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## 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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Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
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## 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15242-4 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*.

ISO 15242 consists of the following parts, under the general title *Rolling bearings — Measuring methods for vibration*:

- *Part 1: Fundamentals*
- *Part 2: Radial ball bearings with cylindrical bore and outside surface*
- *Part 3: Radial spherical and tapered roller bearings with cylindrical bore and outside surface*
- *Part 4: Radial cylindrical roller bearings with cylindrical bore and outside surface*

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## Introduction

Vibration of rotating rolling bearings is a complex physical phenomenon dependent on the conditions of operation. Measuring the vibration output of an individual bearing under a certain set of conditions does not necessarily characterize the vibration output 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 complicated further 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, which 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 ISO 15242 (all parts).

Vibration of rotating rolling bearings can be assessed by any of a number of means using various types of transducers and test conditions. No simple set of values characterizing 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 testing (e.g. as a manufacturing process diagnostic or an assessment of the product quality) is required to select the most suitable method for testing. 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 for the purposes of this part of ISO 15242.

This part of ISO 15242 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 test rig.