

INTERNATIONAL STANDARD

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Environmental tests for aircraft equipment — Steady-state acceleration

*Essais en environnement des équipements aéronautiques — Essais
d'accélération constante*

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Reference number
ISO 2669:1995(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 voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 2669 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 5, *Environmental and operational conditions for aircraft equipment*.

This second edition cancels and replaces the first edition (ISO 2669:1978), of which it constitutes a technical revision.

Annex A forms an integral part of this International Standard.

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Introduction

The tests specified in this International Standard aim to determine the performance characteristics and to confirm the structural integrity and safety of airborne equipment and airborne equipment mountings when they are subjected to gradually changing acceleration forces generated by an aircraft manoeuvre such as turn, pull-out, roll, etc. For example, the tests would be expected to indicate:

- a) any change in operating state and any variations in performance;
- b) any jamming occurring in moving parts and any variation in their path;
- c) any reduction in the free travel and change in the suspension characteristics of the anti-vibration mountings that could damage the operating state and capability of anti-vibration;
- d) any breakage or any weakness in the fastenings mounting devices or structure of the equipment that could constitute a hazard to the aircraft or its occupants.

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Environmental tests for aircraft equipment — Steady-state acceleration

1 Scope

This International Standard specifies two types of steady-state acceleration test and establishes five severity grades of acceleration forces used to simulate a gradually changing acceleration environment representative of that which civil aircraft equipment can encounter in operational use.

The emergency landing case is not within the scope of this International Standard; reference should be made to ISO 7137 for this case.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was 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 edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7137:—¹⁾, *Aircraft — Environmental conditions and test procedures for airborne equipment*.

3 Apparatus

3.1 General characteristics

3.1.1 A centrifuge should be used for producing the required acceleration forces.

3.1.2 In special cases, if stated by the relevant equipment specification, inflight testing or any other method that can produce linear acceleration may be used instead of a centrifuge.

3.1.3 The apparatus shall be capable of producing the specified acceleration forces within $\pm 10\%$ at all points in the equipment.

3.1.4 The apparatus shall be fitted with the electrical, hydraulic and/or pneumatic input and output connections needed to operate the equipment under test and to conduct operational checks. The loss of the connections shall not exceed the limit specified in the relevant specification.

3.1.5 The test apparatus shall be equipped with an adjustable acceleration system, and any additional vibration due to the test apparatus shall be maintained within the tolerance specified in the relevant specifications.

3.1.6 The centrifuge shall be equipped with an adjustable mass balance system to compensate for any out-of-balance forces due to the mass of the test item.

3.2 Special cases

3.2.1 If, because of the excessive size of the equipment, it is not possible to maintain the tolerance specified in 3.1.3 at all points in the equipment, the relevant equipment specification may relax requirements on those parts not considered to be sensitive to specified acceleration forces.

1) To be published. (Revision of ISO 7137:1992)