

RESOLUTION MSC.116(73)  
(adopted on 1 December 2000)  
PERFORMANCE STANDARDS FOR MARINE TRANSMITTING  
HEADING DEVICES (THDs)

**ANNEX 29**

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**PERFORMANCE STANDARDS FOR MARINE TRANSMITTING  
HEADING DEVICES (THDs)**

THE MARITIME SAFETY COMMITTEE,

RECALLING Article (28(b) of the Convention on the International Maritime Organization concerning the functions of the Committee,

RECALLING ALSO resolution A.886(21), by which the Assembly resolved that the function of adopting performance standards and technical specifications, as well as amendments thereto shall be performed by the Maritime Safety Committee and/or the Marine Environment Protection Committee, as appropriate, on behalf of the Organization,

RECALLING FURTHER that, in accordance with the revised chapter V of the SOLAS Convention ships of 300 gross tonnage and upwards and less than 500 gross tonnage, which do not carry a gyro compass, are required to carry a THD, or other means to transmit heading information,

RECALLING FURTHER ALSO that in accordance with the HSC Code passenger craft certified to carry 100 passenger or less which do not carry a gyro compass are required to carry an instrument suitable for providing a heading reference,

NOTING that a properly adjusted THD will fulfil these carriage requirements,

RECOGNIZING the need to prepare appropriate performance standards for THDs,

HAVING CONSIDERED the recommendation on the performance standards for THDs made by the Sub-Committee on Safety of Navigation at its forty-sixth session,

1. ADOPTS the Recommendation on Performance Standards for Marine Transmitting Heading Devices (THDs), set out in the Annex to the present resolution;
2. RECOMMENDS Governments to ensure that THDs installed on or after 1 July 2002 conform to performance standards not inferior to those specified in the Annex to the present resolution.

## ANNEX

### RECOMMENDATION ON PERFORMANCE STANDARDS FOR MARINE TRANSMITTING HEADING DEVICES (THDs)

#### 1 SCOPE

1.1 A transmitting heading device (THD) is an electronic device, which provides information about the ship's true heading.

1.2 In addition to the general requirements contained in resolution A.694(17)\* and the relevant standard for the sensing part used, the THD equipment should comply with the following minimum requirements.

1.3 Where the IMO performance standards which apply to the sensing part do not specify a geographical operating area the THD should operate from 70° latitude south to 70° latitude north as minimum.

#### 2 APPLICATION

2.1 The THDs complying with the requirements contained in this recommendation can be used for heading information as contained in chapter V of the SOLAS Convention.

2.2 In addition such THD should meet the dynamic requirements contained in the HSC Code, chapter 13 for the carriage of a suitable device providing heading information.

#### 3 DEFINITION

3.1 *Heading*: for the purpose of these standards any ship's heading to be input to the THD function.

3.2 *Sensing part*: a sensing function of detecting any heading information connected to the transmitting device.

3.3 *Transmitting part*: device which receives a heading information from the sensing part and convert to the required accurate signal.

3.4 *True heading*: horizontal angle between the vertical plane passing through the true meridian and the vertical plane passing a through the craft's fore and aft datum line. It is measured from true north (000°) clockwise through 360°.

3.5 *Transmission and resolution error*: error which is caused by the method used to transmit the original information to a receiving device. Such method may have a limited capability to code any possible value of the information e.g. step output with 1/6° resolution. This error is caused by the method used inside the THD and at its output to code the information.

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\* Publication IEC 60945.

3.6 *Static error*: error which is caused by any reason and which stays unchanged in value during the operation of the system. This error should be measured under static conditions.

3.7 *Dynamic error*: error which is caused by dynamic influences acting on the system such as vibration, roll, pitch or linear acceleration. This error may have an amplitude and usually a frequency related to the environmental influences and the parameters of the system itself.

3.8 *Follow-up error*: error which is caused by the delay between the existence of a value to be sensed and the availability of the corresponding signal or data stream at the output of the system. This error is e.g. the difference between the real heading of turning vessel and the available information at the output of the system. The follow-up error disappears when the system is static.

## **4 OPERATIONAL REQUIREMENT**

### **4.1 Functionality**

4.1.1 The THD receives a heading signal and generates a suitable output signal for other devices.

4.1.2 Any sensor part may be included in the device.

4.1.3 Any correcting devices or parameters should be protected against inadvertent operation.

### **4.2 Presentation of information**

4.2.1 All displays with the exception of the sensor, and all outputs of heading should indicate true heading.

4.2.2 Manually settable values used for electronic correction should be indicatable by adequate means.

### **4.3 Accuracy**

4.3.1 The THD should be tested for accuracy with the sensing part connected. If the sensing part is so designed that it is included in the transmitting part, the equipment should be tested together with all parts.

4.3.2 The THD should meet at least the following accuracy at the output of the device under sea conditions as specified in resolution A.424(XI) or A.821(19) as applicable:

- .1 Transmission and resolution errors. The transmission error including the resolution error should be less than  $\pm 0.2^\circ$ ;
- .2 Static errors. The static error should be less than  $\pm 1.0^\circ$ ;

- .3 Dynamic errors.\* The dynamic error amplitude should be less than  $\pm 1.5^\circ$ . The dynamic error frequency should be less than 0.033Hz equivalent to a period not shorter than 30s if the amplitude of the dynamic error exceeds  $\pm 0.5^\circ$ ; and
- .4 Follow-up errors: The follow-up error for different rates of turn should be:
- .4.1 less than  $\pm 0.5^\circ$  at rates up to 10°/s; and
- .4.2 less than  $\pm 1.5^\circ$  between a rate of 10°/s and 20°/s.

#### 4.4 **Interfacing**

At least one output should be in accordance with the relevant international marine interface standard.\*\*

### 5 **ELECTROMAGNETIC COMPATIBILITY**

The device, with regard to electromagnetic interference and immunity, should, in addition to resolution A.694(17),\*\*\* comply with resolution A.813(19).\*\*\*\*

### 6 **FAILURE CONDITIONS**

An alarm should be provided to indicate malfunctions of the THD or a failure of the power supply.

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\* If the sensing part is a magnetic one it should meet resolution A.382(X) and should be tested separately in accordance with the relevant standard.

\*\* Publication IEC 61162.

\*\*\* Publication IEC 60945.

\*\*\*\* Publication IEC 60533.

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