Specification for

Woodworking chisels and gouges

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Machine, Engineers and Hand Tools Standards Committee (MTE/-) to Technical Committee MTE/15, upon which the following bodies were represented:

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Contents

Foreword

This British Standard has been prepared under the direction of the Machine Engineer's and Hand Tools Standards Committee. This revision of BS 1943 is based on ISO 2729 "*Woodworking tools — Chisels and gouges*". It has, however, been extended to include butt chisels, stubby chisels, bevel edge paring chisels, sash mortice chisels, and heavy duty mortice chisels. Test requirements have been clarified.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard specifies requirements for chisels and gouges for woodworking.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Nomenclature

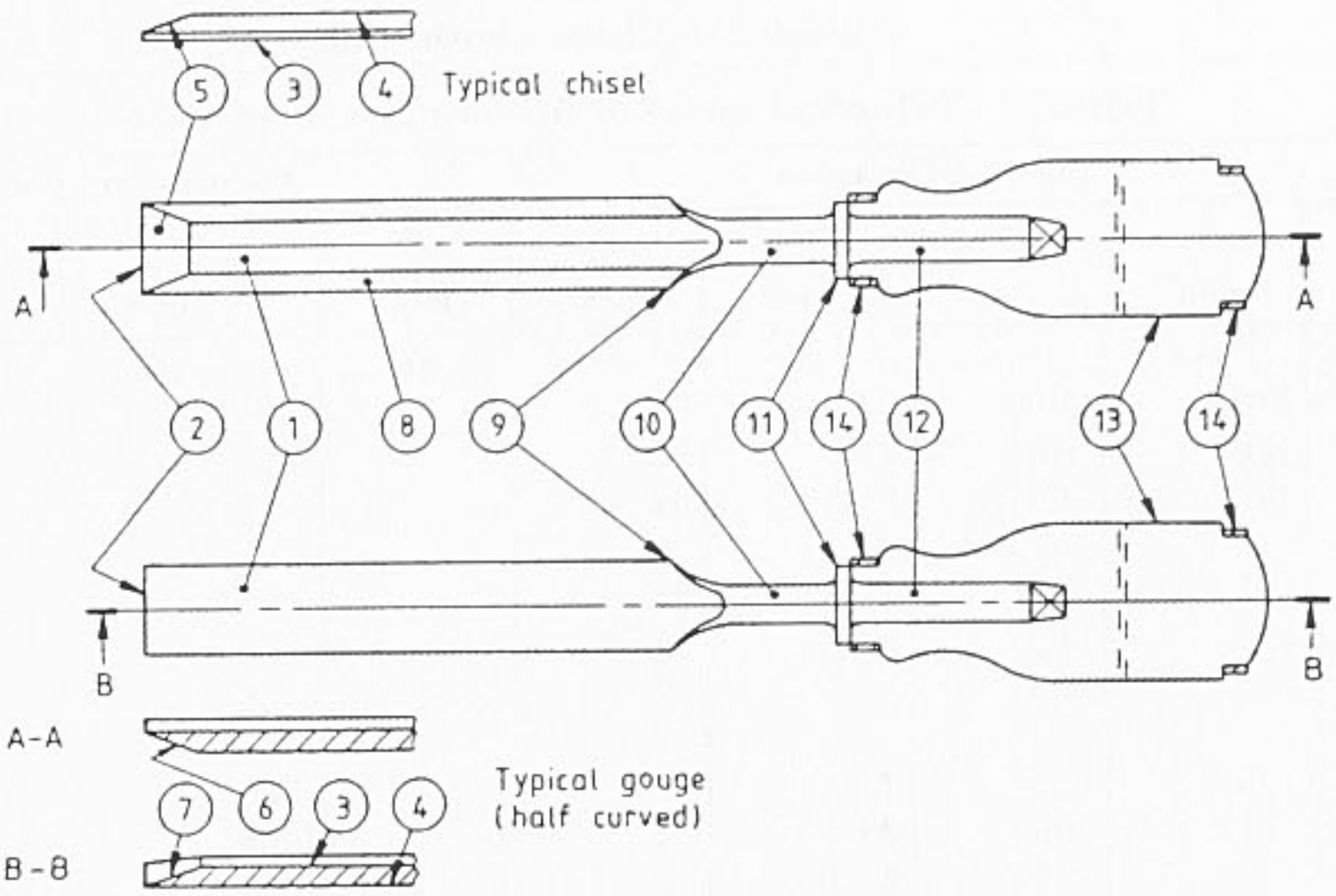
For the purposes of this British Standard the nomenclature given in Figure 1 applies.

3 Dimensions

NOTE The tang dimension specified is a minimum across flats, or minimum diameter if circular.

3.1 Firmer chisels

The dimensions for bevelled and plain firmer chisels with tang, shall be as given in Figure 2 and Table 1 and Table 2.



Number	Term
1	Blade
2	Cutting edge
3	Face
4	Back
5	Cannel
6	Outcannel
7	Incannel
8	Bevel
9	Shoulder
10	Neck
11	Bolster
12	Tang
13	Handle
14	Reinforcing ring (hoop or ferrule)

Figure 1 — Nomenclature for chisels and gouges

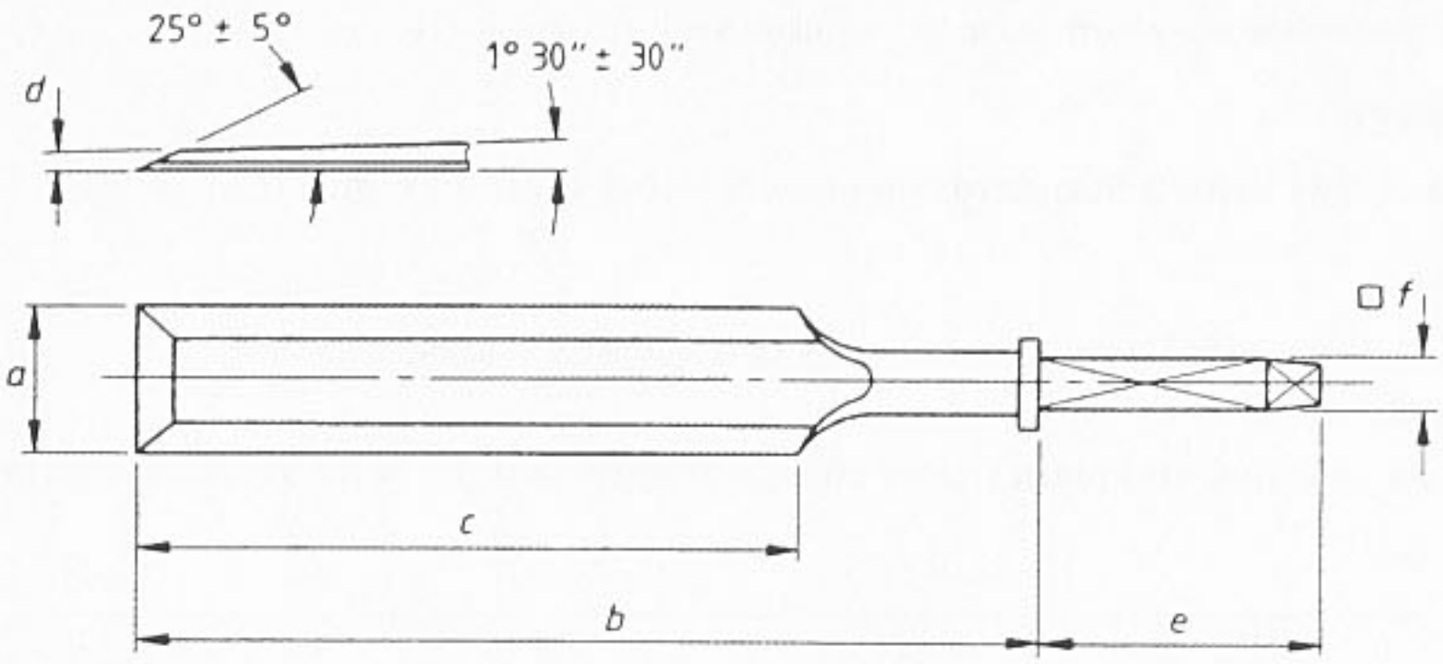


Figure 2 — Chisels with tang

Table 1 — Principal series of firmer chisels (see Figure 2)

Nominal dimension						Flatness deviation	Bending load
a	b	c	d	e^a	f^a		P
	min.	min.	min.	min.	min.	max.	
mm	mm	mm	mm	mm	mm	mm	N
3	115	90	3.75	32	4	0.20	22.75
4	120	90	2.35	32	4	0.20	29.30
6	120	90	2.35	32	4	0.20	45.40
8	125	90	2.35	32	5	0.23	59.60
10	125	90	2.35	32	5	0.23	79.00
12	125	90	2.35	32	5	0.25	93.40
14	135	90	2.50	32	5	0.25	111.70
16	135	95	2.65	32	6	0.28	132.20
18	140	95	2.80	32	6	0.28	144.80
20	140	100	2.80	32	6	0.30	167.00
25	145	100	3.15	32	7	0.30	223.00
32	155	110	3.35	32	7	0.35	330.00
40	160	120	3.75	32	8	0.40	510.00

[a] In the case of a tapered tang the dimension f is the average over the length e.

Table 2 — Secondary series of firmer chisels (see Figure 2)

Nominal dimension						Flatness deviation	Bending load
a	b min.	c min.	d min.	e[a] min.	f[a] min.	max.	P
mm	mm	mm	mm	mm	mm	mm	N
2	115	90	3.75	32	4	0.20	13.20
5	120	90	2.35	32	4	0.20	36.80
13	130	90	2.50	32	5	0.25	115.00
15	135	90	2.65	32	6	0.28	123.00
19	140	100	2.80	32	6	0.28	155.00
22	140	100	3.00	32	7	0.30	193.00
28	150	100	3.15	32	7	0.35	265.00
30	150	110	3.35	32	7	0.35	295.00
35	160	110	3.55	32	8	0.40	370.00
38	160	120	3.55	32	8	0.40	440.00

[a] In the case of a tapered tang the dimension f is the average over the length e.

3.2 Butt and stubby chisels

The dimensions for butt and stubby chisels with tang, bevelled and plain shall be as given in Table 3.

3.3 Firmer gouges

The dimensions for firmer gouges, incannel and outcannel edges shall be as given in Figure 3 and Table 4 and Table 5.

Table 3 — Butt and stubby chisels (see Figure 2)

Nominal dimension						Flatness deviation	Bending load
a	b min.	c min.	d min.	e[a] min.	f[a] min.	max.	P
mm	mm	mm	mm	mm	mm	mm	N
6	90	60	2.35	32	4	0.20	56.8
10	95	60	2.35	32	5	0.23	99.4
12	95	60	2.35	32	5	0.25	117.0
13	100	60	2.50	32	5	0.25	128.0
18	105	60	2.80	32	6	0.28	187.0
19	100	60	2.80	32	6	0.28	207.0
25	105	60	3.15	32	7	0.30	310.0
32	105	60	3.35	32	7	0.35	447.0
38	100	60	3.35	32	8	0.40	647.0

[a] In the case of a tapered tang the dimension f is the average over the length e.

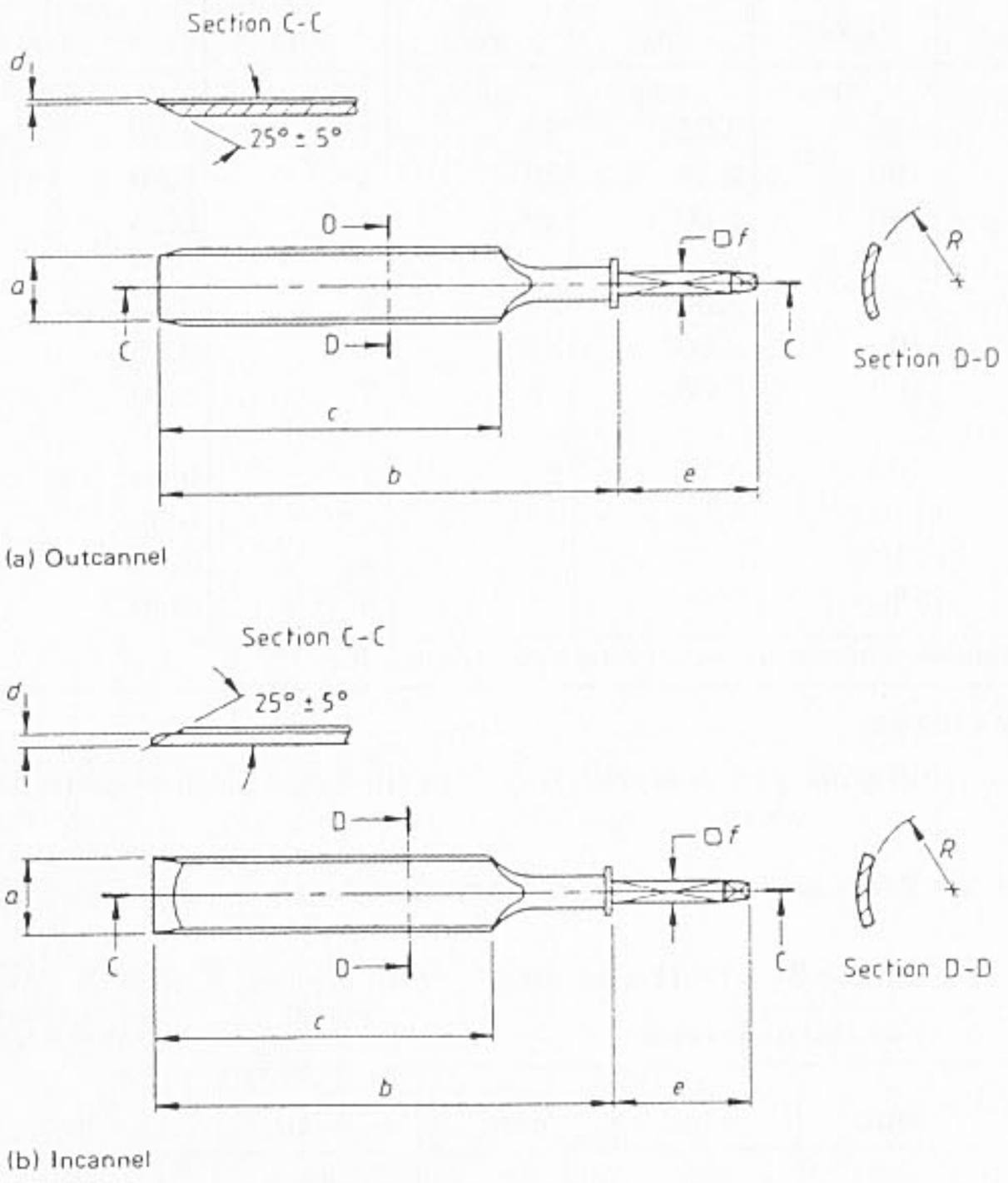


Figure 3 — Firmer gouges

Table 4 — Principal series of firmer gouges (see Figure 3)

Nominal dimension							Bending load
a	b min.	c min.	d min.	e[a] min.	f[a] min.	R	P
mm	mm	mm	mm	mm	mm	mm	N
6	115	90	2.00	32	4	5 ± 0.60	45.40
8	120	95	2.00	32	5	6 ± 0.60	59.60
10	120	95	2.00	32	5	6.5 ± 0.60	79.00
12	125	95	2.00	32	5	7 ± 0.75	93.40
15	130	95	2.25	32	6	9 ± 0.75	123.00
18	130	95	2.50	32	6	10 ± 0.75	144.80
20	130	95	2.50	32	6	12 ± 0.90	167.00
25	140	100	2.80	32	7	16 ± 0.90	223.00

[a] In the case of a tapered tang the dimension f is the average over the length e.

Table 5 — Secondary series of firmer gouges (see Figure 3)

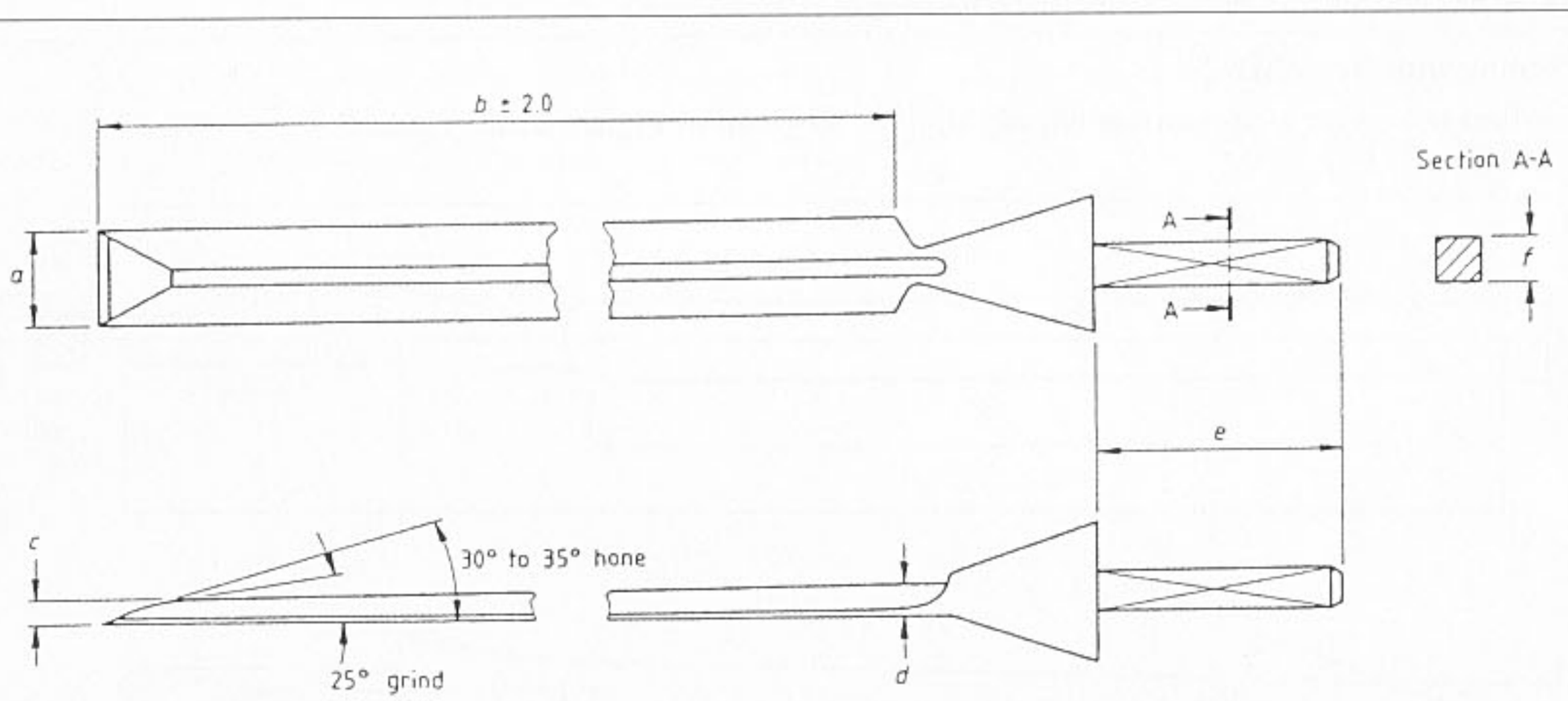
Nominal dimension							Bending load
a	b **min.**	c **min.**	d **min.**	e[a] **min.**	f[a] **min.**	R	P
mm	mm	mm	mm	mm	mm	mm	N
3	110	85	2.40	32	4	3 ± 0.45	22.75
13	125	95	2.25	32	5	8 ± 0.75	115.00
16	130	95	2.25	32	6	9 ± 0.75	132.00
19	130	95	2.50	32	6	11 ± 0.90	155.00
22	140	100	2.50	32	7	14 ± 0.90	193.00
30	150	110	2.80	32	7	18 ± 0.90	295.00
32	150	110	2.80	32	7	19 ± 0.90	330.00

[a] In the case of a tapered tang the dimension f is the average over the length e.

3.4 Bevel edge paring chisels

The dimensions for bevel edge paring chisels shall be as given in Figure 4 and Table 6.

NOTE These chisels are not subject to a bend test.



Linear dimension is in millimetres.

Figure 4 — Bevel edge paring chisels

Table 6 — Bevel edge paring chisels (see Figure 4)

Nominal dimension						Flatness deviation
a	b min.	c min.	d min.	e[a] min.	f[a] min.	max.
mm	mm	mm	mm	mm	mm	
3	180	3.20	7.7	32	4	0.2
6	180	2.35	5	32	4	0.2
10	180	2.35	5	32	5	0.23
12	185	2.35	5	32	5	0.25
13	185	2.35	5	32	5	0.25
16	190	2.65	5	32	6	0.28
19	190	2.80	5	32	6	0.3
20	190	2.80	5	32	6	0.3
22	205	3.15	5.5	32	6	0.3
25	205	3.15	5.5	32	7	0.3
32	205	3.35	6	32	7	0.35
38.4	220	3.75	6	32	7	0.4
40	220	3.75	6	32	8	0.4

[a] In the case of a tapered tang the dimension f is the average over the length e.

3.5 Sash mortice chisels

The dimensions for sash mortice chisels shall be as given in Figure 5 and Table 7.

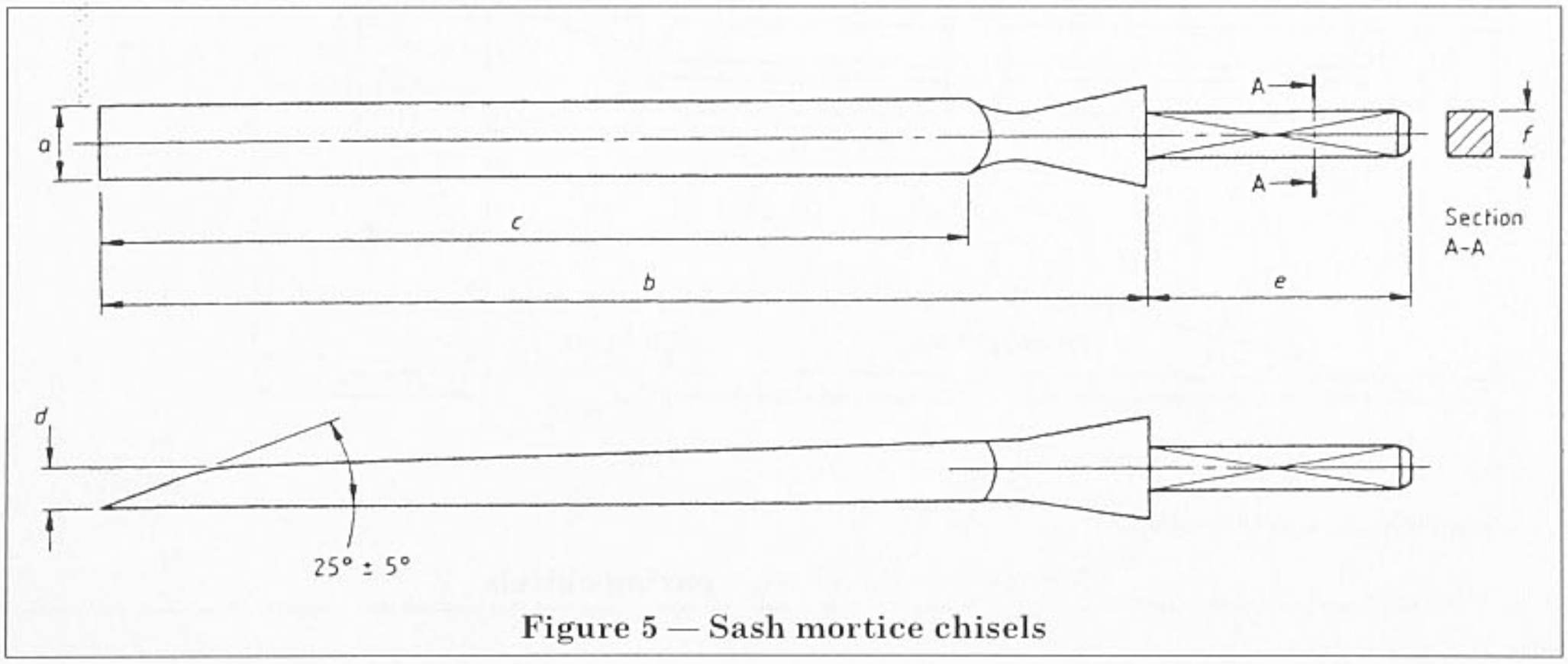


Figure 5 — Sash mortice chisels

Table 7 — Sash mortice chisels (see Figure 5)

Nominal dimension						Flatness deviation	Bending load
a	b min.	c min.	d min.	e[a] min.	f[a] min.	max.	P
mm	mm	mm	mm	mm	mm	mm	N
6	162	130	5	45	7	0.20	60
8	162	130	5	45	7	0.23	75
10	162	130	5	45	7	0.23	95
12	162	130	6	45	7	0.25	120
13	162	130	6	45	7	0.25	120
16	162	130	6	45	7	0.28	145
18	162	130	7	45	7	0.28	160

[a] In the case of a tapered tang the dimension f is the average over the length e.

3.6 Heavy duty mortice chisels

The dimensions for heavy duty mortice chisels shall be as given in Figure 6 and Table 8.

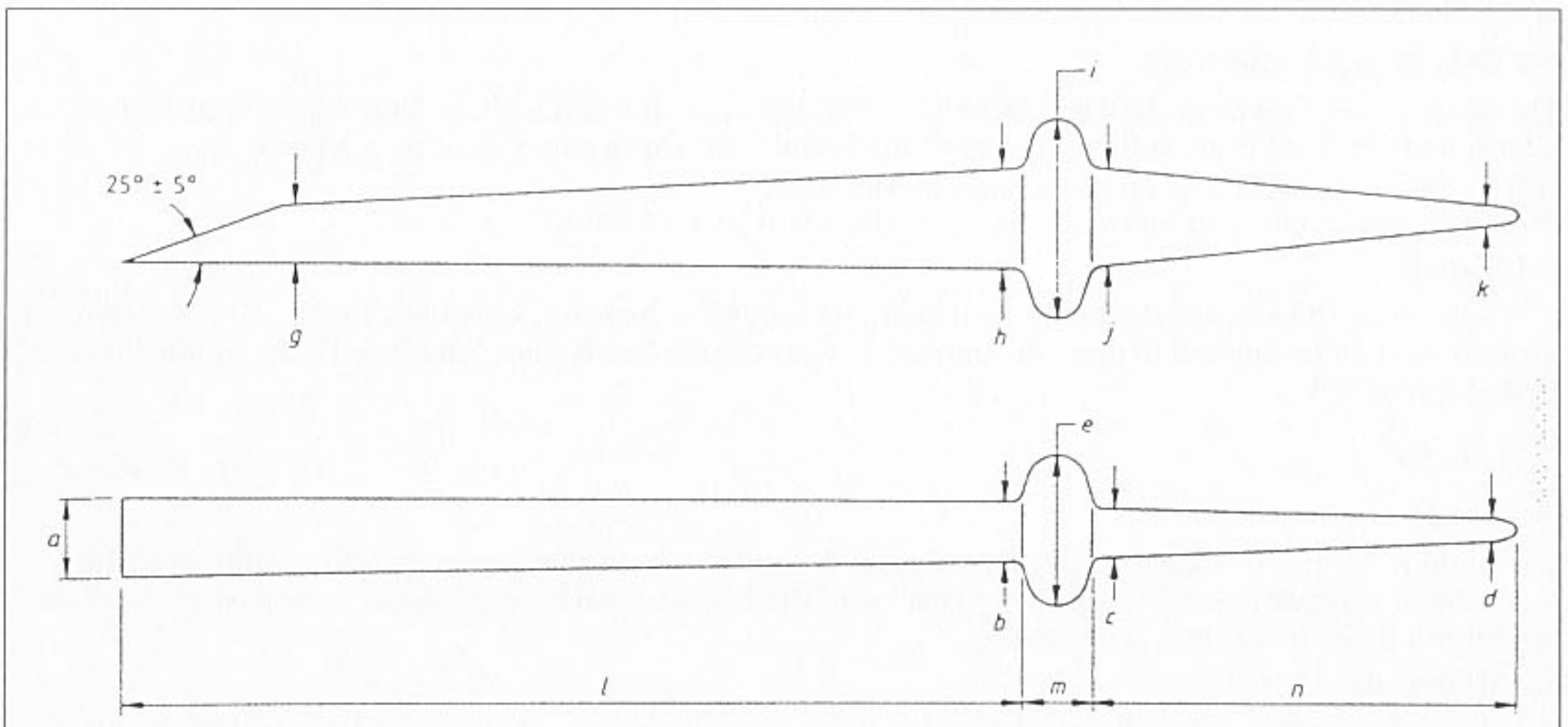


Figure 6 — Heavy duty mortice chisels

Table 8 — Heavy duty mortice chisels (see Figure 6)

Nominal dimension														Flatness deviation max.
a	b	c	d	e	g	h	i	j	k	l	m	n	Handle size	
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
6	5	5	3	25	10	13	30	12	3	152	9	73	36 × 46 × 143	0.20
10	8	8	3	25	10	14	30	14	4	165	9	80	36 × 46 × 143	0.23
12	12	12	4	30	16	21	35	19	4	178	9	80	40 × 50 × 150	0.25
16	13	14	4	30	16	21	35	21	4	190	9	95	40 × 50 × 150	0.28
20	16	14	4	30	16	21	35	21	4	197	9	98	40 × 50 × 150	0.30

4 Blade

4.1 Material

The blades of chisels and gouges shall be manufactured from steel which, taking into account the stated hardness, gives a cutting edge quality the same as, or higher than, that of tool steel with an analysis as given in Table 9.

Table 9 — Analysis of tool steel

Limit	C	Si	Mn	P	S
	%	%	%	%	%
min.	1.05	0.15	0.25	—	—
max.	1.25	0.25	0.40	0.035	0.035

The blades of chisels and gouges shall be hardened and tempered from the cutting edge for a minimum distance equal to two-thirds of the blade length, to the shoulders. After tempering the hardness shall be within the range HRC 58 to 62.

4.2 Cutting edge

The cutting edge shall be ground sharp and ready for final honing. The edge shall be at 90° to the centreline of the blade.

4.3 Bolster neck and tang

The bolster neck and tang shall be concentric with the centreline of the blade. The bolster shall have such a form and size that it gives firm support to the handle. All sharp edges shall be removed.

NOTE 1 The design of the tang is at the manufacturer's discretion.

NOTE 2 A round parallel tang with winging may be produced to fit plastics handles.

4.4 Finish

The face, back and sides of the blade shall be finely ground or have an equivalent finish. After finishing, a protection shall be applied to prevent rusting. Any protective finish shall comply with the appropriate British Standard.

5 Handle

5.1 Shape

The handle shall be designed to give a good grip. It shall not have sharp corners or irregularities which might be hazardous during use. The dimensions of the handle shall be in proportion to those of the blade in order that the tool is well balanced.

5.2 Materials

Wood handles shall be manufactured from beech or other suitable hard wood and shall be fitted with a reinforcing ring or ferrule. The wood shall be straight grained and free from deleterious defects.

The moisture content of the timber from which the handles are manufactured shall be not less than 10 % nor more than 15 %, when determined in accordance with the method described in BS 373.

NOTE Where it is intended that handles be manufactured from plastics material a suitable material should be agreed between the purchaser and the supplier.

6 Performance

6.1 General

When tested as described in Appendix A, chisel and gouge blades shall show no signs of fracture or flaw.

6.2 Flatness

When checked with feeler gauges as described in **A.2**, the maximum flatness deviation of the chisel or gouge blade shall not be greater than the values given in Table 1, Table 2, Table 3, Table 6, Table 7 and Table 8.

6.3 Bending

When tested as described in **A.3**, the maximum permanent deflection of the chisel or gouge blade shall be 1 mm at point A and 3 mm at point B. After testing the blade shall have sustained no damage, distortion or fracture and the handle shall remain securely fixed to the blade.

6.4 Handles

When tested as described in Appendix B, the chisel or gouge handle shall not split or break and any fitted reinforcing rings shall remain in place.

NOTE Mushroom-shaped deformation of the top part of the handle after testing is permitted.

6.5 Performance after honing

After honing the cutting edge of the tool shall be capable of being worked on seasoned oak without any signs of damage to the cutting edge of the tool.

7 Marking

Each chisel and gouge shall be plainly and indelibly marked with the following:

a) the number of this British Standard, i.e. BS 1943[1)];

b) the manufacturer's name or trade mark.

[1)] Marking BS 1943 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

Appendix A Blade testing methods

A.1 Soundness

Place a block of lead on a bench or table. Holding the tool by the tang or neck, between the thumb and fingers, bring the tool down quickly using the force of wrist and elbow to strike the flat of the blade a sharp blow against the top face of the lead block. Repeat this manually applied blow six times consecutively.

A.2 Flatness

Place the face of the chisel blade on a surface plate and check the maximum flatness deviation using feeler gauges.

A.3 Bending

Place the chisel in a fixture as shown in Figure 7. Measure the distance between a point A at the highest part of the bolster and a point B 75 mm from the front end of the handle. Apply a load P to point B and measure the deflection using a dial indicator or other suitable measuring instrument. The values of the load P (in N) given in Table 1, Table 2, Table 3, Table 4, Table 5 and Table 7 are calculated from the equation:

$$P = \frac{M}{L}$$

where

M is the bending moment (in N mm);

L is the dimension shown in Figure 7 (in mm).

NOTE This test is not applicable to bevel edged paring chisels.

Appendix B Handle testing method

Drive a gouge or chisel with a honed cutting edge into well seasoned oak, across the grain of the wood, using direct blows from a mallet to a minimum depth as given in Table 10.

NOTE It may be found necessary to destroy the block to remove the blade intact.

Table 10 — Minimum depth for handle testing

Tool length	Minimum depth
mm	mm
up to 12	50
12 to 16	25
16 to 20	16
20 to 25	16
25 to 40	12

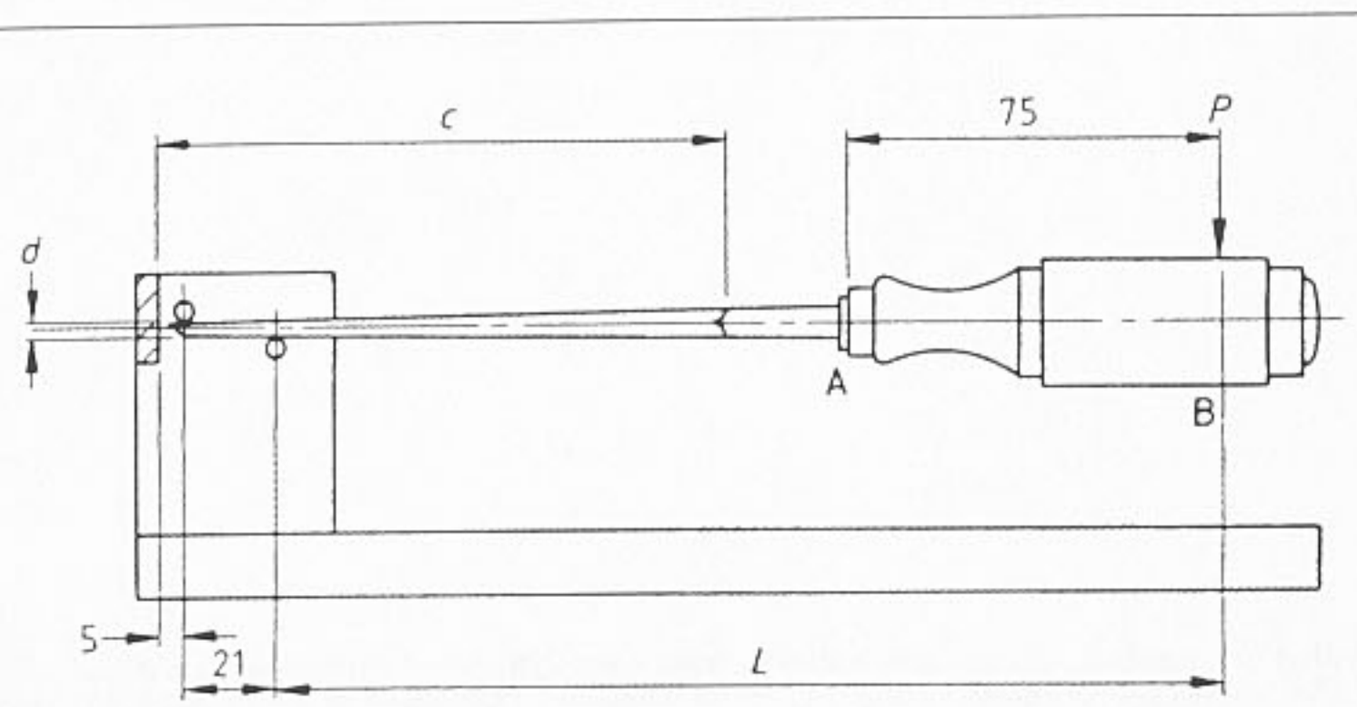


Figure 7 — Bending test

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Publications referred to

BS 373, *Methods of testing small clear specimens of timber.*
BS 891, *Method for Rockwell hardness test.*
BS 891-1, *Testing of metals.*