

Specification for

**Steel nuts (unified
hexagons and unified
threads) for shear
bolts for aircraft**

ICS 49.030.30

Publishing and copyright information

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Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution. It was prepared by Technical Committee ACE/12.

Supersession

BS 2A 110:1962+A4:2013 supersedes BS 2A 110:1962 (incorporating Amendment No 1:1964, Amendment No 2:1976, Amendment No 3:1978 and Amendment No 4:1978), which is withdrawn.

Information about this document

The start and finish of text introduced or altered by Amendment No 4 is indicated in the text by tags **A4** and **A4**. Minor editorial changes are not tagged. Previous amendments have been incorporated into the text and are not indicated.

CAUTION. BS A 110 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.

Designers are invited to consider the physically similar but cadmium free all CRES version BS A400 nut ranges.

This British Standard, having been approved by the Aircraft Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council of the Institution on 4th June, 1962.

The values in British units are to be regarded as the standard. A table is given in the appendix to provide a ready means of calculating the approximate millimetre equivalents of the inch dimensions. More accurate conversions should be based on the tables in BS 350.

References to the following British Standards are made within this document:

BS 4A 100:2003, *Aerospace series — Specification for general requirements for bolts and free running nuts of tensile strength not exceeding 1 249 MPa*

BS 3S 95, *Specification for 1 ½ per cent nickel-chromium-molybdenum steel — (90/110 kgf/mm² (57/70 tonf/in²): limiting ruling section 150 mm (6 in))*

BS 2S 114, *Specification for aircraft material. Manganese-molybdenum steel (55/65 tonf/sq in: limiting ruling section 2½ inches)*

BS 2S 117, *Specification for aircraft material. 1 per cent chromium steel (55/65 tonf/sq in: limiting ruling section 1½ inch)*

BS 2S 142, *Specification for 1 % chromium-molybdenum steel billets, bars, forgings and parts — (900 – 1100 MPa: limiting ruling section 40 mm)*

BS S 154, *Specification for 2 ½ % nickel-chromium-molybdenum steel billets, bars, forgings and parts — (880–1080 MPa: limiting ruling section 150 mm)*

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”.

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.

BRITISH STANDARD SPECIFICATION FOR
STEEL NUTS
(UNIFIED HEXAGONS AND UNIFIED THREADS)
FOR SHEAR BOLTS FOR AIRCRAFT

SPECIFICATION

SCOPE

1. This British Standard specified the materials, dimensions, finish and inspection requirements for slotted and thin steel nuts with Unified hexagons and Unified threads for use with shear bolts for aircraft.

GENERAL REQUIREMENTS

2. ^{A4} The nuts shall comply with the relevant requirements of BS 4A 100:2003 in respect of manufacture, screw threads, protective finish, identification and marking. ^{A4}

MATERIAL AND MANUFACTURE

3. *a.* The nuts shall be machined from bright drawn bars which comply with the latest issue of one of the following British Standards:

^{A4} BS 3S 95

BS 2S 114

BS 2S 117

BS 2S 142

BS S 154 ^{A4}

b. The nuts shall be hexagonal and chamfered as shown in Figs. 1 and 2.

DIMENSIONS

4. All finished nuts, after the application of the ^{A4} protective finish ^{A4}, shall conform to the dimensions and tolerances given in Tables 1 or 2.

SCREW THREADS

5. The nuts shall have Unified threads of the form and class of fit specified in the relevant requirements of ^{A4} BS 4A 100:2003 ^{A4}.

^{A4} PROTECTIVE FINISH ^{A4}

6. ^{A4} All finished nuts shall be uniformly coated with cadmium in accordance with Def Stan 03-19 or BS EN 2133. Thickness and porosity tests are not applicable to the screw threads. ^{A4}

INSPECTION PROCEDURE

7. The nuts shall be inspected in accordance with the relevant requirements of ^{A4} BS 4A 100:2003 ^{A4}.

TABLE 1. DIMENSIONS OF SLOTTED NUTS

(Third Angle Projection)

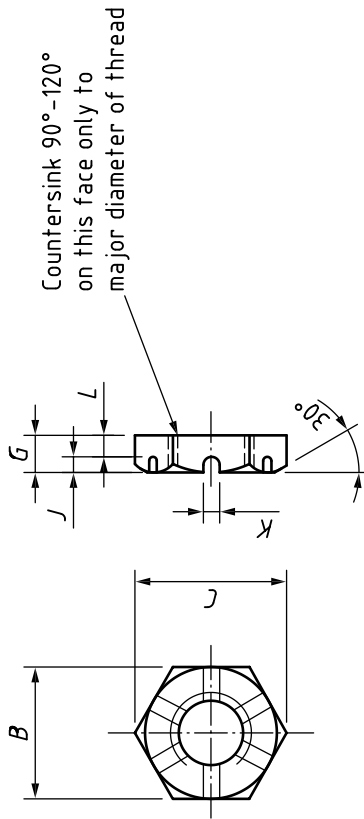


Fig. 1

NOTE. Slots to be rounded.

1	Nominal size	2	Decimal equivalent of nominal size	3	Part reference	4		5	6	7		8	9	10		11	12		13
						Width across flats				Thickness				Width			Lower face of nut to bottom of slot		
						B			C		G		J		K		L		
			in			max.	min.		max.	min.	max.	min.	approx.	min.	max.	max.	min.		
1/4 in UNF	0.2500	ES	0.375	0.370	0.433	0.20	0.19	0.433	0.20	0.19	0.09	0.08	0.09	0.08	0.09	0.11	0.10		
5/16 in UNF	0.3125	GS	0.438	0.431	0.505	0.20	0.19	0.505	0.20	0.19	0.09	0.08	0.09	0.08	0.09	0.11	0.10		
3/8 in UNF	0.3750	JS	0.500	0.493	0.577	0.20	0.19	0.577	0.20	0.19	0.09	0.08	0.09	0.08	0.09	0.11	0.10		
7/16 in UNF	0.4375	LS	0.562	0.554	0.650	0.20	0.19	0.650	0.20	0.19	0.09	0.08	0.09	0.08	0.09	0.11	0.10		
1/2 in UNF	0.5000	NS	0.688	0.679	0.794	0.20	0.19	0.794	0.20	0.19	0.09	0.08	0.09	0.08	0.09	0.11	0.10		
9/16 in UNF	0.5625	PS	0.750	0.741	0.866	0.20	0.19	0.866	0.20	0.19	0.09	0.08	0.09	0.08	0.09	0.11	0.10		
5/8 in UNF	0.6250	QS	0.875	0.866	1.010	0.20	0.19	1.010	0.20	0.19	0.09	0.125	0.09	0.125	0.135	0.11	0.10		
3/4 in UNF	0.7500	SS	0.938	0.929	1.083	0.20	0.19	1.083	0.20	0.19	0.09	0.125	0.09	0.125	0.135	0.11	0.10		

TABLE 2. DIMENSIONS OF THIN NUTS

(Third Angle Projection)

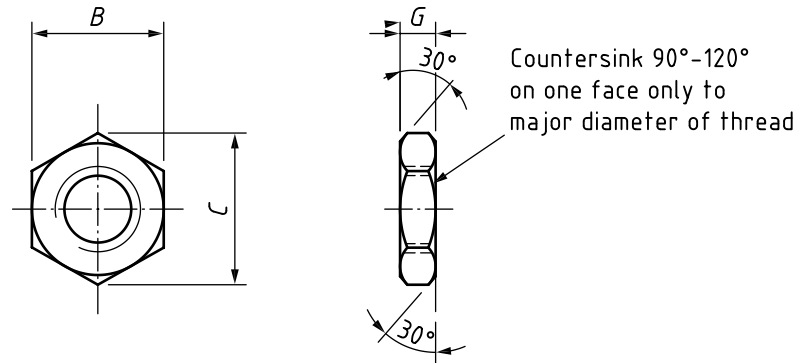


Fig. 2

1	2	3	4	5	6	7	8
Nominal size	Decimal equivalent of nominal size	Part reference	Width across flats		Width across corners	Thickness	
			<i>B</i>		<i>C</i>	<i>G</i>	
			max.	min.	max.	max.	min.
	in		in	in	in	in	in
1/4 in UNF	0.2500	ET	0.375	0.370	0.433	0.20	0.19
5/16 in UNF	0.3125	GT	0.438	0.431	0.505	0.20	0.19
3/8 in UNF	0.3750	JT	0.500	0.493	0.577	0.20	0.19
7/16 in UNF	0.4375	LT	0.562	0.554	0.650	0.20	0.19
1/2 in UNF	0.5000	NT	0.688	0.679	0.794	0.20	0.19
9/16 in UNF	0.5625	PT	0.750	0.741	0.866	0.20	0.19
5/8 in UNF	0.6250	QT	0.875	0.866	1.010	0.20	0.19
3/4 in UNF	0.7500	ST	0.938	0.929	1.083	0.20	0.19

APPENDIX

TABLE FOR CONVERSION OF INCHES TO
APPROXIMATE MILLIMETRE EQUIVALENTS

in	mm	in	mm
$\frac{1}{4}$	6.4	1	25.4
$\frac{5}{16}$	7.9	2	50.8
$\frac{3}{8}$	9.5	3	76.2
$\frac{7}{16}$	11.1	4	101.6
$\frac{1}{2}$	12.7	5	127.0
$\frac{9}{16}$	14.3	6	152.4
$\frac{5}{8}$	15.9	7	177.8
$\frac{3}{4}$	19.1	8	203.2
$\frac{7}{8}$	22.2	9	228.6
		10	254.0