

BS A 401-420:2015



BSI Standards Publication

## AEROSPACE SERIES

Specification for screws, pan  
and 100° countersunk head,  
hexalobular drive recess  
(unified threads below 1/4  
inch) in various materials

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## Contents

1	Scope	1
2	Normative references	1
3	General	2
4	Quality assurance procedure	2
5	Material and manufacture	3
6	Protective finish	3
7	Freedom from defects	3
8	Dimensions	3
9	Head of screws	4
10	Hexalobular drive recess	8
11	Unified thread identifier	10
12	Length of screws	12
13	Screw threads	15
14	Ends of screws	15
15	Length of thread	16
16	Designation	17
17	Identification and marking	17

### Annexes

Annex A (informative)	Screw equivalency quick reference guide	19
Annex B (informative)	Conversion tables	20
Annex C (informative)	Measuring inspection criteria for countersunk heads	21
Annex D (informative)	Derivation of design of the countersunk head	24

### Bibliography

### List of figures

Figure 1	Hexalobular recess in 100° countersunk heads	8
Figure 2	Hexalobular recess in pan heads	9
Figure 3	Unified thread identifier option 1 (annular groove)	11
Figure 4	Unified thread identifier option 2 (plain cylindrical extension)	11
Figure 5	Dimensions of countersunk head screws	13
Figure 6	Dimensions of pan head screws	14
Figure 7	Types of ends permissible on screws	16
Figure C.1	Method of measuring head protrusion of countersunk head screws	21
Figure C.2	Typical gauge block for 100° countersunk head screws	22
Figure D.1	Formulae for dimensions for countersunk head screws	24
Figure D.2	Absolute max and min head conditions of countersunk head screws	26

### List of tables

Table 1	Sampling plan	3
Table 2	British Standard identifier, material and finish of screws	5
Table 3	Dimensions of hexalobular recesses for 100° countersunk heads	9
Table 4	Dimensions of hexalobular recesses for pan heads	10
Table 5	Unified thread identifier option 2	12
Table 6	Dimensions of countersunk head screws	13
Table 7	Dimensions of pan head screws	14
Table 8	Tolerance on length	15
Table 9	Nominal length and part number codes	17
Table A.1	Recess screw comparison to slotted screw equivalent	19
Table B.1	Shank gauge and inch decimal to millimetre equivalents of basic diameters of screws	20

Table C.1 – Dimensions of gauge block for 100° countersunk head screws 23

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**Summary of pages**

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 28, an inside back cover and a back cover.

## Foreword

### Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 October 2015. It was prepared by Technical Committee ACE/12, *Aerospace fasteners and fastening systems*. A list of organizations represented on this committee can be obtained on request to its secretary.

### Information about this document

This British Standard has been introduced to give a hexalobular drive recess alternative to the traditional slot used in screws in the BSI range A 204, A 206, A 208 and A 217 to A 221 (a quick reference guide is provided in Annex 1). This is intended to alleviate the risks of screw driver blade slippage in the vicinity of electronic printed circuit board copper track work and associated wiring.

The method of manufacturing choices are more controlled than those of the slotted BS A 204, etc. range, especially for the austenitic corrosion resistant (CRES) steel option, so to better maintain its strength characteristics, e.g. by cold heading and cold rolling threads. This new standard's title omits the term "machine" as in "machine screw" to reflect this.

This standard also expands the choices by introducing stronger alloy steel, martensitic CRES steel and high temperature/high expansion steel options.

The historic thread size of 2-64 UNF has been maintained. However, very few mating female threaded fasteners such as nuts and helical wire thread inserts, are available commercially; most are 2-56 UNC. Thread size 2-56 UNC has therefore been included as a thread size option.

This standard does not incorporate a mating range of plain hexagon nuts to match the new range of material choices listed above.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

### Hazard warnings

**CAUTION.** Screws conforming to BS A 401 and BS A 411 have cadmium as a plating material, which has been restricted and/or banned in many countries owing to environmental and health concerns. Users should consult local officials if they have questions concerning the use of cadmium-plated parts.

### Use of this document

It has been assumed in the preparation of this British Standard that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

### Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

*Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.*

### Contractual and legal considerations

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.

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## 1 Scope

This British Standard specifies the dimensions, materials, protective finishes and part numbers for 100° countersunk head and pan head screws with unified threads for non-structural general aerospace use.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ASD-STAN TR 3775, *Aerospace series – Bolts and pins – materials*

BS 1134, *Assessment of surface texture – Guidance and general information*

BS 1473, *Specification for wrought aluminium and aluminium alloys for general engineering purposes – rivet, bolt and screw stock*

BS 1580-3, *Unified screw threads – Screw threads with diameters below 1/4 in – Part 3: Requirements*

BS 1872, *Specification for electroplated coatings of tin*

BS 6338, *Specification for chromate conversion coatings on electroplated zinc and cadmium coatings*

BS A 100, *Specification for general requirements for bolts and free running nuts of tensile strength not exceeding 1 245 MPa*

BS L 102, *Specification for bars and extruded sections of aluminium-copper-magnesium-silicon-manganese alloy (solution treated and aged at room temperature) (not exceeding 200 mm diameter or minor sectional dimension) (Cu 4.4, Mg 0.5, Si 0.7, Mn 0.8)*

BS L 168, *Specification for bars and extruded sections of aluminium-copper-magnesium-silicon-manganese alloy (solution treated and artificially aged) (not exceeding 200 mm diameter or minor sectional dimension) (Cu 4.4, Mg 0.5, Si 0.7, Mn 0.8)*

BS S 80, *High chromium-nickel corrosion resisting steel forging stock, bars, forgings and parts (880 to 1 080 MPa: limiting ruling section 100 mm)*

BS S 121, *Specification for 18/9 chromium-nickel corrosion-resisting steel (titanium stabilized) billets, bars, forgings and parts (540 MPa: limiting ruling section 150 mm)*

BS S 130, *Specification for 18/9 chromium-nickel corrosion-resisting steel (niobium stabilized) billets, bars, forgings and parts (540 MPa: limiting ruling section 150 mm)*

BS S 142, *Specification for 1% chromium-molybdenum steel billets, bars, forgings and parts (900–1 100 MPa: limiting ruling section 40 mm)*

BS S 147, *Specification for 0.5% nickel-chromium-molybdenum steel bars for the manufacture of forged bolts and forged nuts*

BS S 148, *Specification for low nickel-chromium steel (bar for the manufacture of forged bolts only)*

BS S 154, *Specification – 2½% nickel-chromium-molybdenum steel billets, bars, forgings and parts (880–1 080 MPa: limiting ruling section 150 mm)*

BS S 158, *Specification for 1% chromium-molybdenum steel bars for the manufacture of forged bolts and forged nuts*