

Resolution A.824(19)
adopted on 23 November 1995
(Agenda item 10)

**PERFORMANCE STANDARDS FOR DEVICES TO INDICATE
SPEED AND DISTANCE**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO the provisions of regulation V/12 of the International Convention for the Safety of Life at Sea (SOLAS), 1974,

RECALLING FURTHER resolution A.478(XII) by which it adopted performance standards for devices to indicate speed and distance,

RECOGNIZING the need to reflect advances in technology and that devices to indicate speed and distance are frequently interfaced with and provide essential input data to ARPA, radar, electronic chart-display and information systems and other navigational equipment,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its sixty-fourth session,

1. ADOPTS the Recommendation on Performance Standards for Devices to Indicate Speed and Distance set out in the annex to the present resolution;
2. RECOMMENDS Governments to ensure that:
 - (a) devices installed on or after 1 January 1997 conform to performance standards not inferior to those specified in the annex to the present resolution;
 - (b) devices installed before 1 January 1997 conform at least to the performance standards set out in resolution A.478(XII);
3. REQUESTS the Maritime Safety Committee to keep these Performance Standards under review and to adopt amendments thereto, as necessary.

Annex

**RECOMMENDATION ON PERFORMANCE STANDARDS FOR DEVICES
TO INDICATE SPEED AND DISTANCE**

1 INTRODUCTION

1.1 Devices to indicate speed and distance are intended for general navigational and ship manoeuvring use. Although the minimum requirement is to provide information on the distance run and the forward speed of the ship through the water or over the ground, additional information on ship's motions other than

in the forward axis may be provided. The equipment should comply fully with its performance standard at forward speeds up to the maximum speed of the ship and in water of depth greater than 3 m beneath the keel.

1.2 In addition to the general requirements in resolution A.694(17), devices to indicate speed and distance should comply with the following minimum performance requirements.

2 METHODS OF PRESENTATION

2.1 Speed information may be presented in either analogue or digital form. Where a digital display is used, its incremental steps should not exceed 0.1 knots. Analogue displays should be graduated at least every 0.5 knots and be marked with figures at least every 5 knots. If the display can present the speed of the ship in other than the forward direction, the direction of movement should be indicated unambiguously.

2.2 Distance run information should be presented in digital form. The display should cover the range from 0 to not less than 9999.9 nautical miles and the incremental steps should not exceed 0.1 nautical miles. Where practicable, means should be provided for resetting a readout to zero.

2.3 The display should be easily readable by day and by night.

2.4 Means should be provided for feeding distance run information to other equipment fitted on board. In this regard:

- .1 when contact closure is used, forward speed only should be indicated. The information should be in the form of one contact closure (or the equivalent) for each 0.005 nautical miles run; and
- .2 when serial digital interface is provided, the information on all speed and distance parameters, including direction, should be provided in the form of a serial stream of digital information conforming to the international protocol for a digital interface for marine equipment use.*

2.5 If equipment is capable of being operated in either the "speed through the water" or "speed over the ground" mode, mode selection and mode indication should be provided.

2.6 If the equipment has provision for indicating speeds other than on a single fore and aft axis, then the forward and athwart speed through the water must be provided, and the forward and athwart speed over the ground may be provided as an additional option. Resultant speed and course information may be provided as a switchable option. All such information should clearly indicate the direction, mode and validity status of the displayed information.

3 ACCURACY OF MEASUREMENT

3.1 Errors in the indicated speed, when the ship is operating free from shallow water effect and from the effects of wind, current and tide, should not exceed 2% of the speed of the ship, or 0.2 knots, whichever is greater.

3.2 Errors in the indicated distance run, when the ship is operating free from shallow water effect and from the effects of wind, current and tide, should not exceed 2% of the distance run by the ship in 1 h or 0.2 nautical miles in each hour, whichever is greater.

3.3 If the accuracy of devices to indicate speed and distance run can be affected by certain conditions (e.g. sea state and its effects, water temperature, salinity, sound velocity in water, depth of water under the keel, heel and trim of ship), details of possible effects should be included in the equipment handbook.

* Refer to IEC 1162: 1994.

4 ROLL AND PITCH

The performance of the equipment should be such that it will meet the requirements of these standards when the ship is rolling up to $\pm 10^\circ$ and pitching up to $\pm 5^\circ$.

5 CONSTRUCTION AND INSTALLATION

5.1 The system should be so designed that neither the method of attachment of parts of the equipment to the ship nor damage occurring to any part of the equipment which penetrates the hull could result in the ingress of water to the ship.

5.2 Where any part of the system is designed to extend from and retract into the hull of the ship, the design should ensure that it can be extended, operated normally and retracted at all speeds up to the maximum speed of the ship. Its extended and retracted positions should be clearly indicated at the display position.