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

GB/T 44682-2024

**Hydraulic fluid power - Method of testing for water-hydraulic
pumps**

(English Translation)

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is modified to adopt ISO 23840:2021 "Water hydraulics - Test methods and characterization of basic steady-state performance of water hydraulic pumps".

The technical differences between this document and ISO 23840:2021 and their reasons are as follows.

--- The normative references GB/T 17446 replace ISO 5598 and GB/T 17485 replace ISO 4391 (see Chapter 3).

Adapt to my country's technical conditions and improve operability;

- Deleted the terms and definitions 3.7 and 3.8 (see 3.7 and 3.8 of ISO 23840:2021) to comply with the standard writing rules of my country;
 - The requirements for the test medium have been changed (see Chapter 5, 6.1.3, Chapter 5, 6.1.3 of ISO 23840:2021) to adapt to the technical requirements of my country.
- Technical conditions to improve operability;
- Figure 1 has been changed to adapt to my country's technical conditions and improve operability;
 - Changed the requirements for the speed of the pump under test in the preparation before the test and the test process (see 6.4, 6.5, 6.4, ISO 23840:2021 6.5) to adapt to my country's technical conditions and improve operability;
 - Change Appendix A from an informative appendix to a normative appendix.

The following editorial changes were made to this document.

- Change the name of the standard to "Test Methods for Hydraulic Transmission Water Hydraulic Pumps";
- Changed the units of some parameters in Table 1, and added conversion coefficients to the formulas involved to ensure the correctness of the formula calculations;
- Figure 1 was redrawn in accordance with my country's mechanical engineering drawing standards, and the components in the figure were renumbered and explained;
- Corrected some editorial errors in Table A.1, changing "pressure (MPa)" to "pressure (%)" when $p \geq 0.15\text{MPa}$;
- Move the descriptions of Figures C.1 to C.3 to the figure;
- The pressure and speed in the data recording table in Table C.1 are replaced by symbols and no specific provisions are made;
- Added the types of water media and corresponding data used in water hydraulic pumps in Table C.2;
- Added references.

Introduction

Water hydraulics (or water hydraulic system) is a system that uses water as a fluid power transmission medium. It is green and environmentally friendly, has low medium cost and the outstanding advantages of easy access, good compatibility with products and no risk of fire have broad application prospects. The application of water hydraulics has been extended to the environment.

High cleanliness requirements and high temperature, open flame, explosive and other

occasions, such as cleaning, food, packaging, cosmetics, semiconductors, coal mining, metallurgy, nuclear industry, marine Oceans and other fields.

The water hydraulic pump is one of the key components of the water hydraulic system. It is necessary to develop appropriate standards for water hydraulic pumps and determine the test methods that can be performed.

The development of methods to characterize basic steady-state performance is critical to both manufacturers and users of products.

Hydraulic transmission water hydraulic pump test method

1 Scope

This document describes the test methods for the performance and efficiency of positive displacement water hydraulic pumps with a continuously rotating shaft under steady-state conditions (including the test test equipment, test procedures and method of presenting test results).

This document is applicable to water hydraulic pumps using tap water, purified water, natural fresh water and sea water as working media.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 17446 Fluid power systems and components vocabulary (GB/T 17446-2024, ISO 5598:2020, MOD) GB/T 17485 Parameter definitions and letter symbols for hydraulic pumps, motors and integral transmissions (GB/T 17485-1998, idt ISO 4391:1983)

3 Terms and definitions

The terms and definitions defined in GB/T 17446 and GB/T 17485 and the following apply to this document.

Water hydraulic pumpwater-hydraulicpump A positive displacement pump that uses water as the working medium to convert mechanical energy into hydraulic energy.

Flow rate measured at the pump outlet.

The ratio of the effective flow rate of the pump to the outlet flow rate.

The ratio of the pump's output torque to its effective torque.

The gauge pressure measured at the pump inlet (the measurement may appear positive or negative).

Gauge pressure measured at the outlet of the pump.