

Specification for

British Association (B.A.) low tensile screws and nuts for aeronautical purposes

NOTE The Institution desires to call attention to the fact that this standard is intended to include the technical provisions necessary for the supply of the material herein referred to, but does not purport to comprise all the necessary provisions of a contract.

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Foreword

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CAUTION. BS A 31, 32, 33 and 34 screws and BS A 47 and 48 nuts have cadmium as a plating material, which has been restricted and/or banned for use in many countries owing to environmental and health concerns; they should not be used in new product designs. Local officials should be consulted about any concerns on using cadmium-plated parts.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 11 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.

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NOTE The screws and nuts covered by these British Standards conform to the dimensions specified in BS 57:1951, "B.A. screws, bolts, nuts and plain washers". The details given in Table 3 to Table 7 have been taken from that specification.

1 Scope

These British Standards cover dimensions, material, finish and part numbers for British Association (B.A.) cheese, round, countersunk, and raised-countersunk head screws, and dimensions, material, finish and code letters for British Association (B.A.) hexagon ordinary (or full) and thin (or lock) nuts for aeronautical use.

2 Material and manufacture

The screws (turned from bar or cold forged) and nuts shall be manufactured from the appropriate material specified in Table 1 and Table 2 respectively.

2A Freedom from defects

- a) The screws and nuts shall be free from harmful defects.
- b) Screws and nuts may be rejected at any time for faults in, or revealed by, manufacture although they have been made from material passed previously for chemical composition and mechanical tests.

3 Dimensions

- a) With the exception of the thread, the screws and nuts shall before coating conform to the dimensions and tolerances given in Table 3 to Table 6 for screws and Table 7 for nuts respectively.
- b) Screw heads shall be concentric with the shank. Slots shall be clean and free from burrs and, on visual inspection, shall appear to be closely coincident with the centre-line of the head.

4 Length of screws

- a) *Cheese and round heads.* The nominal length shall be the distance from the underside of the head to the extreme end of the shank, including any chamfer or radius.
- b) *Countersunk heads.* The nominal length shall be the distance from the upper surface of the head to the extreme end of the shank, including any chamfer or radius.
- c) *Raised-countersunk heads.* The nominal length shall be the distance from the upper surface of the head (excluding the raised portion) to the extreme end of the shank, including any chamfer or radius.

d) *Tolerance on length.* The permissible tolerance on the nominal length of screws shall be as follows:—

Nominal length	Tolerance
Up to and including $\frac{1}{8}$ in.	+ 0.01 in. – 0
Above $\frac{1}{8}$ in. up to and including $\frac{1}{2}$ in.	+ 0.02 in. – 0
Above $\frac{1}{2}$ in.	+ $\frac{1}{32}$ in. – 0

5 Ends of screws (See Figure 1.)

- a) *Cut threads.* All screws with cut threads shall be finished with either a flat chamfer with a 90° included angle to a depth slightly exceeding the depth of thread, or a radius approximately equal to $1\frac{1}{4}$ times the nominal diameter of the shank.
- b) *Rolled threads.* Screws with rolled threads need not be pointed, the lead formed during the thread rolling being sufficient, but the end shall be at right angles to the axis of the screw within the tolerance permitted by the following test:—

The screw shall be screwed into a ring gauge, the face of which is square to the axis of the thread, until the low point of the screw end is flush with the gauge face. The distance between the gauge face and the high point of the screw end shall not exceed one pitch.

6 Screw threads

- a) *Screws.*
 - i) The screw threads may be either cut or rolled at the option of the manufacturer. They shall conform (after coating, if required) to the limits and tolerances specified for close class bolts in BS 93:1951 "British Association (B.A.) screw threads".
 - ii) The minimum major, effective, and minor diameters of threads of screws required to be coated may, before coating, be 0.001 in. smaller than the minimum dimensions specified in Table 8 of BS 93:1951, in order to avoid any undue restriction of the tolerance allowed for screwing.
 - iii) In view of the tendency for closely fitting threads in stainless steel to seize when tightened together, the maximum major, effective and minor diameters of stainless steel screws shall be 0.001 in. below the maximum specified in BS 93:1951, Table 8. The full close class tolerance specified in Table 8 of that standard shall, however, be allowed.
- b) *Nuts.* The screw threads shall conform to the limits and tolerances specified in BS 93:1951. They shall be required to pass gauges approved by the Inspecting Authority