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

GB/T 37162.1-2026

Replacing GB/T 37162.1-2018

**Hydraulic fluid power - Monitoring the level of particulate
contamination of the fluid - Part 1: General principles**

液压传动 液体颗粒污染度的监测 第1部分：总则

(English Translation)

Issued on: July 30, 2026

Implemented on: February 1, 2027

Issued by: State Administration for Market Regulation

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Foreword

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This document conforms to GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting is scheduled.

This document is Part 1 of GB/T 37162 "Monitoring of Particulate Contamination in Hydraulic Transmission Fluids". GB/T 37162 has been published.

The following parts were included.

--Part 1: General Provisions;

--Part 3: Utilizing membrane clogging technology;

--Part 4: Application of shading technology.

Compared to GB/T 37162.1-2018, apart from structural adjustments and editorial changes, the main technical changes are as follows.

--The definition of "automatic particle counter" has been changed (see 3.1, 2018 version 3.1).

--Added the term and definition of "particulate pollution monitor" (see 3.2);

--The definition of "filter" has been changed (see 3.10, 3.9 in the 2018 edition).

--The term and definition of "sampler" have been removed (see 3.15 in the 2018 edition).

--Added the term and definition of "sampling" (see 3.17).

--The treatment of solvents has been removed (see 4.4.2 in the 2018 version).

This document is equivalent to ISO 21018-1:2024 "Monitoring of particulate contamination in hydraulic fluids - Part 1: General".

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 by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Hydraulics and Pneumatics (SAC/TC 3).

Introduction

In hydraulic systems, power is transmitted and controlled via pressurized fluid within a closed circuit. This fluid serves as both a lubricant and a power source.

Force transmission medium. The presence of solid particulate contaminants in liquids not only reduces the lubricating performance of hydraulic fluids but also leads to wear on components.

Internal hydraulic filters can be used to control the amount of particulate contaminants, adapting to both the system's contamination sensitivity and the user's reliability requirements.

Sexual desires.

Users of hydraulic equipment typically specify the maximum particulate contamination levels for components, systems, and production processes.

The degree of cleanliness is usually referred to as the target cleanliness level (RCL). Cleanliness is obtained by sampling the hydraulic fluid and measuring the particulate contamination level. If the measured cleanliness level is...

If particulate contamination levels exceed the target cleanliness level, measures need to be taken to reduce particulate contamination. To avoid unnecessary measures leading to high costs...

The high cost necessitates accurate sampling and measurement of particulate contamination levels.

There are many measuring instruments available, but these are typically used in specific environments such as professional laboratories, and hydraulic equipment is used...

Users cannot obtain measurement results in a timely manner. To overcome this deficiency, it can be used at the work site, near the work site, or directly online or via the main system.

Instruments for measuring particulate matter levels using linear analysis techniques are constantly being developed. However, it is difficult to directly trace the source of these instruments used in field operations.

To meet national measurement standards, because these instruments are typically used to monitor the approximate particulate pollution level of a system or simply to inform the user whether there is a noticeable particulate pollution level.

Significant changes are observed. Only when the monitored particulate pollution level shows a significant change is an accepted particulate counting method typically used to determine the actual particulate pollution level.

Indication level. Furthermore, compared to similar laboratory instruments, these monitoring

instruments have simplified circuitry and structure, which means their results are more reliable.

It may not be so accurate or precise.

In addition, some instruments are designed according to a "pass/fail" principle and have the ability to quickly assess particulate contamination levels in flow.

These instruments are widely used in the physical transmission industry and other sectors; however, they suffer from a lack of a system for use, recalibration (if applicable), and inspection of the input.

The standard methods for determining the validity of results have a much higher uncertainty in their measurement data than expected.

This document aims to provide guidance for instruments used in monitoring particulate contamination levels in hydraulic systems (especially those that are not suitable or cannot be directly traced to national sources).

The measuring instrument provides a unified and consistent operating procedure.

GB/T 37162, "Monitoring of Particulate Contamination in Hydraulic Transmission Fluids," aims to establish a standard for monitoring particulate contamination in hydraulic systems in China.

--Part 1: General Provisions. The purpose is to provide a unified terminology, principles, and methods for monitoring particulate contamination in hydraulic transmission systems.

The law and basic requirements should be established to standardize monitoring procedures, ensure the consistency and reliability of monitoring results, and guide the correct selection of relevant methods.

application.

--Part 2: Calibration and Validation of Pollution Monitoring. The purpose is to standardize the calibration of instruments for monitoring particulate contamination in hydraulically driven liquids.

Verification requirements, methods, and procedures ensure the reliability of monitoring instruments and the accuracy and comparability of measurement results, supporting pollution monitoring work.

Effectively implemented.

--Part 3: Utilization of Membrane Blocking Technology. The aim is to standardize the application of membrane blocking technology in monitoring particulate contamination in hydraulic transmission fluids.

The application requirements, test procedures, and judgment criteria outlined in the text

ensure that the contamination data detected using this method are accurate and comparable, providing a basis for hydraulic systems.

Pollution control provides reliable detection data.

--Part 4: Application of shading technology. The purpose is to standardize the application of shading technology in monitoring particulate contamination in hydraulic transmission fluids.

The requirements, test procedures, and judgment criteria ensure that the contamination data detected using this method are accurate and comparable.

--Part 5: Application of Image Analysis Technology. The aim is to standardize the application of image analysis technology in monitoring particulate contamination in hydraulic transmission fluids.

The application requirements, test procedures, and judgment criteria in the testing process must be clearly defined to ensure that the pollution level data detected using this method are accurate and comparable.

--Part 6: Applications of Electromagnetic Induction Technology. The aim is to standardize the application of electromagnetic induction technology in monitoring particulate contamination in hydraulic transmission fluids.

The application requirements, test procedures, and judgment criteria in the testing process must be clearly defined to ensure that the pollution level data detected using this method are accurate and comparable.

Monitoring of particulate contamination in hydraulic transmission fluids Part 1: General Provisions

1 Scope

This document specifies the methods and techniques for monitoring particulate contamination in hydraulic systems, but the corresponding monitoring instruments cannot be manufactured according to ISO 11171.

The methods described in this document are applicable to monitoring particulate contamination levels in the following objects.

- a) Hydraulic system;
- b) Rinsing process;
- c) Auxiliary equipment and test benches.

This document also applies to the monitoring of other liquids (e.g., lubricating oil, fuel oil, processing fluid).

Note: Instruments used to monitor particulate contamination levels but which cannot be calibrated