied against these specifications is illustrated by Fig 1*e*. This illustration is for guidance only and does not constitute part of the standard requirements.

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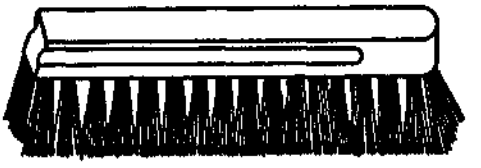

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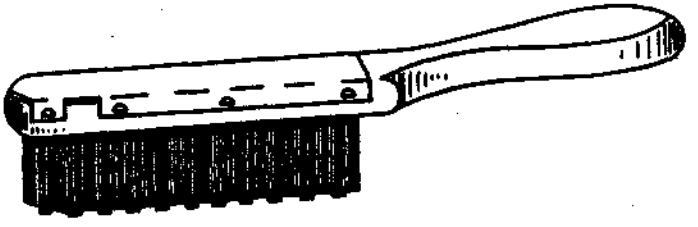

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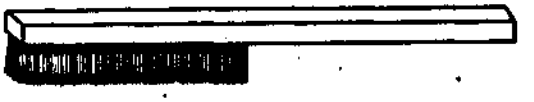

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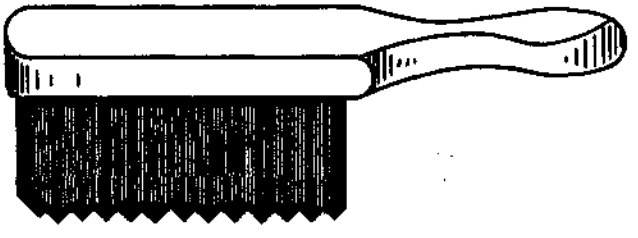

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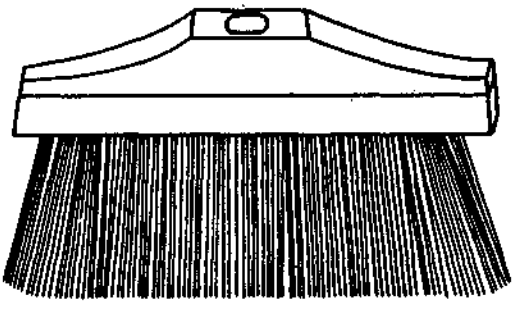

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Fig. 1. Examples of typical hand brushes

3. Wire-filled rotary brushes

3.1 Materials

3.1.1 *Filling.* The filling wire shall be uniform in quality and temper. It shall be circular in section, clean, smooth and free from any injurious defects.

3.1.2 *Crimped wire.* Unless otherwise stated in the tables, crimped wire shall be used in the manufacture of brushes complying with the requirements of this standard. It shall be mill crimped, with at least four crimps per 25 mm.

3.2 Manufacture

3.2.1 The brushes shall be manufactured in accordance with the requirements specified in Tables 6 to 19.

3.2.2 The brushes shall be constructed in such a manner as to ensure an even distribution of wire through the brush to provide good balance. Suitable provision shall be made for holding the wire securely in place and to prevent breakage of the wire due to flexure. Where welded construction is used, the wire shall not be burned, broken or adversely affected in any way by the welding operation.

3.2.3 Narrow face section wheel brushes shall be so constructed that they may be used either singly or adjacent to each other on a common shaft to build up a working surface of any desired width.

3.2.4 All brushes shall be true in balance when placed on a parallel shaft.

3.3 Breakage test for wheel brushes of 100 mm to 300 mm diameter

3.3.1 When tested in accordance with 3.3.2, wheel brushes of diameter 100 mm to 300 mm inclusive shall suffer a loss in mass of not more than 1 %.

3.3.2 Rotate the brush at a speed of 15 m/s while applying a 13 mm diameter steel bar to the face of the brush, with a penetration of 6 % of the trim length, for a period of 10 min.

Table 6. Requirements for wide-face wire-filled rotary brushes*

BS ref. no.	Overall diameter (dimension *A*)	Minimum face width (dimension *B*)	Wire diameter (nominal)	Arbor hole size†
	mm	mm	mm	mm
R 1	75	25	0.25	
R 2	100	25	0.13	
R 3	100	25	0.25	12, 15, 19, 25
R 4	100	25	0.32	
R 5	100	25	0.38	
R 6	110	25	0.38	
R 7	150	25	0.13	
R 8	150	25	0.25	
R 9	150	25	0.32	
R 10	150	25	0.38	
R 11	200	25	0.13	
R 12	200	25	0.25	
R 13	200	25	0.32	12, 15, 19, 25, 30, 50
R 14	200	25	0.38	
R 15	250	25	0.25	
R 16	250	25	0.32	
R 17	250	25	0.38	
R 18	250	25	0.45	

* A typical pattern which may be supplied against these specifications is illustrated by Fig. 2*a*. The main dimensions specified above are indicated on that figure. The illustration is for guidance only and does not constitute part of the standard requirements.
† To be specified by the purchaser.

Table 7. Requirements for narrow-face wire-filled section wheel brushes*

BS ref. no.	Overall diameter (dimension *A*)	Minimum face width (dimension *B*)	Wire diameter (nominal)	Arbor hole size†
	mm	mm	mm	mm
SW 1‡	25	4		6, 9
SW 2‡	35	5		6, 9, 12, 15
SW 3‡	50	6	0.07, 0.09, 0.11,	9, 12, 15, 19, 22
SW 4‡	60	6	0.13, 0.19, 0.25	9, 12, 15, 19, 22
SW 5‡	75	6		12, 15, 19, 22, 25
SW 6‡	85	6		12, 15, 19, 22, 25
SW 7	100	9	0.13	
SW 8	100	9	0.25	9, 12, 15
SW 9	100	9	0.32	
SW 10	100	9	0.38	
SW 11	150	9	0.13	
SW 12	150	9	0.25	12, 15, 19, 25, 30
SW 13	150	9	0.32	
SW 14	150	9	0.38	
SW 15	200	9	0.13	
SW 16	200	9	0.25	12, 15, 19, 25, 30
SW 17	200	9	0.32	
SW 18	200	9	0.38	
SW 19	250	12	0.13	
SW 20	250	12	0.25	19, 25, 30, 50
SW 21	250	12	0.32	
SW 22	250	12	0.38	

*A typical pattern which may be supplied against these specifications is illustrated by Fig. 2*a*. The main dimensions specified above are indicated on that figure. The illustration is for guidance only and does not constitute part of the standard requirements.
†To be specified by the purchaser.
‡Items SW 1 to SW 6 inclusive can be supplied with any of the six wire diameters specified here, according to the purchaser's requirements.

Table 8. Requirements for rotary cup brushes*

BS ref. no.	Diameter (dimension *A*)	Bore size	Wire diameter (nominal)†
	mm	mm	mm
RC 1‡	60	9	0.13, 0.25, 0.32
RC 2‡	65	9	0.13, 0.25, 0.32
RC 3‡	75	9	0.25, 0.32, 0.38, 0.45
RC 4‡	85	12	0.25, 0.32, 0.38, 0.45
RC 5	125	12, 14, 15, 19 (Plain or threaded)	0.32, 0.38, 0.45, 0.50, 0.56,
RC 6	135	12, 14, 15, 19 (Plain or threaded)	0.32, 0.38, 0.45, 0.50

*A typical pattern which may be supplied against these specifications is illustrated by Fig. 2*k*. The main dimension specified above is indicated on that figure. The illustration is for guidance only and does not constitute part of the standard requirements.
†To be specified by the purchaser.
‡Items RC 1 to RC 4 inclusive may be supplied with a 6 mm shank by arrangement between the supplier and the purchaser.

Table 9. Requirements for decarbonizing brushes (flat end)*

BS ref. no.	Outside diameter of cup (dimension *A*)	Shank diameter	Wire diameter (nominal)†	Minimum visible length of wire (dimension *B*)	Minimum overall length (dimension *C*)
	mm	mm	mm	mm	mm
D 1	9	6		22	70
D 2	12	6		22	70
D 3	19	6	0.25, 0.38, 0.50	22	70
D 4	22	6		22	70
D 5	28	6		22	70

*A typical pattern which may be supplied against these specifications is illustrated by Fig. 2*j*. The main dimensions specified above are indicated on that figure. The illustration is for guidance only and does not constitute part of the standard requirements.
†To be specified by the purchaser.

Table 10. Requirements for decarbonizing brushes (pointed end)*

BS ref. no.	Outside diameter of cup (dimension *A*)	Shank diameter	Wire diameter (nominal)†	Minimum visible length of wire (dimension *B*)	Minimum overall length (dimension *C*)
	mm	mm	mm	mm	mm
DP 1	9	6		25	80
DP 2	12	6		25	80
DP 3	19	6	0.25, 0.38, 0.50	30	80
DP 4	22	6		30	80
DP 5	28	6		30	80

*A typical pattern which may be supplied against these specifications is illustrated by Fig. 2*d*. The main dimensions specified above are indicated on that figure. The illustration is for guidance only and does not constitute part of the standard requirements.
†To be specified by the purchaser.

Table 11. Requirements for pencil brushes (flat end)*

BS ref. no.	Diameter of cup (dimension *A*)	Shank diameter	Shank length (dimension *D*)†	Wire diameter (nominal)†	Minimum visible length of wire (dimension *B*)
	mm	mm	mm	mm	mm
P 1	9	6	50, 75, 100, 125	0.45, 0.50	22

*A typical pattern which may be supplied against these specifications is illustrated by Fig. 2*j*. The main dimensions specified above are indicated on that figure. The illustration is for guidance only and does not constitute part of the standard requirements.
†To be specified by the purchaser.

Table 12. Requirements for pencil brushes (pointed end)*

BS ref. no.	Diameter of cup (dimension *A*)	Shank diameter	Shank length (dimension *D*)†	Wire diameter (nominal)†	Minimum visible length of wire (dimension *B*)
	mm	mm	mm	mm	mm
PP 1	9	6	50, 75, 100, 125	0.45, 0.50	22

*A typical pattern which may be supplied against these specifications is illustrated by Fig. 2*d*. The main dimensions specified above are indicated on that figure. The illustration is for guidance only and does not constitute part of the standard requirements.
†To be specified by the purchaser.

Table 13. Requirements for tapped pointed end brushes*

BS ref. no.	Diameter of cup (dimension *A*)	Thread diameter	Wire diameter (nominal)†
	mm	mm	mm
TP 1	12	6; 25.4 t.p.i.	0.45, 0.50
TP 2	19		
TP 3	22		

*A typical pattern which may be supplied against these specifications is illustrated by Fig. 2*d*. The main dimension specified above is indicated on that figure. The illustration is for guidance only and does not constitute part of the standard requirements.
†To be specified by the purchaser.

Table 14. Requirements for valve guide brushes*

BS ref. no.	Outside diameter of cup (dimension *A*)	Shank diameter	Wire diameter (nominal)	Head length (dimension *B*)	Head width (dimension *C*)	Minimum overall length (diameter *D*)
	mm	mm	mm	mm	mm	mm
V 1	6	6	0.71	70	10	180
V 2	8	6	0.80	80	12	180
V 3	9	6	0.80	85	14	180
V 4	10	6	0.90	85	14	180

*A typical pattern which may be supplied against these specifications is illustrated by Fig. 2*b*. The main dimensions specified above are indicated on that figure. The illustration is for guidance only and does not constitute part of the standard requirements.

Table 15. Requirements for plug cleaners*

BS ref. no.	Description	Diameter of brush (dimension *A*)	Shank diameter	Wire diameter (nominal)†
		mm	mm	mm
PC 1	Mushroom head plain	19	6	
PC 2		25	6	
CP 1	Mushroom head collared	35	6	0.45, 0.50
CP 2		50	6	

*Some typical patterns which may be supplied against these specifications are illustrated by Fig. 2*f* and *k*. The main dimensions specified above are indicated on those figures. The illustrations are for guidance only and do not constitute part of the standard requirements.
†To be specified by the purchaser.

Table 16. Requirements for mounted rotary wheels*

BS ref. no.	Description	Diameter of brush (dimension *A*)	Shank diameter	Wire diameter (nominal)†
		mm	mm	mm
MR 1	Splayed type	35	6	
MR 2		50	6	
MR 3		60	6	
MR 4	Hollow cut type straight sided	22	6	0.25, 0.32, 0.38
MR 5		28	6	

*Some typical patterns which may be supplied against these specifications are illustrated by Fig. 2*e*, *f*, *g* and *h*. The main dimensions specified above are indicated on those figures. The illustrations are for guidance only and do not constitute part of the standard requirements.
†To be specified by the purchaser.

Table 17. Requirements for platers' brushes*

BS ref. no.	Description	Type of filling	Minimum visible length of wire (dimension *C*)	Total diameter over wires (dimension *A*)	Wire diameter (nominal)
			mm	mm	mm
PL 1	Long stock cup brushes	Crimped brass or steel wire	75	45	0.07
PL 2			85	50	0.07
PL 3			100	60	0.07
PL 4			100	60	0.11
PL 5	Short stock cup brushes		45	45	0.07
PL 6			50	50	0.07
PL 7			60	60	0.07
PL 8			60	60	0.11

*Some typical patterns which may be supplied against these specifications are illustrated by Fig. 2*c* and *f*. The main dimensions specified above are indicated on those figures. The illustrations are for guidance only and do not constitute part of the standard requirements.

Table 18. Requirements for end wheels*

BS ref. no.	Type of filling	Rows	Diameter of stock (dimension *B*)	Length of cut	Overall diameter (dimension *A*)	Wire diameter (nominal)
			mm	mm	mm	mm
E 1	Straight brass wire	3	25	30	55	0.09
E 2		3	30	30	70	0.09
E 3		3	35	35	80	0.13
E 4		3	45	42	85	0.13
E 5		3	50	50	100	0.13
E 6		3	50	60	125	0.13
E 2A	Crimped steel wire	3	30	30	70	0.09
E 3A		3	35	35	80	0.13
E 4A		3	45	42	85	0.15

*Some typical patterns which may be supplied against these specifications are illustrated by Fig. 2*e*, *f*, *g* and *h*. The main dimensions specified above are indicated on those figures. The illustrations are for guidance only and do not constitute part of the standard requirements.

Table 19. Requirements for platers' scratch brushes*

BS ref. no.	Type of filling	Overall diameter (dimension *A*)	Approximate face width (dimension *B*)	Length of cut	Wire diameter (nominal)†
		mm	mm	mm	mm
PS 1	Crimped brass wire	70	8	19	0.05, 0.07
PS 2		80	11	25	0.05, 0.07, 0.09
PS 3		105	14	32	0.05, 0.07, 0.09
PS 4		110	16	32	0.07, 0.09, 0.11
PS 5		125	22	35	0.07, 0.09, 0.11
PS 6		145	32	42	0.08, 0.09, 0.11, 0.13
PS 7	Crimped steel wire	70	8	19	0.07
PS 8		80	11	25	0.07
PS 9		90	14	25	0.07, 0.09, 0.11
PS 10		105	14	30	0.07, 0.09, 0.11
PS 11		125	22	35	0.07, 0.09, 0.11
PS 12		145	32	42	0.08, 0.09, 0.11, 0.13
PS 13		165	32	42	0.13, 0.21

*A typical pattern which may be supplied against these specifications is illustrated by Fig. 2*a*. The main dimensions specified above are indicated on that figure. The illustration is for guidance only and does not constitute part of the standard requirements.
†To be specified by the purchaser.

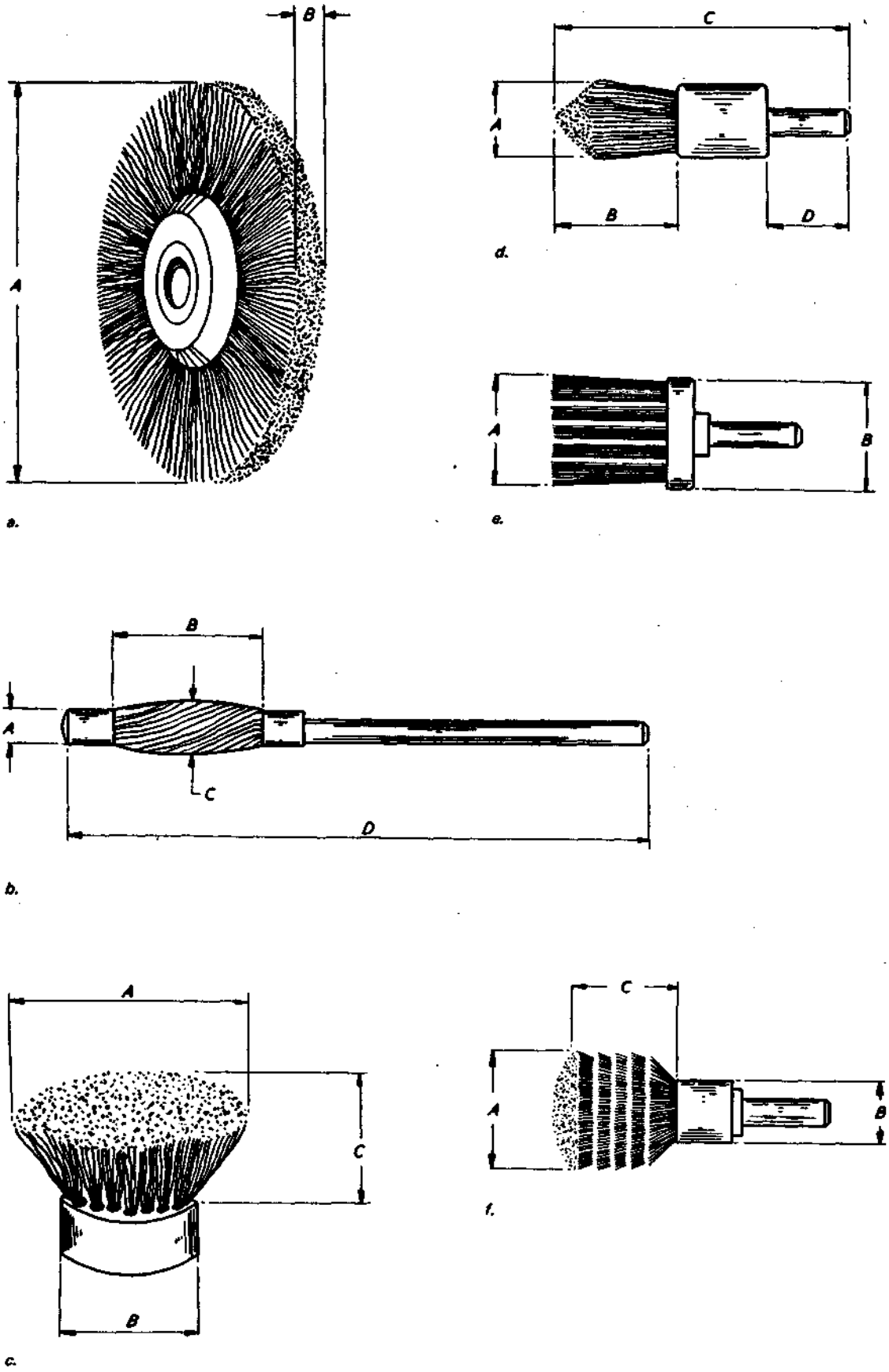
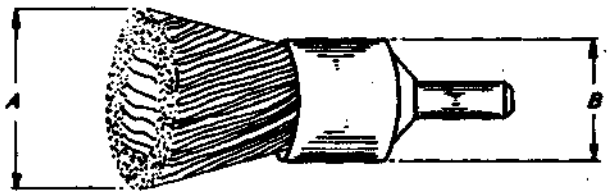
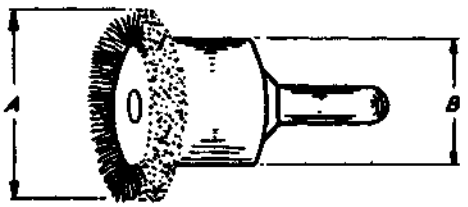


Fig. 2. Examples of typical rotary brushes



g.



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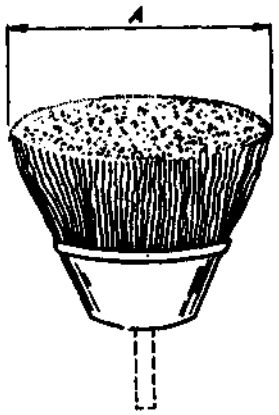
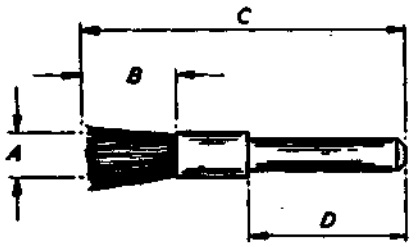


k.



i.

Fig. 2. Examples of typical rotary brushes (*continued*)