

Specification for

Separable tube fittings, 24° cone, for aerospace fluid systems

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Committees responsible for this British Standard

The preparation of this British Standard was undertaken by the Aerospace Standards Policy Committee (ACE/-) upon which the following bodies were represented:

- British Airways
- Department of Trade and Industry (Air Division)
- Institution of Electrical Engineers
- Ministry of Defence
- Society of British Aerospace Companies

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National foreword

This British Standard has been prepared under the direction of the Aerospace Standards Policy Committee. It is identical with ISO 7169:1993 *Aerospace fluid systems — Separable tube fittings for 24° cone — General specification* published by the International Organization for Standardization (ISO). This British Standard supersedes BS M 60:1986 which is withdrawn.

Cross-references

International Standard	Corresponding British Standard
ISO 2859-1:1989	BS 6001 <i>Sampling procedures for inspection by attributes</i> Part 1:1991 <i>Specification for sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection</i> (Identical)
ISO 6771:1987	BS 2M 51:1989 <i>Classification for pressure and temperature for fluid systems and components</i> (Identical)
ISO 6772:1988	BS 2M 52:1989 <i>Method for impulse testing of hydraulic hose, tubing and fitting assemblies for aerospace fluid systems</i> (Identical)
ISO 7257:1983	BS M 55:1984 <i>Method for rotary flexure testing of hydraulic tubing joints and fittings for aerospace use</i> (Identical)

The Technical Committee has reviewed the provisions of ISO 468:1982, ISO 2685:1992, ISO 8575:1990, ISO 9538, and ISO 10583:1993, to which normative reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, an inside back cover 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.

Introduction

This International Standard establishes the basic performance and quality criteria for screw-together tube fitting assemblies and port connectors used in aerospace fluid systems.

The test requirements are intended to satisfy the most strenuous demands encountered in a high-performance aircraft hydraulic system. The procurement requirements are intended to ensure that fittings, which are procured in accordance with this specification, are of the same quality as the fittings used during the original qualification testing. Compliance with these test and procurement requirements is necessary for fittings that are used in control systems where a malfunction would affect the safety of flight.

1 Scope

This International Standard specifies performance and quality requirements for the qualification and manufacture of standard 24° cone fittings¹⁾ to ensure reliable performance in aircraft hydraulic systems.

This International Standard specifies baseline criteria for the design and manufacture of system fittings that are qualification tested on engines.

This International Standard covers fittings of the temperature types and pressure classes specified in ISO 6771.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 468:1982, *Surface roughness — Parameters, their values and general rules for specifying requirements*.

ISO 2685:1992, *Aircraft — Environmental conditions and test procedures for airborne equipment — Resistance to fire in designated fire zones*.

ISO 2859-1:1989, *Sampling procedures for inspection by attributes — Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection*.

ISO 6771:1987, *Aerospace — Fluid systems and components — Pressure and temperature classifications*.

ISO 6772:1988, *Aerospace — Fluid systems — Impulse testing of hydraulic hose, tubing and fitting assemblies*.

ISO 7257:1983, *Aircraft — Hydraulic tubing joints and fittings — Rotary flexure test*.

ISO 8575:1990, *Aerospace — Fluid systems — Hydraulic system tubing*.

ISO 9538:—, *Aerospace — Hydraulic tubing joints and fittings — Planar flexure test*²⁾.

ISO 10583:1993, *Aerospace fluid systems — Test methods for tubefitting assemblies*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 2859-1 and the following definitions apply.

3.1 Workmanship and surface defects

3.1.1

surface irregularity

nonconformity with general surface appearance, possible defect

3.1.2

crack

clean (crystalline) fracture passing through or across the grain boundaries that possibly follows inclusions of foreign elements. Cracks are normally caused by overstressing the metal during forging or other forming operations, or during heat treatment. Where parts are subject to significant reheating, cracks are usually discoloured by scale

3.1.3

fold

doubling over of metal, which can occur during the forging operation. Folds can occur at or near the intersection of diameter changes and are especially prevalent with non-circular necks, shoulders and heads

3.1.4

lap

fold-like machining defect

¹⁾ The geometrical definition of a 24° cone fitting will be given in a future International Standard.

²⁾ To be published.

3.1.5 seam

- 1) Usually a surface opening or crack resulting from a defect obtained during casting or forging.
- 2) Extraneous material, stringer in the material, which is not homogeneous with base metal.

3.1.6 pit

void or hole in the surface as caused, for example, by corrosion

3.1.7 leakage

- 1) wetting or formation of a drop or drops of test fluid in pressure testing or of a bubble in pneumatic testing.
- 2) spillage of test fluid due to rupture.

3.2 fitting components

fitting components are designated as illustrated in Figure 1

3.3 Quality assurance

3.3.1 lot

manufacturer's run of a given part number from the same batch of material, processed at the same time and in the same manner

3.3.2 qualification test

performance testing required to demonstrate successful performance of the fitting in simulated service and using overload, destructive and accelerated tests

4 Requirements

4.1 Qualification

Fittings claiming conformity with this International Standard shall be representative of products which have successfully met the requirements and have passed the tests specified in this International Standard.

Fitting claiming conformity with this International Standard shall be representative of products which have successfully passed the tests specified in clause 5 of this International Standard.

4.2 Materials

4.2.1 Fittings

The fitting parts shall be manufactured from materials as given in Table 1 or equivalents passing the specified qualification tests. The various materials shall be used according to the pressure and temperature requirements of the system (see Table 1).

4.2.2 Tubing

The tubing used with the fittings shall be in accordance with ISO 8575 or equivalent tubing passing the specified qualification tests. Equivalent tubing shall have the mechanical characteristics given in Table 1.

WARNING — Titanium fittings and tubing shall not be used in oxygen systems.

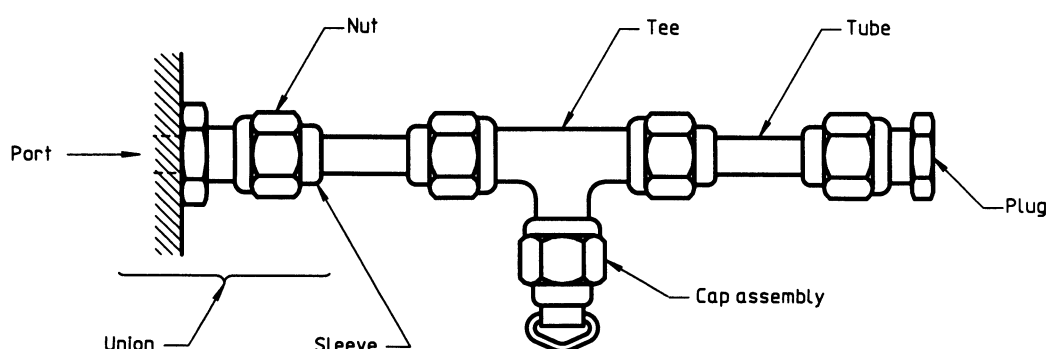


Figure 1 — Fitting assembly part designations