

**Geometrical product specifications (GPS) - Dimensional
measuring equipment: Dial test indicators (lever type) -
Design and metrological characteristics**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 9493:2010 sisaldab Euroopa standardi EN ISO 9493:2010 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 30.11.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.11.2010.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN ISO 9493:2010 consists of the English text of the European standard EN ISO 9493:2010.

This standard is ratified with the order of Estonian Centre for Standardisation dated 30.11.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 01.11.2010.

The standard is available from Estonian standardisation organisation.

ICS 17.040.30

Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

Right to reproduce and distribute belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:
Aru str 10 Tallinn 10317 Estonia; www.evs.ee; Phone: 605 5050; E-mail: info@evs.ee

English Version

Geometrical product specifications (GPS) - Dimensional
measuring equipment: Dial test indicators (lever type) - Design
and metrological characteristics (ISO 9493:2010)

Spécification géométrique des produits (GPS) -
Équipement de mesure dimensionnel: Comparsateurs à
levier mécaniques - Caractéristiques de conception et
caractéristiques métrologiques (ISO 9493:2010)

Geometrische Produktspezifikation (GPS) -
Längenmessgeräte: Fühlhebelmessgeräte -
Konstruktionsmerkmale und messtechnische Merkmale
(ISO 9493:2010)

This European Standard was approved by CEN on 2 October 2010.

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 CEN-CENELEC 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, 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: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN ISO 9493:2010) has been prepared by Technical Committee ISO/TC 213 "Dimensional and geometrical product specifications and verification" in collaboration with Technical Committee CEN/TC 290 "Dimensional and geometrical product specification and verification" 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 May 2011, and conflicting national standards shall be withdrawn at the latest by May 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, 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 the United Kingdom.

Endorsement notice

The text of ISO 9493:2010 has been approved by CEN as a EN ISO 9493:2010 without any modification.

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions	1
4 Design characteristics	2
4.1 General design features.....	2
4.2 Type	2
4.3 Nomenclature.....	4
4.4 Dovetail mounting	4
4.5 Dial and pointer	5
4.6 Stylus.....	6
4.7 Zero adjustment.....	7
4.8 Design characteristics (manufacturer's specification).....	7
5 Metrological characteristics	7
5.1 Maximum permissible error (MPE) and maximum permissible limit (MPL) for a number of metrological characteristics.....	7
5.2 Stylus.....	8
5.3 Measuring forces.....	8
6 Proving of conformance with specification.....	8
6.1 General	8
6.2 Measurement standards for calibration of metrological characteristics	8
7 Marking.....	8
Annex A (informative) Examples of a diagram of errors of indication	9
Annex B (informative) Example of data sheet for dial test indicators	11
Annex C (informative) Calibration of metrological characteristics	13
Annex D (informative) Notes on use	15
Annex E (informative) Relation to the GPS matrix model.....	17
Bibliography.....	19

Introduction

This International Standard is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO/TR 14638). It influences the chain link 5 of the chains of standards on size, distance, form of a line independent of datum, form of a line dependent of datum, form of a surface independent of datum, form of a surface independent of datum, orientation, location, circular run-out and total run-out in the general GPS matrix.

When using this International Standard, see ISO 14978.

For more detailed information on the relation of this International Standard to other standards and the GPS matrix, see Annex E.

Geometrical product specifications (GPS) — Dimensional measuring equipment: Dial test indicators (lever type) — Design and metrological characteristics

1 Scope

This International Standard specifies the most important design and metrological characteristics of dial test indicators (lever type).

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 14253-1:1998, *Geometrical Product Specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 1: Decision rules for proving conformance or non-conformance with specifications*

ISO 14253-2:—¹⁾, *Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 2: Guidance for the estimation of uncertainty in GPS measurement, in calibration of measuring equipment and in product verification*

ISO 14978:2006, *Geometrical product specifications (GPS) — General concepts and requirements for GPS measuring equipment*

ISO/IEC Guide 98-3, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

ISO/IEC Guide 99, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC Guide 99, ISO 14253-1, ISO 14253-2, ISO 14978 and the following apply.

3.1

dial test indicator

⟨lever type⟩ measuring instrument in which the displacement of a pivoting stylus is transmitted and magnified by suitable mechanical means to a pointer which rotates in front of a circular scale

1) To be published. (Revision of ISO/TS 14253-2:1999)