INTERNATIONAL STANDARD

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

Part 5: Test for cold start simulation and hydraulic pulse durability

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

Partie 5: Essai pour simulation de démarrage à froid et 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. www.iso.org/directives

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 70, *Internal combustion engines*, Subcommittee SC 7, *Tests for lubricating oil filters*.

This second edition cancels and replaces the first edition (ISO 4548-5:1990), of which it constitutes a minor revision.

ISO 4548 consists of the following parts, under the general title *Methods of test for full-flow lubricating oil filters for internal combustion engines*:

— *Part 1: Differential pressure/flow characteristics*

— *Part 2: Element by-pass valve characteristics*

— *Part 3: Resistance to high differential pressure and to elevated temperature*

— *Part 4: Initial particle retention efficiency, life and cumulative efficiency (gravimetric method)*

— *Part 5: Test for cold start simulation and hydraulic pulse durability*

— *Part 6: Static burst pressure test*

— *Part 7: Vibration fatigue test*

— *Part 9: Inlet and outlet anti-drain valve tests*

— *Part 12: Filtration efficiency using particle counting, and contamination retention capacity*

The following parts are under preparation:

— *Part 13: Static burst pressure test for composite filter housings*

— *Part 14: Cold start simulation and hydraulic pulse durability for composite filter housings*

— *Part 15: Vibration fatigue test for composite filter housings*

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 cold start simulation and hydraulic pulse durability

1 Scope

This part of ISO 4548 specifies a method of testing the ability of full-flow lubricating oil filters for internal combustion engines to withstand an internal pressure surge such as occurs 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 with a maximum flow rate of 100 l/min.

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, in whole or in part, are normative 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, *Fluid power systems and components — Graphic symbols*

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

3 Terms and 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.

3.2 Graphical symbols

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

4 Operational characteristics to be tested

Filters are subjected in service to pressure fluctuations caused by engine cold starting conditions. The test specified in Clause 8 verifies the ability of the filter canister and seal to withstand these high pressure fluctuations for a given number of start conditions.

Filters are also subjected to cyclic pressure variations during normal operation. The test given in Clause 9 verifies the ability of the filter canister and seal to withstand these pressures for a given number of cycles.