

PD CEN/TS 16650:2014



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Specification for hose couplings for petrol, oil and lubricants — High pressure couplings

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee PRI/66, Rubber and plastics tubing, hoses and hose assemblies.

A list of organizations represented on this committee can be obtained on request to its secretary.

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CEN/TS 16650

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English Version

Specification for hose couplings for petrol, oil and lubricants -
High pressure couplings

Spécifications pour les raccords de tuyaux pour essence,
huile et lubrifiants - Raccords haute pression

Spezifikation für Schlauchkupplungen für Benzin, Öl und
Schmierstoffe - Hochdruckkupplungen

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Foreword

This document (CEN/TS 16650:2014) has been prepared by Technical Committee CEN/TC 218 “Rubber and plastics hoses and hose assemblies”, the secretariat of which is held by BSI.

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1 Scope

This Technical Specification specifies requirements for couplings of 2 in (50,8 mm), 2½ in (63,5 mm), 3 in (76,2 mm) and 4 in (101,6 mm) nominal sizes with ribbed tails and hexagons for use at pressures not exceeding 1 550 kN/m² (225 lbf/in²). For assembly of coupling, see Figure 1.

This document is applicable to couplings which have been designed primarily for aircraft refuelling purposes, but they may also be used for other general purposes.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1982:1998, *Copper and copper alloys — Ingots and castings*

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation (ISO 228-1)*

EN ISO 228-2, *Pipe threads where pressure-tight joints are not made on the threads - Part 2: Verification by means of limit gauges (ISO 228-2)*

BS 1936-1, *Undercuts and runouts for screw threads. Inch screw threads*

BS 1936-2, *Undercuts and runouts for screw threads. Metric screw threads*

BS 2751, *General purpose acrylonitrile-butadiene rubber compounds. Specification*

BS 3643-2:2007, *ISO metric screw threads — Specification for selected limits of size*

3 Information to be supplied by the purchaser

It is essential that the purchaser states in the enquiry and order, the form of screw thread required (see Clause 8).

4 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.

5 Materials

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

- a) Gunmetal castings conforming to Specification CC 491 K of EN 1982:1998
- b) Brass castings conforming to Specification CC 750 S of EN 1982:1998

6 Dimensions

The dimensions of couplings and union nuts shall conform to those shown on Figure 2, Figure 3 and Figure 4 and in Table 1, Table 2 and Table 3.

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

7 Coupling finish

The couplings shall be machined all over including the bores. All burrs and sharp edges shall be removed.

8 Screw threads

The coupling assembly is given in Figure 1.

The couplings shall be screwed with either:

- a) Whitworth BSP threads. The threads on the liner of the union nut (Figure 4 and Table 3) parallel threads as specified in EN ISO 228-1 and EN ISO 228-2. Thread undercuts shall conform to BS 1936-1.
- b) Metric threads. The threads on the liner of the union nut (Figure 5 and Table 4) shall conform to BS 3643-2:2007, Table 4, Tolerance class 6H (medium fit) and BS 3643-2:2007, Table 5, Tolerance class 6g (medium fit). Thread undercuts shall conform to BS 1936-2

It is essential that the purchaser states in the enquiry and order which threads are required.

9 Washers

Washers shall be made of specially selected leather or synthetic rubber in accordance with BS 2751.

10 Bonding

The couplings shall be fitted to the hose so that the electrical bonding, as specified in the relevant standard, is maintained for the hose assembly.

11 Hydrostatic test

All couplings, when assembled without hose, shall be subjected to a hydrostatic test of 3 100 kN/m² (450 lbf/in²). The test 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.

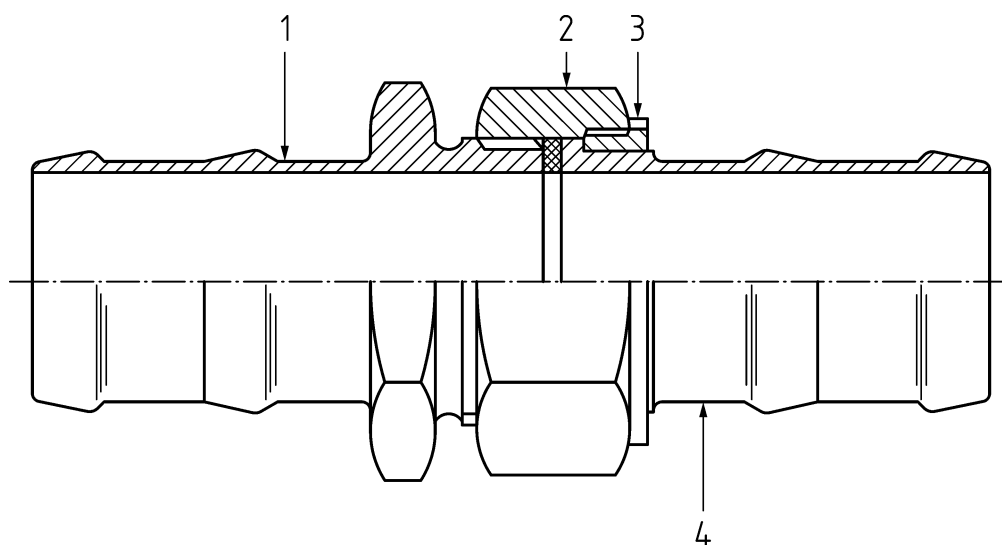
Couplings conforming to this Technical Specification shall not show signs of leakage during this test by reason either of a defective joint or of other defects.

12 Identification marking

Each set of couplings shall be legibly and permanently marked with:

- a) the manufacturer's identification;
- b) the number and date of this Technical Specification;
- c) the following letters to indicate the type of screw thread on the couplings;
 - 1) BSP – for threads conforming to EN ISO 228-1 or EN ISO 228-2;
 - 2) METRIC – for threads conforming to BS 3643-2;
- d) the reference of the material type;

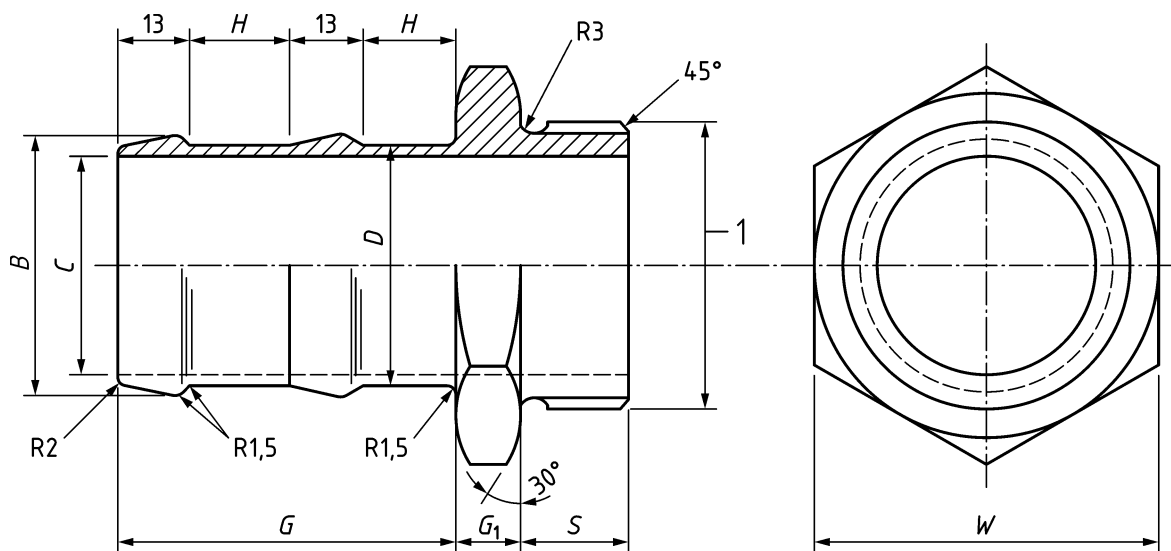
e) the nominal size.



Key

- 1 tail end: Male (see Figure 2)
- 2 union nut (see Figure 4)
- 3 screwed liner (see Figure 5)
- 4 tail end: Female (see Figure 3)

Figure 1 — Assembly of coupling



Key

- 1 Whitworth (BSP) thread (see EN ISO 228-1 and EN ISO 228-2)

Figure 2 — Tail end: male (Machine all over)

Table 1 — Tail-end: male - hexagon (see Figure 2)

Nominal size of coupling i.e. hose bore in	Screw thread	B dia. +0,25 0 mm	C dia. 0 -0,25 mm	D dia. +0,25 0 mm	G $\pm 0,25$ mm	G ₁ $\pm 0,75$ mm	H $\pm 0,75$ mm	S Min. mm	W Hexagon 0 -0,25 mm
	A _x								
	BSP thread								
	Nominal size in								
2	2	54	44,5	49,0	69,75	13	22	22	75
2½	2½	66,5	57	62	76	13	25	25	90
3	3	79,25	69,75	74,5	89	13	32	29	105
4	4	106,25	92	98	101,5	13	38	29	130

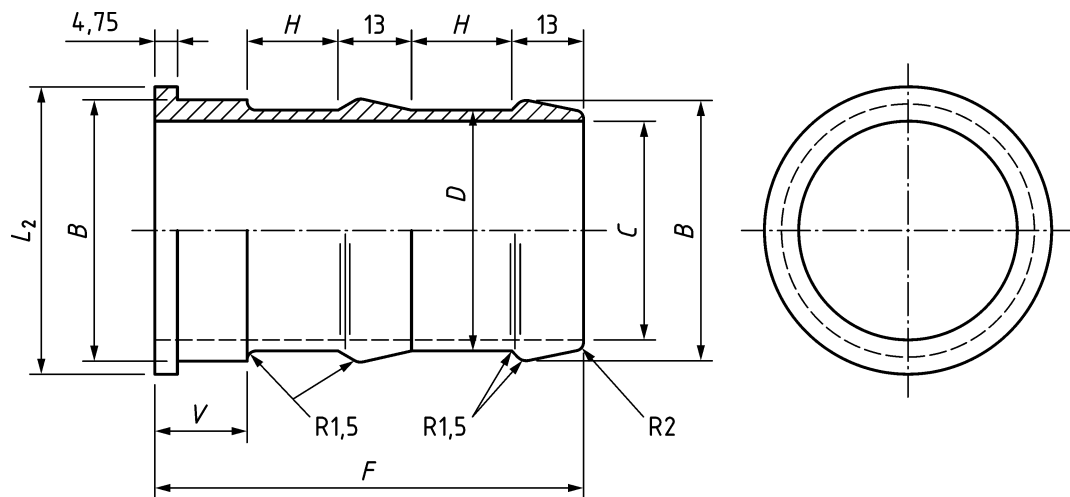
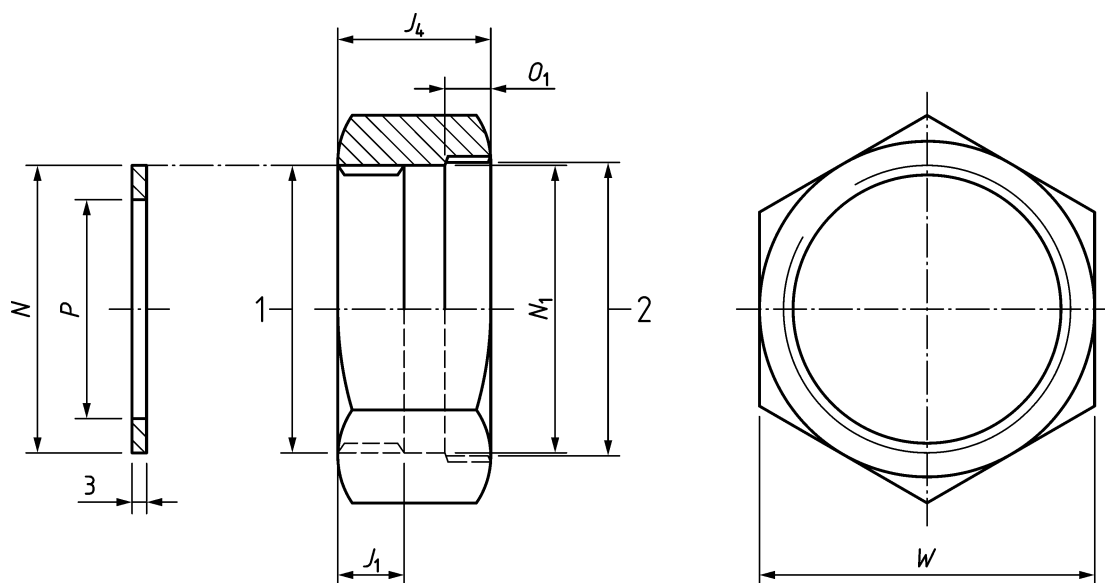


Figure 3 — Tail-end: Female (Machine all over)

Table 2 — Tail-end: female (see Figure 3)

Nominal size of coupling i.e. hose bore in	B dia. 0 -0,25 mm	C dia. 0 -0,25 mm	D dia. +0,25 0 mm	F Min. mm	H $\pm 0,75$ mm	L ₂ dia. 0 -0,25 mm	V mm
2	54	44,5	49	90	22	62	19
2½	66,5	57	62	97	25	78	21
3	79,25	69,75	74,5	111	32	90	22
4	106,25	92	98	125	38	117	24

Dimensions in millimetres



Key

- 1 Whitworth (BSP) thread (see EN ISO 228-1 and EN ISO 228-2)
- 2 threads to BS 3643-2

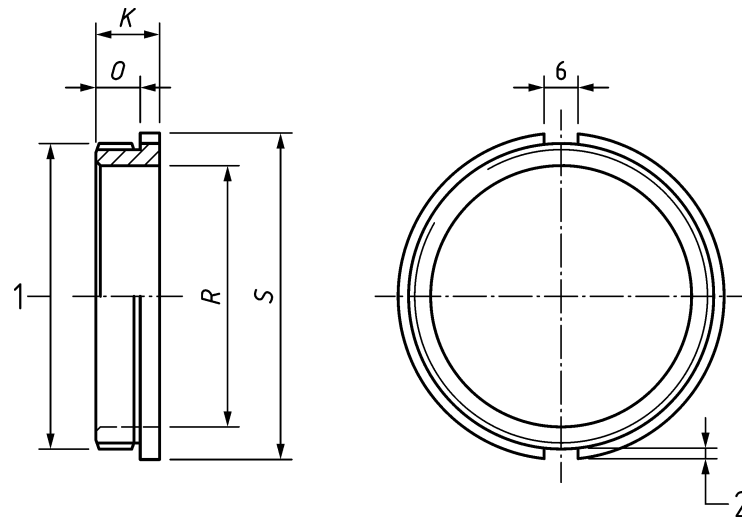
Figure 4 — Hex union nut and washer (Machine all over)

Table 3 — Union nut: hexagon (see Figure 4)

Nominal size of coupling i.e. hose	Screw thread A_x	ISO metric thread		N_1 dia.	O_1	N	P	J_1	J_4	W
	Whitworth (BSP) ^a thread	BS 3643-2 ^b Table 4 Tol. Class 6H (Medium fit)		+0,25 0	+0,35 0	dia.	dia.	±0,25	0 -1,5	hexagon 0 -0,25
	Nominal	Minor dia.	mm	mm	mm	mm	mm	mm	mm	mm
in	in	mm	mm	mm	mm	mm	mm	mm	mm	mm
2	2	M64 × 1,5	62,376	62	9	61	45	13,5	32	75
2½	2½	M80 × 1,5	78,376	78	10	77	57	19	38	90
3	3	M95 × 2	92,835	90	11	89	70	22,25	43	105
4	4	M120 × 2	117,835	117	13	116	92	22,25	45	130

^a EN ISO 228-1 and EN ISO 228-2

Dimensions in millimetres



Key

- 1 threads to BS 3643-2
- 2 to crest of thread

Figure 5 — Screwed liner (Machine all over)

The screwed liner shall be secured in position on union nut by pegging or by grab screwing.

Table 4 — Screwed liner for union nut (see Figure 5)

Nominal size of coupling i.e. hose bore	K	R dia.	S dia.	O	ISO Metric Thread (Medium) Tolerance Class 6 h BS 3643-2:2007, Table 5
	0 -0,75	+0,25 0	±0,25	+0,35 0	
in	mm	mm	mm	mm	
2	13	55	70	9	M64 × 1,5
2½	15	68	87	10	M80 × 1,5
3	16	80	100	11	M95 × 2
4	18	107	127	13	M120 × 2

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