

INTERNATIONAL
STANDARD

ISO
5347-22

First edition
1997-03-01

**Methods for the calibration of vibration
and shock pick-ups —**

Part 22:

Accelerometer resonance testing —
General methods

*Méthodes pour l'étalonnage de capteurs de vibrations et de chocs —
Partie 22: Essai de résonance par accéléromètres — Méthodes générales*



Reference number
ISO 5347-22:1997(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 5347-22 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 5347 consists of the following parts, under the general title *Methods for the calibration of vibration and shock pick-ups*:

- *Part 0: Basic concepts*
- *Part 1: Primary vibration calibration by laser interferometry*
- *Part 2: Primary shock calibration by light cutting*
- *Part 3: Secondary vibration calibration*
- *Part 4: Secondary shock calibration*
- *Part 5: Calibration by Earth's gravitation*
- *Part 6: Primary vibration calibration at low frequencies*
- *Part 7: Primary calibration by centrifuge*
- *Part 8: Primary calibration by dual centrifuge*

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Printed in Switzerland

- Part 9: Secondary vibration calibration by comparison of phase angles
- Part 10: Primary calibration by high impact shocks
- Part 11: Testing of transverse vibration sensitivity
- Part 12: Testing of transverse shock sensitivity
- Part 13: Testing of base strain sensitivity
- Part 14: Resonance frequency testing of undamped accelerometers on a steel block
- Part 15: Testing of acoustic sensitivity
- Part 16: Testing of mounting torque sensitivity
- Part 17: Testing of fixed temperature sensitivity
- Part 18: Testing of transient temperature sensitivity
- Part 19: Testing of magnetic field sensitivity
- Part 20: Primary vibration calibration by the reciprocity method
- Part 21: Shock calibration using laser Doppler velocimeter
- Part 22: Accelerometer resonance testing — General methods

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Methods for the calibration of vibration and shock pick-ups —

Part 22:

Accelerometer resonance testing — General methods

1 Scope

ISO 5347 comprises a series of documents dealing with methods for the calibration of vibration and shock pick-ups.

This part of ISO 5347 lays down detailed specifications for the instrumentation and procedures to be used for accelerometer resonance testing. It applies to rectilinear accelerometers of the piezoresistive, piezoelectric and variable capacitance types in the frequency range 50 Hz to 200 kHz.

The procedures are in general contrary to those described in ISO 5347-14 which is limited to undamped accelerometers. The frequency response of a piezoelectric accelerometer depends on the value of the (lowest) resonance frequency of the instrument when mounted on the structure to be tested. It does not appear possible to specify a test which will determine this frequency for all installations of a given accelerometer. This procedure gives the accelerometer resonance frequency under a set of standard reproducible conditions, with the understanding that the resonance frequency in actual use will in all probability be appreciably different (generally lower, by a factor depending on the mass and compliance of the test structure and the method of attachment). The procedure is not suitable for evaluating the mounted resonance frequency for a field of application; a suitable method is given in ISO 5348.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 5347. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 5347 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5348:—¹⁾, *Mechanical vibration and shock — Mechanical mounting of accelerometers.*

¹⁾ To be published. (Revision of ISO 5348:1987)