

INTERNATIONAL STANDARD

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Mechanical vibration — Vibration testing requirements for shipboard equipment and machinery components

*Vibrations mécaniques — Exigences requises pour les essais de vibrations
des équipements de bord et des composants des machines*



Reference number
ISO 10055:1996(E)

Foreword

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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 10055 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*.

Annex A of this International Standard is for information only.

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Introduction

All machinery installed aboard ship will ordinarily be subjected to a vibratory environment consisting of various frequencies and amplitudes of vibration, possibly for long periods of time during which the machinery and equipment must continue to function normally. Structural arrangements on board ships may result in machinery placed in areas which result in magnification of vibratory amplitudes and, therefore, many items of equipment may be subjected to more severe vibrations than those imposed by the hull.

For equipment and machinery in general, the frequency range of interest is governed by the prime mover (such as a diesel engine) and by propeller and blade excitation (including harmonics). This range does not usually extend beyond 100 Hz.

Vibration measurements for steady-state conditions are usually made in relatively quiet seas and during constant-speed operations. However, actual ship operations occur in all sea states and headings. Any change in a ship's speed, heading, or sea state may have a significant effect on the vibration values.

Based on these considerations, the proposed test severities for vibration testing of shipboard equipment and machinery components cannot be interpreted as simulating normal environmental conditions, but as representing vibration values sufficiently large to obtain a reasonably high degree of probability that the equipment will not fail or malfunction during service life.

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1 Scope

This International Standard defines vibration test requirements for shipboard equipment and machinery components to ensure consistency in vibration resistance requirements for such equipment and machinery components. The tests are intended to locate resonances of the equipment and impose endurance tests at these frequencies, if any. The vibration test is a type test, unless otherwise agreed between the parties concerned.

This International Standard is applicable to the following shipboard equipment:

- control and instrumentation,
- navigation and communication,
- mast-mounted equipment,
- machinery components.

For special machinery, equipment and installations such as antennas, large machinery items and certain unusual designs, it may be necessary to deviate from this International Standard, subject to approval by the parties concerned.

The maximum size and mass of equipment and machinery that can be tested in accordance with this International Standard cannot be defined because the capacities of available vibration-testing machines vary. Furthermore, a given piece of equipment or machinery, although too large to be accommodated on a vibration-testing machine, may be separated into components that are small enough for testing. Control and instrumentation equipment, although often attached to larger pieces of machinery, are tested in this manner.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard 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 2041:1990, *Vibration and shock — Vocabulary*.