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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**

*Matériaux métalliques — Étalonnage et vérification des machines  
pour essais statiques uniaxiaux —*

*Partie 1: Machines d'essai de traction/compression — Étalonnage et  
vérification du système de mesure de force*





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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 1, *Uniaxial testing*.

This fifth edition cancels and replaces the fourth edition (ISO 7500-1:2015), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

- the definitions of  $\Delta F$ ,  $\Delta m$ ,  $\Delta g$ ,  $E$ ,  $E'$ ,  $U$ , and  $U'$  in [Table 1](#) have been editorially revised.

A list of all parts in the ISO 7500 series can be found on the ISO website.

# Metallic materials — Calibration and verification of static uniaxial testing machines —

## Part 1:

# Tension/compression testing machines — Calibration and verification of the force-measuring system

## 1 Scope

This document specifies the calibration and verification of tension/compression testing machines.

The verification consists of:

- a general inspection of the testing machine, including its accessories for the force application;
- a calibration of the force-measuring system of the testing machine;
- a confirmation that the performance properties of the testing machine achieve the limits given for a specified class.

**NOTE** This document addresses the static calibration and verification of the force-measuring systems. The calibration values are not necessarily valid for high-speed or dynamic testing applications. Further information regarding dynamic effects is given in the Bibliography.

**CAUTION — Some of the tests specified in this document involve the use of processes which can lead to a hazardous situation.**

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

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.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

### 3.1 calibration

operation that establishes the relationship between the force values (with associated uncertainties) indicated by the testing machine and those measured by one or more force-proving instruments