
**Space Systems — Mechanism design
and verification**

Systèmes spatiaux — Conception et vérification des mécanismes



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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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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 14, *Space systems and operations*.

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.

Introduction

Mechanisms are important elements of spacecraft and its payloads. A mechanism failure can cause the loss of human lives for manned space systems or jeopardize the intended mission for unmanned space systems.

Currently, there is no international standard that covers all the aspects that can be used for space flight moving mechanisms such as rotating machineries, solar array drive mechanism, paddle hinge mechanism, latch mechanism.

The purpose of this document is to establish general requirements for mechanisms. It provides the uniform requirements necessary to minimize the duplication of effort for resolving technical barrier, considering the differences between approaches taken by the participating nations and their commercial space communities in developing mechanisms. In addition, the use of agreed-upon standards will facilitate cooperation and communication among space programmes.

This document, when implemented for a particular space system, ensures high confidence in achieving safe and dependable operation in all phases of its planned mission.

Space Systems — Mechanism design and verification

1 Scope

This document establishes requirements for the design, material selection and characterization, fabrication, testing and inspection of all space mechanisms on spacecraft and payloads to meet the mission performance requirements. This document does not cover the requirements for mechanisms on expendable and reusable launch vehicles. Applicability of the requirements contained in this document to launch vehicle mechanisms is a decision left to the individual launch vehicle project.

This document applies specifically to all moving mechanisms used in spacecraft during all phases of the mission, with the exception of engines and thermal protection systems.

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 10786, *Space systems — Structural components and assemblies*

ISO 14302, *Space systems — Electromagnetic compatibility requirements*

ISO 15864, *Space systems — General test methods for spacecraft, subsystems and units*

ISO 21886, *Space systems — Configuration management*

ISO 23135, *Space systems — Verification program and management process*

ISO 23460, *Space projects — Programme management — Dependability assurance requirements*

ISO 24113, *Space systems — Space debris mitigation requirements*

ISO 27025, *Space systems — Programme management — Quality assurance requirements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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

3.1

mechanism

assembly of parts that are linked together to enable a relative motion

3.2

outgassing

evolution of gaseous species from a material, usually in a vacuum

Note 1 to entry: Outgassing also occurs in higher-pressure environments.

[SOURCE: ISO 15388:2012, 3.1.34]