

Rotating shaft vibration measuring systems —

Part 1: Relative and absolute sensing of radial vibration

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National foreword

This British Standard reproduces verbatim ISO 10817-1:1998 and implements it as the UK national standard.

The UK participation in its preparation was entrusted by Technical Committee GME/21, Mechanical vibration and shock, to Subcommittee GME/21/2, Vibration and shock measuring instruments and test equipment, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the ISO title page, pages ii to iv, pages 1 to 18, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been prepared under the direction of the Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 June 1999

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INTERNATIONAL STANDARD

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Rotating shaft vibration measuring systems —

Part 1: Relative and absolute sensing of radial vibration

Systèmes de mesure des vibrations des arbres tournants —

Partie 1: Captage relatif et captage absolu des vibrations radiales



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10817-1 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration and shock*, Subcommittee SC 3, *Use and calibration of vibration and shock measuring instruments*.

ISO 10817 consists of the following parts, under the general title *Rotating shaft vibration measuring systems*:

- *Part 1: Relative and absolute sensing of radial vibration*;
- *Part 2: Signal processing*.

Annex A and Annex B of this part of ISO 10817 are for information only.

1 Scope

This part of ISO 10817 gives details of how to obtain reproducible measurement results in order to enable the monitoring and evaluation of shaft vibrations according to the ISO 7919 series. As such, it is concerned primarily with the measurement of shaft vibrations for large machines (e.g. steam turbine generator sets, gas turbines, industrial turbosets, hydraulic machines).

This part of ISO 10817 is applicable to radial vibration measuring systems on shafts, both for absolute and relative measurements. It covers the sensing device (i.e. transducer), signal conditioning, attachment methods and calibration procedures.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 10817. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 10817 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 683-1, *Heat-treatable steels, alloy steels and free-cutting steels — Part 1: Direct-hardening unalloyed and low-alloyed wrought steel in form of different black products*.

ISO 2041, *Vibration and shock — Vocabulary*.

ISO 4287, *Geometrical Product Specification (GPS) — Surface texture: Profile method — Terms, definitions and surface texture parameters*.

ISO 5347, *Methods for the calibration of vibration and shock pick-ups* (all parts).

ISO 5348, *Mechanical vibration and shock — Mechanical mounting of accelerometers*.

ISO 7919-1:1996, *Mechanical vibration of non-reciprocating machines — Measurements on rotating shafts and evaluation criteria — Part 1: General guidelines*.

ISO 7919-2, *Mechanical vibration of non-reciprocating machines — Measurements on rotating shafts and evaluation criteria — Part 2: Large land-based steam turbine generator sets*.

ISO 7919-3, *Mechanical vibration of non-reciprocating machines — Measurements on rotating shafts and evaluation criteria — Part 3: Coupled industrial machines*.

ISO 7919-4, *Mechanical vibration of non-reciprocating machines — Measurements on rotating shafts and evaluation criteria — Part 4: Gas turbine sets*.

ISO 7919-5, *Mechanical vibration of non-reciprocating machines — Measurements on rotating shafts and evaluation criteria — Part 5: Machine sets in hydraulic power generating and pumping plants*.

ISO 8042, *Characteristics to be specified for seismic pick-ups*.

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

GUM:1995, *Guide to the Expression of Uncertainty in Measurement* (BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, OIML).

IEC 60068-2-6, *Environmental testing — Part 2: Tests — Test Fc: Vibration (sinusoidal)*.

IEC 60068-2-29, *Environmental testing — Part 2: Tests — Test Eb and guidance: Bump*.

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*.

3 Terms and definitions

For the purposes of this part of ISO 10817, the terms and definitions given in ISO 2041 apply.

¹⁾ Revision of ISO 5347-0.