INTERNATIONAL STANDARD

ISO 13373-3

First edition
2015-09-15

Condition monitoring and diagnostics of machines — Vibration condition monitoring —

Part 3: Guidelines for vibration diagnosis

Surveillance et diagnostic d'état des machines — Surveillance des vibrations —

Partie 3: Lignes directrices pour le diagnostic des vibrations

Reference number
ISO 13373-3:2015(E)

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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).

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

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 108, *Mechanical vibration, shock and condition monitoring*, Subcommittee SC 2, *Measurement and evaluation of mechanical vibration and shock as applied to machines, vehicles and structures*.

ISO 13373 consists of the following parts, under the general title *Condition monitoring and diagnostics of machines — Vibration condition monitoring*:

— *Part 1: General procedures*

— *Part 2: Processing, analysis and presentation of vibration data*

— *Part 3: Guidelines for vibration diagnosis*

— *Part 9: Diagnostic techniques for electric motors*

Introduction

This part of ISO 13373 has been developed as a set of guidelines for the general procedures to be considered when carrying out vibration diagnostics of machines. It is intended to be used by vibration practitioners, engineers and technicians and it provides them with useful diagnostic tools. These tools include diagnostic flowcharts, process tables and fault tables. The material contained herein presents a structured approach of the most basic, logical and intelligent steps to diagnose vibration problems associated with machines. However, this does not preclude the use of other diagnostic techniques.

ISO 13373-1 presents the basic procedures for vibration signal analysis. It includes: the types of transducers used, their ranges and their recommended locations on various types of machines, online and off-line vibration monitoring systems, and potential machinery problems.

ISO 13373-2 which leads to the diagnostics of machines includes: descriptions of the signal conditioning equipment that is required, time and frequency domain techniques, and the waveforms and signatures that represent the most common machinery operating phenomena or machinery faults that are encountered when performing vibration signature analysis.

The present part of ISO 13373 provides general guidelines for a range of machinery. Guidance for specific machines is provided in other parts of this International Standard (currently under development).

ISO 13373 does not define vibration limits; these are specified in ISO 7919 (all parts) for rotating shafts and ISO 10816 (all parts) for non-rotating parts.

Condition monitoring and diagnostics of machines — Vibration condition monitoring —

Part 3: Guidelines for vibration diagnosis

1 Scope

This part of ISO 13373 sets out guidelines for the general procedures to be considered when carrying out vibration diagnostics of rotating machines. It is intended to be used by vibration practitioners, engineers and technicians and provides a practical structured approach to fault diagnosis. In addition it gives examples of faults common to a wide range of machines.

NOTE Guidance for specific machines is provided in other parts of ISO 13373.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1925,[1)] *Mechanical vibration — Balancing — Vocabulary*

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

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

ISO 13372, *Condition monitoring and diagnostics of machines — Vocabulary*

ISO 13373-1, *Condition monitoring and diagnostics of machines — Vibration condition monitoring — Part 1: General procedures*

ISO 13373-2, *Condition monitoring and diagnostics of machines — Vibration condition monitoring — Part 2: Processing, analysis and presentation of vibration data*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1925, ISO 2041 and ISO 13372 apply.

4 Measurements

4.1 Vibration measurements

Reliable measurement is the essential basis of using this part of ISO 13373 (see Reference [1]).

1) To become ISO 21940-2 when revised.