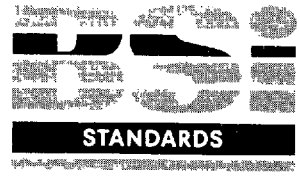
Specification for

Engineers' cold chisels and allied tools

UDC 621.911 3



Committees responsible for this British Standard

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

British Coal Corporation
British Telecommunications plc
Consumer Policy Committee of BSI
Federation of British Hand Tool Manufacturers
Handle Manufacturers' Association
Institute of Carpenters
Ministry of Defence

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

British Steel Industry
Coopted members

This British Standard, having been prepared under the direction of the Machine Engineers and Hand Tools Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 15 January 1995

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Committee reference MTE/15
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Amendments issued since publication

Amd. No.	Date	Text affected

Contents

Figures

Foreword

This British Standard has been prepared under the direction of the Machine, Engineers and Hand Tools Standards Policy Committee, and supersedes BS 3066 : 1981 which is withdrawn.

Matters concerning safety cannot be too strongly emphasized and it is a prime requirement that a safe tool should be offered to the user.

Since publication of the original specification, the design of chisels and manufacturing techniques employed have continued to improve. It is not the intention of this standard to impose restrictions on the types of materials from which chisels may be manufactured, and so inhibit development in this direction, but greater importance is placed on tests and testing procedures.

It should be recognized that cold chisels and allied tools are prone to work hardening and that the hardness values quoted in tables 13 to 15 apply only at the time of manufacture.

In so far as the user is concerned, reports on accidents continue to indicate that such accidents occur as a result of abnormal usage and failure to maintain tools in a safe condition. A responsibility is therefore placed on the users, in their own interests, to ensure that their tools are properly maintained.

A leaflet on safety recommendations is available from manufacturers. An extract is reproduced as annex A.

Fitted hand guards are available on selected chisels and allied tools, as optional extras.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Specification

1 Scope

This British Standard specifies the nominal sizes, dimensions, quality, finish and testing of engineers' cold chisels and allied tools for hand use as follows:

- flat chisels;
- cross-cut chisels;
- half-round nose chisels;
- diamond-point chisels;
- brick bolsters;
- floorboard chisels;
- plugging chisels;
- concrete or moil points;
- parallel pin punches;
- taper punches (including nail and reaper punches);
- centre punches.

2 References

2.1 Normative references

This British Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this British Standard only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

2.2 Informative references

This British Standard refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

3 Material

Chisels and allied tools shall be manufactured from carbon or alloy steels. Carbon steel tools shall be manufactured in accordance with the requirements of table 1. In alloy steel tools, sulfur, phosphorus and residual elements shall comply with the requirements of BS 970 : Part 2 : 1988, except that the main alloying element shall be not less than 0.9 % (*m/m*).

Chisels and allied tools shall not be manufactured from free cutting or semi-free cutting steel.

Hand grips shall be manufactured from high impact plastics material, natural rubber 70° hardness or from other suitable material capable of meeting the requirements of clause **8**.

Table 1. Material specification for carbon steel tools

Element	Minimum % (*m/m*)	Maximum % (*m/m*)
Carbon	0.50	0.75
Manganese	0.50	0.90
Sulfur	—	0.05
Phosphorus	—	0.05
Silicon	—	0.40

4 Types and dimensions

4.1 Types

Cold chisels and allied tools shall be manufactured in either octagonal, hexagonal, square, round or oval sections. Round sections may be knurled if required.

Head types shall be of those shown in figures 1 to 11. Tools of body section below 13 mm shall have chamfered type head.

Tools of 13 mm body section and above shall have either a domed anti-mushroom type head or a conical head. The conical head dimensions shall be as stated in tables 2 to 9 and 11 to 12.

NOTE. It is permissible for tools of 13 mm body section to have a chamfered head.

Illustrations of typical hand guards are shown in figure 12.

4.2 Dimensions

4.2.1 Dimensions, other than length, shall be in accordance with the tables 2 to 12. Unless otherwise agreed between the purchaser and the manufacturer, lengths of chisels and allied tools shall be as stated in tables 2 to 12. Unless otherwise agreed between the purchaser and manufacturer, tolerances shall be in accordance with BS 4114 : 1967.

4.2.2 The designating size of chisels and bolsters shall be the nominal width of the cutting edge, and length where appropriate.

4.2.3 Concrete or moil points shall be designated by length and section (see table 9).

4.2.4 For oval section steels the body section dimensions referred to in tables 2 to 9 are major axis dimensions. The minor axis shall be not less than half the major axis.

4.2.5 Punches shall be designated by the point diameter.

4.2.6 Hand guards shall be so dimensioned that they are a tight fit on the tool shaft and provide protection to the user's hand from misdirected hammer blows. They shall be designed to provide a comfortable grip.

5 Heat treatment and hardness

5.1 General

Both plain carbon and alloy steel tools shall be through-hardened, followed by tempering or stress relieving, to achieve the hardness values given in tables 13 and 14 when tested in accordance with **8.1**.

5.2 Hardness zone at the cutting edge/tool points

5.2.1 *Chisels and bolsters*

The tool blade shall be heat treated to give readings within the hardness range specified in table 13 over the appropriate minimum distance from the extreme cutting end as given in table 15.

5.2.2 *Concrete points*

The hardness zone for concrete or moil points shall be calculated on the body section (see table 9) substituted for the cutting edge size in table 15.

5.2.3 *Punches*

The blade shall be heat treated to give readings within the range specified in table 14 and the hardened zone shall extend from the tool point (working end) to a minimum point 5 mm into the body section.

5.3 Hardness zone at the head

5.3.1 *Chisels, bolsters and concrete points*

The tool head shall give readings within the maximum figure specified in table 13 over a minimum distance of 25 mm from the extreme end of the head.

5.3.2 *Punches*

The tool head shall give readings within the maximum figure specified in table 14 over a minimum distance of 20 mm from the extreme end of the head.

6 Finish

The tools shall be supplied with an effective coating of corrosion inhibitor and shall be free from flaws, seams and any other deleterious defects.

The cutting edges/tool points shall be ground and free from burrs. The blade shall be free from roughness and excessive oxide scale. The body shall be free from excessive oxide scale.

7 Marking

The following shall be legibly stamped or embossed on the body of the tool:

a) manufacturer's name or trademark;

b) if alloy, the word 'alloy';

c) where space permits the number of this British Standard, i.e. BS 3066 : 1995;

d) where space permits, a warning advising the user to wear safety glasses, e.g. 'wear safety glasses'.

8 Tests

8.1 General

Cold chisels and allied tools shall be capable of passing the tests in **8.2** to **8.4** and, where applicable, **8.5**.

8.2 Hardness

When tested in accordance with BS 891 : 1989, chisels and tools shall comply with the requirements specified in clause **5**.

NOTE. Hardness testing in accordance with BS 427 : 1990 is permissible[2)].

8.3 Crack test

When tested by using one of the methods described in BS 6072 : 1981, there shall be no cracks.

8.4 Impact test

When tested in accordance with **B.1**, visual examination of the tool shall reveal no defects, damage to the cutting edge or 'mushrooming' of the head.

8.5 Hand guards

When tested in accordance with **B.2** there shall be no breakage or distortion of the guard.

The guard shall be resistant to damage from commonly used oils and chemicals.

[2)] A conversion chart for HRC to HV is given in BS 860 : 1967.

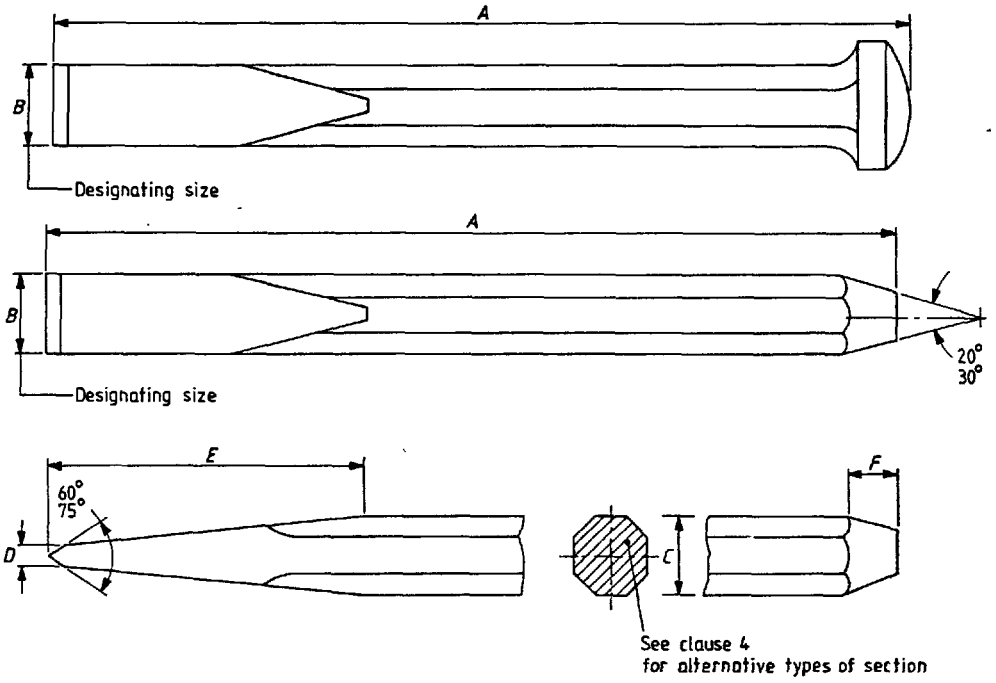


Figure 1. Flat cold chisels

Table 2. Nominal dimensions of flat cold chisels (see figure 1)

Designating size							Body section across flats or diameter *C*	Blade thickness *D*	Length of blade *E*		Length of conical head *F*	
Overall length *A* ± 5.0							Width of cut *B* ± 0.5					
mm							mm	mm	min. mm	max. mm	min. mm	max. mm
					100	150	6	5.5 to 6	1.2	28	31	Chamfered
			100	125	150	200	10	8.0 to 10	1.5	35	38	Chamfered
				150	200	250	13	10.0 to 13	2.4	50	56	Chamfered
		175	200	250	300	450	16	13.0 to 16	2.8	56	63	10 13
200	225	250	300	350	450	600	19	16.0 to 19	3.0	69	75	13 16
		225	250	300	450	600	22	19.0 to 22	3.0	75	88	13 19
		225	250	300	450	600	25	22.0 to 25	4.0	88	100	13 19

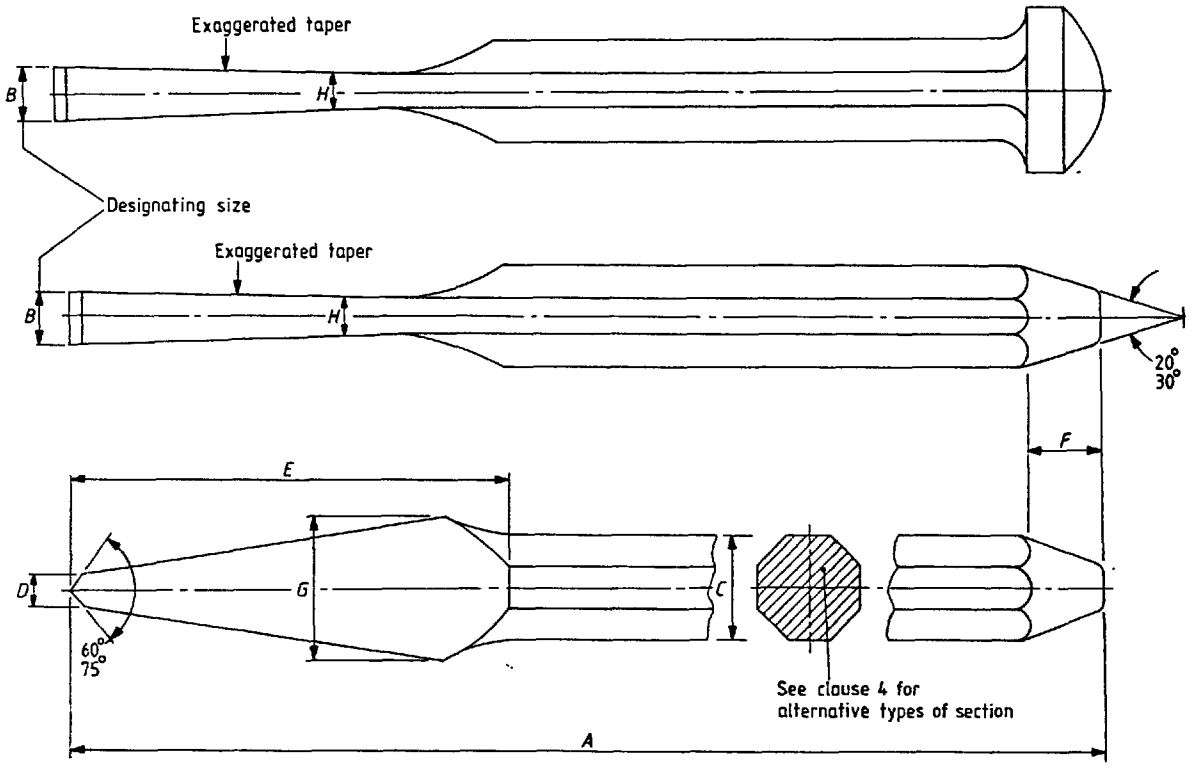


Figure 2. Cross-cut cold chisels

Table 3. Nominal dimensions of cross-cut cold chisels (see figure 2)

Designating size		**Body section across flats or diameter** *C*	**Blade thickness** *D*	**Length of blade** *E*		**Length of conical head** *F*		**Blade depth** *G*	**Blade root thickness** *H*
Overall length *A* ± 5.0	**Width of cut** *B* ± 0.5			**min.**	**max.**	**min.**	**max.**		
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
100	3	6	1.5	35	38	Chamfered		10	2.4
125	5	10	1.5	53	56	Chamfered		14	3.6
150	6	13	2.5	72	75	Chamfered		19	5.0
175	8	16	3.0	75	78	10	13	22	6.0
200	10	19	4.0	78	81	10	13	25	8.0
225	11	22	5.0	85	88	10	16	28	9.0
225	13	22	5.0	85	88	10	16	28	11.0
250	16	25	6.0	88	100	13	19	31	14.0

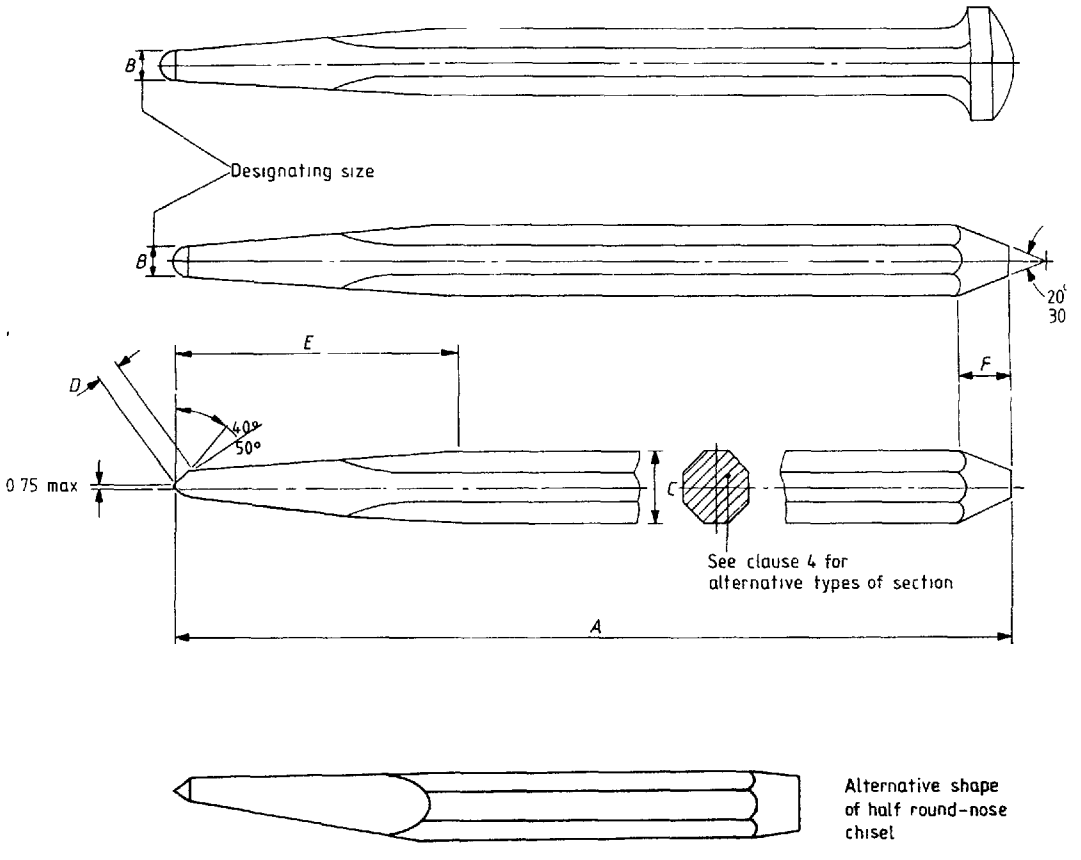


Figure 3. Half round-nose cold chisels

Table 4. Nominal dimensions of half round-nose cold chisels (see figure 3)

Designating size		Body section across flats or diameter *C*	Blade thickness *D*	Length of blade *E*		Length of conical head *F*	
Overall length *A* ± 5.0	Width of cut *B* ± 0.5			min.	max.	min.	max.
mm	mm	mm	mm	mm	mm	mm	mm
100	3	6	4.0	35	38	Chamfered	
125	5	10	5.5	44	47	Chamfered	
150	6	13	7.0	53	56	Chamfered	
175	8	16	10.0	56	60	10	13
200	10	19	11.0	60	63	10	13
225	11	22	13.0	63	69	10	16
225	13	22	14.0	69	75	10	16
250	16	25	17.0	69	75	13	19

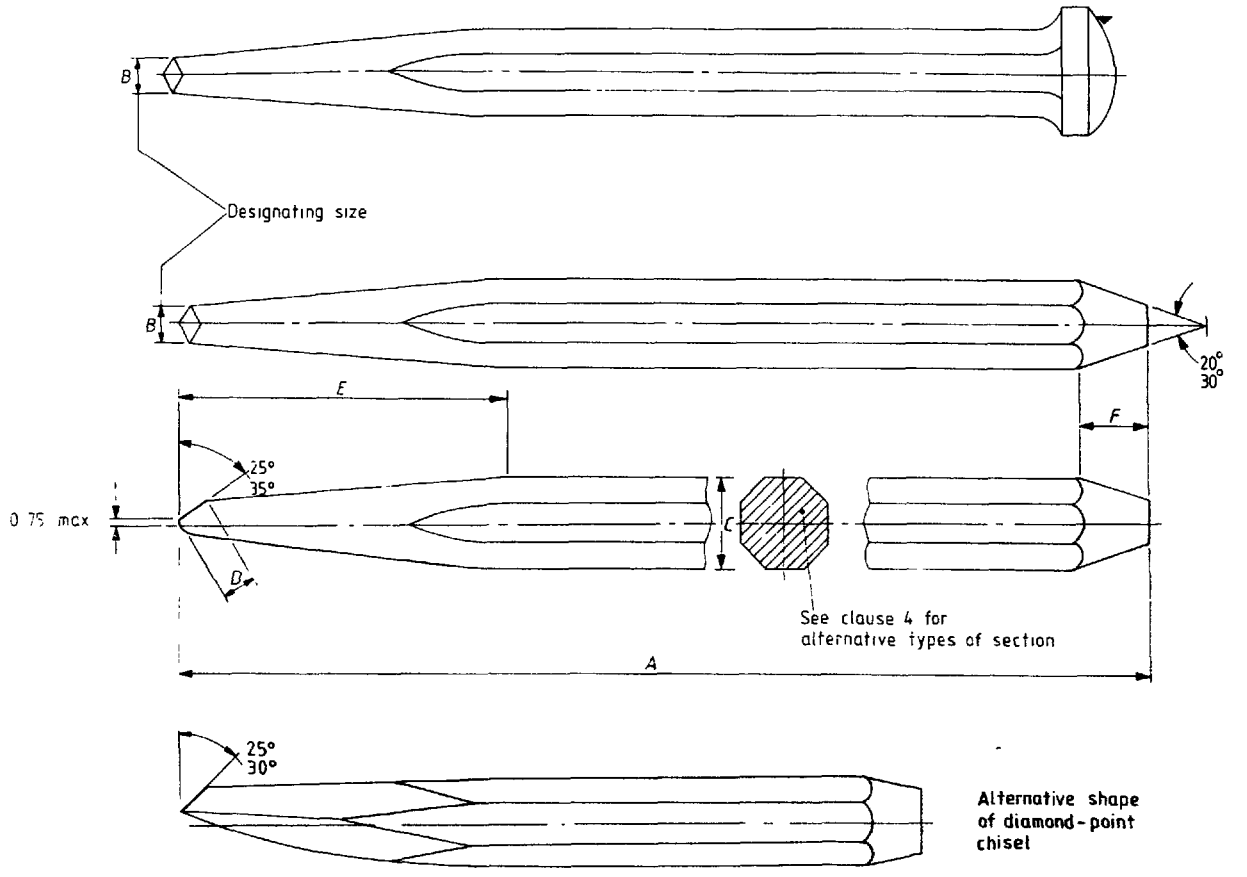
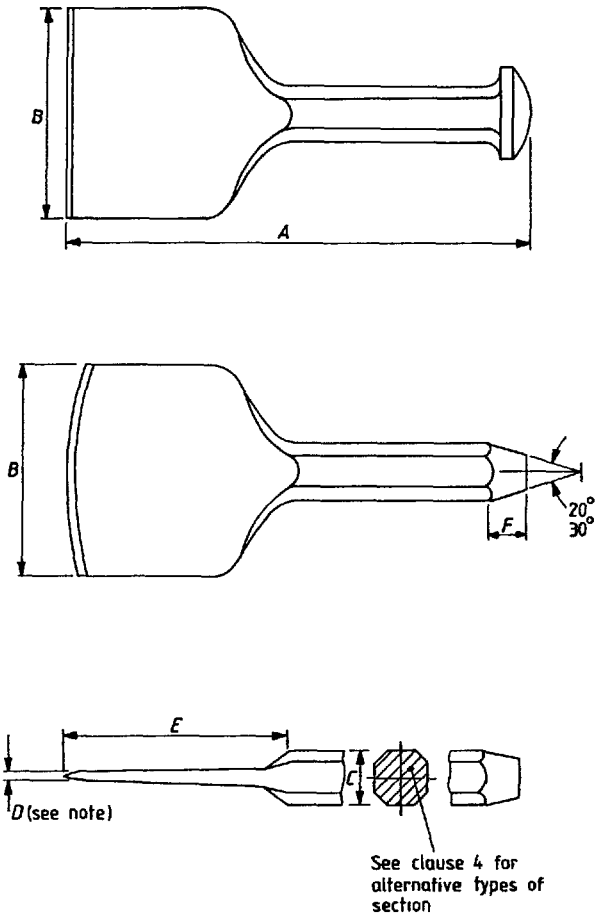


Figure 4. Diamond-point cold chisels

Table 5. Nominal dimensions of diamond-point cold chisels (see figure 4)

Designating size		Body section across flats or diameter *C*	Blade thickness *D*	Length of blade *E*		Length of conical head *F*	
				min.	max.	min.	max.
Overall length *A* ± 5.0	Width of cut *B* ± 0.5						
mm	mm	mm	mm	mm	mm	mm	mm
100	3	6	4.0	35	38	Chamfered	
125	5	10	5.5	44	47	Chamfered	
150	6	13	7.0	53	56	Chamfered	
175	8	16	10.0	56	60	10	13
200	10	19	11.0	60	63	10	13
225	11	22	13.0	63	69	10	16
225	13	22	14.0	69	75	10	16
250	16	25	17.0	69	75	13	19

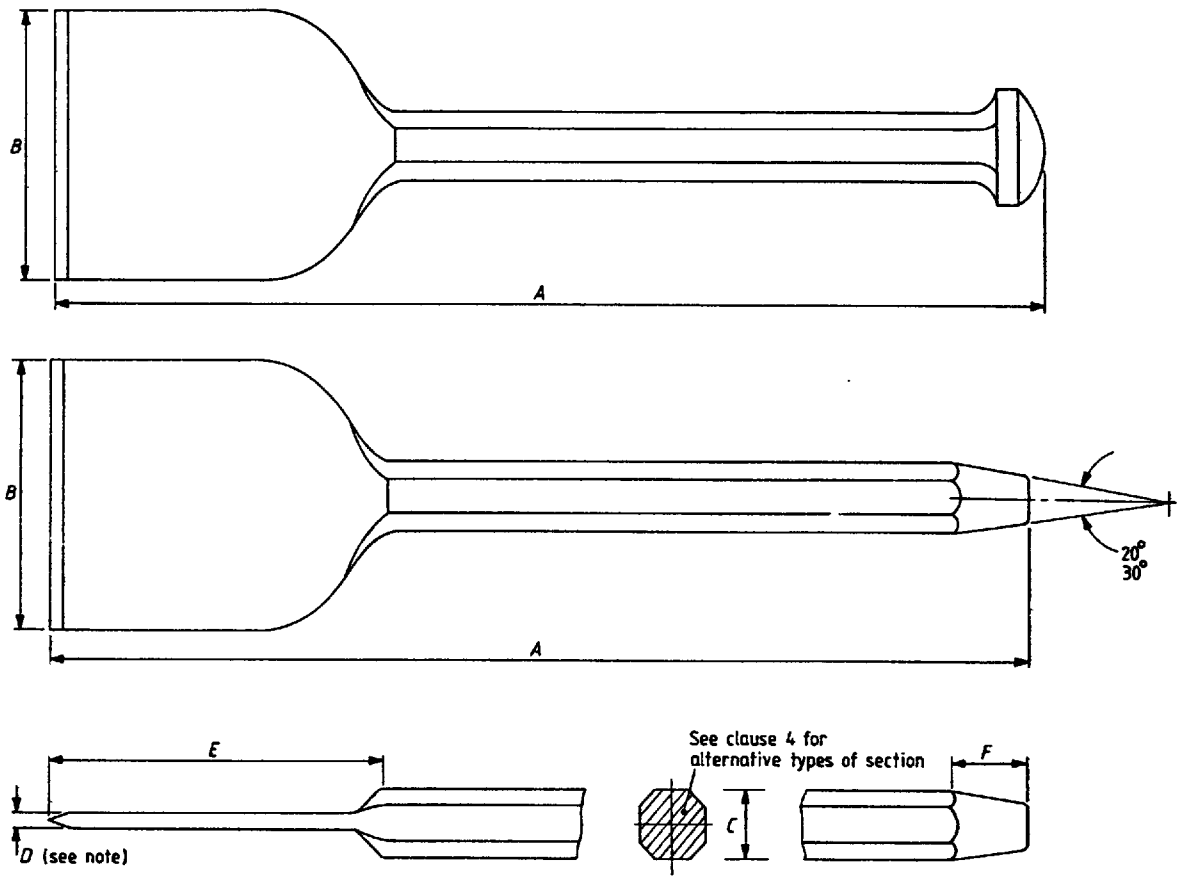


NOTE. Blade thickness *D* has been omitted from table 6 because of variations in methods of manufacture and design.

Figure 5. Brick bolsters

Table 6. Nominal dimensions of brick bolsters (see figure 5)

Designating size			**Body section across flats or diameter** *C*	**Length of blade** *E*		**Length of conical head** *F*	
Overall length *A*		**Width of cut** *B* ± 1.0					
min.	**max.**			**min.**	**max.**	**min.**	**max.**
mm	mm	mm	mm	mm	mm	mm	mm
200	250	50	19 to 22	85	100	10	16
200	250	65	19 to 22	85	100	10	16
200	250	75	19 to 22	85	100	10	16
200	250	88	19 to 22	85	100	10	16
200	250	100	19 to 25	85	100	10	19
200	250	113	19 to 25	85	100	10	19

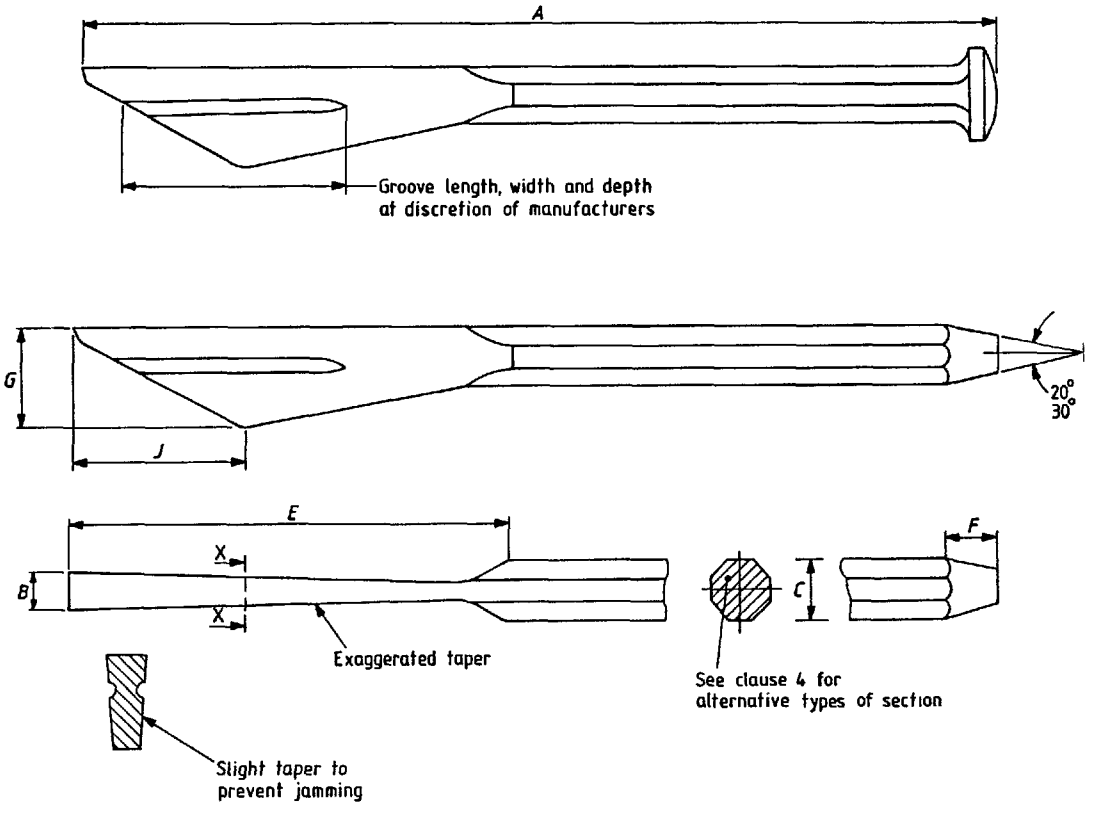


NOTE. Blade thickness *D* has been omitted from table 7 because of variation in methods of manufacture and design.

Figure 6. Floorboard chisels

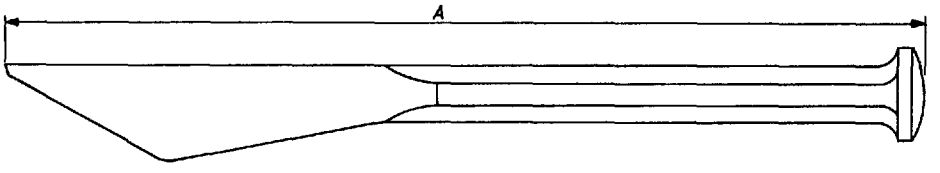
Table 7. Nominal dimensions of floorboard chisels (see figure 6)

Designating size		Body section across flats or diameter *C*	Length of blade *E*		Length of conical head *F*	
Overall length *A* ± 5.0	Width of cut *B* ± 1.0		min.	max.	min.	max.
mm	mm	mm	mm	mm	mm	mm
225	56	16	75	100	10	13
225	63	16	75	100	10	13
225	63	17	75	100	10	13



Section X-X

a) Fluted plugging chisels



b) Plain plugging chisels

Figure 7. Plain and fluted plugging chisels

Table 8. Nominal dimensions of plain and fluted plugging chisels (see figure 7)

Designating size		**Body section across flats or diameter** *C*	**Length of blade** *E*		**Length of conical head** *F*		**Depth of blade** *G*		**Distance of *G* from tip** *J*	
Overall length *A* ± 5.0	**Width of cut** *B* ± 1.0		**min.**	**max.**	**min.**	**max.**	**min.**	**max.**	**min.**	**max.**
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
250	5	16	120	125	10	13	22	25	38	50
250	6	16	120	125	10	13	22	25	38	50

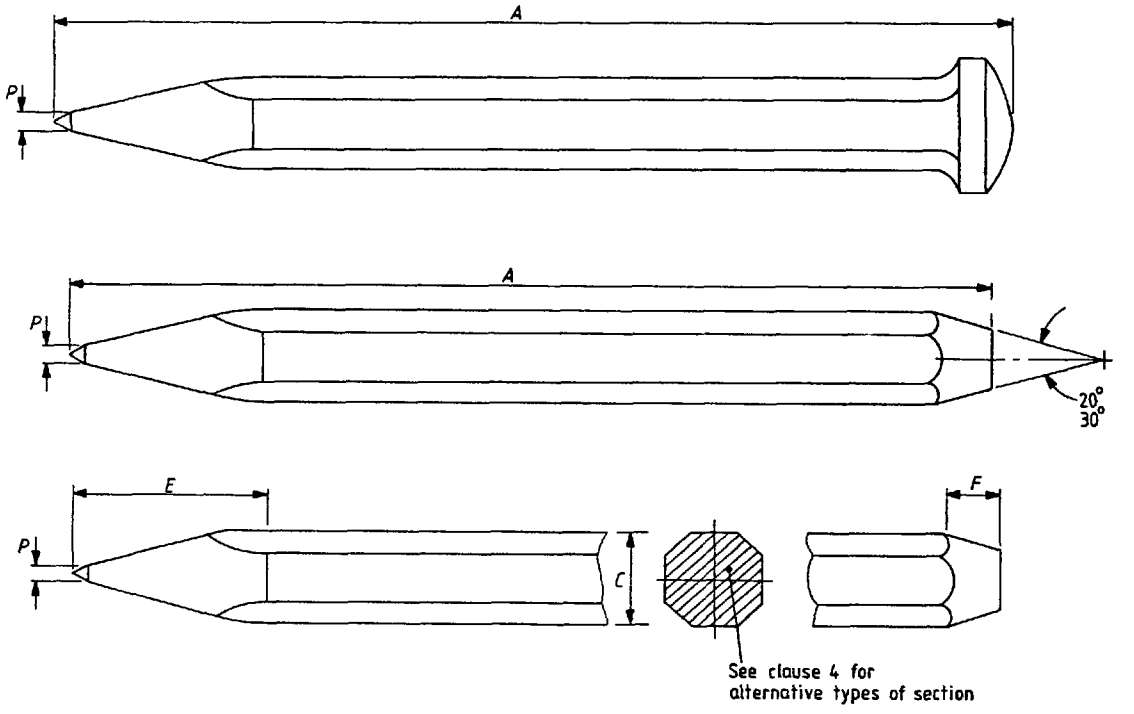


Figure 8. Concrete or moil points

Table 9. Nominal dimensions of concrete or moil points (see figure 8)

Designating size				Body section across flats or diameter *C*	Length of blade *E*		Length of conical head *F*		Pyramid point size *P*	
Overall length *A* ± 5.0					min.	max.	min.	max.	min.	max.
mm				mm	mm	mm	mm	mm	mm	mm
225	250			16	32	53	10	13	3	5
225	250	300	350	19	38	63	10	13	5	6
		300	350	22	38	88	10	16	5	6
		300	350	25	38	88	13	19	5	6

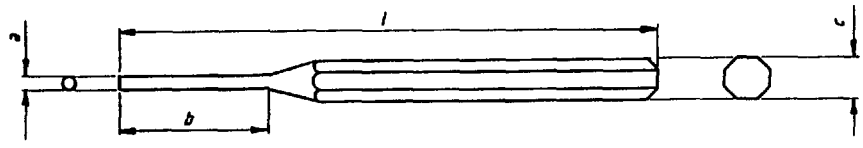
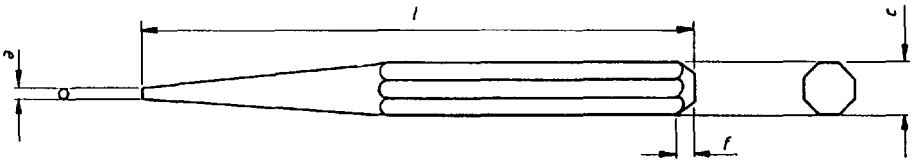


Figure 9. Parallel pin punches

Table 10. Nominal dimensions of parallel pin punches (see figure 9)

Designating size $a^{1)}$ mm	**Nominal diameter (max.)** $a_{-0.3}^{0}$ mm	**Parallel length (min.)** b mm	**Body section (min.)** c mm	**Overall length** l mm
1.59 (1/16″)	1.54	12	7.14	95
2.0	1.95	12	7.14	95
2.38 (3/32″)	2.33	12	7.14	98
3.0	2.95	17	7.14	98
3.18 (1/8″)	3.13	17	7.14	98
3.97 (5/32″)	3.92	20	7.94	98
4.0	3.95	20	7.94	98
4.76 (3/16″)	4.71	20	7.94	98
5.0	4.95	20	7.94	98
5.56 (7/32″)	5.51	28	9.53	98
6.0	5.95	28	9.53	98
6.35 (1/4″)	6.30	32	9.53	98
7.0	6.95	32	9.53	98
7.94 (5/16″)	7.89	32	11.11	125
8.0	7.95	32	11.11	125
9.53 (3/8″)	9.48	32	12.7	133
10.0	9.95	32	12.7	133

[1] Standard imperial sizes are quoted in parentheses for ease of reference.



NOTE. The nail punch point may be 'cupped' if required.

Figure 10. Taper punches

Table 11. Nominal dimensions of taper punches (including nail and reaper punches) (see figure 10)

Designating size	**Body section (min.)**	**Overall length (min.)**	**Length of conical head**	
			f	
a[1)]	*c*	*l*	**min.**	**max.**
mm	mm	mm	**mm**	**mm**
1.59 (1/16″)	9.53	100	Chamfer	
2.38 (3/32″)	9.53	100	Chamfer	
3.18 (1/8″)	9.53	100	Chamfer	
3.97 (5/32″)	9.53	100	Chamfer	
4.76 (3/16″)	9.53	100	Chamfer	
6.35 (1/4″)	12.7	150	Chamfer	
7.94 (5/16″)	15.88	150	10	13
9.53 (3/8″)	15.88	200	10	13

[1)] Tolerance on *a*: ± 0.25. Imperial sizes are quoted in parentheses for ease of reference.

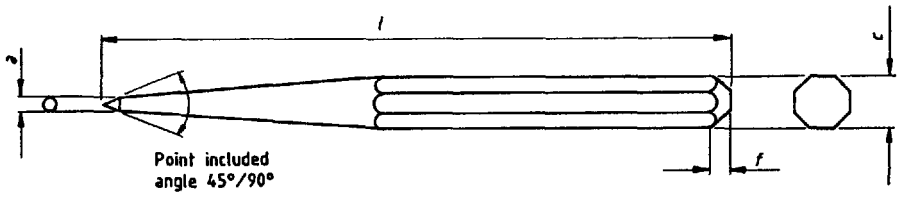


Figure 11. Centre punches

Table 12. Nominal dimensions of centre punches (see figure 11)

Designating size	**Body section (min.)**	**Overall length (min.)**	**Length of conical head**	
			f	
a[1)]	c	l	**min.**	**max.**
mm	mm	mm	**mm**	**mm**
1.59 (1/16″)	9.53	100	Chamfer	
2.38 (3/32″)	9.53	100	Chamfer	
3.18 (1/8″)	9.53	100	Chamfer	
3.97 (5/32″)	9.53	100	Chamfer	
4.76 (3/16″)	9.53	100	Chamfer	
6.35 (1/4″)	9.53	100	Chamfer	
7.94 (5/16″)	9.53	150	Chamfer	
9.53 (3/8″)	12.70	150	Chamfer	
12.70 (1/2″)	15.88	175	10	13

[1)] Tolerance on a: ± 0.25. Imperial sizes are quoted in parentheses for ease of reference.

Table 13. Hardness levels for chisels, bolsters and concrete points							
Carbon steel				**Alloy**			
blade		**head (max.)**		**blade**		**head (max.)**	
HRC	HV30	HRC	HV30	HRC	HV30	HRC	HV30
52 to 58	530 to 650	42	400	54 to 58	560 to 650	42	400

Table 14. Hardness levels for punches							
Carbon steel				**Alloy**			
blade		**head (max.)**		**blade**		**head (max.)**	
HRC	HV30	HRC	HV30	HRC	HV30	HRC	HV30
52 to 58	530 to 650	42	400	52 to 58	530 to 650	42	400

Table 15. Hardness zone at the cutting edge for chisels, bolsters and concrete points	
Nominal size of cutting edge mm	**Hardness zone (minimum distance from cutting edges)** mm
6	13
10	16
13	16
16	18
19	18
22	20
25 and over	20

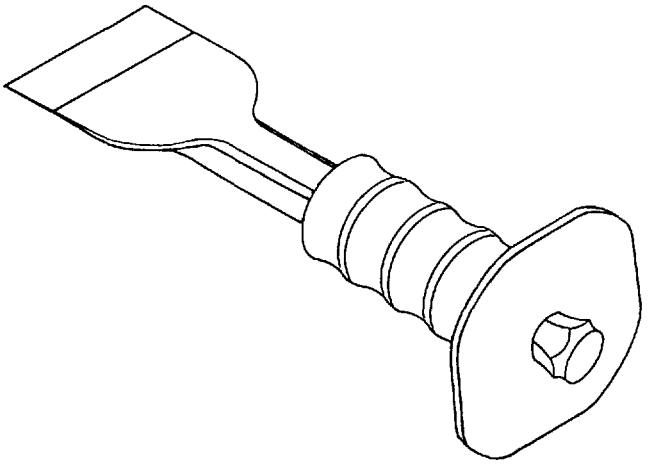


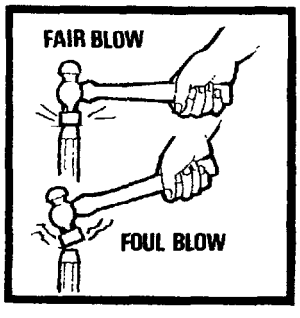
Figure 12. Typical hand guards

Annexes

Annex A (informative)
Guidance on the safe use of chisels and allied tools

Observe the rules

1. Always wear safety glasses when working with these tools.



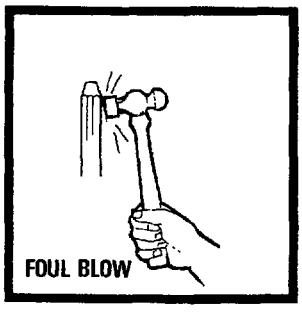
2. Always ensure that the correct tool is selected for the job.

3. Ensure the correct size and type of hammer is used for striking the tool head.

4. Make sure the tool head and the hammer face are clean e.g. free from oil, etc.

5. Instruct the operator to strike the tool being used in a direction away from his person.

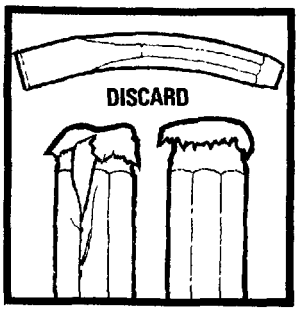
6. Always strike squarely to avoid glancing blows.



7. Never strike a blow to the side of the body of chisels or bolsters.

8. Do not use tools on materials which are harder than the tools themselves.

9. Always ensure that the cutting edges and points are sharp and ground to the correct angle for the materials to be cut or worked.



10. Never use a tool which has a chipped, damaged or a mushroomed head.

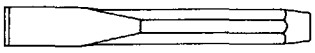
11. Never use a tool that has been bent through misuse.

12. Never use one corner only of a flat chisel when cutting.

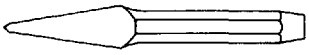
13. Never undertake re-heat treatment of a chisel.

14. If in doubt regarding limitation of these tools then contact the manufacturer.

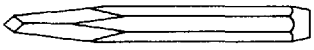
Select the proper tool



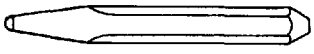
1. Flat chisels. For cutting and chipping cold metals and brickwork.



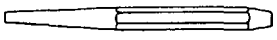
2. Cross-cut chisels. For cutting keyways, etc.



3. Diamond-point chisels. For cleaning out corners of keyways.

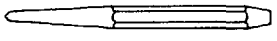


4. Half-round nose chisels. For cutting oil grooves, etc.

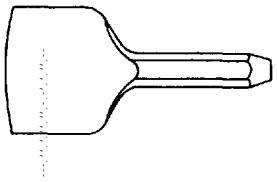


5. Hand or taper punches. For starting pins.

6. Parallel pin punches. For driving out pins.

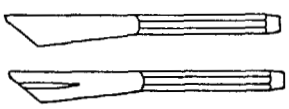


7. Centre punches. For marking out and as a starter for drilling holes.

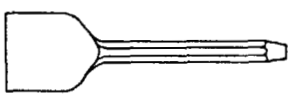


8. Brick bolsters. For cutting bricks.

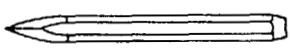
Select the proper tool



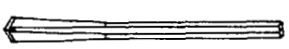
9. Plugging chisels: plain or fluted. For removing mortar or cement from between bricks.



10. Electricians floorboard chisels. For cutting tongues in tongued and grooved floorboarding.

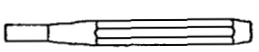


11. Concrete points. For bursting concrete and brickwork.

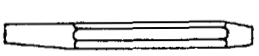


12. Four fin star wall drills. For cutting round holes in brickwork.

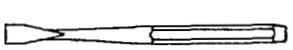
13. Corrugated iron punches. For punching holes in corrugated metal sheets.



14. Motor punches. For removing shafts from bearings, etc.



15. Reaper punches. For removing rivets.



16. Dooking chisels. For cutting holes in brickwork and stone.

Annex B (normative)

Tests

B.1 Impact test

B.1.1 *Apparatus*

B.1.1.1 *Chisels and allied tools*

For chisels up to and including 13 mm blade width a 680 g engineers' hammer complying with the requirements of BS 876 shall be used.

For tools exceeding 13 mm blade width a 910 g engineers' hammer complying with the requirements of BS 876 shall be used.

B.1.1.2 *Punches*

For 1.5 mm to 2.3 mm diameter punch point sizes, a 228 g ball pein engineers' hammer complying with the requirements of BS 876 shall be used.

For 3 mm to 6 mm diameter punch point sizes, a 445 g ball pein engineers' hammer complying with BS 876 shall be used.

For punch point sized above 6 mm diameter a 910 g ball pein engineers' hammer complying with BS 876 shall be used.

B.1.2 *Test*

Hold the tool upright on a low carbon steel test block of 25 mm minimum thickness and apply a solid blow manually to the head.

After carrrying out the test, examine the test piece visually to ensure that there are no defects, damage to the cutting edge or 'mushrooming' of the head.

B.2 Hammer guard strength test

B.2.1 *Apparatus*

910 g engineers' hammer complying with the requirements of BS 876

B.2.2 *Test*

Apply 20 hard blows with the hammer to the hand guard flange. After carrying out the test, examine the guard visually to ensure that the guard is not broken or distorted.

List of references

Normative references

BSI standards publications

BRITISH STANDARDS INSTITUTION, London

BS 876 : 1981[1)]	*Specification for hand hammers*
BS 891 : 1989	*Methods for hardness test (Rockwell method) and for verification of hardness testing machines (Rockwell method)*
BS 970 :	*Specification for wrought steels for mechanical and allied engineering purposes*
BS 970 : Part 2 : 1988	*Requirements for steels for the manufacture of hot formed springs*
BS 4114 : 1967	*Specification for dimensional and quantity tolerances for steel drop and press forgings and for upset forgings made on horizontal forging machines*
BS 6072 : 1981	*Method for magnetic particle flaw detection*

Informative references

BSI Standards publications

BRITISH STANDARDS INSTITUTION, London

BS 427 : 1990	*Method for Vickers hardness test and for verification of Vickers hardness testing machines*
BS 860 : 1967	*Tables for comparison of hardness scales*

[1)] Under revision.

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