

Specification for

Black bolts screws and nuts —

**Hexagon & Square, With B.S.W.
Threads, and Partly Machined Bolts,
Screws & Nuts, Hexagon & Square With
B.S.W. or B.S.F. Threads**

UDC. 621.882.072

Co-operating organizations

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

Admiralty*	Institute of Marine Engineers
Air Ministry	Institute of Petroleum
Associated Offices' Technical Committee	Institution of Civil Engineers
Association of Consulting Engineers (Incorporated)	Institution of Gas Engineers
British Chemical Plant Manufacturers' Association	Institution of Heating and Ventilating Engineers
British Compressed Air Society	Institution of Mechanical Engineers
British Electrical and Allied Manufacturers' Association*	Institution of Mechanical Engineers (Automobile Division)
British Electricity Authority and Area Board	Institution of Production Engineers
British Engineers' Association*	Locomotive Manufacturers' Association*
British Internal Combustion Engine Manufacturers' Association	Machine Tool Trades' Association
British Iron and Steel Federation*	Ministry of Fuel and Power
British Railways, The Railway Executive*	Ministry of Labour and National Service (Factory Department)
Crown Agents for the Colonies*	Ministry of Supply*
D.S.I.R. — Mechanical Engineering Research Laboratory	Ministry of Transport
Engineering Equipment Users' Association	Ministry of Fuel and Power
Gas Council	Ministry of Works*
High Commission of India*	Radio Industry Council
	War Office

The 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:—

Agricultural Engineers' Association	National Physical Laboratory
Black Bolt and Nut Association of Great Britain	North East Coast Institution of Engineers and Shipbuilders
British Constructional Steelwork Association	Railway Carriage and Waggon Building Association
Institution of Engineers and Shipbuilders in Scotland	Washer Manufacturers' Association
Institution of Naval Architects	United Society of Boilermakers and Iron and Steel Shipbuilders
National Coal Board	

This British Standard, having been approved by the Mechanical Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 29 September 1953

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Amendment No. 4, published 11 August, 1966
to BS 916:1953
Black bolts, screws and nuts

At a fully representative conference held on 23rd November, 1965 consideration was given to the action to be taken in relation to the move to metric as far as British Standards for screw threads were concerned and it was decided that:

British industry should be strongly recommended to adopt the internationally agreed ISO metric threads¹⁾ or ISO inch threads²⁾ but that the ISO inch threads should be regarded as second choice. The implementation of this recommendation means that B.A., B.S.F. and B.S.W. threads should become obsolescent and should not be used in new designs.

ACCORDINGLY IT HAS BEEN AGREED THAT BS 916 BE RENDERED OBSOLESCEMENT: IT WILL BE MADE OBSOLETE IN DUE COURSE.

NOTE A standard for ISO metric black hexagon bolts, screws and nuts is in course of preparation.

¹⁾ BS 3643, "ISO metric screw threads".

²⁾ BS 1580, "Unified screw threads".

Foreword

This standard makes reference to the following British Standards:

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

BS 1769, *Unified black hexagon bolts, screws and nuts — heavy series*.

NOTE The requirements for washers in this standard have been superseded by the publication of BS 3410, *Metal washers for general engineering purposes*, to which reference should now be made. BS 916 was first issued in 1940, as a war emergency standard at the request of the Ministry of Supply, to supersede BS 28, *Black bolts and nuts*. The specification was reviewed in 1946 and confirmed for re-issue as the regular British Standard for black hexagon and square bolts and nuts.

The main purpose of the present revision is to take fuller account of regular practice in the manufacture and use of black bolts and nuts. In addition to making provision for products having the comparatively wide tolerances which are usual in the case of black bolts and nuts, provision is also made for bolts faced under the head, with or without turning on the shank, and for nuts faced on one or both sides; for partly machined bolts a choice between medium and free fit threads is given. It will also be noted that the standard recognizes the production and usage of black screws and the title has been amended accordingly.

In adhering to the decision not to re-issue BS 28, it was realized that there are certain applications in heavy engineering work for which the use of the old large (Whitworth) size nuts might be desirable. BS 1769, *Unified black hexagon bolts, screws and nuts — heavy series*, may, however, meet this need, but where it does not, nuts of the basic dimensions of BS 28 will be supplied by the manufacturers when required for such applications as those referred to above.

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 and iv, pages 1 to 14 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 standard relates to ferrous bolts, screws and nuts.

Dimensions and certain requirements are given in respect of bolts, screws and nuts which are either black all over or have partially machined finishes.

The bolts, screws and nuts may be produced by hot or cold forging at the option of the manufacturer.

2 Material

The steel used for the manufacture of the bolts, screws and nuts shall be such that the finished products possess a minimum tensile strength of 26 tons/sq. in. and a minimum elongation of 20 per cent of the gauge length or a minimum tensile strength of 28 tons/sq. in. and a minimum elongation of 17 per cent. The choice of either material will normally be at the option of the manufacturer except where the purchaser specifically states which of the two he requires.

NOTE Gauge length = $4\sqrt{\text{area}}$. (See BS 18.³⁾)

3 Finish

The bolts, screws and nuts shall be neatly and cleanly made.

4 Dimensions

The dimensions and tolerances of the bolts, screws and nuts shall be in accordance with Table 1 to Table 5 inclusive.

5 Length of bolts and screws

a) The nominal length of the bolts and screws shall be the distance from the underside of the head to the further end of the shank, the length of the machined point, if any, being regarded as part of the nominal length.

b) The permissible tolerance on the nominal length shall be as follows:—

Nominal length	Diameter	Tolerance on length
All lengths	Below 1 in.	$+ \frac{1}{8}$ in. – 0
	1 in. and over	$+ \frac{3}{16}$ in. – 0

6 Ends of bolts and screws

The ends of bolts and screws may, at the option of the manufacturer, be finished with either a flat chamfer with a 90° included angle to a depth slightly exceeding the depth of thread, or with a radius approximately equal to $1\frac{1}{4}$ times the nominal diameter of shank. When bolts and screws are made with rolled threads the lead formed at the end of the bolt or screw by the thread rolling operation may be regarded as providing the necessary chamfer to the end, no other machining operation being necessary, and the end shall be reasonably square with the centre line of the shank.

7 Screw threads

a) *Bolts and screws.* For bolts and screws as forged the screw threads shall be B.S.W. free class in accordance with BS 84, “*Parallel screw threads of Whitworth form*”.

For bolts and screws machined under the head, with or without turning on the shank, the screw threads may be B.S.W. or B.S.F. and may be free class or medium class, in accordance with BS 84, as specified by the purchaser.

The screw threads may be cut or rolled at the option of the manufacturer.

b) *Nuts.* For nuts as forged the screw threads shall be B.S.W. normal class and for nuts machined on one or both faces they shall be B.S.W. or B.S.F. normal class, in accordance with BS 84, as specified by the purchaser.

³⁾ BS 18, “*Tensile testing of metals*”.