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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
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Foreword

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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), 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.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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*.

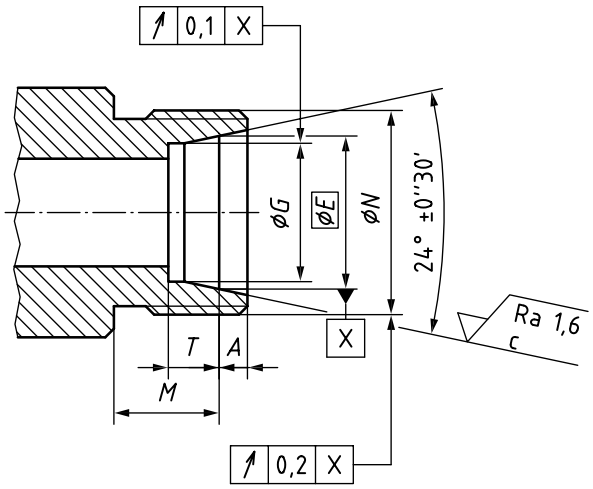
b) A male element, included inside a shell composed of two frustums connected by a spherical section with which the female element comes into contact to provide sealing. The contact line is a circle with a theoretical diameter, *E*.

c) A nut allowing assembly of the male and female elements of the coupling.

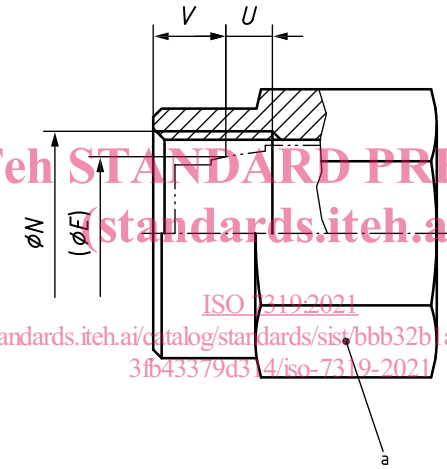
5 Dimensions

The dimensions shall be as shown in Figure 1 and given in Table 1.

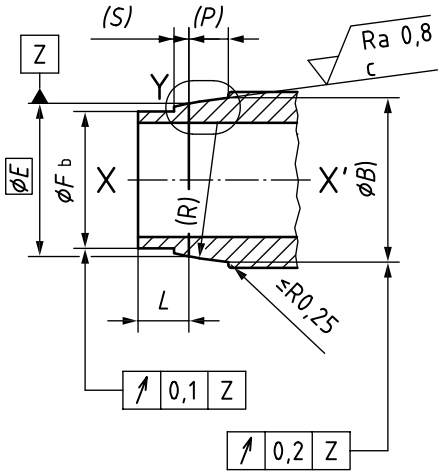
Dimensions in millimetres
Values of surface roughness in microns



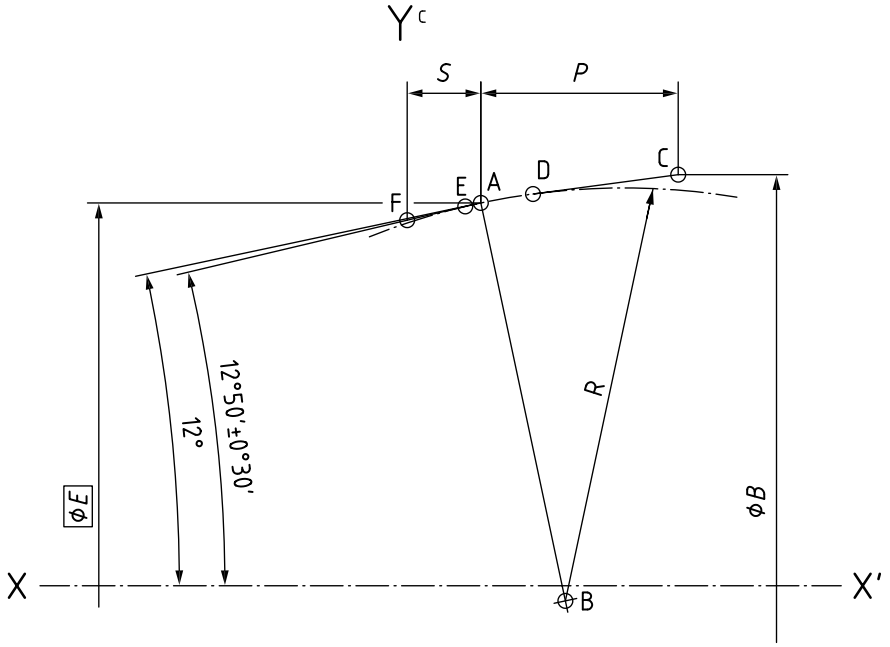
a) Female element



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° 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] external 4g6g / internal 4H5H	A min.	A max.	B max.	E theoretical[c]	F max.	G min.	G max.	H recommended	L max.[d]	M min.	P min.	R max.[e]	S min.	S max.	T min.	U min.	V max.
5	MJ10 × 1	1,38	1,62	7,1	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	8,1	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	10,1	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	12,1	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	14,5	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	16,5	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	18,5	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	22,5	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	27,6	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	34,7	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	42,7	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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