



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

GB/T 24610.2-2019

**Rolling bearings -- Measuring methods for vibration -- Part 2:
Radial ball bearings with cylindrical bore and outside surface**

Issued on: October 18, 2019

Implemented on: May 1, 2020

Issued by: SAMR; SAC

Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Measurement procedure	1
4.1 Rotation frequency	1
4.2 Bearing axial load	1
5 Measurement and evaluation methods	2
5.1 Measured physical quantities	2
5.2 Frequency domain	2
5.3 Pulse and sharp pulse measurement	3
5.4 Test	3
6 Measurement conditions	3
6.1 Bearing measurement conditions	3
6.2 Test environmental conditions	3
6.3 Measuring device conditions	4
Appendix A (Normative Appendix) Measurement of Accuracy of Axial Load Axis Alignment	7
Foreword	
introduction	
6.1 Bearing measurement conditions	
6.2 Test environmental conditions	
6.3 Measuring device conditions	
Appendix A (Normative appendix) Measurement of axis alignment accuracy with applied axial load	

Foreword

GB/T 24610 "Measurement method for rolling bearing vibration" is divided into 4 parts.

--- Part 1.Basics;

--- Part 2.Radial ball bearings with cylindrical holes and cylindrical outer surfaces;

--- Part 3.Spherical roller bearings and tapered roller bearings with cylindrical bore and cylindrical outer surface;

--- Part 4.Cylindrical roller bearings with cylindrical bore and cylindrical outer surface.

This part is the second part of GB/T 24610.

This section is drafted in accordance with the rules given in GB/T 1.1-2009.

This section replaces GB/T 24610.2-2009 "Method for measuring vibration of rolling bearings-Part 2.With cylindrical holes and cylindrical appearance Surface radial ball bearings ", compared with GB/T 24610.2-2009, the main technical changes are as follows.

- Revised the partial expression of "rotation frequency" (see 4.1, 4.1 of.2009 version);
- Modified the symbolic expression of "root mean square vibration velocity" (see 5.1, 5.1 of.2009 version);
- Added "Example of frequency range of non-set rotation frequency" table (see Table 3);
- Modified some graphics and added description of the figure (see Figure 2, Figure 3, Figure A.1, Figure 2, Figure 3, Figure A.1 of the.2009 edition)
- Deleted "bearing cleanliness, lubrication, and operator requirements" (see 6.1.2, 6.1.3, 6.4 of the.2009 edition);
- Increased the requirement for "non-prelubricated bearings" (see 6.1.2).

This section uses the translation method equivalent to ISO 15242-2..2015, "Rolling bearing vibration measurement methods Part 2.With cylindrical holes And radial ball bearings on the outer surface of a cylinder.

The Chinese documents that have a consistent correspondence with the international documents referenced normatively in this section are as follows.

- GB/T 1800.2-2009 Geometrical Product Specifications (GPS) Limits and Fits Part 2.Standard Tolerance Grades and Hole and shaft limit deviation table (ISO 286-2.1988, MOD)
- GB/T 2298-2010 Vocabulary for mechanical vibration, shock and condition monitoring (ISO 2041..2009, IDT)
- GB/T 6930-2002 Vocabulary for rolling bearings (ISO 5593..1997, IDT)
- GB/T 24610.1-2019 Rolling bearing vibration measurement method Part 1.Basics (ISO 15242-1..2015, IDT)

This section is proposed by China Machinery Industry Federation.

This part is under the jurisdiction of the National Rolling Bearing Standardization Technical Committee (SAC/TC98).

This section was drafted. Hangzhou Bearing Test Research Center Co., Ltd., Luoyang Bearing Research Institute Co., Ltd., Baota Industrial Co., Ltd.

Company, Cixing Group Co., Ltd., Huanchi Bearing Group Co., Ltd., Zhejiang Wuzhou Xinchun Group Co., Ltd., Chongqing Changjiang Bearing Co., Ltd.

Co., Ltd., Fujian Yong'an Bearing Co., Ltd., Zhejiang Xinchang New Shaft Industry Co., Ltd., Zhejiang Meiyate Precision Machinery Co., Ltd.

Division, Zhejiang Huanyu Bearing Co., Ltd., Dalian Baishengyuan Technology Co., Ltd.

The main drafters of this section. Cao Maolai, Li Xinglin, Li Feixue, Li Hongbin, Zhao Kun, Chen Yinjun, Zhang Xunlei, Zhao Xingxin, Qian Weihua, Pang Qixing, Zhou Youhua, Luo Qing, Hou Yongqiang, Chang Zhen, Lu Shuigen.

The previous versions of the standards replaced by this section are.

--- GB/T 24610.2-2009.

introduction

The vibration of a rolling bearing is an important operating characteristic. Vibration will affect the performance of the mechanical system with bearings.

It can cause audible noise when propagating to the environment where the operating mechanical system is located, which can lead to system damage and even health problems.

The vibration of a rolling bearing during rotation is a complex physical phenomenon related to the operating conditions. Single set of shafts measured under a set of conditions The bearing vibration value does not necessarily represent the vibration value under different conditions or when the bearing becomes a part of a larger component. Assessed The sound generated by the mechanical system of the bearing is more complicated. It is also affected by the interface conditions, the position and orientation of the sensing device, and the sound of the system.

Impact of the learning environment. Air noise-GB/T 24610 (all parts) is defined as any unpleasant, undesired sound.

Because the term "unpleasant, undesired" is subjective, its evaluation is more complicated. It can be considered that the structural vibration of the bearing is Eventually the driving source for air noise. GB/T 24610 (all parts) only includes vibration measurement of selected bearing structures method.

Bearing vibration can be evaluated using any of a number of methods, with different evaluation methods using different types of sensors and test conditions.

No set of values characterizing bearing vibrations can evaluate bearing vibration performance under all possible conditions of use. Eventually, also It should be based on known bearing types, conditions of use, and vibration testing purposes (e.g.

To choose the most suitable test method. Therefore, the scope of application of bearing vibration standards is not universal. But for the purposes of this section, Only certain methods with a very broad scope are established as standard methods.

This section specifies the method for assessing the vibration of a radial ball bearing with a cylindrical bore and a cylindrical outer surface on a test device.

Method for measuring vibration of rolling bearings Part 2. Cylindrical holes and cylindrical outer surfaces Radial ball bearing

1 Scope This part of GB/T 24610 specifies single-row and double-row radial ball bearings with contact angles not greater than 45° under the established test conditions.

Method of vibration measurement.

This section applies to radial ball bearings with cylindrical bore and cylindrical outer surface.

This section does not apply to bearings with filling grooves and three-point, four-point contact ball bearings.

2 Normative references The following documents are essential for the application of this document. For dated references, only the dated version applies to this article Pieces. For undated references, the latest version (including all amendments) applies to this document.

ISO 286-2 Geometric Product Specifications (GPS) Linear Dimensional Tolerance ISO Code System Part 2. Standard Tolerance Classes and Hole and shaft limit deviation table [Geometrical products specifications (GPS) -ISO codes system for tolerances on linear sizes-Part 2. Tables of standard tolerance grades and limit deviations for holes and shafts]

ISO 2041..2009 Vocabulary for mechanical vibration, shock and condition monitoring (Mechanical vibration, shock and condition monitoring-Vocabulary)

ISO 5593 rolling bearing vocabulary (Rolling bearings-Vocabulary)

ISO 15242-1..2015 Rolling bearing vibration measurement methods-Part 1. Basics (Rolling bearings-Measuring methods for vibration-Part 1. Fundamentals)

3 terms and definitions The terms and definitions defined in ISO 2041, ISO 5593 and ISO 15242-1 apply to this document.

4 Measurement procedure

4.1 Rotation frequency The setting value of the rotation frequency is 1800min^{-1} (30s^{-1}), and the deviation is 1-2% of the nominal rotation frequency.

After negotiation between the manufacturer and the user, other rotation frequencies and deviations can also be used. For example, for bearings with smaller dimensions, High rotation frequency (such as 3600min^{-1}) in order to obtain a suitable vibration signal.