

International 2.4mR Class Association, Technical Committee

$$R = (L + 2d - F + \sqrt{S}) / 2.37 = 2.4$$



2.4mR TC ADVICE 2025

2.4mR BUOYANCY CHECKS

BACKGROUND

Buoyancy checks are a critical 2.4mR boat safety requirement carried out every 5 years to verify that the boat will float when swamped and filled with water. The buoyancy check is done at a dock with the boat in racing condition and with an additional weight of 35kg to account for the weight of a person. 2.4mR boats may fail the buoyancy check when buoyancy foam becomes waterlogged requiring new or additional buoyancy foam.

2.4mR CLASS RULES

A.15 BUOYANCY CERTIFICATE

- A.15.1 The ICA Buoyancy **Certificate** shall state the WS/WORLD SAILING plaque number, the date of confirmation and the name and signature of the confirming individual.
- A.15.2 The buoyancy check shall be carried out and the ICA Buoyancy **Certificate** completed and signed by an **official measurer** or a competent individual assigned by the Technical Committee.
- A.15.3 The buoyancy check shall be performed following the method given in Rule B.4.
- A.15.4 The ICA Buoyancy **Certificate** is valid for a maximum of five (5) years from the date of confirmation.

B.4 BUOYANCY CHECKS

- B.4.1 A *race committee* may require that a **boat** shall pass a buoyancy check in accordance with B.4.2, B.4.3 and B.4.4.
- B.4.2 **CONDITION OF THE BOAT**
The **boat** shall be in racing condition according to Rule C.5.1 and C.5.2. Hatches to watertight compartments, if any, shall be opened in order to let the tanks to be filled with water.
- B.4.3 **EXECUTION OF THE CHECK**
The **boat** shall be filled with water until water flows out of the cockpit, it shall thereafter be tilted over to starboard, to port, to the bow and to the stern in order to let the air enclosed under deck and other parts of the hull to come out.
- B.4.4 **REQUIREMENTS**
The **boat** shall float in an approximately horizontal position.

C.4.1 FOR USE

- (a) OPTIONAL
- (2) One or more electrical pumps.

C.4.2 NOT FOR USE

- (a) MANDATORY
- (1) Towing rope minimum 9m long of not less than 5mm in diameter and of material that floats.

C.5.1 WEIGHT

The weight of the boat in dry condition shall comply with that as stated in the **certificate**.

- (a) The following portable and installed equipment shall be on board when measuring:
 - Fittings and equipment in D.9.1.
 - Equipment in C.4.1 (a)(2) if this will be on board when racing.
 - Equipment in C.4.2 (a)(1)
- (b) The following installed equipment may be removed when measuring, removable equipment shall be capable of removal without tools:
 - (1) Seat consisting of a seat bottom and/or backrest and excludes any hull internal structure. No part of a removable seat shall be below floor level except fixing tabs with a maximum projection of 100mm. The maximum weight of any removable seat shall be 5kg.
 - (2) **Headsail Boom** excluding any **running rigging**.

C.5.2 FLOTATION

- (a) The **hull** shall have flotation elements according to D.5.1.
- (b) The **boat** shall float in an approximate horizontal position when flooded and with an additional weight of 35kg of cast iron or denser material, placed within 100 mm of the 0.55xLWL station.
- (c) **Hulls** with air tank(s) shall contain flotation element(s) and the flotation shall be checked according to (b) with the tank(s) filled with water.
- (d) For flotation check confirmation see B.4.

D.5.1 CONSTRUCTION

- (a) Buoyancy equipment shall comprise of rigid non-communicating air cell foam plastic incorporated into the **boat**.
- (b) The buoyancy equipment shall be constructed such that it cannot leave the **boat** when the **boat** is flooded.
- (c) Watertight compartments shall allow for inspection with a hatch opening of minimum 100 mm in diameter. The highest point of the opening shall be placed no more than 50mm below the underside of the **deck**.

D.9.1 FITTINGS AND EQUIPMENT

(a) MANDATORY

The following fittings and equipment shall be installed:

- (1) A suitable fitting or system in the bow area to enable the boat to be towed. The fitting/system shall be easy to access by rescue craft and shall be able to handle line of at least 5mm in diameter.
- (2) One manual bilge pump with a minimum capacity of 0.5 litre/stroke.
- (3) A suitable fitting or device shall be installed in the deck level, in order to prevent the mast to move astern of that position, which corresponds to the Foretriangle base, J, according to G.4.2.

BUOYANCY CHECK PREPARATION

Buoyancy Certificate	The official measurer or buoyancy certifier will require a Buoyancy Certificate template on which to record the buoyancy check including the World sailing plaque number, date of buoyancy check, certifier name and signature.
Racing condition	The official measurer or buoyancy certifier will check that the 2.4mR boat is in racing condition for the buoyancy check including opening any watertight compartments, ensuring that the electric pump, towing rope, towing fitting, manual pump and J restrictor are installed and removal of personal equipment, water bottles etc.
Additional weight:	35kg of cast iron or denser material is required to account for the weight of a person – the additional weight can be fitness weights, diving weights or lead pieces, the additional weight may need to be verified by checking on scales. The additional weight, if pieces of lead, can be placed in a milk crate or similar with lifting strop so the weight can be placed in a boat by crane. The additional weight, if fitness or diving weights, are usually marked with their weight and can be looped onto a lifting strop so the weight can be placed in a boat by crane.
Sails	The buoyancy check may be easier if the sails are substituted with a 3kg weight which can be managed with the additional weight. A dacron mainsail and headsail weigh approximately 3kg with headsail sheets.
Battery	The buoyancy check may be easier if the battery is substituted by a weight which can be managed with the additional weight. The typical weight of batteries is – lithium 0.6kg, lead acid 2.4kg.
Pump	An electric pump with float switch will need to be turned off for the buoyancy check.



BUOYANCY CHECK PROCEEDURE

People	The buoyancy check is safer if you have a minimum of two people conducting the test to avoid personal injury or boat damage.
Safety	The additional weight requires safe handling to avoid personal injury or boat damage. It is safest to place the additional weight in the boat by crane. The additional weight can be placed in the boat by hand subject to appropriate safety management.
Boats	It is best to do multiple boats in a row to avoid multiple setups. One boat can be pumped out while the next boat is filled with water.
Buoyancy check	Place the boat in the water under the crane. Carefully lower the additional weight into the boat and place within 100mm of the 0.55 x LWL station. Leave the lifting strop attached to the lead for easy retrieval. Fill the boat with water until water flows out of the cockpit. Ensure that safety lines are slack and not holding any weight. Continue to add water and tilt the boat over to starboard, to port, to the bow and to the stern to let the air enclosed under the deck and other parts of the hull to come out. Check that the boat floats in an approximately horizontal position (with the deck approximately 25mm above the water). Carefully remove the additional weight. Pump the water out – a high-capacity pump will assist but a bucket can also work.



DO NOT LIFT THE BOAT UNTIL ALL THE WATER HAS BEEN PUMPED OUT

Buoyancy Certificate	The official measurer or buoyancy certifier will give a copy of the completed Buoyancy Certificate to the 2.4mR boat owner and issue a copy to the country certification authority (MNA or NCA) for their records.
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So, this 2.4mR boat passed the buoyancy check – will your boat pass every 5 years?