

BRITISH STANDARD SPECIFICATION

B. A. SCREWS BOLTS AND NUTS

B.S. 57 : 1951

Incorporating amendments issued October, 1961 (PD4329)
August 1966 (PD5901) and (AMD1528) August 1974.

Amendment No. 2, published 11 August, 1966
to B.S. 57 : 1951
B.A. screws, bolts 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 threads* or ISO inch threads† 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 B.S. 57 BE RENDERED OBSOLESCEENT: IT WILL BE MADE OBSOLETE IN DUE COURSE.

NOTE. Dimensions of metric slotted cheese head screws are given in B.S. Handbook No. 13, 'Metric standards for engineering', and metric standards for other types of machine screws are in course of preparation.

* B.S. 3643, 'ISO metric screw threads'.

† B.S. 1580, 'Unified screw threads'.



THIS BRITISH STANDARD, having been approved by the Mechanical Engineering Industry Standards Committee and endorsed by the chairman of the Engineering Divisional Council, was published under the authority of the General Council on 31st March, 1951.

First published, 1920.

First revision, September, 1944.

Second revision, March, 1951.

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 9,000, fully indexed and with a note of the contents of each, will be found in the BSI Catalogue which may be purchased from BSI Sales Department. The Catalogue may be consulted in many public libraries and similar institutions.

This standard requires reference to the following:—

B.S. 93 : 1951. British Association (B.A.) screw threads, with tolerances for sizes 0 B.A. to 16 B.A.

B.S. 4133 : 1967 Machine screws and machine screw nuts
— metric series.

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or edition.

BRITISH STANDARD SPECIFICATION FOR B.A. SCREWS, BOLTS AND NUTS

*As
altered
Oct.,
1961*

FOREWORD

This British Standard was first issued in 1920. The provisions of that edition related solely to the dimensions of the heads of the various types of screws and the dimensions of ordinary hexagon nuts.

When the first revision of the standard was published in 1944 its scope was extended to include requirements for the complete dimensions of screws, bolts and nuts; in addition, dimensions for lock nuts and for two sizes of washers were given. The edition was issued as a War Emergency British Standard and took into account recommendations, contained in instructions issued by the Ministry of Supply, which indicated those types, sizes and lengths of small screws and bolts regarded as standard production.

General dimensions for all the common types and sizes of B.A. screws bolts and nuts were included in the standard, but the dimensions for types not recognized as standard were given in an Appendix. The tables in the body of the specification designated selected sizes as 'standard' and all other sizes as 'specials.' A table of 'Standard lengths of steel and brass B.A. bolts and screws for wartime production' was given in an Appendix.

The War Emergency edition has now been reviewed in the light of present-day conditions and, whilst the principles stated above have been largely adopted in the present revision, certain modifications which more recent experience has shown to be desirable have been incorporated. There has been some rearrangement of the tables of general dimensions, including the transfer of the table of dimensions for 'Raised-countersunk (instrument) head screws and bolts' from the Appendix to the body of the standard. The ranges of nominal sizes given in these tables are now designated 'Preferred,' 'Second choice' and 'Not normally stocked'; the table of standard lengths has been reviewed and tables are now included in the standard relating to each type of screw and showing the lengths in which each size is normally stocked and other lengths which may be regarded as standard, although they are not normally stocked.

Finally, since the production of B.A. bolts is very small compared with that of B.A. screws, the title of the standard has been suitably revised.

SPECIFICATION

SECTION ONE : SCREWS, BOLTS AND NUTS

SCOPE

1. Section One of this British Standard specifies requirements and dimensions for both ferrous and non-ferrous screws, bolts and nuts.

METHOD OF MANUFACTURE

2. Screws and bolts may be either turned from bars or forged.

MATERIAL

3. The material from which the screws, bolts and nuts are manufactured shall have an ultimate tensile stress of not less than the following :—

Steel	25 tons/sq. in.
Brass	20 tons/sq. in.
Aluminium alloy	20 tons/sq. in.

If the purchaser requires the screws, bolts and nuts to be manufactured from steel or brass of a higher tensile stress, or of another material, he shall specify the ultimate tensile stress of the material.

NOTE. The choice of alloy should normally be left to the manufacturer, but among suitable light alloys satisfying the requirement are the following :—

For screws, bolts and nuts turned from wire or from the bar : B.S. 1475 or B.S. 1476 respectively :

B.S. 1475 : 'Aluminium and aluminium alloy wire for general purposes.'

H.G. 14. T

H.G. 15 (Condition W or WP)

B.S. 1476 : 'Aluminium and aluminium alloy rods, bars and sections for general purposes.'

H.E. 11. WP

H.E. 14. T

H.E. 15 (Condition W or WP)

For screws and bolts cold headed from wire:

B.S. 1475: 'Aluminium and aluminium alloy wire for general purposes.'

N.G. 6. M

H.G. 14. T

H.G. 15 (Condition W or WP)

DIMENSIONS

4. The screws, bolts and nuts shall conform to the dimensions and tolerances given in Tables 1, 2, 3, 4, 5, 6, 13 and 14, and Clauses 5, 6, 7, 8 and 9.

The screw heads shall be concentric with the shank. The slots shall be clean and free from burrs and, on visual inspection, shall appear to be closely co-incident with the centre line of the head.

NOTE. Screws and bolts turned from bars can be supplied with a smaller radius under the head if specially ordered.

LENGTH OF SCREWS AND BOLTS

5. *a. 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.

b. Raised-countersunk (instrument) 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.



c. *Hexagonal, round, cheese, raised-cheese (fillister), and connection 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.

NOTE. The nominal lengths of screws normally stocked are given in Tables 7, 8, 9 and 10. Bolts (screwed part way) are not normally stocked but should be ordered to the lengths given in Tables 7, 8, 9 and 10.

d. *Tolerance on length.* The permissible tolerance on the nominal length of screws and bolts 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.

ENDS OF SCREWS AND BOLTS

6. a. *Cut threads.* The ends of screws and bolts with cut threads 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 1¼ times the nominal diameter of the shank.

b. *Rolled threads.* When screws and bolts are made with rolled threads the lead formed at the end of the screw or bolt by the thread-rolling operation may be regarded as providing the necessary chamfer to the end and no other machining operation is necessary, unless the purchaser, in his enquiry and order, has specified that the ends shall be finished as in Clause 6a above.

NOTE. For convenience, one type of end only is illustrated in the Figures at the head of Tables 1 to 5 inclusive, and Tables 13 and 14. The three alternative types of end permissible are shown in Fig. 1 below.

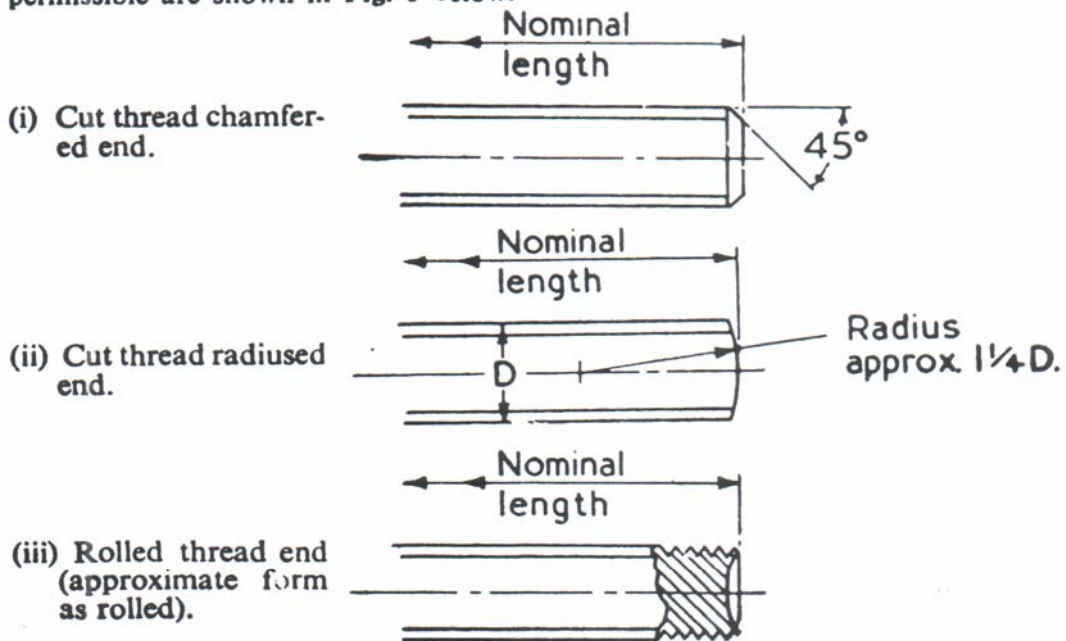


Fig. 1. Alternative types of ends permissible on screws and bolts

SCREW THREADS

7. *a. Screws and bolts.* The screw threads may be either cut or rolled, at the option of the manufacturer. Limits and tolerances shall be as specified for normal class bolts in B.S. 93 : 1951, 'British Association screw threads.' Screws and bolts with close class threads are not normally stocked and should not be ordered, except for special work where refined accuracy of pitch and thread form is particularly required. If the limits and tolerances in respect of the screws and bolts are to be as specified for close class bolts in B.S. 93 : 1951, this shall be stated by the purchaser in his enquiry and order.

b. Nuts. The limits and tolerances of the screw threads shall be as specified in B.S. 93 : 1951.

LENGTH OF THREAD ON SCREWS AND BOLTS

8. *a. Screws: countersunk and raised-countersunk heads.* These shall be threaded right up to the head.

b. Screws: hexagonal, round, cheese, raised-cheese (fillister) and connection heads. These shall be threaded to leave a limited length of unthreaded shank under the head. The length of unthreaded shank is defined as the distance from the leading face of a nut which has been screwed as far as possible on to the screw by hand to the underside of the head. The nut shall have threads as specified in Clause 7 *b* and shall not be countersunk.

The length of unthreaded shank shall not exceed the following:—

Nominal length of screw	Length of unthreaded shank
Up to and including 5 times the diameter.	Not to exceed $1\frac{1}{2}$ times the pitch.
Greater than 5 times the diameter.	Not to exceed $2\frac{1}{2}$ times the pitch.

c. Bolts. The length of thread on bolts shall be the distance from the end of the bolt (including any chamfer or radius) to the leading face of a nut which has been screwed as far as possible on to the bolt by hand. The nut shall have threads as specified in Clause 7 *b* and shall not be countersunk.

The length of thread shall be not less than three times the nominal diameter of the bolt.

CHAMFERING AND WASHER-FACING

9. *a. Hexagonal headed screws and bolts.* These shall have a chamfer of approximately 30° on their upper faces. The underside of the head may, at the option of the manufacturer, be finished flat, or in the case of sizes 0 to 6 B.A. inclusive, have a washer-face.

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b. Hexagonal ordinary (or full) nuts. These shall have a chamfer of approximately 30° on both faces, but sizes 13 B.A. and smaller may, at the option of the manufacturer, be chamfered on one face only.

c. Hexagonal thin (or lock) nuts. These shall have a chamfer of approximately 30° on both faces.

TABLE 1. CHEESE HEAD SCREWS

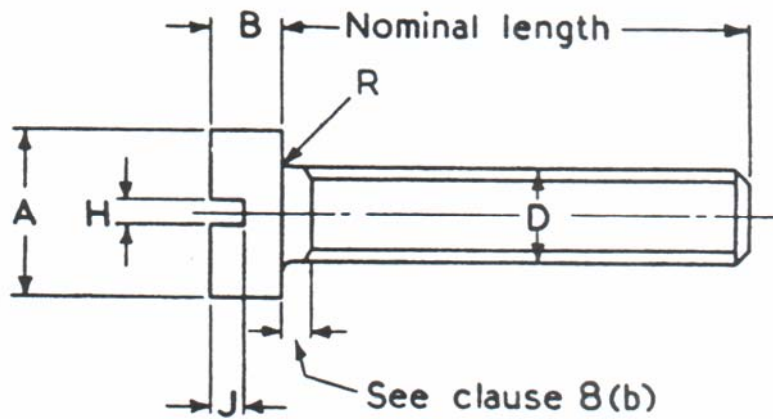


Fig. 2. Cheese head screw

1	2	3	4	5	6	7	8	9	10	11	12
B.A. No.		Diameter of shank and major diameter of thread D		Diameter of head A		Depth of head B		Radius under head R	Slot		
									Width H		Depth J
		max.		max.	min.	max.	min.	max.	max.	min.	nom.
		mm.	in.	in.	in.	in.	in.	in.	in.	in.	in.
Preferred	2	4.7	0.185	0.319	0.309	0.130	0.123	0.015	0.052	0.044	0.058
	4	3.6	0.142	0.252	0.242	0.101	0.095	0.010	0.040	0.034	0.045
	6	2.8	0.110	0.194	0.184	0.078	0.073	0.010	0.033	0.027	0.035
	8	2.2	0.087	0.157	0.147	0.063	0.059	0.010	0.030	0.024	0.027
	10	1.7	0.067	0.112	0.107	0.045	0.041	0.007	0.024	0.019	0.020
	12	1.3	0.051	0.095	0.090	0.038	0.035	0.005	0.020	0.015	0.017
Second choice	0*	6.0	0.236	0.413	0.403	0.167	0.159	0.015	0.064	0.056	0.075
	1	5.3	0.209	0.366	0.356	0.148	0.141	0.015	0.058	0.050	0.066
	3	4.1	0.161	0.283	0.273	0.113	0.107	0.015	0.047	0.039	0.051
	5	3.2	0.126	0.221	0.211	0.088	0.083	0.010	0.040	0.034	0.040
Not normally stocked	7	2.5	0.098	0.173	0.163	0.069	0.064	0.010	0.033	0.027	0.031
	9	1.9	0.075	0.128	0.123	0.052	0.048	0.007	0.030	0.024	0.024
	11	1.5	0.059	0.110	0.105	0.045	0.041	0.005	0.024	0.019	0.020
	13	1.2	0.047	0.081	0.076	0.032	0.029	0.005	0.020	0.015	0.014
	14	1.0	0.039	0.064	0.059	0.026	0.023	0.003	0.015	0.011	0.012
	15	0.9	0.035	0.064	0.059	0.026	0.023	0.003	0.015	0.011	0.012
	16	0.79	0.031	0.058	0.054	0.023	0.020	0.003	0.013	0.009	0.010

* It is recommended that 1/4 in. B.S.F. screws to B.S. 450, 'Bright countersunk, round and cheese head screws (B.S.W. and B.S.F.),' be used in preference to O.B.A.

NOTE. If the slot is produced by plunge milling, dimension J is measured from the upper surface of the head to the point at which the slot breaks out on the surface of the head.

TABLE 2. ROUND HEAD SCREWS

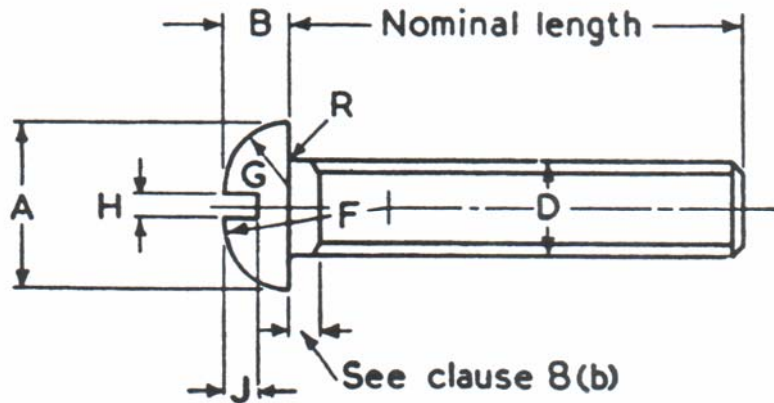


Fig. 3. Round head screw

1	2	3	4	5	6	7	8	9	10	11	12	13
B.A. No.		Diameter of shank and major diameter of thread D		Diameter of head A		Depth of head B		Radius under head R	Radius of head F	Slot		
										Width H		Depth J
		max.		max.	min.	max.	min.	max.	approx.	max.	min.	nom.
		mm.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
Preferred	2	4.7	0.185	0.319	0.309	0.130	0.123	0.015	0.319	0.052	0.044	0.071
	4	3.6	0.142	0.252	0.242	0.101	0.095	0.010	0.252	0.040	0.034	0.056
	6	2.8	0.110	0.194	0.184	0.078	0.073	0.010	0.194	0.033	0.027	0.043
	8	2.2	0.087	0.157	0.147	0.063	0.059	0.010	0.157	0.030	0.024	0.035
	10	1.7	0.067	0.112	0.107	0.045	0.041	0.007	0.112	0.024	0.019	0.025
Second choice	0*	6.0	0.236	0.413	0.403	0.167	0.159	0.015	0.413	0.064	0.056	0.092
	1	5.3	0.209	0.366	0.356	0.148	0.141	0.015	0.366	0.058	0.050	0.081
	3	4.1	0.161	0.283	0.273	0.113	0.107	0.015	0.283	0.047	0.039	0.062
	5	3.2	0.126	0.221	0.211	0.088	0.083	0.010	0.221	0.040	0.034	0.048
Not normally stocked	7	2.5	0.098	0.173	0.163	0.069	0.064	0.010	0.173	0.033	0.027	0.038
	9	1.9	0.075	0.128	0.123	0.052	0.048	0.007	0.128	0.030	0.024	0.029
	11	1.5	0.059	0.110	0.105	0.045	0.041	0.005	0.110	0.024	0.019	0.025
	12	1.3	0.051	0.095	0.090	0.038	0.035	0.005	0.095	0.020	0.015	0.021
	13	1.2	0.047	0.081	0.076	0.032	0.029	0.005	0.081	0.020	0.015	0.018
	14	1.0	0.039	0.064	0.059	0.026	0.023	0.003	0.064	0.015	0.011	0.014
	15	0.9	0.035	0.064	0.059	0.026	0.023	0.003	0.064	0.015	0.011	0.014
16	0.79	0.031	0.058	0.054	0.023	0.020	0.003	0.058	0.013	0.009	0.013	

* It is recommended that 1/4 in. B.S.F. screws to B.S. 450, 'Bright countersunk, round and cheese head screws (B.S.W. and B.S.F.),' be used in preference to O.B.A.

NOTE 1. If the slot is produced by plunge milling, dimension J is measured from the upper surface of the head to the point at which the slot breaks out on the surface of the head.

NOTE 2. Shape of head. The shape of the head shall closely approximate to a half-ellipse. Radius G (struck off the underside of the head) must pass through diameter A and touch radius F.

TABLE 3. COUNTERSUNK HEAD SCREWS

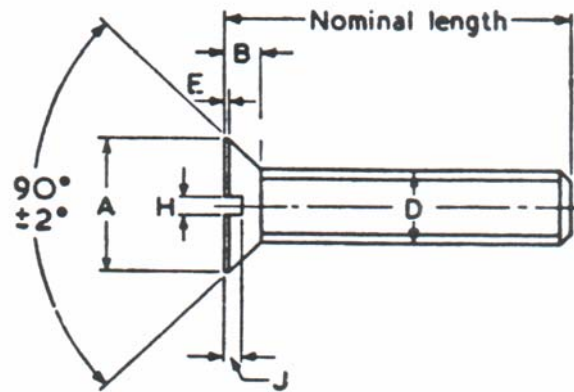


Fig. 4. Countersunk head screw

1	2	3	4	5	6	7	8	9	10	11
B.A. No.		Major diameter of thread D		Diameter of head A		Depth of head		Slot		
		max.	in.	max.	min.	Total B nom.	E max.	Width H		Depth J nom.
								max.	min.	
		mm.	in.	in.	in.	in.	in.	in.	in.	in.
Preferred	2	4.7	0.185	0.319	0.309	0.077	0.010	0.052	0.044	0.036
	4	3.6	0.142	0.252	0.242	0.065	0.010	0.040	0.034	0.031
	6	2.8	0.110	0.194	0.184	0.051	0.009	0.033	0.027	0.024
	8	2.2	0.087	0.157	0.147	0.043	0.008	0.030	0.024	0.021
	10	1.7	0.067	0.112	0.107	0.030	0.007	0.024	0.019	0.016
	12	1.3	0.051	0.095	0.090	0.028	0.006	0.020	0.015	0.014
Second choice	0*	6.0	0.236	0.413	0.403	0.099	0.010	0.064	0.056	0.045
	1	5.3	0.209	0.366	0.356	0.089	0.010	0.058	0.050	0.041
	3	4.1	0.161	0.283	0.273	0.071	0.010	0.047	0.039	0.033
	5	3.2	0.126	0.221	0.211	0.058	0.010	0.040	0.034	0.028
Not normally stocked	7	2.5	0.098	0.173	0.163	0.047	0.009	0.033	0.027	0.023
	9	1.9	0.075	0.128	0.123	0.035	0.008	0.030	0.024	0.018
	11	1.5	0.059	0.110	0.105	0.033	0.007	0.024	0.019	0.016
	13	1.2	0.047	0.081	0.076	0.023	0.006	0.020	0.015	0.012
	14	1.0	0.039	0.064	0.059	0.019	0.006	0.015	0.011	0.011
	15	0.9	0.035	0.064	0.059	0.021	0.006	0.015	0.011	0.011
	16	0.79	0.031	0.058	0.054	0.019	0.005	0.013	0.009	0.010

* It is recommended that $\frac{1}{4}$ in. B.S.F. screws to B.S. 450, 'Bright countersunk, round and cheese head screws (B.S.W. and B.S.F.),' be used in preference to O.B.A.

NOTE. If the slot is produced by plunge milling, dimension J is measured from the upper surface of the head to the point at which the slot breaks out on the surface of the head.

TABLE 4. RAISED-COUNTERSUNK (INSTRUMENT) HEAD SCREWS

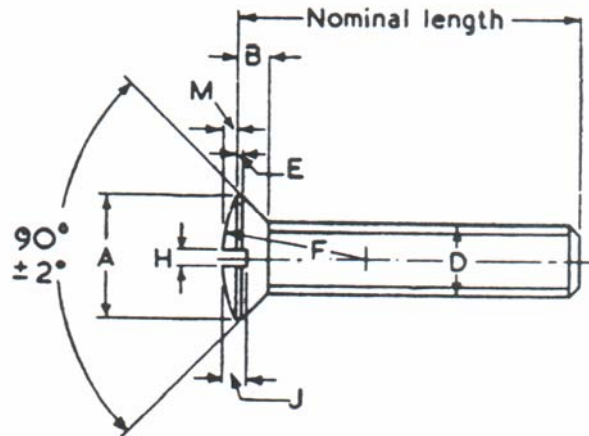


Fig. 5. Raised-countersunk head screw

1	2	3	4	5	6	7	8	9	10	11	12	13
B.A. No.		Major diameter of thread		Diameter of head		Depth of head			Radius	Slot		
		D		A		E	B	M	F	Width H		Depth J
		max.	in.	max.	min.	max.	nom.	approx.	nom.	max.	min.	nom.
		mm.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
Preferred	2	4.7	0.185	0.319	0.309	0.010	0.077	0.036	0.370	0.052	0.044	0.059
	4	3.6	0.142	0.252	0.242	0.010	0.065	0.029	0.283	0.040	0.034	0.049
	6	2.8	0.110	0.194	0.184	0.009	0.051	0.023	0.220	0.033	0.027	0.039
	8	2.2	0.087	0.157	0.147	0.008	0.043	0.019	0.173	0.030	0.024	0.033
	10	1.7	0.067	0.112	0.107	0.007	0.030	0.013	0.134	0.024	0.019	0.024
Not normally stocked	0*	6.0	0.236	0.413	0.403	0.010	0.099	0.048	0.472	0.064	0.056	0.075
	1	5.3	0.209	0.366	0.356	0.010	0.089	0.042	0.417	0.058	0.050	0.067
	3	4.1	0.161	0.283	0.273	0.010	0.071	0.035	0.323	0.047	0.039	0.056
	5	3.2	0.126	0.221	0.211	0.010	0.058	0.026	0.252	0.040	0.034	0.045
	7	2.5	0.098	0.173	0.163	0.009	0.047	0.022	0.197	0.033	0.027	0.037
	9	1.9	0.075	0.128	0.123	0.008	0.035	0.014	0.150	0.030	0.024	0.027
	11	1.5	0.059	0.110	0.105	0.007	0.033	0.013	0.118	0.024	0.019	0.024
	12	1.3	0.051	0.095	0.090	0.006	0.028	0.012	0.102	0.020	0.015	0.022
	13	1.2	0.047	0.081	0.076	0.006	0.023	0.009	0.094	0.020	0.015	0.018
	14	1.0	0.039	0.064	0.059	0.006	0.019	0.008	0.079	0.015	0.011	0.016
	15	0.9	0.035	0.064	0.059	0.006	0.021	0.008	0.071	0.015	0.011	0.016
16	0.79	0.031	0.058	0.054	0.005	0.019	0.006	0.062	0.013	0.009	0.013	

* It is recommended that 1/4 in. B.S.F. screws (which will be included in the revised B.S. 450) be used in preference to O.B.A.

NOTE. If the slot is produced by plunge milling, dimension J is measured from the upper surface of the head to the point at which the slot breaks out on the surface of the head.

TABLE 5. HEXAGONAL HEADED SCREWS AND BOLTS

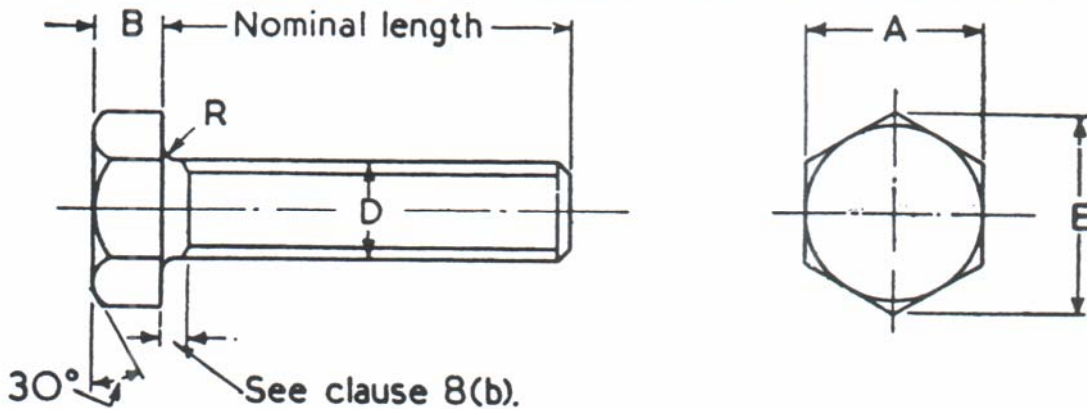


Fig. 6. Hexagonal headed screw

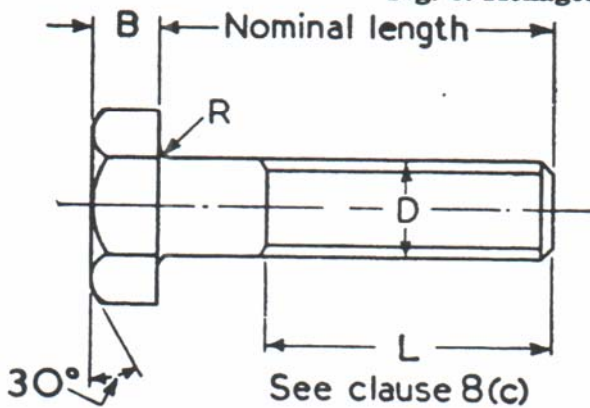


Fig. 7. Hexagonal headed bolt

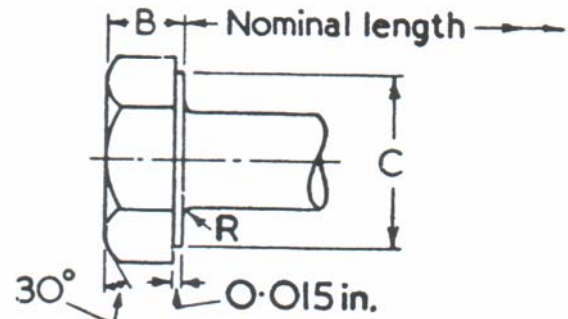


Fig. 8. Washer faced head

Alternative type of head permissible on screws and bolts, sizes 0 to 6 B.A. inclusive only (see Clause 9a).

1	2	3	4	5	6	7	8	9	10	11	12	13											
													Diameter of shank and major diameter of thread D		Width across flats A		Width across corners E	Thickness of head B		Radius under head R	Diameter of washer face C		Length of thread of bolts L
													max.	min.	max.	max.	min.	max.	max.	min.			
Preferred	2	4.7	0.185	0.324	0.319	0.37	0.139	0.132	0.015	0.319	0.309	0.55											
	4	3.6	0.142	0.248	0.243	0.29	0.106	0.100	0.010	0.243	0.233	0.43											
Not normally stocked	0*	6.0	0.236	0.413	0.408	0.48	0.177	0.169	0.015	0.408	0.398	0.71											
	1	5.3	0.209	0.365	0.360	0.42	0.156	0.149	0.015	0.360	0.350	0.63											
	3	4.1	0.161	0.282	0.277	0.33	0.121	0.115	0.015	0.277	0.267	0.48											
	5	3.2	0.126	0.220	0.216	0.25	0.094	0.089	0.010	0.216	0.206	0.38											
	6	2.8	0.110	0.193	0.189	0.22	0.083	0.078	0.010	0.189	0.179	0.33											
	7	2.5	0.098	0.172	0.169	0.20	0.074	0.070	0.010	—	—	0.29											
	8	2.2	0.087	0.152	0.149	0.18	0.065	0.061	0.010	—	—	0.26											
	9	1.9	0.075	0.131	0.128	0.15	0.056	0.052	0.007	—	—	0.22											
10	1.7	0.067	0.117	0.114	0.14	0.050	0.046	0.007	—	—	0.20												

* It is recommended that 1/4 in. B.S.F. screws and bolts to B.S. 1083, 'Precision hexagon bolts, screws, nuts (B.S.W. and B.S.F. threads) and plain washers,' be used in preference to O.B.A.

TABLE 6. HEXAGONAL ORDINARY (OR FULL) NUTS AND THIN (OR LOCK) NUTS

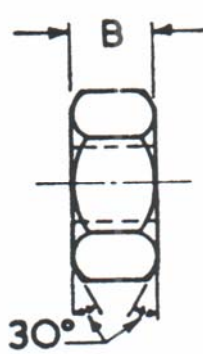


Fig. 9. Hexagonal ordinary nut

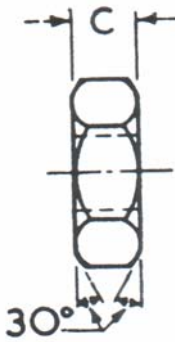
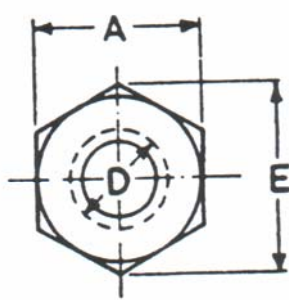


Fig. 10. Hexagonal thin (or lock) nut

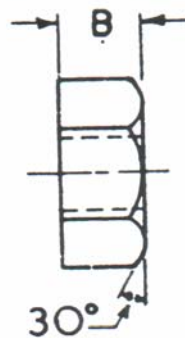


Fig. 11. Hexagonal ordinary nut

Alternative chamfering permissible on sizes 13 B.A. and smaller. (see Clause 9b).

B.A. No.		Nominal diameter of thread D		Width across flats A		Width across corners E		Thickness			
		mm.	in.	in.	in.	in.	Ordinary (or full) nuts B		Thin (or lock) nuts C		
							max.	min.	max.	min.	
Preferred	2	4.7	0.185	0.324	0.319	0.37	0.167	0.157	0.123	0.113	
	4	3.6	0.142	0.248	0.243	0.29	0.135	0.125	0.094	0.084	
	6	2.8	0.110	0.193	0.189	0.22	0.105	0.095	0.073	0.063	
	8	2.2	0.087	0.152	0.149	0.18	0.082	0.075	0.058	0.051	
	10	1.7	0.067	0.117	0.114	0.14	0.064	0.057	—	—	
	12	1.3	0.051	0.090	0.088	0.10	0.049	0.044	—	—	
Second choice	0*	6.0	0.236	0.413	0.408	0.48	0.213	0.203	0.157	0.147	
	1	5.3	0.209	0.365	0.360	0.42	0.188	0.178	0.139	0.129	
	3	4.1	0.161	0.282	0.277	0.33	0.153	0.143	0.108	0.098	
	5	3.2	0.126	0.220	0.216	0.25	0.120	0.110	0.084	0.074	
Not normally stocked	7	2.5	0.098	0.172	0.169	0.20	0.094	0.087	—	—	
	9	1.9	0.075	0.131	0.128	0.15	0.071	0.064	—	—	
	11	1.5	0.059	0.103	0.101	0.12	0.056	0.051	—	—	
	13	1.2	0.047	0.083	0.081	0.10	0.045	0.040	—	—	
	14	1.0	0.039	0.069	0.067	0.08	0.037	0.032	—	—	
	15	0.9	0.035	0.062	0.060	0.07	0.034	0.029	—	—	
	16	0.79	0.031	0.056	0.054	0.07	0.029	0.024	—	—	

* It is recommended that 1/4 in. B.S.F. nuts to B.S. 1083, 'Precision hexagon bolts, screws, nuts (B.S.W. and B.S.F. threads) and plain washers,' be used in preference to O.B.A.

APPENDIX A. SPECIAL TYPES OF SCREWS NOT NORMALLY STOCKED
TABLE 13. RAISED CHEESE (FILLISTER) HEAD SCREWS

NOTE. These screws are not standard. The dimensions are included in this standard solely in order that they may be kept on record. When required, these screws should be ordered to the lengths given in Table 7 (Cheese and countersunk head screws).

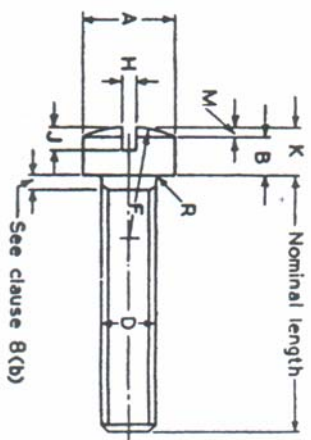


Fig. 14. Raised cheese (fillister) head screw

B.A. No.	Diameter of shank and major diameter of thread D		Diameter of head A		Depth of head		Total depth		Radius		Radius under head		Width H		Depth of slot
	max.	in.	max.	in.	nom.	approx.	max.	min.	nom.	nom.	max.	max.	min.	nom.	
1															
2	6.0	0.236	4.13	0.163	0.048	0.048	0.215	0.207	0.472	0.015	0.064	0.056	0.056	0.107	
3	5.3	0.209	3.66	0.144	0.042	0.042	0.189	0.182	0.417	0.015	0.058	0.050	0.050	0.094	
4	4.7	0.185	3.19	0.126	0.036	0.036	0.165	0.158	0.370	0.015	0.052	0.044	0.044	0.082	
5	4.1	0.161	2.83	0.111	0.035	0.035	0.149	0.143	0.323	0.015	0.047	0.039	0.039	0.074	
6	3.6	0.142	2.52	0.099	0.029	0.029	0.131	0.125	0.283	0.010	0.040	0.034	0.034	0.065	
7	3.2	0.126	2.21	0.086	0.026	0.026	0.114	0.109	0.252	0.010	0.040	0.034	0.034	0.057	
8	2.8	0.110	1.94	0.076	0.023	0.023	0.101	0.096	0.220	0.010	0.033	0.027	0.027	0.050	
9	2.5	0.098	1.73	0.067	0.022	0.022	0.091	0.086	0.197	0.010	0.033	0.027	0.027	0.045	
10	2.2	0.087	1.57	0.061	0.019	0.019	0.082	0.078	0.173	0.010	0.030	0.024	0.024	0.041	
11	1.9	0.075	1.28	0.060	0.014	0.014	0.066	0.062	0.150	0.007	0.030	0.024	0.024	0.033	
12	1.7	0.067	1.12	0.043	0.013	0.013	0.058	0.054	0.134	0.007	0.024	0.019	0.019	0.029	
13	1.6	0.059	1.10	0.043	0.013	0.013	0.058	0.054	0.118	0.006	0.024	0.019	0.019	0.029	
14	1.3	0.051	0.985	0.037	0.012	0.012	0.050	0.047	0.102	0.005	0.020	0.015	0.015	0.025	
15	1.2	0.047	0.981	0.031	0.009	0.009	0.044	0.041	0.094	0.005	0.020	0.015	0.015	0.020	
16	1.0	0.039	0.864	0.025	0.008	0.008	0.034	0.031	0.079	0.003	0.015	0.011	0.011	0.017	
17	0.9	0.035	0.864	0.025	0.008	0.008	0.034	0.031	0.071	0.003	0.015	0.011	0.011	0.017	
18	0.79	0.031	0.864	0.022	0.006	0.006	0.029	0.026	0.062	0.003	0.013	0.009	0.009	0.014	

NOTE. If the slot is produced by plunge milling, dimension J is measured from the upper surface of the head to the point at which the slot breaks out on the surface of the head.

APPENDIX A (continued)

TABLE 14. CONNECTION HEAD SCREWS

NOTE. These screws are not standard. The dimensions are included in this standard solely in order that they may be kept on record. When required these screws should be ordered to the lengths given in Table 7 (Cheese and countersunk head screws).

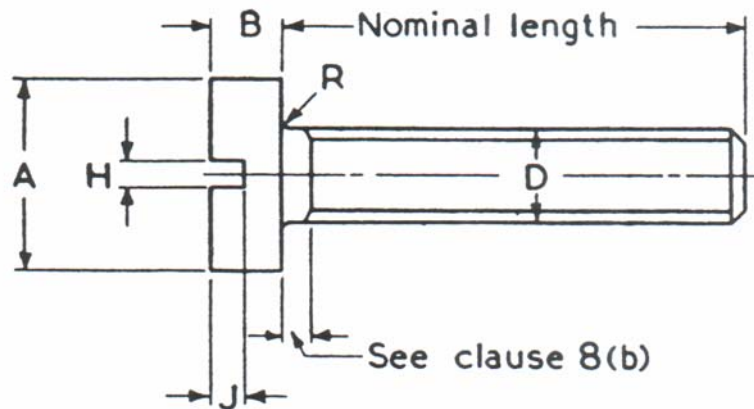


Fig. 15. Connection head screw

1	2	3	4	5	6	7	8	9	10	11
B.A. No.	Diameter of shank and major diameter of thread D		Diameter of head A		Depth of head B		Radius under head R	Slot		
			max.	min.	max.	min.		Width H		Depth J
	max.	min.	max.	min.	max.	min.	max.	min.	nom.	
	mm.	in.	in.	in.	in.	in.	in.	in.	in.	in.
0	6.0	0.236	0.473	0.463	0.168	0.160	0.015	0.064	0.056	0.075
1	5.3	0.209	0.413	0.403	0.146	0.139	0.015	0.058	0.050	0.066
2	4.7	0.185	0.366	0.356	0.130	0.123	0.015	0.052	0.044	0.058
3	4.1	0.161	0.319	0.309	0.113	0.107	0.015	0.047	0.039	0.051
4	3.6	0.142	0.283	0.273	0.100	0.094	0.010	0.040	0.034	0.045
5	3.2	0.126	0.252	0.242	0.088	0.083	0.010	0.040	0.034	0.040
6	2.8	0.110	0.221	0.211	0.078	0.073	0.010	0.033	0.027	0.035
7	2.5	0.098	0.194	0.184	0.068	0.064	0.010	0.033	0.027	0.031
8	2.2	0.087	0.173	0.163	0.061	0.057	0.010	0.030	0.024	0.027
9	1.9	0.075	0.157	0.147	0.055	0.051	0.007	0.030	0.024	0.024
10	1.7	0.067	0.128	0.123	0.046	0.042	0.007	0.024	0.019	0.020
11	1.5	0.059	0.110	0.105	0.039	0.036	0.005	0.024	0.019	0.020
12	1.3	0.051	0.110	0.105	0.039	0.036	0.005	0.020	0.015	0.017
13	1.2	0.047	0.095	0.090	0.033	0.030	0.005	0.020	0.015	0.014
14	1.0	0.039	0.081	0.076	0.028	0.025	0.003	0.015	0.011	0.012
15	0.9	0.035	0.064	0.059	0.023	0.020	0.003	0.015	0.011	0.012
16	0.79	0.031	0.064	0.059	0.023	0.020	0.003	0.013	0.009	0.010

NOTE. If the slot is produced by plunge milling, dimension J is measured from the upper surface of the head to the point at which the slot breaks out on the surface of the head.

**APPENDIX B. APPROXIMATE PROPORTIONS
SCREWS**

Type of screw	Diameter of head (max.)	Depth of head (max.)
Cheese head screw	Based on the rule $A = 1.75D$; but the dimensions have been adjusted slightly so that they come within the diameters of available round bars to B.S. limits.	0.7D
Round head screw		0.7D
Countersunk head screw		0.45D
Raised countersunk (instrument) head screw		Countersunk portion = 0.45D Total depth = 0.65D
Raised cheese (fillister) head screw		Cylindrical portion = 0.7D Total depth = 0.9D
Connection head screw	Based on 2D, but see note above.	0.7D

HEXAGONAL SCREW AND BOLT HEADS AND NUTS

	Width across flats (max.)	Thickness (max.)
Screws and bolts	1.75D	0.75D
Ordinary (or full) nuts	1.75D	0, 1, and 2 B.A. = 0.9D 3 B.A. and smaller = 0.95D
Thin (or lock) nuts	1.75D	2/3D

APPENDIX C. METRIC SLOT WIDTHS

In order to achieve rationalization of slotting saws and screwdriver blades, it has been agreed that metric slot widths as specified in B.S. 4183 should be applied to all types of slotted screws. The metric slot widths which will be applicable to the screws in this obsolescent British Standard are shown below.

During the remainder of the life of this standard, manufacturers will gradually introduce the metric slot widths and during this period screws with slot widths conforming to the dimensions given in either Tables 1, 2, 3, 4, 13 and 14 or the table below, are deemed acceptable.

TABLE 15. SLOT WIDTHS

B.A. No.	Slot widths			
	max.	min.	max.	min.
	mm	mm	in.	in.
0	1.91	1.66	0.075	0.065
1	1.51	1.26	0.060	0.050
2	1.51	1.26	0.060	0.050
3	1.20	1.06	0.048	0.042
4	1.00	0.86	0.040	0.034
5	1.00	0.86	0.040	0.034
6	0.80	0.66	0.032	0.026
7	0.80	0.66	0.032	0.026
8	0.70	0.56	0.028	0.022
9	0.70	0.56	0.028	0.022
10	0.60	0.46	0.024	0.018
11	No change	No change	No change	No change
12	No change	No change	No change	No change
13	No change	No change	No change	No change
14	No change	No change	No change	No change
15	No change	No change	No change	No change
16	No change	No change	No change	No change