

BRITISH STANDARD 1740 : Part 1 : 1971

UDC 621.643.4 : 621.882.082 : 669.1

CONFIRMED OCTOBER 1983

SPECIFICATION FOR
WROUGHT STEEL
PIPE FITTINGS
(SCREWED BS 21 R-series THREAD)

Part 1. Metric units

BRITISH STANDARDS INSTITUTION

**SPECIFICATION FOR
WROUGHT STEEL
PIPE FITTINGS
(SCREWED BSP THREAD)**

BS 1740 : Part 1 : 1971

Incorporating amendment issued February 1983 (AMD 4170)

CONFIRMED OCTOBER 1983

BRITISH STANDARDS INSTITUTION

Incorporated by Royal Charter

2 PARK STREET, LONDON, W1A 2BS

Telex: 266933

Telephone: 01-629 9000

BS 1740 : Part 1 : 1971

THIS BRITISH STANDARD, having been approved by the Mechanical Engineering Industry Standards Committee, was published under the authority of the Executive Board on 28 June, 1971.

© British Standards Institution, 1971

First published, June, 1951.

First revision, July, 1965.

Second revision, June, 1971.

SBN: 580 06992 3

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 makes reference to the following British Standards:

*As amended
Feb., 1983*

BS 21. Pipe threads for tubes and fittings where pressure-tight joints are made on the threads.

BS 1387. Steel tubes and tubulars suitable for screwing to BS 21 pipe threads.

BS 3894. Method for converting elongation values for steel. Part 1. Carbon and low alloy steels.

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 editions.

The following BSI references relate to the work on this standard:
Committee reference MEE/121 Draft for comment 69/11845

CONTENTS

	Page
Co-operating organizations	5
Foreword	6

SPECIFICATION

1. Scope	7
2. Materials	7
3. Screwed ends of fittings	7
4. Method of specifying outlets	7
5. Dimensions and tolerances	8
6. Tests	9
7. Hot dip galvanizing	9
8. Certificate of compliance	9

APPENDIX

A. Method of testing the zinc coating on galvanized steel pipe fittings (copper sulphate test)	26
--	----

TABLES

1. Screwed ends of fittings (internal parallel thread and external taper thread)	10
2. Elbows, tees and crosses, equal	11
3. Elbows, equal 45°	12
4. Elbows, reducing	13
5. Elbows, male and female, equal	14
6. Tees, increasing on the branch	15
7. Tees, reducing (on the run and branch, or on the run only)	16
8. Tees, reducing on the branch	17
9. Sockets and half sockets, equal	18
10. Sockets, reducing	19
11. Socket unions	20
12. Caps	21
13. Plugs	22
14. Hexagon backnuts	23
15. Hexagon bushes	24
16. Nipples, hexagon, equal	25

*As amended
Feb., 1983*

BS 1740 : Part 1 : 1971

CONTENTS—(contd.)

FIGURES

	Page
1. 50 mm × 80 mm tee	8
2. 40 mm × 25 mm × 25 mm tee	8
<i>As amended</i> <i>Feb., 1983</i> 3. Internal parallel thread (R_p)	10
4. External parallel thread (R)	10
5. Elbow, equal	11
6. Tee, equal	11
7. Cross, equal	11
8. Elbow, equal 45°	12
9. Elbow, reducing	13
10. Elbow, male and female, equal	14
11. Tee, increasing on the branch	15
12. Tee, reducing on the run and branch	16
13. Tee, reducing on the run only	16
14. Tee, reducing on the branch	17
15. Standard socket	18
<i>As amended</i> <i>Feb., 1983</i> 15A. Half socket	18
16. Faced socket for long screws (used in conjunction with backnut shown in Fig. 22 and appropriate thread sealant)	18
17. Socket, reducing	19
18. Socket union	20
19. Cap, flat	21
20. Cap, dome	21
21. Plugs	22
<i>As amended</i> <i>Feb., 1983</i> 22. Backnut (used with socket shown in Fig. 16)	23
23. Bush	24
24. Hexagon nipple, equal	25

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:

Associated Offices' Technical Committee
Association of Consulting Engineers
Association of Mining Electrical and Mechanical Engineers
British Chemical Plant Manufacturers' Association
British Compressed Air Society
British Electrical and Allied Manufacturers' Association
British Gear Manufacturers' Association
British Internal Combustion Engine Manufacturers' Association
British Mechanical Engineering Confederation
British Pump Manufacturers' Association
*British Steel Industry
Crown Agents for Oversea Governments and Administrations
Department of Employment and Productivity
Department of the Environment
Department of Trade and Industry
Department of Trade and Industry—National Engineering Laboratory
Electricity Council, the Central Electricity Generating Board and
the Area Boards in England and Wales
Engineering Equipment Users' Association
Gas Council
Institution of Civil Engineers
*Institution of Gas Engineers
Institution of Heating and Ventilating Engineers
Institution of Mechanical Engineers
Institution of Mechanical Engineers (Automobile Division)
Institution of Production Engineers
Locomotive and Allied Manufacturers' Association of Great Britain
London Transport Executive
Machine Tool Trades Association
Ministry of Defence
Ministry of Defence, Army Department
National Coal Board
National Physical Laboratory (Department of Trade and Industry)
Royal Institute of British Architects
Water-tube Boilermakers' Association

The scientific and industrial 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 British Standard:

Institution of Municipal Engineers
Metropolitan Water Board
Welding Institute
Wrought Fittings Makers' Association
Individual manufacturers

BS 1740 : Part 1 : 1971

BRITISH STANDARD SPECIFICATION FOR

WROUGHT STEEL PIPE FITTINGS
(SCREWED BS 21 R-series THREAD)

*As amended
Feb., 1983*

Part 1*. Metric units

FOREWORD

*As amended
Feb., 1983*

This British Standard for wrought pipe fittings, first published in 1951 and revised in 1965, has been prepared in this second revision under the authority of the Mechanical Engineering Industry Standards Committee.

The standard provides for a range of fittings, screwed British Standard pipe thread to BS 21, for use with steel tubes to BS 1387 and includes for the convenience of users particulars of equal sockets and hexagon backnuts as specified in BS 1387. Based on experience and usage rates the range of fittings has been considerably reduced from that contained in the 1965 edition, and no reference is now made to side outlet fittings. Similarly, the range of sizes for some of the fittings retained in this standard has been reduced. Fittings of other types and sizes of outlet not covered by this standard can be made to special order. Experience has also shown that there is no requirement for wrought iron fittings and consequently all reference to wrought iron fittings has been deleted from this standard.

The metric nominal sizes are based upon international agreement. Other dimensions, except for the sizes of hexagons which have been selected from those in BS 4229, 'Sizes of non-ferrous and ferrous bars', Part 2, 'Ferrous bars', have been converted in accordance with BS 350, 'Conversion factors and tables', Part 2, 'Detailed conversion tables', and have been rounded to values which ensure practical interchangeability.

Pieces, longscrows, barrel nipples, close taper nipples, running nipples, bends, springs and return bends are covered in BS 1387.

NOTE 1. In this standard all pressures are gauge pressures and are expressed in N/m² or agreed multiples thereof. 1 bar = 10⁵ N/m².

NOTE 2. Attention is drawn to certification facilities offered by BSI; see the back cover of this standard.

*As amended
Feb., 1983*

* Part 2 of this standard was withdrawn in February 1979.

SPECIFICATION

1. SCOPE

This Part of this British Standard specifies requirements for welded and seamless wrought pipe fittings of nominal size 6 mm to 150 mm inclusive, for use with steel tubes to BS 1387, screwed to BS 21 R-series thread.

*As amended
Feb., 1983*

NOTE. The titles of the British Standards referred to in this standard are listed on page 2.

2. MATERIALS

2.1 The steel from which the fittings are made shall show on test a tensile strength of from 330 N/mm² to 470 N/mm²* and a percentage elongation on a gauge length of $5.65 \sqrt{S_0}$ of not less than 20 %, where S_0 is the original cross-sectional area of the test piece. Where other gauge lengths are used the corresponding elongation on $5.65 \sqrt{S_0}$ can be obtained as shown in BS 3894, Part 1.

2.2 Where fittings are welded during manufacture, the steel shall show on analysis not more than 0.06 % of sulphur and not more than 0.06 % of phosphorus.

2.3 If cold worked bar is used for the manufacture of fittings, the effects of the cold working shall be removed, so that the material of the final product shall show the mechanical properties specified above.

3. SCREWED ENDS OF FITTINGS

3.1 General dimensions. All dimensions for the screwed ends of fittings shall be in accordance with table 1.

NOTE. While fittings may be specified in metric dimensions, the thread designations of these fittings are specified in fractional form, in accordance with BS 21, e.g. BS 1740, hexagon bush, 15 × 10, screwed $R \frac{1}{2} \times R_p \frac{3}{8}$.

3.2 Internal and external threads. Internal threads on the ends of fittings shall be parallel (R_p) and external threads shall be taper (R), and both threads shall comply with the appropriate requirements of BS 21.

NOTE. For pressure duty, fittings complying with the requirements of this standard are not suitable for use with G series threads to BS 2779 since no machined face exists upon which a sealing device may act.

3.3 Alignment. The axes of screw threads shall be coincident with the true axes of the fittings within 1 in 200 on the run and 1 in 125 on the branch.

4. METHOD OF SPECIFYING OUTLETS

4.1 Equal fittings. Where all outlets are of the same size, they shall be specified by that one size irrespective of the number of outlets.

4.2 Unequal fittings. When outlets are of differing sizes they shall be specified as follows:

4.2.1 Fittings having two outlets. The larger outlet shall be specified first.

* 1 N/mm² = 1 MN/m².

BS 1740 : Part 1 : 1971

4.2.2 Tees. When two sizes are specified, the first shall apply to both ends of the run, the second to the branch, e.g. a 50 mm × 80 mm tee (Fig. 1).

When three sizes are specified, the first two shall apply to the ends of the run, the larger end being specified first, and the third to the branch, e.g. a 40 mm × 25 mm × 25 mm tee (Fig. 2).

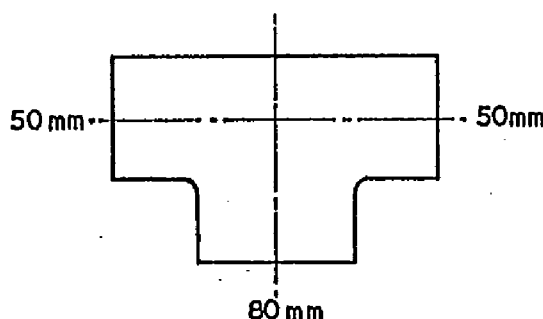


Fig. 1. 50 mm × 80 mm tee

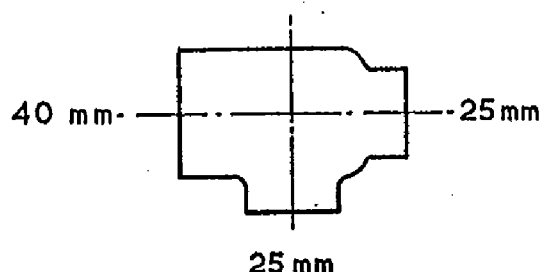


Fig. 2. 40 mm × 25 mm × 25 mm tee

5. DIMENSIONS AND TOLERANCES

5.1 Dimensions. Fittings complying with this Part of this British Standard shall conform to the dimensions in Tables 1 to 16 as appropriate.

5.2 Tolerances

5.2.1 The lengths of reducing sockets, caps, hexagon bushes and hexagon nipples, and the centre to face dimensions of elbows, tees and crosses are minima and the plus tolerance allowed shall be as follows:

Length or centre to face dimension (mm)	Up to and including 25	Over 25 to 40	Over 40 to 65	Over 65 to 75	Over 75 to 150	Over 150
Tolerance (mm)	1.5	3.0	4.5	6.0	8.0	10.0

5.2.2 The lengths of socket unions are minima and the plus tolerance allowed shall be as follows:

Length (mm)	Up to and including 40	Over 40 to 65	Over 65 to 75	Over 75 to 110
Tolerance (mm)	6	10	12	16

6. TESTS

6.1 Pressure tests

6.1.1 By the manufacturer. Each fitting, after being screwed, and before any protective coating other than galvanizing has been applied, shall be capable of withstanding, without showing any signs of leakage, hydraulic and air tests as specified in 6.1.1.1 and 6.1.1.2.

6.1.1.1 Hydraulic test. The application of an internal hydraulic pressure of 5 MN/m^2 (50 bar).

6.1.1.2 Air test. The application of an internal air pressure of 0.7 MN/m^2 (7 bar) whilst the fitting is completely immersed in water or light oil.

6.1.2 Test requirements by the purchaser. If the purchaser requires either of the tests specified in 6.1.1.1 and 6.1.1.2 to be made on fittings supplied to his order, he shall state this in his enquiry and order, and indicate the test or tests required.

7. HOT DIP GALVANIZING

7.1 Where fittings are to be galvanized, they shall first be thoroughly descaled, washed as required and dipped in a bath of molten zinc containing not less than 98.5 % by weight of zinc at a temperature suitable to produce a complete and uniformly adherent coating of zinc.

7.2 Galvanized screwed fittings shall be galvanized before screwing.

7.3 The galvanizing shall be capable of passing the test specified in Appendix A and the test shall preferably be made before any machining operation has been performed.

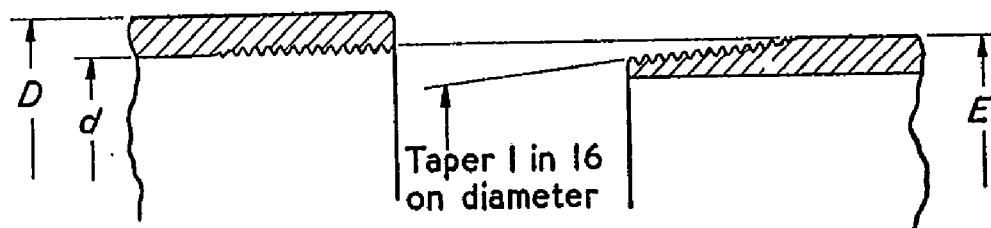
7.4 Should a test on the galvanizing be required, this shall be stated by the purchaser in his enquiry and order. One fitting in every 500, or part thereof, shall be sampled in accordance with Appendix A.

8. CERTIFICATE OF COMPLIANCE

The manufacturer shall, upon request, furnish the purchaser with a certificate as evidence that the fittings supplied comply in all respects with the appropriate requirements of this British Standard.

BS 1740 : Part 1 : 1971

TABLE 1. SCREWED ENDS OF FITTINGS
(INTERNAL PARALLEL THREAD AND EXTERNAL TAPER THREAD)



*As amended
Feb., 1983*

Fig. 3. Internal parallel thread (R_p)Fig. 4. External taper thread (R)

Nominal size of outlet		Minimum outside diameter D	Minimum outside diameter of body behind external thread E	Minimum inside diameter of body behind internal thread d
in	mm	mm	mm	mm
$\frac{1}{8}$	6	15.0	9.8	8.6
$\frac{1}{4}$	8	18.5	13.3	11.4
$\frac{3}{8}$	10	22.0	16.8	15.0
$\frac{1}{2}$	15	27.0	21.1	18.6
$\frac{3}{4}$	20	32.5	26.6	24.1
1	25	39.5	33.4	30.3
$1\frac{1}{4}$	32	49.0	42.1	39.0
$1\frac{1}{2}$	40	56.0	48.0	44.8
2	50	68.0	59.8	56.7
$2\frac{1}{2}$	65	84.0	75.4	72.2
3	80	98.0	88.1	84.9
4	100	124.0	113.3	110.1
5	125	151.0	138.7	135.5
6	150	178.0	164.1	160.9

NOTE. For particulars of threads, see BS 21, Part 1.

TABLE 2. ELBOWS, TEES AND CROSSES, EQUAL

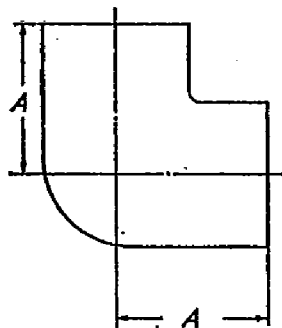


Fig. 5. Elbow, equal

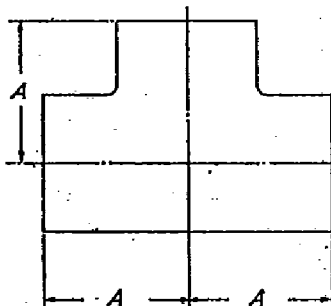


Fig. 6. Tee, equal

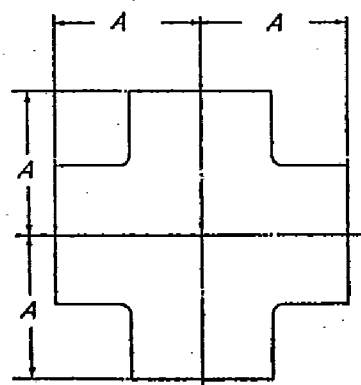


Fig. 7. Cross, equal

Nominal size of outlets		Minimum length centre to face <i>A</i>
in	mm	mm
$\frac{1}{8}$	6	16
$\frac{1}{4}$	8	22
$\frac{3}{8}$	10	24
$\frac{1}{2}$	15	32
$\frac{3}{4}$	20	35
1	25	43
$1\frac{1}{4}$	32	51
$1\frac{1}{2}$	40	52
2	50	64
$2\frac{1}{2}$	65	76
3	80	89
4	100	115
5	125	140
6	150	160

BS 1740 : Part 1 : 1971

TABLE 3. ELBOWS, EQUAL 45°

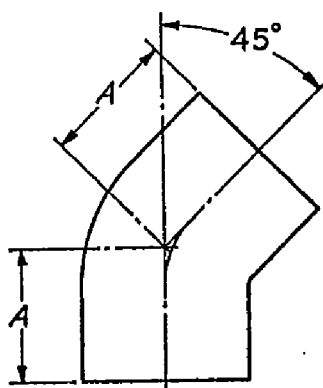


Fig. 8. Elbow, equal 45°

Nominal size of outlets		Minimum length centre to face <i>A</i>
in	mm	mm
$\frac{3}{8}$	10	19
$\frac{1}{2}$	15	22
$\frac{3}{4}$	20	27
1	25	33
$1\frac{1}{4}$	32	38
$1\frac{1}{2}$	40	44
2	50	51

TABLE 4. ELBOWS, REDUCING

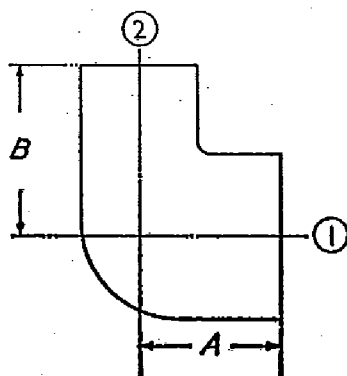


Fig. 9. Elbow, reducing

Nominal size of outlets ① × ②		Minimum length centre to face <i>A</i>	Minimum length centre to face <i>B</i>
in	mm	mm	mm
$\frac{1}{2} \times \frac{3}{4}$	15 × 8	25	32
$\frac{1}{2} \times \frac{3}{8}$	15 × 10	27	32
$\frac{3}{4} \times \frac{3}{8}$	20 × 10*	29	35
$\frac{3}{4} \times \frac{1}{2}$	20 × 15	32	35
1 × $\frac{1}{2}$	25 × 15	35	43
1 × $\frac{3}{4}$	25 × 20	38	43
$1\frac{1}{4} \times \frac{1}{2}$	32 × 15*	38	51
$1\frac{1}{4} \times \frac{3}{4}$	32 × 20	41	51
$1\frac{1}{4} \times 1$	32 × 25	44	51
$1\frac{1}{2} \times \frac{3}{4}$	40 × 20	41	52
$1\frac{1}{2} \times 1$	40 × 25	44	52
$1\frac{1}{2} \times 1\frac{1}{4}$	40 × 32	49	52
2 × $\frac{3}{4}$	50 × 20*	44	64
2 × 1	50 × 25	48	64
2 × $1\frac{1}{4}$	50 × 32	52	64
2 × $1\frac{1}{2}$	50 × 40	56	64

* Non-preferred sizes. The use of these sizes should be avoided.

BS 1740: Part 1 : 1971

TABLE 5. ELBOWS, MALE AND FEMALE, EQUAL

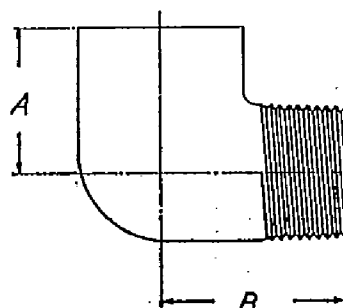


Fig. 10. Elbow, male and female, equal

Nominal size of outlets		Minimum length centre to face	Minimum length centre to face	Minimum bore of male end	Maximum bore of male end
		<i>A</i>	<i>B</i>		
in	mm	mm	mm	mm	mm
¼	8	19	27	6.5	8.0
⅜	10	21	29	8.5	10.5
½	15	25	35	11.5	13.0
¾	20	30	40	18.0	21.0
1	25	37	46	24.0	26.0
1¼	32	43	54	30.0	32.0
1½	40	49	57	37.0	39.0
2	50	59	70	48.0	51.0
2½	65	68	83	62.0	66.0
3	80	81	94	75.0	79.0
4	100	100	115	97.0	104.0

TABLE 6. TEES, INCREASING ON THE BRANCH

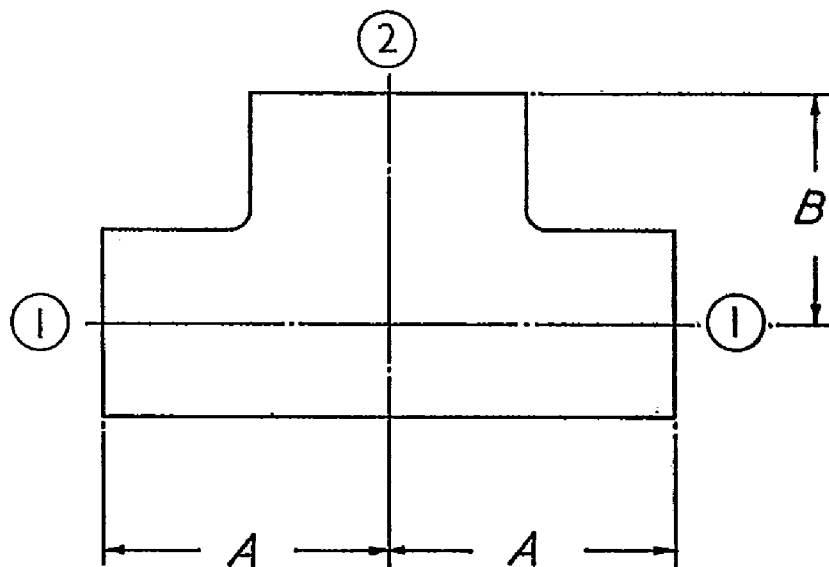


Fig. 11. Tee, increasing on the branch

Nominal size of outlets ① × ②		Minimum length centre to face <i>A</i>	Minimum length centre to face <i>B</i>
in	mm	mm	mm
$\frac{3}{8} \times \frac{1}{2}$	10 × 15	32	27
$\frac{1}{2} \times \frac{3}{4}$	15 × 20	35	32
$\frac{1}{2} \times 1$	15 × 25	43	35
$\frac{3}{4} \times 1$	20 × 25	43	38
$1 \times 1\frac{1}{4}$	25 × 32	51	44
$1 \times 1\frac{1}{2}$	25 × 40	52	44
$1\frac{1}{4} \times 1\frac{1}{2}$	32 × 40	52	49
$1\frac{1}{2} \times 2$	40 × 50	64	56
$2 \times 2\frac{1}{2}$	50 × 65	76	67
2×3	50 × 80	89	73

BS 1740 : Part 1 : 1971

TABLE 7. TEES, REDUCING (ON THE RUN AND BRANCH, OR ON THE RUN ONLY)

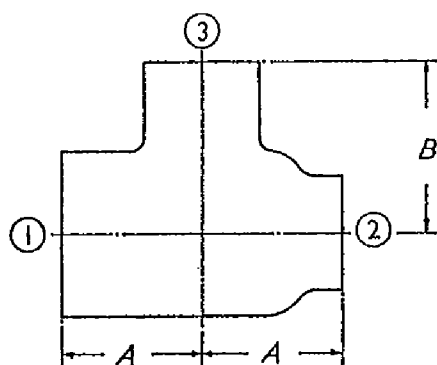


Fig. 12. Tee, reducing on the run and branch

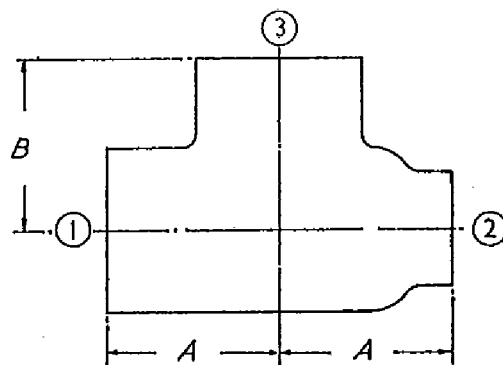


Fig. 13. Tee, reducing on the run only

Nominal size of outlets ① × ② × ③		Minimum length centre to face A	Minimum length centre to face B
in	mm	mm	mm
$\frac{3}{4} \times \frac{1}{2} \times \frac{1}{2}$	20 × 15 × 15	32	35
$\frac{3}{4} \times \frac{1}{2} \times \frac{3}{4}$	20 × 15 × 20	35	35
1 × $\frac{3}{4}$ × $\frac{1}{2}$	25 × 20 × 15	35	43
1 × $\frac{3}{4}$ × $\frac{3}{4}$	25 × 20 × 20	38	43
1 × $\frac{3}{4}$ × 1	25 × 20 × 25	43	43
$1\frac{1}{4} \times 1 \times \frac{3}{4}$	32 × 25 × 20	41	51
$1\frac{1}{4} \times 1 \times 1$	32 × 25 × 25	44	51
$1\frac{1}{4} \times 1 \times 1\frac{1}{4}$	32 × 25 × 32	51	51
$1\frac{1}{2} \times 1 \times 1$	40 × 25 × 25	44	52

TABLE 8. TEES, REDUCING ON THE BRANCH

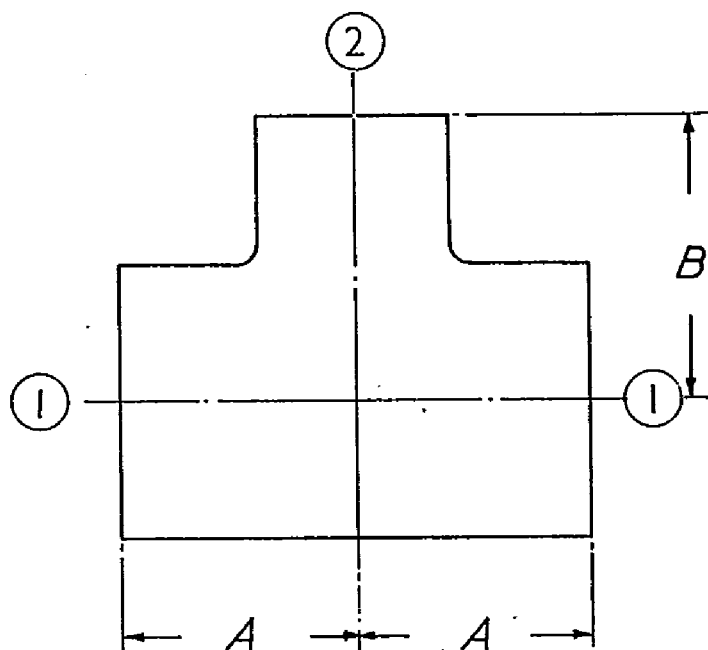


Fig. 14. Tee, reducing on the branch

Nominal size of outlets		Minimum length centre to face	Minimum length centre to face	Nominal size of outlets		Minimum length centre to face	Minimum length centre to face
① × ②		A	B	① × ②		A	B
in	mm	mm	mm	in	mm	mm	mm
$\frac{3}{8}$ × $\frac{1}{4}$	10 × 8	22	24	2 × $\frac{1}{2}$	50 × 15*	41	64
$\frac{1}{2}$ × $\frac{1}{4}$	15 × 8	25	32	2 × $\frac{3}{4}$	50 × 20*	44	64
$\frac{1}{2}$ × $\frac{3}{8}$	15 × 10	27	32	2 × 1	50 × 25	48	64
$\frac{3}{4}$ × $\frac{1}{4}$	20 × 8	27	35	2 × $1\frac{1}{4}$	50 × 32	52	64
$\frac{3}{4}$ × $\frac{3}{8}$	20 × 10	29	35	2 × $1\frac{1}{2}$	50 × 40	56	64
$\frac{3}{4}$ × $\frac{1}{2}$	20 × 15	32	35	$2\frac{1}{2}$ × 1	65 × 25	54	76
1 × $\frac{1}{4}$	25 × 8*	30	43	$2\frac{1}{2}$ × $1\frac{1}{2}$	65 × 40	60	76
1 × $\frac{3}{8}$	25 × 10*	32	43	$2\frac{1}{2}$ × 2	65 × 50	67	76
1 × $\frac{1}{2}$	25 × 15	35	43	3 × 1	80 × 25	60	89
1 × $\frac{3}{4}$	25 × 20	38	43	3 × $1\frac{1}{4}$	80 × 32	64	89
$1\frac{1}{4}$ × $\frac{1}{2}$	32 × 15	38	51	3 × $1\frac{1}{2}$	80 × 40	67	89
$1\frac{1}{4}$ × $\frac{3}{4}$	32 × 20	41	51	3 × 2	80 × 50	73	89
$1\frac{1}{4}$ × 1	32 × 25	44	51	3 × $2\frac{1}{2}$	80 × 65	79	89
$1\frac{1}{2}$ × $\frac{1}{2}$	40 × 15*	38	52	4 × $1\frac{1}{2}$	100 × 40	76	115
$1\frac{1}{2}$ × $\frac{3}{4}$	40 × 20	41	52	4 × 2	100 × 50	83	115
$1\frac{1}{2}$ × 1	40 × 25	44	52	4 × 3	100 × 80	95	115
$1\frac{1}{2}$ × $1\frac{1}{4}$	40 × 32	49	52	6 × 3	150 × 80	120	160
				6 × 4	150 × 100	135	160

* Non-preferred sizes. The use of these sizes should be avoided.

BS 1740 : Part 1 : 1971

As amended
Feb., 1983

TABLE 9. SOCKETS AND HALF SOCKETS, EQUAL

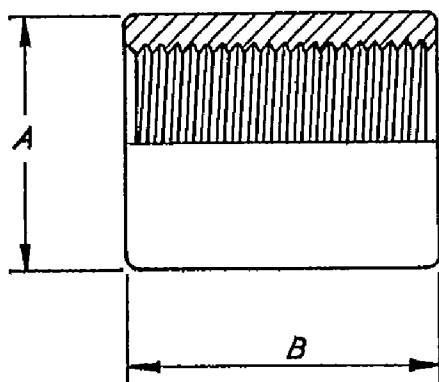
Faced at right angles
to axis of thread

Fig. 15. Standard socket

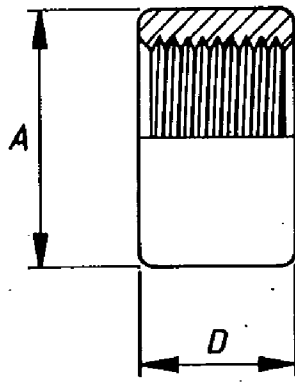


Fig. 15A. Half socket

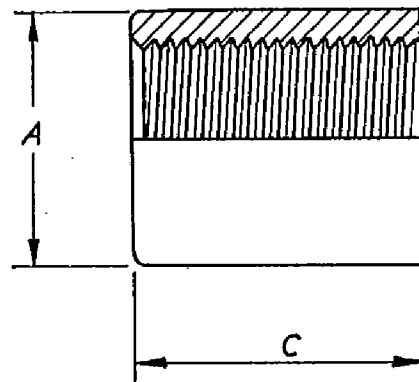


Fig. 16. Faced socket for long screws

(used in conjunction with backnut shown in
Fig. 22 and appropriate thread sealant).As amended
Feb., 1983

Nominal size of outlets		Minimum outside diameter	Minimum length of ordinary socket	Minimum length of faced socket	Minimum* length of half socket
		A	B	C	D
in	mm	mm	mm	mm	mm
1/8	6	15.0	19	17	8
1/4	8	18.5	27	25	11
3/8	10	22.0	28	25	12
1/2	15	27.0	37	35	16
3/4	20	32.5	39	37	19
1	25	39.5	46	43	21
1 1/4	32	49.0	51	48	25
1 1/2	40	56.0	51	48	25
2	50	68.0	60	57	28
2 1/2	65	84.0	69	65	30
3	80	98.0	75	71	35
4	100	124.0	87	84	40
5	125	151.0	96	92	44
6	150	178.0	96	92	44

NOTE. Sockets as specified in BS 1387.

*No maximum length is specified for half sockets.

TABLE 10. SOCKETS, REDUCING

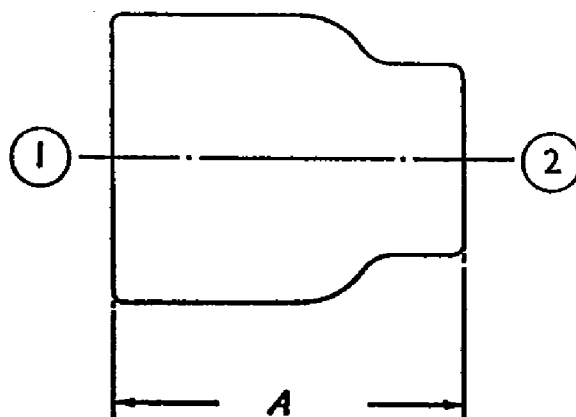


Fig. 17. Socket, reducing

Nominal size of outlets ① × ②		Minimum length A	Nominal size of outlets ① × ②		Minimum length A
in	mm	mm	in	mm	mm
$\frac{1}{4} \times \frac{1}{8}$	8 × 6	25	$2 \times \frac{1}{2}$	50 × 15	70
$\frac{3}{8} \times \frac{1}{8}$	10 × 6	30	$2 \times \frac{3}{4}$	50 × 20	68
$\frac{3}{8} \times \frac{1}{4}$	10 × 8	29	2×1	50 × 25	67
$\frac{1}{2} \times \frac{1}{8}$	15 × 6	41	$2 \times 1\frac{1}{4}$	50 × 32	65
$\frac{1}{2} \times \frac{1}{4}$	15 × 8	40	$2 \times 1\frac{1}{2}$	50 × 40	64
$\frac{1}{2} \times \frac{3}{8}$	15 × 10	38	$2\frac{1}{2} \times 1$	65 × 25	76
$\frac{3}{4} \times \frac{1}{4}$	20 × 8	44	$2\frac{1}{2} \times 1\frac{1}{4}$	65 × 32	75
$\frac{3}{4} \times \frac{3}{8}$	20 × 10	43	$2\frac{1}{2} \times 1\frac{1}{2}$	65 × 40	73
$\frac{3}{4} \times \frac{1}{2}$	20 × 15	41	$2\frac{1}{2} \times 2$	65 × 50	71
$1 \times \frac{1}{4}$	25 × 8	54	3×1	80 × 25	86
$1 \times \frac{3}{8}$	25 × 10	52	$3 \times 1\frac{1}{4}$	80 × 32	84
$1 \times \frac{1}{2}$	25 × 15	51	$3 \times 1\frac{1}{2}$	80 × 40	83
$1 \times \frac{3}{4}$	25 × 20	49	3×2	80 × 50	81
$1\frac{1}{4} \times \frac{3}{8}$	32 × 10	60	$3 \times 2\frac{1}{2}$	80 × 65	79
$1\frac{1}{4} \times \frac{1}{2}$	32 × 15	59	$4 \times 1\frac{1}{2}$	100 × 40	105
$1\frac{1}{4} \times \frac{3}{4}$	32 × 20	57	4×2	100 × 50	100
$1\frac{1}{4} \times 1$	32 × 25	56	$4 \times 2\frac{1}{2}$	100 × 65	100
$1\frac{1}{2} \times \frac{1}{2}$	40 × 15	65	4×3	100 × 80	98
$1\frac{1}{2} \times \frac{3}{4}$	40 × 20	64	5×3	125 × 80	115
$1\frac{1}{2} \times 1$	40 × 25	62	5×4	125 × 100	115
$1\frac{1}{2} \times 1\frac{1}{4}$	40 × 32	60	6×3	150 × 80	140
			6×4	150 × 100	140

BS 1740 : Part 1 : 1971

TABLE 11. SOCKET UNIONS

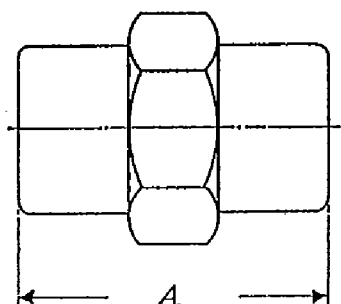


Fig. 18. Socket union

Nominal size of outlets		Minimum length <i>A</i>
in	mm	mm
$\frac{1}{8}$	6	38
$\frac{1}{4}$	8	44
$\frac{3}{8}$	10	51
$\frac{1}{2}$	15	57
$\frac{3}{4}$	20	67
1	25	76
$1\frac{1}{4}$	32	85
$1\frac{1}{2}$	40	100
2	50	110

As amended
Feb., 1983

NOTE. Unions are normally supplied with flat seats and fitted with a washer. Other types of seating are obtainable, if required.

CAUTION. Unions should only be used as complete assemblies because component parts of unions made by different manufacturers, or component parts of different types of union made by the same manufacturer, are not necessarily interchangeable.



TABLE 12. CAPS

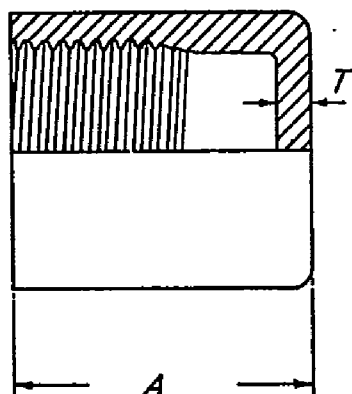


Fig. 19. Cap, flat

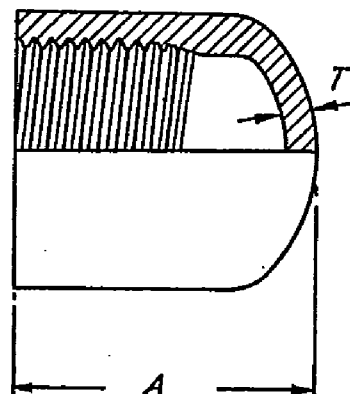


Fig. 20. Cap, dome

Nominal size		Minimum length <i>A</i>	Minimum thickness <i>T</i>
in	mm	mm	mm
$\frac{1}{8}$	6	19	3.5
$\frac{1}{4}$	8	24	3.5
$\frac{3}{8}$	10	27	3.5
$\frac{1}{2}$	15	37	4.0
$\frac{3}{4}$	20	38	4.0
1	25	44	4.5
$1\frac{1}{4}$	32	51	5.0
$1\frac{1}{2}$	40	54	5.5
2	50	60	6.0
$2\frac{1}{2}$	65	67	6.0
3	80	73	7.0
4	100	86	7.0
5	125	98	7.5
6	150	98	8.5

NOTE. Flat or dome caps may be supplied at the option of the manufacturer.

BS 1740 : Part 1 : 1971

TABLE 13. PLUGS

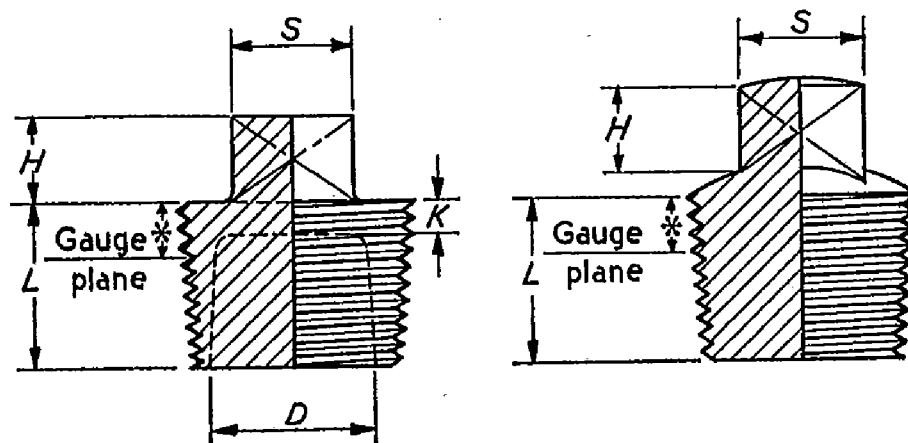


Fig. 21. Plugs

Nominal size		Minimum length of thread for basic gauge length <i>L</i>	Approx size of square <i>S</i>	Minimum effective height of square <i>H</i>	Maximum internal diameter <i>D</i>	Minimum thickness of metal <i>K</i>	Fitting allowance in BS 21 *
in	mm	mm	mm	mm	mm	mm	turns
1/8	6	6.5	6	6			2 3/4
1/4	8	9.7	9	6			2 3/4
3/8	10	10.1	11	10			2 3/4
1/2	15	13.2	13	10			2 3/4
3/4	20	14.5	14	12			2 3/4
1	25	16.8	17	12	22	4	2 3/4
1 1/4	32	19.1	22	16	31	5	2 3/4
1 1/2	40	19.1	27	16	33	5	2 3/4
2	50	23.4	32	19	48	5	3 1/4
2 1/2	65	26.7	37	19	62	6	4
3	80	29.8	37	22	73	8	4
4	100	35.8	46	25	97	10	4 1/2
5	125	40.1	51	29	120	12	5
6	150	40.1	60	32	145	12	5

NOTE 1 Plugs in sizes 25 mm to 150 mm nominal size may be either solid or hollow, and the attention of the purchaser is drawn to the necessity of stating in his enquiry and order which pattern is required.

* This dimension is to be not less than the fitting allowance in BS 21.

NOTE 2. It is permissible for solid plugs to be provided with a shallow concave recess in the base so long as the essential solidity of the plug is maintained.

TABLE 14. HEXAGON BACKNUTS

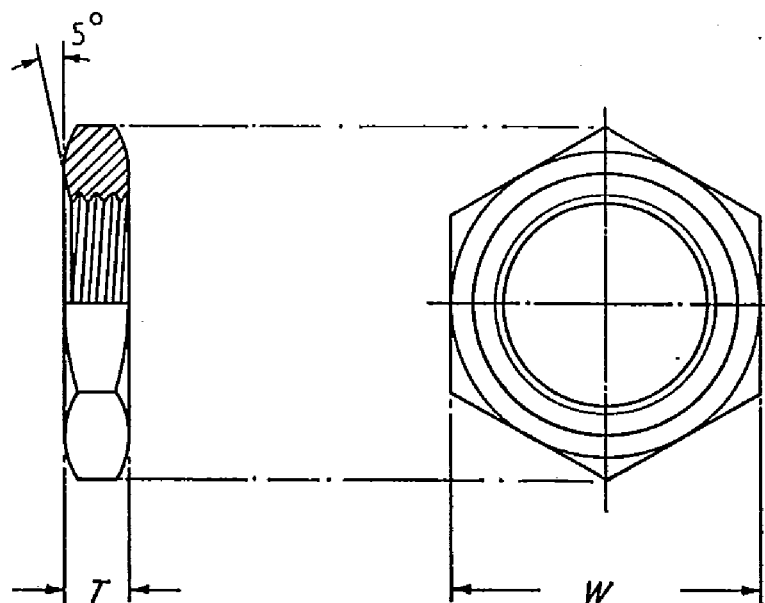


Fig. 22. Backnut (used with socket shown in Fig. 16).

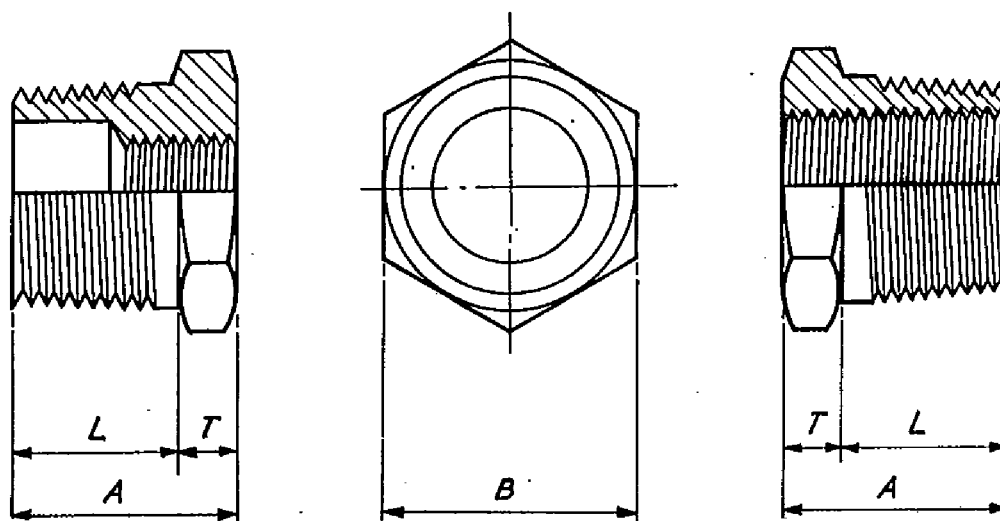
As amended
Feb., 1983

Nominal size		Width across flats*	Thickness <i>T</i>	
in	mm		Minimum	Tolerance
		mm	mm	mm
1/8	6	17.0	6.5	+ 1.5
1/4	8	19.0	6.5	
3/8	10	24.0	7.0	
1/2	15	30.0	8.0	
3/4	20	36.0	9.0	
1	25	41.0	9.5	+ 1.5
1 1/4	32	50.0	11.0	
1 1/2	40	60.0	12.0	
2	50	70.0	13.0	
2 1/2	65	90.0	17.0	+ 3.0
3	80	100.0	21.0	
4	100	130.0	22.0	
5	125	160.0	24.0	
6	150	190.0	25.0	

* The tolerance allowed on width across flats is to be ± 0.8 mm.

BS 1740 : Part 1 : 1971

TABLE 15. HEXAGON BUSHES



Two types of bush are illustrated, either of which can be supplied.

Fig. 23. Bush

Nominal size		Minimum length of external thread for basic gauge length plus die clearance <i>L</i>	Thickness of hexagon <i>T</i>	Minimum overall length <i>A</i>	Width across flats of hexagon <i>B</i>
in	mm	mm	mm	mm	mm
$\frac{1}{4}$	8	12.5	6	18.5	14.0
$\frac{3}{8}$	10	12.5	8	20.5	17.0
$\frac{1}{2}$	15	17.5	8	25.5	22.0
$\frac{3}{4}$	20	19.0	10	29.0	27.0
1	25	21.0	10	31.0	36.0
$1\frac{1}{4}$	32	24.0	11	35.0	46.0
$1\frac{1}{2}$	40	24.0	13	37.0	50.0
2	50	27.0	14	41.0	60.0
$2\frac{1}{2}$	65	32.0	16	48.0	78.0
3	80	35.0	19	54.0	90.0
4	100	40.0	22	62.0	115.0
5	125	45.0	25	70.0	140.0
6	150	45.0	25	70.0	166.0

NOTE. Nominal sizes refer to size of male end, i.e. the larger diameter of the bush. The smaller diameter of the bush i.e. the female end, shall be by arrangement between the manufacturer and the purchaser.

TABLE 16. NIPPLES, HEXAGON, EQUAL

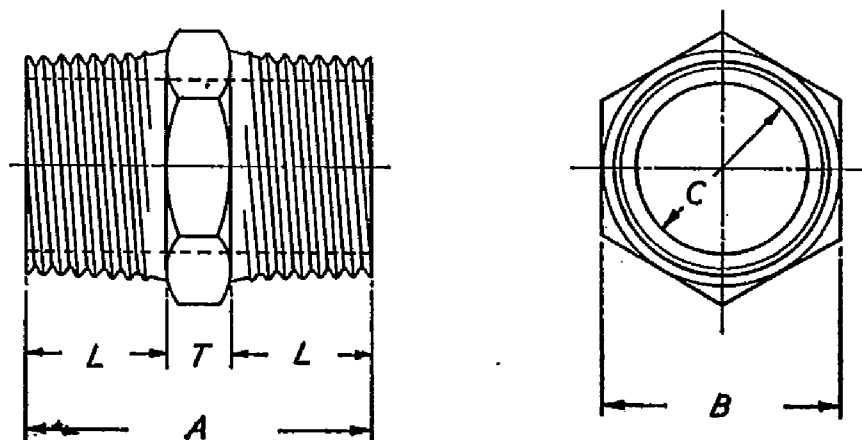


Fig. 24. Hexagon nipple, equal

Nominal size		Minimum length of thread for basic gauge length plus die clearance	Thickness of hexagon	Minimum overall length	Maximum diameter of bore	Width across flats of hexagon
		<i>L</i>	<i>T</i>	<i>A</i>	<i>C</i>	<i>B</i>
in	mm	mm	mm	mm	mm	mm
$\frac{1}{8}$	6	9.5	6	25	5.5	12.0
$\frac{1}{4}$	8	12.5	6	31	6.5	14.0
$\frac{3}{8}$	10	12.5	8	33	9.5	17.0
$\frac{1}{2}$	15	17.5	8	43	12.5	22.0
$\frac{3}{4}$	20	19.0	10	48	19.0	27.0
1	25	21.0	10	52	25.0	36.0
$1\frac{1}{4}$	32	24.0	11	59	32.0	46.0
$1\frac{1}{2}$	40	24.0	13	61	38.0	50.0
2	50	27.0	14	68	51.0	60.0
$2\frac{1}{2}$	65	32.0	16	80	64.0	78.0
3	80	35.0	19	89	76.0	90.0
4	100	40.0	22	102	100.0	115.0
5	125	45.0	25	115	125.0	140.0
6	150	45.0	25	115	150.0	166.0

BS 1740 : Part 1 : 1971

APPENDIX A

METHOD OF TESTING THE ZINC COATING ON GALVANIZED
STEEL PIPE FITTINGS (COPPER SULPHATE TEST)

A.1 Preparation of sample. The sample shall be cleaned by swabbing with benzene (C_6H_6), wiped dry with a clean soft cloth, dipped into a 2 % solution of sulphuric acid for 15 seconds, and then thoroughly rinsed in clean water. Finally it shall be wiped dry with a clean soft cloth.

A.2 Preparation of the solution. The copper sulphate solution shall have a specific gravity of 1.170 at 15°C and shall be made by dissolving approximately 33 g of crystalline copper sulphate ($CuSO_4 \cdot 5H_2O$) in each 100 ml of distilled water. The solution shall be shaken with an excess of copper carbonate or copper hydrate and shall be filtered or allowed to settle before use.

A.3 Method of performing the test. The sample, prepared as in A.1 above, shall be subjected to four successive dips in the copper sulphate solution. During the test the temperature of the solution shall not fall below 15°C or rise above 21°C. During each immersion neither sample nor solution shall be agitated.

The sample shall be completely immersed in the solution unless its size renders this impracticable, when a length of at least 75 mm shall be immersed.

The solution container shall be of a material which is inert to copper sulphate, and its internal dimensions shall be such as to allow a 25 mm minimum clearance between the sides and any part of the sample.

Each dip shall be of a duration of 60 seconds, and after each dip the sample shall be withdrawn, rinsed immediately in clean running water, and any black deposit removed with a brush. The sample shall be wiped dry with a clean soft cloth and, except after the final dip, returned immediately to the solution.

After each test or batch of tests the solution shall be discarded. No used solution may be returned to the stock supply.

After the specified four dips, the sample shall not show any adherent red deposit of metallic copper after the final rinsing and wiping dry. If the test has been carried out on a fitting which has been subjected to a machining operation, the deposit of metallic copper on or near to the machined surfaces shall be disregarded.

AMD 5517

Amendment No. 2
published and effective from 31 March 1987
to BS 1740 : Part 1 : 1971

Specification for wrought steel pipe fittings
(screwed BS 21 R-series thread)

Revised text

Table 11. Socket unions (as amended by Amendment No. 1). Beneath the note, insert the following cautionary note:

'CAUTION. Unions should only be used as complete assemblies because component parts of unions made by different manufacturers, or component parts of different types of union made by the same manufacturer, are not necessarily interchangeable.'

Table 14. Hexagon backnuts. In the footnote, delete 'Backnuts as specified in BS 1387.'

AMD 6240

Amendment No. 3
published and effective from 31 May 1990
to BS 1740 : Part 1 : 1971

Specification for wrought steel pipe fittings
(screwed BS 21 R-series thread)
Part 1. Metric units

Revised text

Table 13. Plugs. Number the existing note as 'NOTE 1' and insert the following new note:

'NOTE 2. It is permissible for solid plugs to be provided with a shallow concave recess in the base so long as the essential solidity of the plug is maintained.'