



BSI Standards Publication

Methods for the calibration of vibration and shock transducers

Part 45: In-situ calibration of transducers with built in calibration coil

National foreword

This British Standard is the UK implementation of ISO 16063-45:2017.

The UK participation in its preparation was entrusted to Technical Committee GME/21/2, Mechanical vibration, shock and condition monitoring - Vibration and shock measuring instruments and testing equipment.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Methods for the calibration of vibration and shock transducers —

Part 45:

In-situ calibration of transducers with built in calibration coil

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

*Partie 45: Partie 45: Étalonnage sur site des transducteurs munis
d'une bobine d'étalonnage intégrée*



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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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on 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 the following URL: 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 parts in the ISO 16063 series can be found on the ISO website.

Methods for the calibration of vibration and shock transducers —

Part 45:

In-situ calibration of transducers with built in calibration coil

1 Scope

This document specifies the calibration of vibration transducers with built-in calibration coils in laboratory and in situ. In laboratory, the method described can be applied to calibrate the vibration sensitivity and electrical sensitivity, and to obtain the coefficient of calibration coil. In situ, it can be used to calibrate the electrical sensitivity and vibration sensitivity using electrical instrumentation.

This document specifies the instrumentation and procedure for performing calibrations of vibration transducers with built-in calibration coils in the frequency range typically from 0,1 Hz to 100 Hz.

The expanded uncertainty can be evaluated using the method given in this document.

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 16063-1, *Methods for the calibration of vibration and shock transducers — Part 1: Basic concepts*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

- ISO Online browsing platform: available at www.iso.org/obp
- IEC Electropedia: available at www.electropedia.org

3.1

vibration transducer with built-in calibration coils

vibration transducer employing calibration coils as internal exciting elements for which seismic mass is excited to vibrate by electromagnetic force produced by the exciting electrical signal of the calibration coil

EXAMPLE 1 Pendulum.

EXAMPLE 2 Seismometers and electromagnetic transducers with built-in calibration coils.

3.2

electrical sensitivity

<for vibration transducer with built-in calibration coils> ratio of the electrical output of the vibration transducer to the exciting electrical signal of the calibration coil in the absence of mechanical excitation parallel to a specified axis of *sensitivity* (3.3) at the mounting surface