
British Standard

Compression couplings for tubes

Part 3. Specification for light series couplings (metric)

Raccords de tuyauterie à compression
Partie 3. Raccords de série légère (métrique) — Spécification

Druckkupplungen für Rohre
Teil 3. Leichte Kupplungen (metrisch)

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Committee references MER/118/1, MEE/118/1, Draft for comment 71/35432

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Copper Tube Fittings Manufacturers' Association	Society of Motor Manufacturers and Traders Ltd
Heating, Ventilating and Air Conditioning Association	Stainless Steel Fabricators' Association of Great Britain
National Brass Foundry Association	

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Foreword

This Part of this British Standard for carbon steel, stainless steel and copper alloy compression couplings has been prepared under the authority of the Mechanical Engineering Industry Standards Committee, and forms a new Part of BS 4368. BS 4368 is now published in three Parts.

- Part 1. Specification for heavy series couplings (metric)
- Part 3. Specification for light series couplings (metric)
- Part 4. Specification for type test requirements

This Part of the standard is substantially in conformity with the ISO Recommendations and Standards for pipe connections for industrial applications. Metric units have been used throughout and, therefore, the standard may be used for the manufacture of couplings when adopting the metric system.

The couplings specified in this standard are, in general, rated equivalent to the light series of DIN 2353 'Non-soldered, taper bush type unions'. Type A couplings specified in this standard are also, in general, dimensionally interchangeable with the light series of DIN 2353.

Section 1 gives the general requirements relating to two types of compression couplings for tubes for general engineering purposes (see Fig. 1).

The two types of compression couplings illustrated in Fig. 1 are:

- a. Compression couplings Type A, in which the joint is made and the tube is held by the compression of a ring or ferrule, or part of the coupling on the outside of the tube.
- b. Compression couplings, Type B, in which the joint is made and the tube is held by the compression of a manipulated portion of the tube at or near its end against a loose sleeve within the coupling, or against the face of the coupling body.

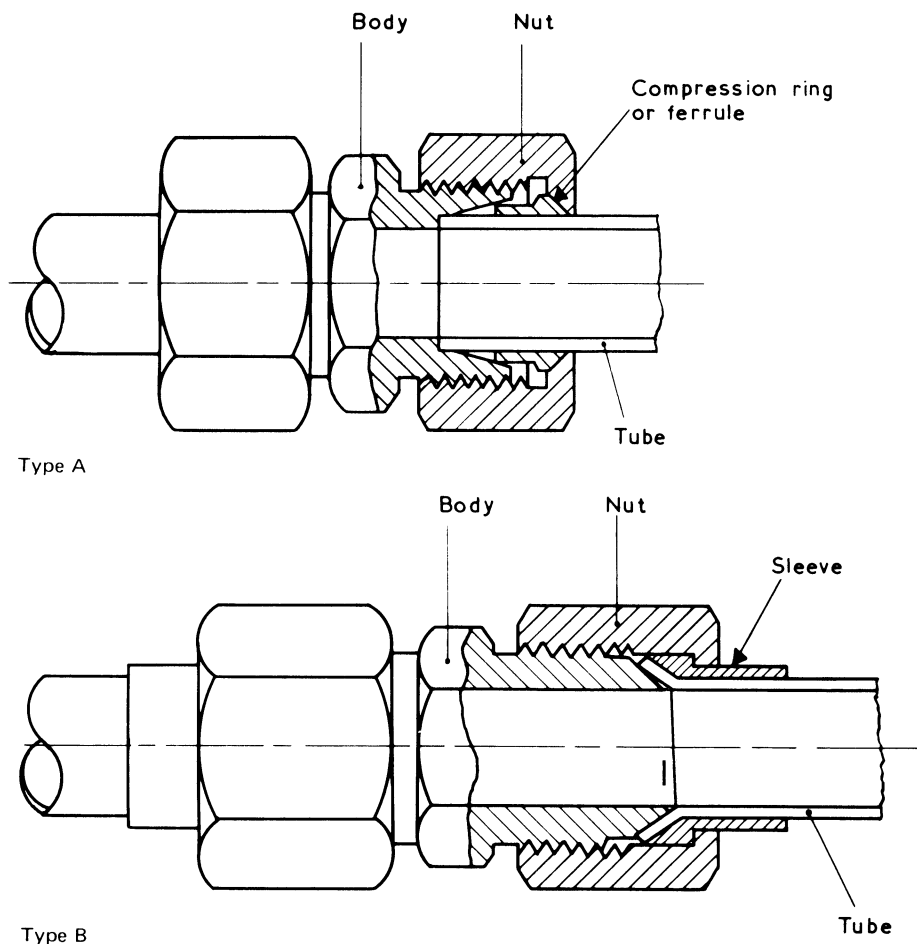


Fig. 1. Compression couplings

Compression couplings, Type C, illustrated in Part 1 of BS 4368, are applicable to the heavy series only and are not covered by this part of the standard.

Appendix A describes the method of specifying metric compression couplings. This differs from that normally used in the United Kingdom when using imperial units.

Appendix B lists the information to be agreed between the purchaser and the manufacturer.

NOTE 1. Information on SI units is given in the following standards: BS 3763 'The International System of units (SI)', PD 5686 'The use of SI Units'. See also BS 350 'Conversion factors and tables', Supplement No.1 'Additional tables for SI conversions'.

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

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Part 3. Specification for light series couplings (metric)

1. General requirements

1.1 Scope

This British Standard specifies the requirements for a light series of carbon steel, stainless steel and copper alloy compression couplings, as described in the Foreword, for tubes with the outside diameter in sizes from 6 mm to 42 mm as specified in Table 1.

NOTE 1. This standard does not cover installation of couplings. Strict compliance with the fitting instructions of the manufacturer is necessary.

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

1.2 Materials

All couplings shall be manufactured from carbon steel, stainless steel or copper alloy which will provide at least the minimum requirements for the pressure/temperature ratings specified in 1.3. The material used shall have characteristics which make it suitable for use with the fluid to be contained and to provide an effective joint. See also the notes to Tables 10 and 11.

1.3 Pressure/temperature ratings

1.3.1 Type A and B carbon and stainless steel compression couplings shall be suitable for use at the nominal working pressures given in Tables 1A and 1B when used at temperatures between -10°C and $+120^{\circ}\text{C}$.

1.3.2 Type A and B copper alloy compression couplings shall be suitable for use at the nominal working pressures given in Tables 1C and 1D when used at temperatures between -10°C and $+60^{\circ}\text{C}$.

1.4 Designation of couplings

Couplings shall be designated by the outside diameter of the tube with which they are to be used together with the letters 'mm' e.g. 12 mm. For stud ends (connector ends) the thread designation of the stud end shall be added, e.g. 12 mm X G $\frac{3}{8}$ A (BS 2779).

The method of describing couplings shall be in accordance with Appendix A.

1.5 Tubes

The couplings shall be suitable for use with tubes of the sizes given in Table 1. The limits of size include ovality.

Carbon steel tubes complying with the material requirements of BS 3601 or BS 3602 and stainless steel tubes complying with the requirements of BS 3605 are suitable, provided their outside diameter tolerances comply with Table 1. Copper tubes in accordance with BS 2871 : Part 2 : 1972 with outside diameters to Tables 5 and 6 of that standard are suitable, as their outside diameter tolerances fall within Table 1 of this standard. The use of other materials shall be subject to agreement between the manufacturer and the purchaser.

1.6 Basic dimensions

The dimensions for stud ends, compression threads, hexagons and spanner flats shall be in accordance with Table 2. Nominal overall dimensions of assembled couplings are shown in Tables 4, 5, 6, 7, 8, 9, 11 and 12.

NOTE. The couplings may not provide an effective joint if they are used with tubes which have outside diameters beyond the limits of size given in Table 1 or with tubes which are too hard or too soft. The purchaser should therefore ensure that the tubes are of the correct dimensions and material for use with the chosen coupling.

Table 1. Tube sizes

Outside diameter	Limits of size	
	Maximum	Minimum
mm	mm	mm
6	6.1	5.9
8	8.1	7.9
10	10.1	9.9
12	12.1	11.9
15	15.1	14.9
18	18.1	17.9
22	22.1	21.9
28	28.1	27.9
35	35.15	34.85
42	42.2	41.8

Table 1A. Nominal working pressure ratings of Type A carbon and stainless steel couplings

Designation (tube o.d.)	Working pressure
mm	bar*
6 up to and including 15	250
18 up to and including 22	160
28 up to and including 42	100

*1 bar = 10^5 N/m² = 10^5 Pa.

Table 1B. Nominal working pressure ratings of Type B carbon and stainless steel couplings

Designation (tube o.d.)	Working pressure
mm	bar*
6 up to and including 15	250
18 up to and including 42	160

*1 bar = 10^5 N/m² = 10^5 Pa.

Table 1C. Nominal working pressure ratings of Type A copper alloy couplings

Designation (tube o.d.)	Working pressure
mm	bar*
6 up to and including 15	160
18 up to and including 22	100
28 up to and including 42	64

*1 bar = 10^5 N/m² = 10^5 Pa.

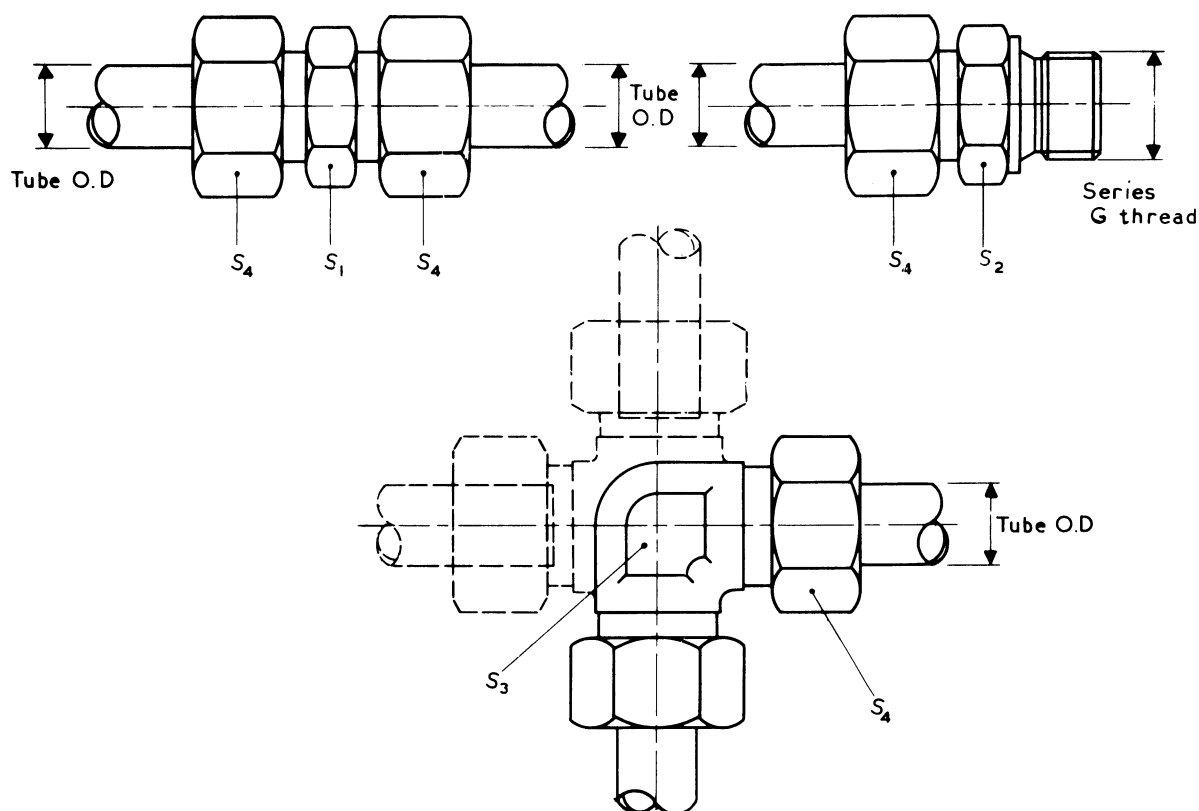
Table 1D. Nominal working pressure ratings of Type B brass couplings

Designation (tube o.d.)	Working pressure
mm	bar*
6 up to and including 15	125
18 up to and including 42	80

*1 bar = 10^5 N/m² = 10^5 Pa.

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Table 2. Basic dimensions



Basic dimensions

Tube o.d.	Stud end thread Series G thread	Compression thread	Across flats		Forging pad S ₃ A/F	Nut S ₄ A/F
			S ₁	S ₂		
mm			mm	mm	mm	mm
6	1/8	M12 × 1.5	12	14	12	14
8	1/4	M14 × 1.5	14	19	12	17
10	1/4	M16 × 1.5	17	19	14	19
12	3/8	M18 × 1.5	19	22	17	22
15	1/2	M22 × 1.5	24	27	19	27
18	1/2	M26 × 1.5	27	27	24	32
22	3/4	M30 × 2	32	32	27	36
28	1	M36 × 2	41	41	36	41
35	1 1/4	M45 × 2	46	50	41	50
42	1 1/2	M52 × 2	55	55	50	60

Across flats dimensions are spanner sizes and nominal.

1.7 Design

The couplings may be of the manufacturer's own design but shall comply with the following conditions.

- (1) The couplings shall be in accordance with the general requirements of this standard and shall conform to such dimensions as are given in the tables.
- (2) The coupling bodies shall be free from internal fins or other irregularities which might reduce the free flow of liquid and shall be so designed that resistance to flow through the coupling shall be reduced to a minimum.
- (3) Provision for tightening shall be made on all couplings with screwed ends.
- (4) Union nuts shall be in accordance with 1.6.