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Methods for the calibration of vibration and shock transducers —

Part 44: Calibration of field vibration calibrators

Méthodes pour l'étalonnage des transducteurs de vibrations et de chocs —

Partie 44: Étalonnage des calibreurs de vibrations pour usage in situ

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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.

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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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*.

A list of all the parts in the ISO 16063 series can be found on the ISO website.

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

ISO 16063 comprises a series of documents dealing with methods for the calibration of vibration and shock transducers.

This document focuses on field vibration calibrators (FVCs). In this context, FVCs are mainly used for *in situ* checks of vibration and shock transducers providing sine wave vibration at known frequency and magnitude under field conditions. The FVC acts as a calibrated vibration source for *in situ* checks of transducer sensitivity that is specified or requested, for example, in ISO 8041-1 or in ISO 8042.

Operational frequency and acceleration RMS value of FVCs are usually 160 Hz or 159,2 Hz, and 3,16 m/s^2, 9,81 m/s^2 or 10 m/s^2, respectively, which are widely accepted as reference conditions. There are also FVCs with selectable acceleration magnitudes and frequencies. In comparison with stationary calibration systems, FVCs have limitations in shaker power and inertial mass. Therefore, they can be unsuitable for heavy test objects, high acceleration magnitudes and large displacements.

Using the calibration procedure described by this document, the acceleration generated by an FVC can be traceable, through chain of calibration, to a primary or national standard as defined by ISO/IEC Guide 99 (“the VIM”) with associated uncertainty defined by ISO/IEC Guide 98-3 (“the GUM”).

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Methods for the calibration of vibration and shock transducers —

Part 44:
Calibration of field vibration calibrators

1 Scope

This document specifies the instrumentation and procedure to be used for performing calibration of field vibration calibrators (FVCs).

It is not applicable to FVCs used for the calibration of transducers. These are covered by ISO 16063-21.

Procedures and requirements of *in situ* calibration by FVC are beyond the scope of this document.

Annex B provides more information on the application of FVC.

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.

ISO 2041, *Mechanical vibration, shock and condition monitoring — Vocabulary*

ISO 16063-21, *Methods for the calibration of vibration and shock transducers — Part 21: Vibration calibration by comparison to a reference transducer*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2041 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 http://www.electropedia.org/

4 Requirements for apparatus and other conditions

4.1 General

Figure 1 shows the apparatus for the calibration. In some cases, reference transducer and amplifier may be a single device as transducer chain.

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