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

GB/T 13634-2019

**Metallic materials - Calibration of force-proving instruments
used for the verification of uniaxial testing machines**

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Foreword

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

This standard replaces GB/T 13634-2008 "Calibration of Standard Force Gauge for Inspection of Single-Axis Testing Machines".

Compared with GB/T 13634-2008, the main technical changes of this standard are as follows.

--- Increased the formula for calculating creep relative error in the creep test of standard dynamometer (see 7.4.4, 7.5.5);

--- Revised the grading criteria for standard dynamometers (see 8.2, 8.2 of the.2008 edition);

--- Increased measurement uncertainty for standard dynamometer calibration and subsequent use (see Appendix C).

This standard uses the translation method equivalent to ISO 376:2011 "Standard of the standard force gauge for metal material uniaxial testing machine inspection".

The documents of our country that have a consistent correspondence with the international documents referenced in this standard are as follows.

---GB/T 27025-2008 General requirements for testing and calibration laboratory capabilities (ISO /IEC 17025:2005, IDT)

This standard has made the following editorial changes.

--- Correct the printing error, delete the sign of the extended uncertainty value in Table 2;

--- Increased the introduction of the formula in the body.

This standard was proposed by the China Machinery Industry Federation.

This standard is under the jurisdiction of the National Testing Machine Standardization Technical Committee (SAC/TC122).

This standard was drafted. China National Machinery Testing Equipment Co., Ltd., China Testing Technology Research Institute, Wuxi Metrology and Testing Institute, Shenzhen Wanshen

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Introduction

The ISO /TC 164/SC1 Working Group has established procedures for determining the measurement uncertainty of standard dynamometers as new appendices.

In Appendix C.

This standard allows calibration in two ways.

--- Use the standard dynamometer of process and backhaul to calibrate with incremental and declining forces;

--- Only use the standard dynamometer of the process, only with incremental force calibration.

In the first case, when the standard dynamometer is used for process and return bidirectional measurement, the calibration is performed with increasing force and decreasing force to

Determine the hysteresis of the standard dynamometer. In this case, no creep test is required.

In the second case, when the standard dynamometer is not used for bidirectional measurement, the calibration is performed only with increasing force, and a creep test is required.

Test. In this case, there is no need to determine the hysteresis.

Metal material uniaxial testing machine for inspection

Calibration of standard dynamometer

1 Scope

This standard specifies the calibration of the standard dynamometer for static testing of single-axis testing machines (such as tensile/pressure testing machines), and gives the standard test.

Grading method of force meter.

This standard applies to standard force gauges that measure the force exerted by measuring the elastic deformation of the elastomer or in proportion to it.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

General requirements for ISO /IEC 17025 testing and calibration laboratory capabilities
(General requirements for the competence of
Testing and calibration laboratories)

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Standard force gauge force-proving instrument
Combination from force sensor to pointing device.

4 symbols and instructions

The symbols and descriptions used in this standard are shown in Table 1.

Table 1 Symbols and descriptions

Symbol	unit	description
		Recurrence relative error after b % transposition
b'	%	repeatability relative error when not indexed
c	%	creep relative error
		Maximum capacity of Ff N sensor
FN	N	maximum calibration force
Fc	%	interpolation relative error
F0	%	zero relative error
If		the reading of the indicating device after the unloading
IO		the reading of the front indicator of the afterburner a