INTERNATIONAL STANDARD

ISO 5347-3

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

Part 3:
Secondary vibration calibration

Méthodes pour l'étalonnage de capteurs de vibrations et de chocs — Partie 3: Étalonnage secondaire de vibrations

Reference number
ISO 5347-3:1993(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.

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 5347-3 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration and shock*, Sub-Committee 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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— *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*

Annex A forms an integral part of this part of ISO 5347.

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

Part 3:
Secondary vibration calibration

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 procedure to be used for secondary vibration calibration of rectilinear pick-ups and working pick-ups.

It is applicable for the following parameters:

— frequency range:	20 Hz to 5 000 Hz;
— dynamic range:	0,1 µm to 10 mm (frequency-dependent);
	1 mm/s to 10 m/s (frequency-dependent);
	10 m/s^2 to 1 000 m/s^2 (frequency-dependent).

The limits of uncertainty applicable are as follows:

for displacement and velocity pick-ups 20 Hz to 1 000 Hz: ± 4 % of reading;

for accelerometers 20 Hz to 1 000 Hz: ± 2 % of reading;

for accelerometers 20 Hz to 2 000 Hz: ± 3 % of reading;

for accelerometers 20 Hz to 5 000 Hz: ± 5 % of reading.

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 5347-1:1993, *Methods for the calibration of vibration and shock pick-ups — Part 1: Primary vibration calibration by laser interferometry.*

3 Apparatus

3.1 Equipment capable of maintaining room temperature at 23 °C ± 3 °C.

3.2 Primary standard accelerometer, calibrated together with amplifier in accordance with the laser-interferometer method (see ISO 5347-1) within ± 0,5 % at selected frequency and acceleration.

3.3 Frequency generator and indicator, having the following characteristics:

— uncertainty for frequency: maximum ± 0,1 % of reading;

— frequency stability: better than ± 0,1 % of reading over the measurement period;

— amplitude stability: better than ± 0,1 % of reading over the measurement period.

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