

Specification for

**Couplings for suction
and delivery
hose (1¹/₂ in. to 8 in.
nominal sizes) other
than fire hose couplings**

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*	Institute of Petroleum
Air Ministry	Institution of Civil Engineers
Associated Offices Technical Committee	Institution of Gas Engineers
Association of Consulting Engineers (Incorporated)	Institution of Heating and Ventilating Engineers
British Chemical Plant Manufacturers’ Association	Institution of Mechanical Engineers*
British Compressed Air Society*	Institution of Mechanical Engineers (Automobile Division)
British Electrical and Allied Manufacturers’ Association	Institution of Production Engineers
British Engineers Association*	Locomotive Manufacturers Association
British Internal Combustion Engine Manufacturers’ Association	Machine Tool Trades’ Association
British Iron and Steel Federation	Ministry of Fuel and Power
British Railways, The Railway Executive	Ministry of Labour and National Service (Factory Department)
Crown Agents for the Colonies	Ministry of Supply*
Department of Scientific and Industrial Research	Ministry of Transport*
Engineering Equipment Users Association	Ministry of Works*
Institute of Marine Engineers	Office of the High Commissioner for India
	War Office*

The Government departments and 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 standard:—

Association of Mining Electrical and Mechanical Engineers	Federation of Civil Engineering Contractors
British Wrapped Rubber Hose Manufacturers’ Association	Federation of Manufacturers of Contractors Plant
Council of Underground Machinery Manufacturers	Federation of Painting Contractors
Cut Thread Screwing Tool Manufacturers’ Association	Institution of Municipal Engineers
Federation of British Rubber Manufacturers’ Associations	Institution of Water Engineers
	National Association of Colliery Managers
	National Coal Board
	Individual Manufacturers of couplings

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 22 August 1951

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Foreword

This standard makes reference to the following British Standards:

BS 15, *Mild steel for general structural purposes.*

BS 21, *Pipe threads.*

BS 192, *Open-ended spanners (not including B.A. sizes).*

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

BS 250, *Wrought high tensile brass rods and sections (other than forging stock).*

BS 336, *Couplings, branch pipes, nozzles, strainers and auxiliaries for fire hose.*

BS 1102, *Rubber suction and discharge hose with woven fabric wire reinforcement.*

BS 1154, *Vulcanized natural rubber compounds.*

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

BS 1580, *Unified screw threads.*

and to the following American Petroleum Institute Specification:—

A.P.I. Specification 6A 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 Federation of Manufacturers of Contractors' Plant.

Experience made it evident that an improvement in the types of hose coupling was both desirable and necessary; the ordinary types were not sufficiently robust, they were too difficult to couple and a full bore coupling could not be coupled to a restricted bore coupling without an adaptor.

This standard deals with the types of couplings and adaptors for suction and delivery hose used by H.M. Forces, public works contractors, salvage engineers, and similar users.

These couplings have been designed primarily for use with water, but they may be used for other suitable liquids. The couplings covered in Part 1 of this standard are also suitable for use with compressed air.

Two types of couplings are specified, the screw type and the swivelling ring swing-bolt type; the design of the couplings differs from that previously used in having ribbed instead of serrated tail ends. The screw type couplings have a thread of coarser pitch; the more robust thread and more substantial horns lead to easier coupling and confer ability to withstand rough usage.

For any particular nominal size of coupling two diameters of tail end are provided:

- a) Full bore,
- b) Reduced bore.

The full bore coupling has a waterway equal to its nominal size and also equal to the outside diameter of the appropriate standard pipe for attaching to hose with enlarged ends. The reduced bore coupling is interchangeable with the full bore coupling, but has a tail end of outside diameter to suit canvas or other non-elastic hose of nominal bore.

The Unified form of screw thread has been adopted for these couplings. The Unified screw thread system is the outcome of deliberations between the Governments of the United Kingdom, Canada and the United States of America, and is fully described in BS 1580, "*Unified screw threads.*"

The couplings may be secured to the hose by wiring, by clamps, or by clips. The clamps or clips should be located between the ridges of the coupling. In the case of wiring, the binding may extend the full length of the coupling, i.e. along the depressions and over the central ridge, or it may be applied in separate sections, one for each depression. The wire binding should be properly tied off, and the adjacent turns of wire soldered to each other over a width of $\frac{1}{2}$ in.

To conform to usual practice, it is recommended that the female hose coupling should connect to both suction and delivery sides of the pump or source of supply. Straighteners and feed valves will, therefore, have a female coupling.

Details of fire hose couplings are given in BS 336, "*Fire hose couplings (including screwed outlets for hydrants), suction hose couplings and branch pipe and nozzle connections.*"

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 42 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.

Part 1. Screw type couplings

1 Scope

Part 1 of this standard covers 1½, 2, 2½, 3, 3½ and 4 in. screw type couplings and adaptors for use in conjunction with suction and delivery hose intended for working pressures not exceeding 100 lb/sq. in.

2 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.

3 General

Unless otherwise specified, screw type couplings shall be supplied in sets comprising the following:

Full bore coupling	a) Tail end male b) Tail end female c) Coupling nut d) Washer	See Figure 1
Reduced bore coupling	a) Tail end male b) Tail end female c) Coupling nut d) Washer	See Figure 2

4 Material

Couplings and adaptors shall be made from gun metal castings complying with specification LG2-C or from brass complying with specifications B2-C or B3-C, all in BS 1400, "*Copper alloy ingots and castings*." Hot pressings in accordance with BS 218 are permissible, but the purchaser shall be given prior notification by the manufacturer of his intention to supply hot pressings.

5 Dimensions

The dimensions of couplings and adaptors shall conform to those shown in Figure 6–Figure 17 and Table 1–Table 9.

6 Workmanship

Workmanship and finish shall be of good quality. All burrs and sharp edges shall be removed.

7 Screw threads

Screw threads, male and female, shall be the Unified form of screw thread complying with BS 1580, "*Unified screw threads*," but only those sizes set out in Table 10 shall be used.

NOTE The tolerances shown in Table 10 for 6 UNS threads have been calculated from the formulae given in BS 1580.

Screw threads on the adaptors may be either B.S.P. (taper or parallel) complying with BS 21, "*Pipe threads*," or A.P.I. (taper) complying with A.P.I. Specification 6A¹⁾ for female threads. (See Figure 12–Figure 17.)

The first thread shall be chamfered to 45°.

8 Washers

Washers shall be made of specially selected leather, of chloroprene to BS hardness 71° to 80°, rubber asbestos compound or other suitable approved 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.

9 Wrenches

Wrenches shall be made of steel not inferior to BS 15, "*Structural steel*," and they shall be to the dimensions in Figure 19 and Table 11.

10 Interchangeability

All corresponding parts shall be interchangeable, including the screw threads.

11 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 1782.

NOTE The mark BS 1782 on or in relation to the product is a claim by the manufacturer that it complies with the requirements of the standard.

The British Standards Institution is the owner of the registered certification trade mark. This is shown below enclosed in the words "Approved to British Standard". This mark can be used only by manufacturers licensed under the certification mark scheme operated by the BSI. The presence of this mark on or in relation to a product is an assurance that the goods have been produced to comply with the requirements of the British Standard under a system of supervision, control and testing operated during manufacture and including periodical inspection at the manufacturer's works in accordance with the certification mark scheme of the BSI.

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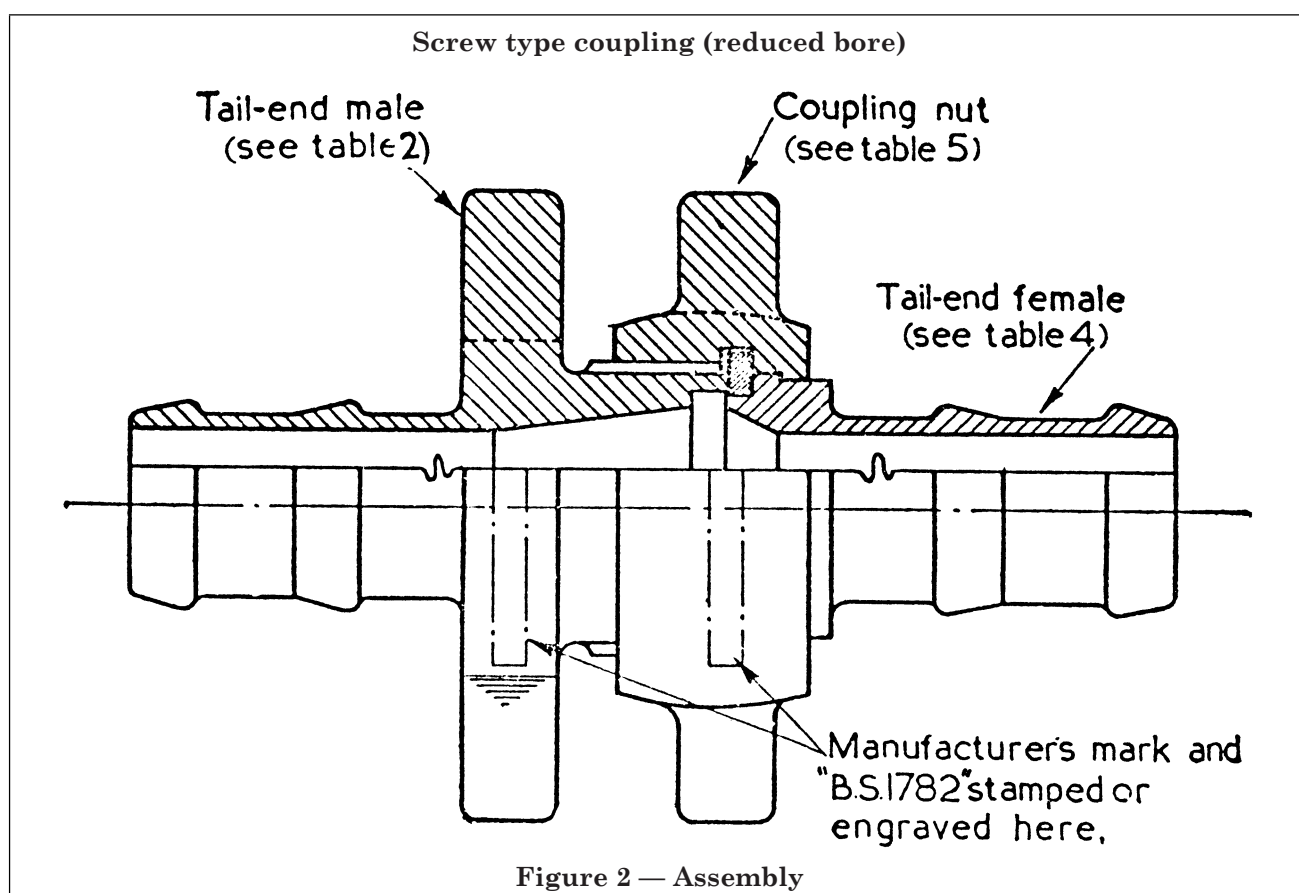


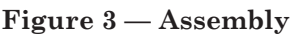
¹⁾ A.P.I. Specification 6A, "*Threads in valves, fittings and flanges*".

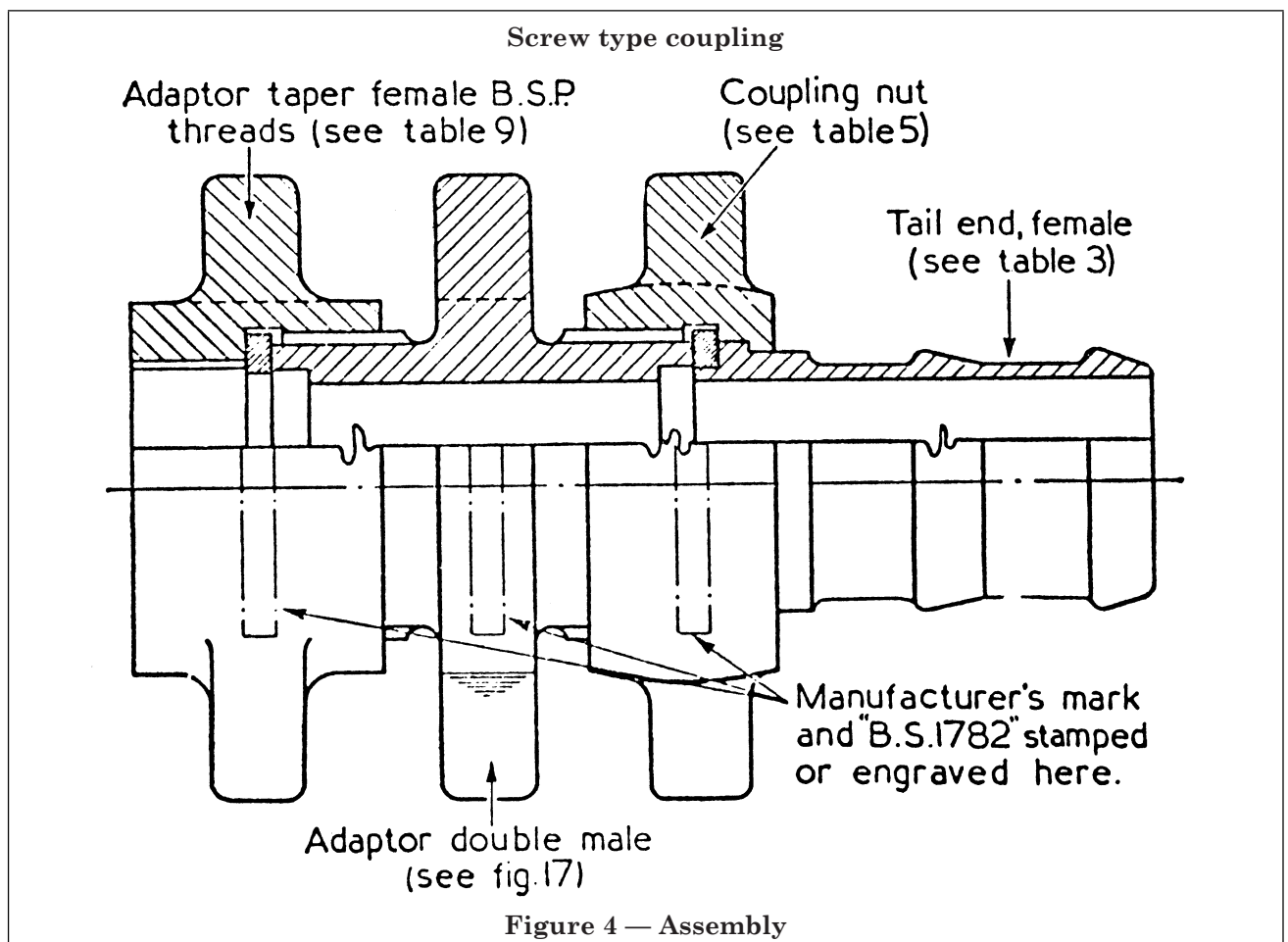
Couplings assembled without hose shall, if required, be given a pressure test in the presence of the purchaser or his representative. This test is for the purpose of locating porosity in the castings after machining, and also to test the merits of the joint.

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

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.







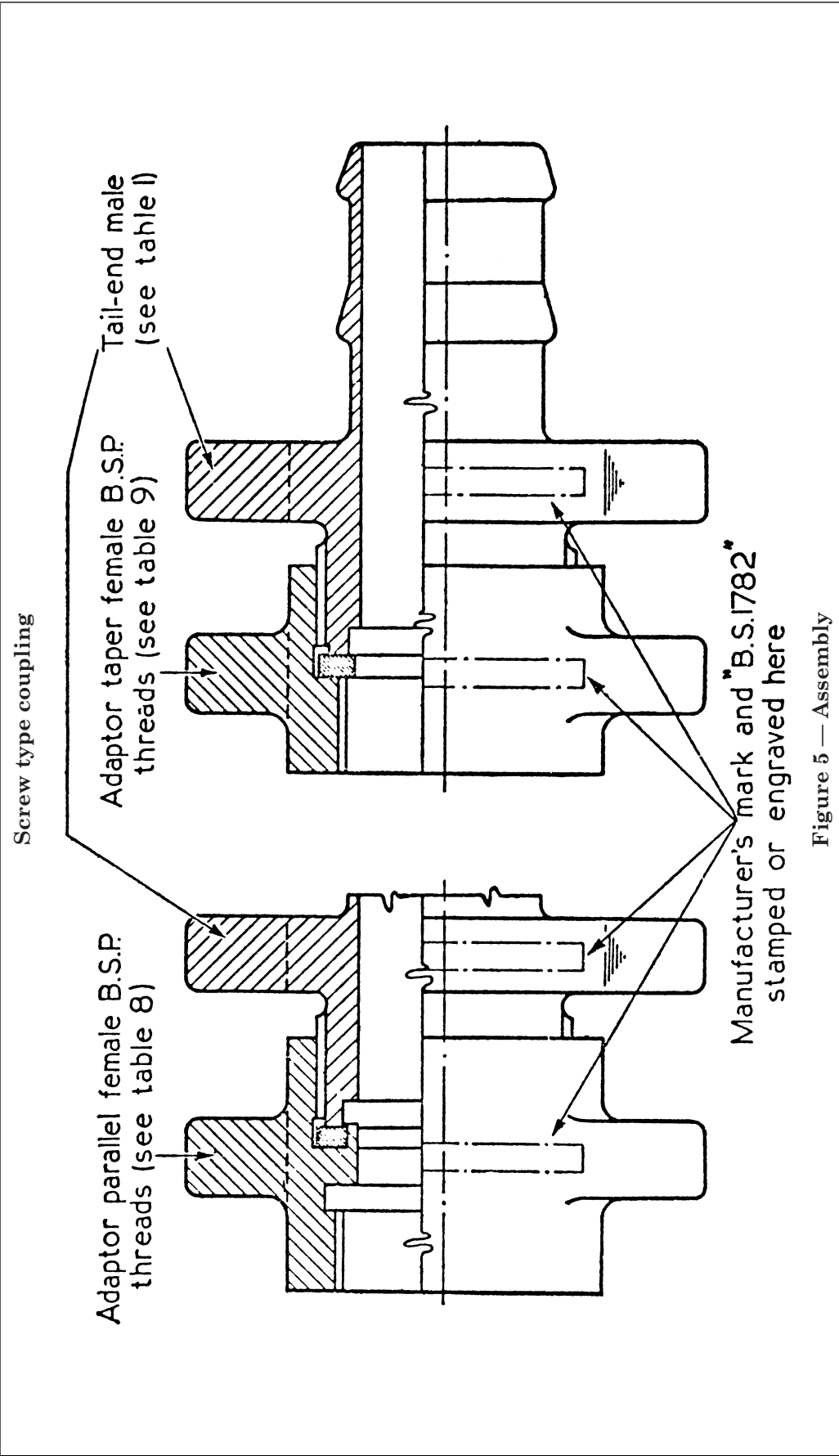
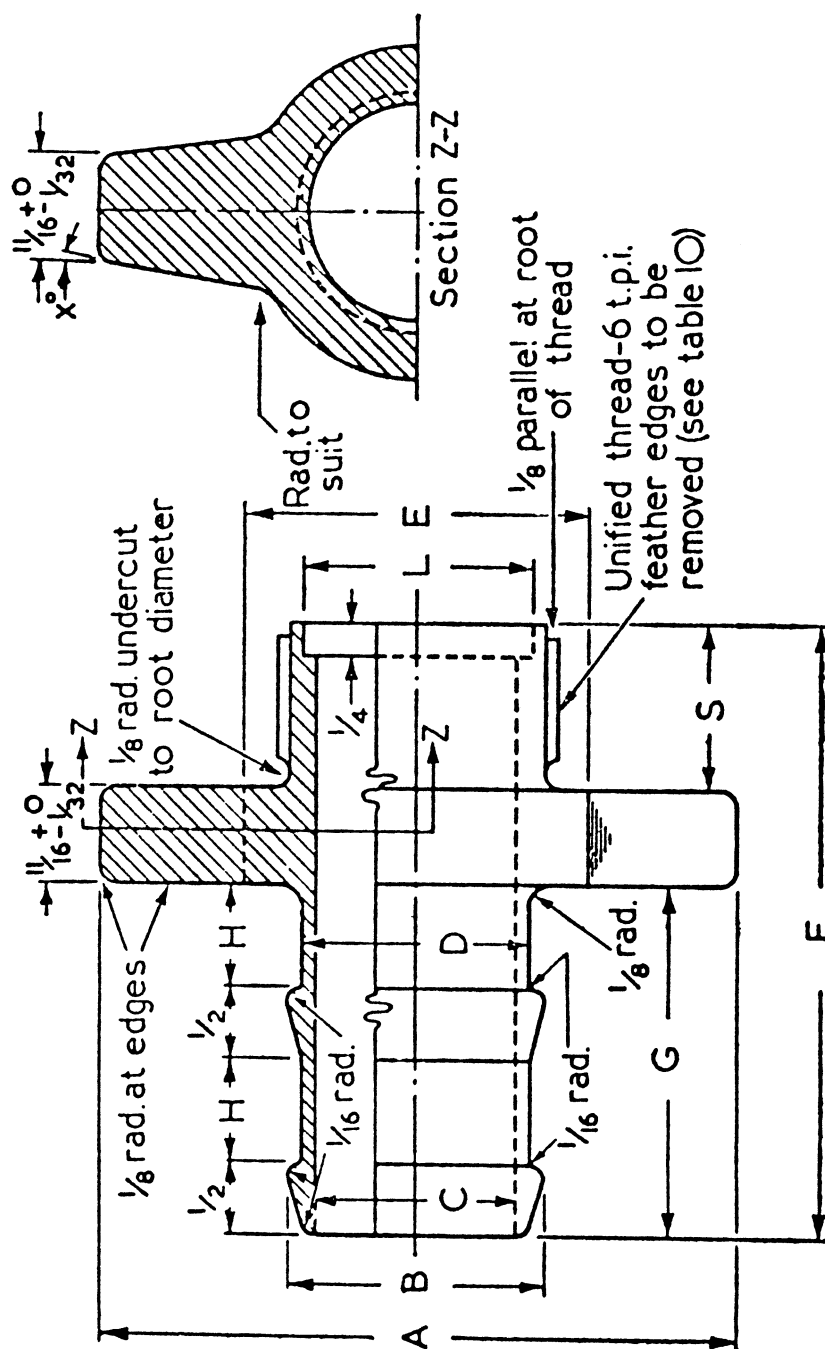


Figure 5 — Assembly

Screw type coupling: full bore (with two horns)

All dimensions in inches



Machined all over, except bore and horns.

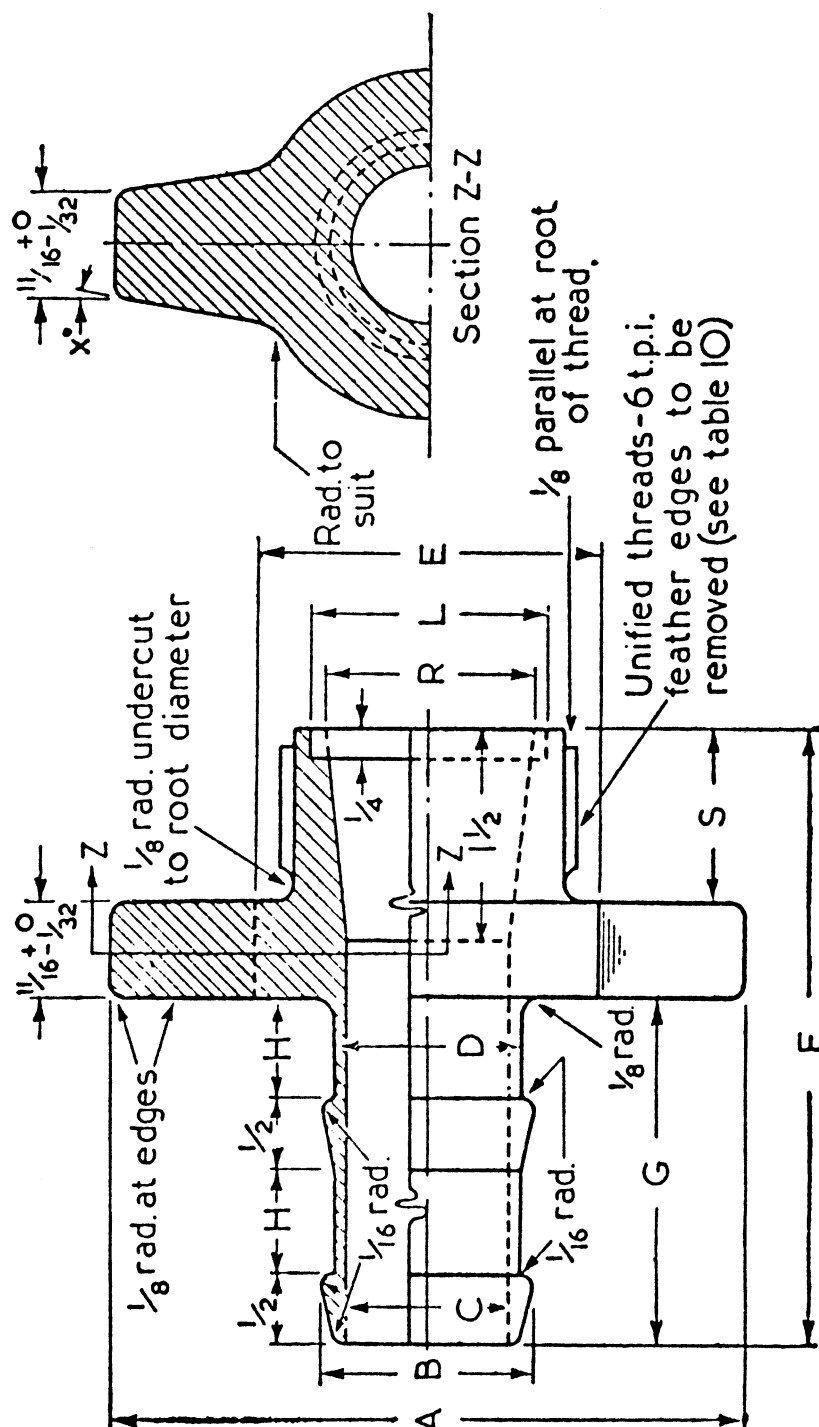
Figure 6 — Tail end, male

Table 1 — Tail-end, male

1	2	3	4	5	6	7	8	9	10	11	12
	A	B dia.	C dia.	D dia.	E dia.	F	G	H	L dia.	S	Angle χ
Nominal size	Limits of tolerance $\pm 1/32$	Limits of tolerance $+0$ $-1/64$	Limits of tolerance $+0$ $-1/32$	Limits of tolerance $+1/32$ -0	Limits of tolerance $\pm 1/32$	Limits of tolerance $\pm 1/32$	Limits of tolerance $\pm 1/32$	Limits of tolerance $+0$ $-1/32$			
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
$1\frac{1}{2}$	$4\frac{1}{2}$	$1\frac{7}{8}$	$1\frac{1}{2}$	$1\frac{11}{16}$	$2\frac{1}{2}$	$4\frac{3}{8}$	$2\frac{1}{2}$	$\frac{3}{4}$	$1\frac{11}{16}$	$1\frac{3}{16}$	10°
2	5	$2\frac{3}{8}$	2	$2\frac{3}{16}$	$2\frac{7}{8}$	$4\frac{7}{8}$	3	1	$2\frac{3}{16}$	$1\frac{3}{16}$	15°
$2\frac{1}{2}$	$5\frac{3}{4}$	3	$2\frac{1}{2}$	$2\frac{3}{4}$	$3\frac{5}{8}$	$4\frac{7}{8}$	3	1	$2\frac{3}{4}$	$1\frac{3}{16}$	15°
3	$6\frac{1}{4}$	$3\frac{1}{2}$	3	$3\frac{1}{4}$	4	$5\frac{1}{2}$	$3\frac{1}{2}$	$1\frac{1}{4}$	$3\frac{1}{4}$	$1\frac{5}{16}$	20°
$3\frac{1}{2}$	$6\frac{3}{4}$	4	$3\frac{1}{2}$	$3\frac{3}{4}$	$4\frac{1}{2}$	$5\frac{1}{2}$	$3\frac{1}{2}$	$1\frac{1}{4}$	$3\frac{3}{4}$	$1\frac{5}{16}$	20°
4	$7\frac{1}{4}$	$4\frac{1}{2}$	4	$4\frac{1}{4}$	5	6	4	$1\frac{1}{2}$	$4\frac{1}{4}$	$1\frac{5}{16}$	20°
NOTE Unless otherwise specified, general limits of tolerance to be $\pm 1/64$ in.											

Screw type coupling: reduced bore (with two horns)

All dimensions in inches



Machined all over, except bore and horns.

Figure 7 — Tail end, male