

BUREAU OF INDIAN STANDARDS

DRAFT FOR COMMENTS ONLY

Not to be reproduced without permission of BIS or use as Standard

Doc No.: PGD 13 (24935) WC

February 2024

भारतीय मानक मसौदा

**यांत्रिक कंपन — सक्रिय चुंबकीय बियरिंग्स वाली घूर्णन मशीनरी का कंपन —
भाग 2 कंपन का मूल्यांकन**

Draft Indian Standard

**Mechanical Vibration — Vibration of Rotating Machinery
Equipped with Active Magnetic Bearings —
Part 2 Evaluation of Vibration**

ICS 17.160

Bearings Sectional Committee, PGD 13

Last date for Comment: 30/04/2024

NATIONAL FOREWORD

This Indian Standard which is identical with ISO 14839-2 : 2004 ‘Mechanical vibration — Vibration of rotating machinery equipped with active magnetic bearings — Part 2 Evaluation of Vibration’ issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Bearings Sectional Committee and approval of the Production and General Engineering Division Council.

This standard concerns steady-state values of rotor vibrations and the AMB coil currents and voltage measured during nominal steady-state operation, but not the transient condition while passing critical speeds.

Because of the stiff support of oil-film bearings with small clearances [e.g. bearing radial clearance (C) divided by the journal radius (R), $C/R \approx 0.001$], shaft vibration should be regulated within low levels to avoid oil-film rupture of the lubricant and metal contact inside the bearing. In contrast, the relatively soft support of AMBs and correspondingly large clearances (e.g. $C/R \approx 0.005$), a larger vibration level is often observed in AMB rotors but is quite normal and acceptable. The lower stiffness introduces no major problems in the transmission force to the machine foundation. Compared to the oil-film bearing rotor standards (see the IS/ISO 20816 series), this standard provides greater values of zone limits for vibration assessment and acceptance.

Other parts in this series are:

- Part 1 Mechanical vibration — Vibration of rotating machinery equipped with active magnetic bearings — Part 1 Vocabulary

- Part 3 Mechanical vibration — Vibration of rotating machinery equipped with active magnetic bearings — Part 3 Evaluation of stability margin
- Part 4 Mechanical vibration — Vibration of rotating machinery equipped with active magnetic bearings — Part 4 Technical Guidelines
- Part 5 Mechanical vibration — Vibration of rotating machinery equipped with active magnetic bearings — Part 5 Touch Down Bearings

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words ‘International Standard’ appear referring to this standard, they should be read as ‘Indian Standard’.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to the following International Standard for which Indian Standard also exists. The corresponding Indian Standard which is to be substituted in its place is listed below along with its degree of equivalence for the edition indicated.

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 7919-1 Mechanical vibration of non-reciprocating machines — Measurements on rotating shafts and evaluation criteria — Part 1: General guidelines	IS/ISO 20816-1 : 2016 Mechanical vibration - Measurement and evaluation of machine vibration: Part 1 general guidelines	Identical

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (revised)’.

Doc No.: PGD 13 (24935) WC
February 2024

For more information or copy of ISO standard please write to us at pgd@bis.gov.in