INTERNATIONAL STANDARD

ISO 21984

First edition
2018-02

Ships and marine technology — Guidelines for measurement, evaluation and reporting of vibration with regard to habitability on specific ships

Navires et technologie maritime — Lignes directrices pour le mesurage, l'évaluation et l'établissement de rapports des vibrations affectant l'habitabilité à bord des navires spéciaux

Reference number
ISO 21984:2018(E)

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Foreword

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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 voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 8, *Ship design*.

Introduction

Shipboard vibration that interferes with duties or reduces comfort is objectionable and often results in adverse comments from crew and passengers. To quantify this vibration, this document gives guidelines for the measurement, evaluation and reporting of habitability for all persons on board specific ships including crew.

Vibration data acquired in accordance with this document are also useful for

— comparison with ship specifications,

— comparison with other ships, and

— further development and improvement of vibration regulations.

Ships and marine technology — Guidelines for measurement, evaluation and reporting of vibration with regard to habitability on specific ships

1 Scope

This document gives guidelines for the measurement, evaluation and reporting of vibration with regard to habitability for all persons on board ships satisfying one or both of the following conditions:

a) 2-stroke cycle, long-stroke, low-speed diesel engine directly coupled to the fixed-pitch propulsion propeller is installed.

b) length of deck house (L) is limited as compared with its height (H) (i.e. deck house of around 1,0 and above in slenderness ratio of H to L). An example of length of deck house (L) and its height (H) for slenderness ratio is shown in Annex A.

Overall frequency-weighted r.m.s. vibration values in the frequency range 1 Hz to 80 Hz are given as guidance values for different spaces on ships.

This document is applicable to specific ships with intended voyages of 24 h or more.

This document specifies requirements for the instrumentation and the procedure of measurement in normally occupied spaces. It also contains analysis specifications and guidelines for the evaluation of ship vibration with respect to habitability.

This document is not applicable to machinery spaces, other than engine control rooms, where persons do not stay for prolonged periods of time.

ISO 20283-5 is generally applicable to all ships. Requirements for measurement, evaluation and reporting of vibration with regard to habitability for all persons on board passenger and merchant ships, including specific ships to which this document may also be applicable can be found in ISO 20283-5. This document is neither complementary nor additional but supplementary to ISO 20283-5. The shipbuilder can select either this document or ISO 20283-5 to apply to any specific ship upon due consideration to individual design conditions of the ship and, if any, experience in building sister or similar ships, and that particular selection is intended to be agreed on by the shipowner.

The evaluation of low-frequency ship motion which can result in motion sickness is covered by ISO 2631-1. For the evaluation of the global structural vibration of a ship, however, see ISO 20283-2.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 2631-1, *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 1: General requirements*

ISO 2631-2, *Mechanical vibration and shock — Evaluation of human exposure to whole-body vibration — Part 2: Vibration in buildings (1 Hz to 80 Hz)*

ISO 8041, *Human response to vibration — Measuring instrumentation*