

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Rotating electrical machines –
Part 14: Mechanical vibration of certain machines with shaft heights 56 mm
and higher – Measurement, evaluation and limits of vibration severity**

**Machines électriques tournantes –
Partie 14: Vibrations mécaniques de certaines machines de hauteur d'axe
supérieure ou égale à 56 mm – Mesurage, évaluation et limites de l'intensité
vibratoire**



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CONTENTS

FOREWORD.....	4
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions	6
4 Measurement quantities.....	7
4.1 General.....	7
4.2 Vibration magnitude	7
4.3 Relative shaft vibration.....	7
5 Measurement equipment.....	7
6 Machine mounting	8
6.1 General.....	8
6.2 Free suspension	8
6.3 Rigid mounting.....	8
6.3.1 Foundation	8
6.3.2 Horizontal machines.....	9
6.3.3 Vertical machines.....	9
6.4 Active environment determination.....	9
7 Conditions of measurement.....	10
7.1 Key.....	10
7.2 Measurement positions and directions	10
7.2.1 Measurement positions for vibration.....	10
7.2.2 Measurement positions for relative shaft displacement.....	10
7.3 Test conditions.....	10
7.4 Vibration transducer.....	10
8 Limits of bearing housing vibration	11
8.1 Limits of vibration magnitude.....	11
8.2 Limits of vibration velocity with twice-line frequency for a.c. machines.....	12
8.3 Axial vibration	12
9 Limits of relative shaft vibration.....	12
Bibliography	18
Figure 1 – Minimum elastic displacement as a function of rated speed	13
Figure 2 – Preferred positions of measurement applicable to one or both ends of the machine.....	14
Figure 3 – Measurement positions for those ends of machines where measurements according to Figure 2 are not possible without disassembly of parts.....	14
Figure 4 – Measurement positions for pedestal bearing	15
Figure 5 – Preferred circumferential position of transducers for the measurement of relative shaft displacement.....	15
Figure 6 – Measurement positions for vertical machines (measurements to be made at the bearing housing; when not accessible, then as close as possible).....	16
Figure 7 – Vibration limit diagram for shaft heights $H > 132$ mm.....	17
Table 1 – Limits of maximum vibration magnitude in displacement (r.m.s.) and velocity (r.m.s.) for shaft height H	11

Table 2 – Limits for the maximum shaft vibration (S_{p-p}) and the maximum run-out.....13

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ROTATING ELECTRICAL MACHINES –

**Part 14: Mechanical vibration of certain machines
with shaft heights 56 mm and higher – Measurement,
evaluation and limits of vibration severity**

FOREWORD

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International Standard IEC 60034-14 has been prepared by IEC technical committee 2: Rotating machinery.

This fourth edition cancels and replaces the third edition, published in 2003, and its amendment 1, published in 2007. It constitutes a technical revision.

The significant technical changes with respect to the previous edition are:

- a) 6.2 is significantly changed to better explain the definition "free suspension".
- b) 6.3: a second method of rigid mount is added since the first method is not always possible on the test floor.
- c) 7.1: an improved option for shaft key is defined.

- d) Clause 8: considerable effort to harmonize with NEMA MG 1 and IEEE 841 and API 541, and also establish levels which are achievable and more in line with best practices. Table 1 is reduced to two shaft-height range sections.
- e) 8.2: definition of twice line frequency simplified along with Figure 7 added.

The text of this International Standard is based on the following documents:

FDIS	Report on voting
2/1906/FDIS	2/1914/RVD

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60034 series, published under the general title *Rotating electrical machines*, can be found on the IEC website.

NOTE For A table of cross-references of all IEC TC 2 publications can be found in the IEC TC 2 dashboard on the IEC website.

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- reconfirmed,
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- replaced by a revised edition, or
- amended.

ROTATING ELECTRICAL MACHINES –

Part 14: Mechanical vibration of certain machines with shaft heights 56 mm and higher – Measurement, evaluation and limits of vibration severity

1 Scope

This part of IEC 60034 specifies the factory acceptance vibration test procedures and vibration limits for certain electrical machines under specified conditions, when uncoupled from any load or prime mover.

It is applicable to DC and three-phase AC machines, with shaft heights 56 mm and higher and a rated output up to 50 MW, at operational speeds from 120 min⁻¹ up to and including 15 000 min⁻¹.

This document is not applicable to machines mounted *in situ* (on site), three-phase commutator motors, single-phase machines, three-phase machines operated on single-phase systems, vertical waterpower generators, turbine generators greater than 20 MW and machines with magnetic bearings or series-wound machines.

NOTE For machines measured *in situ*, refer to applicable parts of IEC 60036, ISO 10816 and ISO 7919.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60034-1, *Rotating electrical machines – Part 1: Rating and performance*

IEC 60034-7, *Rotating electrical machines – Part 7: Classification of types of constructions and mounting arrangements (IM Code)*

ISO 2954, *Mechanical vibration of rotating and reciprocating machinery – Requirements for instruments for measuring vibration severity*

ISO 10817-1, *Rotating shaft vibration measuring systems – Part 1: Relative and absolute sensing of radial vibration from rotating shafts*

ISO 10819-1, *Mechanical vibration – Measurement and evaluation of machine vibration – Part 1: General guidelines*

ISO 21940-32, *Mechanical vibration – Rotor balancing – Part 32: Shaft and fitment key convention*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60034-1 apply.