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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 32325-2015

**Rolling bearings - Specifications for the vibration (velocity) of
deep groove ball bearings**

滚动轴承 深沟球轴承振动（速度）技术条件

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009. This Standard was proposed by China Machinery Industry Federation. This Standard shall be under the jurisdiction of National Technical Committee on Rolling Bearings of Standardization Administration of China (SAC/TC 98). The drafting organizations of this Standard. Hangzhou Bearing Test Research Center Co., Ltd., Jinfa Bearing Co., Ltd., National Small and Medium-sized Bearing Product Quality Supervision and Inspection Center, Tianma Bearing Group Co., Ltd., Zhejiang Wuzhou Xinchun Group Co., Ltd., Zhejiang Chentong Bearing Co., Ltd., Zhejiang Times Metrology Technology Co., Ltd. Main drafters of this Standard. Chen Fanghua, Yan Sisi, Li Xianhong, Qian Yaming, Shi Dafang, Shi Zhexi, Zheng Xiaopeng, Chen Jianxin, Kang Pengfei. Rolling bearings - Specifications for vibration (velocity) of deep groove ball bearings

1 Scope

China's national specification for the vibration velocity of deep groove ball bearings. It specifies the technical requirements, the measurement methods, the evaluation methods and the inspection rules for the vibration velocity of deep groove ball bearings of nominal outside diameter greater than 10 mm and up to 200 mm, in the 0, 2 and 3 diameter series of GB/T 276, with two normative annexes covering the measurement of the radial and axial runout of the test mandrel and the measurement of the basic vibration of the driving device. Vibration is the property by which a bearing is graded when nothing else distinguishes one from another. Two bearings of the same designation, both within their dimensional tolerances and both correctly hardened, can run quietly or noisily, and the difference is worth a great deal to whoever buys them: an electric motor for a domestic appliance, a

machine tool spindle or a ventilation fan is judged by the user on the noise it makes, and almost all of that noise comes from the bearings. What the measurement actually detects is everything about the bearing that is not perfectly round, smooth or uniform - waviness on the raceways, roughness of the ball surfaces, variation in ball diameter, defects in the cage, contamination left in the grease. None of those is visible and none is caught by a dimensional inspection. The standard defines vibration groups: group V is the basic requirement for a general bearing, and groups V1, V2, V3 and V4 apply to bearings with progressively higher requirements, with groups VF3 and VF4 available only for bearings of nominal outside diameter greater than 10 mm and up to 100 mm. Issued on 31 December 2015 and in force since 1 April 2016.

This Standard specifies technical requirements, measurement methods, evaluation methods and inspection rules for vibration (velocity) of deep groove ball bearings of which nominal outer diameter is greater than 10mm ~ 200mm, and the dimensions are in accordance with 0, 2, 3 diameter series of GB/T 276 (hereinafter referred to as the bearings). This Standard is applicable to deep groove ball bearings, in which the specified group V is the basic requirements for general bearing vibration (velocity), groups V1, V2, V3, V4 as well as groups VF3, VF4 are applicable to the bearings that have higher requirements for vibration (velocity) and groups VF3, VF4 are only applicable to the bearings of which the nominal outer diameter is greater than 10mm ~ 100mm.

2 Normative references

The following referenced documents are indispensable for the application 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.

GB/T 276, Rolling bearings - Deep groove ball bearings - Boundary dimensions

GB 443, Lubricating Oils for Total Loss Systems L-AN

GB/T 2828.1, Sampling procedures for inspection by attributes - Part 1. Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection

GB/T 24610.1, Rolling bearings - Measuring methods for vibration - Part 1. Fundamentals

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 24610.1 as well as the followings apply.

3.1 peak value of bearing vibration velocity The maximum value of bearing vibration speed within a given time interval.

4 Group codes

The codes in JB/T 2974 as well as the following vibration group codes apply to this document.

5 Technical requirements

5.1 The vibration velocity of individual bearing shall not exceed the corresponding group limit specified in Table 1.

5.2 For groups VF3, VF4 bearings, in addition that the vibration velocity of individual bearing shall not exceed the corresponding group limit specified in Table 1, the crest factor of vibration velocity shall also meet the requirements of group F. When using peak value of vibration velocity, the peak value of low-frequency vibration velocity shall not be greater than 4 times the vibration velocity.

6 Measurement methods

6.1 Measurement methods shall comply with the provisions of GB/T 24610.2.

6.2 The radial and axial circular runout after mandrel and spindle are combined shall not be greater than 5 μ m. The measurement methods are in accordance with the provisions of Annex A.

7 Evaluation methods

7.1 Under the specified measurement conditions, after making the bearing vibration reaches a stable state and run for 1s, start the measurement. The measurement duration is 2s~5s. Read the measurement value in this state corresponding to each measurement point position.

7.2 Select 3 measurement point positions where the outer cylindrical surface of the bearing outer ring is approximately equidistant to measure. Conduct positive and negative measurements.

7.3 When in dispute, use NY-120 solvent oil to effectively clean the non-pre-lubricated bearings.

8 Inspection rules

8.1 The individual bearing is measured according to the method specified in this Standard. When the vibration velocity value in any frequency band is greater than the corresponding group limit in Table 1, this bearing shall be rejected.

8.2 When conducting the sampling inspection for vibration of a batch of bearings, according

to the provisions of GB/T 2828.1, it shall use primary sampling scheme of normal inspection and general inspection level II. The acceptance quality limit (AQL) of vibration velocity shall be 1.5. The AQL of crest factor of vibration velocity or the peak value of vibration velocity shall be 4.0.

Annex A

(normative) Measurement methods for radial and axial circular runout of mandrel As shown in Figure A.1, after the mandrel and the spindle are combined, place the probe of the measuring meter 1 vertically on any part of the mating surface of the mandrel and the bearing bore and place the probe of the measuring gauge 2 vertically on any part of the shoulder end face of the spindle.