



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 39926-2021

**Hydraulic fluid power - Filter element test methods - Thermal
conditioning and cold start-up simulation**

Issued on: March 9, 2021

Implemented on: October 1, 2021

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

The translation method used in this standard is equivalent to ISO 16908.2014 "Hydraulic Filter Element Test Method Hot Working Condition and Cold Start Simulation".

The Chinese documents that have a consistent correspondence relationship with the normatively cited international documents in this standard are as follows.

---GB/T 786.1-2009 Graphical symbols and circuit diagrams of fluid transmission systems and components Part 1.For general purposes and

Graphical symbols for data processing (ISO 1219-1.2006, IDT)

---GB/T 14039-2002 Hydraulic transmission oil solid particle pollution grade code (ISO 4406.1999, MOD)

---GB/T 14041.1-2007 Hydraulic Filter Element Part 1.Structural Integrity Verification and Determination of Initial Bubble Point

(ISO 2942.2004, IDT)

---GB/T 14041.2-2007 Hydraulic filter element Part 2.Material and liquid compatibility inspection method (ISO 2943.1998,

IDT)

---GB/T 17446-2012 Fluid Power System and Components Vocabulary (ISO 5598.2008, IDT)

---GB/T 17486-2006 Evaluation of pressure drop and flow characteristics of hydraulic filters (ISO 3968.2001, IDT)

---GB/T 17489-1998 Hydraulic particle pollution analysis Extract liquid samples from working system pipelines (idtISO 4021.1992)

---GB/T 37163-2018 The hydraulic transmission adopts the automatic particle counting method of the shading principle to determine the particle pollution degree of the liquid sample

(ISO 11500.2008, MOD)

This standard was proposed by the China Machinery Industry Federation.

This standard is under the jurisdiction of the National Hydraulic and Pneumatic Standardization Technical Committee (SAC/TC3).

Drafting organizations of this standard. Jiujiang Seven Precision Electromechanical Technology Co., Ltd., Aviation Industry (Xinxiang) Measurement Technology Co., Ltd., Anhui Lane

Electric Pump Co., Ltd., Liming Hydraulic Co., Ltd., Xinxiang Pingfei Hydraulic Co., Ltd., Shanghai Mintai Hydraulic Co., Ltd., Beijing Chemical

the University.

Introduction

In the hydraulic transmission system, the power is transmitted and controlled by means of the pressurized liquid in the closed circuit. The filter removes solids and

Various colloidal organic matter and other particulate pollutants control the pollution degree of the liquid.

Filter elements, especially those used in mobile hydraulic systems, can withstand a series of thermal stresses such as extreme low temperature and high temperature conditions.

When the system is cold-started (starting in a low-temperature environment), the oil passes through the filter element with a great viscosity. The cold start test is used to detect the shock of the filter element.

The ability to pressurize poorly without causing loss of structural integrity and performance.

The filter element used in the mobile hydraulic system will be affected by the stress generated by the cold start during its life cycle, so it is necessary to check the filter element in the cold

The ability to maintain filtration performance and structural integrity under start-up conditions.

This standard specifies the test procedure for making the filter element to withstand the cold start stress, and the tested filter element can be subjected to other subsequent performance tests after it is determined to be qualified.

These performance tests mainly include multiple pass tests, crush tests and flow fatigue

tests. This allows customers to understand that the filter element can withstand

The ability to cold start and maintain expected performance.

Test method of hydraulic transmission filter element

Hot conditions and cold start simulation

1 Scope

This standard specifies the hot working conditions of hydraulic filter elements and the test procedures for simulating cold start that may be encountered in mobile hydraulic system applications.

In addition to making the test results reproducible, the test procedure can also be used as a test before other filter element performance tests specified in ISO 11170.

Test procedures.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated reference documents, the latest version (including all amendments) is applicable to this document.

ISO 1219-1 Graphical symbols and circuit diagrams of fluid power transmission systems and components-Part 1.Used for general purpose and data processing

Graphic symbols

(Fluidpowersystemsandcomponents-Graphicsymbolsandcircuitdiagrams-Part 1.

Graphicsymbolsforconventionaluseanddata-processingapplications)

ISO 2942 Hydraulic fluid power-Filter element structural integrity inspection and initial bubble point determination (Hydraulicfluidpower-Filter

elements-Verificationoffabricationintegrityanddeterminationofthefirstbubblepoint)

ISO 2943 Hydraulic fluid power-Filter material and liquid compatibility inspection method (Hydraulicfluidpower-Filter

elements-Verificationofmaterialcompatibilitywithfluids)

ISO 3968 Determination of pressure drop flow characteristics of hydraulic transmission filters (Hydraulicfluidpower-Filters-

Evaluationofdifferentialpressureversusflowcharacteristics)

ISO 4021 Hydraulic Transmission Particle Contamination Analysis Extracting liquid samples

from working system pipelines (Hydraulic fluid power-

Particulate contamination analysis-Extraction of fluid samples from lines of an operating system)

ISO 4406 Hydraulic fluid power-Fluids-Method

for coding the level of contamination by solid particles)

ISO 5598 Fluid power systems and components-Vocabulary

(Fluid power systems and components-Vocabulary)

The ISO 11500 hydraulic transmission adopts the automatic particle counting method based on the shading principle to determine the particle contamination of liquid samples (Hydraulic fluid

power-Determination of the particulate contamination level of a liquid sample by automatic particle counting using the light-extinction principle)

3 Terms and definitions

The following terms and definitions defined in ISO 5598 apply to this document.

3.1

Cold soak

Immerse the filter element or other parts in a static liquid that is 5°C lower than the minimum operating temperature.

3.2

Cold start

The high-viscosity liquid at low temperature suddenly passes through the filter element, which makes the flow and pressure difference of the filter element increase sharply.