INTERNATIONAL STANDARD

**ISO 1938-1**

First edition
2015-11-01

# Geometrical product specifications (GPS) — Dimensional measuring equipment —

## Part 1: Plain limit gauges of linear size

*Spécification géométrique des produits (GPS) — Équipement de mesure dimensionnel —*

*Partie 1: Calibres lisses à limite de taille linéaire*



Reference number
ISO 1938-1:2015(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.

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).

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).

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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 213, *Geometrical product specifications and verification*.

This first edition cancels and replaces ISO/R 1938:1971, which has been technically revised.

ISO 1938 consists of the following parts, under the general title *Geometrical product specifications (GPS) — Dimensional measuring equipment*:

— *Part 1: Plain limit gauges of linear size*

— *Part 2: Reference disk gauges*

This part of ISO 1938 does not include requirements for setting plug gauges and setting ring gauges, which were dealt with in ISO/R 1938:1971, 3.9.4.

This part of ISO 1938 covers the concepts and principles developed in ISO 14978.



 

# Introduction

This part of ISO 1938 is a geometrical product specification (GPS) standard and is to be regarded as a general GPS standard (see ISO 14638). It influences chain links E, F and G of the size chain of standards in the general GPS matrix. For more detailed information of the relation of this part of ISO 1938 to other standards and the GPS matrix model, see Annex C.

The ISO/GPS matrix model given in ISO 14638 gives an overview of the ISO/GPS system of which this document is a part. The fundamental rules of ISO/GPS given in ISO 8015 apply to this document and the default decision rules given in ISO 14253-1 apply to specifications made in accordance with this document, unless otherwise indicated.

The terms and concepts used in this first edition of ISO 1938-1 (compared to the former edition ISO/R 1938:1971) have been changed according to needs and terminology in the other GPS standards.

This part of ISO 1938 deals with verification, using plain limit gauges, of linear sizes for features of size when the dimensional specifications are required (see ISO 14405-1), for rigid workpieces.

NOTE Tables 4 and 5 use the modifiers given in ISO 14405-1 and ISO 1101.

# Geometrical product specifications (GPS) — Dimensional measuring equipment —

# Part 1: Plain limit gauges of linear size



## 1 Scope

This part of ISO 1938 specifies the most important metrological and design characteristics of plain limit gauges of linear size.

This part of ISO 1938 defines the different types of plain limit gauges used to verify linear dimensional specifications associated with linear size.

This part of ISO 1938 also defines the design characteristics and the metrological characteristics for these limit gauges as well as the new or wear limits state Maximum Permissible Limits (MPLs) for the new state or wear limits state for these metrological characteristics.

In addition, this part of ISO 1938 describes the use of limit gauges. It covers linear sizes up to 500 mm.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 286-1:2010, *Geometrical product specifications (GPS) — ISO code system for tolerances on linear sizes — Part 1: Basis of tolerances, deviations and fits*

ISO 1101:2012, *Geometrical product specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

ISO 14405-1:2010, *Geometrical product specifications (GPS) — Dimensional tolerancing — Part 1: Linear sizes*

ISO 14253-1:2013, *Geometrical product specifications (GPS) — Inspection by measurement of workpieces and measuring equipment — Part 1: Decision rules for proving conformity or nonconformity with specifications*

ISO 14253-2:2011, *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 17450-1:2011, *Geometrical product specifications (GPS) — General concepts — Part 1: Model for geometrical specification and verification*

ISO 17450-2:2012, *Geometrical product specifications (GPS) — General concepts — Part 2: Basic tenets, specifications, operators, uncertainties and ambiguities*

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)*