



BSI Standards Publication

**Aerospace — Fluid systems — Interface
of 24° cone metric couplings**

National foreword

This British Standard is the UK implementation of ISO 7319:2021. It supersedes BS 2M 59:1993, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ACE/69, Aerospace hydraulic systems, fluids and components.

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

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Published by BSI Standards Limited 2021

ISBN 978 0 539 12189 6

ICS 49.080

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 June 2021.

Amendments/corrigenda issued since publication

Date	Text affected
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INTERNATIONAL
STANDARD

ISO
7319

Third edition
2021-06-01

**Aerospace — Fluid systems —
Interface of 24° cone metric couplings**

*Aéronautique et espace — Systèmes de fluides — Interface des
raccordements métriques à cône de 24°*



Reference number
ISO 7319:2021(E)



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 10, *Aerospace fluid systems and components*.

This third edition cancels and replaces the second edition ([ISO 7319:1992](http://www.iso.org/iso/7319:1992)), of which it constitutes a minor revision.

The main changes compared to the previous edition are as follows:

- the normative reference has been changed from dated to undated.

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Aerospace — Fluid systems — Interface of 24° cone metric couplings

1 Scope

This document defines the geometry of the interface of removable 24° cone couplings for fluid systems in aircraft. The connection with the pipe of each one of the connecting elements can be of different design.

This document specifies the dimensions which allow the interchangeability of the male and female elements and of the nut used for the connection.

The dimensions define the maximum volume of the male fitting.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[ISO 5855-3](#), *Aerospace — MJ threads — Part 3: Limit dimensions for fittings for fluid systems*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

4 Coupling assembly and sealing principle

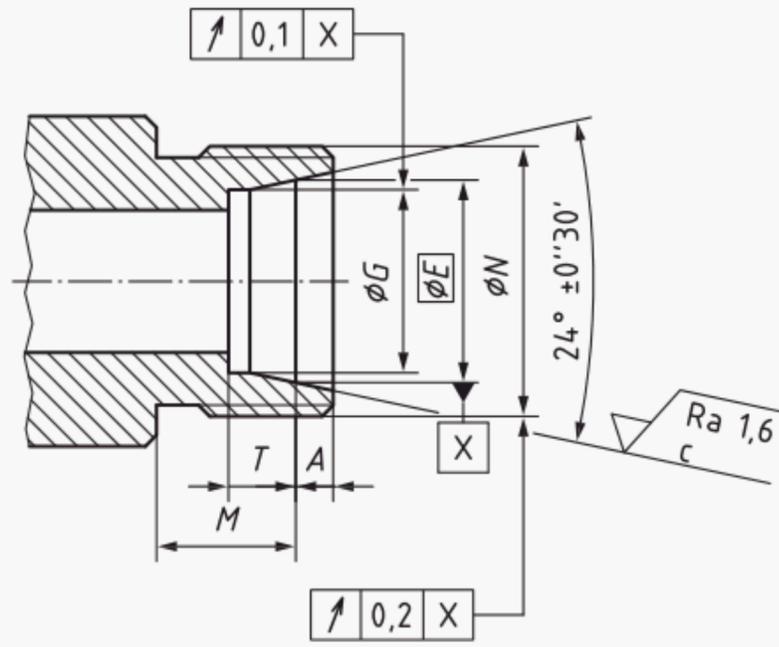
The coupling comprises three elements as follows.

- a) A female element including a frustum with a cone angle equal to 24°, with which the male element comes into contact to provide sealing. The contact line is a circle with a theoretical diameter, E .
- b) A male element, included inside a shell composed of two frustums connected by a spherical section with which the female element comes into contact to provide sealing. The contact line is a circle with a theoretical diameter, E .
- c) A nut allowing assembly of the male and female elements of the coupling.

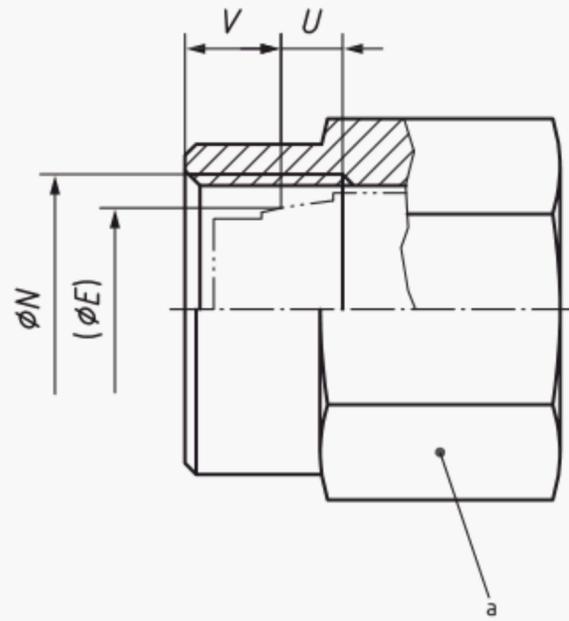
5 Dimensions

The dimensions shall be as shown in [Figure 1](#) and given in [Table 1](#).

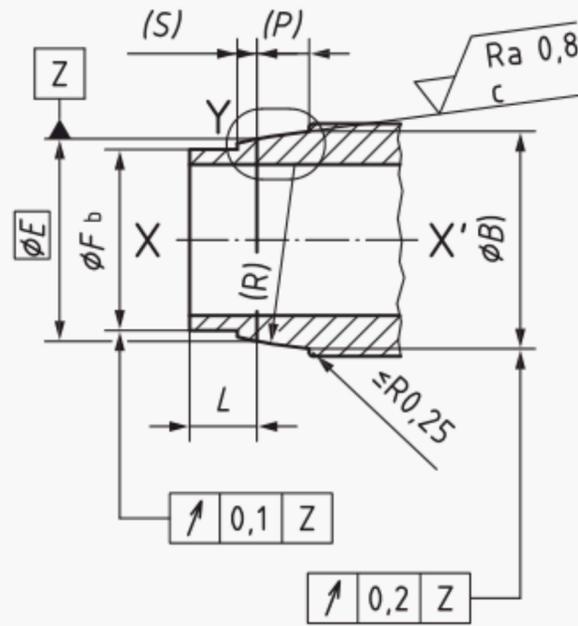
Dimensions in millimetres
 Values of surface roughness in microns



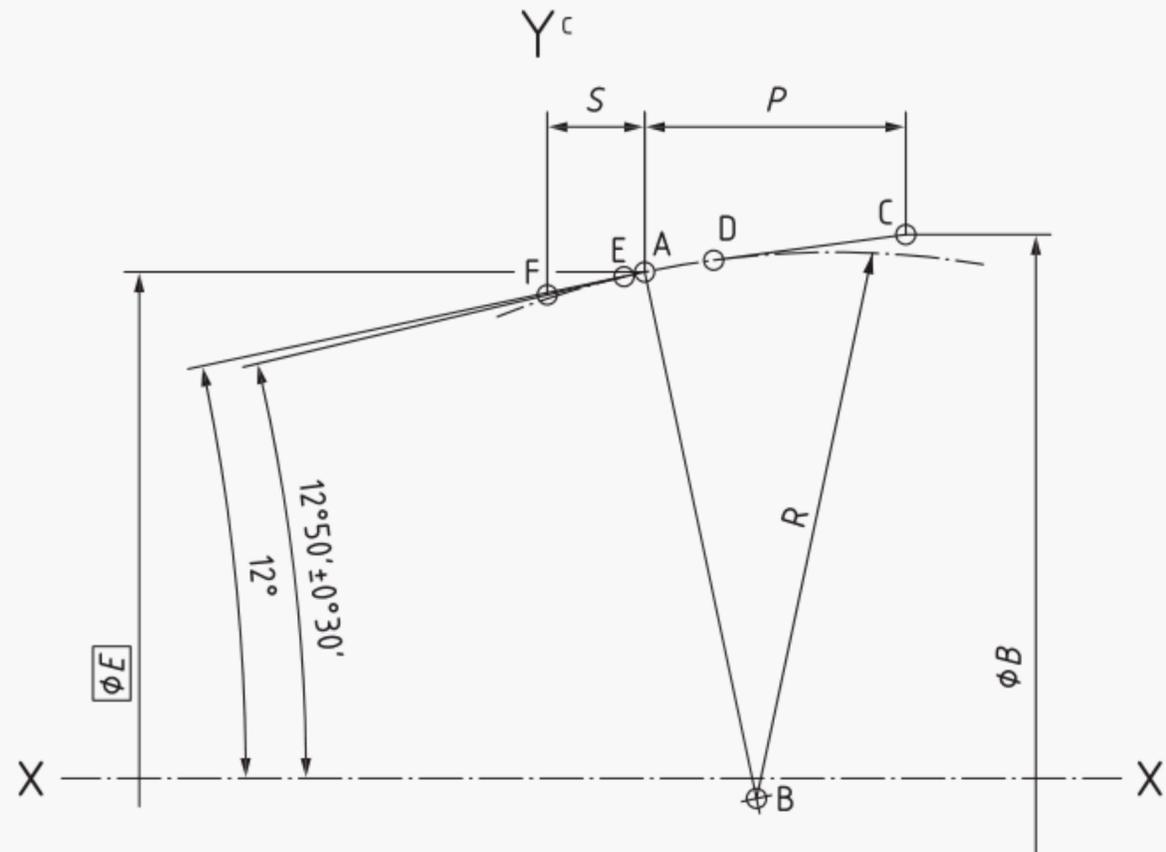
a) Female element



b) Nut



c) Male element



d) Male profile (detail Y)

Key

- a H , across flats.
- b Circular traces allowed.
- c Outline of the theoretical profile of the male element shell.

Point A: origin at $E/2$ from the XX' axis

Point B: point located at a distance R from point A, on the perpendicular to the line tilted 12° relative to XX' and passing through point a

Point C: located at $B/2$ from the XX' axis and at a distance P from point A

Line CD: tangent drawn from C to the arc of the circle with centre at B and radius R

Line EF: tangent tilted $12^\circ 50'$ relative to the XX' axis on the arc to the circle with centre at B and radius R . The point of tangency thus obtained is designated E

NOTE The profile involves exclusively those machined male elements which do not lose their shape. Nevertheless, the male element can be in the form of a sleeve fitted over the end of the pipe and which, during coupling to the female element, is compressed onto the pipe and changes its shape such that the correct profile is obtained.

Figure 1 — Dimensions

Table 1 — Dimensions

Dimensions in millimetres

DN ^a	N ^b		A	B	E	F	G		H	L	M	P	R	S		T	U	V
	external 4g6g	internal 4H5H					min.	max.						min.	max.			
5		MJ10 × 1	1,38	1,62	6,5	5,06	5,26	5,36	12	3,88	7,18	2,58	6,13	0,56	0,92	3,88	2,8	4,7
6		MJ12 × 1,25	1,38	1,62	7,5	6,06	6,26	6,36	14	4,38	8,18	2,58	6,13	0,56	0,92	4,38	3,8	4,7
8		MJ14 × 1,5	1,38	1,62	9,5	8,06	8,26	8,36	17	4,38	9,18	2,58	6,13	0,56	0,92	4,38	3,8	5,2
10		MJ16 × 1,5	1,38	1,62	11,5	10,06	10,26	10,36	19	4,38	10,18	2,58	6,13	0,56	0,92	4,38	4,1	5,9
12		MJ18 × 1,5	2,28	2,52	13,5	12,06	12,26	12,36	22	4,48	9,28	3,48	12,13	0,96	1,32	4,48	4,1	6,4
14		MJ20 × 1,5	2,28	2,52	15,5	14,06	14,26	14,36	24	4,48	9,28	3,48	12,13	0,96	1,32	4,48	4,1	6,4
16		MJ22 × 1,5	2,28	2,52	17,5	16,06	16,26	16,36	27	4,48	9,28	3,48	12,13	0,96	1,32	4,48	4,4	6,1
20		MJ27 × 1,5	2,28	2,52	21,5	20,08	20,28	20,38	32	4,48	9,28	3,48	12,13	0,96	1,32	4,48	3,9	6,1
25		MJ33 × 1,5	2,28	2,52	26,6	25,08	25,28	25,38	41	4,48	10,28	3,48	13,61	0,96	1,32	4,48	4,2	5,8
32		MJ42 × 2	2,28	2,52	33,7	32,1	32,3	32,4	46	4,98	11,28	3,48	17,24	0,96	1,32	4,98	4,1	5,9
40		MJ50 × 2	2,28	2,52	41,7	40,1	40,3	40,4	60	4,98	11,28	3,48	21,32	0,96	1,32	4,98	4,4	7,6

^a Nominal size (outside diameter of the corresponding tube).

^b Threads shall be in accordance with [ISO 5855-3](#).

^c Tolerance for the proof gauge: ± 0,002 5.

^d L min. = S

^e The radius R shall have a sufficient minimum value in order to prevent a deterioration of the seats during assembly of the male and female elements.

Bibliography

- [1] [ISO 5855-1](#), *Aerospace — MJ threads — Part 1: General requirements*

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