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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 37162.1-2018

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

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Foreword

GB/T 37162 "Hydraulic Transmission Liquid Particle Contamination Monitoring" is divided into four parts.

--- Part 1. General;

--- Part 2. Calibration and verification procedures for on-site pollution monitors;

--- Part 3. Application of filter plugging technology;

--- Part 4. Application of shading technology.

This part is the first part of GB/T 37162.

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

This section uses the redrafting method to modify the use of ISO 21018-1.2008 "hydraulic transmission liquid particle pollution degree monitoring part 1

Points. General.

The technical differences between this part and ISO 21018-1.2008 and their reasons are as follows.

---About the normative reference documents, this part has made technical adjustments to adapt to China's technical conditions, adjustments

The situation is reflected in Chapter 2, "Regulatory Citations", and the specific adjustments are as follows.

* Replace ISO 4406.1999 with GB/T 14039-2002 with international standards (see 6.3.4);

* Replace ISO 5598 with GB/T 17446 equivalent to the international standard (see Chapter 3);

* Replace ISO 3722 with GB/T 17484 equivalent to the international standard (see 6.3.1);

* Replace ISO 4021 with GB/T 17489 equivalent to the international standard (see 6.2.1, 6.2.2, 6.3.4 and 6.4.1);

* Replace ISO 11171 with GB/T 18854 with international standards (see 6.7);

* Replace ISO 11943 with GB/T 21540 equivalent to the international standard (see 6.7);

* Replace ISO 12103-1.1997 (see 6.7) with GB/T 28957.1 modified to international standards.

--- Removed the normative reference document ISO 11500.1997 and included in the reference, as this document is only in 3.2 and B.7.1

Cited in, and has been replaced by ISO 11500.2008. In ISO 11500.2008, the source of the definition of 3.2 has been modified.

For the normative reference document ISO 11171 in this section.

--- Modified the definition of the automatic particle counter and added a note to be consistent with GB/T 18854 (see 3.1).

--- Modified the definition of the filter, added a note, supplemented the contents of the direct molding filter (see 3.9).

--- Removed the definition of the 3.18 pollution level code in ISO 21018-1.2008, which has been clearly defined by GB/T 14039.

No need to redefine.

This section has made the following editorial changes.

--- Revised the ordering of the analysis methods in Table A.1~Table A.6 in Appendix A, from English alphabetical order to Chinese Pinyin alphabetical ordering.

To adapt to the expression habits of our country.

This part was proposed by the China Machinery Industry Federation.

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

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Introduction

In hydraulic systems, power is transmitted and controlled by means of pressurized liquid in a closed circuit. The liquid is both a lubricant and a moving

Force transfer medium. The presence of solid particulate contaminants in the liquid not only hinders the lubrication of the hydraulic fluid, but also causes the grinding of the components.

damage. The degree of particle contamination in the liquid is directly related to the performance and reliability of the system, so it is controlled within the limits allowed by the system. liquid

Pressure filters can be used to control the amount of particulate contaminants that are adapted to both the system's pollution sensitivity and the user's reliability requirements.

Users of hydraulic equipment usually specify the highest particle contamination of components, systems and production processes in turn, the highest particulate pollution of these regulations.

Dyeing is often referred to as target cleanliness (RCL). Once the particle contamination exceeds the RCL, measures will be taken to re-control it

Often within range. Cleanliness is obtained by sampling hydraulic fluid and measuring the degree of particle contamination. If the measured particle contamination is higher than the target cleaning

Degree, take measures to restore the original state of the system. In order to avoid costly unnecessary measures, accurate sampling and measurement of particles is required.

Pollution degree.

There are many measuring instruments to choose from, but these instruments are usually laboratory-based and need to be specified by a specialized laboratory.

Used in the environment, users of hydraulic equipment cannot obtain measurement results in time. In order to overcome this shortcoming, it can be used on the job site and near work.

Instruments for measuring particle contamination on site or directly using on-line or mainline measurement techniques are being developed. Use for these job sites

Instruments that are directly traceable to national measurement standards may not be appropriate or practical, as these instruments are typically used to monitor systems

The degree of particle contamination or only inform the user whether there is a significant change in particle contamination. When the detected particle contamination level changes significantly, it is usually only

An approved particle counting method is used to determine the actual particle

contamination. Moreover, compared to similar laboratory instruments, these monitoring instruments are simple.

Circuits and structures are made, which means that their results are not accurate.

In addition, some instruments are designed according to the "pass/fail" principle, with the ability to quickly assess cleanliness, so in fluids

Applications in the transmission industry and other industries have increased significantly. However, these instruments lack a use, recalibration (if applicable) and check output junctions

The standard method of effectiveness, the variability of the measured data is much higher than expected.

This section is intended for these instruments that monitor the degree of contamination of the hydraulic system (especially those that cannot or are not suitable for direct traceability to national measurements).

Standard instruments) provide a uniform, consistent procedure.

Monitoring of the pollution degree of liquid transmission liquid particles

Part 1. General

1 Scope

This part of GB/T 37162 specifies methods and techniques for monitoring the degree of particle contamination in hydraulic systems, and describes various methods.

Advantages and disadvantages in order to properly select monitoring methods under given conditions.

The methods described in this section apply to monitoring.

a) the cleanliness of the hydraulic system;

b) the rinsing process;

c) Auxiliary equipment and test benches.

This section also applies to the monitoring of other liquids (eg lubricants, fuels, treatment fluids).

Note. Instruments used to monitor particle contamination cannot be considered or referred to as particle counters, even if they employ the same physical principles as particle counters.

2 Normative references