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(JBIA)

**Rolling bearings — Tolerances of
bearings — Part 1 : Radial bearings**

ICS 21.100.20

Reference number : JIS B 1514-1 : 2006 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from The Japan Bearing Industrial Association (JBIA) with a draft being attached based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

Consequently JIS B 1514 : 2000 is withdrawn and replaced with this Standard, JIS B 1514-2 and JIS B 1514-3.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

JIS B 1514 consists of the following parts under the general title “*Rolling bearings—Tolerances of bearing—*”:

—*Part 1 : Radial bearings*

—*Part 2 : Thrust bearings*

—*Part 3 : Chamfer dimensions—Maximum values*

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Rolling bearings—Tolerances of bearings— Part 1 : Radial bearings

Introduction This Japanese Industrial Standard has been prepared based on the fourth edition of ISO 492 *Rolling bearings—Radial bearings—Tolerances* published in 2002 without any modifications of the technical contents.

In addition, “Information” given sidelines or dotted underlines is the matters not stated in the original International Standard.

1 Scope This part of JIS B 1514 specifies tolerances and permissible values of radial bearings specified in JIS B 1512 (hereafter referred to as “bearings”).

NOTES 1 The tolerances and permissible values specified in this Standard are not applicable to certain radial bearings of particular types (e.g. drawn cup needle roller bearings) or bearings for particular fields of application (e.g. airframe bearings and instrument precision bearings).

2 Chamfer dimension limits shall be as specified in JIS B 1514-3.

3 The International Standard corresponding to this part of JIS B 1514 is as follows.

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.

ISO 492 : 2002 *Rolling bearings—Radial bearings—Tolerances* (IDT)

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 : ISO 5593 : 1997 *Rolling bearings—Vocabulary* is equivalent to the said standard.

JIS B 0124 *Rolling bearings—Symbols for quantities*

NOTE : ISO 15241 : 2001 *Rolling bearings—Symbols for quantities* is equivalent to the said standard.

JIS B 1512 *Rolling bearings—Boundary dimensions*

NOTE : References shown below are equivalent to the said standard.

ISO 15 : 1998 *Rolling bearings—Radial bearings—Boundary dimensions, general plan*

ISO 355 : 1977 *Rolling bearings—Metric tapered roller bearings—Boundary dimensions and series designations*

ISO 8443 : 1999 *Rolling bearing—Radial ball bearings with flanged outer ring—Flange dimensions*

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

NOTE : ISO 582 : 1995 *Rolling bearings—Chamfer dimensions—Maximum values* is identical with the said standard.

JIS B 1515-1 *Rolling bearings—Tolerances—Part 1 : Terms and definitions*

NOTE : ISO 1132-1 : 2000 *Rolling bearings—Tolerances—Part 1 : Terms and definitions* is identical with the said standard.

3 Terms and definitions For the purposes of this Standard, the definitions given in JIS B 0104 shall apply.

4 Symbols for quantities

4.1 General For the purposes of this Standard, symbols for quantities in JIS B 0124 and JIS B 1515-1, and the following shall apply. Symbols for quantities in figures 1 to 4 and values in tables 1 to 26 are nominal dimensions unless otherwise specified.

4.2 Symbols for boundary dimensions and of running accuracy Symbols for boundary dimensions and of running accuracy shall be as follows (see figure 1, figure 3 and figure 4).

B	: inner ring width
V_{Bs}	: variation of inner ring width
Δ_{Bs}	: deviation of a single inner ring width
C	: outer ring width
C_1	: outer ring flange width
V_{Cs}	: variation of outer ring width
V_{C1s}	: variation of outer ring flange width
Δ_{Cs}	: deviation of a single outer ring width
Δ_{C1s}	: deviation of a single outer ring flange width
d	: bore diameter
d_1	: basic diameter at the theoretical large end of tapered bore
V_{dmp}	: variation of mean bore diameter in a plane
V_{dsp}	: variation of bore diameter in a plane
Δ_{dmp}	: deviation of mean bore diameter in a plane or deviation of mean bore diameter in a plane at theoretical small end of tapered bore
Δ_{ds}	: deviation of a single bore diameter

- Δ_{d1mp} : deviation of mean bore diameter in a plane at the theoretical large end of tapered bore
 D : outside diameter
 D_1 : outside diameter of outer ring flange
 V_{Dmp} : variation of mean outside diameter in a plane
 V_{Dsp} : variation of outside diameter in a plane
 Δ_{Dmp} : deviation of mean outside diameter in a plane
 Δ_{Ds} : deviation of a single outside diameter
 Δ_{D1s} : deviation of a single outside diameter of outer ring flange
 K_{ea} : radial runout of outer ring
 K_{ia} : radial runout of inner ring
 S_d : perpendicularity of inner ring face with respect to bore
Information : mentioned as “runout of inner ring reference face (back face, where applicable) with respect to the bore” in old JIS.
 S_b : perpendicularity of outer ring outside surface with respect to face
Information : mentioned as “variation of outside surface generatrix inclination with respect to the outer ring reference face (back face)” in old JIS.
 S_{b1} : perpendicularity of outer ring outside surface with respect to flange back face
Information : mentioned as “variation of outside surface generatrix inclination with respect to the outer ring flange back face” in old JIS.
 S_{ea} : axial runout of outer ring
 S_{ea1} : axial runout of outer ring flange back face
 S_{ia} : axial runout of inner ring
 α : half of basic taper angle of tapered bore

4.3 Additional symbols for quantities of tapered roller bearings Boundary dimensions added to symbols for quantities of tapered roller bearings shall be as follows (see figure 2).

- T : assembled bearing width
 T_1 : effective width of inner ring subunit
 T_2 : effective width of outer ring
 ΔT_s : deviation of actual (assembled) bearing width
 ΔT_{1s} : deviation of actual effective width of inner ring subunit
 ΔT_{2s} : deviation of actual effective width of outer ring

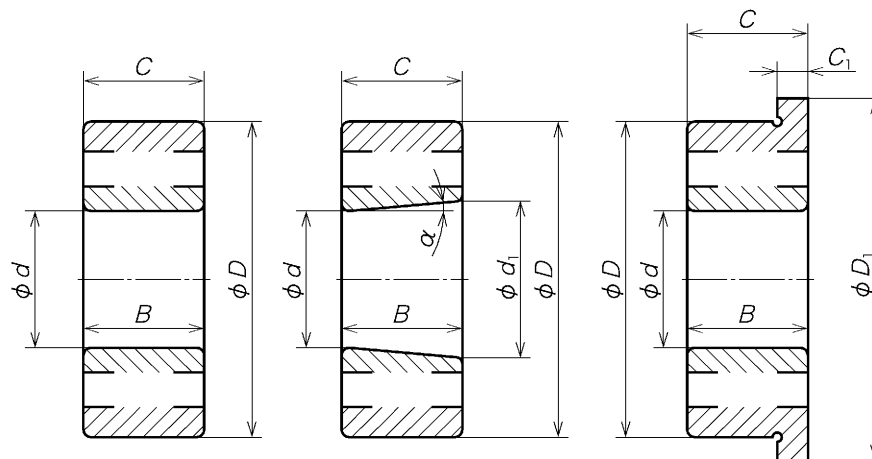


Figure 1 Symbols for quantities of boundary dimensions

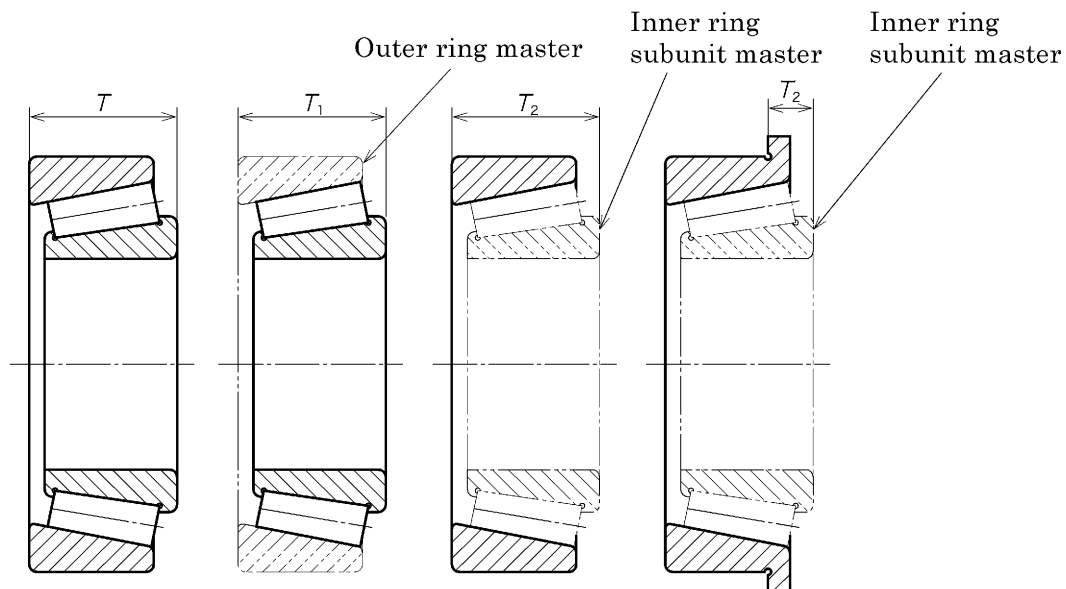


Figure 2 Additional symbols for quantities of tapered roller bearings

5 Tolerances and permissible values

5.1 Radial bearings (except for tapered roller bearings)

5.1.1 General Tolerances and permissible values for bearing bore diameters shown in tables 1 to 10 shall apply to cylindrical bore bearings. Tolerances and permissible values for tapered bores shall be as shown in 5.4. Diameter series in tables 1 to 8 are defined in JIS B 1512.

5.1.2 Class 0 Class 0 shall be as given in tables 1 and 2.

**Table 1 Tolerances and permissible values for inner ring of radial bearings
(except for tapered roller bearings) of Class 0**

Unit : μm

d (mm)		Δ_{dnp}		V_{dsp}			V_{dnp}	K_{ia}	Δ_{Bs}				V_{Bs}
				Diameter series					Single bearing		Matched bearing ⁽¹⁾		
				9	0, 1	2, 3, 4							
Over	Or under	Upper limit	Lower limit	Max.			Max.	Max.	Upper limit	Lower limit	Upper limit	Lower limit	Max.
—	0.6	0	−8	10	8	6	6	10	0	−40	—	—	12
0.6	2.5	0	−8	10	8	6	6	10	0	−40	—	—	12
2.5	10	0	−8	10	8	6	6	10	0	−120	0	−250	15
10	18	0	−8	10	8	6	6	10	0	−120	0	−250	20
18	30	0	−10	13	10	8	8	13	0	−120	0	−250	20
30	50	0	−12	15	12	9	9	15	0	−120	0	−250	20
50	80	0	−15	19	19	11	11	20	0	−150	0	−380	25
80	120	0	−20	25	25	15	15	25	0	−200	0	−380	25
120	180	0	−25	31	31	19	19	30	0	−250	0	−500	30
180	250	0	−30	38	38	23	23	40	0	−300	0	−500	30
250	315	0	−35	44	44	26	26	50	0	−350	0	−500	35
315	400	0	−40	50	50	30	30	60	0	−400	0	−630	40
400	500	0	−45	56	56	34	34	65	0	−450	—	—	50
500	630	0	−50	63	63	38	38	70	0	−500	—	—	60
630	800	0	−75	—	—	—	—	80	0	−750	—	—	70
800	1 000	0	−100	—	—	—	—	90	0	−1 000	—	—	80
1 000	1 250	0	−125	—	—	—	—	100	0	−1 250	—	—	100
1 250	1 600	0	−160	—	—	—	—	120	0	−1 600	—	—	120
1 600	2 000	0	−200	—	—	—	—	140	0	−2 000	—	—	140

Note ⁽¹⁾ Applies to inner rings or outer rings of single bearings made for paired and stack assemblies.
Also applies to inner rings with tapered bore of $d \geq 50$ mm.