INTERNATIONAL STANDARD

**ISO 14085-4**

First edition
2015-03-01

# Aerospace series — Hydraulic filter elements — Test methods —

## Part 4: Verification of collapse/burst pressure rating

*Série aérospatiale — Eléments filtrants hydrauliques — Méthode d'essais —*

*Partie 4: Vérification de la résistance à l'éclatement/écrasement*

Reference number
ISO 14085-4:2015(E)

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Published in Switzerland

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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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 10, *Aerospace fluid systems and components*.

ISO 14085 consists of the following parts, under the general title *Aerospace series — Hydraulic filter elements — Test methods*:

— *Part 1: Test sequence*

— *Part 2: Conditioning*

— *Part 3: Filtration efficiency and retention capacity*

— *Part 4: Verification of collapse/burst pressure rating*

— *Part 5: Resistance to flow fatigue*

— *Part 6: Cleanliness level*


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# Introduction

In aerospace hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure. The liquid is both a lubricant and power-transmitting medium. The presence of solid contaminant particles in the liquid interferes with the ability of the hydraulic fluid to lubricate, and causes wear and malfunction of the components. The extent of contamination in the fluid has a direct bearing in the performance, reliability, and safety of the system, and needs to be controlled to levels that are considered appropriate for the system concerned.

Filters are used to control the contamination level of the fluid by removing solid contaminant particles, typically consisting of a filter element enclosed in a filter housing. The filter element is the porous device that performs the actual process of filtration. The complete assembly is designated as a filter.

As a filter element removes contaminant due to its efficiency, the filter element clogs and its differential pressure increases to values which can affect its structural integrity. The capability of the filter element to maintain a specified fluid cleanliness level depends on its performance and structural integrity, which can both be affected if the filter element differential pressure becomes too high.

A collapse/burst test quantifies the resistance of the filter element to high differential pressures that can occur both due to filter clogging, as well as that occurring in non-steady state operating conditions such as cold starts and decompression surges.

This part of ISO 14085 provides a procedure to verify that a filter element can withstand a designated high differential pressure without failure.

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# Aerospace series — Hydraulic filter elements — Test methods —

# Part 4: Verification of collapse/burst pressure rating

## 1 Scope

This part of ISO 14085 describes a method for verifying the collapse/burst pressure rating of an aerospace hydraulic fluid power filter element. This represents the capability of a filter element to withstand a designated differential pressure in the normal (intended) direction of flow, created by flowing contaminated fluid through the filter element until either collapse/burst occurs or the maximum expected differential pressure is reached without element failure.

The collapse/burst pressure test can be conducted in conjunction with an efficiency test performed according to the procedure defined in the ISO 14085-3 by continuing the contaminant injection until the designated filter element differential pressure is reached.

This part of ISO 14085 is not intended to qualify a filter element under replicate conditions of service; this can only be done by a specific test protocol developed for the purpose, including actual conditions of use, for example the operating fluid or contamination.

The tests data resulting from application of this part of ISO 14085 can be used to compare the performance of aerospace hydraulic filter elements.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1219-1, *Fluid power systems and components — Graphical symbols and circuit diagrams — Part 1: Graphical symbols for conventional use and data-processing applications*

ISO 2942, *Hydraulic fluid power — Filter elements — Verification of fabrication integrity and determination of the first bubble point*

ISO 5598, *Fluid power systems and components — Vocabulary*

ISO 11943, *Hydraulic fluid power — On-line automatic particle-counting systems for liquids — Methods of calibration and validation*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5598 and the following apply.

**3.1**
**free-flow dummy element**
duplicate test filter element with its media layers removed to replicate the flow pattern in the housing generated by the test filter element

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