

Translated English of Chinese Standard: JB/T10186-2010

www.ChineseStandard.net → Buy True-PDF → Auto-delivery.

Sales@ChineseStandard.net

JB

MACHINERY INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 21.100.20

J 11

File No.: 28424-2010

JB/T 10186-2010

Replacing JB/T 10186-2000

Rolling bearings - Specifications of matched angular contact ball bearings

滚动轴承 组配角接触球轴承 技术条件

Issued on: February 11, 2010

Implemented on: July 01, 2010

**Issued by: Ministry of Industry and Information Technology of the
People's Republic of China**

Table of Contents

Foreword.....	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	6
4 Symbols	6
5 Types of matching structures	7
6 Technical requirements	8
6.1 Dimensional tolerance and rotation accuracy	8
6.2 Preload, pre-clearance and protruding amount.....	9
6.3 Matching.....	13
6.4 Interchangeability	13
6.5 Others	13
7 Measurement methods	13
8 Inspection rules.....	13
9 Marks	14
10 Packaging	15
Annex A (normative) Level 4A and level 2A tolerances	16
Annex B (informative) Matching between matched bearing of level 5 and above tolerance and shaft and housing	18
 Figure 1 -- Main matching types of matched bearings	7
Figure 2 -- Protruding amount of bearing	13
Figure 3 -- Mark of angular line.....	14
Figure 4 -- Marks of maximum value point of K_{ia}, K_{ea} and Δ_{dmp}, Δ_{Dmp} ...	14
Figure B.1	18
Figure B.2	18
 Table 1 -- Mutual difference of radial runout of matched bearings.....	9
Table 2 -- Width deviation of individual angle contact ball bearing ΔB_s,	

ΔC_s	9
Table 3 -- Preloads of matched bearings (DB type and DF type)	11
Table 4 -- Preload coefficient value of multi-joint matched bearings	11
Table 5 -- Axial pre-clearance of the 7200B and 7300B series matched bearings	12
Table 6 -- $\delta_1 + \delta_2$	12
Table A.1 -- Inner ring of level 4A tolerance	16
Table A.2 -- Outer ring of level 4A tolerance	16
Table A.3 -- Inner ring of level 2A tolerance	17
Table A.4 -- Outer ring of level 2A tolerance	17
Table B.1 -- Matching with shaft	18
Table B.2 -- Matching with housing bore	18
Table B.3 -- Geometric tolerance and face roughness of shaft and housing bore	19

Foreword

This Standard replaces JB/T 10186-2000 “Rolling bearings - Specifications of matched angular contact ball bearings”.

Compared with JB/T 10186-2000, the main changes in this Standard are as follows:

- modified some definitions (Clause 3 of Edition 2000 and this Edition);
- expanded size range (Table 1, Table 2 of Edition 2000 and this Edition);
- deleted requirements for mutual width difference of inner, outer rings of universal assembly bearing (Table 3 of Edition 2000);
- modified preload coefficient value of multi-joint bearing (Table 5 of Edition 2000 and Table 4 of this Edition);
- added requirements that special preload needs to be calculated and determined (6.2.1.3 of this Edition);
- modified the value of sum of partial protruding amounts (Table 7 of Edition 2000 and Table 6 of this Edition);
- added inspection rules (Clause 8).

Annex A of this Standard is normative. Annex B is informative.

This Standard was proposed by China Machinery Industry Federation.

This Standard shall be under the jurisdiction of National Technical Committee on Rolling Bearing of Standardization Administration of China (SAC/TC 98).

The drafting organizations of this Standard: Luoyang Bearing Research Institute, Harbin Bearing Group Corporation, Taizhou Youte Bearing Co., Ltd.

Main drafters of this Standard: Yang Xiaowei, Jia Qiusheng, Guo Baoxia, Yang Xiaohui, Zheng Zixun.

Version of standard substituted by this Standard is:

- JB/T 10186-2000.

Rolling bearings - Specifications of matched angular contact ball bearings

1 Scope

This Standard specifies the specifications of matched angular contact ball bearings of which the dimensions are in accordance with GB/T 292 (hereinafter referred to as matched bearings).

This Standard is applicable to production inspection, user acceptance and application of the matched bearings.

2 Normative references

The following standards contain the provisions which, through reference in this Standard, constitute the provisions of this Standard. For dated references, subsequent amendments (excluding corrections) or revisions do not apply to this Standard. However, the parties who enter into agreement based on this Standard are encouraged to investigate whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply to this Standard.

GB/T 272-1993, *Rolling bearing - Identification code*

GB/T 275-1993, *Shaft and housing fits for rolling bearings*

GB/T 292-2007, *Rolling bearings - Angular contact ball bearings - Boundary dimensions*

GB/T 307.2-2005, *Rolling bearings - Measuring and gauging principles and methods* (ISO 1132-2:2001, *Rolling bearings - Tolerances - Part 2: Measuring and gauging principles and methods, MOD*)

GB/T 307.3-2005, *Rolling bearings - General technical regulations*

GB/T 6930-2002, *Rolling bearings - Vocabulary* (ISO 5593:1997, IDT)

GB/T 7811-2007, *Rolling bearings - Symbols for quantities* (ISO 15241:2001, IDT)

GB/T 8597-2003, *Rolling bearings - Rust proof packaging*

JB/T 2974-2004, *Rolling bearings - Identification code - Supplemental regulations*

JB/T 3574-1997, *Marking for Rolling Bearings Products*

JB/T 8921-1999, *Rolling bearings and commercial parts - Inspection rules*

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 6930 as well as the followings apply.

3.1 matched face

end faces of the matched bearings that are close together under preload

3.2 universal matching

matching in any way such as back-to-back, face-to-face or in series

3.3 pre-clearance

axial clearance value preset in the group of bearings after the bearings are matched back-to-back and face-to-face

4 Symbols

The symbols given in GB/T 7811 as well as the followings apply to this document.

$d_{mp1}-d_{mp2}$	Mutual difference of average inner diameter between individual bearings in matched bearings
$D_{mp1}-D_{mp2}$	Mutual difference of average outer diameter between individual bearings in matched bearings
$K_{ia1}-K_{ia2}$	Mutual difference of inner ring radial runout between individual bearings in matched bearings
$K_{ea1}-K_{ea2}$	Mutual difference of outer ring radial runout between individual bearings in matched bearings
$\alpha_1-\alpha_2$	Mutual difference of contact angle between individual bearings in matched bearings
δ	Protruding amount, i.e., after a preload is applied to an individual bearing, the distance between the end face of one ring and the end face of the other outer ring is at the same end face of the bearing. When protruding, the amount of protrusion is "+" value; when recessed, the amount of protrusion is "-" value.

6 Technical requirements

Matched bearings shall, in addition to GB/T 307.3, also meet the following technical requirements.

6.1 Dimensional tolerance and rotation accuracy

6.1.1 The individual bearing tolerance level in matched bearings shall, for bearings with $\alpha=15^\circ$ and $\alpha=25^\circ$, meet the requirements of over level 5 tolerance. For bearings with $\alpha=40^\circ$, it shall meet the requirements of over level 6 tolerance.

6.1.2 The individual bearing in matched bearings shall be manufactured according to 6, 5, 4, 2 standard tolerance levels. In addition, it may be manufactured according to user requirements, according to special tolerance levels such as 4A, 2A (codenamed P4A, P2A). 2A, 4A tolerances are as specified in Annex A.

NOTE: Other technical requirements for level 4A and level 2A bearings are the same as for level 4 and level 2 bearings.

6.1.3 The mutual dimensional difference between individual bearings in matched bearings shall meet the followings:

- a) the mutual difference between inner diameter and outer diameter $d_{mp1}-d_{mp2}$, $D_{mp1}-D_{mp2}$ shall not be greater than one-third of the dimensional tolerance of the inner and outer diameters;
- b) the mutual difference of radial runout between inner ring and outer ring $K_{ia1}-K_{ia2}$, $K_{ea1}-K_{ea2}$ shall be in accordance with Table 1;
- c) the mutual difference of contact angle, for bearings with $\alpha=15^\circ$ and $\alpha=25^\circ$, $\alpha_1-\alpha_2 \leq 1^\circ$; for bearings with $\alpha=40^\circ$, $\alpha_1-\alpha_2 \leq 1.5^\circ$.

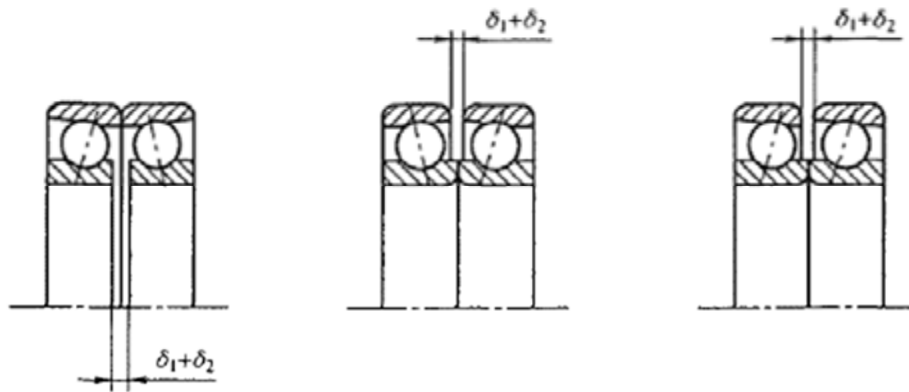


Figure 2 -- Protruding amount of bearing

6.3 Matching

For the matching between matched bearing and shaft and housing, the bearing of level 6 tolerance shall be in accordance with GB/T 275. Refer to Annex B for recommended bearing values for level 5 and above tolerance.

6.4 Interchangeability

Except for the universal matched bearings, the individual bearings in other matched bearings cannot be matched at random, that is, they are not interchangeable.

6.5 Others

When there are other special requirements for matched bearings, it can be determined by the user and the manufacturer.

7 Measurement methods

7.1 The measurement methods for contact angle of matched bearing, protruding amount of the matched face end (both ends for universal matched bearing) as well as axial pre-clearance shall be specified by manufacturer's authority department.

7.2 The measurements of other items shall be in accordance with GB/T 307.2.

8 Inspection rules

8.1 The individual bearing in matched bearings in inspected according to JB/T 8921. The main inspection items for matched bearings also include $d_{mp1}-d_{mp2}$, $D_{mp1}-D_{mp2}$, $K_{ia1}-K_{ia2}$, $K_{ea1}-K_{ea2}$, $\alpha_1-\alpha_2$. The acceptance quality level AQL is 1.5.

This is an excerpt of the PDF (Some pages are marked off intentionally)

Full-copy PDF can be purchased from 1 of 2 websites:

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

----- The End -----