
**Space systems — Pressure
components and pressure system
integration**

*Systèmes spatiaux — Intégration des composants sous pression et des
systèmes sous pression*



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Contents

Page

Foreword.....	vi
Introduction.....	vii
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Abbreviated terms.....	5
5 General requirements.....	5
5.1 General.....	5
5.2 Design requirements.....	6
5.2.1 Loads, pressures and environments.....	6
5.2.2 Strength.....	6
5.2.3 Stiffness.....	6
5.2.4 Thermal effects.....	7
5.2.5 Stress analysis.....	7
5.2.6 Fatigue analysis/damage tolerance (safe-life) analysis.....	7
5.2.7 Analysis of survivability against space debris and meteoroid impacts.....	7
5.2.8 Avoidance of accidental break-up caused by an on-board source of energy.....	7
5.3 Material requirements.....	8
5.3.1 Metallic materials.....	8
5.3.2 Non-metallic material requirements.....	8
5.4 Fabrication and process requirements.....	8
5.5 Contamination control and cleanliness requirements.....	9
5.5.1 General contamination control requirements.....	9
5.5.2 Design considerations.....	9
5.6 Quality assurance programme requirements.....	10
5.6.1 General.....	10
5.6.2 QA programme inspection plan requirements.....	10
5.6.3 QA inspection technique requirements.....	10
5.6.4 QA inspection data requirements.....	10
5.6.5 Acceptance test requirements.....	10
5.7 Qualification test requirements.....	11
5.8 Operation and maintenance requirements.....	11
5.8.1 Operating procedure.....	11
5.8.2 Safe operating limits.....	11
5.8.3 Inspection and maintenance.....	12
5.8.4 Repair and refurbishment.....	12
5.8.5 Storage.....	12
5.8.6 Documentation.....	12
5.8.7 Reactivation.....	13
5.8.8 Recertification.....	13
6 General pressurized-system requirements.....	13
6.1 System analysis requirements.....	13
6.1.1 System pressure analysis.....	13
6.1.2 System functional analysis.....	13
6.1.3 System hazard analysis.....	14
6.2 Design features.....	14
6.2.1 Assembly.....	14
6.2.2 Routing.....	14
6.2.3 Separation.....	14
6.2.4 Shielding.....	14
6.2.5 Grounding.....	15
6.2.6 Handling.....	15

6.2.7	Special tools	15
6.2.8	Test points	15
6.2.9	Common-plug test connectors	15
6.2.10	Individual test connectors	15
6.2.11	Threaded parts	15
6.2.12	Friction-type locking devices	15
6.2.13	Internally threaded bosses	15
6.2.14	Retainer or snap rings	15
6.2.15	Snubbers	15
6.3	Component selection	16
6.3.1	Connections	16
6.3.2	Fluid temperature	16
6.3.3	Actuator pressure rating	16
6.3.4	Pressure rating	16
6.3.5	Pump selection	16
6.3.6	Fracture and leakage	16
6.3.7	Oxygen system components	16
6.3.8	Pressure regulators	16
6.3.9	Manual valves and regulators	16
6.4	Design pressures	17
6.4.1	Overpressure or underpressure	17
6.4.2	Back-pressure	17
6.4.3	Pressure isolation	17
6.4.4	Gas/fluid separation	17
6.4.5	Compressed-gas bleeding	17
6.5	Mechanical-environment design	17
6.5.1	Acceleration and shock loads	17
6.5.2	Torque loads	17
6.5.3	Vibration loads	17
6.6	Controls	17
6.6.1	Interlocks	17
6.6.2	Multiple safety-critical functions	18
6.6.3	Critical flows and pressures	18
6.7	Protection	18
6.8	Electrical	18
6.8.1	Hazardous atmospheres	18
6.8.2	Radio frequency energy	18
6.8.3	Grounding	18
6.8.4	Solenoids	18
6.8.5	Electric motor-driven pumps	18
6.9	Pressure relief	18
6.9.1	General requirements	18
6.9.2	Flow capacity	19
6.9.3	Sizing	19
6.9.4	Unmanned flight vehicle servicing	19
6.9.5	Automatic relief	19
6.9.6	Venting	19
6.9.7	Relief valve isolation	19
6.9.8	Negative-pressure protection	19
6.9.9	Reservoir pressure relief	20
6.9.10	Air pressure control	20
6.10	Control devices	20
6.10.1	Directional control valves	20
6.10.2	Overtravel	20
6.10.3	Pressure and volume control stops	20
6.10.4	Manually operated levers	20
6.11	Accumulators	20
6.11.1	Accumulator design	20

6.11.2	Accumulator gas pressure gauges	21
6.11.3	Accumulator identification	21
6.12	Flexible hose	21
6.12.1	Installation	21
6.12.2	Restraining devices	21
6.12.3	Flexible hose stress	21
6.12.4	Temporary installations	21
7	Specific pressure system requirements	21
7.1	General	21
7.2	Hydraulic systems	22
7.2.1	Hydraulic system components	22
7.2.2	Pressure limit	23
7.2.3	Cavitations	23
7.2.4	Hydraulic lockup	23
7.2.5	Pressure relief	23
7.3	Pneumatic-system requirements	24
7.3.1	Pneumatic-system components	24
7.3.2	Controls	24
	Annex A (informative) Recommended minimum safety factors	25
	Annex B (informative) Open line force calculation factors	26
	Bibliography	27

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).

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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*.

This second edition cancels and replaces the first edition (ISO 24638:2008), which has been technically revised.

The main changes compared to the previous edition are as follows:

- [6.8.4](#) was revised to make the requirement a more general statement;
- corrections were made to [Tables 1](#) and [A.1](#).

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

Space vehicles and their launch systems usually have a series of engines to use for both primary propulsion and secondary propulsion functions, such as attitude control and spin control.

Different engines have different propellant feed systems. For example, the gas-pressure feed system is typically used for liquid propellant engines; it consists of a high-pressure gas tank, a fuel tank and an oxidizer tank, valves and a pressure regulator. All these components are referred to as pressurized hardware.

Due to their specific usage, the liquid propellant tanks and the high-pressure gas bottles are often referred to as pressure vessels, while valves, regulators and feed lines are usually called pressure components.

ISO 14623 sets forth the standard requirements for pressure vessels in order to achieve safe operation and mission success. However, the requirements for pressure components are not covered in ISO 14623. Furthermore, the standard requirements for pressure system integration are lacking.

Significant work has been done in the area of design, analysis and testing of pressure components for use in space systems. This document establishes the preferred methods for these techniques and sets forth the requirements for the assembly, installation, test, inspection, operation and maintenance of the pressure systems in spacecraft and launch vehicles.

Space systems — Pressure components and pressure system integration

1 Scope

This document establishes the baseline requirements for the design, fabrication and testing of space flight pressure components. It also establishes the requirements for the assembly, installation, test, inspection, operation and maintenance of the pressure systems in spacecraft and launch vehicles. These requirements, when implemented on a particular space system, ensure a high level of confidence in achieving safe and reliable operation.

This document applies to all pressure components other than pressure vessels and pressurized structures in a pressure system. It covers lines, fittings, valves, bellows, hoses and other appropriate components that are integrated to form a pressure system.

The requirements for pressure vessels and pressurized structures are set forth in ISO 14623.

This document does not apply to engine components.

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 14623, *Space systems - Pressure vessels and pressurized structures — Design and operation*

ISO 21347, *Space systems — Fracture and damage control*

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

3 Terms and definitions

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

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/>

3.1

A-basis allowable

mechanical strength value above which at least 99 % of the population of values is expected to fall, with a confidence level of 95 %

Note 1 to entry: See also *B-basis allowable* (3.3).

[SOURCE: ISO 14623:2003, 2.1, modified — Note 1 to entry has been added.]

3.2

applied load

applied stress

actual load (stress) imposed on the hardware in the service environment

[SOURCE: ISO 14623:2003, 2.4, modified — “the structure” has been changed to “the hardware”.]