INTERNATIONAL STANDARD

ISO 10816-1

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Mechanical vibration — Evaluation of machine vibration by measurements on non-rotating parts —

Part 1:
General guidelines

Vibrations mécaniques — Évaluation des vibrations des machines par mesurages sur les parties non tournantes —

Partie 1: Directives générales

Reference number
ISO 10816-1:1995(E)

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.

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 10816-1 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration and shock*, Subcommittee SC 2, *Measurement and evaluation of mechanical vibration and shock as applied to machines, vehicles and structures.*

This first edition of ISO 10816-1 cancels and replaces ISO 2372:1974 and ISO 3945:1985, which have been technically revised.

ISO 10816 consists of the following parts, under the general title *Mechanical vibration — Evaluation of machine vibration by measurements on non-rotating parts*:

— *Part 1: General guidelines*

— *Part 2: Large land-based steam turbine generator sets in excess of 50 MW*

— *Part 3: Industrial machines with nominal power above 15 kW and nominal speeds between 120 r/min and 15000 r/min when measured in situ*

— *Part 4: Gas turbine driven sets excluding aircraft derivatives*

— *Part 5: Machine sets in hydraulic power generating and pumping plants*

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— *Part 6: Reciprocating machines with power ratings above 100 kW*

Annexes A, B, C, D, E and F of this part of ISO 10816 are for information only.

Introduction

This part of ISO 10816 is a basic document which establishes general guidelines for the measurement and evaluation of mechanical vibration of machinery, as measured on the non-rotating (and, where applicable, non-reciprocating) parts of complete machines, such as bearing housings. Recommendations for measurements and evaluation criteria pertaining to specific machine types are provided in additional parts of ISO 10816.

For many machines, measurements made on non-rotating parts are sufficient to characterize adequately their running conditions with respect to trouble-free operation. However, there are some machines, such as those containing flexible rotors, for which measurements on non-rotating parts may not be totally adequate. In such cases, it may be necessary to monitor the machine using measurements on both the rotating and non-rotating parts, or on the rotating parts alone. For such machines, the guidelines presented in this part of ISO 10816 are complemented by those given for shaft vibration in ISO 7919-1. If the procedures of both standards are applicable, the one which is more restrictive generally applies.

Vibration measurements can be used for a number of purposes including routine operational monitoring, acceptance tests and diagnostic and analytical investigations. This part of ISO 10816 is designed to provide guidelines for operational monitoring and acceptance tests only.

Three primary measurement parameters (displacement, velocity and acceleration) are defined and their limitations given. Adherence to the guidelines presented should, in most cases, ensure satisfactory service performance.