SLOVENSKI STANDARD
SIST EN ISO 8728:2000

01-december-2000

Ships and marine technology - Marine gyro-compasses (ISO 8728:1997)

Ships and marine technology - Marine gyro-compasses (ISO 8728:1997)

Schiffe und Meerestechnik - Kreiselkompasse für die Seeschiffahrt (ISO 8728:1997)

Navires et technologie maritime - Compas gyroscopiques a usage marin (ISO 8728:1997)

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English version

Ships and marine technology - Marine gyro-compasses (ISO 8728:1997)

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This European Standard was approved by CEN on 6 December 1998.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

The text of the International Standard ISO 8728:1998 has been prepared by Technical Committee ISO/TC 8 "Ships and marine technology" in collaboration with Technical Committee CEN/TC 300 "Sea-going vessels and marine technology", the secretariat of which is held by DIN.

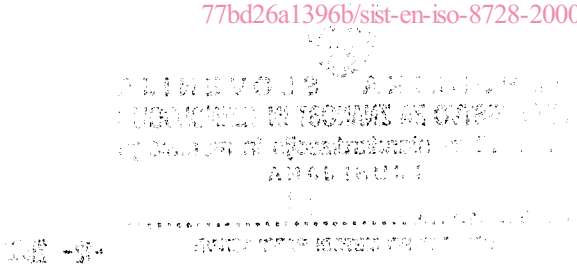
This European Standard supersedes EN ISO 8728:1994.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 1999, and conflicting national standards shall be withdrawn at the latest by June 1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 8728:1998 was approved by CEN as a European Standard without any modification.



INTERNATIONAL STANDARD

ISO 8728

Second edition
1997-06-15

Ships and marine technology — Marine gyro-compasses

Navires et technologie maritime — Compas gyroscopiques à usage marin

Reference number
ISO 8728:1997(E)

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 8728 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 6, *Navigation.*

This second edition cancels and replaces the first edition (ISO 8728:1987), which has been technically revised.

Annex A forms an integral part of this International Standard. Annex B is for information only.

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Ships and marine technology — Marine gyro-compasses

1 Scope

This International Standard specifies the construction, performance and type testing for gyro-compasses required by Chapter V of SOLAS, 1974.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were 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 editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/R 694:1968, *Positioning of magnetic compasses in ships.*

IEC 945:1994, *Marine navigational equipment — General requirements — Methods of testing and required test results.*

International Convention on Safety of Life at Sea (SOLAS) 1974 (amended).

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 gyro-compass: Complete equipment including all essential elements of the complete design.

3.2 true heading: Horizontal angle between the vertical plane passing through the true meridian and the vertical plane passing through the ship's fore-and-aft datum line; it is measured from true north (000°) clockwise through 360°.

NOTE — When the gyro-compass equipment is not installed on board ship, this "true heading" is regarded as the true heading of the lubber line. Where a gyro-compass has the facility of introducing a correction by moving the lubber line, the correction is set for the local latitude.

3.3 settled: Stable situation when any three readings taken at intervals of 30 min are within a band of 0,7°, with the compass level and stationary.

NOTE — The settling time is the elapsed time between the time of switch-on at the initial heading error and the third recording of the settle.

3.4 settle point heading: Mean value of ten readings taken at 20 min intervals after the compass has settled as defined in 3.3.

3.5 settle point error: Difference between the settle point heading as defined in 3.4 and the true heading.

3.6 error: Difference between the observed value and the settle point heading as defined in 3.4.

3.7 bearing repeater compass: Device that reproduces the master compass card at a remote location.

3.8 compass card: Graduated dial of the compass which indicates the measured direction of the meridian.

3.9 latitude error: Error to which some gyro-compasses are subject, the magnitude and sign of which depend upon the local latitude.

NOTE — Means are provided for correcting this error.

3.10 speed error: Error to which gyro-compasses are subject, the magnitude and sign of which depend upon the speed, course and latitude of the ship.

NOTE — Means are provided for correcting this error.

3.11 lubber line: Index line situated on the body of a compass against which the compass heading is read.

3.12 master compass: Main compass unit which supplies the heading information to the repeaters and other navigational aids.

3.13 Scorsby table: Test machine which independently oscillates a platform about three axes; it is used to simulate the motion of a ship.

4 Construction

Gyro-compass units shall conform to the following requirements.

4.1 The equipment shall be capable of continuous operation under conditions of vibration, humidity, change of temperature and variations of the power supply as specified in 6.10.1 to 6.10.5.

4.2 For those ships which are required to carry bearing repeater compasses, the construction of these shall be as follows.

a) The bearing repeater compass shall be designed to be fitted with an azimuth reading device.

b) A gimbal mechanism shall be provided to enable the bearing repeater compass card to be held horizontally against the ship's motion.

c) Any bearing repeater compass intended for use on an open deck shall be waterproof.

4.3 The compass card shall be graduated at equal intervals of 1° or fraction thereof.

The graduation error shall be less than ± 0,2°.

A numerical indication shall be provided at least at every 10°, starting from 000° clockwise through 360°.

4.4 Fully adequate illumination shall be provided to enable the reading of all compass cards at all times. Facilities for dimming shall be provided.

4.5 Both master compass and repeater compasses shall be provided with a lubber line to indicate the ship's heading.

4.5.1 The base or some other fixed extremity of the compass shall be marked or identified in such a way as to facilitate the installation of the compass in a ship so that the lubber line lies in a vertical fore-and-aft plane of the ship. Where a gyro-compass has the facility of introducing a correction by moving the lubber line, the correction during installation shall be set to zero.

If such marks or identifications are not in the same vertical plane as the uncorrected lubber line, then the horizontal angular relationship between them shall be clearly indicated.

4.6 Means shall be provided for correcting the errors induced by speed and latitude. Graphical or tabular means of correction may be used.

4.7 Steps shall be taken to eliminate as far as is practical the causes of, and to suppress, electromagnetic interference between the gyro-compass and other equipment on board.

4.8 Mechanical noise from all units shall be so limited as to ensure the hearing of sounds on which the safety of the ship may depend.

4.9 The equipment shall be so constructed that it is readily accessible for maintenance purposes.

4.10 An automatic alarm shall be provided to indicate a power failure in the gyro-compass.

4.11 Means shall be incorporated for the protection of the equipment from excessive currents and voltages, transients and accidental reversal of power supply polarity.

4.12 The gyro-compass shall be designed to enable heading information to be provided to other navigational aids.

5 Performance requirements

5.1 Accuracy in latitudes up to 60°

5.1.1 Settling time

When switched on in accordance with the manufacturer's instructions, the compass shall settle within 6 h.

5.1.2 Settle point error

5.1.2.1 The settle point error as defined in 3.5 at any heading shall not exceed ± 0,75° × secant latitude, and the RMS value of the differences between individual heading indications and the mean value shall be less than 0,25° × secant latitude.

5.1.2.2 The repeatability of settle point error from one run-up to another shall be within 0,25° × secant latitude.

5.1.3 Settling time under operational conditions

When switched on in accordance with the manufacturer's instructions, the compass shall settle within 6 h when rolling and pitching with simple harmonic motion of any period between 6 s and 15 s, a maximum angle of 5°, and a maximum horizontal acceleration of 0,22 m/s^2.

5.1.4 Settle point error under general conditions

The repeatability of the settle point error of the master compass shall be within ± 1° × secant latitude under the general conditions and including variations in magnetic fields likely to be experienced in the ship in which it is installed.

5.1.5 Residual error in correction

The residual steady state error, after correction for speed and course influences at a speed of 20 kn[1)], shall not exceed ± 0,25° × secant latitude.

5.1.6 Effect of alteration of speed

The error due to a rapid alteration of speed of 20 kn shall not exceed ± 2°.

1) knots