BRITISH STANDARD

BS 2464:1954

Incorporating Amendment Nos. 1, 2, 3, 4, 5, 6, and 7

Specification for

Hose couplings for petrol, oil and lubricants —

($^3/_4$ in. to 4 in. nominal sizes)

UDC 621.643.41.033

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:—

Admiralty*
Air Ministry
Associated Offices' Technical Committee
Association of Consulting Engineers (Incorporated)
British Chemical Plant Manufacturers' Association*
British Compressed Air Society*
British Electrical and Allied Manufacturers' Association*
British Electricity Authority and Area Board
British Engineers' Association
British Internal Combustion Engine Manufacturers' Association
British Iron and Steel Federation
British Railways, The British Transport Commission
Crown Agents for the Colonies
D.S.I.R. — Mechanical Engineering Research Laboratory
Engineering Equipment Users' Association*
Gas Council
High Commission of India
Institute of Marine Engineers
Institute of Petroleum*
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 Manufacturers' Association
Machine Tool Trades' Association
Ministry of Fuel and Power*
Ministry of Labour and National Service (Factory Department)
Ministry of Supply*
Ministry of Transport*
Ministry of Works*
National Physical Laboratory
Radio Industry Council
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The 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 standard:

Association of Mining and Electrical Engineers
British Wrapped Rubber Hose Manufacturers Association
Council of British Manufacturers of Petroleum Equipment
Cut Thread Screwing Tool Manufacturers Association
Federation of British Rubber Manufacturers Associations
Federation of Civil Engineering Contractors
Federation of Manufacturers of Contractors Plant
Federation of Painting Contractors
Institution of Municipal Engineers
Institution of Water Engineers
National Association of Colliery Managers
National Benzole Association
National Coal Board
Oil Companies Materials Committee
Institution of Water Engineers
Inter-Service Oil Distribution Technical Committee
Individual manufacturers of couplings

Amendments issued since publication

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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 15 April 1954

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Contents

Foreword

This standard makes reference to the following British Standards:—

BS 192, *B.S.W. and B.S.F. open-ended carbon steel spanners.*

BS 218, *Leaded brass (58 per cent copper, 2 per cent lead) forging stock and forgings.*

BS 249, *Leaded brass (58 per cent copper, 3 per cent lead) rods and sections (other than forging stock).*

BS 1400, *Schedule for copper alloy ingots and copper and copper alloy castings.*

BS 2090, *Hook spanners, peg spanners, coupling wrenches and the related slots, holes and horns.*

BS 2779, *Fastening threads of B.S.P. sizes.*

and to the following American Specifications:—

ASA.B.33.1, *Hose coupling screw threads.*

API STD.5L, *Line pipe.*

API STD.6.A, *Threads in valves, fittings and flanges.*

This British Standard has been prepared under the authority of the Mechanical Engineering Industry Standards Committee in response to a request from the Joint Services Committee.

These couplings have been designed primarily for duties in connection with filling and discharging of rail and road cars and dispensing equipment.

Two forms of screw threads have been specified for the couplings: Whitworth (B.S.P.) threads in accordance with BS 84[1)], and American threads in accordance with ASA specification B33.1 ($^3/_4$ in. to 2 in.) and with Federal Standard Stock Catalogue ZZ-H-466b (November, 1935) ($2^1/_2$ in. to 4 in.) (see Appendix A and Appendix B). These latter threads have been specified to ensure that the couplings connect with oil equipment screwed in accordance with API.STD. 5L and 6A.

Appendix A and Appendix B have been included, giving the dimensions and tolerances of the American hose-coupling screw threads, but details of the pilot at the beginning of the male thread and the length of the nipple have been excluded.

The couplings may be secured to the hose by clamps, by clips or by other suitable means. It is essential that suitable hose be used in conjunction with the couplings covered by this standard. Such hose should be sufficiently thick and heavy to withstand the pressure required (see Clause **1**, last paragraph) but it should be pliable enough to enable it to be compressed on to the coupling for attachment purposes.

This standard forms one of a series for hose couplings, the other British Standards in this series being:—

BS 336, *Fire hose and suction hose couplings, branch pipes and nozzle connections.*

BS 1782, *Hose couplings ($1^1/_2$ in. to 8 in. nominal sizes) other than fire hose couplings.*

BS 1906, *Hose couplings (air and water) ($^1/_8$ in. to $1^1/_4$ in. nominal sizes).*

[1)] BS 84, *"Screw threads of Whitworth form".*

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 44 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.

1 Scope

This British Standard applies to the following types of reduced bore couplings and adaptors:—

a) Couplings with ribbed tail-ends and hexagons (see Table 1a, Table 1b, Table 5 and Table 7) for $^3/_4$, 1, $1^1/_4$, $1^1/_2$, 2, $2^1/_2$, 3 and 4 in. hose.

b) Couplings with serrated tail-ends and hexagons (see Table 2, Table 6 and Table 7) for $^3/_4$, 1, $1^1/_4$, $1^1/_2$, 2, $2^1/_2$, 3 and 4 in. hose.

c) Couplings with ribbed tail-ends and rectangular horns (see Table 3, Table 5 and Table 8) for $1^1/_2$, 2, $2^1/_2$, 3 and 4 in. hose.

d) Couplings with serrated tail-ends and round horns (see Table 4, Table 6 and Table 9) for $1^1/_2$, 2, $2^1/_2$, 3 and 4 in. hose.

e) Adaptor: double ended union, with hexagons and with male threads at both ends (see Table 10).

f) Adaptor: swivelling type with hexagons, or with round horns, and with female threads at both ends (see Table 11 and Table 12).

g) Caps (see Table 13).

h) Plugs (see Table 14).

The maximum pressures recommended for the couplings when they are attached to suitable hoses (see Foreword, paragraph 6) are as follows:

100 lb/sq. in. when the hose is secured to the coupling by wire binding.

150 lb/sq. in. when the hose is secured to the ribbed type of coupling by suitable clips.

2 Information to be supplied by the purchaser

The purchaser shall give, in his enquiry and order, the following information:—

a) The type of coupling required, i.e. whether with hexagons, or with rectangular or round horns.

b) Whether the tail-ends shall be ribbed or serrated. (Particular attention is drawn to the footnotes to Table 5 and Table 6)

c) The form of screwthread required (see Clause **7**).

3 Designation of sizes of couplings

The size by which the coupling is designated shall be the nominal bore of the hose with which it is to be used.

4 Materials

The material used in the manufacture of the couplings and adaptors shall be as follows:—

a) Gunmetal castings complying with Specification LG2-C of BS 1400.[2)]

b) Brass castings complying with Specifications B2-C and B3-C of BS 1400.

c) Brass bars complying with BS 249.[3)]

d) Hot pressings complying with BS 218[4)] are permissible but the purchaser shall be given prior notification by the manufacturer of his intentions to supply hot pressings.

5 Dimensions

The dimensions of couplings and adaptors shall conform to those shown on Figure 7 to Figure 22 and in Table 1 to Table 14.

NOTE The illustrations in this standard are diagrammatic only, and are solely for the purpose of indicating where the specified dimensions apply.

6 Workmanship

Workmanship shall be of good quality. All burrs and sharp edges shall be removed and the couplings shall have a smooth finish.

NOTE The term "smooth finish" in this clause refers, in the case of castings, to clean cored waterways, all exterior surfaces, except round horns and tails, being fettled and wire brushed.

7 Screw threads

The couplings shall be screwed with either:

a) Whitworth (B.S.P.) threads, "free fit" as specified in BS 2779[5)],

or

b) American hose threads as specified in Appendix A and Appendix B.

The first thread on all male and female threads shall be chamfered to 45°.

The purchaser shall state in his enquiry and order which threads he requires [see Clause **2** c)].

8 Washers

Washers shall be made of specially selected leather, synthetic rubber, rubber asbestos compound or other suitable material as specified by the purchaser. When not so specified the purchaser shall be given prior notification by the manufacturer of the type and quality of washer he intends to supply.

[2)] BS 1400, *"Schedule for copper alloy ingots and copper and copper alloy castings".*
[3)] BS 249, *"Leaded brass (58 per cent copper, 3 per cent lead) rods and sections (other than forging stock)".*
[4)] BS 218, *Leaded brass (58 per cent copper, 2 per cent lead) forging stock and forgings.*
[5)] BS 2779, *"Fastening threads of B.S.P. sizes".*

9 Bonding

Means shall be provided on the couplings for electrical bonding but the method to be used shall be agreed between the purchaser and the manufacturer.

NOTE The method of electrical bonding to be used on the couplings will vary according to the type of hose employed, but the method to be adopted must comply with any Government instructions and with the relevant requirements of the petroleum industry.

10 Wrenches and spanners

Wrenches for use with the rectangular horned type couplings shall conform to the dimensions given in Figure 23 and Table 15, and those for use on round horned couplings shall conform to the dimensions given in Figure 24 and Table 16 and may be made of ferrous or non-ferrous materials. These wrenches are also specified in BS 2090[6]. Spanners shall comply with BS 192[7].

11 Identification marking

Each set of couplings shall be legibly and permanently marked with the manufacturer's identification and the number of this British Standard, i.e. BS 2464.

Each female tail-end for use with the $2^1/_2$; in. coupling screwed with B.S.P. threads shall be marked with the symbols "B.S.P." (see the footnotes to Table 5 to Table 6).

In addition, couplings shall be marked with the following letters to indicate the type of screw thread on the couplings:—

B.S.P. — for Whitworth (B.S.P.) threads complying with BS 2779.[8]

Am. — for American threads (see Appendix A and Appendix B).

The male tail-ends shall be clearly marked near the screwed end as follows:

RIB — to indicate a ribbed tail-end

or SER — to indicate a serrated tail-end.

12 Hydrostatic test

All couplings, when assembled without hose, shall be subjected to a hydrostatic test of 200 lb/sq. in. It shall be applied after all machining operations have been completed. This test is for the purpose of locating flaws in the material after machining, and also to test the merits of the joint.

When couplings are being assembled for the hydrostatic test, only the appropriate standard wrench or spanner shall be used in tightening them. Use shall not be made of an extension on the handle of the wrench or spanner, or of other means to produce excessive tightness. Couplings complying with this standard shall not show signs of leakage during this test by reason either of defective joint or of other defects.

When required, this test shall be applied in the presence of the purchaser or his representative.

13 Inspection

The purchaser or his representative shall have access, at all reasonable times, to those portions of the works in which the testing is taking place.

14 Test facilities

The manufacturer shall supply, at his own cost, labour and appliances for making the tests on his premises in accordance with this standard. Failing the existence of facilities for making the prescribed tests at his own works the manufacturer shall be responsible for having the tests made elsewhere.

Illustrations of couplings and tables of dimensions *(are shown on following pages)*

[6] BS 2090, *"Hook spanners, peg spanners, coupling wrenches and the related slots holes and horns".*

[7] BS 192, *"B.S.W. and B.S.F. open-ended carbon steel spanners".*

[8] BS 2779, *"Fastening threads of B.S.P. sizes".*

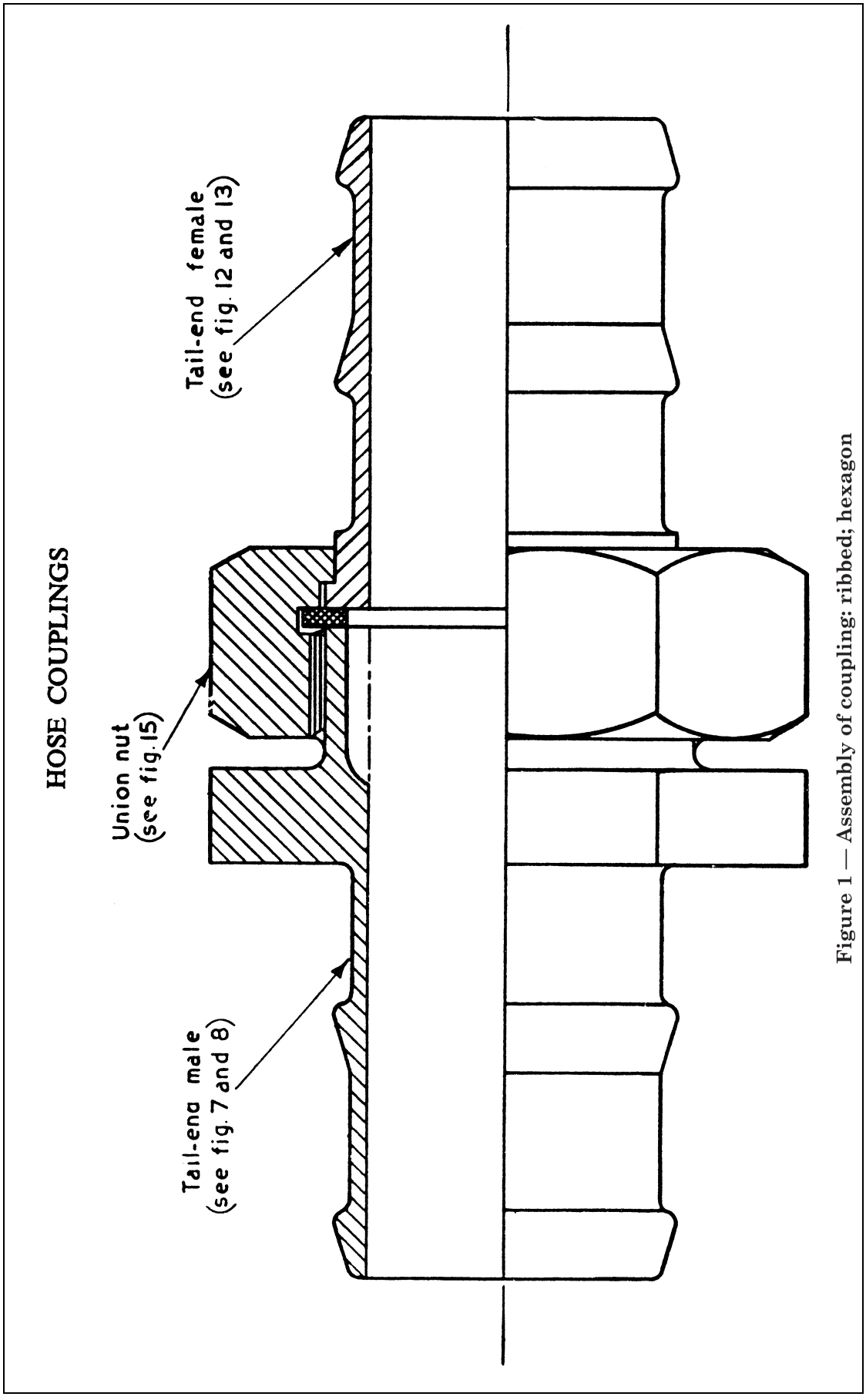


Figure 1 — Assembly of coupling: ribbed; hexagon

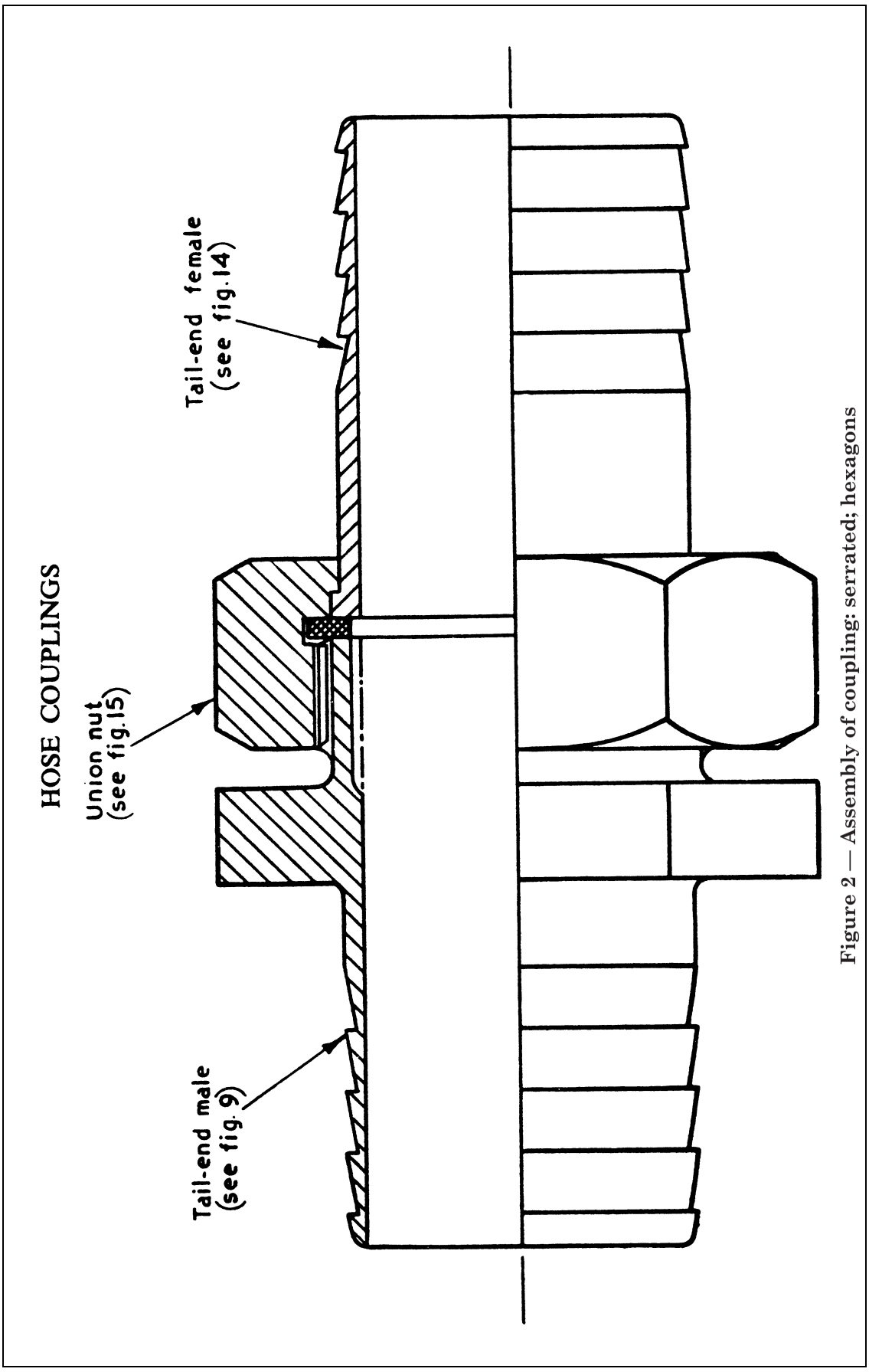


Figure 2 — Assembly of coupling: serrated; hexagons

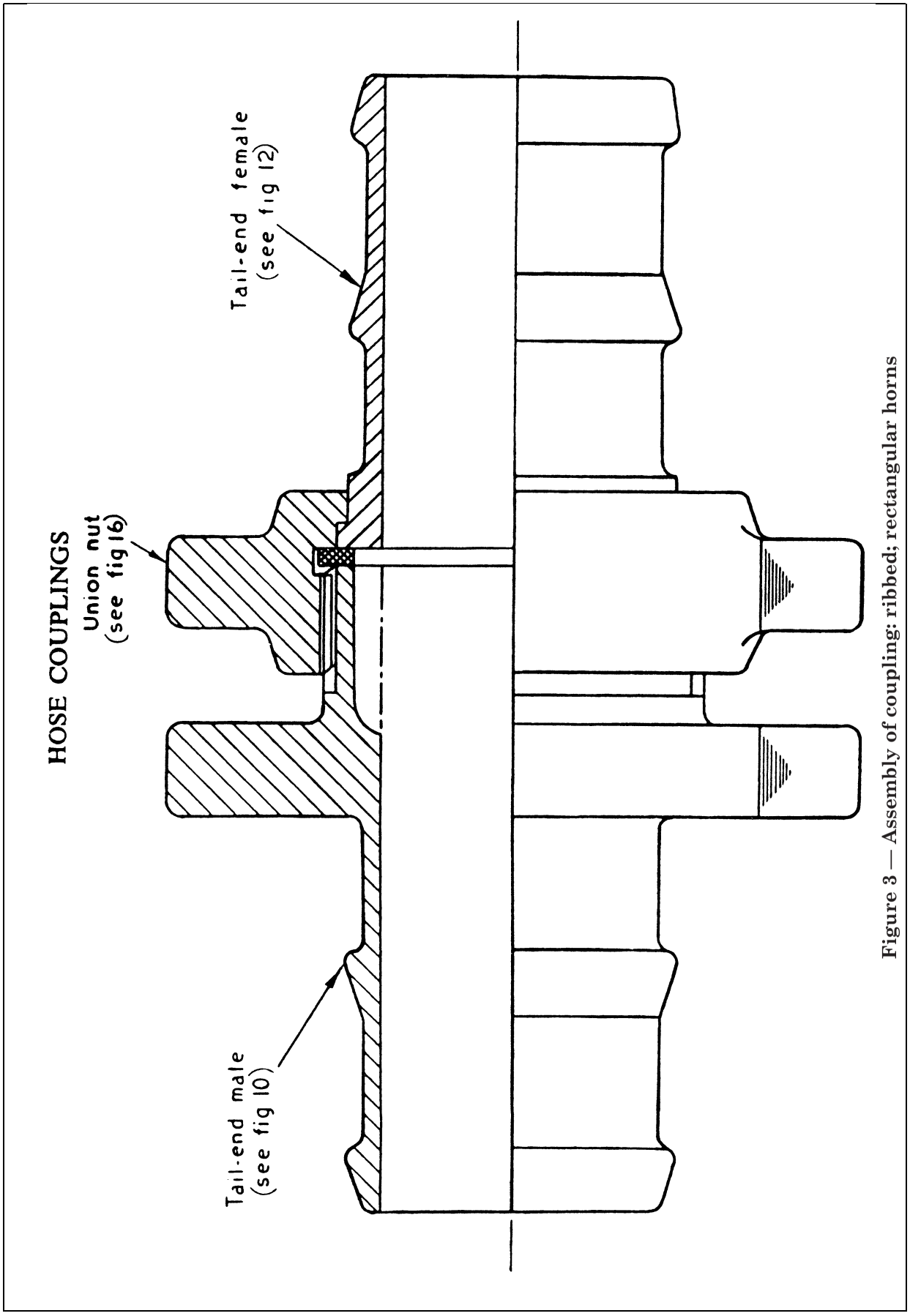


Figure 3 — Assembly of coupling: ribbed; rectangular horns

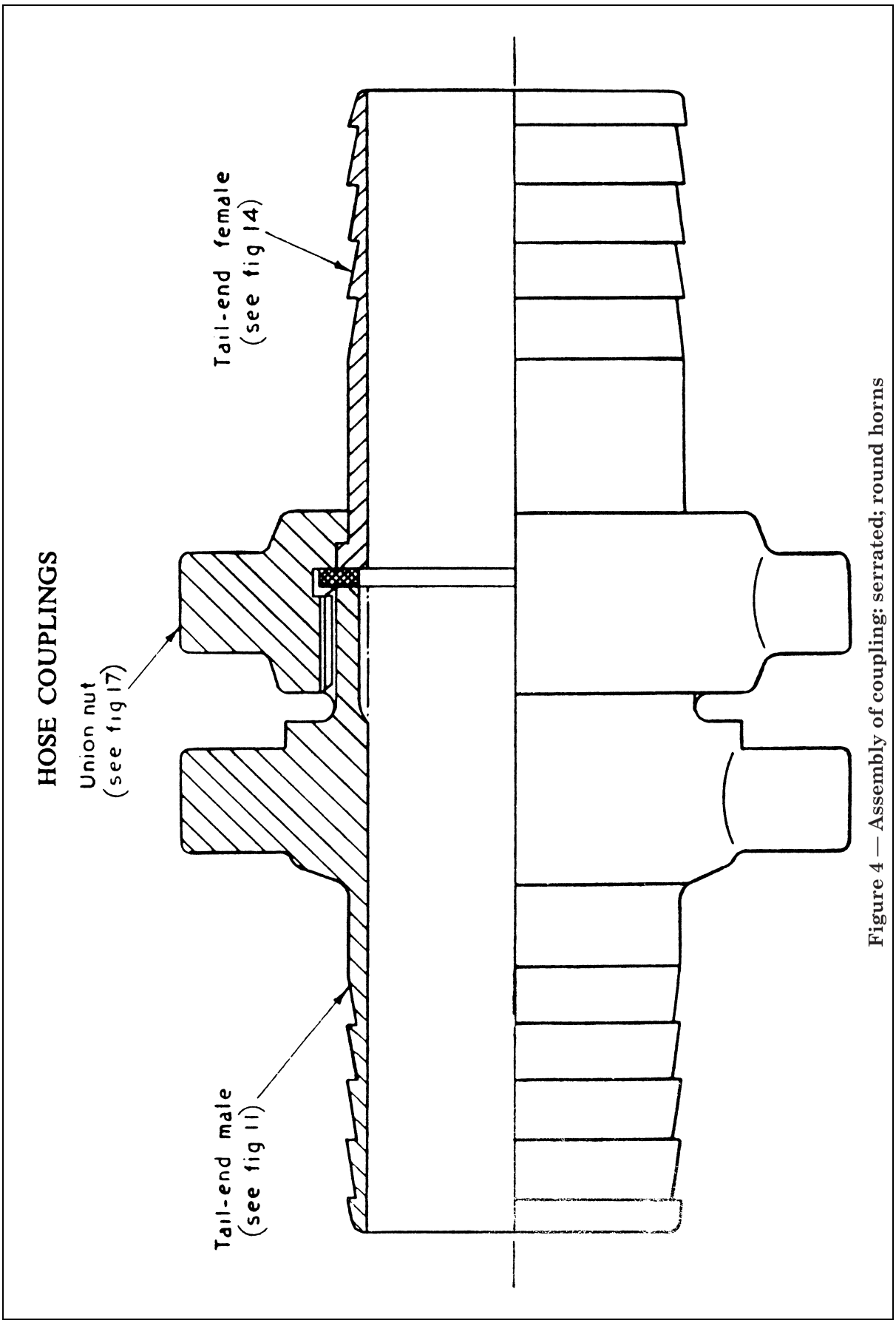


Figure 4 — Assembly of coupling: serrated; round horns

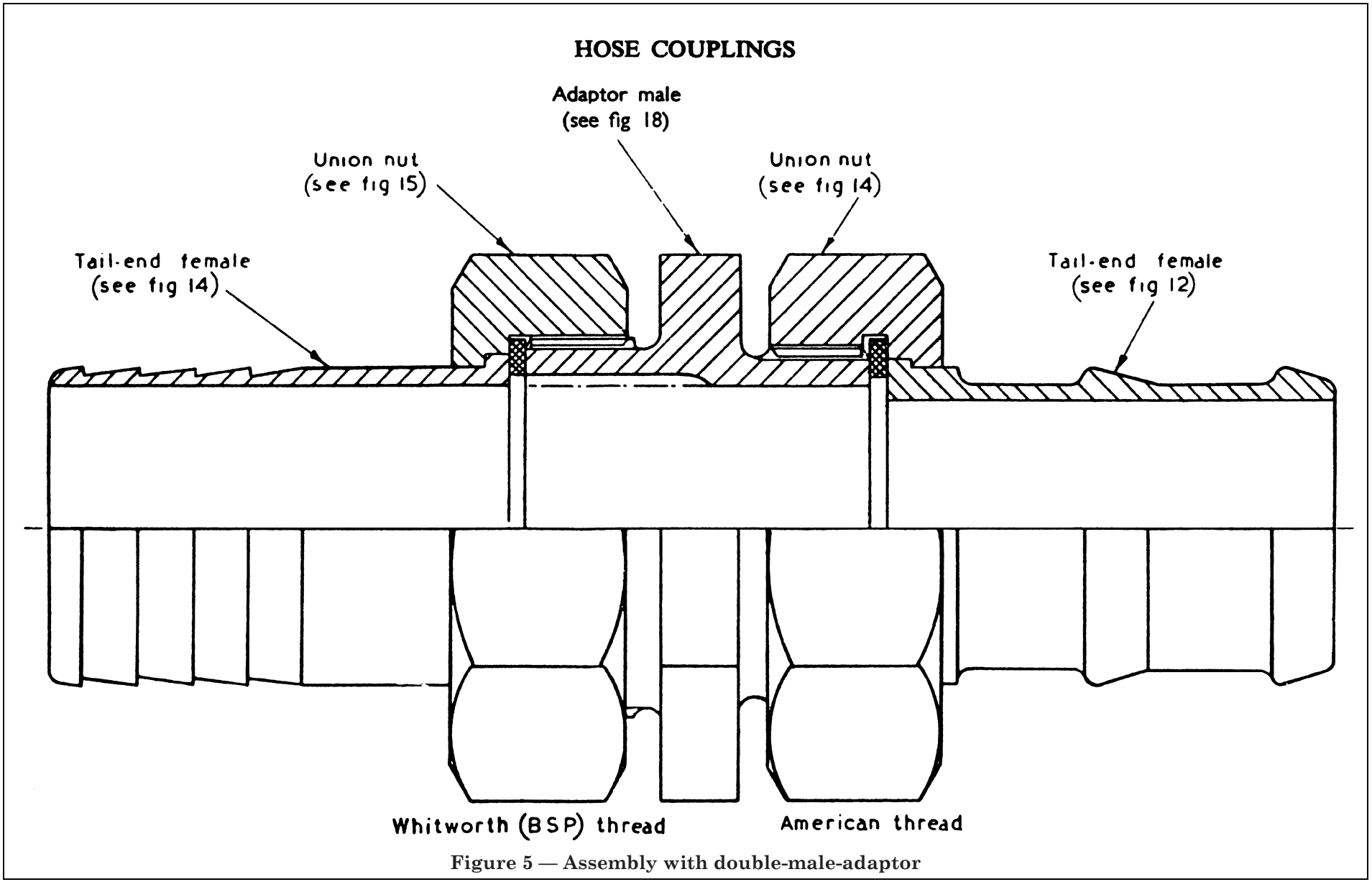


Figure 5 — Assembly with double-male-adaptor

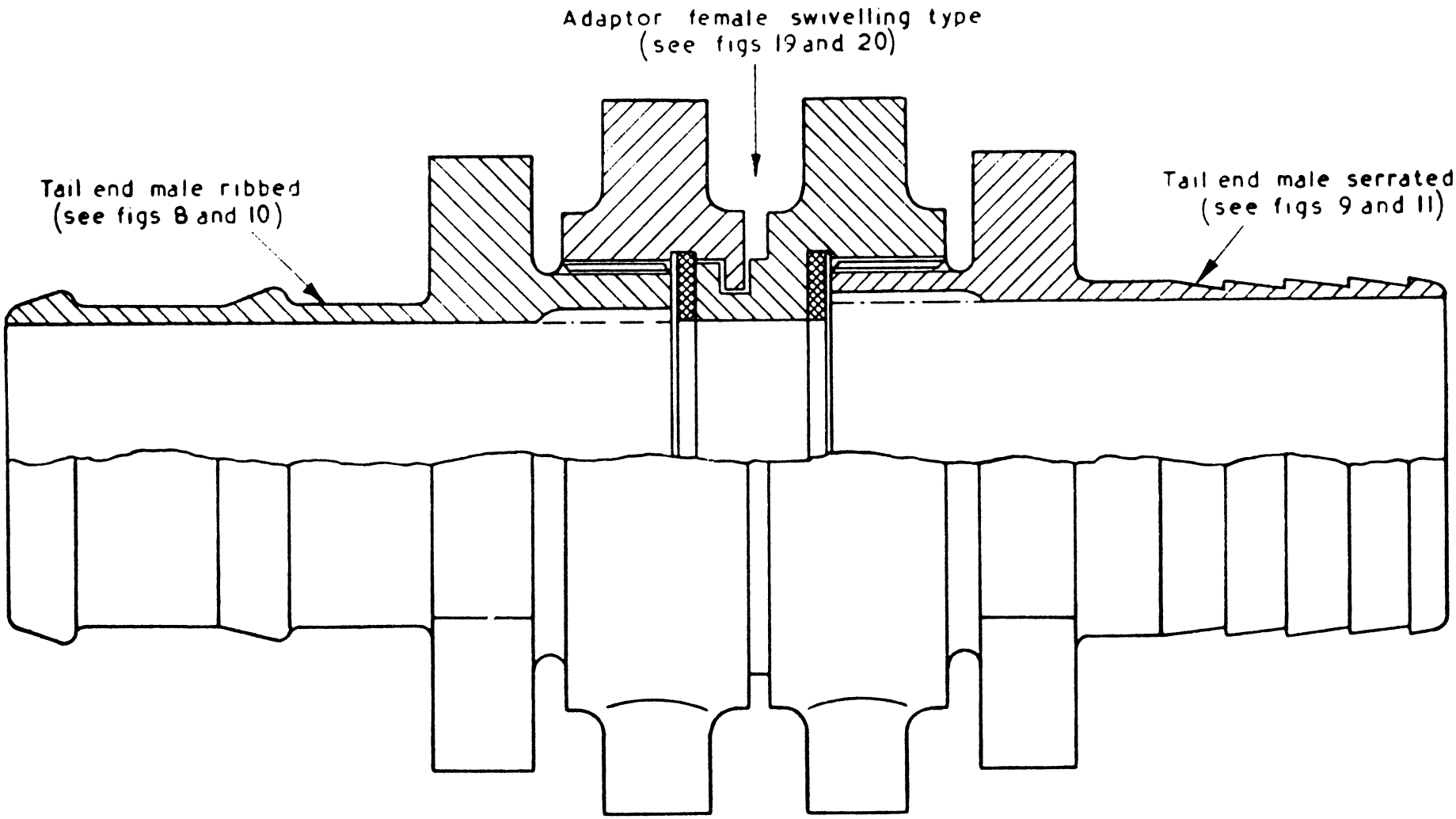
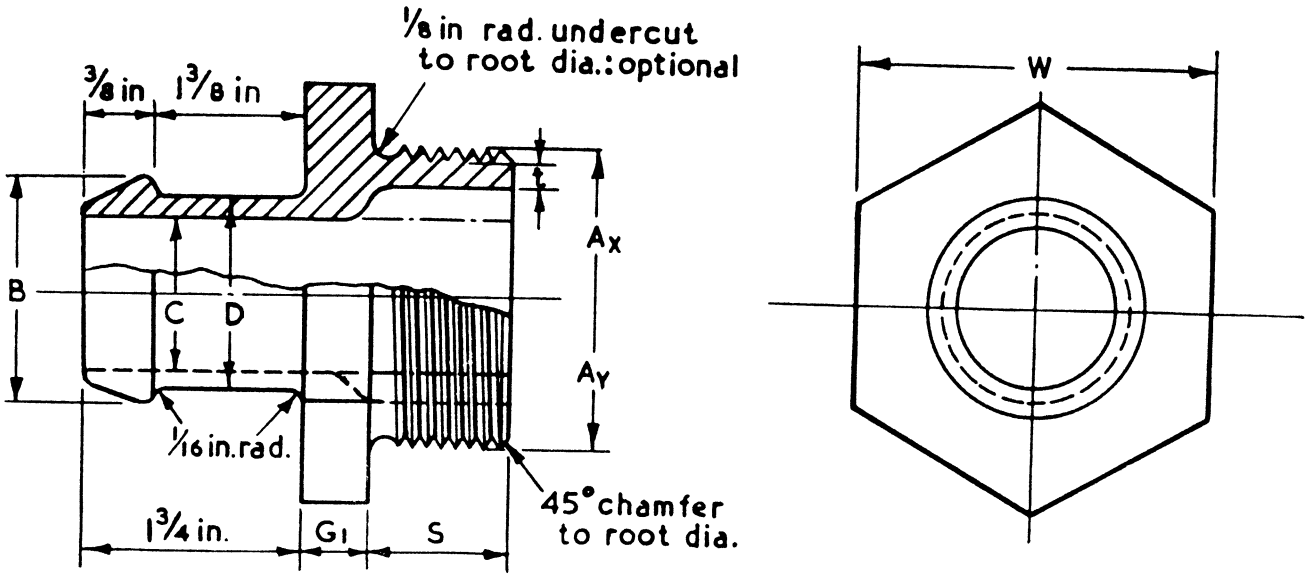


Figure 6 — Assembly with swivelling type adaptor

HOSE COUPLINGS



3/4, 1 and 1 1/4 in. sizes.

Smooth finish all over.

NOTE See Clause **9** for electrical bonding.

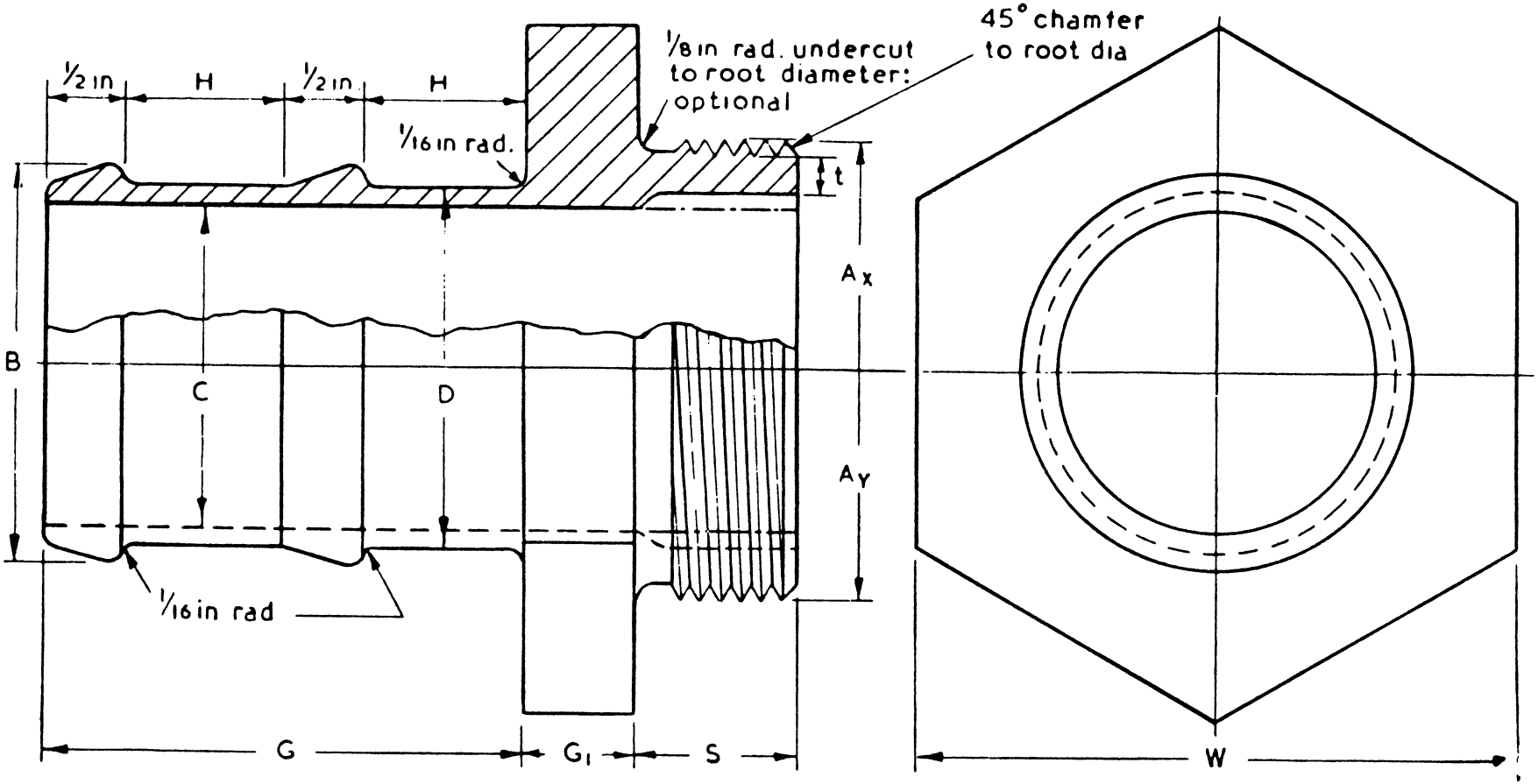
Figure 7 — Tail-end: male; ribbed; hexagon

Table 1a — Tail-end: male; ribbed; hexagon

(See Figure 7)

Size of coupling, i.e. hose bore	Screw thread			B. dia.	C. dia	D. dia.	G_1	S	t	W Hexagons	
	Nominal size	A_X	A_Y								
		Whitworth (B.S.P.) Major dia. (max.)	American thread Major dia. (max.) (See Appendix A)	± 0.010	± 0.030	± 0.010	± 0.030	Min	Min.	Max.	Min.
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
$^3/_4$	$^3/_4$	1.041 0	1.035 3	0.750	0.484	0.640	0.312	0.687	0.125	1.250	1.212
1	1	1.309 0	1.295 1	1.000	0.625	0.812	0.312	0.687	0.125	1.625	1.575
$1^1/_4$	$1^1/_4$	1.650 0	1.639 9	1.250	0.875	1.062	0.375	0.750	0.125	2.000	1.938

HOSE COUPLINGS



1 ½ in. to 4 in. sizes.

Smooth finish all over.

NOTE See Clause **9** for electrical bonding.

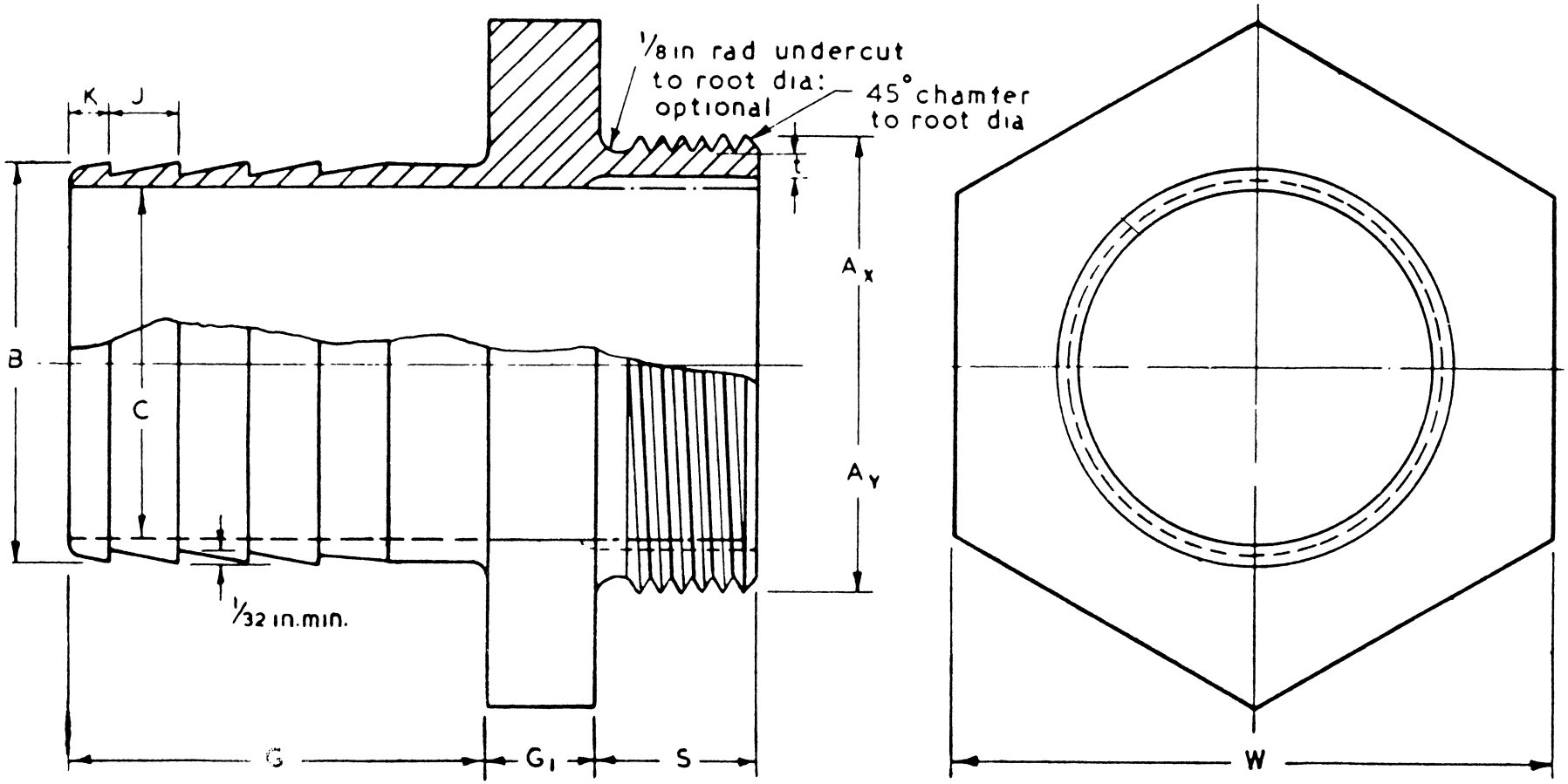
Figure 8 — Tail-end: male; ribbed; hexagon

Table 1b — Tail-end: male; ribbed; hexagon

(See Figure 8)

Size of coupling, i.e. hose bore	Screw thread			B. dia.	C. dia	D. dia.	G	G_1	H	S	t	W Hexagons	
	Nominal size	A_X Whitworth (B.S.P.) Major dia. (max.)	A_Y American thread Major dia. (max.) (See Appendix A)	± 0.010	± 0.030	± 0.010	± 0.125	± 0.030	± 0.030	Min.	Min.	Max.	Min.
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
$1^1/_2$	$1^1/_2$	1.882 0	1.878 8	1.500	1.125	1.312	2.5	0.375	0.75	0.750	0.125	2.375	2.300
2	2	2.347 0	2.352 8	2.000	1.625	1.812	3.0	0.437	1.00	0.875	0.125	2.750	2.662
$2^1/_2$[a]	$2^1/_2$	2.960 0	2.843 4	2.500	2.000	2.250	3.0	0.687	1.00	1.000	0.187	3.500	3.338
3	3	3.460 0	3.469 7	3.000	2.50	2.750	3.5	0.687	1.25	1.125	0.187	3.875	3.750
4	4	4.450 0	4.468 3	4.00	3.50	3.75	4.0	0.687	1.50	1.125	0.250	5.000	4.838

[a] NOTE In order to accommodate a hose-end strainer the recess in the 2¼ inch tail end: male, shall have a diameter of 2.250 ± 0.030 inches and a length of 1.470 in maximum and 1.440 in minimum with a 45° chamfer at the inner end.



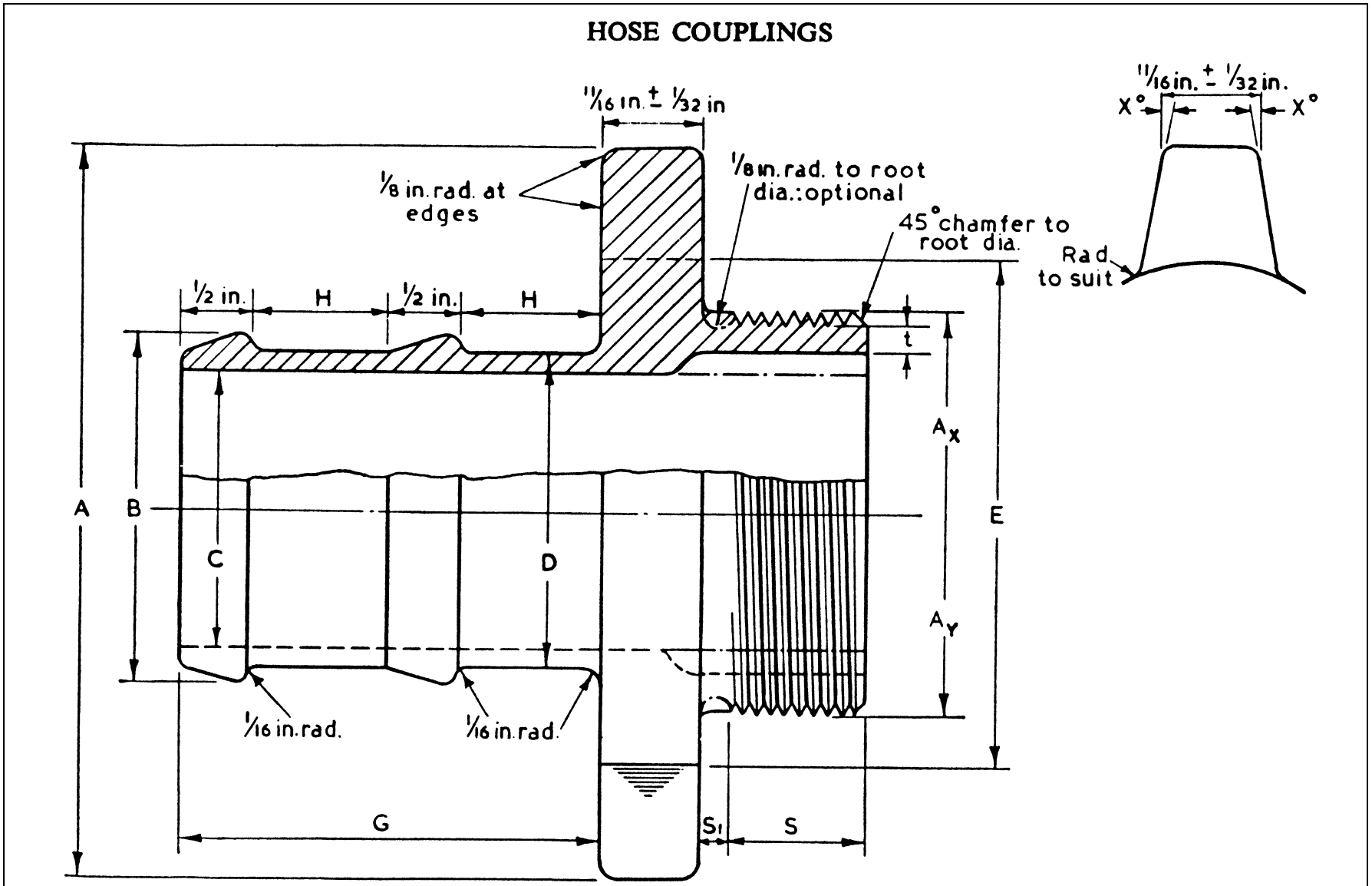
Smooth finish all over.
NOTE See Clause **9** for electrical bonding.

Figure 9 — Tail-end: male; serrated; hexagon

Table 2 — Tail-end: male; serrated; hexagon

(See Figure 9)

Size of coupling, i.e. hose bore	Screw thread			B. dia.	C dia	G	G_1	K	J	S	t	W Hexagons	
	Nominal size	A_X	A_Y										
		Whitworth (B.S.P.) Major dia. (max.)	American thread Major dia. (max.) (See Appendix A)	± 0.010	± 0.030	± 0.125	± 0.030	± 0.062	± 0.062	Min.	Min.	Max.	Min.
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
$^3/_4$	$^3/_4$	1.041 0	1.035 3	0.750	0.562	1.75	0.312	0.125	0.218	0.687	0.125	1.250	1.212
1	1	1.309 0	1.295 1	1.000	0.812	1.75	0.312	0.187	0.250	0.687	0.125	1.625	1.575
$1^1/_4$	$1^1/_4$	1.650 0	1.639 9	1.250	1.000	1.75	0.375	0.187	0.312	0.750	0.125	2.000	1.938
$1^1/_2$	$1^1/_2$	1.882 0	1.878 8	1.500	1.250	2.125	0.375	0.187	0.437	0.750	0.125	2.375	2.300
2	2	2.347 0	2.352 8	2.000	1.750	2.25	0.437	0.187	0.437	0.875	0.125	2.750	2.662
$2^1/_2$	$2^1/_2$	2.960 0	2.843 4	2.500	2.250	2.625	0.687	0.25	0.437	1.000	0.187	3.500	3.338
3	3	3.460 0	3.469 7	3.000	2.750	3.250	0.687	0.25	0.437	1.125	0.187	3.875	3.750
4	4	4.450 0	4.468 3	4.000	3.625	3.875	0.687	0.375	0.500	1.125	0.250	5.000	4.838

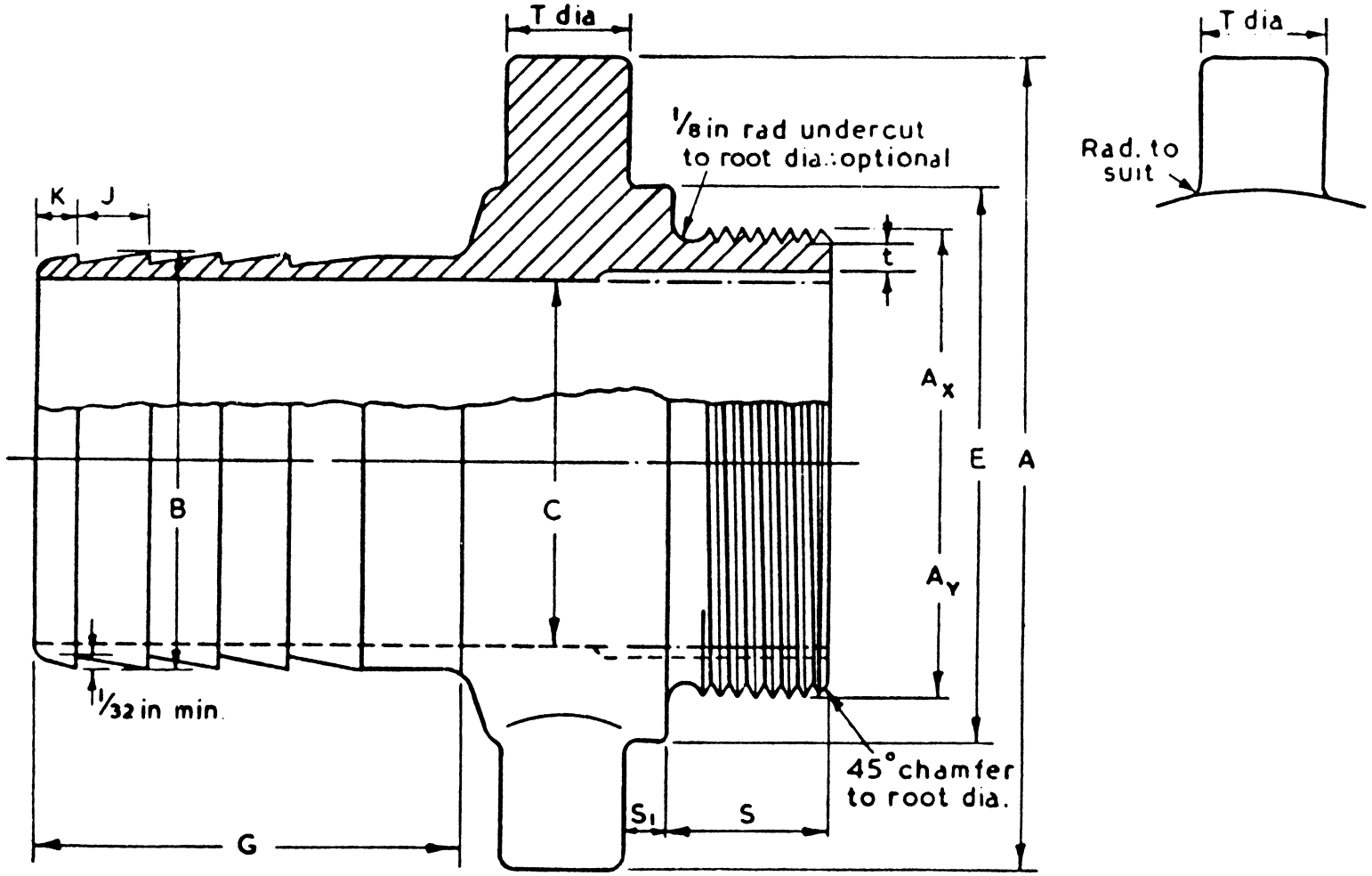


Smooth finish all over.
NOTE See Clause **9** for electrical bonding.

Figure 10 — Tail-end: male; ribbed; rectangular horn

Table 3 — Tail-end: male; ribbed; rectangular horns
(See Figure 10)

Size of coupling, i.e. hose bore	Screw thread			A	B dia.	C dia.	D dia.	E dia.	G	H	S	S_1	t	Angle X
	Nominal size	A_X	A_Y											
		Whitworth (B.S.P.) Major dia. (max.)	American thread Major dia. (max.) (See Appendix A)	± 0.125	± 0.010	± 0.030	± 0.010	± 0.030	± 0.125	± 0.030	Min.	Min.	Min.	
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
$1^1/_2$	$1^1/_2$	1.882 0	1.878 8	4.125	1.500	1.125	1.312	2.375	2.5	0.75	0.750	0.187	0.125	10°
2	2	2.347	2.352 8	4.500	2.000	1.625	1.812	2.750	3.0	1.00	0.875	0.187	0.125	15°
$2^1/_2$	$2^1/_2$	2.960	2.843 4	5.250	2.500	2.000	2.250	3.500	3.0	1.00	1.000	0.250	0.187	15°
3	3	3.460	3.469 7	5.750	3.000	2.500	2.750	4.000	3.5	1.25	1.125	0.250	0.187	20°
4	4	4.450	4.468 3	6.750	4.000	3.500	3.750	5.000	4.0	1.50	1.125	0.312	0.250	20°



Smooth finish all over.

NOTE See Clause **9** for electrical bonding.

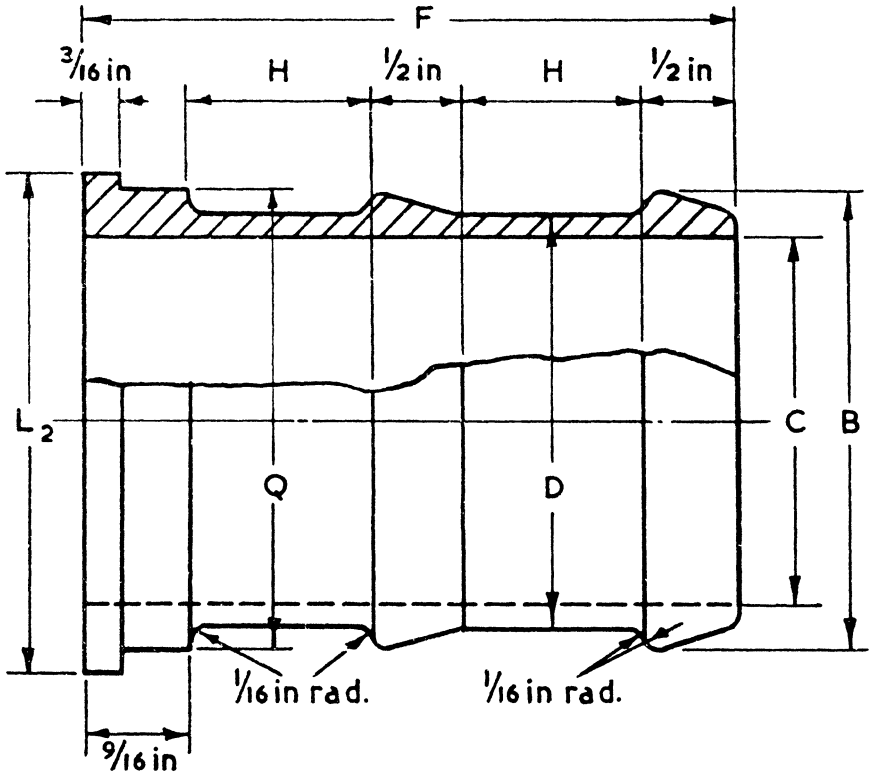
Figure 11 — Tail-end: male; serrated; round horns

Table 4 — Tail-end: male; serrated; round horns

(See Figure 11)

Nominal size, i.e. hose bore	Screw thread			A	B dia.	C dia.	E[a] dia.	G	J	K	S	S_1	t	T dia.
	Nominal size	A_X Whitworth (B.S.P.) Major dia. (max.)	A_Y American thread Major dia. (max.) (See Appendix A)	Min.	± 0.010	± 0.030		± 0.125	± 0.062	± 0.062	Min.	± 0.125	Min.	± 0.062
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
$1^1/_2$	$1^1/_2$	1.882 0	1.878 8	3.500	1.500	1.250	2.312	2.125	0.437	0.187	0.750	0.187	0.125	0.437
2	2	2.347	2.352 8	4.000	2.000	1.750	2.812	2.25	0.437	0.187	0.875	0.187	0.125	0.562
$2^1/_2$	$2^1/_2$	2.960	2.843 4	5.000	2.500	2.250	3.437	2.625	0.437	0.25	1.000	0.250	0.187	0.75
3	3	3.460	3.469 7	6.000	3.000	2.750	4.000	3.250	0.437	0.25	1.125	0.250	0.187	0.75
4	4	4.450	4.468 3	7.000	4.000	3.625	5.000	3.875	0.500	0.375	1.125	0.312	0.250	0.875

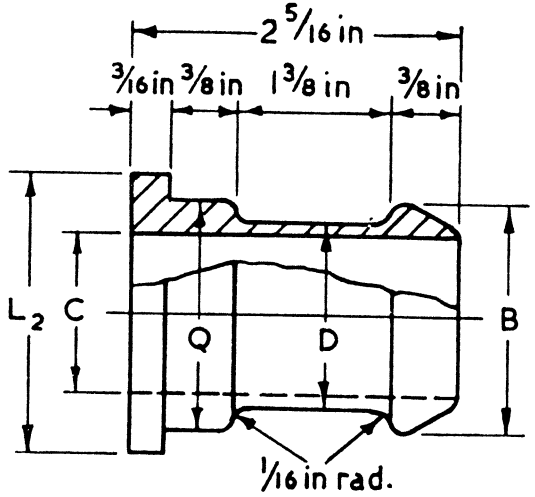
[a] These dimensions may be varied at manufacturer' discretion.



Smooth finish all over.

NOTE See Clause 9 for electrical bonding.

Figure 12 — Tail-end: female (large)



3/4 in. 1 in. and 1 1/4 in. sizes only.

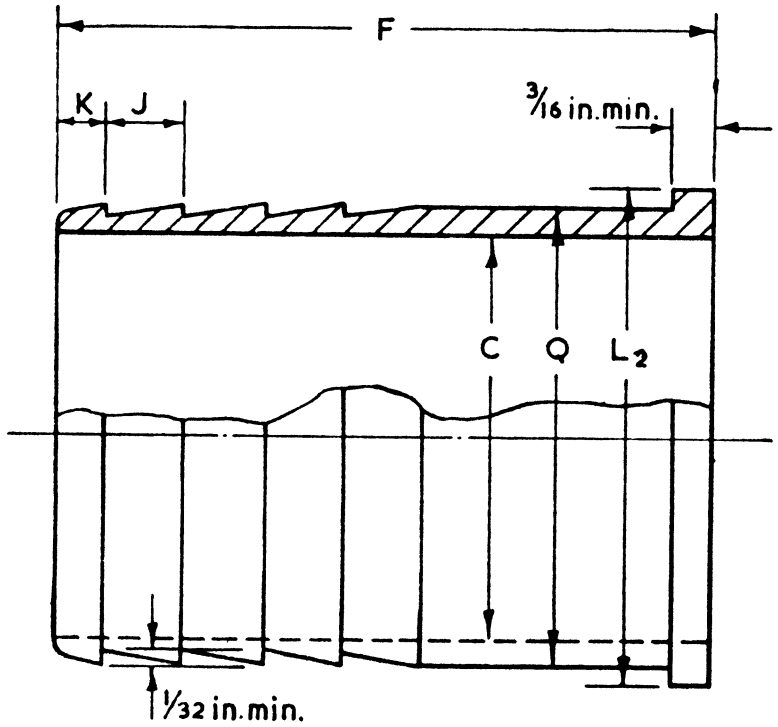
Figure 13 — Tail-end: female (small)

Table 5 — Tail-end: female ribbed
(See Figure 12 and Figure 13)

Nominal size, i.e. hose bore	B dia.	C dia.	D dia.	F	H	L_2 dia.	Q dia.
	± 0.010	± 0.030	± 0.010	Min.	± 0.030	+0 −0.010	+0 −0.010
in.	in.	in.	in.	in.	in.	in.	in.
$^3/_4$	0.750	0.484	0.640	—	—	0.937 5	0.750
1	1.000	0.625	0.812	—	—	1.187	1.000
$1^1/_4$	1.250	0.875	1.062	—	—	1.531	1.250
$1^1/_2$	1.500	1.125	1.312	3.062	0.75	1.750	1.500
2	2.000	1.625	1.812	3.312	0.875	2.218	2.000
$2^1/_2$	2.500	2.000	2.250	3.562	1.00	2.687 2.812[a]	2.500
3	3.000	2.500	2.750	4.062	1.25	3.312	3.000
4	4.000	3.500	3.750	4.562	1.50	4.312	4.000

[a] Tail-ends with the dimension L_2 = 2.812 in. can be used only with the $2^1/_2$ in. coupling when screwed with B.S.P. threads. All such tail-ends shall bear the symbols "B.S.P." for identification purposes.

HOSE COUPLINGS



Smooth finish all over.

NOTE See Clause **9** for electrical bonding.

The plain portion of the coupling shall be $^{1}/_{2}$ in. for the $^{3}/_{4}$ in. size increasing to 1 in. for the 4 in size.

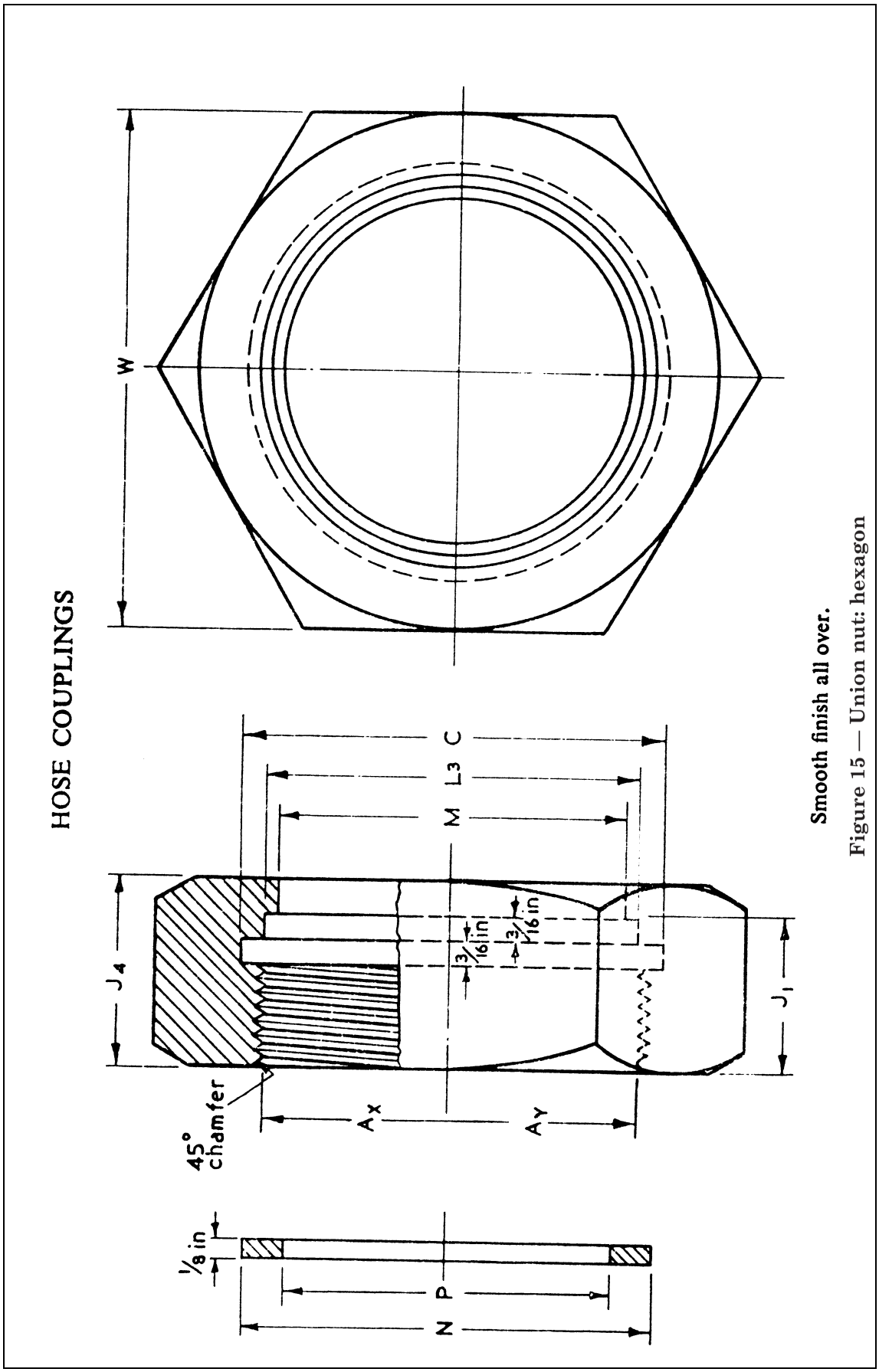
Figure 14 — Tail-end: female; serrated

Table 6 — Tail-end: female; serrated

(See Figure 14)

Nominal size, i.e. hose bore	C dia. ± 0.030	F Min.	J ± 0.062	K ± 0.062	L_2 dia. +0 −0.010	Q dia. +0 −0.010
in.	in.	in.	in.	in.	in.	in.
$^3/_4$	0.562	2.093	0.218	0.125	0.9375	0.750
1	0.812	2.250	0.250	0.187	1.187	1.000
$1^1/_4$	1.000	2.625	0.312	0.187	1.531	1.250
$1^1/_2$	1.250	2.875	0.437	0.187	1.750	1.500
2	1.750	3.000	0.437	0.187	2.218	2.000
$2^1/_2$	2.250	3.750	0.437	0.25	2.687 2.812[a]	2.500
3	2.750	4.000	0.437	0.25	3.312	3.000
4	3.625	5.625	0.500	0.375	4.312	4.000

[a] Tail-ends with the dimension L_2 = 2.812 in. can be used only with the $2^1/_2$ in. coupling when screwed with B.S.P. threads. All such tail-ends shall bear the symbols "B.S.P." for identification purposes.



Smooth finish all over.

Figure 15 — Union nut: hexagon

Table 7 — Union nut: hexagon

(See Figure 15)

Nominal size, i.e. hose bore	Screw thread			C dia.	L_3 dia.	M dia.	N dia.	P dia.	J_1	J_4	W Hexagons	
	Nominal size	A_X	A_Y									
		Whitworth (B.S.P.) Minor dia. (min.)	American thread Minor dia. (min.) (See Appendix B)	± 0.030	+0.010 −0	+0.010 −0			± 0.010	+0 −0.062	Max.	Min.
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
$^3/_4$	$^3/_4$	0.949 6	0.950 0	1.046	0.953	0.781	1.000	0.625	0.718	0.906	1.250	1.212
1	1	1.192 6	1.192 1	1.344	1.218	1.031	1.250	0.875	0.718	0.968	1.625	1.575
$1^1/_4$	$1^1/_4$	1.533 6	1.536 9	1.718	1.562	1.281	1.625	1.000	0.780	1.031	2.000	1.938
$1^1/_2$	$1^1/_2$	1.765 6	1.775 8	2.031	1.781	1.531	2.000	1.250	0.780	1.031	2.375	2.300
2	2	2.230 6	2.249 8	2.406	2.250	2.031	2.375	1.750	0.906	1.156	2.750	2.662
$2^1/_2$	$2^1/_2$	2.843 6	2.693 0	3.031	2.844	2.510	3.000	2.250	1.125	1.375	3.500	3.388
3	3	3.343 6	3.319 3	3.531	3.344	3.031	3.500	2.750	1.250	1.500	3.875	3.750
4	4	4.333 6	4.317 9	4.531	4.344	4.031	4.500	3.625	1.250	1.500	5.000	4.838

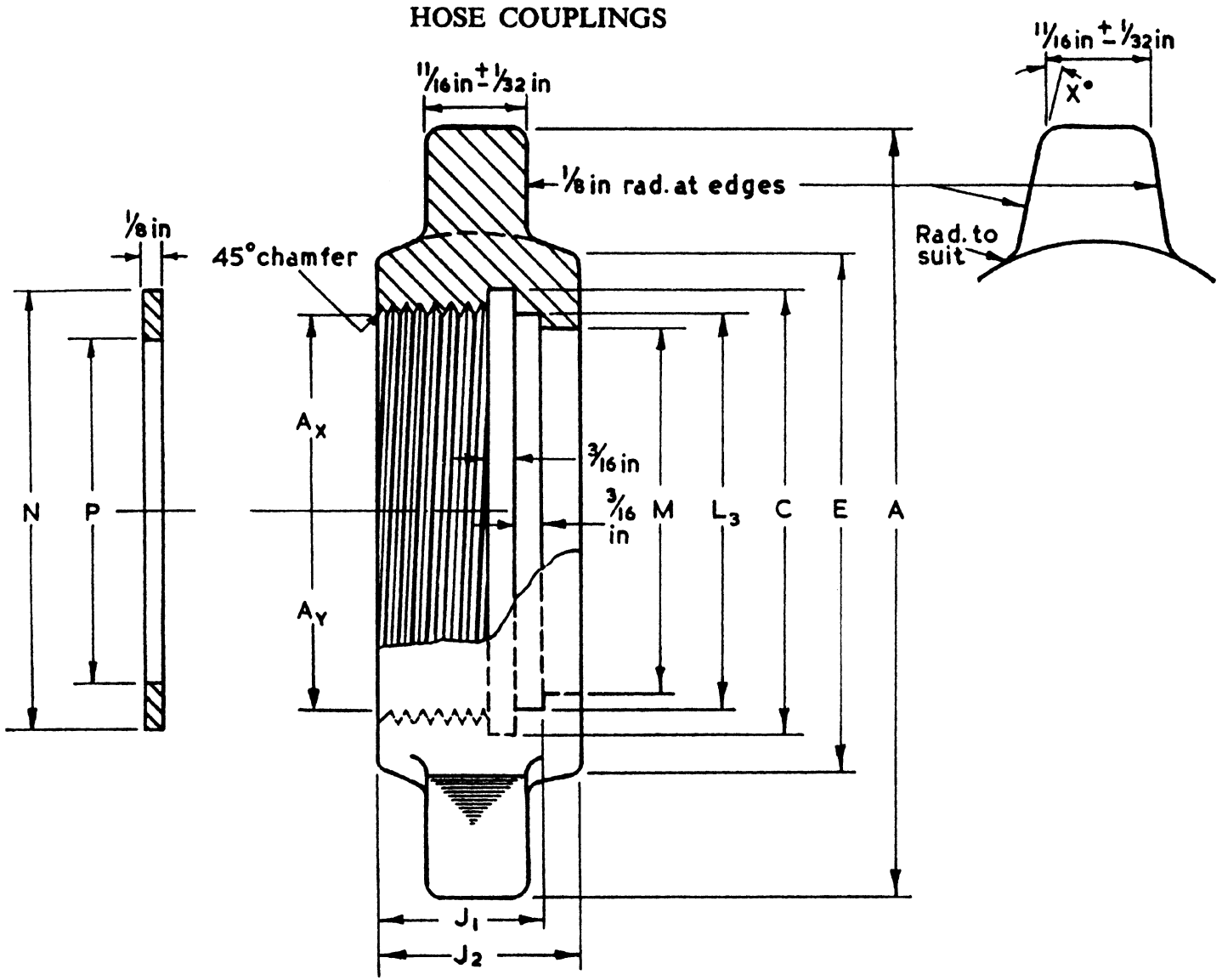


Figure 16 — Union nut: rectangular horns

Table 8 — Union nut: rectangular horns

(See Figure 16)

Nominal size, i.e. hose bore	Screw thread			A	C dia.	E	J_2	J_1	L_3 dia.	M	N	P	Angle x
	Nominal size	A_X Whitworth (B.S.P.) Minor dia. (min.)	A_Y American thread Minor dia. (min.) (See Appendix B)	± 0.1250	± 0.030	± 0.030	+0 −0.062	± 0.010	± 0.010	± 0.010			
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
$1^1/_2$	$1^1/_2$	1.765 6	1.775 8	4.125	2.031	2.375	1.031	0.780	1.781	1.531	2.000	1.250	10°
2	2	2.230 6	2.249 8	4.500	2.406	2.750	1.156	0.906	2.250	2.031	2.375	1.750	15°
$2^1/_2$	$2^1/_2$	2.843 6	2.693 0	5.250	3.031	3.500	1.375	1.125	2.844	2.510	3.000	2.250	15°
3	3	3.343 6	3.319 3	5.750	3.531	4.000	1.500	1.250	3.344	3.031	3.500	2.750	20°
4	4	4.333 6	4.317 9	6.750	4.531	5.000	1.500	1.250	4.344	4.031	4.500	3.625	20°

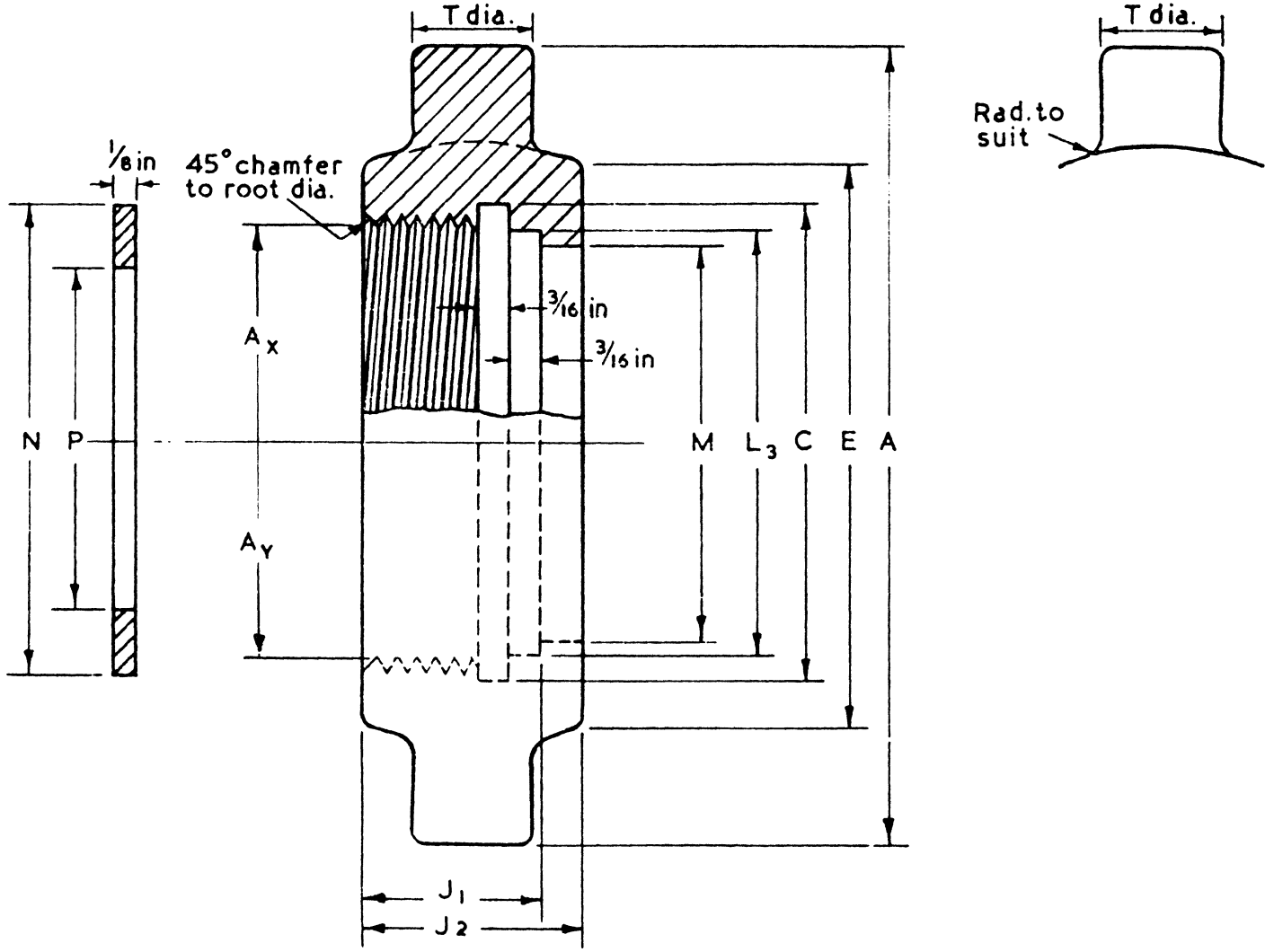
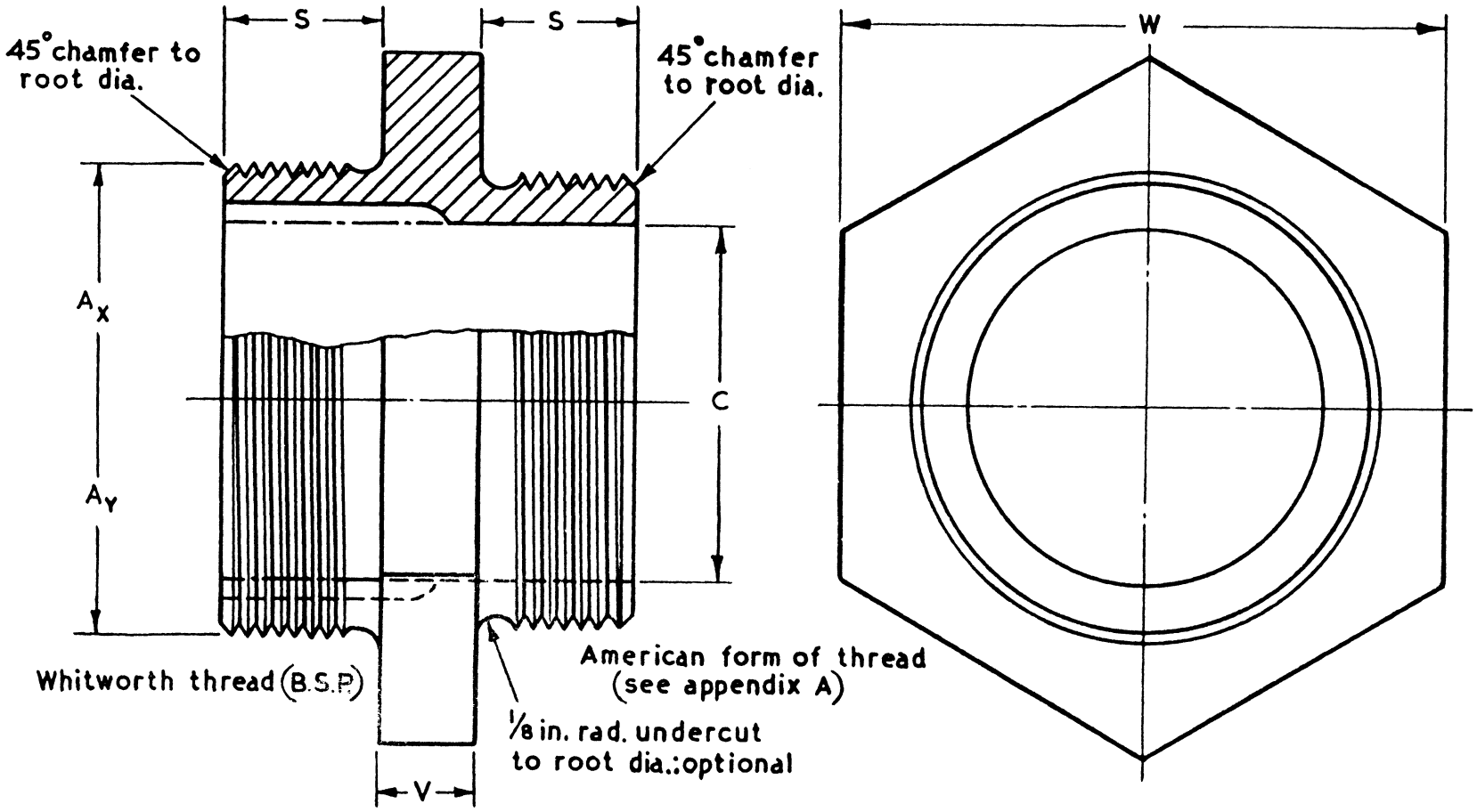


Figure 17 — Union nut: round horns

Table 9 — Union nut: round horns

(See Figure 17)

Nominal size, i.e. hose bore	Screw thread			A	C dia.	E	J_2	J_1	L_3 dia.	M	N	P	T dia.
	Nominal size	A_X Whitworth (B.S.P.) Minor dia. (min.)	A_Y American thread Minor dia. (min.) (See Appendix B)	Min.	± 0.030	± 0.030	+0 −0.062	± 0.010	± 0.010 −0	± 0.010 −0			± 0.062
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in
$1^1/_2$	$1^1/_2$	1.765 6	1.775 8	3.500	2.031	2.312	0.969	0.780	1.781	1.531	2.000	1.250	0.437
2	2	2.230 6	2.249 8	4.000	2.406	2.812	1.094	0.906	2.250	2.031	2.375	1.750	0.562
$2^1/_2$	$2^1/_2$	2.843 6	2.693 0	5.000	3.031	3.437	1.312	1.125	2.844	2.510	3.000	2.250	0.750
3	3	3.343 6	3.319 3	6.000	3.531	4.000	1.437	1.250	3.344	3.031	3.500	2.750	0.750
4	4	4.333 6	4.317 9	7.000	4.531	5.000	1.437	1.250	4.344	4.031	4.500	3.625	0.875



Smooth finish all over.

NOTE See Clause **9** for electrical bonding.

Figure 18 — Double-ended union: male threads; hexagon

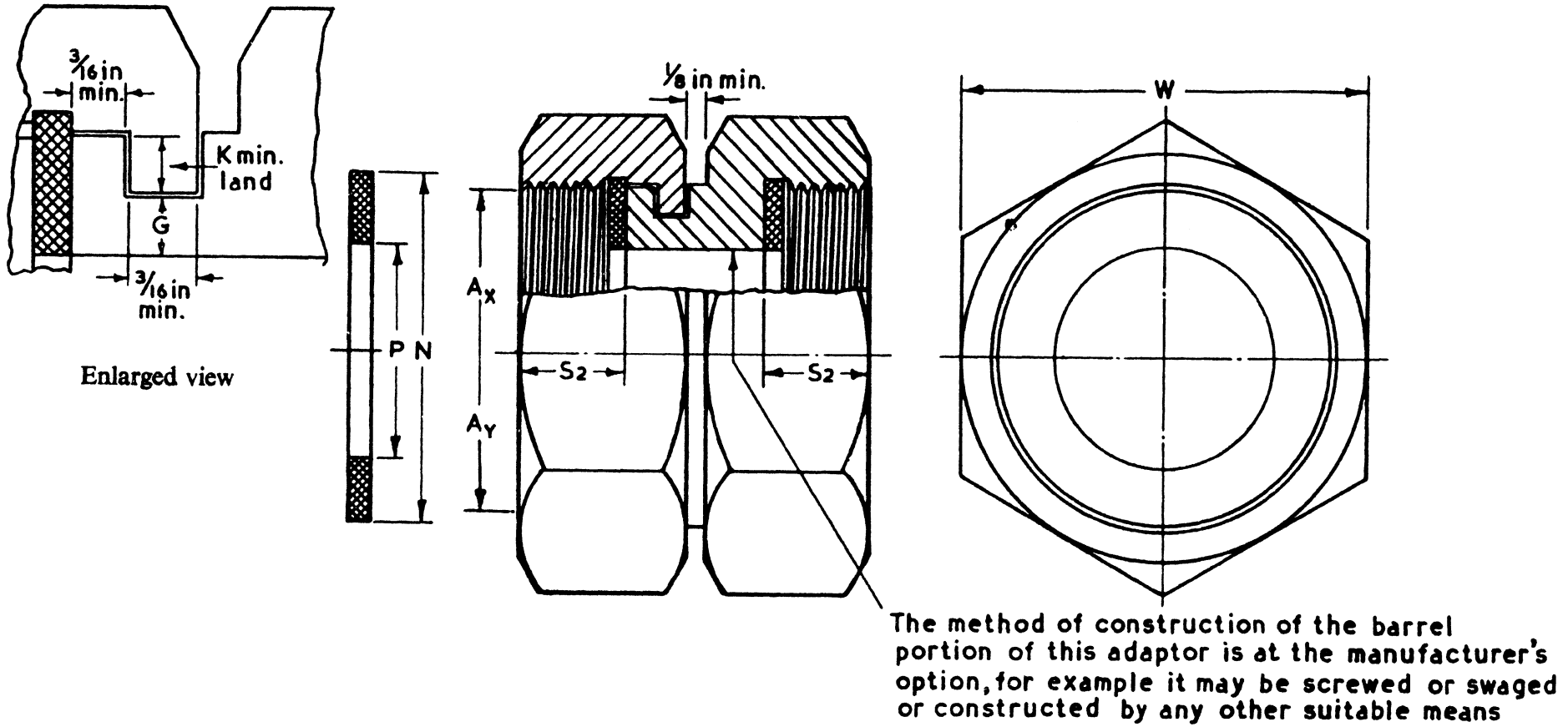
Table 10 — Double ended union: male threads; hexagon

(See Figure 18)

Nominal size, i.e. hose bore	Screw thread			C dia.	S	V	W Hexagon	
	Nominal size	A_X	A_Y					
		Whitworth (B.S.P.) Major diameter (max.)	American thread Major diameter (max.) (See Appendix A)	± 0.010	Min.	± 0.030	Max.	Min.
in.	in.	in.	in.	in.	in.	in.	in.	in.
$^3/_4$	$^3/_4$	1.041 0	1.035 3	0.750	0.687	0.312	1.250	1.212
1	1	1.309 0	1.295 1	0.875	0.687	0.312	1.625	1.575
$1^1/_4$	$1^1/_4$	1.650 0	1.639 9	1.250	0.750	0.375	2.000	1.938
$1^1/_2$	$1^1/_2$	1.882 0	1.878 8	1.437	0.750	0.375	2.375	2.300
2	2	2.347 0	2.352 8	1.906	0.875	0.437	2.750	2.662
$2^1/_2$	$2^1/_2$	2.960 0	2.843 4	2.500[b]	1.000	0.687	3.500	3.388
3	3	3.460 0	3.469 7	3.000	1.125	0.687	3.875	3.750
4	4	4.450 0	4.468 3	3.750	1.125	0.687	5.000	4.838

These adaptors may be screwed at both ends with Whitworth (BSP) threads or with American threads. They may also be screwed at one end with Whitworth (BSP) threads and at the other with American threads. The purchaser shall give clear instructions to the manufacturer which threads he requires.

[b] 2.500 in when screwed with Whitworth (B.S.P.) threads, and
2.250 in. when screwed with American threads.



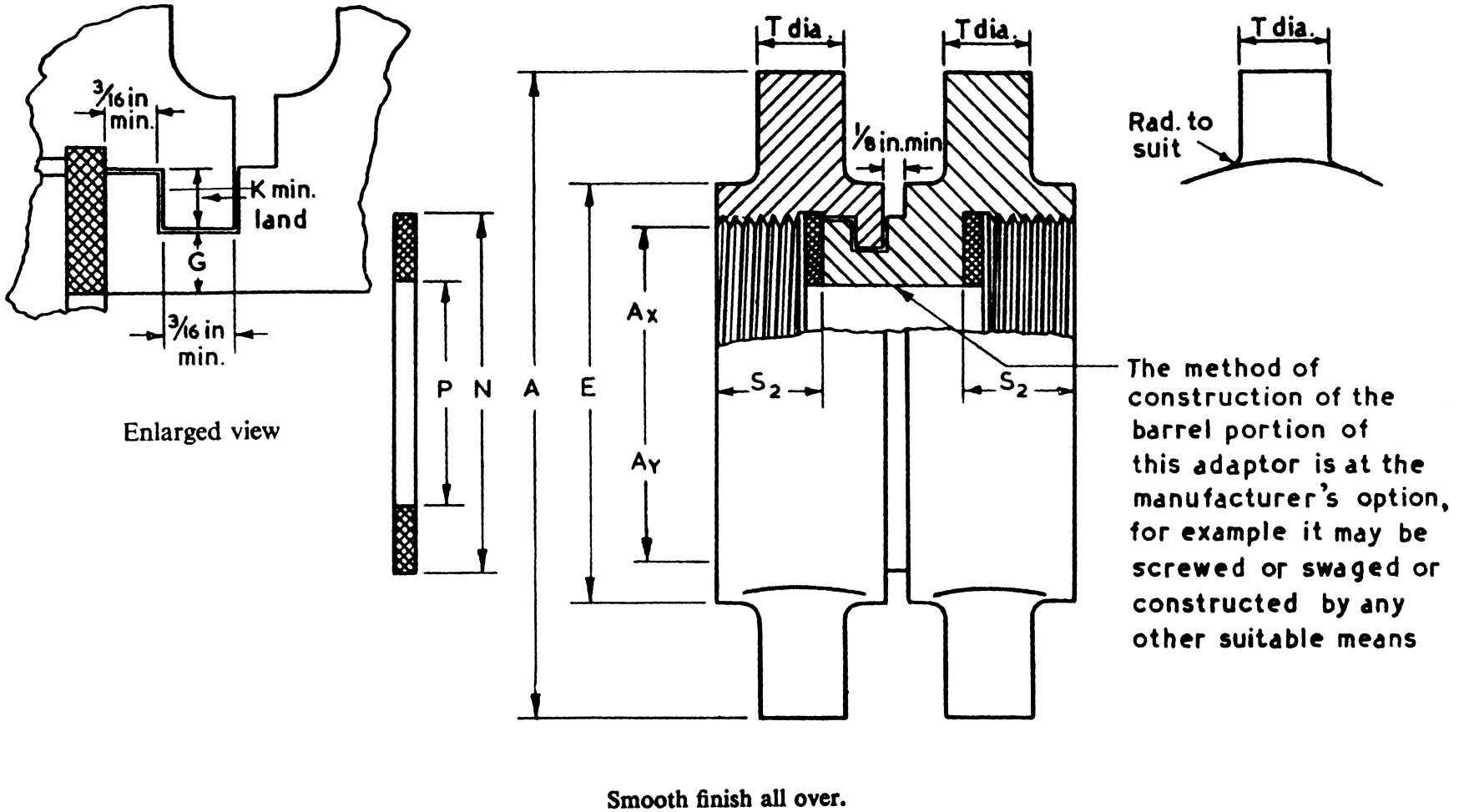
Smooth finish all over.

Figure 19 — Adaptor: swivelling type; female threads; hexagon

Table 11 — Adaptor: swivelling type; female threads; hexagon

(See Figure 19)

Nominal size, i.e. hose bore	Screw thread			G	K	N	P	S_2	W Hexagons	
	Nominal size	A_X	A_Y							
		Whitworth (B.S.P.) Minor diameter (min.)	American thread Minor diameter (min.)	Min.	Min.			± 0.010	Max.	Min.
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
$1^1/_2$	$1^1/_2$	1.765 6	1.775 8	0.187	0.187	2.000	1.250	0.594	2.375	2.300
2	2	2.230 6	2.249 8	0.187	0.187	2.375	1.750	0.718	2.750	2.662
$2^1/_2$	$2^1/_2$	2.843 6	2.693 0	0.187	0.218	3.000	2.250	0.937	3.50	3.388
3	3	3.343 6	3.319 3	0.218	0.250	3.500	2.750	1.062	3.875	3.750
4	4	4.333 6	4.317 9	0.218	0.250	4.500	3.625	1.062	5.000	4.838

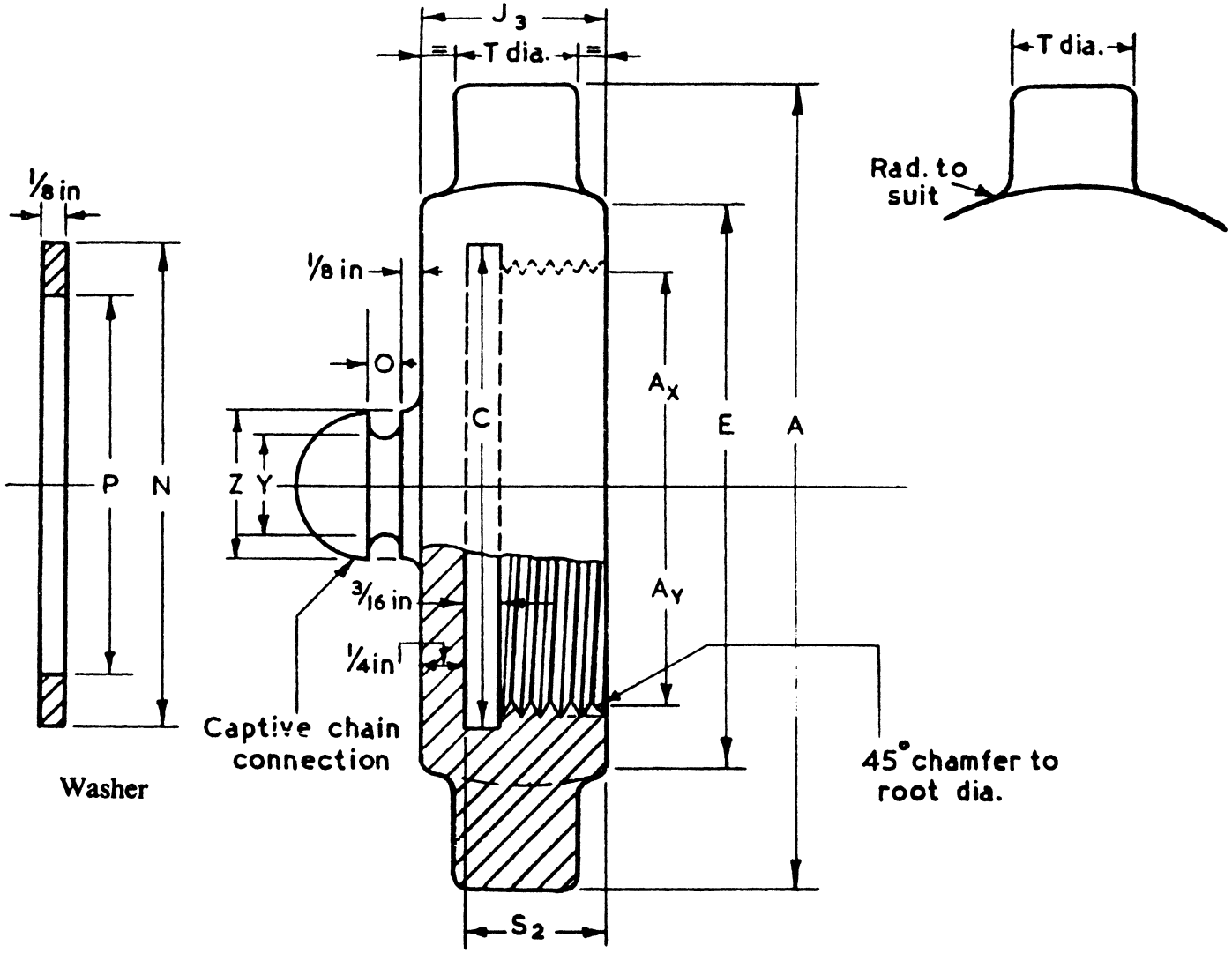


Smooth finish all over.

Figure 20 — Adaptor: swivelling type; female threads; round horns

Table 12 — Adaptor: swivelling type; female threads; round horns
(See Figure 20)

Nominal size, i.e., hose bore	Screw thread			A dia.	E dia.	G	K	N	P	S_2	T dia.
	Nominal size	A_X Whitworth (B.S.P.) Minor diameter (min.)	A_Y American thread Minor diameter (min.) (See Appendix B)	Min.	± 0.030	Min.	Min.			± 0.010	± 0.062
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
$1^1/_2$	$1^1/_2$	1.765 6	1.775 8	3.500	2.312	0.187	0.187	2.000	1.250	0.594	0.437
2	2	2.230 6	2.249 8	4.000	2.812	0.187	0.187	2.375	1.750	0.718	0.562
$2^1/_2$	$2^1/_2$	2.843 6	2.693 0	5.000	3.437	0.187	0.218	3.000	2.250	0.937	0.750
3	3	3.343 6	3.319 3	6.000	4.000	0.218	0.250	3.500	2.750	1.062	0.750
4	4	4.333 6	4.317 9	7.000	5.000	0.218	0.250	4.500	3.625	1.062	0.875



Smooth finish all over.

Figure 21 — Cap: round horns

Table 13 — Caps: round horns

(See Figure 21)

Nominal size, i.e. hose bore	Screw thread			A	C	E	J_3	N. dia.	O	P. dia.	S_2	T dia.	Y	Z
	Nominal size	A_X Whitworth (B.S.P.) Minor dia. (min.)	A_Y American thread Minor dia. (min.) (See Appendix B)	Min.	± 0.030	± 0.030	± 0.010				± 0.010	± 0.062		
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
$^3/_4$	$^3/_4$	0.949 6	0.950 0	2.312	1.093	1.375	0.718	1.000	0.156	0.625	0.531	0.375	0.312	0.562
1	1	1.192 6	1.192 1	2.687	1.344	1.562	0.718	1.250	0.156	0.875	0.531	0.375	0.375	0.625
$1^1/_4$	$1^1/_4$	1.533 6	1.536 9	3.187	1.718	2.000	0.781	1.625	0.156	1.000	0.593	0.437	0.437	0.687
$1^1/_2$	$1^1/_2$	1.765 6	1.775 8	3.500	2.031	2.312	0.844	2.000	0.187	1.250	0.594	0.437	0.500	0.750
2	2	2.230 6	2.249 8	4.000	2.406	2.812	0.969	2.375	0.187	1.750	0.718	0.562	0.562	0.812
$2^1/_2$	$2^1/_2$	2.843 6	2.693 0	5.000	3.031	3.437	1.187	3.000	0.187	2.250	0.937	0.750	0.625	0.875
3	3	3.343 6	3.319 3	6.000	3.531	4.000	1.312	3.500	0.187	2.750	1.062	0.750	0.687	0.937
4	4	4.333 6	4.317 9	7.000	4.531	5.000	1.312	4.500	0.187	3.625	1.062	0.875	0.750	1.000

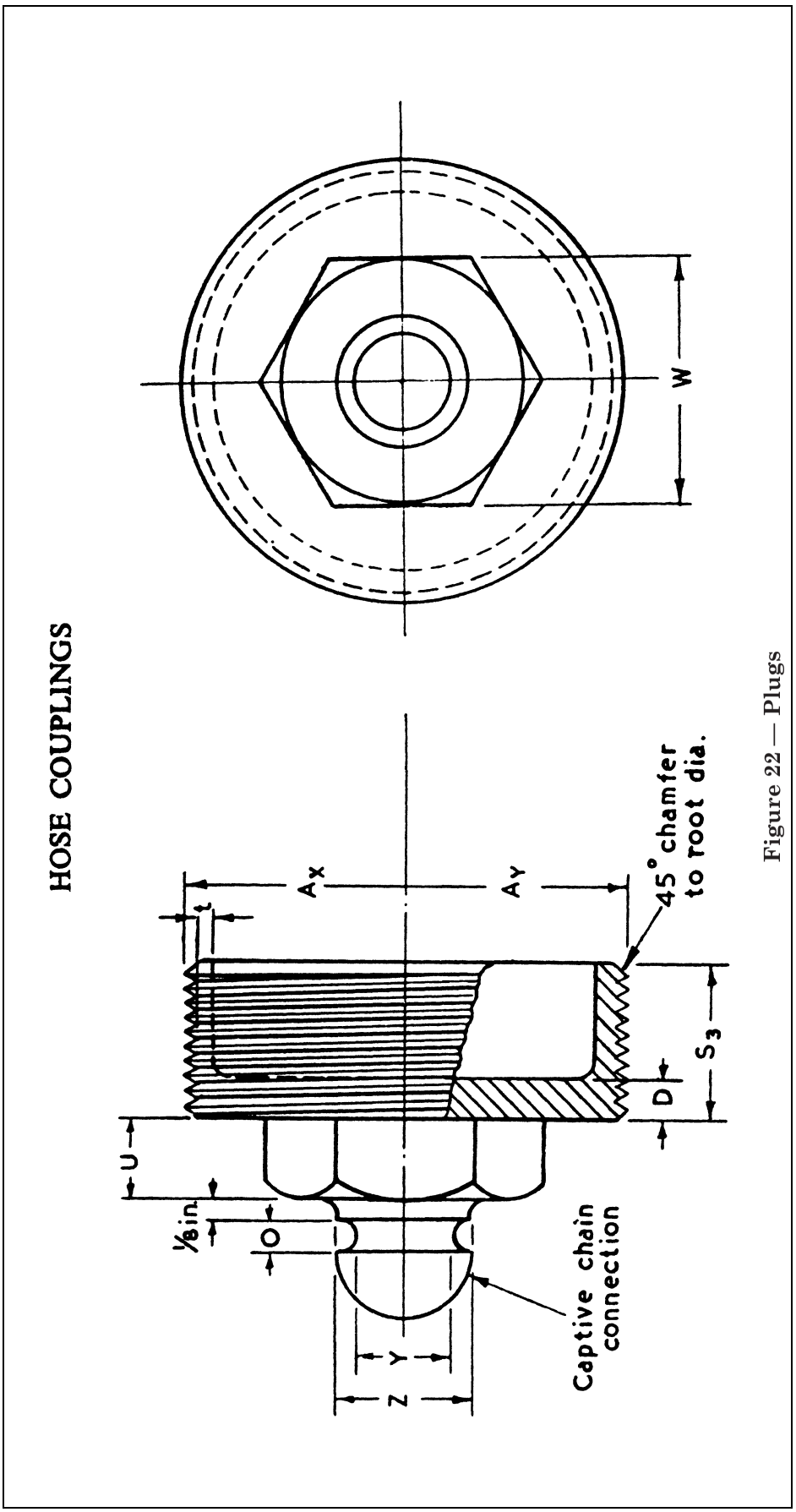


Figure 22 — Plugs

Table 14 — Plugs

(See Figure 22)

Nominal size, i.e., hose bore	Screw thread			O	S	U	W Hexagons		Y	Z	t	D
	Nominal size	A_X	A_Y									
		Whitworth (B.S.P.) Major diameter (max.)	American thread Major diameter (max.) (See Appendix A)			Min.	Max.	Min.			Min.	Min.
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
$^3/_4$	$^3/_4$	1.041 0	1.035 3	0.156	0.562	0.375	0.562	0.554	0.312	0.562	0.125	0.187
1	1	1.309 0	1.295 1	0.156	0.562	0.375	0.562	0.554	0.375	0.562	0.125	0.187
$1^1/_4$	$1^1/_4$	1.650 0	1.639 9	0.156	0.625	0.375	0.750	0.742	0.437	0.687	0.125	0.187
$1^1/_2$	$1^1/_2$	1.882 0	1.878 8	0.187	0.625	0.500	1.312	1.300	0.500	0.750	0.125	0.250
2	2	2.347 0	2.252 8	0.187	0.750	0.500	1.625	1.575	0.562	0.812	0.125	0.250
$2^1/_2$	$2^1/_2$	2.960 0	2.843 4	0.187	1.000	0.500	1.625	1.575	0.625	0.875	0.187	0.250
3	3	3.460 0	3.469 7	0.187	1.250	0.625	2.000	1.938	0.687	0.937	0.187	0.250
4	4	4.450 0	4.468 3	0.187	1.250	0.625	2.000	1.938	0.750	1.000	0.250	0.250

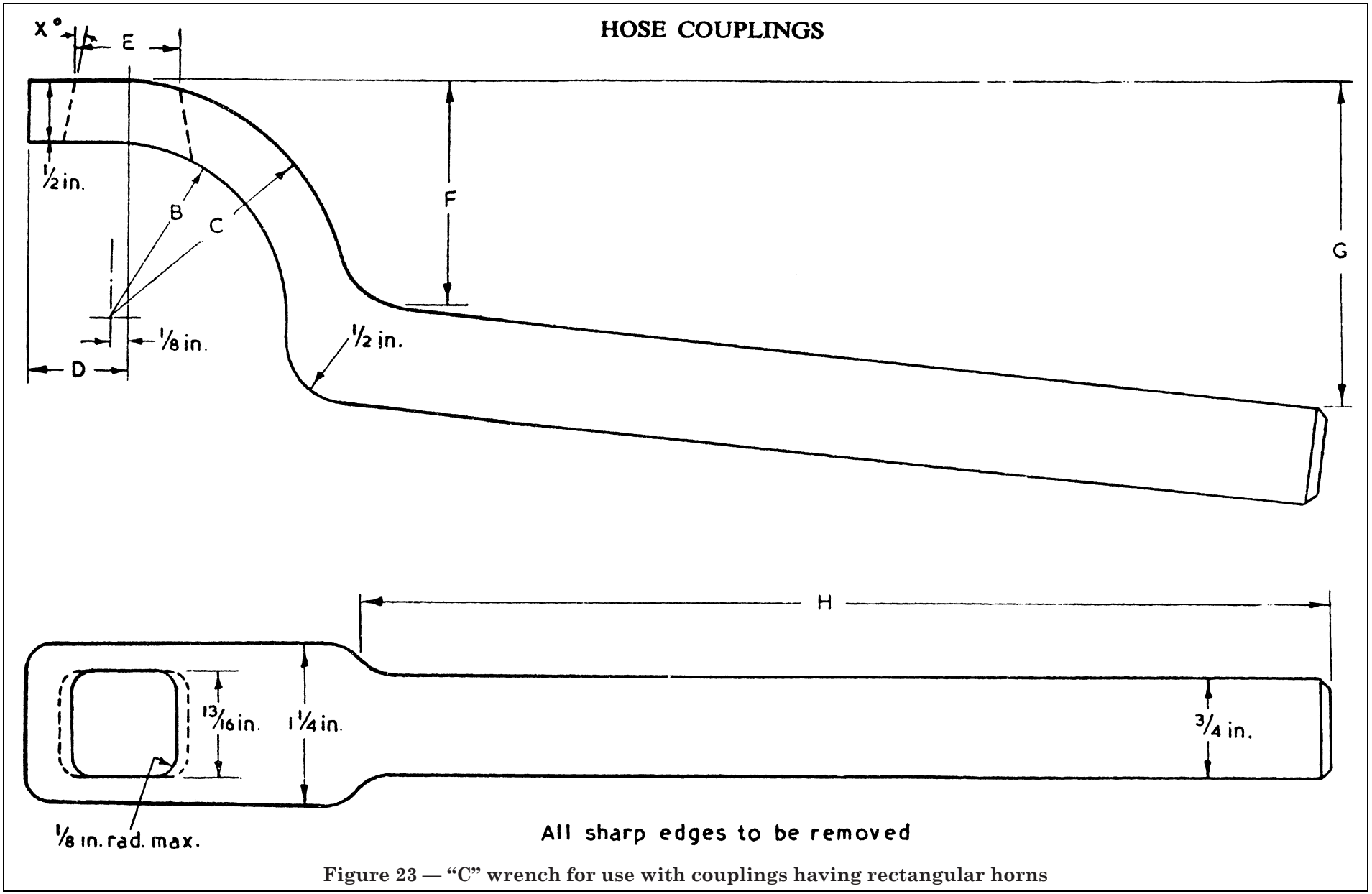


Figure 23 — "C" wrench for use with couplings having rectangular horns

Table 15 — "C" wrench for use with couplings with rectangular horns
(See Figure 23)

Nominal size	B rad.	C rad.	D	E Limits of tolerance +0.030 −0	F	G	H	Angle x
in.	in.	in.	in.	in.	in.	in.	in.	
$1^1/_2$	1.375	1.875	0.750	0.812	1.750	2.500	7.500	10°
2	1.625	2.125	0.875	0.875	2.000	2.750	8.000	15°
$2^1/_2$	2.000	2.500	0.875	0.875	2.250	3.000	8.500	15°
3	2.250	2.750	1.000	0.937	2.500	3.250	9.000	20°
4	2.750	3.250	1.000	0.937	3.000	3.750	10.000	20°

NOTE Unless otherwise specified, general limits of tolerance to be ± 0.030 in.

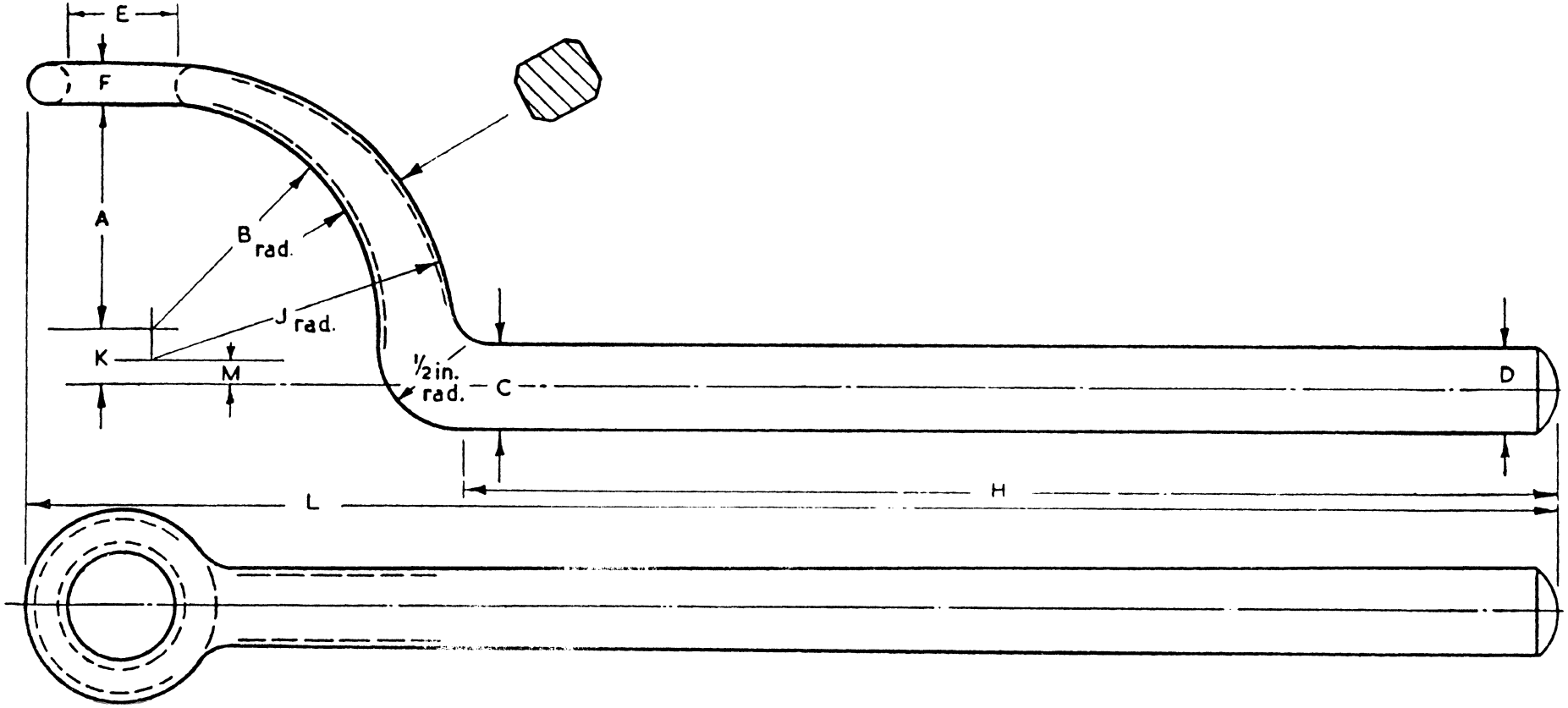


Figure 24 — Wrenches for couplings having round horns

Table 16 — Wrench for use with couplings having round horns
(See Figure 24)

Hose size	A	B Rad.	C	D	E +0.030 −0	F	H	J Rad.	K	L	M
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
3/4	0.875	0.875	0.500	0.500	0.500	0.187	6.50	1.250	0.281	8.75	0.062
1	0.938	0.938	0.500	0.500	0.500	0.187	6.75	1.25	0.312	9.00	0.062
1 1/4	1.000	1.000	0.625	0.625	0.562	0.250	7.25	1.312	0.312	9.50	0.062
1 1/2	1.250	1.250	0.625	0.625	0.625	0.250	8.25	1.500	0.312	11.25	0.062
2	1.500	1.500	0.625	0.625	0.750	0.250	8.25	2.000	0.312	11.25	0.062
2 1/2	1.875	1.875	0.625	0.625	0.875	0.250	8.25	2.375	0.312	11.75	0.062
3	2.250	2.250	0.750	0.750	0.937	0.250	10.00	2.750	0.375	13.75	0.125
4	3.000	3.000	0.750	0.750	0.937	0.312	10.50	3.500	0.375	15.00	0.125

NOTE Unless otherwise specified, general limits of tolerance ± 0.030 in.

Appendix A American form of hose-coupling thread

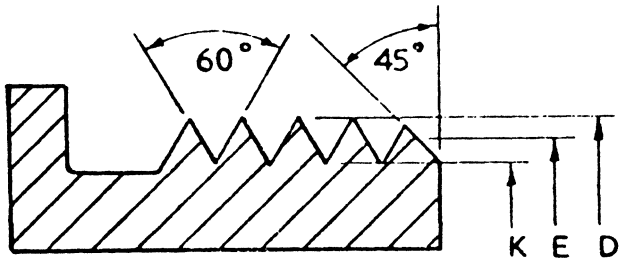


Figure 25 — External threads

Table 17 — Dimensions of external threads

Type of thread (See Note 2)	Nominal size	Threads per inch	Major diameter D		Effective diameter E		Minor dia. K (max.)
			Max.	Min.	Max.	Min.	
	in.		in.	in.	in.	in.	in.
a	$^3/_4$	14	1.035 3	1.021 3	0.988 9	0.981 9	0.942 5
a	1	$11^1/_2$	1.295 1	1.278 1	1.238 6	1.230 1	1.182 1
a	$1^1/_4$	$11^1/_2$	1.639 9	1.622 9	1.583 4	1.574 9	1.526 9
a	$1^1/_2$	$11^1/_2$	1.878 8	1.861 8	1.822 3	1.813 8	1.765 8
a	2	$11^1/_2$	2.352 8	2.335 8	2.296 3	2.287 8	2.239 8
b	$2^1/_2$	8	2.843 4	2.821 2	2.762 2	2.751 1	2.681 0
b	3	8	3.469 7	3.447 5	3.388 5	3.377 4	3.307 3
b	4	8	4.468 3	4.446 1	4.387 1	4.376 0	4.305 9

NOTE 1 These dimensions ensure a leak-proof joint when the couplings are connected to valves, fittings and flanges threaded to API.STD. 6A.

NOTE 2 Thread standards are as follows:—

a) American National hose-coupling threads (for steam, air, water, etc.) ASA B33.1. These fit American National pipe threads.

b) Special hose-coupling threads based on American National pipe threads. American Federal Standard Stock Catalogue ZZ-H-466b (Nov. 1935) (Section IV, Part 5).

Appendix B American form of hose-coupling thread

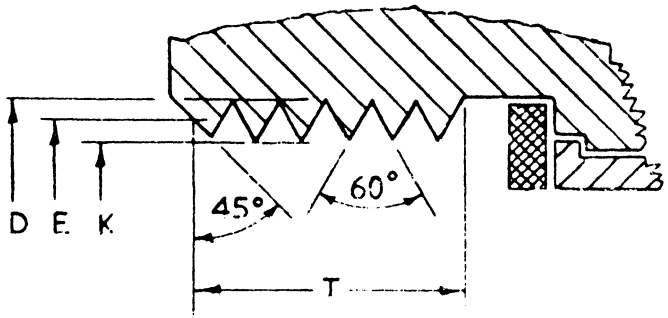


Figure 26 — Internal threads

Table 18 — Dimensions of internal threads

Type of thread (see Note 2)	Nominal size	Threads per inch	Major diameter D (min.)	Effective diameter E		Minor diameter K		Thread length of coupling T	Approximate number of threads in length T
				Max.	Min.	Max.	Min.		
	in.		in.	in.	in.	in.	in.	in.	
1	$^{3}/_{4}$	14	1.042 8	1.003 4	0.996 4	0.964 0	0.950 0	$^{3}/_{8}$	$5^{1}/_{4}$
1	1	$11^{1}/_{2}$	1.305 1	1.257 1	1.248 6	1.209 1	1.192 1	$^{3}/_{8}$	$4^{1}/_{4}$
1	$1^{1}/_{4}$	$11^{1}/_{2}$	1.649 9	1.601 9	1.593 4	1.553 9	1.536 9	$^{15}/_{32}$	$5^{1}/_{2}$
1	$1^{1}/_{2}$	$11^{1}/_{2}$	1.888 8	1.840 8	1.832 3	1.792 8	1.775 8	$^{15}/_{32}$	$5^{1}/_{2}$
1	2	$11^{1}/_{2}$	2.362 8	2.314 8	2.306 3	2.266 8	2.249 8	$^{19}/_{32}$	$6^{3}/_{4}$
2	$2^{1}/_{2}$	8	2.855 4	2.785 3	2.774 2	2.715 2	2.693 0	$^{11}/_{16}$	$5^{1}/_{2}$
2	3	8	3.481 7	3.411 6	3.400 5	3.341 5	3.319 3	$^{13}/_{16}$	$5^{1}/_{2}$
2	4	8	4.480 3	4.410 2	4.399 1	4.340 1	4.317 9	$^{13}/_{16}$	$6^{1}/_{2}$

NOTE 1 These dimensions ensure a gasket joint with API. line pipe thread to API. STD. 5L.

NOTE 2 Thread standards are as follows:—

a) American National hose-coupling threads (for steam, air, water, etc.) ASA B33.1. These fit American National pipes threads.

b) Special hose-coupling threads based on American National pipe threads. American Federal Stock Catalogue ZZ-H-466b, (Nov. 1935) (Section IV, Part 5).

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