

ICS 49.080
CCS V 20



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

GB/T 46719.5-2026

**Aerospace - Hydraulic filter elements test methods - Part 5:
Resistance to flow fatigue**

航空航天 液压滤芯试验方法 第5部分：抗流动疲劳

(English Translation)

Issued on: July 2, 2026

Implemented on: February 1, 2027

Issued by: State Administration for Market Regulation

Table of Contents

Preface
Introduction
1 Scope
2 Normative References
3 Terms and Definitions
4 Graphical symbols and loop diagrams
5 Experimental Equipment and Materials
6 Accuracy of measuring instruments and test conditions
7 Experimental Procedure
9 Data Presentation
10 Labeling Explanation
Appendix A (Informative) Flow Fatigue Test Data Report
References

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 5 of GB/T 46719 "Test Methods for Aerospace Hydraulic Filter Elements". GB/T 46719 has been published as follows.

Part 2.

---Part 1: Experimental Sequence;

---Part 2: Regulatory Role;

---Part 3: Filtration Efficiency and Retention Capacity;

---Part 4: Validation of Crushing/Rupture Pressure Rating;

---Part 5: Resistance to Flow Fatigue;

---Part 6: Cleanliness Levels this document is equivalent to ISO 14085-5:2015 "Aerospace series hydraulic filter elements - Test methods - Part 5: Resistance to flow fatigue".

The following minimal editorial changes have been made to this document.

---To align with existing standards, the standard title has been changed to "Test Methods for Aerospace Hydraulic Filter Elements - Part 5: Resistance to Flow Fatigue";

---Added the source for the definition of "filter element ultimate pressure difference" (see 3.7);

---Added "References".

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Aircraft Standardization Technical Committee (SAC/TC435).

Introduction

GB/T 46719 aims to provide a unified and consistent procedure for performance testing of aerospace hydraulic filter elements, and is proposed to consist of six parts.

---Part 1: Test Sequence. The purpose is to specify the test sequence and provide guidelines for acceptance criteria.

---Part 2: Regulation. This section describes the filter element's thermal conditions and cold start test procedure.

---Part 3: Filtration Efficiency and Retention Capacity. This section describes the test procedures for the filtration efficiency and retention capacity of filter cartridges.

---Part 4: Crushing/Rupture Pressure Rating Verification. The purpose is to describe the crushing (rupture) pressure test procedure for the filter element.

---Part 5: Resistance to Flow Fatigue. The purpose is to describe the test procedures for the filter element's resistance to flow fatigue.

---Part 6: Cleanliness Grade. The purpose is to provide guidance on the initial cleanliness testing methods for filter cartridges.

In aerospace hydraulic fluid power systems, power is transmitted and controlled through pressurized fluid. This fluid serves as both a lubricant and a...

It is the power transmission medium. The presence of solid contaminant particles in the liquid can interfere with the lubrication ability of the hydraulic oil and lead to wear and failure of components.

The degree of contamination in the fluid directly affects the system's performance, reliability, and safety, and needs to be controlled within the system's permissible level.

A porous element that performs the actual filtration process. The assembly consisting of the filter element and the housing is called a filter.

The effectiveness of a filter element in controlling contaminants depends on its design and sensitivity to dynamic operating conditions.

This can damage the filter element, especially when the filter element is clogged and the pressure differential increases.

This document provides a test procedure for evaluating the resistance of hydraulic filter elements to flow fatigue.

Aerospace hydraulic filter element test methods Part 5: Resistance to Flow Fatigue

1 Scope

This document describes a test method for evaluating the flow fatigue resistance of aerospace hydraulic filter elements, used to assess different levels of contaminants added to the filter.

The hydraulic filter element's ability to withstand flow fatigue caused by changes in flow rate. The hydraulic filter element undergoes the same alternating flow under multiple predetermined pressure differentials.

Quantity and the specified number of cycles.

The number of cycles and pressure differentials used in this document are intended to simulate the operating conditions of the filter and are not applicable to qualification verification under actual operating conditions.

Verification. If verification under actual operating conditions is required, a dedicated test procedure should be developed, including actual usage conditions such as the working medium and contaminants.

Material and precise flow circulation conditions.

This document establishes a unified method for verifying the ability of hydraulic filter elements to withstand alternating pressure differentials caused by flow fluctuations.

The test data results presented in this document are applicable to evaluating the performance of aerospace hydraulic filter elements.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

Note: GB/T 786.1-2021 Graphical symbols and circuit diagrams for fluid transmission systems and components - Part 1: Graphical symbols (ISO 1219-1:2012, IDT) Note. GB/T 14041.1-2007 Verification of structural integrity and determination of initial bubble point for hydraulic filter elements (ISO 2942:2004, IDT) Note. GB/T 14041.2-2007 Test method for compatibility of hydraulic filter element materials with liquids (ISO 2943:1998, IDT) Note. GB/T 17446-2024 Vocabulary of Fluid Transmission Systems and Components (ISO 5598:2020, MOD) ISO 12103-1 Test dust for evaluating filters in road vehicles - Part 1: Test dust containing silica (Roadvehicle-Note. GB/T 28957.1-2023 Test dust for evaluating filters in road vehicles - Part 1: Test dust for silica (ISO 12103-1.

2016, MOD)

ISO 14085-3 Aerospace series hydraulic filter elements test methods - Part 3: Filtration efficiency and retention capacity (Aerospace)

3 Terms and Definitions

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