Hacksaw blades —

Part 1: Specification for hand and machine hacksaw blades

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/8, upon which the following bodies were represented:

Association of Engineering Distributors Ltd.
British Engineers Cutting Tools Association
British Hacksaw and Bandsaw Manufacturers' Association
Gauge and Tool Makers' Association
Ministry of Defence

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Contents

Foreword

This Part of BS 1919 has been prepared under the direction of the Machine, Engineers and Hand Tools Standards Policy Committee.

First published in 1953, BS 1919 was revised in 1967, partly to achieve a rationalization of sizes but also as a step towards metrication. The standard was further revised in 1974 to take into account international agreement within ISO on hacksaw blades and to add the flexible type of high speed steel hacksaw blade.

BS 1919 was further revised in 1983 to include the important bi-metal types of hacksaw blade and requirements for both power and hand hacksaw blades.

The present revision of BS 1919 divides the 1983 edition into two Parts as follows.

BS 1919-1 specifies the dimensions of hand and machine hacksaw blades and also includes the static bend test for hand blades only. This Part of BS 1919 has been produced in advance of the related standard ISO 2336 that is being prepared by the International Organization for Standardization (ISO).

A further Part of BS 1919 will cover the performance testing of hand and machine hacksaw blades.

BS 1919-1 and BS 1919-2 together supersede BS 1919:1983, which is withdrawn.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, 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 Part of BS 1919 specifies the dimensions and static testing of hand hacksaw blades and the dimensions of machine hacksaw blades.

It is applicable to single edge blades of length not greater than 750 mm, the tooth pitch of which is not greater than 6.3 mm (or four teeth in 25 mm).

2 References

2.1 Normative references

This Part of BS 1919 incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this Part of BS 1919 only when incorporated in it by updating or revision.

2.2 Informative references

This Part of BS 1919 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 Definitions

For the purposes of this Part of BS 1919, the following definitions apply.

NOTE 1 The elements defined in **3.1** to **3.11** are shown in Figure 1.

NOTE 2 The linear dimensions defined in **3.12** to **3.17** are shown in Figure 2.

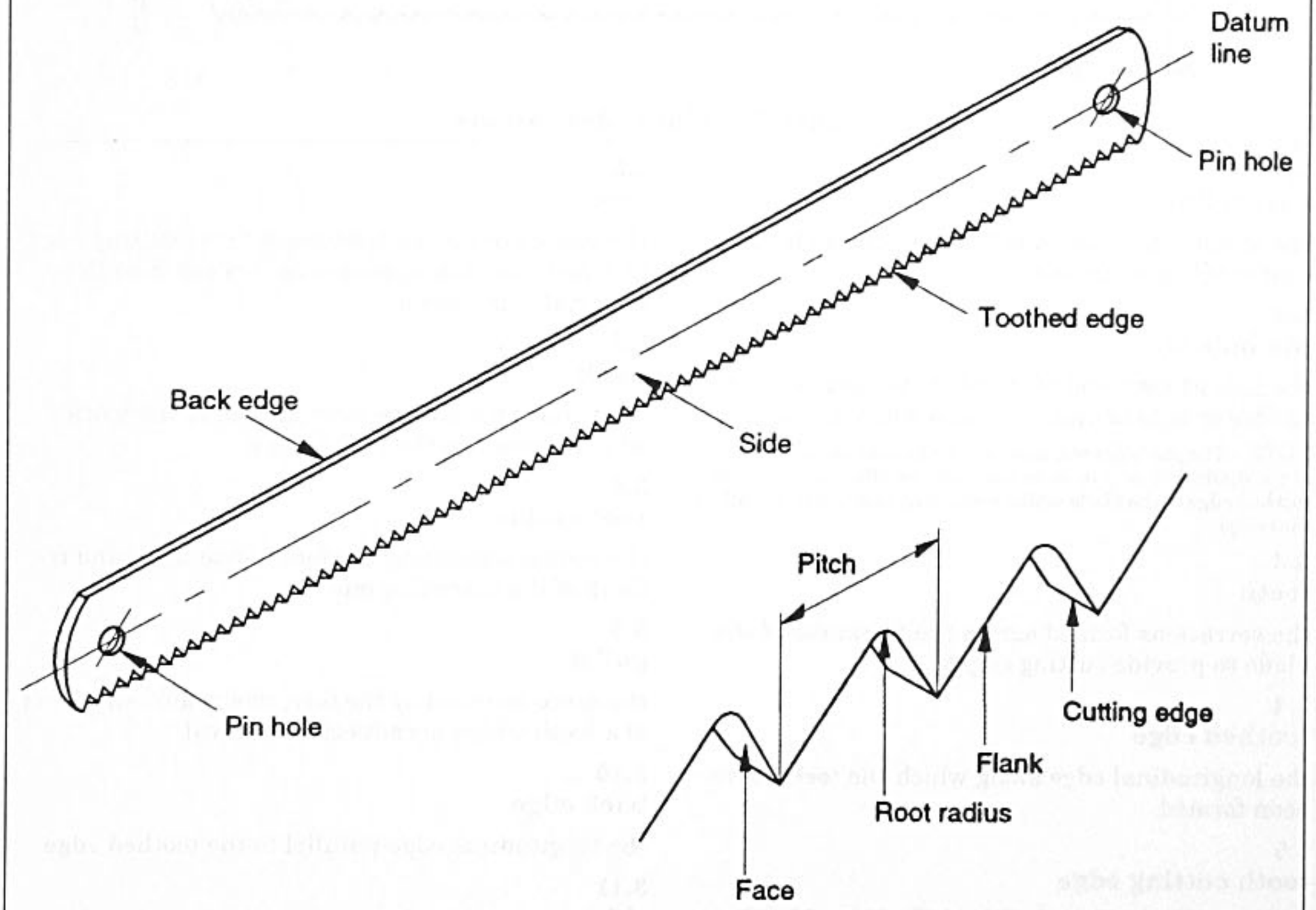


Figure 1 — Elements of a hacksaw blade

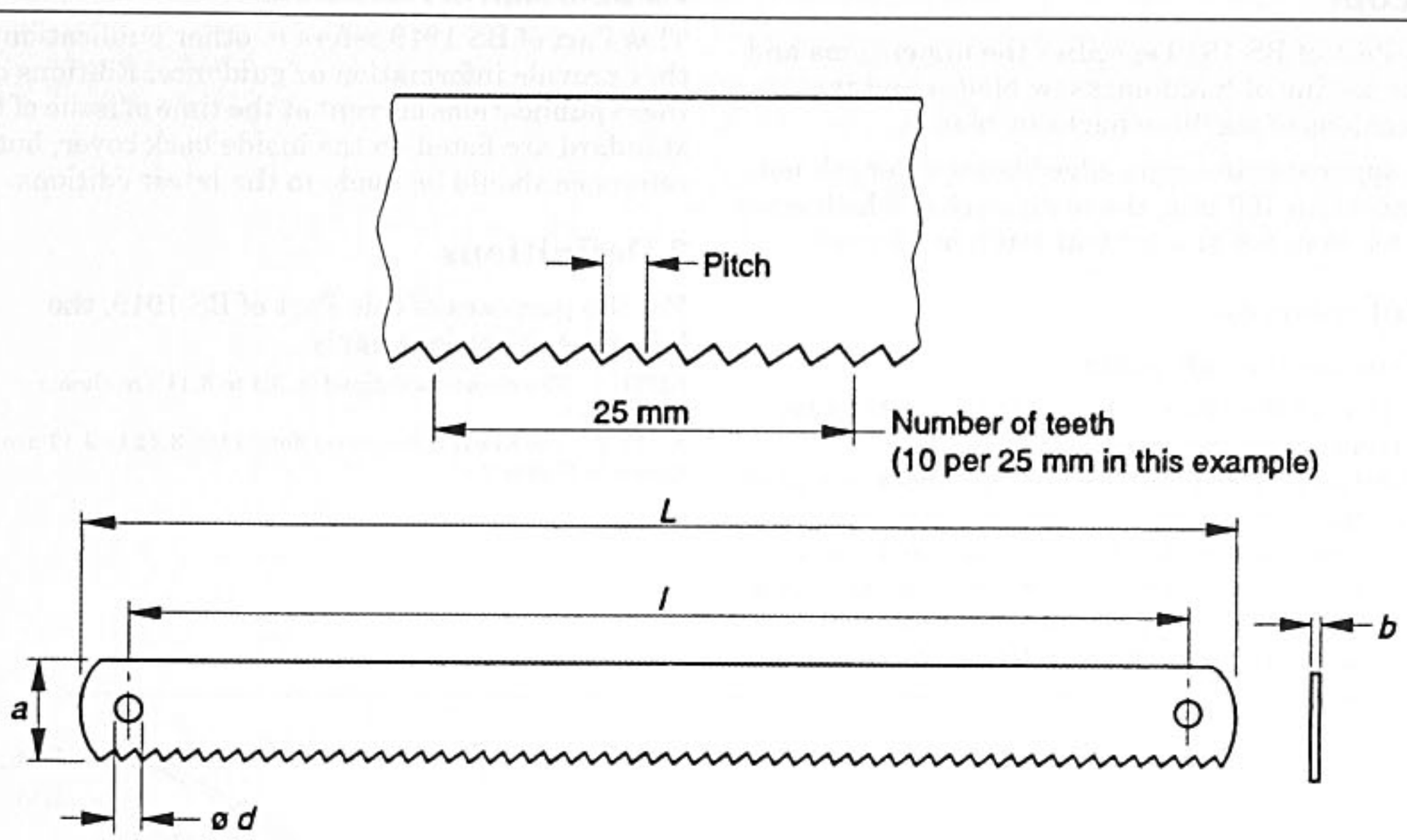


Figure 2 — Linear dimensions

3.1
datum line

the longitudinal line which passes through the centre of the blade width

3.2
pin hole *(d)*

the hole at each end of the blade by means of which the blade is held and tensioned when in use

NOTE The pin holes will normally be located on the centre line of the blade, but may in some instances be offset towards the toothed edge of the blade whilst remaining essentially parallel to that edge.

3.3
teeth

the serrations formed across the thickness of the blade to provide cutting edges

3.4
toothed edge

the longitudinal edge along which the teeth have been formed

3.5
tooth cutting edge

the transverse edge of each tooth, formed by the intersection of the flank and the face

3.6
face

the surface of the tooth adjacent to the cutting edge, on which the chip impinges as it is cut from the material being sawn

3.7
flank

the surface behind the cutting edge of the tooth which extends to the root radius

3.8
root radius

the radius connecting the face of one tooth and the flank of the preceding one

3.9
gullet

the space bounded by the face, root radius and flank of a tooth which permits chip removal

3.10
back edge

the longitudinal edge parallel to the toothed edge

3.11
side

one of the flat surfaces between the toothed edge and the back edge

3.12
blade length *(l)*

the dimension between the centres of the pin holes

3.13
overall length *(L)*

the dimensions between the ends of the blade measured along its centre line

3.14
width *(a)*

the dimension between the toothed edge and the back edge

3.15
thickness *(b)*

the dimension between the two sides, excluding any set

3.16
pitch *(P)*

the distance between the adjacent cutting edges

NOTE This is measured in millimetres.

3.17
number of teeth *(N)*

the number of teeth contained in any 25 mm length measured along the toothed edge

NOTE The internationally agreed pitches of teeth and corresponding numbers of teeth per 25 mm are as follows:

P	0.8	1.0	1.4	1.8	2.5	4.0	6.3
N	32	24	18	14	10	6	4

3.18
size designation

the blade length, width, thickness and pitch (and number of teeth per 25 mm)

NOTE Size designation is always expressed in that order as shown in the following examples (in millimetres):

300 × 12.5 × 0.63 × 1.4

or

300 × 12.5 × 0.63 × 1.4 (18)

3.19
set

the projection of the teeth from the sides of the blade to provide clearance (see Figure 3)

3.20
high speed steel all-hard blade

a hacksaw blade manufactured from high speed steel and, except for the area adjacent to the pin holes, uniformly hardened and tempered throughout

3.21
high speed steel flexible blade

a hacksaw blade manufactured from high speed steel with a uniformly hardened and tempered toothed edge, the centre of the blade in the soft condition and the back edge either soft or hard

3.22
bi-metal high speed flexible steel blade

a hacksaw blade with a fully hardened and tempered high speed steel toothed edge that is joined to a spring steel backing

3.23
low alloy steel flexible blade

a hacksaw blade manufactured from a high carbon steel which contains sufficient alloy addition to significantly enhance the wear resistance properties

4 Dimensions and number of teeth

4.1 Hand hacksaw blades

Dimensions shall be as given in Table 1.

4.2 Machine hacksaw blades

Dimensions shall be as given in Table 2.

5 Bend requirement for hand blades

When tested in accordance with Annex A, blades shall not bend permanently or fracture.

6 Marking

Each hacksaw blade, and the package in which the blade is contained, shall be clearly and permanently marked with the following information:

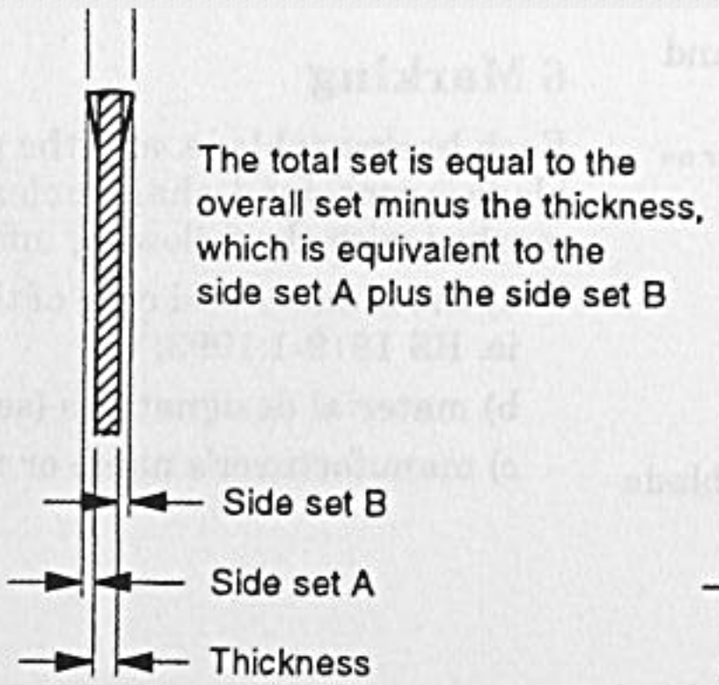
a) the number and date of this British Standard, ie. BS 1919-1:1993;[1)]

b) material designations (see **3.20** to **3.23**);

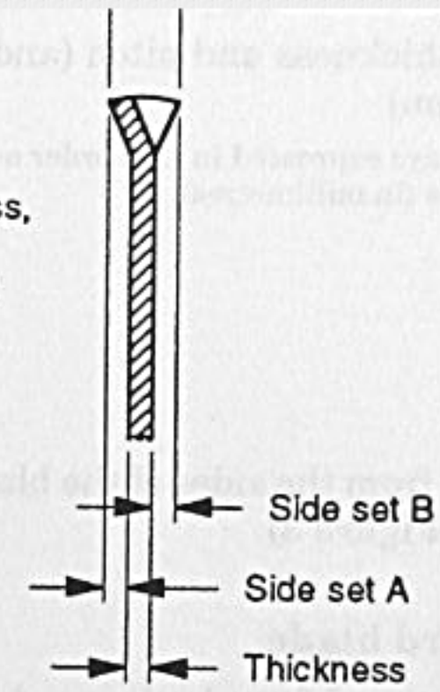
c) manufacturer's name or trade mark.

[1)] Marking BS 1919-1:1993 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 solely the claimant's responsibility. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

Staggered sets



b) Staggered set



c) Wavy set

Figure 3 — Blade set

Table 1 — Dimensions of hand hacksaw blades

Blade length l (± 2) mm	Nominal width a mm	Nominal thickness b mm	Nominal teeth spacing[a]		Overall length L (max.) mm	Pin hole diameter d H14[b] mm
			Pitch P mm	Number of teeth in 25 mm N		
300	12.5	0.63	0.8	32	315	$4^{+0.30}_{0}$
			1.0	24		
			1.4	18		
			1.8	14		

[a] See Figure 2.
[b] In accordance with BS 4500-1.2:1990

Table 2 — Dimensions of machine hacksaw blades

Blade length l (± 2) mm	Nominal width a mm	Nominal thickness b mm	Nominal teeth spacing[a]		Overall length L (max.) mm	Pin hole diameter d^b H14[c] mm
			Pitch P mm	Number of teeth in 25 mm N		
300	25	1.25	1.8	14	330	$8.2^{+0.36}_{0}$
			2.5	10		
350	25	1.25	1.8	14	380	$8.2^{+0.36}_{0}$
			2.5	10		
	32	1.60	2.5	10		
			4.0	6		
400	32	1.60	2.5	10	430	$8.2^{+0.36}_{0}$
			4.0	6		
	38	2.00	4.0	6		
			6.3	4		
450	32	1.60	2.5	10	485	$10.2^{+0.43}_{0}$
			4.0	6		
	38	2.00	4.0	6		
			6.3	4		
500	38	2.00	4.0	6	535	$10.2^{+0.43}_{0}$
	50	2.50	4.0	6		
			6.3	4		
525	38	2.00	2.5	10	560	$10.2^{+0.43}_{0}$
			4.0	6		
	45	2.25	4.0	6		

Annex A (normative) Bend test for hand blades

A.1 Principle

The resistance to breakage of hand blades is assessed by bending sample blades round a former. Flexible blades and bi-metal high speed steel types are subject to a more severe bend than all-hard type blades.

A.2 High speed, steel all-hard hand blade

A.2.1 *Apparatus*

A.2.1.1 *Test block,* made of steel, 250 mm diameter, hardened and ground to give a wear-resistant surface. (See Figure A.1.)

A.2.2 *Procedure*

Bend each test blade by hand around the periphery of the test block (**A.2.1.1**), firmly secured to a bench, ensuring that the blade lies flat against the test block surface. On releasing the blade, check for damage.

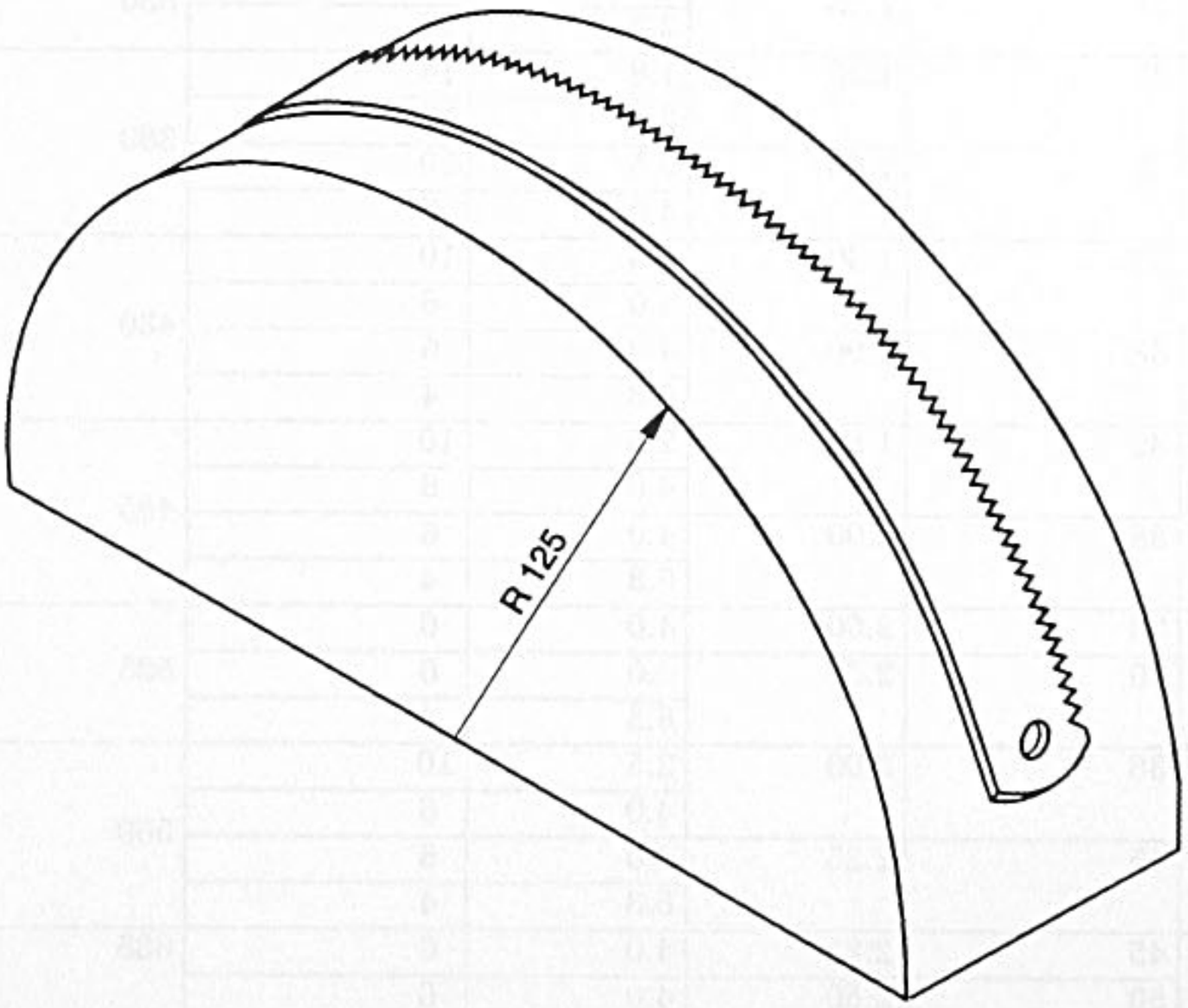
A.3 High speed, steel flexible and bi-metal type blades

A.3.1 *Apparatus*

A.3.1.1 *Test bar,* made of steel 60 mm in diameter, hardened and ground to give a wear-resistant surface (See Figure A.2.)

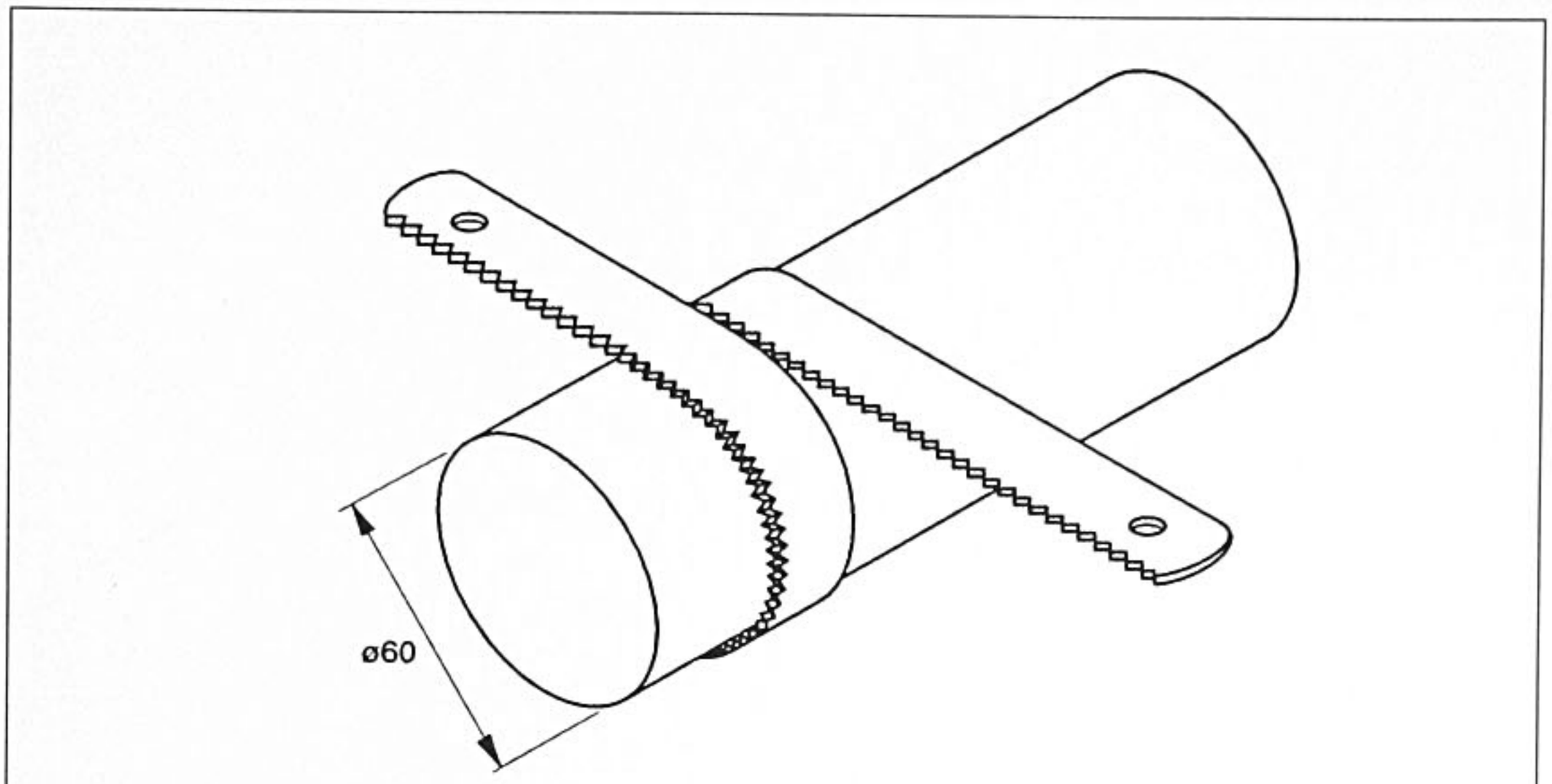
A.3.2 *Procedure*

Bend each test blade around the whole circumference of the test bar (**A.3.1.1**), ensuring that the blade lies flat against the test bar surface. On releasing the blade, check for damage.



Dimension is in millimetres.

Figure A.1 — Bend test for all-hard type hand blades



Dimension is in millimetres.

Figure A.2 — Bend test for flexible and bi-metal type hand blades

List of references (see clause 2)

Normative references

BSI standards publications

BRITISH STANDARDS INSTITUTION, London

BS 4500, *ISO limits and fits.*

BS 4500-1, *General tolerances and deviations.*

BS 4500-1.2:1990, *Tables of commonly used tolerance grades and limits deviations for holes and shafts.*

Informative references

ISO publication

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO), Geneva. (Publication available from BSI Customer Services.)

ISO 2336:1980, *Hand and machine hacksaw blades — Dimensions for lengths up to 450 mm and pitches up to 6,3 mm*[2)].

[2)] Referred to in the foreword only.

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