INTERNATIONAL STANDARD

ISO 20515

Third edition
2021-09

Rolling bearings — Radial bearings, retaining slots — Dimensions, geometrical product specifications (GPS) and tolerance values

Roulements — Roulements radiaux, encoches de retenue — Dimensions, spécification géométrique des produits (GPS) et valeurs de tolérance

Reference number
ISO 20515:2021(E)

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Published in Switzerland

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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).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 4, *Rolling bearings*, Subcommittee SC 12, *Ball bearings*.

This third edition cancels and replaces the second edition (ISO 20515:2012), which has been technically revised.

The main changes compared to the previous edition are as follows:

— the title has been updated;

— the geometrical product specification (GPS) has been modified;

— the specification for the location of the retaining slot's bottom surface has been changed from a distance to a position specification, whereas the tolerance values have to be recalculated and rounded;

— the structure of the tables has been revised.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document is a machine element geometry standard as defined in the geometrical product specification system (GPS system) as presented in matrix model of ISO 14638[5].

The fundamental rules of ISO GPS given in ISO 8015[2] apply to this document and the default decision rules given in ISO 14253-1[3] apply to specifications made in accordance with this document, unless otherwise indicated.

The connection between functional requirements, measuring technique, and measuring uncertainty is always intended to be considered. For measurement uncertainty, it is intended that ISO 14253-2[4] should be considered.

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Rolling bearings — Radial bearings, retaining slots — Dimensions, geometrical product specifications (GPS) and tolerance values

1 Scope

This document specifies dimensions and tolerances of retaining slots to be used for outer rings of single-row angular contact ball bearings, four-point-contact ball bearings and radial cylindrical roller bearings.

The retaining slots are not suitable for use in the outer rings of sealed and shielded radial ball bearings, nor in the outer rings of radial cylindrical roller bearings without ribs.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirement 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 15, *Rolling bearings — Radial bearings — Boundary dimensions, general plan*

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

ISO 5593, *Rolling bearings — Vocabulary*

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

ISO 15241, *Rolling bearings — Symbols for physical quantities*

ISO 22872[1)], *Rolling bearings — Geometrical product specifications (GPS) — Symbols, terms and definitions associated with GPS*

3 Terms and definitions

For the purpose of this document the terms and definitions given in ISO 15, ISO 1101, ISO 5593, ISO 14405-1, ISO 15241, ISO 22872 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
retaining slot
angled slot in an outer ring at the intersection of the outside surface and the face of the ring

Note 1 to entry: See Figures 1 and 2; also outline illustration in ISO 5593:2019, Figure 155.

Note 2 to entry: The purpose of the slot is to provide a simple means of preventing rotation of the outer ring of a bearing in relation to the application where it is mounted.

1) Under preparation. Stage at the time of publication: ISO/DIS 22872:2021.

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[SOURCE: ISO 5593:2019, 3.2.2.25, modified — "See Figures 1 and 2; also outline illustration in" was added in Note 1 to entry.]

3.2
b
nominal retaining slot width

3.2.1
Δbg
lower limit deviation of a maximum inscribed size of retaining slot width

Note 1 to entry: The term "deviation" is defined in ISO 286-1:2010[1], 3.2.4 and the term "maximum inscribed size" is defined in ISO 14405-1:2016, 3.7.1.2.

3.2.2
Δbs
upper limit deviation of two-point size of retaining slot width

Note 1 to entry: The term "deviation" is defined in ISO 286-1:2010[1], 3.2.4 and the term "two-point size" is defined in ISO 14405-1:2016, 3.6.1.

3.3
PS2
position specification of retaining slots median planes with respect to the axis established from the outer ring outside surface

Note 1 to entry: The position specification of a median plane is specified in ISO 1101:2017, 17.13.4.

3.4
D
nominal bearing outside diameter

[SOURCE: ISO 15241:2012, 2.17]

3.5
h
nominal distance between the side face of outer ring and the intersection between the bottom surface of the retaining slot and the outer ring outside surface

3.6
PS1
position specification of retaining slot bottom surface with respect to the axis established from the outer ring outside surface and the outer ring side face

Note 1 to entry: The position specification of a planar surface is specified ISO 1101:2017, 17.13.5.

3.7
r_0
fillet radius at bottom of retaining slot

Note 1 to entry: The lower limit of r_0 should not be 0 and shall be appropriately dimensioned to avoid stress concentrations. Indicated values are tolerance values. This is expressed in Figures 1 and 2 by r_0 max. In technical drawings this is expressed by e.g. 0,5 max.

4 Graphical description

To express that the ISO GPS system, ISO 8015[2], is applied, the dimensional and geometrical characteristics shall be included in the technical product documentation (for example, on the drawing). The dimensional and geometrical specifications associated to these characteristics are described in Figure 1 and Figure 2.

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