



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

GB/T 24610.1-2019

**Rolling bearings -- Measuring methods for vibration -- Part 1:
Fundamentals**

Issued on: October 18, 2019

Implemented on: May 1, 2020

Issued by: SAMR; SAC

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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 first 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 24610.1-2009 "Measurement methods for rolling bearing vibration-Part 1.Basics", and GB/T 24610.1-Compared with.2009, the main technical changes are as follows.

--- Deleted the terms "stiffness", "displacement", "speed", "acceleration", "passband", "exponential average effective speed" and their definitions (see.2009 edition)

3.2, 3.6, 3.7, 3.8, 3.11, 3.14);

--- Modified the definition of "vibration" and "sensor" and the abbreviated form of "root mean square" (see 3.2, 3.3, 3.7, 3.3, 3.4,.2009 version, 3.13);

--- Added the term "sharp pulse" "pulse" and its definition (see 3.9, 3.10);

--- Modified some requirements of measurement procedures (see 5.2, 5.5, 5.2 and 5.5 of the.2009 version);

--- Modified some requirements for measurement and evaluation methods (see 6.2, 6.3, 6.5, 6.2, 6.3, 6.5 of the.2009 edition);

--- Modified some graphics (see Figure 4, Figure 5, Figure 6,.2009 version of Figure 2, Figure 3, Figure 4);

--- Modified the content of the bearing measurement conditions (see 7.1, 7.1 of the.2009 edition);

--- Modified some requirements of test device conditions (see 7.3,.2009 version 7.3);

--- Deleted the "requirements for operators" (see 7.4 of the.2009 edition);

--- Revised the requirements for system performance evaluation (see 8.3, 8.3 of the.2009 version);

--- Informative appendix B "Correlation of displacement, velocity and acceleration amplitude" and informative appendix C "radial runout and axis Measurement of runout ".

This section uses the translation method equivalent to ISO 15242-1..2015 "Rolling bearing vibration measurement methods-Part 1.Basics".

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)

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).

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

--- GB/T 24610.1-2009.

introduction

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

When propagated to the environment in which the operating mechanical system is located, it can cause audible noise, 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.

This section defines and specifies the physical quantities to be measured and the general

test conditions and environment when measuring rolling bearing vibration on a test device.

situation. According to this part, the acceptance party of the bearing can determine the acceptance standard through negotiation to control the vibration of the bearing.

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 general principles of vibration measurement. The different types of bearing vibration assessment methods with cylindrical holes and cylindrical outer surfaces Details will be specified in other parts of GB/T 24610.

Method for measuring vibration of rolling bearings Part 1. Basics

1 Scope This part of GB/T 24610 specifies the vibration measurement methods of rotating rolling bearings under the established test conditions and related Calibration of measurement systems.

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 product specifications (GPS) -ISO code system for tolerances on linear sizes-Part 2. Tables of standard tolerance classes 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)

3 terms and definitions The terms and definitions defined in ISO 2041 and ISO 5593 and the following apply to this document.

3.1 Motion error Undesirable radial or axial (translational) or inclined (angular) motion of the axis of rotation, but does not include changes due to temperature or applied load Induced movement.

3.2 Vibration Mechanical oscillations around a point of equilibrium.