

CONFIRMED
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Specification for

Fixing accessories for building purposes —

**Part 1: Fixings for Sheet, Roof and Wall
Coverings**

Co-operating organizations

The Hardware and Ironmongery Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives of the following Government departments and scientific and industrial organizations:

- Aluminium Federation*
- British Ironfounders Association
- British Lock and Latch Manufacturers' Association
- British Plastics Federation
- British Waterworks Association
- Cast Butt Hinge Manufacturers' Association
- Copper Development Association*
- D.S.I.R. — Building Research Station
- Guild of Architectural Ironmongers
- Institution of Municipal Engineers
- London County Council
- Metal Window Association Ltd.
- Ministry of Public Building and Works
- National Brassfoundry Association*
- National Federation of Builders' and Plumbers' Merchants*
- National Federation of Building Trades Employers*
- National Federation of Ironmongers
- Royal Institute of British Architects*
- The Royal Institution of Chartered Surveyors
- Zinc Development Association

The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this standard:

- Asbestos Cement Manufacturers' Association
- Black Bolt and Nut Association of Great Britain
- Brass Shoe Rivet Association
- British Constructional Steelwork Association
- British Malleable Tube Fittings Association (1959)
- Cut Copper and Zinc Nail Manufacturers' Association
- National Federation of Roofing Contractors
- Steel Nail Association

This British Standard, having been approved by the Hardware and Ironmongery Industry Standards Committee, and endorsed by the Chairman of the Building Divisional Council, was published under the authority of the General Council on 13 July 1964

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Foreword

This standard makes reference to the following British Standards and Codes of Practice:

BS 84, *Parallel screw threads of Whitworth form.*

BS 729, *Zinc coatings on iron and steel articles — Part 1: Hot-dip galvanized coatings — Part 2: Sherardized coatings.*

BS 916, *Black bolts, screws and nuts. Hexagon and square. B.S.W. and B.S.F.*

BS 1202, *Wire nails and cut nails for building purposes — Part 3: Aluminium nails.*

BS 1470, *Wrought aluminium and aluminium alloys. Sheet and strip.*

BS 1473, *Wrought aluminium and aluminium alloys. Rivet, bolt and screw stock for forging.*

BS 1475, *Wrought aluminium and aluminium alloys. Wire.*

BS 1476, *Wrought aluminium and aluminium alloys. Bars, rods and sections.*

BS 1580, *Unified screw threads.*

BS 1706, *Electroplated coatings of cadmium and zinc on iron and steel.*

BS 3382, *Electroplated coatings on threaded components.*

CP 3, *Code of functional requirements of buildings — Chapter IX: Durability.*

CP 143, *Sheet, roof and wall coverings.*

This British Standard is issued under the authority of the Hardware and Ironmongery Industry Standards Committee and specifies the materials, dimensions, etc., for fixing accessories for building purposes.

BS 1494, “*Fixing accessories for building purposes*” was first published in 1948 and revised in 1951. This standard covered products manufactured chiefly from steel, malleable iron, copper and brass. Owing to the development of increasingly wider uses of aluminium roofing and cladding, it later became apparent that a number of products covered by BS 1494 were being made of aluminium and consequently BS 2465, “*Aluminium fixing accessories for building purposes*” was published in 1954.

When in 1962 it became apparent that revisions were necessary to both BS 1494 and BS 2465, the Technical Committee concerned decided that it would be appropriate to combine the two standards. It was further decided to divide the standard, which will include products manufactured from all appropriate materials, into three parts as follows:

BS 1494, “*Fixing accessories for building purposes*”.

— *Part 1: Fixings for sheet, roof and wall coverings;*

— *Part 2: Sundry fixings;*

— *Part 3: Fixings for pipes and gutters.*

For all details of roofing nails in steel, copper and aluminium, including spring head nails, reference should be made to BS 1202, “*Wire nails and cut nails for building purposes*”.

NOTE Metric equivalents are given in Appendix A. The figures in British units are to be regarded as the standard. The metric conversions are approximate. More accurate conversions should be based on the tables in BS 350, “*Conversion factors and tables*”.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 20, 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

Part 1 of this British Standard specifies requirements in respect of the materials for manufacture and the essential dimensions of the following fixing accessories:

- Hook bolts and nuts
- Drive screws
- Washers
- Self-tapping screws
- Roofing bolts, nuts and clips
- Roofing screws
- Sheeting clips.

2 Material

The materials used for the manufacture of the fixing accessories shall comply with the relevant requirements specified in the appropriate section.

The products covered by this British Standard may be used in securing roof and wall claddings made from asbestos cement, steel, aluminium, plastics, etc., to structures of steel, aluminium, concrete, brickwork or timber. Protection against corrosion may be necessary, and when dissimilar metals are in contact with each other protection against galvanic action should also be provided. It is intended that components used in conjunction with each other, e.g. nuts, bolts and washers, should always be of the same material in order to reduce any risk of galvanic corrosion from this source.

Reference should be made to British Standard Codes of Practice CP 3, “*Code of functional requirements of buildings*”, Chapter IX, “*Durability*” and the appropriate part numbers of CP 143, “*Sheet, roof and wall coverings*”.

3 Protective finishes

a) *General*. The protective finish can greatly affect the durability of the fitting and the performance of the structure. Consequently, the protective finish must be carefully selected and specified, taking account of the material from which the product is manufactured and the conditions of service likely to be encountered. Unless ordered otherwise the following products shall have the protective finish specified which is adequate for normal conditions of use. For abnormal conditions of use the protective finish shall be agreed between manufacturer and user.

By arrangement between manufacturer and user certain accessories, where practicable, may be coated with plastics.

b) *Steel products with machine screw threads*. These products shall be coated with cadmium or zinc in accordance with BS 3382¹⁾, Parts 1 and 2, and passivated as required by that standard.

c) *Steel unthreaded products or products with wood screw threads*. These products shall be coated with cadmium or zinc by one of the following methods:

- i) Electroplating in accordance with BS 1706²⁾ and passivated in accordance with that standard.
- ii) Sherardizing in accordance with BS 729, Part 2³⁾.
- iii) Hot-dip galvanizing in accordance with BS 729, Part 1⁴⁾.

d) *Self-tapping screws*. These screws shall be coated with zinc or cadmium by electroplating in accordance with BS 1706²⁾ and passivated in accordance with that standard, unless made from stainless steel.

4 Workmanship

All articles shall be free from excessive burrs and flashes which may be detrimental to their use.

¹⁾ BS 3382, “*Electroplated coatings on threaded components*”.

²⁾ BS 1706, “*Electroplated coatings of cadmium and zinc on iron and steel*”.

³⁾ BS 729, Part 2, “*Sherardized coatings*”.

⁴⁾ BS 729, Part 1, “*Hot-dip galvanized coatings*”.

5 Inspection

The customer or his representative shall, if desired, be granted facilities for the inspection of finished goods prior to delivery.

6 Manufacturer's certificate

The customer shall, on request, be entitled to a certificate stating that the articles comply with the requirements of this British Standard.

Hook bolts and nuts

7 General

- a) Hook bolts are made in several patterns and shall conform to the dimensions specified in Clauses 9 and 10, Table 1 and Figure 1 to Figure 6.
- b) Hook bolts shall, unless otherwise specified, be supplied complete with square nuts which shall conform to Clause 10.

8 Material

Special attention is directed to Clause 2, where a warning regarding the dangers of using dissimilar metals is given.

- a) *Steel hook bolts and nuts.*
 - i) Steel hook bolts shall be manufactured from rod or wire having a tensile strength of not less than 40 tonf/in² in the case of rolled thread hook bolts, and 28 tonf/in² for cut thread hook bolts.
 - ii) Steel nuts for hook bolts shall be manufactured from bar or strip having a tensile strength of not less than 28 tonf/in².
- b) *Aluminium hook bolts and nuts.*
 - i) Aluminium rolled thread or cut thread hook bolts shall be manufactured from one of the following alloys:
 - HG20-WDP as specified in BS 1475⁵⁾
 - or NG6-1/2H as specified in BS 1475⁵⁾.
 - ii) Aluminium nuts for hook bolts shall be manufactured from one of the following alloys:
 - HG9-WD as specified in BS 1475⁵⁾
 - HE30-WP as specified in BS 1476⁶⁾
 - or NS6-1/4H as specified in BS 1470⁷⁾.

9 Shank diameter

The diameter of the unthreaded portion of the shank is closely associated with the method of manufacture; it will be near the maximum major diameter of the thread for cut thread bolts and near the minimum effective diameter for those with rolled threads. The unthreaded portion of the shank on rolled thread hook bolts will therefore be approximately $\frac{3}{64}$ inch smaller than the nominal thread diameter.

10 Screw threads

- a) *General.* Screw threads on bolts and nuts shall be Unified Coarse (UNC) in accordance with BS 1580⁸⁾ or British Standard Whitworth (B.S.W.) in accordance with BS 84⁹⁾.

⁵⁾ BS 1475, "Wrought aluminium and aluminium alloys. Wire".

⁶⁾ BS 1476, "Wrought aluminium and aluminium alloys. Bars, rods and sections".

⁷⁾ BS 1470, "Wrought aluminium and aluminium alloys. Sheet and strip".

⁸⁾ BS 1580, "Unified screw threads".

⁹⁾ BS 84, "Parallel screw threads of Whitworth form".

b) *Hook bolts.*

i) Hook bolts may be supplied with either rolled or cut threads.

ii) Screw threads on bolts shall conform to the “Class 2A” limits and tolerances for UNC threads or the “Medium Class” limits and tolerances for B.S.W. threads.

c) *Nuts for hook bolts.* Screw threads in nuts shall conform to the “Class 1B” limits and tolerances for UNC threads or the “Normal Class” limits and tolerances for B.S.W. threads.**11 Information to be specified by the purchaser**

a) Description and BS number

b) Material and finish

c) Diameter and length

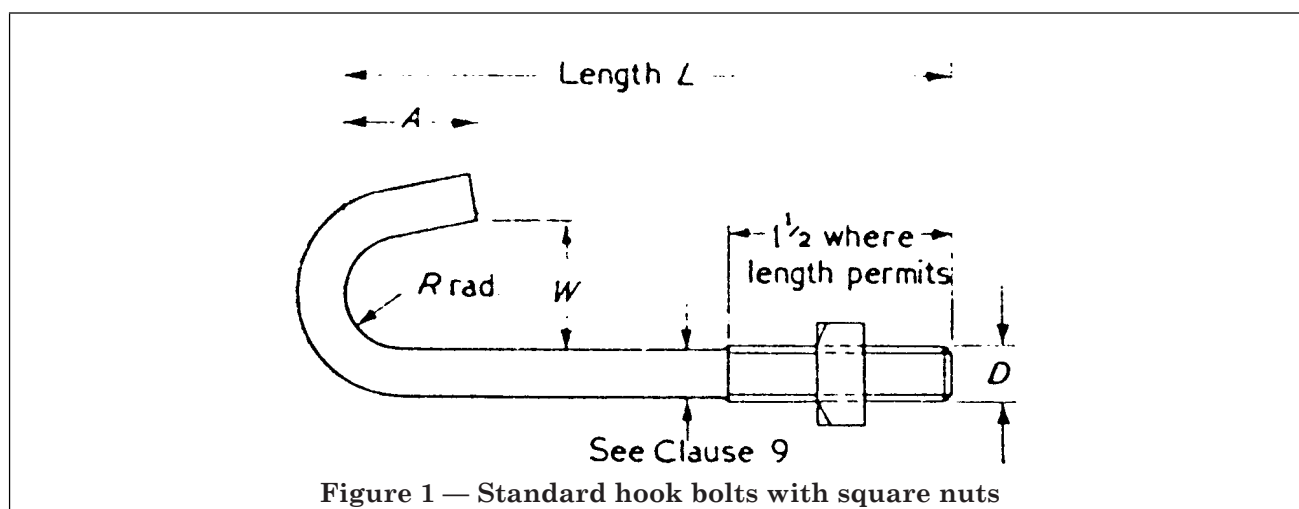
d) Dimensions *C* and *E* for cranked pattern, Dimension *E* for “L”, “U” and “J” patterns.

Table 1 — Standard hook bolts

Nominal diameter <i>D</i>	Inside rad of hook <i>R</i>	Depth inside hook <i>A</i>	Width inside mouth of jaw <i>W</i>	Standard lengths ^a
	nominal	nominal	nominal	
in	in	in	in	in
$\frac{1}{4}$ ^b	$\frac{1}{4}$	$\frac{5}{8}$	$\frac{9}{16}$	3 to 6 in $\frac{1}{2}$ inch increments
$\frac{5}{16}$	$\frac{9}{32}$	$\frac{3}{4}$	$\frac{5}{8}$	3 to 8 in $\frac{1}{2}$ inch increments
$\frac{3}{8}$	$\frac{11}{32}$	$\frac{3}{4}$	$\frac{11}{16}$	3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5 and 6

^a The above lengths are those normally available, other lengths in $\frac{1}{2}$ inch increments may be obtained when specially ordered.^b Suitable for light duty applications only.