
**Geometrical Product Specifications
(GPS) — Dimensional measuring
equipment — Design and metrological
characteristics of mechanical dial gauges**

*Spécification géométrique des produits (GPS) — Instruments de
mesurage dimensionnel: Comparateurs mécaniques à cadran —
Caractéristiques de conception et caractéristiques métrologiques*



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS

© ISO 2006

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

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.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Design characteristics.....	2
4.1 General.....	2
4.2 Dimensions.....	2
4.3 Dial and pointer.....	5
4.4 Revolution counting device.....	6
4.5 Contact element.....	6
4.6 Zero adjustment.....	6
4.7 Movable limit indicators.....	7
4.8 Design characteristics (manufacturer's specification).....	7
5 Metrological characteristics.....	7
5.1 MPE and MPL for a number of metrological characteristics.....	7
5.2 Contact element.....	8
5.3 Measuring forces.....	8
6 Proving conformance with specification.....	8
6.1 General.....	8
6.2 Measurement standards for calibration of metrological characteristics.....	8
7 Marking.....	8
Annex A (informative) Example diagram of errors of indication.....	9
Annex B (informative) Example data sheet for mechanical dial gauges.....	10
Annex C (informative) Calibration of metrological characteristics.....	11
Annex D (informative) Relation to the GPS matrix model.....	12
Bibliography.....	14

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 463 was prepared by Technical Committee ISO/TC 213, *Dimensional and geometrical product specifications and verification*.

This first edition of ISO 463 cancels and replaces ISO/R 463:1965, which has been technically revised.

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 dependent of datum, orientation, location, circular run-out and total run-out in the general GPS matrix.

For more detailed information of the relation of the standard to other standards and the GPS matrix model see Annex D.

This document is a preview generated by EVS

Geometrical Product Specifications (GPS) — Dimensional measuring equipment — Design and metrological characteristics of mechanical dial gauges

1 Scope

This International Standard specifies the most important design and metrological characteristics of mechanical dial gauges.

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, *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/TS 14253-2, *Geometrical Product Specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 2: Guide to the estimation of uncertainty in GPS measurement, in calibration of measuring equipment and in product verification*

ISO 14978:—¹, *Geometrical Product Specification (GPS) — General concepts and requirement for GPS measuring equipment*

Guide to the expression of uncertainty in measurement (GUM). BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML, 1st edition, 1993, corrected and reprinted in 1995.

International Vocabulary of Basic and General Terms in Metrology (VIM). BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML, 2nd edition, 1993.

3 Terms and definitions

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

3.1

mechanical dial gauge

measuring instrument in which the axial displacements of a plunger are transmitted and magnified by suitable mechanical means to a pointer which rotates in front of an analog circular scale

NOTE It may also be provided with a revolution-counting device, e.g. in which a pointer rotates in front of a scale which indicates the number of revolutions of the pointer or the axial displacement of the plunger.

1) To be published.