

ICS 25.220.10

CCS J 20



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

GB/T 18853-2015

Replacing GB/T 18853-2002

**Hydraulic fluid power filters -- Multi-pass method for evaluating
filtration performance of a filter element**

液压传动过滤器 评定滤芯过滤性能的多次通过方法

(English Translation)

Issued on: December 31, 2015

Implemented on: July 1, 2016

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China**

Table of Contents

Preface
Introduction
1 Scope
2 Normative reference document
3 Terms and definitions
4 Symbol
5 General procedure
6 Test equipment
7 Test instrument accuracy and test conditions of the range of
8 Filter performance test circuit verification procedures
9 Required information before trial
10 Preparation before trial
11 Filter Performance Test
12 Calculate
13 Data expression
14 Note
Appendix A (normative) Basic performance of test oil
Appendix B (informative) Guidelines for the design of test systems
Appendix C (Informative Appendix) Calculation and Chart Report Example
Reference

Foreword

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

This standard instead of GB/T 18853-2002 "hydraulic transmission filter to assess the filter performance of multiple pass method", and GB/T 18853-2002 compared to the main technical changes are as follows.

--- modified version of the normative reference documents ISO 11943 and ISO 4405, using the latest version (see Chapter 2, 2002 Yearbook Chapter 2).

The normative reference document, ASTM D4308, was deleted and included in the references (see Chapter 2 of 2002).

--- modified part of the parameter symbols (see 4.2, 2002 version 4.2).

- increase the particle size (x_1 , x_2) and the particle size (x_{int}) calculated using the interpolation method (see Table 1).
- increased drying requirements and standardized requirements for test powder over 200 g (see 6.3).
- Increased use of antistatic additives (see 10.3.2).
- Increased number of digital processing requirements for the calculation of the average number of particles (see 12.5d)).
- modified the expression of the average number of the average number of particles in the upper and lower reaches (see 12.7, 2002 edition 12.7).
- Removes the number of weight contaminants for upstream oil samples (see 12.10).

This standard uses the re-drafting method to modify the use of ISO 16889.:2008 "hydraulic drive filter performance evaluation of multiple pass Method "(English version).

The technical differences between this standard and ISO 16889.:2008 are as follows.

- to modify the normative reference documents to meet the technical conditions of our country, the adjustment of the situation is reflected in Chapter 2 "normative reference File ", the specific adjustments are as follows.
- Replace ISO 1219-1 (see 4.1) with GB/T 786.1 equivalent to the international standard;
- Replace ISO 2942 with equivalent GB/T 14041.1 with international standards (see Chapter 9);
- GB 5598 (see Chapter 3) with GB/T 17446 equivalent to international standards;
- Replace ISO 3722 (see 6.5) with GB/T 17484 equivalent to international standards;
- ISO 3968 (see 6.7.1) is replaced by GB/T 17486 equivalent to the international standard;
- ISO 4021 (see 6.7.1) is replaced by GB/T 17489 equivalent to the international standard;
- GB 11171 (see 4.2) is replaced by GB/T 18854 with an international standard;
- ISO 11943 (see 6.4) with GB/T 21540 equivalent to international standards;
- ISO 4405 is replaced by GB/T 27613 with an international standard (see 6.8);
- Replace ISO 12103-1 (see 6.3) with GB/T 28957.1 with international standard modifications;
- Removes ISO 17889.:2008 normative reference file ISO 5725, since this file is only available in the "Appendix D" section Quotes.
- increase the test in the 9th test before the test oil viscosity 14mm²/s and 16mm²/s corresponding to the temperature requirements to improve the test the accuracy of the

results.

--- Added A.5 in the domestic oil YH-10, YH-12 and YH-15 as qualified oil to meet the test oil in China Application.

--- Added footnote to the special function fuel tank symbol in the system schematic of Appendix B, which is marked in GB/T 786.1 is not specified, so the use of ISO 16889 in the expression.

--- modify the Appendix B of the system schematic diagram of the temperature regulator of the expression symbols, using GB/T 786.1 in the expression of the provisions.

This standard has made the following editorial changes.

- Removed the ISO 16889.:2008 information Appendix D, modified the "reference". Because these two aspects of the standard so that the with the relationship is not, and increased the length of the standard.

This standard is proposed by the China Machinery Industry Federation.

This standard by the National Hydraulic and Pneumatic Standardization Technical Committee (SAC/TC3) centralized.

This standard is responsible for the drafting unit. National Defense Science and Technology Industrial Granularity Level 1 metering station.

This standard participates in the drafting unit. Jiujiang Seven Precision Electromechanical Technology Co., Ltd., Beijing University of Chemical Technology, Xinxiang Pingfei Filter Co., Ltd.

Division, Liming Hydraulic Co., Ltd.

Introduction

In the hydraulic system, the solid particulate contaminants by increasing wear, stuck, siltation, clogging and accelerating oil oxidation deterioration, etc.

And the annex, resulting in reduced reliability, improved failure rate, shorten the life of accessories and other issues. The hydraulic filter is used to control the circulation in the hydraulic system of the number of polluted particles, so that the pollution level of oil to meet the hydraulic accessories of the pollution tolerance and the user needs the reliability requirements. in order to it is advisable to compare the performance of the filter to select the most suitable filter. The performance characteristics of the filter depend on the filter element (its filter and geometry) and the filter housing (its structural shape and seal design). In fact, the hydraulic oil carries contaminants continuously Flows through the filter until the filter flow resistance reaches the pre-set ultimate differential pressure (bypass valve opening pressure or pressure difference set by the differential pressure indicator).

The filter service life (before reaching the limit pressure difference) and the pollution rate at any point in the hydraulic system are related to the rate of increase in pollutants (invasion rate and generation Rate and the performance of the filter are closely related. Therefore, in the laboratory for the performance evaluation of the filter should be tested for the filter the device provides a continuous amount of contaminant, and regularly monitors the filtration performance parameters of the filter.

The test should have a degree of reproducibility and reproducibility. The standard test contaminants are the ISO intermediate test specified in ISO 12103-1 Test powder (ISO MTD, ISO 12103-A3). This test powder has a stable uniform particle size distribution and is available all over the world can be purchased. The upstream and downstream particle size distribution of the filter should be measured using an automatic particle counter calibrated according to GB/T 18854.

The results of the filter to determine the filter performance. It is difficult to specify the circulation flow that is consistent with the flow variation in the actual hydraulic system and therefore, in this test method using steady-state conditions as a test case, in order to improve the reproducibility of the test results and reproducibility.

Hydraulic drive filter A method of evaluating the filter performance of filter elements

1 Scope

This standard specifies the following.

- a) hydraulic transmission filter in the continuous injection of pollutants under the conditions of multiple filtration performance test;
- b) procedures for determining the scale capacity, particle filtration and differential pressure characteristics;
- c) Tests currently applicable to hydraulic drive cartridges. This filter has an average particle size of particles smaller than or equal to 25 μm (c) Ratio greater than or equal to 75, and the end of the test tank weight pollution degree of less than.200mg/L;

Note: The flow range of the test equipment and the lower limit of the particle size are determined by validation.

- d) Tests using ISO intermediate test powder and test oil specified in Annex A.

This standard applies to the following three test conditions.

- test conditions 1, the upstream basic weight pollution degree of 3mg/L;
- test conditions 2, the upstream basic weight pollution rate of 10mg/L;
- test conditions 3, the upstream basic weight pollution degree of 15mg/L.