



SLOVENSKI STANDARD

SIST EN ISO 376:2004

01-marec-2004

BUXca Yý U
SIST EN 10002-3:1996

Kovinski materiali - Kalibracija merilnikov sile za preverjanje enoosnih preskuševalnih strojev (ISO 376:1999)

Metallic materials - Calibration of force-proving instruments used for the verification of uniaxial testing machines (ISO 376:1999)

Metallische Werkstoffe - Kalibrierung der Kraftmessgeräte für die Prüfung von Prüfmaschinen mit einachsiger Beanspruchung (ISO 376:1999)

Matériaux métalliques - Etalonnage des instruments de mesure de force utilisés pour la vérification des machines d'essais uniaxiaux (ISO 376:1999)

Ta slovenski standard je istoveten z: EN ISO 376:2002

ICS:

77.040.10 Mehansko preskušanje kovin Mechanical testing of metals

SIST EN ISO 376:2004

en

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 376

January 2002

ICS 77.040.10

Supersedes EN 10002-3:1994

English version

Metallic materials - Calibration of force-proving instruments used for the verification of uniaxial testing machines (ISO 376:1999)

Matériaux métalliques - Etalonnage des instruments de mesure de force utilisés pour la vérification des machines d'essais uniaxiaux (ISO 376:1999)

Metallische Werkstoffe - Kalibrierung der Kraftmessgeräte für die Prüfung von Prüfmaschinen mit einachsiger Beanspruchung (ISO 376:1999)

This European Standard was approved by CEN on 26 December 2001.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

EN ISO 376:2002 (E)

CORRECTED 2002-10-02

Foreword

The text of ISO 376:1999 has been prepared by Technical Committee ISO/TC 164 "Mechanical testing of metals" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 376:2002 by Technical Committee EC/ISS/TC 1 "Steel - Mechanical testing", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2002, and conflicting national standards shall be withdrawn at the latest by July 2002.

This document supersedes EN 10002-3:1994.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 376:1999 has been approved by CEN as EN ISO 376:2002 without any modifications.

NOTE Normative references to International Standards are listed in Annex ZA (normative).

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Annex ZA (normative)

Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN</u>	<u>Year</u>
ISO 7500-1	1999	Metallic materials - Verification of static uniaxial testing machines - Part 1: Tension/compression testing machines	EN ISO 7500-1	1999

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INTERNATIONAL STANDARD

ISO
376

Second edition
1999-08-15

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

*Matériaux métalliques — Étalonnage des instruments de mesure de force
utilisés pour la vérification des machines d'essais uniaxiaux*

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Reference number
ISO 376:1999(E)

ISO 376:1999(E)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 376 was prepared by Technical Committee ISO/TC 164, *Mechanical testing of metals*, Subcommittee SC 1, *Uniaxial testing*.

This second edition cancels and replaces the first edition (ISO 376:1987) which has been technically revised.

Annexes A and B of this International Standard are for information only.

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

1 Scope

This International Standard covers the calibration of force-proving instruments used for the static verification of uniaxial testing machines (e.g. tension/compression testing machines) and describes a procedure for classifying these instruments. A force-proving instrument is defined as being the whole assembly from the force transducer through to and including the indicator. This International Standard generally applies to force-proving instruments in which the force is determined by measuring the elastic deformation of a loaded member or a quantity which is proportional to it.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system.*

3 Principle

Calibration consists of applying precisely-known forces to the loaded member and recording the data from the deflection measuring system, which is considered an integral part of the force-proving instrument.

When an electrical measurement is made, the indicator may be replaced by another indicator and the force-proving instrument need not be recalibrated provided the following conditions are fulfilled.

- a) The original and replacement indicators have calibration certificates traceable to national standards which give the results of calibration in terms of electrical base units (volt, ampere). The replacement indicator shall be calibrated over a range equal to or greater than the range for which it is used with the force-proving instrument and the resolution of the indicator shall be at least equal to the resolution of the indicator when it is used with the force-proving instrument.
- b) The units and excitation source of the replacement indicator should be respectively of the same quantity (e.g. 5 V, 10 V) and type (e.g. AC or DC carrier frequency).
- c) The uncertainty of each indicator (both the original and the replacement indicators) shall not influence the uncertainty of the whole assembly of the force-proving instrument. It is recommended that the uncertainty of the replacement indicator should be no greater than 1/3 of the uncertainty of the entire system.

4 Characteristics of force-proving instruments

4.1 Identification of the force-proving instrument

All the elements of the force-proving instrument (including the cables for electrical connection) shall be individually and uniquely identified, e.g. by the name of the manufacturer, the model and the serial number. For the force transducer, the maximum working force shall be indicated.

4.2 Application of force

The force transducer and its loading fittings shall be designed so as to ensure axial application of force, whether in tension or compression.

Examples of loading fittings are given in annex A.

4.3 Measurement of deflection

Measurement of the deflection of the loaded member of the force transducer may be carried out by mechanical, electrical, optical or other means with adequate accuracy and stability.

The type and the quality of the deflection measuring system determine whether the force-proving instrument is classified only for specific calibration forces or for interpolation (see clause 7).

Generally, the use of force-proving instruments with dial gauges as a means of measuring the deflection is limited to the forces for which the instruments have been calibrated. The dial gauge, if used over a long travel, may contain large localised periodic errors which produce an uncertainty too great to permit interpolation between calibration forces. The dial gauge may be used for interpolation if its periodic error has a negligible influence on the interpolation error of the force-proving instrument.

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