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Ships and marine technology — Rate of turn indicators

Navires et technologie maritime — Fréquence des indicateurs de direction

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Contents

Page

Foreword ..... **iv**

1 Scope **1**

2 Normative references **1**

3 Terms and definitions **1**

4 Construction **2**
4.1 General 2
4.2 Indication 2
4.3 Range scales 2
4.4 Illumination and lighting 3
4.5 Type of indicator 3
4.6 Alert 3

5 Performance requirements **3**
5.1 Accuracy 3
5.2 Operation 3
5.3 Insulation resistance and high voltage 3

6 Methods of testing and required test results **4**
6.1 Construction 4
6.2 Environmental tests 4
6.3 Accuracy test 4
6.4 Operation test 4
6.5 Insulation resistance and high voltage test 4
6.6 Alert test 4

7 Interface **4**

8 Marking and identification **5**

9 Information **5**

Bibliography **6**

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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).

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

This second edition cancels and replaces the first edition (ISO 20672:2007), which has been technically revised. It also incorporates the Technical Corrigendum ISO 20672:2007/Cor 1:2008.

The main changes are as follows:

— in Clause 2, deleted IEC 61162-1 and IEC 61162-2;

— in 4.5 and 6.1, added a provision on displays for presentation and a reference to IEC 62288;

— in new 4.6 and 6.6, added a provision on alerts and a reference to IEC 62923-1 and IEC 62923-2;

— in Clause 7, updated interface requirements;

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

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Ships and marine technology — Rate of turn indicators

1 Scope

This document specifies the construction, performance requirements, methods of testing and required test results for the rate of turn indicators required by Clause 2.9.1, Regulation 19, chapter V, SOLAS 1974 (as amended, 2000).

It is based upon the requirements of IMO Resolution A.526(13), and is also associated with IMO Resolution A.694 (17) and IEC 60945.

Where a requirement in this document is different from that in IEC 60945, the requirement in this document takes precedence.

NOTE All requirements that are extracted from the recommendations of IMO Resolution A.526(13) on performance standards for rate of turn indicators are printed in italics and the resolution and paragraph numbers are indicated in brackets.

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.

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

IMO Resolution A.526(13), *Performance standards for rate-of-turn indicators*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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
rate of turn indicator
indicator capable of indicating rates of turn in degrees per minute to starboard and to port of the ship to which it is fitted

Note 1 to entry: A rate of turn indicator may be self-contained; alternatively it may form part of, or derive information from, any other appropriate equipment.

[SOURCE: IMO Resolution A.526(13), 2.1 and 2.2, modified — in the definition, added “in degrees per minute”.]

3.2
analogue-type indicator
indicator that shows the rate of turn in a continuous way, such as by means of an arrow pointer and a graduated scale

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3.3
digital-type indicator
indicator that shows the rate of turn in a discrete, alphanumeric way

3.4
full scale
range from 0° per minute to the greatest angular rate scale of port (or starboard) direction

4 Construction

4.1 General

The rate of turn indicators shall conform to IMO Resolution A.526(13) and the requirements in 4.2 to 4.6.

4.2 Indication

a) [IMO Resolution A.526(13), 2.3.1] *The indication required* shall *be provided by a centre-zero analogue type indicator (preferably circular). Where a circular scale indicator is used, the zero* shall *be uppermost.*

b) [IMO Resolution A.526(13), 2.3.2] *A turn of ship to port* shall *be indicated on the left of the zero point and a starboard turn to the right of the zero point. If the actual rate of turn exceeds full scale deflection, this* shall *be clearly indicated on the display.*

c) [IMO Resolution A.526(13), 2.3.3] *In addition, an alphanumeric display may be provided. Positive indication of port and starboard* shall *be provided on such displays.*

d) [IMO Resolution A.526(13), 2.3.4] *The length of scale in either direction from zero* shall *not be less than 120 mm. The sensitivity of the system* shall *ensure that a change in the rate of turn of 1° per minute is represented by a distance of not less than 4 mm on its scale.*

4.3 Range scales

a) [IMO Resolution A.526(13), 2.4.1] *A linear range scale of not less than ± 30° per minute* shall *be provided.* The scale for 30° per minute indicator shall *be marked in intervals of 1° per minute on both sides of zero. The scale* shall *be marked with figures every 10° per minute. Every 10° mark* shall *be significantly longer than the 5° mark which in turn* shall *be significantly longer than the 1° mark. The marks and figures* shall *preferably be red or a light colour on a dark background*.

b) [IMO Resolution A.526(13), 2.4.2] *Additional linear range scales* of ± 120° and ± 300° per minute *may be provided* and the scale and figures of each range shall be marked in intervals proportionate to the 30° per minutes indicator as defined in 4.3 a) (see Table 1).

Table 1 — Scaling reference

Scale	Numerical mark	Short mark	Half mark	Longer mark
30°	0, 10, 20, 30	every 1 deg	every 5 deg	every 10 deg
120°	0, 40, 80, 120	every 4 deg	every 20 deg	every 40 deg
300°	0, 100, 200, 300	every 10 deg	every 50 deg	every 100 deg

Any other range scale may be acceptable under approval by the appropriate authority.

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