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Hydraulvätskor – Filter – Bestämning av motstånd mot flödesutmattning med partiklar (ISO 3724:2007, IDT)

Hydraulic fluid power – Filter elements – Determination of resistance to flow fatigue using particulate contaminant (ISO 3724:2007, IDT)

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Den internationella standarden ISO 3724:2007 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av ISO 3724:2007.

The International Standard ISO 3724:2007 has the status of a Swedish Standard. This document contains the official version of ISO 3724:2007.

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.

Information about the content of the standard is available from the Swedish Standards Institute (SIS), telephone +46 8 555 520 00. Standards may be ordered from SIS Förlag AB, who can also provide general information about Swedish and foreign standards.

Denna standard är framtagen av kommittén för Renhetsteknik, SIS/TK 108.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 3724 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 6, *Contamination control*.

This second edition cancels and replaces the first edition (ISO 3724:1976), which has been technically revised.

Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. The fluid is both a lubricant and a power-transmitting medium. Filters maintain fluid cleanliness by removing insoluble contaminants. The filter element is a porous device that performs the actual process of filtration.

The effectiveness of the filter element in controlling contaminants is dependent upon its design and its sensitivity to any unsteady operating conditions that can stress and cause damage to the filter element.

Hydraulic fluid power — Filter elements — Determination of resistance to flow fatigue using particulate contaminant

1 Scope

This International Standard specifies a method for determining the resistance of a hydraulic filter element to flow fatigue after it has been loaded with particulate contaminant and subjected to a uniform varying flow rate and predetermined maximum element differential pressure.

It establishes a uniform method for verifying the ability of a filter element to withstand the flexing caused by cyclic differential pressures induced by a variable flow rate.

NOTE Annex A summarizes data from a round robin test performed to verify the procedure specified in this International Standard.

2 Normative references

The following referenced documents are indispensable for the application 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 — Graphic symbols and circuit diagrams — Part 1: Graphic symbols for conventional use and data-processing applications*

ISO 1219-2, *Fluid power systems and components — Graphic symbols and circuit diagrams — Part 2: Circuit diagrams*

ISO 2941[1)], *Hydraulic fluid power — Filter elements — Verification of collapse/burst pressure rating*

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

ISO 2943, *Hydraulic fluid power — Filter elements — Verification of material compatibility with fluids*

ISO 5598[2)], *Fluid power systems and components — Vocabulary*

1) To be published. (Revision of ISO 2941:1974)

2) To be published. (Revision of ISO 5598:1985)

3 Terms and definitions

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

3.1
filter element resistance to flow fatigue
ability of a filter element to resist structural failure due to flexing caused by cyclic system flow rate conditions

3.2
maximum assembly differential pressure
Δp_A
sum of the housing differential pressure and the maximum element differential pressure

3.3
housing differential pressure
Δp_H
differential pressure of the filter housing without an element

3.4
maximum element differential pressure
Δp_E
maximum differential pressure across the filter element designated by the manufacturer as the limit of useful performance

4 Graphic symbols and circuit diagrams

Graphic symbols used in this International Standard are in accordance with ISO 1219-1 and circuit diagrams in accordance with ISO 1219-2.

5 Test apparatus

5.1 Pressure-sensing and recording instruments, with a frequency response capable of measuring the full pressure-versus-time curve (see Figure 1).

5.2 Flow fatigue cycle test stand, capable of varying the test flow rate from 0 l/min up to the rated flow rate (see Figures 1 and 2).

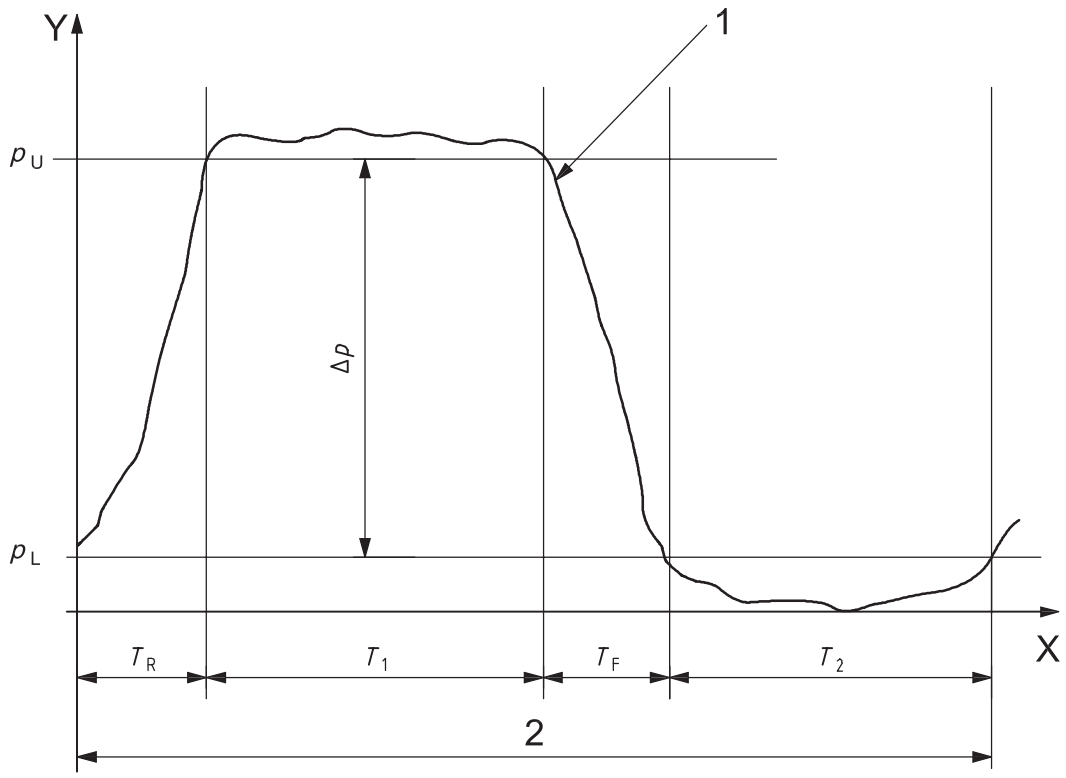
5.3 Test filter housing, capable of ensuring that the fluid cannot bypass the filter element. The filter shall be capable of being modified to suit this purpose.

5.4 Test fluid, with a viscosity between 14 mm^2/s and 32 mm^2/s at the test temperature. The compatibility of the fluid and filter element material shall be verified in accordance with ISO 2943. Any fluid that is compatible with the filter element material may be used.

5.5 Cycle counting device, capable of recording the number of flow fatigue cycles.

5.6 Inert particulate contaminant, not able to add strength to the filter element, used to load the filter element being evaluated.

NOTE Test dust according to ISO 12103-1 is suitable.



Key

X time (s)
Y pressure (kPa)

1 actual test pressure (kPa)
2 one test cycle, T

p_L lower test pressure; $p_L \leqslant 10\ \%\ p_U$
p_U upper test pressure; tolerance on p_U is $\pm$ 10 %
T_R rise time; $T_R = (15 \pm 5)\ \%T$
T_1 time at pressure; $T_1 = (35 \pm 5)\ \%T$
T_F fall time; $T_F = (15 \pm 5)\ \%T$
T_2 time without pressure; $T_2 = (35 \pm 5)\ \%T$

Figure 1 — Flow fatigue cycle test waveform