

2.4 NORLIN ONE DESIGN CLASS RULES

2024



The Norlin mark III design for the 2.4mR Class, which was adopted as an international class in 1993, was designed in 1987 by Peter Norlin.

The Norlin mark III design was chosen to be the 2.4 Norlin One Design boat. The 2.4 Norlin One Design Class was introduced as a Class in 2011.

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INTRODUCTION

These **class rules** apply to 2.4 NOD boats. These boats may race in both open 2.4mR Class events and in closed 2.4 NOD events such as Paralympics, WS World Championships or other events, which have been given such status.

The 2.4 NOD **hulls** including decks, **keels** and **rudders** supplied by the accredited builder are manufacturing controlled. **Rigs** and **sails** are measurement controlled as well as boats built before 2011-03-01.

The 2.4 NOD **hulls** including decks, **keels** and **rudders** shall only be manufactured by accredited builders – in the **class rules** referred to as an accredited hull builder. Equipment is required to comply with the 2.4 NOD Construction Manual and is subject to a manufacturing control system approved by the ICA.

2.4 NOD **hulls** including decks, **keels** and **rudders** may, after having left the manufacturer, only be altered to the extent permitted in Section C of these **class rules**.

Owners and crews should be aware that compliance with rules in Section C is NOT totally checked as part of the fundamental certification.

Rules regulating the use of equipment during a race are contained in Section C of these **class rules**, in ERS Part I and in the Racing Rules of Sailing.

This introduction only provides an informal background and the 2.4 NOD **class rules** proper begin on the next page.

These Rules are **Closed Class Rules**. Anything not specifically allowed by these rules is prohibited.

PART I – ADMINISTRATION

Section A – General

A.1 LANGUAGE

- A.1.1 The official language of the class is English and in case of dispute over translation the English text shall prevail.
- A.1.2 The word “shall” is mandatory and the word “may” is permissive.

A.2 ABBREVIATIONS

- A.2.1 WS World Sailing
MNA World Sailing Member National Authority
ICA International 2.4mR Class Association
NCA National Class Association
2.4 NOD 2.4 Norlin One Design boat
ERS Equipment Rules of Sailing
RRS Racing Rules of Sailing

A.3 AUTHORITIES

- A.3.1 The 2.4 NOD **class authority** is the ICA.
- A.3.2 No legal responsibility with respect to these **class rules**, or accuracy of measurement, rests with:
World Sailing,
the MNA,
the ICA,
an NCA,
the **certification authority**, CA
an **official measurer**.

No claim arising from these **class rules** will be entertained.

- A.3.3 Notwithstanding anything contained herein, the **certification authority** has the authority to withdraw a **certificate**.

A.4 ADMINISTRATION OF THE CLASS

- A.4.1 The ICA is responsible for administration of the class.

A.5 WS RULES

- A.5.1 These **class rules** shall be read in conjunction with the ERS and RRS.
- A.5.2 Except when used in headings, when a term is printed in “**bold**” the definition in the ERS applies and when a term is printed in “*italics*” the definition in the RRS applies.

A.6 CLASS RULES CHANGES

- A.6.1 At WS 2.4 NOD events - WS Regulation 28.1.3 applies. At all other 2.4 NOD events - RRS 87 applies.
- A.6.2 At World, Continental or Regional Championships the sailing instructions may vary these **class rules** only with the agreement of the ICA.

A.7 CLASS RULES AMENDMENTS

- A.7.1 Amendments to **class rules** are subject to the approval of the ICA.

A.8 CLASS RULES INTERPRETATION

- A.8.1 Interpretation of **class rules** shall be in accordance with WS Regulation 10.

A.9 INTERNATIONAL 2.4mR CLASS FEE AND WS BUILDING PLAQUE

- A.9.1 The accredited hull builder shall equip the boat with a 2.4mR Class WS plaque.

A.10 2.4 NOD FEE AND 2.4 NOD CLASS STICKER

- A.10.1 The accredited hull builder shall pay the 2.4 NOD Fee to the ICA as stated in the 2.4 NOD Agreement between the accredited hull builder and the ICA.
- A.10.2 The ICA, or its delegate shall, after having received the 2.4 NOD Fee for the hull, send the 2.4 NOD class sticker to the accredited hull builder.
- A.10.3 An owner of a hull built before 2011-03-01, which has been approved to comply with these **class rules**, shall send this documentation to the ICA together with the registration fee.
- A.10.4 An owner of a hull built by a licenced hull builder between 2011-03-01 and 2019-06-02, or a hull built by a previously licensed hull builder after 2019-06-03, not previously certified, shall send this documentation to the ICA together with the registration fee.
- A.10.5 The ICA, or its delegate shall, after having received the registration fee and documentation according to A.10.3 and A10.4, send the 2.4 NOD class sticker to the owner.

A.11 SAIL NUMBERS

- A.11.1 **Sail** numbers shall be issued by the MNA or the NCA.
- A.11.2 **Sail** numbers shall be issued in consecutive order starting at “1” or World Sailing plaque numbers.
- A.11.3 Personal sail numbers may be used after decision by the MNA or the NCA.
- A.11.4 Sailors may use **sail** numbers assigned to them by the MNA or NCA that do not correspond with the **sail** number on the measurement certificate.

A.12 MEASUREMENT

- A.12.1 All measurement shall be carried out by a 2.4 NOD class measurer.
- A.12.2 Class Measurers shall be either,
 - (a) An **official measurer**, or

- (b) A person appointed by the ICA. The appointment shall be renewed annually.

A.12.3 The ICA may refuse to accept measurement reports made by an class measurer who has misused the trust of their title by poor measurement work.

A.13 CERTIFICATION

A.13.1 The ICA is the **certification authority** for 2.4 NOD boats.

A.13.2 A **certificate** shall record the following information:

- (a) Class
- (b) ICA
- (c) 2.4mR WS Building Plaque Number
- (d) Accredited Builder details and hull number (hull number not needed for boats built before 2011-03-01)
- (e) 2.4 NOD Class Sticker Number
- (f) Date of measurement report and name of class measurer
- (g) Date of issue of **certificate**
- (h) Type of rudder (only for boats built before 2011-03-01)
- (i) Specific data of the hull, keel and rudder according to the measurement report.

A.14 INITIAL HULL CERTIFICATION

A.14.1 For a **certificate** to be issued to a hull built after 2019-06-03 not previously **certified**:

- (a) **Certification control** shall be carried out by the accredited hull builder as “in house certification”, IHC. The ICA certification report form shall be used for the 2.4 NOD certificate, and the 2.4mR measurement report form for the 2.4mR hull certificate. If the accredited hull builder has not been approved for IHC, the **certification control** shall be carried out by a class measurer who shall complete the appropriate measurement report. The ICA measurement report form shall be used for submission of the 2.4 NOD certificate.
- (b) When the **hull** and the **rig** is supplied by two different builders, the rules in (a) shall apply for both builders.
- (c) The certification and or measurement report(s) together with a copy of the 2.4mR certificate and **certification** fee shall be sent to the ICA.
- (d) Upon receipt of a satisfactorily completed certification/measurement report, the copy of the 2.4mR certificate and **certification** fee, the ICA shall issue a **certificate** and send it to the owner. The ICA certificate form shall be used.

A.14.2 For a certificate to be issued to a hull built before 2011-03-01 not previously **certified**:

- (a) **Certification control** shall be carried out by a class measurer who shall complete the appropriate measurement report. The ICA measurement report form shall be used.

- (b) The measurement report(s), a copy of the 2.4mR **certificate**, and **certification** fee shall be sent to the ICA.
 - (c) Upon receipt of a satisfactorily completed measurement report, a copy of the 2.4mR certificate, and **certification** fee the ICA may issue a **certificate** and send it to the owner. The ICA certificate form shall be used.
- A.14.3 For a certificate to be issued to a hull built by a licenced hull builder between 2011-03-01 and 2019-06-02 not previously **certified**:
- (a) **Certification control** shall be carried out by a class measurer who shall complete the appropriate measurement report. The ICA measurement report form shall be used.
 - (b) The measurement report(s), a copy of the 2.4mR **certificate**, and **certification** fee shall be sent to the ICA.
 - (c) Upon receipt of a satisfactorily completed measurement report, a copy of the 2.4mR certificate, and **certification** fee the ICA may issue a **certificate** and send it to the owner. The ICA certificate form shall be used.
- A.14.4 For a certificate to be issued to a hull built by a previously licensed hull builder after 2019-06-03 not previously **certified**:
- (a) **Certification control** shall be carried out by a class measurer who shall complete the appropriate measurement report. The ICA measurement report form shall be used for submission of the 2.4 NOD certificate
 - (b) The certification and or measurement report(s) together with a copy of the 2.4mR certificate and **certification** fee shall be sent to the ICA.
 - (c) Upon receipt of a satisfactorily completed certification/measurement report, the copy of the 2.4mR certificate and **certification** fee, the ICA shall issue a **certificate** and send it to the owner. The ICA certificate form shall be used.

A.15 VALIDITY OF CERTIFICATE

A.15.1 A **certificate** becomes invalid upon:

- (a) Significant repair or replacement to the **hull, keel** or rudder and the change to any items recorded on the **certificate** as required under A.13 (a) – (j),
- (b) Withdrawal by the ICA,
- (c) The issue of a new **certificate**.

A.16 RE-CERTIFICATION

A.16.1 The ICA may issue a **certificate** to a previously certified **boat**:

- (a) When it is invalidated under A.15.1(a), after receipt of the old **certificate** and if needed appropriate documentation given by a class measurer, and **certification** fee if required.

- (b) When it is invalidated under A.15.1 (b), at its discretion.
- (c) In other cases, by application of the procedure in A.14.

A.17 RETENTION OF CERTIFICATION DOCUMENTATION

A.17.1 The ICA shall retain the original relevant certification report or measurement report upon which the current **certificate** is based, and a copy of the certificate.

A.18 BUOYANCY CERTIFICATE

A.18.1 The ICA Buoyancy Certificate shall state the WS plaque number, the date of confirmation and the name and signature of the confirming individual.

A.18.2 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 ICA Technical Committee.

A.18.3 The buoyancy check shall be performed following the method given in Section L.

A.18.4 An ICA Buoyancy Certificate is valid for a maximum of five (5) years from the date of the confirmation.

Section B – Boat Eligibility

For a **boat** to be eligible for *racing*, it shall comply with the rules in this section.

B.1 CLASS RULES AND CERTIFICATION

B.1.1 The boat shall:

- (a) Be in compliance with the **class rules**.
- (b) Have a valid 2.4 NOD **certificate**.
- (c) Have valid **certification marks** as required in the 2.4mR Class Rules
- (d) Have been **certified** according to the 2.4mR Class Rules
- (e) Have a valid ICA Buoyancy Certificate according to A.18

B.2 BUOYANCY CHECKS

B.2.1 A *race committee* may require that a **boat** shall pass a buoyancy check in accordance with Section L.

B.3 CLASS ASSOCIATION MARKINGS

B.3.1 A 2.4 NOD Class Sticker shall be fixed to the inside of the **hull** in the cockpit on the port side.

B.3.2 A 2.4mR WS Plaque shall be fixed to the inside of the **hull** in the cockpit on the port side.

B.3.3 Boats measured and certified before 1st July 1994 according to the 2.4mR Class Rules and provided with a plaque issued by the Scandinavian Sailing Federation may have that plaque instead of the 2.4mR WS Plaque.

B.4 2.4 NOD CLASS MEMBERSHIP

B.4.1 For a **boat** to be eligible for racing in a World, Continental or Regional Championship of the 2.4 NOD Class, the helmsman must be a current member of the ICA.

PART II – REQUIREMENTS AND LIMITATIONS

The **crew** and the **boat** shall comply with the rules in Part II when *racing*. In case of conflict Section C shall prevail.

The rules in Part II are **closed class rules**. **Certification control** and **equipment inspection** shall be carried out in accordance with the ERS except where varied in this Part.

Section C – Conditions for Racing

C.1 GENERAL

C.1.1 RULES

- (a) RRS 52 – manual power shall not apply.
- (b) The ERS Part I – use of equipment shall apply.
- (c) The ERS Part III – rules governing equipment control and inspection shall apply with the following amendment of H.5.1 Condition of sail: Battens may be left in the sail unless the class measurer requires them to be removed in order to properly measure the sail.

C.2 CREW

C.2.1 LIMITATIONS

- (a) The **crew** shall consist of one person.
- (b) In normal positions of the **crew** both the legs and the main part of the torso shall be below deck and inside the **sheerline**.

C.3 PERSONAL EQUIPMENT

C.3.1 Personal equipment is optional.

C.4 ADVERTISING

C.4.1 LIMITATIONS

Advertising shall only be displayed in accordance with WS Regulation 20.

C.5 PORTABLE EQUIPMENT

C.5.1 MANDATORY

- (a) Towing rope minimum 9m long of not less than 5mm in diameter and of material that floats. This may not be used for any other purpose than towing.

C.5.2 OPTIONAL

- (a) One or more electrical pumps.
- (b) Paddle, bailer, mooring lines, fenders, current stick, portable anemometer. tools, spare lines and spare blocks may be carried on board

above the floor level. The total weight of this optional portable equipment shall not exceed 2.0kg.

- (c) Extra sails.
- (d) The use of electronic navigation equipment is permitted. Timing devices are permitted. Handheld communication devices (cell phones, pagers, radios, etc.) are permitted but may be prohibited or restricted in the *notice of race or sailing instructions*.

C.6 BOAT

C.6.1 WEIGHT

- (a)

	minimum	maximum
The weight of the boat in dry condition	253 kg	254 kg

- (b) The **boat weight** shall include one jib and one mainsail and portable equipment as listed in C.5.1 (a) and portable equipment in C.5.2 (a).
- (c) The seat may be excluded if it fulfils the requirement according to D.6.2(b).
- (d) The **headsail boom** may be excluded if it fulfils the requirement according to F.6.3(b).
- (e) The horizontal distance between the balance point (centre of gravity) of the **boat**, when its baseline (waterline) is horizontal, and section 0 shall not be more than 1371mm or less than 1343mm. See also Section M.

C.6.2 CORRECTOR WEIGHTS

- (a) **Corrector weights** of lead shall be securely fixed to the **hull** when the **boat weight** is less than the minimum requirement.
- (b) **Corrector weights** shall be placed on the underside of the deck not more than 200 mm aft of the mast.

C.7 HULL

C.7.1 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) The **hull** shall comply with the templates as defined in section J.
- (b) Application of fillers to the hull for fairing is not allowed in order to change the shape of the original hull.
- (c) Routine maintenance such as painting and polishing is permitted without re-measurement and re-**certification**.
- (d) Repair of **hull** damages is permitted, see D.2.4 (e).
- (e) Corrections of **ballast** weight in order to comply with C.6.1 will be permitted. It will also be permitted to remove the **ballast** pigs from the keel for certain reasons (transportation, cleaning etc). However the **ballast** shall be restored such that the boat complies with C.6.1.
- (f) The interior of the boat may be modified.

C.7.2 BUOYANCY

- (a) The **boat** shall float in an approximate horizontal position when flooded and loaded with minimum 35kg lead ballast placed 1350mm \pm 100 mm from the hull datum section defined in D.2.4(b). See also Section L.
- (b) **Hulls** with watertight compartments shall be checked according to (a) with the compartments filled with water. See also Section L.
- (c) For buoyancy check confirmation see A.18.

C.7.3 BALLAST

- (a) **Ballast** pigs shall comply with D.8.
- (b) The maximum weight of the **ballast**, including any equipment (eg. battery) placed below the floor level, but excluding electrical pump and associated hoses and cables, is 181kg. To exclude electrical pump and associated hoses and cables, the weight of these may not exceed 1.5 kg.

C.8 RUDDER

C.8.1 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) The **rudder** shall comply with the templates as defined in section J.
- (b) Routine maintenance such as painting and polishing is permitted without re-measurement and re-**certification**.
- (c) Repair of **rudder** damage will be permitted if the **rudder** complies with C.8.1 (a).

C.8.2 LIMITATIONS

- (a) Only one **rudder** shall be used during an event of less than 8 consecutive days, except when a **rudder** has been lost or damaged beyond repair.

C.8.3 USE

- (a) Boats built before 2011-03-01, which are not equipped with the deep standard **rudder**, may have the small standard **rudder**. This shall be stated on the certificate. Dimensions of the small **rudder** shall comply with the templates as defined in Section J.

C.9 RIG

C.9.1 CONSTRUCTION

- (a) All **spars** shall comply with Section F.

C.9.2 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) Routine maintenance such as painting and polishing is permitted.

C.9.3 FITTINGS

- (a) All mandatory **fittings** and their positioning shall comply with Section F. Other **fittings** are optional.

C.9.4 LIMITATIONS

- (a) Only one set of **spars** and **standing rigging** shall be used during a National Championship or higher event of less than 8 consecutive days, except when an item has been lost or damaged beyond repair.

C.9.5 MAST

(a) DIMENSIONS

	minimum	maximum
Limit mark width	10mm	15mm
Mast spar curvature at a distance of 2700 mm from the mast datum point (See F.2.4 (a))		30mm

(b) USE

- (1) The **spar** shall be stepped in the mast step in such a way that the heel is not capable of moving more than 10mm athwart ships. The mast may be movable in fore-and aft direction.
- (2) The **mast datum point** shall not be above the deck measurement point. (See D.2.5 (c)), regardless of the **mast** rake.
- (3) Rotating **masts** are not permitted.

C.9.6 BOOM

(a) DIMENSIONS

	minimum	maximum
Limit mark width	10mm	15mm
Outer point distance		1960mm
Boom spar curvature at a distance of 1000 mm from the outer limit mark (See C.9.6 (a))		15mm

(b) POSITIONING

- (1) The intersection of the aft edge of the **mast** and the top of the **boom**, each extended as necessary, shall not be below the upper edge of the mast **lower limit mark** when the **boom** is at 90° to the **mast**.

C.9.7 WHISKER POLE

(a) DIMENSIONS

	minimum	maximum
Whisker pole length		2106mm
Whisker pole cross section	22mm	

C.9.8 HEADSAIL BOOM

(a) CONSTRUCTION

- (1) Materials, dimensions, construction and fittings are optional.

C.9.9 STANDING RIGGING

(a) DIMENSIONS

	minimum	maximum
Foretriangle base		1560 mm
Forestay height (see F.2.4 (a))	3730 mm	3750 mm
Distance from hull datum section to forward end of the foretriangle base	3456 mm	3536 mm

(b) USE

- (1) Whilst racing upwind the **mast** is not permitted to be adjusted in an athwart ships plane to windward of a plane perpendicular to the deck. On boats with adjustable **shrouds** it shall be possible to have both sides tightened to their upward limit at the same time.

C.9.10 RUNNING RIGGING

(a) MANUFACTURER

Manufacturer is optional

(b) MATERIALS

Materials are optional

(c) CONSTRUCTION

(1) Mandatory

- (1) **Mainsail** halyard
- (2) **Headsail** halyard
- (3) **Mainsail** sheet
- (4) **Headsail** sheets
- (5) **Boom** vang
- (6) **Backstay**
- (7) **Backstay** control line

(2) Optional

- (1) **Mainsail** outhaul line
- (2) **Mainsail** tack and cunningham control lines
- (3) **Mainsail** traveller control lines
- (4) Mainsheet bridle system, fixed or with adjustment lines
- (5) **Mainsail** sheet fine tune
- (6) **Headsail** cunningham control line
- (7) **Headsail** fairleads or blocks adjustment lines
- (8) **Whisker pole** control lines
- (9) **Headsail boom** control lines
- (10) **Forestay, backstay** and **shroud** adjustment lines

- (11) **Mast** control lines fore and aft at deck
 - (12) **Mast** control lines fore and aft at butt
 - (13) Shock cords for **whisker pole** control
 - (14) Shock cords for **headsail boom** outhaul
 - (15) Shock cord for **mainsail** outhaul retention
 - (16) Shock cord for **backstay** control line retention
- (d) USE
The use of **running rigging** is optional.

C.10 SAILS

C.10.1 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) **Sails** shall not be altered in any way except as permitted by these **class rules**.
- (b) Routine maintenance such as repair of damage is permitted without re-measurement and re-**certification**.

C.10.2 LIMITATIONS

- (a) Not more than 2 **mainsails** and 3 **headsails** shall be used during a National Championship or higher event of less than 8 consecutive days except when a **sail** has been lost or damaged beyond repair.

C.10.3 MAINSAIL

- (a) IDENTIFICATION
The national letters and **sail** number shall comply with these **class rules**.
- (b) USE
 - (1) The **sail** shall be hoisted on a halyard. The arrangement shall permit hoisting and lowering of the **sail** at sea by the **crew**.
 - (2) The highest visible point of the **sail**, projected at 90° to the **mast**, shall not be set above the lower edge of the **mast upper limit mark**. The **tack point** of the **sail** shall not be set below the upper edge of the mast **lower limit mark**. The **clew point** of the sail, projected at 90° to the **boom**, shall not be set behind the fore side of the **boom outer limit mark**.
 - (3) The **luff** bolt rope shall be in the **mast** groove or track.

C.10.4 HEADSAIL

- (a) USE
 - (1) The highest visible point of the **sail**, projected at 90° to the **mast**, shall not be set above the **forestay rigging point**.
 - (2) The **sail** shall be hoisted on a halyard. The arrangement shall permit lowering the sail so that no part of it is above a plane 1800 mm above the **mast datum point**. From there it shall be possible to hoist it again to its original position.
 - (3) The **sail** shall not be attached to any point on the boat that is in front of the forestay.

Section D – Hull

D.1 PARTS

D.1.1 MANDATORY

- (a) **Hull** shell including **keel** and deck
- (b) **Rudder**
- (c) **Ballast**
- (d) Buoyancy equipment

D.1.2 OPTIONAL

- (a) Seat
- (b) Parts used inside the boat
- (c) Parts to cover deck openings

D.2 GENERAL

D.2.1 RULES

- (a) The **hull** shall comply with the **class rules** in force at the time of initial **certification**.
- (b) The **hull** of Norlin mark III boats built before 2011-03-01 shall comply with Section K. The ICA Measurement Report form shall be used.

D.2.2 CERTIFICATION

- (a) **Hull** certification shall comply with A.14.

D.2.3 MATERIALS

- (a) The **hull** shell, **keel** and deck mouldings shall be built from Glass Reinforced Plastic. Aluminium or stainless steel reinforcements are permitted where required for mounting fittings.
- (b) The **hull** shell, **keel** and deck mouldings shall not weigh less than 3.6kg/m².
- (c) Where sandwich construction is used, the core material shall be of balsa, PVC or polyester or combinations thereof and shall be of density before lamination not less than 60kg/m³ in average over a square with the sides 25mm.
- (d) Parts of the **hull** excluding **hull** shell, **keel** and deck mouldings may also be made from aluminium.
- (e) Parts or a structure of several parts that in no direction exceed the size of 120 mm may be of any material if the weight is less than 0.3 kg.
- (f) Wiring, pumps and adherent hoses may be of any material.
- (g) Parts of the steering system may be of any material. Such parts shall not add structural strength to the hull.
- (h) Hatches may be of any plastic material. The minimum weight of hatches in the deck shall be no lighter than the pieces of deck they replace. This includes the original hatch over the **rudder**.

- (i) Any soft material may be used to cover the cockpit. A hard cover shall be made of GRP.
- (j) Stainless steel may be used for mast foot and shroud levers.
- (k) Parts intended to protect edges around holes according to D.2.4 (c) including **mast** hole may be of any material.
- (l) Navigation instruments may be of any material.
- (m) In case a disabled sailor cannot sail without a specific part, that does not comply with these rules, a dispensation may be given by the ICA.

D.2.4 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) The **hull** shell, **keel** and deck mouldings shall not be altered in any way except as permitted by these **class rules**.
- (b) Bulkheads and reinforcements may be modified.
- (c) Holes not bigger than necessary for the installation of **fittings** and passage of lines may be made in the deck. Modification of **shroud** holes are permitted within the limits defined in D.3.1(c).
- (d) Routine maintenance such as painting and polishing is permitted without re-measurement and re-**certification**.
- (e) If any hull moulding is repaired in any other way than described in D.2.4(d), a class measurer shall verify on the **certificate** that the external shape is the same as before the repair, the repair has been done using materials according to D.2.3, and that no substantial stiffness, or other, advantage has been gained as a result of the repair. The class measurer shall also describe the details of the repair on the **certificate**.
- (f) One inspection hatch is permitted in the deck forward of the mast and one aft of the cockpit. This in addition to the hatch over the rudder post that is a part of the deck mould.
- (g) The **mast** opening in the deck may be modified. The forward edge of the **mast** hole shall not extend forward of 2093mm from station 0. Its width shall not exceed 64mm.
- (h) The deck mouldings may be modified to accommodate a **headsail** boom with associated fittings.

D.2.5 DEFINITIONS

- (a) HULL DATUM POINT
The **hull datum point** is a point on the centreline of the **hull** placed at the intersection of the underside of the hull and the aft surface of the **rudder** stock.
- (b) HULL DATUM SECTION (SECTION 0)
The vertical cross section transverse to the centre line through the **hull datum point** is defined as the hull datum section (section 0). This shall be permanently marked in the surface of the **hull** on starboard and port sides on both the **sheerline** and the deck near the **sheerline**.

(c) MEASUREMENT POINT OF THE DECK

The measurement point of the deck is a point, at the **mast** hole section, 36mm above the deck level, measured 15mm from the outmost part of the **hull** shell in this section.

D.2.6 IDENTIFICATION

- (a) The **hull** shall carry the 2.4mR WS Plaque, see B.3.2.
- (b) The **hull** shall carry the 2.4 NOD class sticker, see B.3.1.
- (c) The **hull** shall carry the following information: builder, date built and the boat's sequential identification number permanently embossed or debossed into the hull shell.
- (d) **Hulls** built before 2011-03-01 are excluded from (c).

D.2.7 BUILDERS

- (a) The **hull** including deck, **keel** and **rudder** shall be built by an accredited hull builder.
- (b) All moulds shall be approved by the ICA.
- (c) **Hulls** built before 2011-03-01 are excluded from (a) and (b) and shall comply with Section K.

D.3 HULL SHELL INCLUDING KEEL AND DECK

D.3.1 CONSTRUCTION

- (a) As specified in the Construction Manual.
- (b) Boats built before 2011-03-01 are excluded from D.3.1 (a). However any additional filler on the external **hull** extension of the **hull** (for example in the stern or the stem or the keel) shall be removed to the original shape of the **hull**. See Section K.
- (c) Position of **shroud** holes/slots in the deck.

Boats built after 2011-02-28	minimum	maximum
Distance to back end of shroud hole from section 0	1902mm	
Distance to front end of shroud hole from section 0		1982mm
Slot length		60mm
Distance from centreline to inner edge of hole	240mm	
Distance from centreline to outer edge of hole		268mm
Hole width		12mm

Boats built before 2011-03-01	minimum	maximum
Distance to back end of shroud hole from section 0	1812mm	
Distance to front end of shroud hole from section 0		1982mm
Slot length		60mm
Distance from centreline to inner edge of hole	230mm	
Distance from centreline to outer edge of hole		280mm
Hole width		14mm

D.4 INTERIOR STRUCTURE

D.4.1 CONSTRUCTION

- (a) Optional.

D.5 BUOYANCY

D.5.1 CONSTRUCTION

- (a) Buoyancy equipment shall comprise of rigid non-communicating air cell foam plastic incorporated into the **boat** inside the bulkheads.
- (b) Watertight compartments shall be inspectable by an 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.6 SEAT

D.6.1 MATERIALS

- (a) In addition to what is specified in D.2.3 any soft material that does not take up significant amounts of water.

D.6.2 CONSTRUCTION

- (a) Seat included in **boat** weight
 - (1) Construction is optional.
- (b) Seat excluded from the **boat** weight
 - (1) Construction is optional
 - (2) Seat shall consist of a seat bottom and/or backrest and excludes any hull internal structure.
 - (3) Seat shall be capable of removal without tools.
 - (4) No part of the seat shall be below floor level except fixing tabs with a maximum projection of 100mm.
 - (5) The maximum weight of a removable seat shall be 5kg.

D.7 ASSEMBLED HULL

D.7.1 FITTINGS

- (a) **MANDATORY**
 - (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) Two (2) lifting eyes installed in the boat with a minimum total load capacity of 520kg.
 - (3) One manual bilge pump permanently installed which may discharge through **hull** shell or deck. The pump shall have a minimum capacity of 0.5 litre/stroke.
 - (4) 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** of 1560mm.

- (b) OPTIONAL
 - (1) **Fittings** placed inside the hull
 - (2) **Fittings** on deck
- (c) CONSTRUCTION
 - (1) No **fittings** may be attached to the outside of the **hull** shell (this means that for example that plastic flaps between **hull** and **rudder** are not permitted).

D.7.2 MEASUREMENT MARKS

The following measurement points shall be outlined with marks painted or fastened (adhesive tape) to the **hull**:

- (a) A mark not less than 60 x 10mm:
 - (1) At ends of LWL (L)
 - (2) At ends of measured length (L1)
 - (3) At L2

The inner edges of the marks denote the measurement point.

- (b) An immersion mark at 0,55 x LWL from the forward end of LWL, a triangular mark (a right-angled triangle with a hypotenuse of 50mm). The bottom corner of the immersion mark denotes the measurement point.
- (c) A round mark of 10mm diameter.
 - (1) At the freeboard points above L1 forward and at stern,
 - (2) At the freeboard point above the immersion marks 0.55 x LWL
 - (3) At d1 in the midship girth station
 - (4) At the point 120mm above forward L1.

See also H.3.

D.8 BALLAST

D.8.1 RULES

- (a) The **ballast** shall comply with the current **class rules**.

D.8.2 MATERIALS

- (a) The density of the **ballast** materials shall not be greater than the density of lead.

D.8.3 CONSTRUCTION

- (a) The **ballast** shall be internal in the **boat** and shall be removable from the inside of the **boat**.
- (b) The **ballast** shall be divided in lead pigs consisting of minimum 8 pieces and maximum 16 pieces. The maximum weight of one pig is 35kg. In addition a battery may be one piece.
- (c) **Ballast** pigs shall have their primary dimension in horizontal direction.

Section E – Rudder

E.1 PARTS

E.1.1 MANDATORY

- (a) **Rudder** blade
- (b) Rudderstock

E.2 GENERAL

E.2.1 RULES

- (a) **The rudder** shall comply with the current **class rules**.

E.2.2 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) The **rudder** shall not be altered in any way except as permitted by these **class rules**. See also C.8.1.
- (b) Routine maintenance such as polishing and painting is permitted without re-measurement and re-certification. See also C.8.1.

E.2.3 MANUFACTURERS

- (a) Manufacturers of the **rudder** shall be an accredited hull builder. See D.2.7.
- (b) Boats built before 2011-03-01 may use a small standard **rudder** according to section J. See also C.8.3 (a).

E.2.4 MATERIALS

- (a) As specified in the Construction Manual.

E.2.5 CONSTRUCTION

- (a) As specified in the Construction Manual.

E.2.6 DIMENSIONS

- (a) As specified in the Construction Manual.
- (b) Diameter of rudderstock is 25mm \pm 1mm.

E.2.7 POSITION

- (a) As specified in the Construction Manual.

E.2.8 FITTINGS

- (a) The fitting for attaching steering lines or other arrangement to the rudderstock is optional.

Section F – Rig

F.1 PARTS

F.1.1 MANDATORY

- (a) **Mast**
- (b) **Boom**
- (c) **Standing rigging**
- (d) **Running rigging**

F.1.2 OPTIONAL

- (a) **Whisker pole**
- (b) **Headsail boom**

F.2 GENERAL

F.2.1 RULES

- (a) The **spars** and their **fittings** shall comply with the **class rules**.
- (b) The **standing and running rigging** shall comply with the **class rules**.

F.2.2 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) **Spars** shall not be altered in any way except as permitted by these **class rules**.
- (b) Routine maintenance such as polishing and replacement of **fittings** is permitted

F.2.3 CERTIFICATION

- (a) No **certification** of **spars, standing and running rigging** is required.

F.2.4 DEFINITIONS

- (a) **Mast datum point**

The **mast datum point** is a point on the forward side of the **mast** 3750mm (forestay height) below the forestay **rigging point**. The **mast datum point** shall be marked by a punch.

F.2.5 MANUFACTURER

- (a) Rig builder is optional.

F.3 MAST

F.3.1 MATERIALS

- (a) The **spar** (excluding **fittings** and **corrector weights**) shall be of aluminum alloy. The **mast** crane and **spreaders** shall be of aluminum alloy.

F.3.2 CONSTRUCTION

- (a) The **spar** extrusion shall include a fixed **sail** groove or track, which may or may not be integral with the **spar** but shall be of aluminium alloy.

F.3.3 FITTINGS

(a) **MANDATORY**

- (1) **Boom** attachment fitting
- (2) **Shroud** attachments
- (3) A set of **spreaders**
- (4) **Mainsail** halyard sheave
- (5) **Headsail** halyard sheave

(b) **OPTIONAL**

Other **fittings** and instrumentation are optional

F.3.4 DIMENSIONS

	minimum	maximum
Mast spar cross section at upper point		
fore-and-aft	28mm	66mm
transverse	24mm	
Mast spar cross section between a point 400 mm below the mast datum point and a point 3500mm above		
fore-and-aft	56mm	66mm
transverse	38mm	
Mast spar cross section between upper point and the point 3500mm above the datum point may have a fair rounding taper		
Mast limit mark width	10mm	15mm
Lower point height	340mm	350mm
Upper point height	4990mm	5000mm
Lower point to upper point	4630mm	4650mm
Forestay height	3730mm	3750mm
Shroud height	3770mm	4000mm
Spreader		
length	200mm	350mm
height	1950mm	2050mm

F.3.5 WEIGHTS

	minimum	maximum
Mast weight	6.5kg	
Mast tip weight	2.0kg	

F.4 BOOM

F.4.1 MATERIALS

- (a) The **spar** shall be of aluminium alloy.

F.4.2 CONSTRUCTION

- (a) The **spar** extrusion may or may not include a fixed **sail** groove or track which may or may not be integral with the **spar** but shall be of the same material.

F.4.3 FITTINGS

- (a) **Fittings** of the **boom** are optional.

F.4.4 DIMENSIONS

	minimum	maximum
Boom cross section between mast and outer point		
vertical		75mm
transverse	27mm	55mm

F.5 WHISKER POLE

F.5.1 MANUFACTURER

- (a) Manufacturer is optional.

F.5.2 MATERIALS

- (a) The **spar** shall be of aluminium alloy.

F.5.3 CONSTRUCTION

- (a) Construction is optional.

F.5.4 FITTINGS

- (a) **Fittings** of the **whisker pole** are optional.

F.5.5 DIMENSIONS

	minimum	maximum
Whisker pole length		2106mm
Whisker pole cross section	22mm	

F.6 HEADSAIL BOOM

F.6.1 MANUFACTURER

- (a) Manufacturer is optional.

F.6.2 MATERIALS

- (a) Materials are optional.

F.6.3 CONSTRUCTION

- (a) **Headsail boom** included in **boat** weight.
 - (1) Construction is optional
- (b) **Headsail boom** excluded from the **boat** weight.
 - (1) Construction is optional
 - (2) Headsail boom excludes any running rigging
 - (3) Headsail boom shall be capable of removal without tools

F.6.4 FITTINGS

(a) **Fittings** of the **headsail boom** are optional.

F.6.5 DIMENSIONS

(a) Dimensions are optional.

F.7 STANDING RIGGING

F.7.1 MATERIALS

(a) The **standing rigging** excluding **backstay** and **forestay** shall be of stainless steel.

(b) Material of the **backstay** and **forestay** is optional.

F.7.2 CONSTRUCTION

(a) MANDATORY

(1) **Forestay**

(2) Upper **shrouds**

(3) Upper **shrouds** and lower **shrouds** (if present) shall go through the same holes/slots in the deck.

(a) OPTIONAL

(1) Lower **shrouds**

F.7.3 FITTINGS

(a) **Fittings** are optional.

F.7.4 DIMENSIONS

	minimum	maximum
Upper shroud	2.5 mm	

F.8 RUNNING RIGGING

F.8.1 MATERIALS

(a) Materials are optional.

F.8.2 CONSTRUCTION

(a) MANDATORY

Construction is optional.

(b) OPTIONAL

Construction is optional.

F.8.3 FITTINGS

(a) **Fittings** are optional.

Section G – Sails

G.1 PARTS

G.1.1 MANDATORY

- (a) **Mainsail**
- (b) **Headsail**

G.2 GENERAL

G.2.1 RULES

- (a) **Sails** shall comply with the **class rules** in force at the time of **certification**.

G.2.2 CERTIFICATION

- (a) The class measurer shall **certify mainsails** and **headsails** in the **tack** and shall sign and date the **certification mark**. **Mainsail E** is 1960mm. **Headsail J** is 1560mm.
- (b) An MNA may appoint one or more persons at a sailmaker to measure and **certify sails** produced by that manufacturer in accordance with WS In-house Certification Guidelines.

G.2.3 SAILMAKER

- (a) Sailmaker is optional.

G.3 MAINSAIL

G.3.1 IDENTIFICATION

- (a) The class insignia shall conform with the dimensions, colours and requirements as detailed in the diagram contained in Section H.
- (b) As an alteration to RRS APPENDIX G 1.3, the Insignia may be placed on the starboard side only.
- (c) The national letters and **sail** numbers shall comply with the RRS, but as an alteration to RRS APPENDIX G1.2 b), the national letters and sail numbers shall be of the following dimensions:

	minimum	maximum
Height	250mm	270mm
Thickness	30mm	40mm
Space between adjoining letters and numbers	45mm	50mm

G.3.2 MATERIALS

- (a) The **ply** fibres are optional
- (b) Materials of **stiffenings**, cornerboards, reinforcements and battens are optional

G.3.3 CONSTRUCTION

- (a) The **sail** construction shall be **soft sail**.
- (b) The **body of the sail** shall be **single-ply sail**.

- (c) The **sail** shall have 4 equally spaced **batten pockets** in the **leech**. These equal parts shall be within the tolerances $\pm 50\text{mm}$.
- (d) The following are permitted: Stitching, glues, tapes, bolt ropes, corner eyes, headboard with fixings, cunningham eye or pulley, **batten pocket patches**, **batten pocket** elastic, **batten pocket** end caps, mast and boom slides, leech line with cleat, **windows**, tell tales, **sail reinforcements**, **tabling**, battens, sail shape indicator stripes and items as permitted or prescribed by other applicable *rules*.

G.3.4 DIMENSIONS MAINSAIL

	minimum	maximum
Leech length	4850mm	5150mm
Half width		1333mm
Three quarter width		804mm
Upper width at upper leech point 500mm from head point		372mm
Top width		72mm
Foot median		4900mm
Batten pocket length outside		
uppermost pocket		480mm
intermediate and lowermost pockets		680mm
Batten pocket width outside		60mm
Batten length		
uppermost batten		480mm
intermediate and lowermost battens		680mm
Primary reinforcements		800mm
Secondary reinforcements		800mm

G.4 HEADSAIL

G.4.1 MATERIALS

- (a) The **ply** fibres are optional.
- (b) Materials of **stiffenings**, cornerboards, sail reinforcements and battens are optional.

G.4.2 CONSTRUCTION

- (a) The construction shall be **soft sail**.
- (b) The **body of the sail** shall consist of **single-ply sail**.
- (c) The following are permitted: Stitching, glues, tapes, one cringle /tie attachment point at each sail corner, hanks, **batten pocket** elastic, **batten pocket patches**, **batten pocket** end caps, leech line with cleat, **windows**, tell tales, **sail reinforcements**, **tabling**, battens, sail shape indicator stripes and items as permitted or prescribed by other applicable *rules*.

G.4.3 TYPES OF HEADSAILS

- (a) Standard **headsail**. No limitations on use.
- (b) **Headsail boom headsail**. No limitations on use.

G.4.4 DIMENSIONS STANDARD HEADSAIL

	minimum	maximum
Foot length		1716mm
Three quarter width		437mm
Half width		827mm
Top width		40mm
Foot median		3910mm
Number of batten pockets		3
Batten pocket length outside		450mm
Batten pocket width outside		60mm
Number of battens		3
Batten length		400mm
Head point to intersection of leech and centreline of uppermost batten pocket	700mm	
Clew point to intersection of leech and centreline of lowermost batten pocket	700mm	
Primary reinforcement		600mm
Secondary reinforcement		600mm

G.4.5 DIMENSIONS HEADSAIL BOOM HEADSAIL

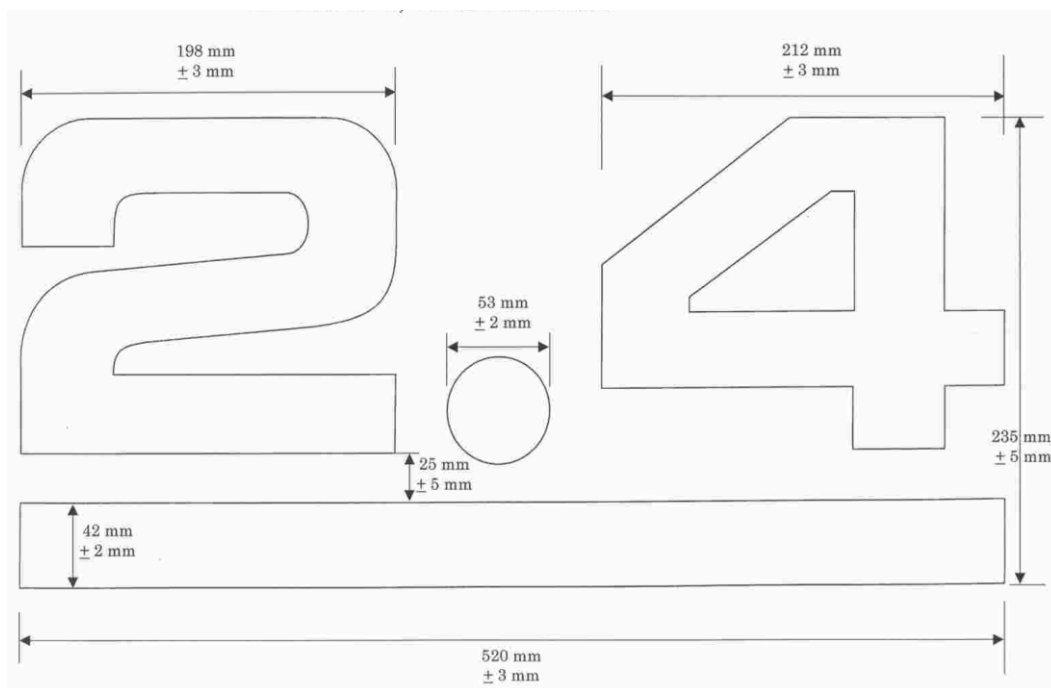
	minimum	maximum
Foot length		1482mm
Three-quarter width		468mm
Half width		850mm
Top width		40mm
Foot median		3910mm
Number of batten pockets		3
Batten pocket length outside		450mm
Batten pocket width outside		60mm
Number of battens		3
Batten length		400mm
Head point to intersection of leech and centreline of uppermost batten pocket	700mm	
Clew point to intersection of leech and centreline of lowermost batten pocket	700mm	
Primary reinforcement		600mm
Secondary reinforcement		600mm

PART III – APPENDICES

The rules in Part III are **closed class rules**. Measurement shall be carried out in accordance with the ERS except where varied in this Part.

Section H - Class insignia and measurement diagrams

H.1 CLASS INSIGNIA DIAGRAM



H.2 INSIGNIA COLOURS

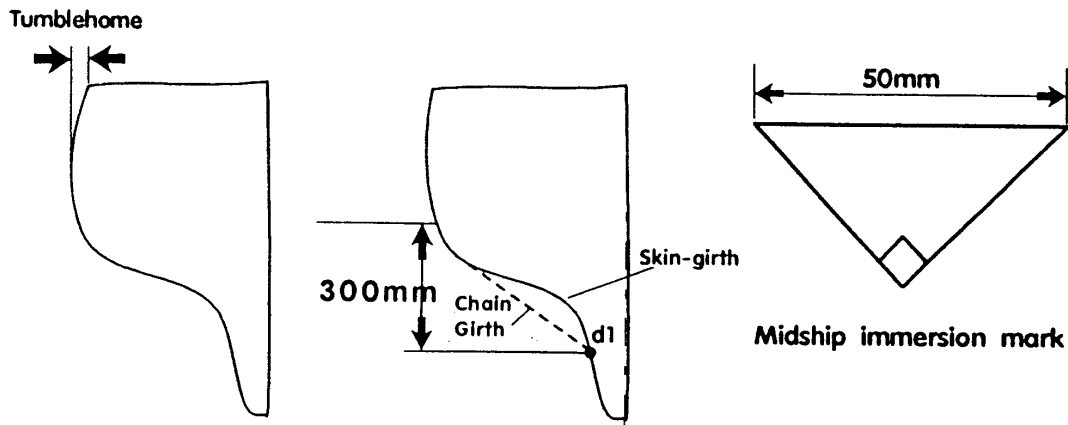
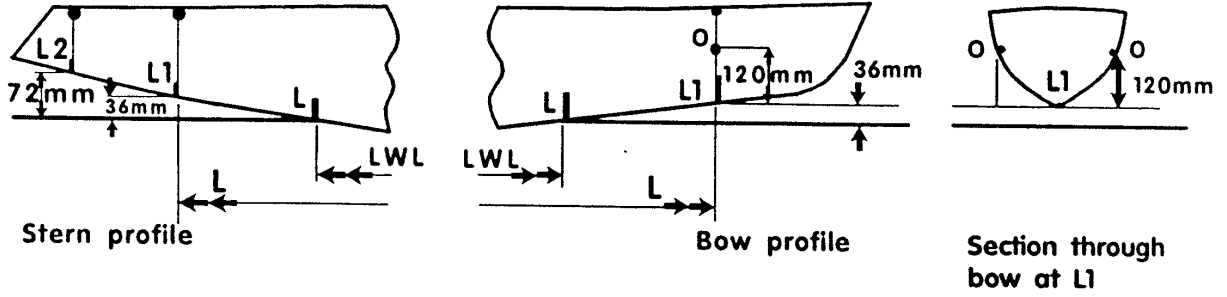
The class insignia shall be in blue colour.

Current and former champions may have the horizontal line in the insignia in a different colour:

- | | |
|--------------------------|--------|
| International Champion - | Gold |
| Continental Champion - | Orange |
| National Champion - | Green |

H.3 MEASUREMENT DIAGRAMS

Measurement Diagrams



Midship Cross-section at
0.55 x LWL from forward
end of LWL

Section J – Hull, keel and rudder dimensions and templates

J.1 DIMENSIONS

Refer to Construction Manual drawings J1, J3 & J4.

The **hull** and **keel** shall comply with the following dimensions:

	Minimum	Maximum
Hull length	4175mm	4183mm
Vertical distance from baseline to keel line		
at section A	481mm	483mm
at section 0	437mm	437mm
at section 1	118mm	120mm
at section 3	127mm	129mm
at section 4	400mm	400mm
Vertical distance from baseline to under- side of keel at section 2	576mm	578mm
Beam of hull at sheerline		
at section 0	536mm	542mm
at section 2	800mm	808mm
at section 4	302mm	309mm
Horizontal distance from the aft end of the hull to hull datum point	645mm	651mm
Horizontal distance from vertical section through hull datum point		
to fore end of mast spar hole at deck		2093mm
to aft end of shroud holes at deck	1902mm	
to forward end of shroud holes at deck		1982mm
Transverse distance between centres of shroud holes at deck and centreline	240mm	268mm
Horizontal distance from the intersection of the forestay and the deck to forward end of hull	0mm	80mm
Keel girth at section 2		2752mm

J.2 TEMPLATES

Refer to Construction Manual drawing J2.

The **hull**, **keel** and **rudder** shall be checked for compliance with the templates defined in section J2. Only templates approved by the ICA shall be used.

The **hull** shall comply with the following **hull** templates:

- Section 0, 2 and 4 templates
- Stern section template

The **keel** shall comply with the following **keel** templates:

- Cross section 75 and 400 templates
- Underside **keel** template
- Trailing edge template

The standard **rudder** shall comply with the following **rudder** templates:

- Profile template
- Cross section 200, 400 and 600 templates
- Trailing edge template

The small **rudder** shall comply with the following **rudder** templates:

- Profile template
- Cross section 200 and 400 templates
- Trailing edge template

Clearance to templates at:	Minimum	Maximum
Section 0 Template perpendicular to the waterline	2mm	4mm
Section 2 Template perpendicular to the waterline	2mm	4mm
Section 4 Template perpendicular to the waterline	2mm	4mm
Underside of keel at section 2 Template placed perpendicular to the waterline	0mm	4mm
Keel profile at 75mm below the base line Template placed parallel to the waterline	2mm	5mm
Keel profile at 400mm below the base line Template placed parallel to the waterline	2mm	5mm
Aft most part of stern foil template Template placed on the stern + 50 from centre plane	0mm	2mm
Trailing edge of the keel	0mm	1mm
Small rudder profile template	1mm	5mm
Small rudder cross section templates 1 and 2	2mm	5mm
Trailing edge of the small rudder	0mm	1mm
Standard rudder profile template	1mm	5mm
Standard rudder cross section templates 1, 2 and 3	2mm	5mm
Trailing edge of the standard rudder	0mm	1mm

Section K – Requirements for old Norlin mark III boats built before 2011-03-01

K.1 SCOPE

To be approved as a 2.4 NOD boat the following requirements must be met:

- (1) The **hull** shall have been built before 2011-03-01.
- (2) The **boat** shall have a valid 2.4mR Certificate
- (3) The **boat** shall comply with C.6, C.7, C.8, C.9, D, E, F, G and K.

*Hulls built in moulds which were produced from a properly built hull according to the above may be accepted.

K.2 HULL CHECKS

Assembled **hull** dimensions shall be checked for compliance with the dimensions defined in section J.

The draught shall be checked by taking the chain girth measure at cross section 2 from the **sheerline** on one side round the **keel** to the **sheerline** on the other side:
< 2752mm

The **hull**, **keel** and **rudder** shall be checked for compliance with the templates defined in section J.2. Only templates approved by the ICA shall be used.

K.3 ADDITIONAL CHECKS

Visual checks shall be made to see that the **hull** shape has not been changed by application of fillers or by grinding. In such cases the **hull** shape shall be restored to its original shape. When in doubt templates in the sections A, 1 and 3 shall be checked, where relevant. The same tolerances as for cross sections 0, 2 and 4 apply.

Section L – Buoyancy check

L.1 CONDITION OF THE BOAT

The **boat** shall be in racing condition according to Rule C.6.1 (a) and with an additional weight of 35 kg lead placed 1350 mm forward of section 0 (+- 100 mm).

Hatches to watertight compartments, if any, shall be opened in order to let the tanks to be filled with water.

L.2 EXECUTION OF THE CHECK

The **boat** shall be filled with water and 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.

L.3 REQUIREMENTS

The **boat** shall float in an approximately horizontal position. Neither the stern nor the bow shall have tendencies to sink under the water level.

Section M – Procedure when measuring centre of gravity of the boat

M.1 CONDITIONS

The **boat weight** shall be in accordance with C.6.1 (a).

The **mast** shall be at right angles to the **waterline**. The **boom** shall be attached to the **mast** and be on the centre line of the boat. The **mainsail** shall be placed alongside and parallel to the **boom** and the **headsail** placed on the fore deck.

M.2 MEASURING PROCEDURE

The boat shall be hung by a rope fixed in the two lifting eyes.

Using the friction of the rope over the lifting hook, the level of the boat should be adjusted. The boat shall hang with the **waterline** horizontal.

This can be checked by placing a spirit level on the centre line of the **boat**, with one end on the forward cockpit frame and the other on the aft cockpit frame. A 10mm shim should be placed between the spirit level and the aft cockpit frame. Other methods are, optical or laser levels on the **waterline**.

A plum bob is hung from the centre of the hook as close as possible to the floor. The centre of gravity is measured horizontally from the section 0 to the line of the plum bob. Section 0 is permanently marked on the sheer line.

The position of the **ballast** pigs or the **corrector weights**, may be used to adjust the centre of gravity to comply with rule C.6.1(b).

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