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(JBIA)

**Rolling bearings — Boundary
dimensions, geometrical product
specifications (GPS) and tolerance
values of needle roller bearings —
Part 1: Machined rings**

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Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by the Japan Bearing Industry Association (JBIA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied *mutatis mutandis* pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS B 1536-1**: 2008), which has been technically revised.

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JIS B 1536 series consists of the following 5 parts under the general title: *Rolling bearings — Boundary dimensions, geometrical product specifications (GPS) and tolerance values of needle roller bearings —*

Part 1: Machined rings

Part 2: Drawn cup without inner ring

Part 3: Radial needle roller and cage assemblies

Part 4: Thrust needle roller and cage assemblies, thrust washers

Part 5: Track rollers

Rolling bearings — Boundary dimensions, geometrical product specifications (GPS) and tolerance values of needle roller bearings — Part 1 : Machined rings

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 1206 : 2018**, Edition 4, with some modifications of the technical contents, such as adding provisions not specified in the corresponding International Standard in line with the actual conditions in Japan.

The vertical lines on both sides and dotted underlines indicate additions to the corresponding International Standard. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies the boundary dimensions, and limit deviations, permissible values and tolerance values for needle roller bearings with machined rings of Grade 0 in accuracy. This Standard also specifies the dimensional and geometrical characteristics, and limit deviations from nominal sizes.

These specifications apply to needle roller bearings with inner ring and without inner ring. Recommended limit deviations, permissible values and tolerance values for shaft raceways used for needle roller bearings without inner ring are given in Annex A.

NOTE The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 1206 : 2018 *Rolling bearings — Needle roller bearings with machined rings — Boundary dimensions, geometrical product specifications (GPS) and tolerance values* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 0104 *Rolling bearings — Vocabulary*

NOTE Corresponding International Standard : ISO 5593 *Rolling bearings — Vocabulary*

JIS B 0420-1 *Geometrical product specifications (GPS) — Dimensional tolerancing*

— Part 1 : Linear sizes

NOTE Corresponding International Standard : ISO 14405-1 *Geometrical product specifications (GPS) — Dimensional tolerancing — Part 1 : Linear sizes*

JIS B 1512-1 *Rolling bearings — Boundary dimensions — Part 1 : Radial bearings*

NOTE Corresponding International Standard : ISO 15 *Rolling bearings — Radial bearings — Boundary dimensions, general plan*

JIS B 1514-3 *Rolling bearings — Tolerances of bearings — Part 3 : Chamfer dimensions — Maximum values*

NOTE Corresponding International Standard : ISO 582 *Rolling bearings — Chamfer dimensions — Maximum values*

JIS B 1520-1 *Rolling bearings — Internal clearance — Part 1 : Radial internal clearance for radial bearings*

NOTE Corresponding International Standard : ISO 5753-1 *Rolling bearings — Internal clearance — Part 1 : Radial internal clearance for radial bearings*

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

ISO/TS 17863 *Geometrical product specification (GPS) — Tolerancing of moveable assemblies*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS B 0104**, **JIS B 0420-1**, **ISO 1101** and **ISO/TS 17863** apply.

4 Symbols

The dimensional and geometrical specifications in which symbols are in accordance with **ISO/GPS** terminology are given in Table 1. Symbols and terms as given in the previous edition in relation to the descriptions given in this Standard are in accordance with Table B.1.

Limit deviations, permissible values and tolerance values associated to a characteristic shall be expressed by the symbol t (slanted text) followed by the symbol of characteristic, for example $t_{\Delta Cs}$.

In this Standard, the default specification operator for size shall be in accordance with the two-point size specified in **JIS B 0420-1**.

NOTE The default specification operator is specified by **ISO Standards**, **JISs** or company standards as default specification relating to tolerance characteristics (see also **JIS B 1514-1** ^[6] and **JIS B 1514-2** ^[7]).

Table 1 Symbols for nominal sizes, characteristics and specification modifiers

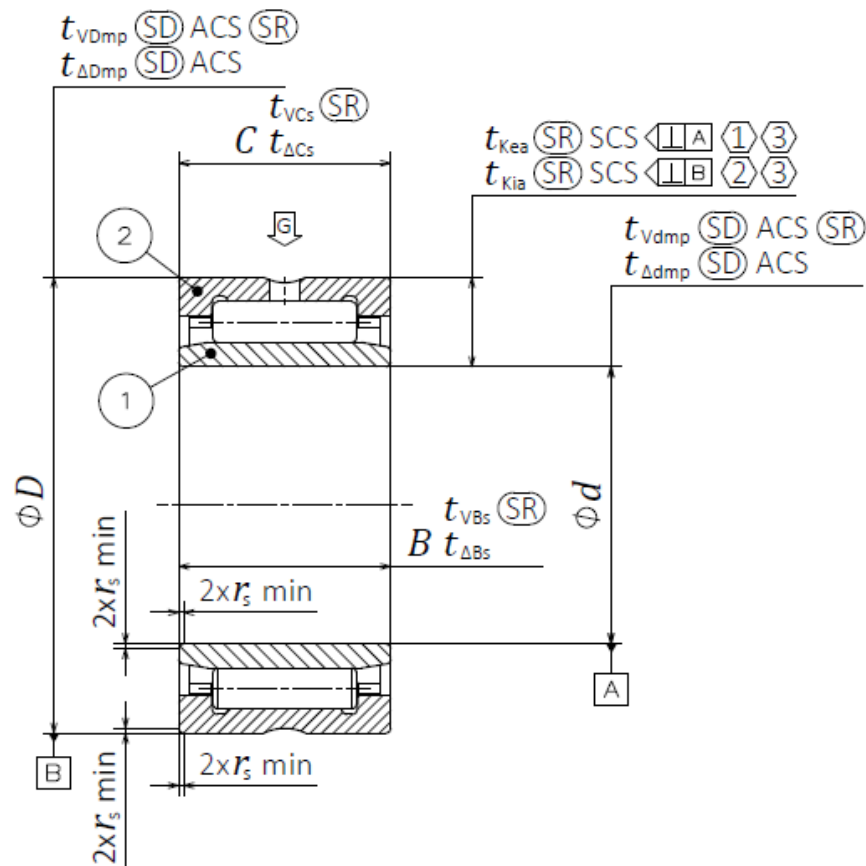
Symbol for nominal size ^{a)}	Symbol for characteristic	GPS symbol and specification modifier ^{b), c)}	Description ^{d)}
B			nominal inner ring width
	VBs		range of two-point sizes of inner ring width (range size)
	ΔB_s		deviation of a two-point size of inner ring width from its nominal size
C			nominal outer ring width
	VCs		range of two-point sizes of outer ring width (range size)
	ΔC_s		deviation of a two-point size of outer ring width from its nominal size
d			nominal bore diameter
	Vdmp		range of mid-range sizes (out of two-point sizes) of bore diameter in any cross-section (range size)
	Δd_{mp}		deviation of a mid-range size (out of two-point sizes) of bore diameter in any cross-section from its nominal size
D			nominal outside diameter
	VDmp		range of mid-range sizes (out of two-point sizes) of outside diameter in any cross-section (range size)
	ΔD_{mp}		deviation of a mid-range size (out of two-point sizes) of outside diameter in any cross-section from its nominal size
F_w			nominal bore diameter of needle roller complement
	ΔF_{ws}		deviation of the smallest maximum inscribed size of bore diameter of needle roller complement from its nominal size
	Kea		range of two-point sizes of section height between inner ring bore surface and outer ring outside surface of assembled needle roller set and fixed inner ring in a specific cross section perpendicular to datum, i.e. axis, established from the inner ring bore surface
	Kia		range of two-point sizes of section height between outer ring outside surface and inner ring bore surface of assembled needle roller bearing, obtained from a specific cross section of turning inner ring and needle roller set and fixed outer ring perpendicular to datum, i.e. axis, established from the outer ring outside surface
r			nominal chamfer dimension
	r_s		single chamfer dimension

Table 1 (concluded)

Notes	a)	Symbols as defined in JIS B 0124 ^[3] .
	b)	Symbols as defined in JIS B 0420-1 and ISO 1101 .
	c)	Specification modifier (LP) is not indicated on a drawing if the two-point size is applied for both the limit deviations and the rank-order size.
	d)	Description based on JIS B 0022 ^[1] , JIS B 0420-1 and ISO 1101 .
	e)	Symbols for direction of gravity  , fixed parts FP and movable parts MP are in accordance with ISO/TS 17863 (see Figure 1 and Figure 2).
	f)	Considering the influence of rotation of needle roller complement.

Figure 1 and Figure 2 show examples of GPS applied to needle roller bearings with and without inner ring, respectively.

These principles shall apply to all types of needle roller bearings (e.g. irrespective of with/without cage, number of rows of needle rollers, with/without lubrication groove and lubrication holes in the outer ring).



① FP①—MP②, G

② FP②—MP①, G

③ the requirements apply at any specific location of the FP for any location of the MP relation to the direction $\downarrow G$ of gravity where the needle rollers are in contact with both raceways of the inner and outer ring

① inner ring

② outer ring

The shape of chamfer for which the projection line of " $r_s \text{ min}$ " is described shall be in accordance with Figure 3.

Figure 1 Example of needle roller bearing with inner ring