

Stainless steel tubes and fittings for the food industry and other hygienic applications —

Part 4: Specification for threaded (IDF type) couplings

ICS 67.260; 77.140.75

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Piping Systems Components Standards Policy Committee (PSE/-) to Technical Committee PSE/8, upon which the following bodies were represented:

Adhesive Tape Manufacturers' Association
British Compressed Air Society
British Gas plc
British Malleable Tube Fittings Association
British Steel Industry
British Valve and Actuator Manufacturers' Association
British Welded Steel Tube Association
Engineering Equipment and Materials Users' Association
Food and Drink Federation
Institution of Civil Engineers
Institution of Gas Engineers
Institution of Water and Environmental Management
Large Diameter Steel Tube Association
Mechanical Handling Engineers' Association
Stainless Steel Fabricators' Association of Great Britain
Steel Tube Fittings Manufacturers' Technical Association
Water Companies Association
Water Research Centre
Water Services Association of England and Wales
Coopted member

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

Brewers Society
Dairy Trade Federation
Institution of Production Engineers
Milking Machine Manufacturers' Association

This British Standard, having been prepared under the direction of the Piping Systems Components Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 31 January 1992

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Amendments issued since publication

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Foreword

This Part of BS 4825 has been prepared under the direction of the Piping Systems Components Standards Policy Committee.

BS 4825-4:1991+A1:2009 supersedes BS 4825-4:1991, which is withdrawn.

BS 4825 is published in five Parts:

- *Part 1: Specification for tubes;*
- *Part 2: Specification for bends and tees;*
- *Part 3: Specification for clamp type couplings;*
- *Part 4: Specification for threaded (IDF type) couplings;*
- *Part 5: Specification for recessed ring joint type couplings.*

This Part of BS 4825 has been prepared taking into account ISO 2853 published by the International Organization for Standardization (ISO).

Couplings specified in BS 4825 are intended for the following uses:

- *Part 3: where either in-place cleaning or frequent dismantling is necessary;*
- *Part 4: where cleaning in-place techniques are normally practised;*
- *Part 5: where piping systems are frequently dismantled.*

The essential differences between this Part of BS 4825 and BS 4825-4:1977 are as follows.

- a) This edition has been simplified by excluding reference to tube outside diameters not in current use.
- b) Tube sizes of 1.6 mm wall thickness have been introduced for welded type male parts and liners for tube outside diameters of 50.8 mm and below.
- c) The 101.6 mm outside diameter coupling is now 6 TPI (instead of 8 TPI) and reflects common UK usage. It is not interchangeable with the ISO 2853 coupling of the same diameter.

The start and finish of text introduced or altered by Amendment No. 1 is indicated in the text by tags **A1** **A1**. Minor editorial changes are not tagged.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 19, 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 Part of BS 4825 specifies the dimensions, tolerances, surface finish, materials, assembly and hygienic requirements for welded and expanded type male parts and liners, and nuts and seals for threaded IDF type fittings for the food industry and other hygienic applications.

NOTE 1 The male parts and liners specified are intended to be used with stainless steel tubes specified in BS 4825-1.

NOTE 2 The titles of the publications referred to in this standard are listed on [F1](#) page 19 [A1](#).

2 Information to be supplied by the purchaser

2.1 The purchaser is to provide to the supplier the information given in Appendix A to enable products to be supplied in accordance with this standard.

2.2 A number of options are permitted by this standard as given in Appendix B.

Both the definitive requirements specified throughout this standard and the options selected by the purchaser shall be satisfied by the manufacturer before a claim of compliance with this standard can be made and verified. In the event that the purchaser does not indicate his requirements at the time of enquiry and order the manufacturer shall select the option where appropriate.

3 Definitions

For the purposes of this Part of BS 4825, the following definitions apply.

3.1

expanded male part

externally threaded part of coupling providing a sealing face. To be attached to a tube end by expansion

3.2

expanded liner

coupling part having a shoulder and providing a sealing face. To be attached to a tube end by expansion

3.3

welded male part

externally threaded part of coupling providing a sealing face. To be attached to a tube end by a butt weld

3.4

welded type liner

coupling part having a shoulder and providing a sealing face. To be attached to a tube end by a butt weld

3.5

seal

an elastomer which provides a liquid tight joint when compressed between the liner and male part

3.6

nut

an internally threaded component providing the clamping of the coupling and compressing the seal between the liner and the male part. May have either a round or hexagonal external form

4 Symbols

For the purposes of this Part of BS 4825 the following symbols apply:

<i>A</i>	allowance of male part thread
<i>B</i> ₁	inside diameter of support ring
<i>B</i> ₂	outside diameter of support ring
<i>C</i> ₁	spigot diameter of expanded type male part and liner
<i>C</i> ₂	spigot diameter of welded type male part and liner
<i>C</i> ₃	inside diameter of hexagon and round nut
<i>C</i> ₄	inside diameter of seal
<i>C</i> ₅	inside diameter of expanded type male part and liner
<i>C</i> ₆	inside diameter of welded type male part and liner
<i>C</i> ₇	outside diameter of expanded and welded type liner
<i>C</i> ₈	outside diameter of round nut
<i>C</i> ₉	centring inside diameter of nut
<i>C</i> ₁₀	outside diameter of neck of welded type male part and liner
<i>d</i>	major diameter of male part thread
<i>d</i> ₁	minor diameter of male part thread
<i>d</i> ₂	pitch diameter of male part thread
<i>D</i>	major diameter of nut thread
<i>D</i> ₁	minor diameter of nut thread
<i>D</i> ₂	pitch diameter of nut thread
<i>E</i>	inside diameter of seal lip
<i>F</i> ₁	total length of expanded type male part
<i>F</i> ₂	total length of welded type male part and liner
<i>F</i> ₃	total length of expanded type liner
<i>F</i> ₄	total length of hexagon and round nut
<i>F</i> ₅	inside width of support ring
<i>G</i> ₁	length of external thread of expanded and welded type male part
<i>G</i> ₂	length of internal thread of hexagon and round nut
<i>H</i>	height of fundamental triangle of thread
<i>J</i>	chamfer diameter of round nut
<i>K</i>	length of spigot of expanded and welded type male part and liner

- L_1 flange thickness of expanded and welded type liner
- L_2 inside flange thickness of hexagon and round nut
- M_1 outside diameter of lip of seal to be used with support ring
- M_2 outside diameter of lip of seal to be used without support ring
- N_1 width across slots of round nut
- N_2 width across flats of hexagon nut
- O width of slot of round nut
- P pitch of thread
- R_1 fillet radius of welded type male part
- R_2 fillet radius of welded type liner
- S outside diameter of seal (lip excluded) to be used with support ring
- T_2 length of lip seal to be used with support ring
- T_3 wall thickness of support ring
- U total thickness of seal
- V compression thickness of seal
- w root width of male part threads on GO side profile
- W root width of nut threads on GO side profile
- X_1 lock ring groove diameter
- X_2 lock ring outside diameter
- α_1 angle of chamfer of round nut
- α_2 angle of flange of support ring

5 Design

NOTE The purchaser should specify whether expanded or welded type couplings are required in his enquiry and/or order (see Appendix A).

5.1 The dimensions of the couplings shall be as given in Table 1 to Table 8 and Figure 1 to Figure 8.

5.2 Provision shall be made for the tightening of the coupling by hexagonal or round nuts as specified by the purchaser in his enquiry and/or order (see Appendix B).

5.3 The screwed ends of the coupling shall be of trapezoidal form as shown in Appendix C; the cross section of screwed coupling assemblies is detailed in Appendix D.

5.4 The design of the coupling shall be such as to ensure satisfactory operation in a properly assembled pipeline system operating at a maximum working pressure of 1.6 MPa.

5.5 The use of support rings is optional but provision for their use shall be made in fittings greater than 63.5 mm nominal size intended for use at pressure greater than 1 MPa (see Table 8).

Table 1 — Expanded type male part
(see Figure 1)

Tube outside diameter	C_1	C_5	F_1
mm	mm	mm	mm
25.4	29.0	25.4	16.5
38.1	42.5	38.1	19.5
50.8	56.0	50.8	19.5
63.5	69.7	63.5	25.0
76.2	82.3	76.2	30.0

Tolerances (see [A1](#)) BS EN 20286-1 and BS EN 20286-2 [A1](#))
Spigot diameter C_1 : h10
Inside diameter C_5 : A10
Total length F_1 : ± 0.2 mm
Length of thread G_1 : ± 0.2 mm
Length of spigot K : ± 0.1 mm

