



SLOVENSKI STANDARD
SIST ISO 3290:2002

01-julij-2002

Kotalni ležaji - Kroglice - Mere in tolerance

Rolling bearings -- Balls -- Dimensions and tolerances

Roulements -- Billes -- Dimensions et tolérances

Ta slovenski standard je istoveten z: ISO 3290:2001

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ICS:

21.100.20 Kotalni ležaji Rolling bearings

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en

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INTERNATIONAL STANDARD

**ISO
3290**

Third edition
2001-12-01

Rolling bearings — Balls — Dimensions and tolerances

Roulements — Billes — Dimensions et tolérances

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Reference number
ISO 3290:2001(E)

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Printed in Switzerland

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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 3290 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*.

This third edition cancels and replaces the second edition (ISO 3290:1998) which has been technically revised.

Annexes A and B form a normative part of this International Standard.

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Rolling bearings — Balls — Dimensions and tolerances

1 Scope

This International Standard specifies requirements for finished steel balls for rolling bearings.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 1132-1:2000, *Rolling bearings — Tolerances — Part 1: Terms and definitions*

ISO 4288:1996, *Geometrical Product Specifications (GPS) — Surface texture: Profile method — Rules and procedures for the assessment of surface texture*

ISO 4291:1985, *Methods for the assessment of departure from roundness — Measurement of variations in radius*

ISO 5593:1997, *Rolling bearings — Vocabulary*

ISO 15241:2001, *Rolling bearings — Symbols for quantities*

3 Terms and definitions

For the purposes of this International Standard, the terms and the definitions given in ISO 1132-1, ISO 5593 and ISO 15241 and the following apply.

3.1

nominal ball diameter

D_w

diameter value which is used for the general identification of a ball size

3.2

single ball diameter

D_{ws}

distance between two parallel planes tangential to the actual surface of a ball

3.3

mean ball diameter

D_{wm}

arithmetical mean of the largest and the smallest of the single diameters of a ball

ISO 3290:2001(E)**3.4****variation of ball diameter** V_{Dws}

difference between the largest and the smallest of the single diameters of a ball

3.5**surface irregularities and form parameters**

various types of deviation from the perfect spherical ball surface, uniformly distributed and repeated around the ball surface

NOTE The deviations to which limits can be attributed are:

- deviation from spherical form;
- waviness;
- surface roughness.

3.5.1**deviation from spherical form**

greatest radial distance, in any equatorial plane, between the smallest circumscribed sphere and the greatest inscribed sphere, with their centres common to the least square sphere centre

NOTE Information about the measurement of this deviation is given in annex A.

3.5.2**waviness**

surface irregularities of random or periodical deviation from the ideal spherical form

NOTE It is recommended that waviness be evaluated as velocity amplitude. In practice, the waviness components are separated from the real surface by a waviness analyser (filters).

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3.5.3**surface roughness**

surface irregularities with relatively small spacings, which usually include irregularities resulting from the method of manufacture being used and/or other influences

NOTE These irregularities are considered within the limits that are conventionally defined, e.g., within the limits of the sampling length.

3.6**surface defect**

element, irregularity or group of elements and irregularities of the real surface, unintentionally or accidentally caused during manufacture, storage, handling or use of the surface

NOTE These types of element or irregularity differ considerably from those constituting the surface roughness and should not be considered during the measurement of the surface roughness (see 4.2, note 2). Surface defects (and their limits) are not specified in this International Standard.

3.7**ball lot**

definite quantity of balls manufactured under conditions presumed uniform and which is considered as an entity

3.8**mean diameter of ball lot** D_{wmL}

arithmetical mean of the mean diameters of the largest ball and the smallest ball in a ball lot

3.9**variation of ball lot diameter** V_{DwL}

difference between the mean diameters of the largest ball and the smallest ball in a ball lot

3.10**ball grade****G**

specific combination of dimensional, form, surface roughness and sorting tolerances for balls

NOTE Ball grade is identified by the letter G and a number.

3.11**ball gauge** S

amount by which the mean diameter of a ball lot should differ from the nominal ball diameter, this amount being one of an established series

NOTE 1 Each ball gauge is a whole multiple of the ball gauge interval established for the ball grade in question (see Table 3 and annex B).

NOTE 2 A ball gauge, in combination with the ball grade and nominal diameter, should be considered as the most exact ball size specification to be used by a customer for ordering purposes.

3.12**deviation of a ball lot from ball gauge** Δ_S

difference between the mean diameter of a ball lot and the sum of the nominal ball diameter and the ball gauge

$$\Delta_S = D_{wL} - (D_w + S)$$

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See Table 3 and annex B.

3.13**ball subgauge**

amount of an established series of amounts, which is the nearest to the actual deviation from the ball gauge of a ball lot

NOTE 1 Each ball subgauge is a whole multiple of the ball subgauge interval established for the ball grade in question (see Table 3 and annex B).

NOTE 2 The ball subgauge, in combination with the nominal ball diameter and the ball gauge, is used by ball manufacturers to denote the mean diameter of a ball lot and should not be used by customers for ordering purposes.

3.14**hardness**

measure of resistance to penetration as determined by specific methods

4 Requirements**4.1 Ball size**

The preferred nominal ball diameters are given in Table 1. Where applicable, the corresponding inch sizes are given for reference purposes only.