



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

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Metallic materials - Calibration and verification of static uniaxial testing machines - Part 1: Tension/compression testing machines - Calibration and verification of the force-measuring system

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Foreword

This document is drafted in accordance with GB/T 1.1-2020 "Directives for standardization - Part 1. Rules for the structure and drafting of standardizing documents".

This document is Part 1 of GB/T 16825 "Metallic materials - Calibration and verification of static uniaxial testing machines". GB/T 16825 has issued the following parts.

- Part 1. Tension/compression testing machines - Calibration and verification of the force-measuring system;
- Part 2. Tension creep testing machines - Verification of the applied force.

This document replaces GB/T 16825.1-2008 "Verification of static uniaxial testing machines - Part 1. Tension/compression testing machines - Verification and calibration of the force-measuring system". Compared with GB/T 16825.1-2008, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- Change the scope of application of the document; add verification requirements for the performance properties of the testing machine to reach the specified class (see Clause 1; Clause 1 of the 2008 edition);
- Add the term "Verification" (see 3.2);
- Add definitions of symbols such as a_F , a_Z , b_{al} , ΔF , Δt_m , Δt_g , E , E' , k , m , q_i , q_{al} , q_{max} , q_{min} (see Clause 4);
- Change the representation method of the resolution of numerical indicator (see 6.2.2; 6.2.2 of the 2008 edition);
- Change the determination method of relative resolution (see 6.3; 6.3 of the 2008 edition);
- Change the relevant requirements for calibration methods (see 6.4.4; 6.4.4 of the

2008 edition);

- Change the requirement for calibration below 20% of the measuring force range (see 6.4.5; 6.4.5 of the 2008 edition);
- Change the requirements for relative indication error, relative repeatability error, and agreement between two force-proving instruments in the assessment of force indicator (see 6.5; 6.5 of the 2008 edition).

This document is identical to ISO 7500-1:2018 "Metallic materials - Calibration and verification of static uniaxial testing machines - Part 1. Tension/compression testing machines - Calibration and verification of the force-measuring system".

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuing authority of this document shall not be held responsible for identifying any or all such patent rights.

This document was proposed by China Machinery Industry Federation.

This document shall be under the jurisdiction of National Technical Committee 122 on Testing Machines of Standardization Administration of China (SAC/TC 122).

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The previous releases of this document and the documents it replaces are as follows.

- It was first issued in 1997 as GB 16825-1997; first revised in 2002 as GB/T 16825.1-2002; second revised in 2008;
- This is the third revision.

1 Scope

This document specifies the calibration and verification method of tension/compression

testing machines.

2 Normative references

The contents of the following documents, through normative references in this text, constitute indispensable provisions of this document. Among them, for dated references, only the edition corresponding to that date applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

ISO 376 Metallic materials - Calibration of force-proving instruments used for the verification of uniaxial testing machines

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

Confirmation, in accordance with the provisions of this document, that the performance properties of the testing machine achieve the limits given for a specified class.

4 Symbols

The following symbols and their meanings apply to this document (see Table 1).

5 General inspection of the testing machine

The calibration of the testing machine shall only be carried out if the machine is in good working order. For this purpose, a general inspection of the machine shall be carried out before calibration of the force-measuring system of the machine as indicated in Annex A.

6 Calibration of the force-measuring system of the testing machine

The thickness of the graduation marks on the scale shall be uniform and the width of the pointer shall be approximately equal to the width of a graduation mark.

The resolution, r , shall be expressed in units of force.

7 Class of testing machine range

Table 2 gives the maximum permissible values for the different relative errors of the force-measuring system and for the relative resolution of the force indicator, which