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**Methods of test for full-flow  
lubricating oil filters for internal  
combustion engines —**

**Part 5:  
Test for hydraulic pulse durability**

*Méthodes d'essai des filtres à huile de lubrification à passage intégral  
pour moteurs à combustion interne —*

*Partie 5: Méthode d'essai de résistance aux impulsions hydrauliques*



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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](http://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](http://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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 70, *Internal combustion engines*, Subcommittee SC 7, *Tests for lubricating oil filters*.

This third edition cancels and replaces the second edition (ISO 4548-5:2013), which has been technically revised.

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

- The test system schematic has been revised to include updated instrumentation.
- The cold start simulation test and hydraulic pulse durability procedures have been combined into [Clause 8](#).
- The names of the tests have been revised to the “extreme” and “normal” pressure surge tests.
- The test system setup has been defined in more detail.
- A round robin test has been added to be performed to validate the changes. The results have been summarized in a new informative annex (see [Annex B](#)).

A list of all parts in the ISO 4548 series can be found on the ISO website.

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](http://www.iso.org/members.html).

## Introduction

ISO 4548 (all parts) establishes standard test procedures for measuring the performance of full-flow lubricating oil filters for internal combustion engines. The series has been prepared in separate parts, each part relating to a particular performance characteristic.

Together the tests provide the information necessary to assess the characteristics of a filter, but if agreed between the purchaser and the manufacturer, the tests can be conducted separately.



# Methods of test for full-flow lubricating oil filters for internal combustion engines —

## Part 5: Test for hydraulic pulse durability

### 1 Scope

This document specifies a method of testing the ability of full-flow lubricating oil filters manufactured with metal pressure vessel materials for internal combustion engines to withstand an internal pressure surge. Normally surges occur when an engine is started from cold, and cyclic internal pressure variations experienced during operation.

These tests are intended for application to spin-on type filters and detachable filters with disposable elements.

The tests can be applied to other filters, if thought applicable, by agreement between the filter manufacturer and the purchaser.

**NOTE** This test is not intended to replace simulated environmental testing (e.g. at very low temperatures). If such testing is required, it will be the subject of negotiation between the supplier and customer.

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

ISO 4548-1, *Methods of test for full-flow lubricating oil filters for internal combustion engines — Part 1: Differential pressure/flow characteristics*

### 3 Terms, definitions and graphical symbols

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4548-1 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/>

#### 3.2 Graphical symbols

For the purposes of this document, the graphical symbols given in ISO 1219-1 apply.