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Mechanical vibration — Uncertainty of the measurement and evaluation of human exposure to vibration

Vibrations mécaniques — Incertitude de mesure et évaluation de l'exposition humaine aux vibrations

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 108, *Mechanical vibration, shock and condition monitoring*, Subcommittee SC 4, *Human exposure to mechanical vibration and shock*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document takes the form of a guide and describes how to deal with the uncertainty of vibration quantities associated with human exposure to vibrations.

The uncertainty arises from various sources. These uncertainties need to be distinguished from errors, such as when using measuring instruments or selecting the measurement strategy, which may falsify the measurand. Errors are not considered in this guide.

Calculations of measurement uncertainty are meaningful and valid only if all significant mistakes have been identified.

This document is intended to be used as a reference document for other standards. Examples of the application of the individual methods in practical situations are provided in the annexes. These examples are related to hand-arm vibration but the principles also apply for whole-body vibration.

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Mechanical vibration — Uncertainty of the measurement and evaluation of human exposure to vibration

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1 Scope

This document specifies methods for determining the uncertainty of the measurement and evaluation of human exposure to vibration. It applies to measurements of vibration quantities (measurands), calculated following a relevant measurement model on the basis of directly measured values, to evaluate

a) human exposure to hand-transmitted vibration at the workplace,

b) vibration emission of hand-held and hand-guided machinery in a laboratory setting,

c) human exposure to whole-body vibration at the workplace, and

d) whole-body vibration emission of vehicles.

Examples of the application of the individual methods in practical situations are provided in the annexes.

In this document a measurement error is defined as the difference between a measured and a reference quantity value.

In this document “uncertainty” does not include errors that result from bad measurement strategies, faulty use of measurement equipment or other mistakes.

2 Normative references

The following document is referred to in the text in such a way that some or all of it’s 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.

ISO/IEC Guide 99, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC Guide 99 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

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