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Class Rules

International Etchells Class



The Etchells was designed in 1966 by Skip Etchells and was adopted as a World Sailing class in 1974.

sport / nature / technology



World Sailing
Class Association

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INTRODUCTION

Etchells hulls, hull appendages, rigs and sails are measurement controlled.

These rules are deemed to include the Sail Measurement Certificate, Measurement Templates and Measurement Diagrams.

Etchells hulls, hull appendages and rigs shall only be manufactured by World Sailing/ISAF approved builders– in the class rules referred to as licensed builders. Equipment is required to comply with the International Etchells Building Specification and is subject to a World Sailing/ISAF approved manufacturing control system.

Etchells hulls, hull appendages, rigs and sails may, after having left the manufacturer, only be altered to the extent permitted in Section C of the class rules.

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

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.

If these rules do not say you can, then you cannot.

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 ISAF International Sailing Federation now World Sailing
- MNA World Sailing Member National Authority
- IECA International Etchells Class Association
- NCA National Class Association
- ERS Equipment Rules of Sailing
- RRS Racing Rules of Sailing

A.3 AUTHORITIES

- A.3.1 The international authority of the class is World Sailing which shall co-operate with the IECA in all matters concerning these **class rules**.
- A.3.2 Notwithstanding anything contained herein, the **certification authority** has the authority to withdraw a **certificate** and shall do so on the request of World Sailing.

A.4 ADMINISTRATION OF THE CLASS

- A.4.1 World Sailing has delegated its administrative functions of the class to MNAs. The MNA may delegate part or all of its functions, as stated in these **class rules**, to an NCA.
- A.4.2 In countries where there is no MNA, or the MNA does not wish to administrate the class, its administrative functions as stated in these **class rules** shall be carried out by the IECA which may delegate the administration to an NCA.

A.5 WORLD SAILING RULES

- A.5.1 These **class rules** shall be read in conjunction with the ERS.
- A.5.2 Except where 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 VARIATIONS

- A.6.1 At Class Events – see RRS 89.1(d) – World Sailing Regulation 10.5(f) applies. At all other events RRS 87 applies.

A.7 CLASS RULES AMENDMENTS

- A.7.1 Amendments to these **class rules** are subject to the approval of World Sailing in accordance with World Sailing Regulations.

A.8 CLASS RULES INTERPRETATION

- A.8.1 Interpretation of **class rules** shall be made in accordance with the World Sailing Regulations.

A.9 INTERNATIONAL CLASS FEE AND WS/ISAF BUILDING PLAQUE

- A.9.1 The licensed hull builder shall pay the International Class Fee.
- A.9.2 World Sailing shall, after having received the International Class Fee for the hull, send the World Sailing Building Plaque and a measurement form to the licensed hull builder.

A.10 SAIL NUMBERS

- A.10.1 Sail numbers shall be the boat's World Sailing/ISAF plaque number.

A.11 HULL CERTIFICATION

- A.11.1 A **certificate** shall record the following information:
- (a) Class
 - (b) **Certification authority**
 - (c) Sail number issued by the **certification authority**
 - (d) Owner and address
 - (e) Hull identification/CIN
 - (f) Builders details including, hull no, mould no and plug no
 - (g) Date of issue of initial **certificate**
 - (h) Date of issue of **certificate**
 - (i) Complete **boat** weight
 - (j) Mast bury, as per C.9.4 (a) (2)
 - (k) Weight of correctors, if any
 - (l) Location of correctors, if any
 - (m) Signature of owner.

A.12 INITIAL HULL CERTIFICATION

- A.12.1 For a **certificate** to be issued to a hull not previously **certified**:
- (a) **Certification control** shall be carried out by the **official measurer** who shall complete the appropriate documentation.
 - (b) The documentation and **certification** fee, if required, shall be sent to the **certification authority**.
 - (c) Upon receipt of a satisfactorily completed documentation and **certification** fee, if required, the **certification authority** may issue a **certificate** and if so shall send a copy to the appropriate NCA.

A.13 VALIDITY OF CERTIFICATE

A.13.1 A hull **certificate** becomes invalid upon:

- (a) the change to any items recorded on the hull **certificate** as required under A.11.
- (b) withdrawal by the **certification authority**.
- (c) the issue of a new **certificate**.

A.14 HULL RE-CERTIFICATION

A.14.1 The **certification authority** may issue a **certificate** to a previously certified hull:

- (a) when it is invalidated under A.13.1(a) and/or after receipt of the old **certificate**, and **certification** fee if required.
- (b) when it is invalidated under A.13.1 (b), at its discretion.
- (c) in other cases, by application of the procedure in A.12.
- (d) it shall send a copy to the appropriate NCA.

A.15 RETENTION OF CERTIFICATION DOCUMENTATION

A.15.1 The **certification authority** shall:

- (a) retain the original documentation upon which the current **certificate** is based.
- (b) upon request, transfer this documentation to the new **certification authority** if the hull is exported.

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 hull **certificate**.

B.1.2 The owner/owners shall be a fully paid up member/members of the IECA.

B.2 FLOTATION CHECKS

B.2.1 It is the responsibility of the owner to ensure the water tightness of the boat at all times.

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 50 is changed as follows: C.3.2.
- (b) The ERS Part I – Use of Equipment shall apply.
- (c) RRS 55.4 shall not apply.
- (d) RRS 42.3 (b) is changed as follows: see C.2.4(a)
- (e) RRS 49.1 Crew Position is changed as follow: see C.2.3

C.2 CREW

C.2.1 LIMITATIONS

- (a) The **crew** shall consist of 3 or 4 persons.
- (b) Substitutions of crew shall be requested to the Race Committee who shall verify the eligibility and crew weight of the substitute crew. The Jury shall approve the substitution in writing.
- (c) For any Etchells class Sanctioned Event as described in Appendix A.3, the boat shall sail with the same number of crew throughout.

C.2.2 WEIGHTS

	minimum	maximum
The total weight of the crew dressed in light clothing, the minimum being outerwear shorts and t-shirt		285 kg

C.2.3 HIKING

- (a) When hiking in the sitting position, no part of the **crew's** body between the middle of the thigh and the feet shall be outboard of the **sheerline**.
- (b) When hiking in the lying position, at least one arm and one leg shall be completely inboard of the **sheerline**.
- (c) The use of ONLY the headsail, spinnaker and/or mainsheets and/or a single safety line attached to the top of the console, held solely in the hands, may be used to assist hiking. The safety line shall be of constant thickness, maximum diameter 10mm. It shall have no knots, loops or

splices other than to attach it to the console. When extended outboard perpendicular to the **sheerline**, it shall extend no more than 300mm from the **sheerline**.

- (d) No rope, wire, rail, handhold or other special device shall be used by any member of the crew for the purpose of supporting his weight outboard of the **sheerline**.
- (e) Hiking straps and stiffeners worn under the thighs are not permitted. This amends RRS 49.1.

C.2.4 BOAT HANDLING

- (a) Hanging on to the mast or shrouds to promote roll tacking or gybing is prohibited. (This amends RRS 42.3 (b)).

C.3 PERSONAL EQUIPMENT

C.3.1 MANDATORY

- (a) The boat shall be equipped with **personal buoyancy** for each crew member to the minimum standard EN 393: 1995 (CE 50 Newtons) in accordance with ISO standard 12402-5 (Level 50), or USCG Type III, or AUS PFD 1. The **personal flotation device** shall be readily available and shall have a whistle attached.

C.3.2 TOTAL WEIGHT

The total weight per person of worn or carried clothing and equipment, including footwear and other clothing worn below the knee, shall not exceed 10 kg. The total combined weight carried by the crew shall not exceed 30Kg. This amends RRS 50.1 (b).

C.4 ADVERTISING

C.4.1 LIMITATIONS

In accordance with World Sailing Regulation 20.5.1, no advertising shall be displayed pursuant to World Sailing Regulation 20.3.2 (Advertising chosen by the Person in Charge on hulls, spars and sails).

C.5 PORTABLE EQUIPMENT

C.5.1 FOR USE

(a) MANDATORY

		Minimum	Maximum
(1)	Hand pump	1	
(2)	Anchor weight	3.5kg	
(3)	Anchor chain link size	6mm	
(4)	Combined weight anchor and chain	5.5kg	9.0kg
(5)	Anchor line diameter	10mm	
(6)	Continuous anchor line length (N.B. Running rigging does not comply with this rule)	45m	50m
(7)	Buckets with lanyards	2	
(8)	Capacity each bucket	9.5lt	
(9)	Lanyard length	1.5m	

(b) OPTIONAL

- (1) Electronic or mechanical timing devices
- (2) Magnetic compass
- (3) Self contained digital compass – giving no more than direction, tacking prompt and timer
- (4) Extra hand pumps and/or electric bilge pump system (pump, battery, wiring and switches) weighing no more than 6.0 kgs. in total, with the battery securely positioned in the port seat locker and easily removable.
- (5) Depth sounder not piercing the hull, to be used ONLY when permitted by a National Authority for races confined to boats of their own nationality
- (6) Electronic video recording apparatus
- (7) VHF Radio

C.5.2 NOT FOR USE

(a) MANDATORY

- (1) Towing rope minimum 25 m and maximum 30 m continuous length of not less than 12 mm. Towing rope must be of a floatable material and not pre-stretched. (N.B. Running rigging does not comply with this rule).
- (2) Two paddles minimum 1200 mm long and with a blade area of minimum 0.04 m².

(b) OPTIONAL

- (1) Mooring line

- (2) Flashlight
- (3) Heaving line and throwing PFD device
- (4) Re-boarding device
- (5) Sound signalling device
- (6) Flares
- (7) First Aid Kit
- (8) Knife.
- (9) Other safety items including any required by law of the boat's National Authority or country.

C.6 BOAT

C.6.1 COMPLETE BOAT WEIGHT

	Minimum	Maximum
The Complete Boat Weight.....	1508 kg	1565 kg

The Complete Boat Weight shall be taken with the **boat** in dry condition and ready to sail, excluding **sails** and all portable equipment as listed in C.3 and C.5, but including one set of sheets.

C.6.2 HULL CORRECTOR WEIGHTS

- (a) If the Complete Boat Weight as defined in C.6.1 is found to be less than 1508kg, corrector weights shall be added as detailed in (b) and (c) below so that the Complete Boat Weight is no less than 1508kgs.
- (b) To correct, weight shall be added by:
 - (i) permanently fixing weight in the forward bilge sump, which when combined with the certified weight of the keel shall not exceed 965kg; and/or
 - (ii) Amidships, above the waterline and working towards the ends of the hull towards the bulkheads add port and starboard;
 - (1) One 305mm wide strip of 510gm/sq.m glass woven roving and polyester resin of sufficient length to add the required weight.
 - (2) If the first strip is not adequate, a second 305mm wide strip shall be placed above, not on, the first strip. The second strip shall be carried out towards the bulkheads only so far as necessary to add the required weight.
 - (3) This added glass and resin weight shall not increase the Glass Hull weight to exceed 400kg.

C.7 HULL

C.7.1 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) Routine maintenance such as painting and polishing is permitted without re-measurement and re-**certification**.
- (b) Grinding, planing, sanding and/or the application of putty fillers and coatings on the outside of the hull is permitted only for the fairing of local

imperfections or to improve the finish on the surface of the hull, provided that no part of the **boat** is caused to be outside any measurement tolerances.

- (c) A block, not exceeding 75mm from the centreline of the boat, may be fitted to the cleat shelf face to assist a crew member to brace themselves and prevent falling or sliding inboard when trimming.
- (d) Holes not bigger than necessary for the installation of fittings and passage of lines may be made in the deck, bulkheads, knees or thwarts – see D.7.2 (b).

C.7.2 FITTINGS

(a) USE

- (1) Bulkhead access hole covers with gaskets attached and all wing nuts securely fastened and drainage plugs shall be kept in place while racing.
- (2) The Floorboards shall not be removed while racing.

C.8 HULL APPENDAGES

C.8.1 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) Hull appendages shall not be altered in any way except as permitted by these class rules.
- (b) Routine maintenance such as cleaning, polishing and repair of minor damage, abrasions and scratches is permitted without re-measurement and re-certification.
- (c) Grinding, planing, sanding and/or the application of putty fillers and coatings on the outside of the hull appendages is permitted only for the fairing of local imperfections or to improve the finish on the surface of the hull appendage, provided that no part of the **boat** is caused to be outside any measurement tolerances.
- (d) If the weight or shape (section or profile) of the keel is altered, outside the allowances in (a) & (b), the keel shall be fully re-measured and a new weight certificate issued and the **boat's** certificate re-issued as necessary. Any changes shall comply with current rules and templates. The procedure in H 2 shall be followed.

C.9 RIG

C.9.1 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) Unused holes 8mm or less in diameter shall be filled with pop rivets or machine screws. Unused holes greater than 8mm shall be filled or covered with aluminium.

C.9.2 FITTINGS

(a) USE

- (1) Fore and aft mast chocks may be fitted and used to hold the mast in position in the partners.
- (2) Mechanical means, including rams, levers and/or block and tackle arrangements with cleats, shall be permitted to move and hold the

position of the mast fore and aft in the partners, provided such systems attach to the mast and fit entirely below the top of the partners.

- (3) Mast partner blocks shall be fitted and may be attached either to the mast or the mast **spar** hole. If attached to the mast, they may include a step in their design, which shall be a clearance fit above the raised side of the mast **spar** hole when the mast is at rest with no tension on the standing rigging.

C.9.3 LIMITATIONS

- (a) Only one set of **spars** and standing **rigging** shall be used during an Etchells class Sanctioned Event as described in Appendix A.3.

C.9.4 MAST

(a) DIMENSIONS

	minimum	maximum
(1) Distance from mast datum point to point B at the sheerline in way of mast	725 mm	740 mm
(2) Distance from point B to the top of the mast step	755 mm	785 mm

(b) USE

- (1) The **spar** shall be stepped in the mast step in such a way that the heel is capable of being moved in a fore and aft direction, except that it shall not be capable of moving more than 2 mm while racing.
- (2) If a sliding gooseneck is used, a stop shall be fitted to prevent the upper edge of the boom being below the **lower point**.

C.9.5 BOOM

(a) DIMENSIONS

	minimum	maximum
Limit mark width	25mm	
Boom point distance		3530 mm

(b) USE

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

C.9.6 SPINNAKER POLE

(a) USE

- (1) Grip tape or similar may be added to the pole.

C.9.7 STANDING RIGGING

(a) DIMENSIONS

	minimum	maximum
Forestay from Forward Datum Point	1290mm	1340 mm

(b) USE

- (1) Shrouds shall be adjusted, only by turnbuckles attached to chainplates above the deck.
- (2) The fore and aft position of shrouds shall not be adjusted while racing.
- (3) The forestay shall be adjusted only by a below deck turnbuckle attached to the stem fitting and shall not be adjusted while racing.
- (4) While sailing downwind with the jib lowered on the deck, the mast may be steadied by either:
 - (a) unfastening the halyard from the headsail and attaching it to the tack fitting or to a separate deck eye located aft of the forestay and retensioning the halyard, or,
 - (b) attaching a separate line from the headsail tack fitting or from a separate deck eye located aft of the forestay to the head of sail or halyard and then re-tensioning the halyard

C.9.8 RUNNING RIGGING

(a) USE

- (1) Sheeting arrangements are optional except that no lines may pass through the hull sides.
- (2) The lower section of the backstay shall be led around the backstay sheave inside the hull.
- (3) Halyards shall be led over sheaves or fairleads in the positions as shown on the spar drawings.
- (4) The kicking strap/boom vang shall be led only to the chainplates, cabin top and/or the mast above the partners.
- (5) Other running rigging arrangements are 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 general repairs is permitted without re-measurement and re-**certification**, provided that no alteration to sail shape or measurement takes place.

C.10.2 LIMITATIONS

- (a) Not more than 1 mainsail, 2 headsails and 2 spinnakers shall be carried aboard.
- (b) Not more than 1 mainsail, 2 headsails and 2 spinnakers shall be presented for measurement and used during an Etchells Class Sanctioned Event as defined in Appendix A.3.

- (c) Only one sail of each type shall be hoisted at any one time.

C.10.3 SPARE NUMBER

C.10.4 MAINSAIL

(a) USE

- (1) The **sail** shall be hoisted on a halyard. The arrangement shall permit hoisting and lowering of the **sail** at sea.
- (2) The highest visible point of the **sail**, projected at 90° to the mast **spar**, shall not be set above the lower edge of the mast **upper limit mark**. The intersection of the **leech** and the top of the boom **spar**, each extended as necessary, shall not be behind the fore side of the boom **outer limit mark**.
- (3) **Luff** and **foot** bolt ropes shall be in the **spar** grooves or tracks.

C.10.5 HEADSAIL

(a) USE

- (1) The **sail** shall be hoisted on a halyard. The arrangement shall permit hoisting and lowering of the **sail** at sea.
- (2) The intersection of the **luff** or its extension and the deck shall be not more than 50 mm aft of forestay

C.10.6 SPINNAKER

(a) USE

- (1) The **sail** shall be hoisted on a halyard. The arrangement shall permit hoisting and lowering of the **sail** at sea.

Section D – Hull

D.1 PARTS

D.1.1 MANDATORY

- (a) Hull shell
- (b) Forward ring frame in hulls built on or after 1st January 2008
- (c) Deck
- (d) Buoyancy Tanks
- (e) Bulkheads
- (f) Thwart
- (g) Partition aft of seat
- (h) Knees
- (i) Rudder skeg

D.1.2 OPTIONAL

- (a) Console
- (b) Forward ring frame in hulls built prior to 1st January 2008

D.2 GENERAL

D.2.1 RULES

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

D.2.2 CERTIFICATION

- (a) See Rule A.12.
- (b) The builder shall sign the measurement form stating that the hull and hull appendages are built in accordance with the rules, plans and specifications of the IECA.

D.2.3 MODIFICATIONS, MAINTENANCE AND REPAIR

- (a) The hull shell, deck, bulkheads, floorboards and thwart shall not be altered in any way except as permitted by these **class rules**.
- (b) Holes not bigger than necessary for the installation of fittings and passage of lines may be made in the deck, bulkheads, knees or thwarts.
- (c) If any hull moulding is repaired in any other way than described in C.7.1, an **official measurer** shall verify on the **certificate** that the external shape is the same as before the repair and that no substantial stiffness, or other, advantage has been gained as a result of the repair. The **official measurer** shall also describe the details of the repair on the **certificate**.
- (d) Limited extra reinforcement in way of attachment of fittings to the hull, deck, cuddy, coaming, seat, bulkheads or knees, shall consist of:
polyester resin and glass tapes and/or backing plates of metal, wood, filler or any combination of these.
Reinforcement shall not exceed the area needed to prevent local crushing or fracture. It shall not create an additional structural member, nor connect two or more structural components.
- (e) Open holes are permitted in the knees and/or thwart to allow running rigging, storage of spinnaker pole and/or paddle and to provide access to thwart storage compartment.

OPEN HOLE DIMENSIONS

	minimum	maximum
Any hole to any edge of any knee or thwart		50mm
Running rigging hole to any edge of any knee or thwart.....		25mm
Total area of hole(s) in a single knee		75cm ²
Total area of hole(s) in forward or aft vertical thwart member.....		250 cm ²
Area of any one hole passing running rigging through a knee or thwart..... (Equivalent to max diameter of 50.5mm)		250cm ²

D.2.4 DEFINITIONS

(a) HULL DATUM POINT

The **Hull Datum Point (HDP)** is the vertical tangent to the bow excluding any fittings at the sheerline on the bow centre line.

(b) The Aft Datum Point (ADP) is the intersection of the transom and underside of the hull counter extension.

(c) All measurement sections shall be marked permanently by the builder in the mouldings.

D.2.5 IDENTIFICATION

(a) The hull shall carry the Worlds Sailing/ISAF Plaque permanently placed near the centreline of the forward face of the aft bulkhead.

(b) The World Sailing/ISAF plaque number shall also be cut into the keelson or moulded into the glass of the hull in the bilge area.

D.2.6 BUILDERS

(a) The hull shall be built by a builder licensed by World Sailing/ISAF. Applications for building licenses shall be made to World Sailing and the premises shall be inspected by Lloyds Register of Shipping or a similar classification society.

(b) All moulds shall be constructed by builders licensed for that purpose and approved by World Sailing/ISAF. All moulds shall be numbered.

(c) Any assembly moulds or construction jigs shall be approved by World Sailing/ISAF.

(d) No alterations shall be made to any moulds except that a non-skid surface may be incorporated in any place on the deck or seat moulds.

D.3 HULL SHELL

D.3.1 MATERIALS

(a) The hull shell shall be built from glass reinforced polyester resin. The use of “S” glass is prohibited.

(b) Vinylester resin may be used for the fitting of the rudder skeg and the rudder post.

D.3.2 CONSTRUCTION

(a) The construction shall be in accordance with the World Sailing/ISAF agreed builder’s specification.

(b) The **hull** shall have deck stiffeners, hull stringers, skeg, bulkheads, seat and all knees except those in way of the chainplates, installed before the **hull** is removed from the mould.

(c) The **hull** shall be fully decked except for the mast **spar** hole and cockpit opening and have flotation element(s) as per D.5.(d) The deck shall be joined to the **hull** either in the mould or in an approved assembly jig.

D.3.3 MEASUREMENT

(a) The shape of the **hull** shall be controlled by the application of World Sailing/ISAF approved templates.

- (b) The clearance between hull and template shall be as per D.10.2. The **sheerline** shall lie between the measurement marks scribed on the templates.

D.4 DECK

D.4.1 MATERIALS

- (a) The deck shall be built from glass reinforced polyester resin.

D.4.2 CONSTRUCTION

- (a) The construction shall be in accordance with the World Sailing/ISAF agreed builder's specification.
- (b) The mould shall not be modified, except that a non-slip surface may be incorporated in any area of the deck.

D.5 BUOYANCY TANKS

D.5.1 CONSTRUCTION

- (a) Buoyancy equipment shall comprise of fore and aft tanks formed by bulkheads – See D7.

D.6 COCKPIT SOLE FLOORBOARDS

D.6.1 MATERIALS

- (a) The materials of the floorboards are optional.

D.6.2 CONSTRUCTION

- (a) The design and construction of the floorboards is optional, except that they shall be easily removable.
- (b) The floorboards may be fastened in position at the keelson and at 2 locations on each side.
- (c) At each fastening point the **hull** may be reinforced for an area 75mm x 75mm using materials as in D.3.2 (a).
- (d) The openings between the floorboards and **hull** may be bridged with flexible materials such as tape or mesh.
- (e) The floorboards may extend to the inside surface of the hull.
- (f) The floorboards shall contact the hull with not more than five transverse members;

D.7 BULKHEADS

D.7.1 MATERIALS

- (a) The materials shall be in accordance with the World Sailing/ISAF agreed builder's specification.

D.7.2 CONSTRUCTION

- (a) The construction shall be in accordance with the World Sailing/ISAF agreed builder's specification.
- (b) Holes in the bulkheads shall be filled, bushed or positively plugged to increase water tightness. A hole shall be considered filled if the clearance

around the rigging does not exceed 0.5mm. Watertight tubes for rigging are prohibited.

- (c) Drain plugs are permitted but shall be sealed with a positively locking, screw-in plug while racing.
- (d) Access hatch covers shall be constructed in glass covered 6mm plywood, solid fibreglass or a 6mm polycarbonate material with a total minimum weight of 1.4 kg each.

D.8 THWARTS

D.8.1 MATERIALS

- (a) The materials shall be in accordance with the World Sailing/ISAF agreed builder's specification.

D.8.2 CONSTRUCTION

- (a) The construction shall be in accordance with the World Sailing/ISAF agreed builder's specification.
- (b) The mould may not be modified, except that a non-slip surface may be incorporated in any area of the thwart.

D.9 CONSOLE

D.9.1 MATERIALS

- (a) The materials shall be in accordance with the World Sailing/ISAF agreed builder's specification.

D.9.2 CONSTRUCTION

- (a) The design and construction is optional except that the unit shall not be attached so as to affect the rigidity of the **hull**.
- (b) No fitting shall be attached on a base higher than necessary to ensure a fair lead.

D.10 ASSEMBLED HULL

D.10.1 FITTINGS

(a) MANDATORY

The following fittings shall be positioned in accordance with the measurement diagram:

- (1) Forestay fitting
- (2) Shroud plates
- (3) Backstay fitting
- (4) Mast step

(b) OPTIONAL

- (1) Halyard winches or tensioners
- (2) Mainsail sheet blocks, fairleads and cleats
- (3) Mainsail Cunningham blocks, fairleads and cleats
- (4) Mainsheet track with one traveller, under the aft end of the boom.

- (5) Headsail sheet blocks, fairleads and cleats
- (6) Headsail Cunningham blocks, fairleads and cleats
- (7) Headsail Barber hauler fairleads, blocks and cleats
- (8) Headsail tracks
- (9) Spinnaker sheet and guy fairleads, blocks and cleats
- (10) Spinnaker Barber hauler fairleads, blocks and cleats
- (11) General control blocks and fittings.
- (12) Tiller lock
- (13) Stowage clips for paddle(s), spinnaker pole, sail bags and other equipment
- (14) One inspection hole in each buoyancy tank, provided that the watertight integrity of the buoyancy tank is maintained and covers are capable of resisting accidental dislodgement. Covers, including metal fasteners shall be fitted in accordance with manufacturer's recommendations.
- (15) Draining holes in buoyancy tanks, provided that the watertight integrity of the buoyancy tank is maintained and screw in plugs that are capable of resisting accidental dislodgement.
- (16) Deck clips for cockpit cover and/or tent.
- (17) Drain hole in bilge closed with a screw-in plug.
- (18) Pump outlets exiting on deck – not in buoyancy tanks.

D.10.2 DIMENSIONS

The keel line shall be taken as the intersection line from transom to stem of the hull shell and the **hull** centreplane.

The sections shall be taken as vertical, transverse planes at the following positions measured to the sheerline each side:

Section 0:	at 1600 mm from hull datum point as defined in D.2.4
Section 3:	at 3650 mm from hull datum point as defined in D.2.4
Section 6:	at 5650 mm from hull datum point as defined in D.2.4
Section 10:	at 8260 mm from hull datum point as defined in D.2.4

And at the following positions on the hull centreline profile:

Section 0:	at 1735 mm from hull datum point as defined in D.2.4
Section 10:	at 1105 mm from aft datum point as defined in D.2.4

The baseline shall be on the centreplane of the **hull** at the following vertical distances:

at section 10:	500 mm from hull shell
at section 0:	500 mm from hull shell

	minimum	maximum
Hull length between perpendiculars at HDP & ADP	9285 mm	9300 mm
Vertical distance from baseline to underside of hull shell;		
at hull datum point	1260 mm	1290 mm
at section 3	155 mm	175 mm
at section 6 – 75mm out from centreline	135 mm	160 mm
at aft datum point	660 mm	685 mm

Beam of hull , excluding rubbing strakes and fittings, at sheerline;		
at section 6	2105mm	2125mm
Distance of hull from templates at sections 0, 3, 6 & 10	0 mm	14 mm
Longitudinal distance from hull datum point as defined in D.2.4;		
to centre of mast spar hole at deck	3800 mm	3825 mm
Longitudinal dimension of mast spar hole	200 mm	204 mm
Athwartships dimension of mast spar hole	98 mm	102 mm
Longitudinal distance from hull datum point as defined in D.2.4;		
to forward side of cockpit	4537 mm	4567 mm
Longitudinal dimension of cockpit	2650 mm	2680 mm
Cockpit width at section 6	930 mm	960 mm

	minimum	maximum
Depth of cockpit sole floorboards :		
below sheerline at section 6	640 mm	770 mm
Length of floorboards	1780 mm	1880 mm
Overall width of floorboards	810 mm	
Longitudinal distance from Section 6;		
forward end of floorboards	900 mm	1100 mm
Fastening for floorboards from each end (max 2 per side)		50 mm
Thickness of floorboard members (fore & aft)		35 mm
Spacing of floorboard members	250 mm	
Weight of floorboards	15 kg	20 kg
Longitudinal distance from Section 6;		
to forward bulkhead	2580 mm	2780 mm
to aft bulkhead	2240 mm	2440 mm
Longitudinal distance from hull datum point as defined in D.2.4 to forward edge of shroud plates	3810 mm	3835mm
Longitudinal distance from hull datum point as defined in D.2.4 to ring frame at sheerline	1960mm	2010 mm
Distance from outer deck edge to shroud plates		40 mm
Length of shroud plates	260 mm	266 mm
Length of console at top, excluding fittings		530 mm
Width of console at top, excluding fittings		220 mm
Top of console below cockpit coaming, excluding fittings	50 mm	
Skeg: radius of leading edge		15 mm
Skeg thickness	32 mm	38 mm
Minor local concavities in surface of skeg		1.5mm
A straight edge applied to the surface of the skeg in any direction shall show no systematic concavities, except in the areas immediately adjacent to: rudder stock, hull and leading edge.		

D.10.3 WEIGHTS

	minimum	maximum
Glass Hull	380 kg	

This weight is to be the glass hull with deck attached as it comes from the mould or jig. It shall include deck stiffeners, hull stringers, skeg with micro balloon fill, glassed in forestay and backstay fittings, forward and aft bulkheads without access hole covers, chainplates, seat and knees. *(It shall exclude keel, keel bolts, keelson, micro balloon fill in the bilge, mast step, interior gel coat, floorboards, Sampson post or console, tiller, rudder, bulkhead access hole covers and partition aft of seat).*

	minimum	maximum
Bare Hull	1405 kg	

This weight is to be the Glass Hull as above but with the keel attached, micro balloon fill in the bilge, bulkhead access hole covers, interior gel coat, mast step, keelson, rudder and partition aft of the seat. *(It shall exclude floorboards, tiller and tiller extension, Sampson post or console, spars, standing and running rigging and associated fittings)*

	minimum	maximum
Complete Boat Weight	1508 kg	1565 kg

The Complete Boat Weight shall be taken with the **boat** in dry condition and ready to sail, excluding **sails** and all portable equipment as listed in C.3 and C.5, but including one set of sheets.

Section E – Hull Appendages

E.1 PARTS

E.1.1 MANDATORY

- (a) **Keel**
- (b) **Rudder**

E.2 GENERAL

E.2.1 RULES

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

E.2.2 CERTIFICATION

- (a) **Fundamental measurement** shall form part of the **certification** of the hull

E.2.3 MANUFACTURERS

- (a) The **hull appendages** shall be made by manufacturers licensed by World Sailing/ISAF.

E.3 KEEL

E.3.1 RULES

- (a) The **keel** shall comply with the **class rules** in force at the time of the initial **certification** of the **hull**.

E.3.2 CERTIFICATION

- (a) **Fundamental measurement** shall form part of the **certification** of the hull
- (b) For boats built prior to 1st December 1998 where the keel has not been altered in anyway, any measurement shall comply with the dimensions in Section H 3.
- (c) For boats built prior to 1st December 1998 and where the keel is altered in any way after 1st December 1998, any measurement shall comply with the dimensions in Section E.3.

E.3.3 DEFINITIONS

- (a) The keel template shall be positioned at 54.2 degrees to the leading edge of the keel.
- (b) The template shall control the keel shape between 845mm above the base of the keel and the bottom Vee sections.
- (c) The template shall be positioned so that the clearance between the template and the hull is constant all the way around the keel.
- (d) The chain girth is to be measured at Section 6 from the sheerline to the point 80mm vertically above the bottom of the keel at this station

E.3.4 MANUFACTURERS

- (a) Manufacturers shall be licensed by the World Sailing/ISAF.

E.3.5 MATERIALS

- (a) The **keel** shall be of lead.
- (b) The **keel** may be covered with:
 - (i) Paint
 - (ii) Filler
 - (iii) Polyester or vinylester resin
 - (iv) Glass cloth or mat
- (c) The keel bolts shall be stainless steel

E.3.6 CONSTRUCTION

- (a) The **keel** shall be manufactured from a pattern approved by World Sailing/ISAF.
- (b) The keel shall have a constant horizontal section before and after any coatings are applied

E.3.7 FITTINGS

- (a) **MANDATORY**
 - (1) Two lifting eyes fitted to keel bolts as required in the building specifications.
 - (2) There shall be 10 keel bolts as per builder's specification

E.3.8 DIMENSIONS

	minimum	Maximum
Height of lead	854 mm	888 mm
Chord length measured along template	1141 mm	1150 mm
Difference between min and max chord dimensions		5 mm
Surface of keel including coatings to template	0 mm	3 mm
Radius of leading edge over template control area		10 mm
With leading edge at 54.2° to horizontal		
Station 0 above station 10	20 mm	50 mm
Chain girth at section 6	2175 mm	2190 mm
Aft datum point to:		
Intersection of leading edge and bottom of keel	4660 mm	4686 mm
Intersection of trailing edge and bottom of keel	3600 mm	3626 mm
Angle of keel Vee bottom section from vertical	38°	45°
Keel bolt diameter	16 mm	16 mm
Keel bolt number	10	10

E.3.9 WEIGHTS

	minimum	maximum
Including keel bolts, but excluding coatings	953 kg	965 kg

E.4 RUDDER BLADE, RUDDER STOCK AND TILLER

E.4.1 RULES

- (a) The **rudder** blade including stock, shall comply with the **class rules** in force at the time of initial **certification**.

E.4.2 CERTIFICATION

- (a) **Fundamental measurement** shall form part of the **certification** of the hull.
 (b) The profile of the rudder and skeg shall be measured with the official template and conform to the dimensions and tolerances on the measurement diagram.

E.4.3 DEFINITIONS

- (a) The 100mm plane is located perpendicular to the trailing edge of the rudder at 100mm – measured along the trailing edge - above the straight line intersection of the trailing edge and the bottom of the rudder.
 (b) The 250mm plane is located perpendicular to the trailing edge of the rudder at 250mm – measured along the trailing edge - above the straight line intersection of the trailing edge and the bottom of the rudder.

E.4.4 MANUFACTURERS

- (a) Manufacturers shall be licensed by World Sailing/ISAF.

E.4.5 MATERIALS

- (a) The **rudder** blade shall be of glass reinforced polyester resin.
- (b) The **rudder** stock shall be of solid stainless steel.
- (c) The tiller shall be of:
 - (i) Wood
 - (ii) Aluminium
 - (iii) Steel
 - (iv) Glass reinforced polyester resin
 - (v) A combination of the above
- (d) The tiller extension material is optional.

E.4.6 CONSTRUCTION

- (a) The **rudder** blade shall be manufactured in a mould approved by World Sailing/ISAF.
- (b) The method of construction shall be as per the official building specifications.

E.4.7 FITTINGS

- (a) MANDATORY
 - (1) Tiller
- (b) OPTIONAL
 - (1) Tiller extension

E.4.8 DIMENSIONS

	minimum	maximum
Rudder stock diameter	28 mm	29 mm
Rudder thickness	32 mm	38 mm
Rudder thickness at any point on 100mm plane (E.4.3)		26 mm
Rudder thickness at any point on 250mm plane (E.4.3)		33 mm
Aft Datum Point to aft edge of rudder stock measured along hull	1890 mm	1900 mm
Aft Datum Point to aft edge of rudder stock extended to the bottom of gudgeon	2135 mm	2145 mm
Minor local concavities in surface of rudder		1.5 mm
A straight edge applied to the surface of the rudder in any direction shall show no systematic concavities, except in the areas immediately adjacent to: Rudder stock and along the leading edge of the skeg.		

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) **Spinnaker pole**

F.2 GENERAL

F.2.1 RULES

- (a) The **spars** and their fittings shall comply with the **class rules** in force at the time of **certification** of the **spar**.
- (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 cleaning, polishing and repair/replacement of non measured fittings is permitted without re-measurement and re-**certification**.
- (c) Internal and external sleeves or doublers may be fitted when the **spar** is fractured or broken or:
 - (1) the **spar** shows damage which will cause failure, the damage having been caused by accident or normal use; or
 - (2) **spars** from the manufacturer concerned have shown a history of failure at that location on the spar.

- (d) The **mast** shall have no more than two sleeves or doublers:

	maximum
Internal sleeves	1000 mm
External sleeves	500 mm
External sleeves wholly or partly above 4360mm above mast datum point	400 mm

- (e) The **boom** shall have no more than one sleeve or doubler:

	maximum
Internal sleeve	1300 mm

- (f) An external doubler is allowed at the forward face of the mast as a modification of the design of the jib/spinnaker halyard sheave box

DIMENSIONS

	minimum	maximum
Length		400 mm
Width measured around forward face of spar		100 mm
Extension above upper halyard exit slot		200 mm

- (g) An internal doubler is allowed at the forward face of the mast as a modification of the design of the jib/spinnaker sheave box..

DIMENSIONS

	minimum	maximum
Length		650 mm
Width measured around forward face of spar		100 mm
Extension above upper halyard exit slot		350 mm

- (h) Any fastening or welding shall not alter the flexibility of the **spar** and shall not add to its strength. The materials used shall be the same specification as used in the **spar** construction.
- (i) Prior to any repair, approval shall be given by the fleet captain and the measurer that the repair is necessary. When completed, the measurer shall inspect and re-measure as necessary.
- (j) Unused holes 8mm or less in diameter shall be filled with pop rivets or machine screws. Unused holes greater than 8mm shall be filled with aluminium.

F.2.3 CERTIFICATION

- (a) The **official measurer** shall **certify spars** and shall sign and date the **certification mark** and complete a Spar Measurement Form.
- (b) No **certification** of standing and running **rigging** is required.
- (c) The **mast** and **boom** shall be legibly marked with World Sailing/ISAF authorised serial numbers at the following locations:
Mast: within 150mm of heel.
Boom: within 150mm of outboard end.

F.2.4 DEFINITIONS

- (a) MAST DATUM POINT

The **mast datum point** is the highest point of the lower limit mark at the aft edge of the spar.

F.2.5 MANUFACTURER

- (a) Masts, spreaders and booms shall only be constructed by builders licensed by World Sailing/ISAF.
- (b) The extrusion dies shall be approved by World Sailing/ISAF

F.3 MAST

F.3.1 MATERIALS

- (a) The **spar** shall be of Aluminium alloy to specifications 6061-T6 or HV-90WP or equivalent.

F.3.2 CONSTRUCTION

- (a) The **spar** extrusion shall include a fixed sail groove which shall be integral with the **spar** and shall be of the same material.
- (b) The spars shall be constructed in accordance with the approved specification agreed with the licensed builders.

F.3.3 FITTINGS

(a) MANDATORY

- (1) Mast head fitting
- (2) External shroud tangs
- (3) A set of spreaders, either fixed or with restricted movement
- (4) Mainsail halyard sheave boxes
- (5) Headsail halyard sheave boxes
- (6) Spinnaker halyard sheave boxes
- (7) Spinnaker pole track and sliding fitting
- (8) Spinnaker pole lift block with attachment
- (9) Gooseneck
- (10) Heel fitting
- (11) Main Halyard Lock above **upper point**.

(b) OPTIONAL

- (1) One mechanical wind indicator
- (2) Compass bracket
- (3) Kicking strap attachment

F.3.4 DIMENSIONS

	minimum	maximum
Mast spar curvature		50 mm
Mast spar cross section below taper;		
fore-and-aft	123 mm	126 mm
transverse	76 mm	79 mm
Mast spar cross section at upper point;		
fore-and-aft	65 mm	75 mm
transverse	60 mm	70 mm
Mast limit mark width	25 mm	
Lower point to upper point		9906 mm
Start of taper	7800 mm	7950 mm
Forestay height	7605 mm	7635 mm
Shroud height	8120 mm	8140 mm

Lower Shroud height, above or below centre line of spreader		60 mm
Spinnaker pole fitting:		
height to top of track		1525 mm
length of track	1220 mm	
projection		95 mm
Spinnaker hoist height		7575 mm
Spinnaker halyard extension		45 mm
Spreader		
length	760 mm	780 mm
height	3845 mm	3875 mm
Spreader section;		
fore & aft	47mm	49 mm
depth	18 mm	20 mm
Spreaders may be rigidly fixed or may swing fore and aft from the centreline of the spreader socket with 15kg applied at the tip of each spreader:		
aft swing at tip of spreader		100 mm
forward swing at tip of spreader		75 mm
Bottom of heel fitting to bottom of mast extrusion	7 mm	13 mm
Bottom of heel fitting to top of mast step		25 mm
Length of sail entry cut-away or flare	100 mm	200 mm
Top of sail entry cut-away or flare above Mast Datum Point	470 mm	570 mm
Gooseneck track	169 mm	376 mm
Gooseneck track backing plate	168 mm	381 mm

F.3.5 WEIGHTS

	minimum	maximum
Mast tip weight excluding heel plug, spreaders and all rigging	12 kg	
Mast tip weight Fully rigged with spinnaker track slide at lowest point	13 kg	

F.3.6 OPTIONAL LOWER MAST REINFORCEMENT

- An external reinforcement fitted to the forward section of the mast below the **lower point** is permitted. Maximum length of reinforcement: 500 mm.
- An internal reinforcement fitted to the forward section of the mast from the **lower point** to 100 mm above the mast base is permitted.
- The attachment method of all mast reinforcements is optional.
- Materials used for reinforcement shall be to the same specification as those used for spar construction.

F.4 BOOM

F.4.1 MATERIALS

- (a) The **spar** shall be of Aluminium alloy to specifications 6061-T6 or HV-90WP or equivalent.

F.4.2 CONSTRUCTION

- (a) The **spar** extrusion shall be of constant section. It shall include a fixed sail groove which shall be integral with the **spar** and shall be of the same material.
- (b) The **spar** shall not be tapered or cut away except for providing entry for the footrope and for the attachment of fittings.
- (c) The spar may be internally reinforced. The maximum length of the reinforcement is 1300 mm. Location and attachment method are optional. Maximum wall thickness of the reinforcement shall be 3.18 mm.

F.4.3 FITTINGS

(a) MANDATORY

- (1) **Boom** end plug

(b) OPTIONAL

- (1) All other fittings attached to the **boom**.
- (2) Internal mainsheet system.

F.4.4 DIMENSIONS

	minimum	maximum
Boom spar curvature		25 mm
Boom spar cross section between;		
vertical	81 mm	84 mm
transverse	65 mm	67 mm
Extension of boom section aft of Boom Outer Point excluding boom end plug	100 mm	150 mm
Sail entry cut-away from forward end of extrusion		190 mm
Outhaul track cut-away from aft end of extrusion		267 mm
Internal mainsheet – all holes from either end of spar		400 mm
Internal mainsheet – single sheave exit, forward of Boom Outer Point		1800 mm

F.5 SPINNAKER POLE

F.5.1 MANUFACTURER

Manufacturer is optional.

F.5.2 MATERIALS

The **spar** shall be of aluminium.

F.5.3 CONSTRUCTION

Optional

F.5.4 FITTINGS

- (a) Fittings are optional.
- (b) Grip tape or similar may be added to the pole.

F.5.5 DIMENSIONS

	minimum	maximum
Spinnaker pole length		2895 mm

F.6 STANDING RIGGING

F.6.1 MATERIALS

- (a) The **standing rigging** shall be of stainless steel or rope.

F.6.2 CONSTRUCTION

(a) MANDATORY

- (1) A **forestay** of 1 x19 wire
- (2) **Shrouds** of 1 x19 wire
- (3) A **backstay** of 1 x19 wire
- (4) A **backstay** pennant of 7x19 wire or equivalent rope.

F.6.3 FITTINGS

(a) MANDATORY

- (1) **Forestay** rigging link
- (2) **Shroud** rigging screws
- (3) **Backstay** Pennant system

F.6.4 DIMENSIONS

	minimum	maximum
Forestay diameter	4.7 mm	
Shroud diameter	4.7 mm	
Lower Shroud diameter	4.7 mm	
Backstay diameter	3.2 mm	
Backstay pennant diameter wire	4.0 mm	
Backstay pennant diameter rope	4.0 mm	

When attached to the upper **Backstay Rigging Point**, the lower end of the 1x19 wire **backstay** shall be not less than 200mm below the **Mast Datum Point** when pulled taut along the mast with 5 kg tension.

F.7 RUNNING RIGGING

F.7.1 MATERIALS

- (a) **Halyards**: stainless steel wire or rope.
- (b) **Sheets** and control lines: optional.

F.7.2 CONSTRUCTION

(a) MANDATORY

- (1) Mainsail **halyard**; rope or 7x19 wire
- (2) Headsail **halyard**; rope or 7x19 wire
- (3) Spinnaker **halyard**; rope

(b) OPTIONAL

- (1) Construction of all other lines optional

F.7.3 FITTINGS

(a) MANDATORY

- (1) Halyard sheaves or fairleads.

(b) OPTIONAL

- (1) All other fittings

F.7.4 DIMENSIONS

	minimum	maximum
Main halyard wire	2.4 mm	
Main halyard rope	4.0 mm	
Headsail halyard wire	3.1 mm	
Headsail halyard rope	4.8 mm	
Spinnaker halyard rope	4.8 mm	

Section G – Sails

G.1 PARTS

G.1.1 MANDATORY

- (a) Mainsail
- (b) Headsail

G.1.2 OPTIONAL

- (a) Spinnaker

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 **official measurer** shall **certify** mainsails and headsails in the **tack** and spinnakers in the **head** and shall sign and date the **certification mark**.

G.2.3 SAILMAKER

- (a) No licence is required.

G.2.4 SAIL ROYALTY TAG

- (a) Sails produced after 1st March 2021, must have a uniquely-numbered 'IECA sail royalty tag' permanently affixed. For mainsails and jibs it shall be affixed in the tack of the sail. For spinnakers it shall be affixed in the head of the sail. Sailmakers shall purchase the sail royalty tags from the IECA Office.
- (b) Royalty tags shall not be transferred from one sail to another.

G.3 MAINSAIL

G.3.1 IDENTIFICATION

- (a) The class insignia shall conform with the dimensions and requirements as detailed in the diagram contained in Section H and be placed in accordance with the RRS.
- (b) The preferred colour of the insignia is blue; however other contrasting colours may be used except that gold shall only be used for the insignia of a yacht owned by a world champion.
- (c) The national letters and sail numbers shall comply with the RRS.

G.3.2 MATERIALS

- (a) The **ply** fibres shall consist of polyester
- (b) **Stiffening** shall consist of:
 - (1) Cornerboards plastic or aluminium.
 - (2) Battens wood or glass reinforced polyester and/or epoxy resin.
- (c) **Sail reinforcement** shall consist of woven polyester of the same weight as the body of the sail. For a **two ply sail**, reinforcement beyond the primary reinforcement dimension shall not be more than one extra layer of the same weight cloth.

G.3.3 CONSTRUCTION

- (a) The construction shall be: **soft sail, single ply sail or two ply sail** where both layers are of equal weight cloth.
- (b) The **sail** shall have 4 **batten pockets** in the **leech**. They shall be spaced equally +/-80 mm along the leech, measured to the upper edge of the batten pocket. Battens may be permanently fixed or removable.
- (c) 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, adjustable leech line, **windows**, flutter patches, spreader patches, tell tales,

sail shape indicator stripes and items as permitted or prescribed by other applicable *rules*.

G.3.4 DIMENSIONS

	minimum	maximum
Leech length		10425 mm
Half width		2267 mm
Three-quarter width		1400 mm
Upper width at upper leech point 450 mm from head point		342 mm
Finished weight of ply of the body of the sail	250 g/m ²	
Primary reinforcement		843 mm
Secondary reinforcement:		
from sail corner measurement points		1800 mm
Window: number of		Unlimited
Total Window area		1.0 m ²
Window to sail edge	100 mm	
Headboard width		102 mm
Batten length		1300 mm
Batten width:		35 mm
Batten spacing tolerance either side of equal leech points		80 mm
Bolt rope including covering	8 mm	

G.4 HEADSAIL

G.4.1 MATERIALS

- The **ply** fibres shall consist of polyester.
- Stiffening** shall consist of battens of wood or glass reinforced polyester and/or epoxy resin.
- Sail reinforcement** shall consist of woven polyester of the same weight as the body of the sail. For a **two ply sail**, reinforcement beyond the primary reinforcement dimension shall not be more than one extra layer of the same weight cloth.

G.4.2 CONSTRUCTION

- The construction shall be: **soft sail, single ply sail or two ply sail** where both layers are of equal weight cloth.
- The headsail shall have 3 **batten pockets** in the **leech**. They shall be positioned 40mm +/- 20 mm below the leech cross height points, measured to the upper edge of the batten pocket at the leech. Battens may be permanently fixed or removable.
- The **leech** profile shall be straight or concave between:
 - each **batten pocket**,
 - between the **aft head point** and top batten pocket,

- between the **clew** and lower batten.

- (d) The following are permitted: Stitching, glues, tapes, corner eyes, hanks, hook and loop or web and snap, luff fasteners, batten pocket elastic, **batten pocket patches**, batten pocket end caps, adjustable leech and foot lines, **windows**, flutter patches, tell tales, sail shape indicator stripes and items as permitted or prescribed by other applicable *rules*.

G.4.3 DIMENSIONS

	minimum	maximum
Luff length		7915 mm
Leech length		7370 mm
Foot length remove bold		2540 mm
Foot median		7700 mm
Quarter width		1860 mm
Half width		1275 mm
Three quarter width		650 mm
Seven-eighths width taken as the shortest distance to the luff from the point on the leech equidistant from the head point and the three-quarter leech point	315 mm	
Top width		55 mm
Foot irregularity		25 mm
Finished weight of ply of the body of the sail	270 g/m ²	
Primary reinforcement		705 mm
Secondary reinforcement:		
from sail corner measurement points		1800 mm
Window: number of		unlimited
	minimum	maximum
Total Window area		1.0 m ²
Window to sail edge	100 mm	
Batten length:		800 mm
Batten width:		35 mm
Batten spacing tolerance at 40mm below cross points		20 mm

G.5 SPINNAKER

G.5.1 MATERIALS

- (a) The **ply** fibres shall consist of nylon.
 (b) **Sail reinforcement** shall consist of nylon or woven polyester.

G.5.2 CONSTRUCTION

- (a) The construction shall be: **soft sail, single ply sail**.

- (b) The following are permitted: Stitching, glues, tapes, corner eyes, sister clips, corner rings, head swivel, tell tales, adjustable leech lines, hook and loop and items as permitted or prescribed by other applicable *rules*.

G.5.3 DIMENSIONS

	minimum	maximum
Leech length	8250 mm	8450 mm
Half Foot length	2545 mm	2745 mm
Foot Median	9300 mm	9500 mm
Half cross width between leech and centrefold 2745mm from head	2425 mm	2625 mm
Half cross width between leech and centrefold 5485mm from head	2955 mm	3155 mm
Finished weight of ply of the body of the sail	32 g/m ²	
Primary reinforcement		740 mm
Secondary reinforcement from sail corner measurement points		1800mm

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

H.1 SPARE NUMBER

H.2 KEEL ALTERATION PROCEDURE.

H.2.1 Before any alteration to the keel, the owner shall;

- (a) Notify the fleet captain
- (b) Contact the MNA/NCA for permission and any instructions
- (c) Submit the name of the measurer who will inspect the work.
- (d) The MNA/NCA will advise the measurer and owner of the current hull measurement details and suspend the **Certificate** during the alteration process.
- (e) Prior to work starting the measurer shall weigh and record the Complete Boat weight as per C.6.1.

H.2.2 All work and re-measurement shall be in accordance with C.6.1 and E.1 – E.3. All measurements shall be recorded on the measurement form in accordance with H.2.6.

H.2.3 TO REMOVE LEAD FROM A HEAVY KEEL.

- (a) Any drilled holes shall be in the area:

	minimum	maximum
Above the bottom of the keel	380 mm	480 mm
From the leading edge in the waterline plane	305 mm	505 mm
- (b) Alternatively the entire lead surface may be planed.
- (c) The measurer shall re-weigh the complete boat as per C.6.1 and weigh and record the lead removed.

H.2.4 TO ADD LEAD TO A LIGHT KEEL;

that is less than maximum weight and less than maximum chain girth.

- (a) Mark the 80mm girth measurement mark at section 6 on both sides.
- (b) Add lead to the bottom of the keel. The total keel weight shall not exceed 965kg

H.2.5 TO ADD LEAD TO A HEAVY KEEL; but is less than maximum chain girth.

- (a) Proceed to add lead as per H.2.4.
- (b) Remove weight as per H.2.3. (a) only. The location of holes shall be measured from the new keel bottom and leading edge.

H.2.6 MEASUREMENT AND RE-CERTIFICATION

- (a) The measurer shall re-weigh the **boat** as per C.6.1 and fully re-measure the keel using the keel alteration measurement form.

- (b) The measurer shall send the keel alteration form and report to the MNA/NCA.
- (c) The MNA/NCA shall on confirming that the alterations comply with all the class rules, issue a new **certificate**.
- (d) The owner shall inform the fleet captain that a new **certificate** has been issued.

H.3 KEEL DATA FOR BOATS PRE 1ST DECEMBER 1998.

Only items that have changed since 1st December 1998 are shown.

H.3.1 DIMENSIONS

	minimum	maximum
Maximum thickness	133 mm	144 mm
Chord length measured along template	1130 mm	1170 mm
Difference between min and max chord dimensions		20 mm
Surface of keel including coatings to template	0 mm	8 mm
Radius of leading edge over template control area		10 mm
Chain girth at station 6	2140 mm	2190 mm
Hull Datum Point to:		
Intersection of leading edge and bottom of keel	4660 mm	4690 mm
Intersection of trailing edge and bottom of keel	3600 mm	3635 mm
Angle of keel Vee bottom section from vertical	38°	45°
Keel bolt diameter	16 mm	16 mm
Keel bolt number	10	10

H.3.2 WEIGHTS

	minimum	maximum
Including keel bolts, but excluding coatings	953 kg	987 kg

H.4 MEASUREMENT DIAGRAMS

- H.4.1 Sail Insignia
- H.4.2 Mast measurement diagram
- H.4.3 Rudder profile template
- H.4.4 Hull measurement diagrams
- H.4.5 Hull section diagram
- H.4.6 Chaingirth measurement diagram
- H.4.7 Point 'A' diagram
- H.4.8 Point 'B' diagram
- H.4.9 Point 'C' diagram
- H.4.10 Angled keel template position diagram
- H.4.11 Keel measurement height diagram
- H.4.12 Keel template trailing edge position diagram
- H.4.13 Keel template leading edge position diagram

- H.4.14 Procedure for levelling boat diagram
- H.4.15 Keel forward and trailing edges intersection diagram
- H.4.16 Bulkhead open hole diagram
- H.4.17 Knee, seat thwart open hole diagram

Class plans shall form, as necessary a part of the builders specifications only.

NOTE

The class plans are not included in the class rules and measurement procedures as it is difficult for a measurer to know what he/she should check or not – what is advice and what are rules.

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