
Aerospace — Bolts — Test methods

Aéronautique et espace — Vis — Méthodes d'essai



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Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Tests	1
4.1 Tensile test at ambient temperature	1
4.1.1 Apparatus	1
4.1.2 Procedure	2
4.2 Double shear test	4
4.2.1 Apparatus	4
4.2.2 Procedure	5
4.3 Tension fatigue test	7
4.3.1 Apparatus	7
4.3.2 Procedure	7
4.4 Stress durability test of ambient temperature	8
4.4.1 Apparatus	8
4.4.2 Procedure	8
4.5 Inspection for grinding burns	8
4.5.1 Procedure	8
4.6 Tensile test at elevated temperature	10
4.6.1 Apparatus	10
4.6.2 Procedure	10
4.7 Stress relaxation test at elevated temperature	10
4.7.1 Apparatus	10
4.7.2 Procedure	11
4.8 Stress corrosion test	11
4.8.1 Apparatus	11
4.8.2 Procedure	12
4.9 Stress rupture test at elevated temperature	13
4.9.1 Apparatus	13
4.9.2 Procedure	14
5 Test validity	14
6 Test reports	14
Annex A (normative) Calibration of apparatus	15
Annex B (normative) Test reports	16
Annex C (informative) Formulae	17

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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 4, *Aerospace fastener systems*.

This second edition cancels and replaces the first edition (ISO 7961:1994), which has been technically revised.

The main changes compared to the previous edition are:

- modification of [Figures 3, 5 and 6](#) (corrected tolerances, further explanations added);
- modification of [Annex B](#);
- editorial adjustment.

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 — Bolts — Test methods

1 Scope

This document specifies test methods for bolts for aerospace constructions.

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 7500-1, *Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Calibration and verification of the force-measuring system*

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:

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

4 Tests

4.1 Tensile test at ambient temperature

4.1.1 Apparatus

4.1.1.1 Test device (see [Figure 1](#)).

4.1.1.1.1 The test device shall be centred such that the stress at four equi-spaced points around the test sample is uniform within 1 %, or such that the coaxiality between the bolt and the clearance holes is less than or equal to 0,025 mm to ensure the application of the tensile load along the axis of the bolt.

Calibration requirements of the test device shall conform to ISO 7500-1 and [Annex A](#).

Other types of device may be used provided they respect the requirements of [Figure 3](#).

4.1.1.1.2 Cups, fixed or removable, in conformity with [Figure 3](#), which specifies only functional requirements.

4.1.1.1.3 Test nut (free-running or self-locking) or **threaded part** (assuming the role of a nut), of sufficient strength to guarantee bolt failure.

4.1.1.2 Tapered spacer, placed under the head during the test, when required by the procurement specification or definition document to evaluate the effect of angularity. The minimum clearance between the hole and the bolt shank shall be 0,13 mm. At least 90 % of the bolt bearing area shall be supported by