The Etchells was designed in 1966 by Skip Etchells and was adopted as an international class in 1974.
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International Etchells Class Rules 2015 Revised March 2015 2
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 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 an 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
MNA ISAF 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 the ISAF 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 the ISAF.

A.4 ADMINISTRATION OF THE CLASS
A.4.1 ISAF 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 ISAF 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) – ISAF 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 the ISAF in accordance with the ISAF Regulations.

A.8 CLASS RULES INTERPRETATION  
A.8.1 Interpretation of class rules shall be made in accordance with the ISAF Regulations.

A.9 INTERNATIONAL CLASS FEE AND ISAF BUILDING PLAQUE  
A.9.1 The licensed hull builder shall pay the International Class Fee.  
A.9.2 ISAF shall, after having received the International Class Fee for the hull, send the ISAF Building Plaque and a measurement form to the licensed hull builder.

A.10 SAIL NUMBERS  
A.10.1 Sail numbers shall be the boats 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 43 is changed as follows: C.3.2.
(b) The ERS Part I – Use of Equipment shall apply.
(c) RRS 50.4 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 follows: see C.2.3

C.2 CREW

C.2.1 LIMITATIONS

(a) The crew shall consist of 3 or 4 persons.
(b) No crew member shall be substituted during an Etchells class Sanctioned Event as described in Appendix A.3.
(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

<table>
<thead>
<tr>
<th>The total weight of the crew dressed in light clothing, the minimum being outerwear shorts and t-shirt ……</th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>285 kg</td>
</tr>
</tbody>
</table>

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. This amends RRS 43.1 (b).

C.4 **ADVERTISING**

C.4.1 **LIMITATIONS**

In accordance with ISAF Regulation 20.5.1, no advertising shall be displayed pursuant to ISAF 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

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

(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.

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) VHF Radio.
(9) Knife.
(10) 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

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Complete Boat Weight</td>
<td>1508 kg</td>
<td>1565 kg</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Distance from mast datum point to point B at the sheerline in way of mast</td>
<td>725 mm</td>
<td>740 mm</td>
</tr>
<tr>
<td>(2) Distance from point B to the top of the mast step</td>
<td>755 mm</td>
<td>785 mm</td>
</tr>
</tbody>
</table>

(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

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit mark width</td>
<td>25 mm</td>
<td></td>
</tr>
<tr>
<td>Boom point distance</td>
<td></td>
<td>3530 mm</td>
</tr>
</tbody>
</table>

(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

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestay from Forward Datum Point</td>
<td>1290mm</td>
<td>1340 mm</td>
</tr>
</tbody>
</table>

(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 separated deck eye located aft of the forestay and re-tensioning 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) Sheetin 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 ACQUISITION AND REGISTRATION.

(a) Sails shall only be acquired by a fully registered boat (A.12) and whose owner/s is/are a fully paid up member/s of the association for the appropriate year.

(b) A sail is deemed acquired on the date it was first entered on the sail acquisition form. It shall be entered on the sail acquisition form by an IECA approved sail measurer.

(c) Unused sail allocation shall not be carried forward to subsequent years.

(d) Sail acquisition rights apply to the boat not the owner.

(e) Each boat may acquire in each calendar year, in any manner a total of 6 sails of any combination of type (mainsail, headsail or spinnaker).

(f) The owner may apply for exemption to (e) to replace sails lost, stolen or destroyed as per the procedure in Section H.

(g) The sail category, sail number, date and legible signature of the measurer shall be entered on the boat’s sail acquisition form.

(h) Sails used in Etchells class racing shall comply with boats acquisition rights and shall be registered to the boat correctly with sail number and hull number matching except as determined and published by the IECA.

(i) Sails shall not be borrowed for Etchells class Sanctioned Events as defined in Appendix A.3.

(j) Any re-cutting, re-design, alteration or repair shall not deem the sail to be a new sail unless 33.3% or more of the material is replaced.

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

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any hole to any edge of any knee or thwart</td>
<td></td>
<td>50mm</td>
</tr>
<tr>
<td>Running rigging hole to any edge of any knee or thwart</td>
<td></td>
<td>25mm</td>
</tr>
<tr>
<td>Total area of hole(s) in a single knee</td>
<td></td>
<td>75cm²</td>
</tr>
<tr>
<td>Total area of hole(s) in forward or aft vertical thwart member</td>
<td></td>
<td>250 cm²</td>
</tr>
<tr>
<td>Area of any one hole passing running rigging through a knee or thwart (Equivalent to max diameter of 50.5mm)</td>
<td></td>
<td>250 cm²</td>
</tr>
</tbody>
</table>

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 ISAF Plaque permanently placed near the centreline of the forward face of the aft bulkhead.

(b) The 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 ISAF. Applications for building licenses shall be made to ISAF 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 ISAF. All moulds shall be numbered.

(c) Any assembly moulds or construction jigs shall be approved by 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 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 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 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 ISAF agreed builder’s specification.

D.7.2 CONSTRUCTION
(a) The construction shall be in accordance with the 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 ISAF agreed builder’s specification.

D.8.2 CONSTRUCTION
(a) The construction shall be in accordance with the 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 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:

<table>
<thead>
<tr>
<th>Section</th>
<th>Position from <strong>hull datum point</strong> as defined in D.2.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 0</td>
<td>at 1735 mm</td>
</tr>
<tr>
<td>Section 10</td>
<td>at 1105 mm from aft datum point as defined in D.2.4</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Section</th>
<th>Distance from baseline to underside of <strong>hull shell</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>500 mm</td>
</tr>
<tr>
<td>0</td>
<td>500 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hull length between perpendiculars at HDP &amp; ADP</th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>9285 mm</td>
<td>9300 mm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vertical distance from baseline to underside of <strong>hull shell</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>at <strong>hull datum point</strong></td>
</tr>
<tr>
<td>at section 3</td>
</tr>
<tr>
<td>at section 6 – 75mm out from centreline</td>
</tr>
<tr>
<td>at aft datum point</td>
</tr>
<tr>
<td>1260 mm</td>
</tr>
<tr>
<td>155 mm</td>
</tr>
<tr>
<td>135 mm</td>
</tr>
<tr>
<td>660 mm</td>
</tr>
</tbody>
</table>

**Beam of hull**, excluding rubbing strakes and fittings, at sheerline:

<table>
<thead>
<tr>
<th>Section 6</th>
<th>Beam of <strong>hull</strong>, excluding rubbing strakes and fittings, at sheerline</th>
</tr>
</thead>
<tbody>
<tr>
<td>2105 mm</td>
<td>2125 mm</td>
</tr>
</tbody>
</table>

Distance of **hull** from templates at sections 0, 3, 6 & 10:

<table>
<thead>
<tr>
<th>Distance of <strong>hull</strong> from templates at sections 0, 3, 6 &amp; 10</th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 mm</td>
<td>14 mm</td>
<td></td>
</tr>
</tbody>
</table>

Longitudinal distance from **hull datum point** as defined in D.2.4:

<table>
<thead>
<tr>
<th>Longitudinal distance from <strong>hull datum point</strong> as defined in D.2.4</th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>to centre of mast <strong>spar</strong> hole at deck</td>
<td>3800 mm</td>
<td>3825 mm</td>
</tr>
<tr>
<td>Longitudinal dimension of mast <strong>spar</strong> hole</td>
<td>200 mm</td>
<td>204 mm</td>
</tr>
<tr>
<td>Athwartships dimension of mast <strong>spar</strong> hole</td>
<td>98 mm</td>
<td>102 mm</td>
</tr>
<tr>
<td>to forward side of cockpit</td>
<td>4537 mm</td>
<td>4567 mm</td>
</tr>
<tr>
<td>Longitudinal dimension of cockpit</td>
<td>2650 mm</td>
<td>2680 mm</td>
</tr>
<tr>
<td>Cockpit width at section 6</td>
<td>930 mm</td>
<td>960 mm</td>
</tr>
<tr>
<td>Specification</td>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Depth of cockpit sole floorboards:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below sheerline at section 6</td>
<td>640 mm</td>
<td>770 mm</td>
</tr>
<tr>
<td>Length of floorboards</td>
<td>1780 mm</td>
<td>1880 mm</td>
</tr>
<tr>
<td>Overall width of floorboards</td>
<td>810 mm</td>
<td></td>
</tr>
<tr>
<td>Longitudinal distance from Section 6;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forward end of floorboards</td>
<td>900 mm</td>
<td>1100 mm</td>
</tr>
<tr>
<td>Fastening for floorboards from each end (max 2 per side)</td>
<td>50 mm</td>
<td></td>
</tr>
<tr>
<td>Thickness of floorboard members (fore &amp; aft)</td>
<td></td>
<td>35 mm</td>
</tr>
<tr>
<td>Spacing of floorboard members</td>
<td>250 mm</td>
<td></td>
</tr>
<tr>
<td>Weight of floorboards</td>
<td>15 kg</td>
<td>20 kg</td>
</tr>
<tr>
<td>Longitudinal distance from Section 6;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To forward bulkhead</td>
<td>2580 mm</td>
<td>2780 mm</td>
</tr>
<tr>
<td>To aft bulkhead</td>
<td>2240 mm</td>
<td>2440 mm</td>
</tr>
<tr>
<td>Longitudinal distance from <strong>hull datum point</strong> as defined in D.2.4 to forward edge of shroud plates</td>
<td>3810 mm</td>
<td>3835 mm</td>
</tr>
<tr>
<td>Longitudinal distance from <strong>hull datum point</strong> as defined in D.2.4 to ring frame at sheerline</td>
<td>1960 mm</td>
<td>2010 mm</td>
</tr>
<tr>
<td>Distance from outer deck edge to shroud plates</td>
<td></td>
<td>40 mm</td>
</tr>
<tr>
<td>Length of shroud plates</td>
<td>260 mm</td>
<td>266 mm</td>
</tr>
<tr>
<td>Length of console at top, excluding fittings</td>
<td></td>
<td>530 mm</td>
</tr>
<tr>
<td>Width of console at top, excluding fittings</td>
<td></td>
<td>220 mm</td>
</tr>
<tr>
<td>Top of console below cockpit coaming, excluding fittings</td>
<td>50 mm</td>
<td></td>
</tr>
<tr>
<td>Skeg: radius of leading edge</td>
<td></td>
<td>15 mm</td>
</tr>
<tr>
<td>Skeg thickness</td>
<td>32 mm</td>
<td>38 mm</td>
</tr>
<tr>
<td>Minor local concavities in surface of skeg</td>
<td></td>
<td>1.5 mm</td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
D.10.3 WEIGHTS

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glass Hull</td>
<td>380 kg</td>
<td></td>
</tr>
</tbody>
</table>

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).*

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bare Hull</td>
<td>1405 kg</td>
<td></td>
</tr>
</tbody>
</table>

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)*

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete Boat Weight</td>
<td>1508 kg</td>
<td>1565 kg</td>
</tr>
</tbody>
</table>

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 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 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 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 the 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

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

E.3.9 WEIGHTS

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Including keel bolts, but excluding coatings</td>
<td>953 kg</td>
<td>965 kg</td>
</tr>
</tbody>
</table>

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 the 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 the 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

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rudder stock diameter</td>
<td>28 mm</td>
<td>29 mm</td>
</tr>
<tr>
<td>Rudder thickness</td>
<td>32 mm</td>
<td>38 mm</td>
</tr>
<tr>
<td>Rudder thickness at any point on 100mm plane (E.4.3)</td>
<td>26 mm</td>
<td></td>
</tr>
<tr>
<td>Rudder thickness at any point on 250mm plane (E.4.3)</td>
<td>33 mm</td>
<td></td>
</tr>
<tr>
<td>Aft Datum Point to aft edge of rudder stock measured along hull</td>
<td>1890 mm</td>
<td>1900 mm</td>
</tr>
<tr>
<td>Aft Datum Point to aft edge of rudder stock extended to the bottom of gudgeon</td>
<td>2135 mm</td>
<td>2145 mm</td>
</tr>
<tr>
<td>Minor local concavities in surface of rudder</td>
<td>1.5 mm</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th></th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal sleeves</td>
<td>1000 mm</td>
</tr>
<tr>
<td>External sleeves</td>
<td>500 mm</td>
</tr>
<tr>
<td>External sleeves wholly or partly above 4360 mm above mast datum point</td>
<td>400 mm</td>
</tr>
</tbody>
</table>
(e) The **boom** shall have no more than one sleeve or doubler:

<table>
<thead>
<tr>
<th></th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal sleeve</td>
<td>1300 mm</td>
</tr>
</tbody>
</table>

(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**

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td></td>
<td>400 mm</td>
</tr>
<tr>
<td>Width measured around forward face of <strong>spar</strong></td>
<td>100 mm</td>
<td></td>
</tr>
<tr>
<td>Extension above upper halyard exit slot</td>
<td>200 mm</td>
<td></td>
</tr>
</tbody>
</table>

(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**

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td></td>
<td>650 mm</td>
</tr>
<tr>
<td>Width measured around forward face of <strong>spar</strong></td>
<td></td>
<td>100 mm</td>
</tr>
<tr>
<td>Extension above upper halyard exit slot</td>
<td></td>
<td>350 mm</td>
</tr>
</tbody>
</table>

(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 the 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 ISAF.

(b) The extrusion dies shall be approved by 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

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mast spar curvature</td>
<td></td>
<td>50 mm</td>
</tr>
<tr>
<td>Mast spar cross section below taper;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fore-and-aft</td>
<td>123 mm</td>
<td>126 mm</td>
</tr>
<tr>
<td>transverse</td>
<td>76 mm</td>
<td>79 mm</td>
</tr>
<tr>
<td>Mast spar cross section at upper point;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fore-and-aft</td>
<td>65 mm</td>
<td>75 mm</td>
</tr>
<tr>
<td>transverse</td>
<td>60 mm</td>
<td>70 mm</td>
</tr>
<tr>
<td>Mast limit mark width</td>
<td></td>
<td>25 mm</td>
</tr>
<tr>
<td>Lower point to upper point</td>
<td></td>
<td>9906 mm</td>
</tr>
<tr>
<td>Start of taper</td>
<td>7800 mm</td>
<td>7950 mm</td>
</tr>
<tr>
<td>Forestay height</td>
<td>7605 mm</td>
<td>7635 mm</td>
</tr>
<tr>
<td>Shroud height</td>
<td>8120 mm</td>
<td>8140 mm</td>
</tr>
<tr>
<td>Lower Shroud height, above or below centre line of spreader</td>
<td>60 mm</td>
<td></td>
</tr>
<tr>
<td>Spinnaker pole fitting:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>height to top of track</td>
<td></td>
<td>1525 mm</td>
</tr>
<tr>
<td>length of track</td>
<td>1220 mm</td>
<td></td>
</tr>
<tr>
<td>projection</td>
<td></td>
<td>95 mm</td>
</tr>
<tr>
<td>Spinnaker hoist height</td>
<td></td>
<td>7575 mm</td>
</tr>
<tr>
<td>Spinnaker halyard extension</td>
<td></td>
<td>45 mm</td>
</tr>
<tr>
<td>Spreader</td>
<td></td>
<td></td>
</tr>
<tr>
<td>length</td>
<td>760 mm</td>
<td>780 mm</td>
</tr>
<tr>
<td>height</td>
<td>3845 mm</td>
<td>3875 mm</td>
</tr>
<tr>
<td>--------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td><strong>Spreader</strong> section;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>fore &amp; aft</td>
<td>47mm</td>
<td>49 mm</td>
</tr>
<tr>
<td>depth</td>
<td>18 mm</td>
<td>20 mm</td>
</tr>
<tr>
<td><strong>Spreader</strong>s 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:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>aft swing at tip of spreader</td>
<td>100 mm</td>
<td></td>
</tr>
<tr>
<td>forward swing at tip of spreader</td>
<td>75 mm</td>
<td></td>
</tr>
<tr>
<td>Bottom of heel fitting to bottom of mast extrusion</td>
<td>7 mm</td>
<td>13 mm</td>
</tr>
<tr>
<td>Bottom of heel fitting to top of mast step</td>
<td>25 mm</td>
<td></td>
</tr>
<tr>
<td>Length of sail entry cut-away or flare</td>
<td>100 mm</td>
<td>200 mm</td>
</tr>
<tr>
<td>Top of sail entry cut-away or flare above <strong>Mast Datum Point</strong></td>
<td>470 mm</td>
<td>570 mm</td>
</tr>
<tr>
<td>Gooseneck track</td>
<td>169 mm</td>
<td>376 mm</td>
</tr>
<tr>
<td>Gooseneck track backing plate</td>
<td>168 mm</td>
<td>381 mm</td>
</tr>
</tbody>
</table>

F.3.5 **WEIGHTS**

<table>
<thead>
<tr>
<th>Mast tip weight excluding heel plug, spreaders and all rigging</th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mast tip weight Fully rigged with spinnaker track slide at lowest point</td>
<td>12 kg</td>
<td>13 kg</td>
</tr>
</tbody>
</table>

F.3.6 **OPTIONAL LOWER MAST REINFORCEMENT**

(a) An external reinforcement fitted to the forward section of the mast below the **lower point** is permitted. Maximum length of reinforcement: 500 mm.

(b) An internal reinforcement fitted to the forward section of the mast from the **lower point** to 100 mm above the mast base is permitted.

(c) The attachment method of all mast reinforcements is optional.

(d) 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

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

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

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spinnaker pole length</strong></td>
<td></td>
<td>2895 mm</td>
</tr>
</tbody>
</table>
F.6  STANDING RIGGING

F.6.1 MATERIALS
(a) The standing rigging shall be of stainless steel.

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

F.6.3 FITTINGS
(a) MANDATORY
(1) Forestay rigging link
(2) Shroud rigging screws
(3) Backstay Pennant system

F.6.4 DIMENSIONS

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forestay diameter</td>
<td>4.7 mm</td>
<td></td>
</tr>
<tr>
<td>Shroud diameter</td>
<td>4.7 mm</td>
<td></td>
</tr>
<tr>
<td>Lower Shroud diameter</td>
<td>4.7 mm</td>
<td></td>
</tr>
<tr>
<td>Backstay diameter</td>
<td>3.2 mm</td>
<td></td>
</tr>
<tr>
<td>Backstay pennant diameter</td>
<td>4.0 mm</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main halyard wire</td>
<td>2.4 mm</td>
<td></td>
</tr>
<tr>
<td>Main halyard rope</td>
<td>5.9 mm</td>
<td></td>
</tr>
<tr>
<td>Headsail halyard wire</td>
<td>3.1 mm</td>
<td></td>
</tr>
<tr>
<td>Headsail halyard rope</td>
<td>5.9 mm</td>
<td></td>
</tr>
<tr>
<td>Spinnaker halyard</td>
<td>5.9 mm</td>
<td></td>
</tr>
</tbody>
</table>

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.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**

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leech length</strong></td>
<td>10425 mm</td>
</tr>
<tr>
<td><strong>Half width</strong></td>
<td>2267 mm</td>
</tr>
<tr>
<td><strong>Three-quarter width</strong></td>
<td>1400 mm</td>
</tr>
<tr>
<td><strong>Upper width at upper leech point 450 mm from head point</strong></td>
<td>342 mm</td>
</tr>
<tr>
<td><strong>Finished weight of ply of the body of the sail</strong></td>
<td>250 g/m²</td>
</tr>
<tr>
<td><strong>Primary reinforcement</strong></td>
<td>843 mm</td>
</tr>
<tr>
<td><strong>Secondary reinforcement:</strong></td>
<td></td>
</tr>
<tr>
<td>from sail corner measurement points</td>
<td>1800 mm</td>
</tr>
<tr>
<td><strong>Window:</strong> number of</td>
<td>Unlimited</td>
</tr>
<tr>
<td><strong>Total Window area</strong></td>
<td>1.0 m²</td>
</tr>
<tr>
<td><strong>Window to sail edge</strong></td>
<td>100 mm</td>
</tr>
<tr>
<td><strong>Headboard width</strong></td>
<td>102 mm</td>
</tr>
<tr>
<td><strong>Batten length</strong></td>
<td>1300 mm</td>
</tr>
<tr>
<td><strong>Batten width:</strong></td>
<td>35 mm</td>
</tr>
<tr>
<td><strong>Batten spacing tolerance either side of equal leech points</strong></td>
<td>80 mm</td>
</tr>
<tr>
<td><strong>Bolt rope including covering</strong></td>
<td>8 mm</td>
</tr>
</tbody>
</table>
G.4 HEADSAIL

G.4.1 MATERIALS

(a) The ply fibres shall consist of polyester.
(b) Stiffening shall consist of battens of 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.4.2 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 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.
(c) 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

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luff length</td>
<td></td>
<td>7915 mm</td>
</tr>
<tr>
<td>Leech length</td>
<td></td>
<td>7370 mm</td>
</tr>
<tr>
<td>Foot length remove bold</td>
<td></td>
<td>2540 mm</td>
</tr>
<tr>
<td>Foot median</td>
<td></td>
<td>7700 mm</td>
</tr>
<tr>
<td>Quarter width</td>
<td></td>
<td>1860 mm</td>
</tr>
<tr>
<td>Half width</td>
<td></td>
<td>1275 mm</td>
</tr>
<tr>
<td>Three quarter width</td>
<td></td>
<td>650 mm</td>
</tr>
<tr>
<td>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</td>
<td>315 mm</td>
<td></td>
</tr>
<tr>
<td>Top width</td>
<td></td>
<td>55 mm</td>
</tr>
<tr>
<td>Foot irregularity</td>
<td></td>
<td>25 mm</td>
</tr>
<tr>
<td>Finished weight of ply of the body of the sail</td>
<td>270 g/m²</td>
<td></td>
</tr>
<tr>
<td>Primary reinforcement</td>
<td></td>
<td>705 mm</td>
</tr>
</tbody>
</table>
### Secondary reinforcement:

<table>
<thead>
<tr>
<th>from sail corner measurement points</th>
<th>1800 mm</th>
</tr>
</thead>
</table>

### Window:

<table>
<thead>
<tr>
<th>number of</th>
<th>unlimited</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Total Window area</th>
<th>1.0 m²</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Window to sail edge</th>
<th>100 mm</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Batten length:</th>
<th>800 mm</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Batten width:</th>
<th>35 mm</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Batten spacing tolerance at 40mm below cross points</th>
<th>20 mm</th>
</tr>
</thead>
</table>

### 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

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leech length</td>
<td>8250 mm</td>
<td>8450 mm</td>
</tr>
<tr>
<td>Half Foot length</td>
<td>2545 mm</td>
<td>2745 mm</td>
</tr>
<tr>
<td>Foot Median</td>
<td>9300 mm</td>
<td>9500 mm</td>
</tr>
<tr>
<td>Half cross width between leech and centrefold 2745mm from head</td>
<td>2425 mm</td>
<td>2625 mm</td>
</tr>
<tr>
<td>Half cross width between leech and centrefold 5485mm from head</td>
<td>2955 mm</td>
<td>3155 mm</td>
</tr>
<tr>
<td>Finished weight of <em>ply</em> of the <em>body of the sail</em></td>
<td>32 g/m²</td>
<td></td>
</tr>
<tr>
<td>Primary reinforcement</td>
<td>740 mm</td>
<td></td>
</tr>
<tr>
<td>Secondary reinforcement from sail corner measurement points</td>
<td>1800 mm</td>
<td></td>
</tr>
</tbody>
</table>
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 SAIL ACQUISITION REQUIREMENTS.

H.1.1 USED BOAT.
To demonstrate that a sail with a used boat is uncompetitive, the new owner shall apply to his NCA for exemption from C.10.3 using the procedure below. If granted the NCA shall promptly inform the IECA.

(a) The owner shall show that all sails in any category (Main, Headsail, Spinnaker) were acquired 2 years before the boats purchase.
(b) The application shall list the acquisition dates of all sails in the boats present inventory by either submitting a copy of the sail measurement certificate or a letter signed by an IECA approved sail measurer.
(c) If exemption is granted, the new owner may acquire in the first calendar year of ownership 2 sails of the category deemed uncompetitive. None of the uncompetitive sails shall be used for racing.

H.1.2 LOST, STOLEN OR DESTROYED SAILS.
To demonstrate to the NCA that a sail has been lost, stolen or destroyed, the owner shall document ALL the following in an affidavit signed by:

(i) The owner;
(ii) His fleet captain; and
(iii) An IECA approved sail measurer.

IF LOST OR STOLEN:

(a) Circumstances of loss or theft.
(b) That the sail(s) was/were the newest in the given category and not more than 3 years old.
(c) The replacement will be as near as possible the same as the lost or stolen sail. i.e. It should be from the same sail loft, be the same cut and the same cloth weight.
(d) Acknowledge that the lost or stolen sail, if recovered, shall not be used for racing.

OR

IF DESTROYED:

(a) The destruction circumstances were beyond the owners control.
(b) The destruction would require more than one third of the material in the body of the sail to be replaced in a repair.
(c) That the sail(s) was/were the newest in the given category and not more than 3 years old.
(d) The replacement will be as near as possible the same as the destroyed sail. i.e. It should be from the same sail loft, be the same cut and the same cloth weight.

(e) Acknowledge that the destroyed sail, if recovered, shall not be used for racing.

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:

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above the bottom of the keel</td>
<td>380 mm</td>
</tr>
<tr>
<td>From the leading edge in the waterline plane</td>
<td>305 mm</td>
</tr>
</tbody>
</table>

(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

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum thickness</td>
<td>133 mm</td>
<td>144 mm</td>
</tr>
<tr>
<td>Chord length measured along template</td>
<td>1130 mm</td>
<td>1170 mm</td>
</tr>
<tr>
<td>Difference between min and max chord dimensions</td>
<td>20 mm</td>
<td></td>
</tr>
<tr>
<td>Surface of keel including coatings to template</td>
<td>0 mm</td>
<td>8 mm</td>
</tr>
<tr>
<td>Radius of leading edge over template control area</td>
<td>10 mm</td>
<td></td>
</tr>
<tr>
<td>Chain girth at station 6</td>
<td>2140 mm</td>
<td>2190 mm</td>
</tr>
</tbody>
</table>

**Hull Datum Point to:**

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection of leading edge and bottom of keel</td>
<td>4660 mm</td>
<td>4690 mm</td>
</tr>
<tr>
<td>Intersection of trailing edge and bottom of keel</td>
<td>3600 mm</td>
<td>3635 mm</td>
</tr>
<tr>
<td>Angle of keel Vee bottom section from vertical</td>
<td>38°</td>
<td>45°</td>
</tr>
<tr>
<td>Keel bolt diameter</td>
<td>16 mm</td>
<td>16 mm</td>
</tr>
<tr>
<td>Keel bolt number</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

H.3.2 WEIGHTS

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Including keel bolts, but excluding coatings</td>
<td>953 kg</td>
<td>987 kg</td>
</tr>
</tbody>
</table>

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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