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Ships and marine technology — Marine electromagnetic compasses

Navires et technologie maritime — Compas électromagnétiques de marine

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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.

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).

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For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 6, *Navigation and ship operations*.

This third edition cancels and replaces the second edition (ISO 11606:2000), which has been technically revised. It also incorporates the Technical Corrigendum ISO 11606:2000/Cor 1:2005.

The main changes are as follows:

— in Clause 1, added text relating to IMO Resolution MSC.166(78) and the applicability of this document;

— in Clause 2, replaced ISO 449:1997 with ISO 25862:2019, and deleted IEC 61162-1, IEC 61162-2 and IMO Resolution MSC.86(70);

— in Clause 3, added term *electromagnetic compass* (3.1);

— in 5.7 and 11.1.12, added a provision on displays for presentation and a reference to IEC 62288;

— in 5.10, updated interface requirements;

— in 7.3, updated failure alarm requirements;

— in 11.2.9, updated other environmental conditions requirements;

— deleted former Annex A;

— in the Bibliography, added ISO 22090-2, IEC 61162-1, IEC 61162-2, IEC 61162-450, IEC 62288, IEC 62923-1, IEC 62923-2, IMO Resolution MSC.86(70), IMO Resolution MSC.166(78), IMO Resolution MSC.191(79), IMO Resolution MSC.302(87) and IMO Resolution MSC.466(101).

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Ships and marine technology — Marine electromagnetic compasses

1 Scope

This document specifies general requirements, type tests and individual tests for the marine electromagnetic compasses, intended for steering purposes and/or taking bearings on board ships, required by Chapter V of SOLAS, 1974 and the International Code of Safety for High-Speed Craft (HSC Code). In accordance with IMO Resolution MSC.166(78), this document is applicable to marine electromagnetic compasses fitted before 1 July 2002. For marine electromagnetic compasses installed on or after 1 July 2002, ISO 22090-2 is applicable. The magnetic compasses specified in this document apply to ships the overall length of which is normally not less than 24 m.

NOTE In this document requirements extracted from the recommendations of IMO resolutions are printed in italics.

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 1069, *Magnetic compasses and binnacles for sea navigation — Vocabulary*

ISO 25862:2019, *Ships and marine technology — Marine magnetic compasses, binnacles and azimuth reading devices*

IEC 60945, *Marine navigation and radiocommunication equipment and systems — General requirements — Methods of testing and required test results*

IMO Resolution A. 694(17), *General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids*

IMO Resolution A. 813(19), *General requirements for electromagnetic compatibility (EMC) for all electrical and electronic ship's equipment*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1069 and the following apply

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
electromagnetic compass
item of the electronic equipment that uses the geomagnetic field to obtain information about the ship's heading

Note 1 to entry: This information is conveyed to the main compass (used for steering and taking bearings), to additional repeater indicators and, if required, to other navigational equipment.

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3.2
magnetic sensor
sensor that detects geomagnetic field and supplies appropriate output concerning direction to the *processor* (3.4)

3.3
main compass
display unit that shows the output of the *processor* (3.4) with a compass card or an electronic image of a compass card

3.4
processor
device that processes the output of the *magnetic sensor* (3.2) and provides the ship's magnetic heading and/or true heading

3.5
repeater indicator
additional indicator that may be equipped with a display that uses a different type of compass card

4 Composition

The electromagnetic compass system shall consist of a magnetic sensor, a processor, a main compass display and facilities for other repeater indicators and equipment.

5 Construction and material

5.1 Requirements

Electromagnetic compasses shall fulfil the requirements in 5.2 to 5.17.

5.2 Electrical wiring

Electrical wiring, such as that for the direct-current power supply and that for connecting the units, shall not produce any perceptible errors in the heading information.

Twist cables are recommended for this purpose.

5.3 Non-magnetic housing

The housing of the magnetic sensor system shall be non-magnetic.

5.4 Fore-and-aft marks

[IMO Resolution MSC.86(70), Annex 2, 4.1.1] *Fore-and-aft marks* shall *be inscribed on the housing* of the magnetic sensor system and the bottom part of the binnacle of the main compass. The units shall be *installed* on *the fore-and-aft line* of the ship.

[IMO Resolution MSC.86(70), Annex 2, 4.1.2] *The fore-and-aft marks* shall *be within ±0,5° of the fore-and-aft* axis of the unit.

5.5 Graduation

5.5.1 Graduation of main compass card

The main compass shall be of the compass card type, which shall be graduated in 360 single degrees, starting from North (000°) in the clockwise direction as viewed from above. Each tenth degree shall be marked with the three corresponding numbers. The accuracy of the graduation shall be better than

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