SLOVENSKI STANDARD
SIST EN ISO 7500-2:2007

01-april-2007

Nadomeġļa:
SIST EN ISO 7500-2:2000

Kovinski materiali ï Preverjanje strojev za enoosno statiļno preskuġanje ï 2. del: Stroji za natezni preskus lezenja - Preverjanje in umerjanje obremenitev (ISO 7500-2:2006)

Metallic materials - Verification of static uniaxial testing machines - Part 2: Tension creep testing machines - Verification of the applied force (ISO 7500-2:2006)

Metallische Werkstoffe - Prüfung von statischen einachsigen Prüfmaschinen - Teil 2: Zeitstandprüfmaschinen für Zugbeanspruchung - Prüfung der angewendeten Kraft (ISO 7500-2:2006)

Matériaux métalliques - Vérification des machines pour essais statiques uniaxiaux - Partie 2: Machines d'essai de fluage en traction - Vérification de la force appliquée (ISO 7500-2:2006)

Ta slovenski standard je istoveten z: **EN ISO 7500-2:2006**

ICS:

77.040.10 Mehansko preskušanje kovin Mechanical testing of metals

SIST EN ISO 7500-2:2007 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 7500-2

December 2006

ICS 77.040.10

Supersedes EN ISO 7500-2:1999

English Version

Metallic materials - Verification of static uniaxial testing machines - Part 2: Tension creep testing machines - Verification of the applied force (ISO 7500-2:2006)

Matériaux métalliques - Vérification des machines pour essais statiques uniaxiaux - Partie 2: Machines d'essai de fluage en traction - Vérification de la force appliquée (ISO 7500-2:2006)

Metallische Werkstoffe - Prüfung von statischen einachsigen Prüfmaschinen - Teil 2: Zeitstandprüfmaschinen für Zugbeanspruchung - Prüfung und Kalibrierung des Kraftmesssystems (ISO 7500-2:2006)

This European Standard was approved by CEN on 4 September 2006.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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

Ref. No. EN ISO 7500-2:2006: E

Foreword

This document (EN ISO 7500-2:2006) has been prepared by Technical Committee ISO/TC 164 "Mechanical testing of metals" in collaboration with Technical Committee ECISS/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 June 2007, and conflicting national standards shall be withdrawn at the latest by June 2007.

This document supersedes EN ISO 7500-2:1999.

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

Endorsement notice

The text of ISO 7500-2:2006 has been approved by CEN as EN ISO 7500-2:2006 without any modifications.

INTERNATIONAL STANDARD

ISO 7500-2

Second edition
2006-12-15

Metallic materials — Verification of static uniaxial testing machines —

Part 2: Tension creep testing machines — Verification of the applied force

Matériaux métalliques — Vérification des machines pour essais statiques uniaxiaux —
Partie 2: Machines d'essai de fluage en traction — Vérification de la force appliquée

Reference number
ISO 7500-2:2006(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

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 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 7500-2 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 7500-2:1996), which has been technically revised.

ISO 7500 consists of the following parts, under the general title *Metallic materials — Verification of static uniaxial testing machines*:

— *Part 1: Tension/compression testing machines — Verification and calibration of the force-measuring system*

— *Part 2: Tension creep testing machines — Verification of the applied force*

Metallic materials — Verification of static uniaxial testing machines —

Part 2: Tension creep testing machines — Verification of the applied force

1 Scope

This part of ISO 7500 specifies the verification of testing machines used for uniaxial creep testing in tension in accordance with ISO 204.

The verification consists of

— a general inspection of the testing machine, and

— a verification of the force applied by the testing machine.

This part of ISO 7500 applies to dead-weight machines, lever-type creep testing machines and direct-spring-loading machines.

Machines with a force-measuring system [1] should be verified in accordance with 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*.

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.

ISO 204, *Metallic materials — Uniaxial creep testing in tension — Method of test*

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

1) For the purposes of this part of ISO 7500, a force-measuring system comprises the load cell plus conditioning plus indicator.

3 Symbols and their meanings

For the purposes of this part of ISO 7500, the symbols in Table 1 apply.

For the purposes of this part of ISO 7500 the following types of creep testing machines are recognized:

— dead-weight machines, with or without guides (Figures A.1 and A.2);

— overslung or underslung lever machines (Figures A.3, A.4 and A.5);

— jockey-weight machines, either with overslung or underslung lever (Figures A.6 and A.7);

— any combination of the types of machines mentioned above (Figure A.8);

— testing machines with force applied by a spring (Figure A.9).

Table 1 — Symbols and meaning

Symbol	Unit	Meaning
F_N	N	Maximum force of the force range of the testing machine
F_i	N	Force applied to creep testing machine: — for dead-weight machines: $F_i = mg_n$[a] — for lever-type machines: $F_i = mg_n R$[a] — for jockey-weight machines, the value of F_i is indicated on the scale of the machine — for spring-type machines: force applied to spring-calibration device
F	N	True force indicated by the force-proving instrument
$\overline{F}$	N	Arithmetic mean of several measurements of F or F_i at the same discrete force
F_{max}, F_{min}	N	Highest or lowest value of F or F_i at the same discrete force
F_M	N	Force applied by the masses on the scale pan of the machines
F_V	N	Lower limit of the verified force range
R	—	Lever ratio used for the verification
b	%	Relative repeatability error of the force-measuring system of the testing machine
d	N	Discrimination threshold
d_1	N	Discrimination threshold corresponding to 20 % of the maximum force of the force range (F_N)
a	%	Relative discrimination threshold
q	%	Relative accuracy error of the force-measuring system of the testing machine

[a] g_n = standard acceleration of free fall, in m/s^2 (g_n = 9,806 65 m/s^2). This quantity was earlier also called “standard acceleration due to gravity”.

4 General inspection of the testing machine

The verification 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 verification of the force applied by the machine (see Annex A).

5 Verification of the force applied by the testing machine

5.1 General

This verification shall be carried out for each of the force ranges used. If the testing machine has several force ranges, each force range[2)] shall be regarded as a separate testing machine.

This verification shall be carried out using tension-force-proving instruments. These instruments shall be in accordance with ISO 376. The class of the force-proving instrument shall be equal or superior to the class determined for the creep testing machine.

5.2 Masses

The masses used to apply the forces during the verification can be either

a) known masses with an accuracy equal to or better than ± 0,1 %, verified at least every five years, or

b) masses dedicated for use with a given creep testing machine, applied in the same sequence as during the test.

5.3 Determination of the discrimination threshold

The discrimination threshold (d) of the machine is defined as the smallest increment of force that can be applied and detected during the verification procedure.

The discrimination threshold (d) shall be determined at 20 %, 60 % and 100 % of the maximum force F_N of the force range. If forces of a magnitude less than 0,2 F_N are to be tested (see 5.2), the discrimination threshold shall additionally be determined at the lower limit of the provided testing range.

The discrimination threshold (d) is measured at the magnitude of the force resulting from the smallest mass added to, or removed from, the scale pan of the machine, or the force which corresponds to the smallest recordable movement of the jockey weight which causes a detectable change at the indicator of the force-proving instrument.

The relative discrimination threshold (a) is calculated for each level of force specified according to the following formula :

$$a = \frac{d}{F} \times 100 \tag{1}$$

and shall remain within the limits given in Table 3 for the class of machine considered.

The discrimination threshold (d) shall be expressed in newtons.

2) Force range means, in the case of a deadweight machine, the range over which the machine is to be used; in the case of a lever-type machine it is the force range for each separate lever ratio.