INTERNATIONAL STANDARD

ISO 9788

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Air cargo equipment — Cast components of double stud fitting assembly with a load capacity of 22 250 N (5 000 lbf), for aircraft cargo restraint

Équipement pour le fret aérien — Composants de fonderie d'une ferrure à pion double, de capacité de charge de 22 250 N (5 000 lbf), pour l'arrimage du fret dans les aéronefs

INTERNATIONAL ISO

Reference number
ISO 9788 : 1990 (E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 9788 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles.*

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Air cargo equipment — Cast components of double stud fitting assembly with a load capacity of 22 250 N (5 000 lbf), for aircraft cargo restraint

1 Scope

1.1 This International Standard specifies the geometry and requirements for the cast components of a double stud fitting assembly, having a load capacity of 22 250 N (5 000 lbf), when installed in rail conforming to ISO 7166.

1.2 Other materials than those specified in 4.2 may alternatively be used, provided the performance and testing requirements of this International Standard are complied with.

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 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 3951 : 1989, *Sampling procedures and charts for inspection by variables for percent nonconforming.*

ISO 5922 : 1981, *Malleable cast iron.*

ISO 6892 : 1984, *Metallic materials — Tensile testing.*

ISO 7166 : 1985, *Aircraft — Rail and stud configuration for passenger equipment and cargo restraint.*

F.A.R. 25.621(d), *Federal Aviation Regulation Part 25, casting factors, non-critical castings.* [1]

J.A.R. 25.621, *Joint Airworthiness Regulation Part 25, casting factors.* [2]

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 casting: Part shaped by solidification of molten metal in a mould.

3.2 rough casting: Casting which has not been machined or not yet been finished.

4 Technical requirements

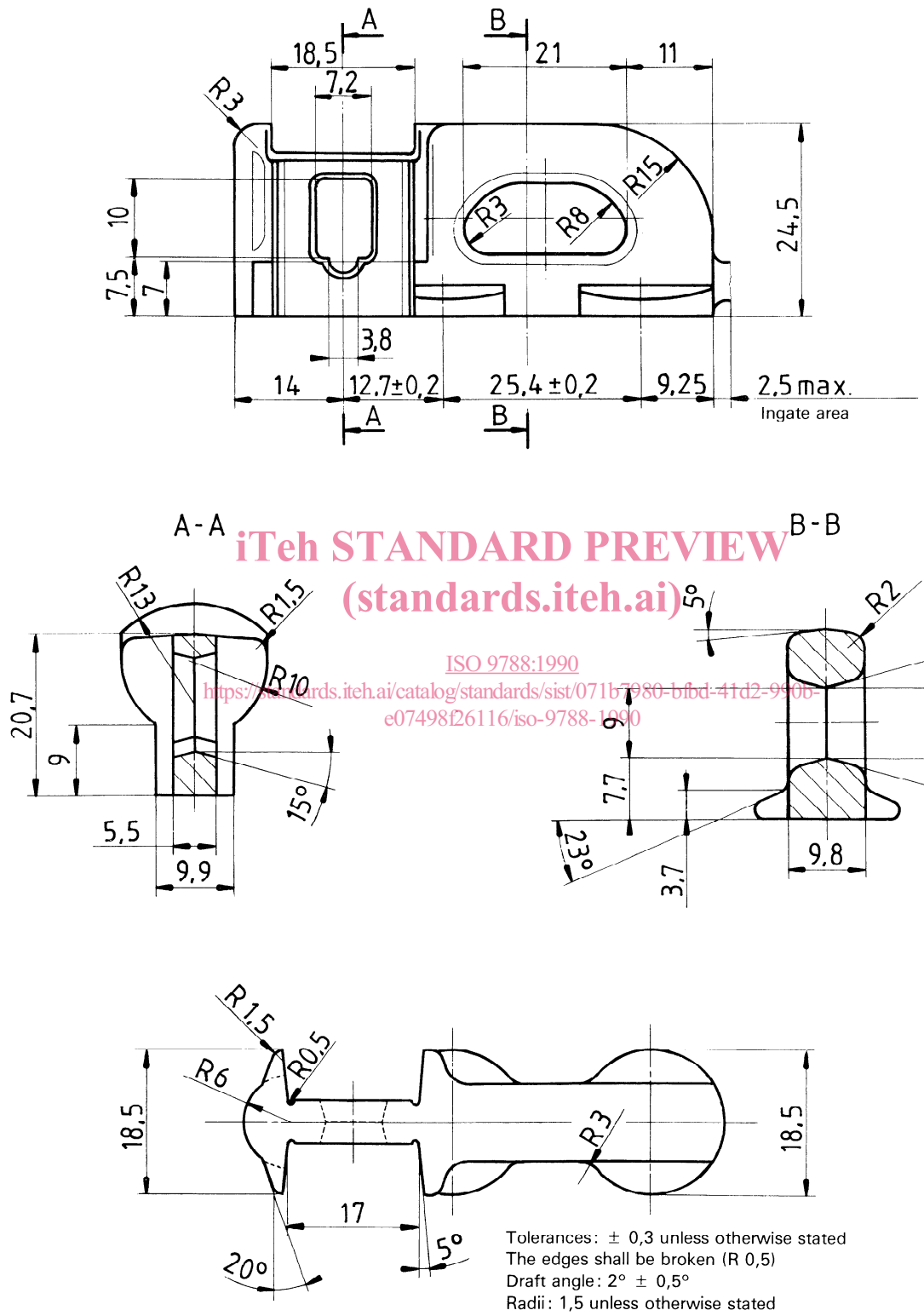
4.1 Configuration

The configuration shall comply with figures 1 to 3. Only maximum envelope dimensions and those affecting interchangeability are imposed. The minimum dimensions are limited by the strength requirements.

1) Obtainable from:
Superintendent of documents, US-Government Printing Office, Washington, DC 20402.

2) Obtainable from:
Civil Aviation Authority, Printing and publication services, Greville House, 37 Gratton Road, Cheltenham, Glos. GL50 2BN, United Kingdom.

Dimensions in millimetres



Tolerances: ± 0,3 unless otherwise stated
The edges shall be broken (R 0,5)
Draft angle: 2° ± 0,5°
Radii: 1,5 unless otherwise stated

Figure 1 — Double stud body

Dimensions in millimetres

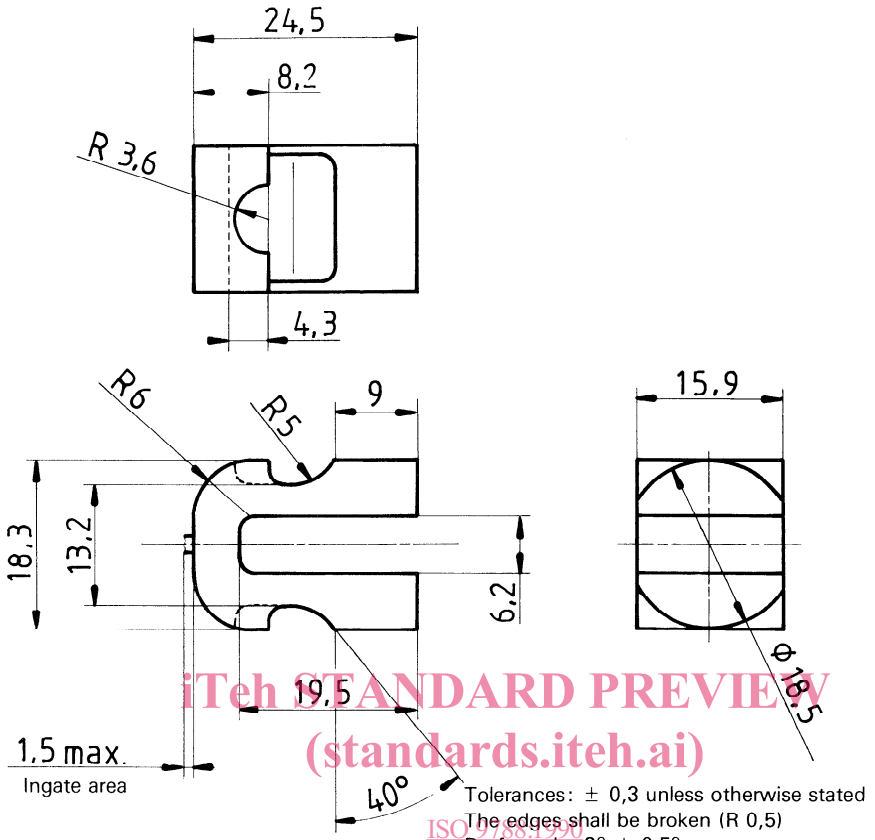


Figure 2 — Plunger

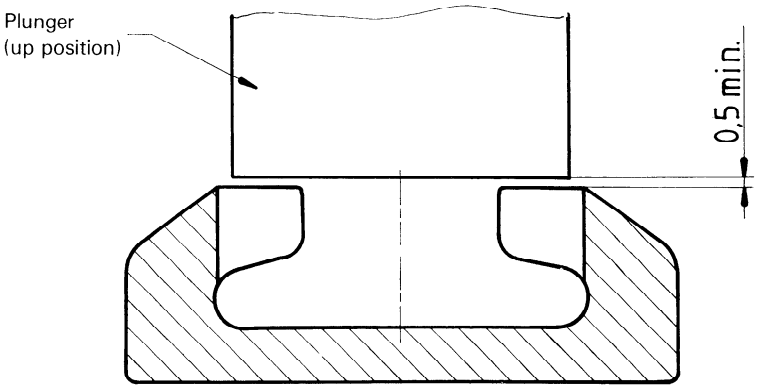


Figure 3 — Clearance of plunger in rail

4.2 Material

4.2.1 Cast body

The body shall be made of malleable cast iron of grade P70-02 (see ISO 5922), or equivalent.

Minor surface irregularities, for example small sand and slaggy patches, small cold shuts, barnacles, shrinkages, concentrations of small voids, remainders of moulding material, discontinuities and burrs, are generally acceptable in non-critical areas. Any marginal cases shall be arbitrated by tensile tests.

Physical and/or pictorial reference samples and descriptions may be used for comparison to quantify those features difficult to express numerically.

4.2.2 Cast plunger

The plunger shall be made of malleable cast iron of grade B35-10 (see ISO 5922), or equivalent.

4.2.3 Other components

Other components may be made of any suitable material meeting the geometrical and strength requirements.

4.2.4 Surface treatment

Components made of non-corrosion-resistant material shall be treated to have a performance equal to or better than that provided by a zinc chromate layer of 12 µm minimum thickness.

4.3 Load requirements

Double stud fitting assemblies complying with this International Standard are designed to resist a minimum breaking strength of 22 250 N (5 000 lbf) in any direction.

A casting factor approved by the controlling airworthiness authority, as appropriate according to the quality control procedure and non-destructive inspections applied, shall be included in order to determine the breaking strength.

The value of the casting factor varies between 1 and 2 according to the quality control procedure and non-destructive inspections applied. It shall be determined by the controlling airworthiness authority according to the appropriate national standards and regulations. Applicable examples of these airworthiness regulations are

— in the U.S.A.: F.A.R. 25.621(d), *Federal Aviation Regulation Part 25, casting factors, non-critical castings.*

— in the E.E.C.: J.A.R. 25.621, *Joint Airworthiness Regulation Part 25, casting factors.*

5 Certification and testing

5.1 Certification

For certification, the load specified in 4.3 shall be applied as shown in figure 4, in separate tests.

A statement of compliance with this International Standard or a test report shall be provided.

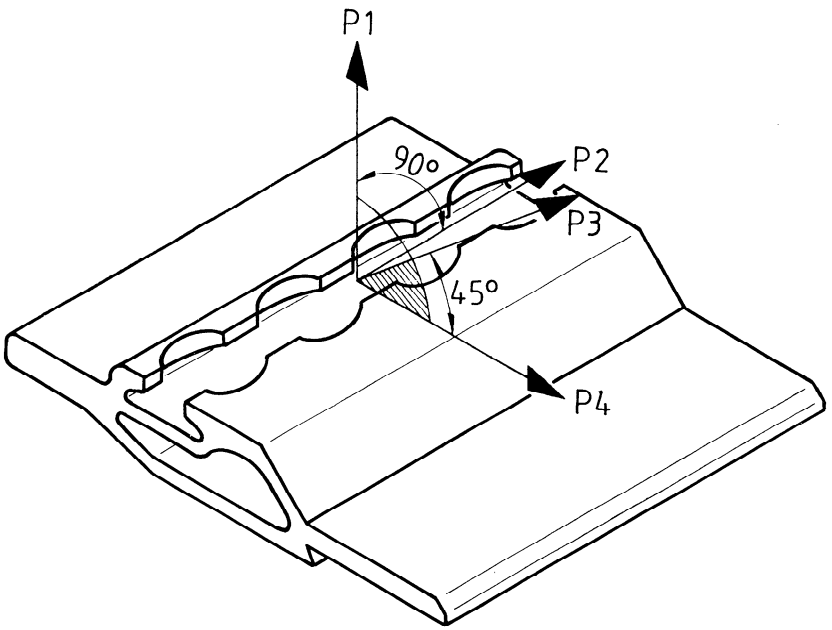


Figure 4 — Load directions for qualification testing

5.2 Testing

5.2.1 General

The components shall be tested by the manufacturer.

The components shall be combined into batches and samples shall be selected at random for testing.

5.2.2 Sampling — Cast components

Sampling shall be carried out in accordance with ISO 2859-1, for inspection by attributes, and ISO 3951, for inspection by variables.

5.2.3 Load test

The double stud assembly shall be installed in a rail meeting the dimensional and tolerance requirements specified in ISO 7166, and shall be tested mechanically in accordance with ISO 5922 and ISO 6892.

A progressively increasing pulling strength shall be applied to the assembly in the 45° load direction with respect to rail references. The pulling strength shall be increased until the first fitting component fails. The breaking strength value shall be recorded for each test. A new sample shall be used for each test.

No component of the fitting shall fail before the minimum required load capacity specified in 4.3 is attained.

Deformation of components is acceptable, as long as it does not result in either rupture or complete disengagement of the fitting from the rail.

5.2.4 Retests

In case of failure, retests shall be carried out in accordance with 5.2.4.1 and 5.2.4.2.

5.2.4.1 The test specimens for the re-tests shall be taken from the same test units as the first test samples.

5.2.4.2 For any test showing unsatisfactory results, two retests shall be carried out. Both results shall meet the required characteristics.

When a series of similar tests has to be performed, the terms "test" and "test specimen" imply the total test or test sample series.

6 Designation

The designation of a double stud fitting assembly complying with this International Standard shall be as follows:

Double stud ISO 9788 - 5 M 2

Reference of this International Standard

Code of load capacity (5 = 5 000 lbf)

Code of material (M = malleable cast iron)

Configuration code (2 = double stud)

7 Identification

In addition to any manufacturer's marking, the double stud body shall carry the designation code specified in clause 6.

The position and method of marking is left to the manufacturer's discretion.

UDC 629.73.023.8 : 656.7.073.4

Descriptors: aircraft, cargo aircraft, aircraft equipment, cargo, fastenings, specifications, dimensions, tests, designation.

Price based on 5 pages