

ICS 23.100.20



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

GB/T 15622-2023

**Hydraulic cylinder - Test method
(English Translation)**

Issued on: November 27, 2023

Implemented on: June 1, 2024

Issued by: State Administration for Market Regulation

Table of Contents

Foreword...	3
1 Scope...	5
2 Normative references...	5
3 Terms and definitions...	5
4 Symbols and units...	5
5 Feature inspection and characteristic parameters...	6
5.1 General...	6
5.2 Double rod cylinder...	7
5.3 Single rod cylinder...	7
6 Test conditions...	8
6.1 Test medium...	8
6.2 Test medium conditions...	8
7 Test items...	9
8 Item L - Basic test (required)...	9
8.1 General...	9
8.2 Operation and leakage test under low pressure...	9
8.3 Pressure resistance and external leakage test...	10
9 Item P - Internal leakage test (optional)...	10
9.1 General...	10
9.2 Steps...	10
9.3 Visual inspection...	11
10 Item F - Friction test (optional)...	11
10.1 General...	11
10.2 Test setup...	11
10.3 Test amplitude...	11
10.4 Motion characteristic curve...	11
10.5 Friction calculation...	13
10.6 Friction force report...	14
11 Annotation notes...	15

Foreword

This document was drafted in accordance with the rules given in GB/T 1.1-2020

"Directives for standardization - Part 1. Rules for the structure and drafting of standardizing documents".

This document replaces GB/T 15622-2005 "Hydraulic Fluid Power -- Test Method for the Cylinders". Compared with GB/T 15622-2005, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) Deleted the requirements for the test apparatus and the schematic diagram of the test (see 5.1 of Edition 2005);
- b) Changed the test conditions (see Chapter 6 of this Edition; Chapter 5 of Edition 2005);
- c) Changed the test items and requirements (see Chapters 7~10 of this Edition; Chapters 6~8 of Edition 2005);
- d) Deleted the requirements for test reports (see Chapter 9 of Edition 2005).

The modification of this document adopts ISO 10100.2020 "Hydraulic fluid power -- Cylinders -- Acceptance tests".

The technical differences and reasons between this document and ISO 10100.2020 are as follows.

- Replaced ISO 5598 (see Chapter 3 of this document) with the normative reference GB/T 17446 to adapt to China's technical conditions and improve operability;
- Replaced ISO 6743-4 and ISO 7745 (see 6.1 of this document) with normative references GB/T 7631.2 and GB/T 16898 to adapt to China's technical conditions and improve operability;
- Replaced ISO 4406 (see 6.2.2 of this document) with the normative reference GB/T

14039 to adapt to China's technical conditions and improve operability;

- Changed the test setup requirements for friction force test (see 10.2 of this document; 10.2 of ISO 10100.2020) to adapt to the technical conditions in China

and improve operability.

This document has undergone the following editorial changes.

- Changed the standard name to "Hydraulic cylinder -- Test method";
- Deleted the footnote to Table 1;
- Changed some symbols;

Hydraulic cylinder -- Test method

1 Scope

This document describes the test method for hydraulic cylinders.

This document is applicable to the test of hydraulic cylinders.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 7631.2, Lubricants, industrial oils and related products (class L) -

Classification - Part 2.Family H (Hydraulic systems) (GB/T 7631.2-2003, ISO 6743-4.1999, IDT)

GB/T 14039, Hydraulic fluid power - Fluids -- Method for coding the level of contamination by solid particles (GB/T 14039-2002, ISO 4406.1999, MOD)

GB/T 16898, Guidelines for use of fire-resistant hydraulic fluids (GB/T 16898-1997, idt ISO 7745.1989)

GB/T 17446, Fluid power systems and components -- Vocabulary (GB/T 17446-2012, ISO 5598.2008, IDT)

ISO 15380, Lubricants, industrial oils and related products (class L) -- Family H (Hydraulic systems) -- Specifications for hydraulic fluids in categories HETG, HEPG, HEES and HEPR

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 17446 apply.

4 Symbols and units

The symbols and units in Table 1 are applicable to this document.

5.1 General

The following information of the tested hydraulic cylinder shall be recorded.

- a) Type;
- b) Cylinder diameter;
- d) Are there any leaks at all static seals;
- e) Is there any leakage in the throttle valve and/or buffering element installed on the hydraulic cylinder;
- f) Is there any leakage at the weld seam of the tested hydraulic cylinder;
- g) When the test liquid pressure cylinder is equipped with buffering (such as with a buffering throttle valve, it is advisable to slightly open the throttle valve port), verify whether there is buffering effect.

8.3.1 Steps

The two chambers of the tested hydraulic cylinder shall be applied with 1.5 times the rated pressure or the pressure agreed upon by both the supplier and the purchaser, and maintained for at least 10 seconds. For larger cylinder diameters, it is advisable to extend the time for applying pressure in both chambers.

8.3.2 Visual inspection

During the test, the following shall be tested.

- a) Structural integrity;
- b) Are there any leaks at all sealed locations;
- c) Is there any leakage at the throttle valve or one-way valve (if applicable);