
**Rolling bearings — Measuring
methods for vibration —**

**Part 4:
Radial cylindrical roller bearings with
cylindrical bore and outside surface**

Roulements — Méthodes de mesure des vibrations —

*Partie 4: Roulements radiaux à rouleaux cylindriques, à alésage et
surface extérieure cylindriques*

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Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Measurement process	1
4.1 Rotational frequency.....	1
4.2 Bearing radial and axial loads.....	2
5 Measurement and evaluation methods	2
5.1 Physical quantity measured.....	2
5.2 Frequency domain.....	2
5.3 Measurement of pulses and spikes.....	3
5.4 Measurement.....	3
6 Conditions for measurement	3
6.1 Bearing conditions for measurement.....	3
6.1.1 Prelubricated bearings.....	3
6.1.2 Non-prelubricated bearings.....	4
6.2 Conditions of the measurement environment.....	4
6.3 Conditions for the measurement device.....	4
6.3.1 Stiffness of the spindle/mandrel arrangement.....	4
6.3.2 Loading mechanism.....	4
6.3.3 Magnitude and alignment of the external load applied to the bearing.....	4
6.3.4 Location of the transducer and direction of measurement.....	6
6.3.5 Mandrel.....	9
Annex A (normative) Measurement of external radial loading alignment	10
Annex B (normative) Measurement of external axial loading alignment	11

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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This document was prepared by Technical Committee ISO/TC 4, *Rolling bearings*.

This second edition cancels and replaces the first edition (ISO 15242-4:2007), which has been technically revised.

The main changes compared to the previous edition are as follows:

- editorial changes have been made for clarification and removal of inconsistencies
- figure keys have been updated for clarification

A list of all the parts in the ISO 15242 series can be found on the ISO website.

Introduction

Vibration in rotating rolling bearings can be of importance as an operating characteristic of such bearings. The vibration can affect the performance of the mechanical system incorporating the bearing and can result in audible noise when the vibration is transmitted to the environment in which the mechanical system operates, can lead to damages, and can even create health problems.

Vibration of rotating rolling bearings is a complex physical phenomenon dependent on the conditions of operation. Measuring the vibration of an individual bearing under a certain set of conditions does not necessarily characterize the vibration under a different set of conditions or when the bearing becomes part of a larger assembly. Assessment of the audible sound generated by the mechanical system incorporating the bearing is further complicated by the influence of the interface conditions, the location and orientation of the sensing device, and the acoustical environment in which the system operates. Assessment of airborne noise that, for the purpose of ISO 15242 (all parts), can be defined as any disagreeable and undesired sound, is further complicated by the subjective nature of the terms *disagreeable* and *undesired*. Structure-borne vibration can be considered the driving mechanism that ultimately results in the generation of airborne noise. Only selected methods for the measurement of the structure-borne vibration of rotating rolling bearings are addressed in the current edition of all parts of ISO 15242.

Vibration of rotating rolling bearings can be assessed by a number of means using various types of transducers and measurement conditions. No simple set of values characterizing the vibration of a bearing is adequate for the evaluation of the vibratory performance in all possible applications. Ultimately, a knowledge of the type of bearing, its application and the purpose of the vibration measurement (e.g. as a manufacturing process diagnostic or an assessment of the product quality) is required to select the most suitable method for measuring. The field of application for standards on bearing vibration is, therefore, not universal. However, certain methods have established a wide enough level of application to be considered as standard methods.

This document serves to define the detailed method for assessing vibration of single-row and double-row radial cylindrical roller bearings with cylindrical bore and outside surface on a measuring device.