The 470 was designed in 1963 by Andre Cornu and was adopted as an international recognised class in 1969.
## INDEX

INTRODUCTION ........................................ 3

**PART I – ADMINISTRATION**

**Section A – General**

A.1 Language ........................................ 4
A.2 Abbreviations ................................. 4
A.3 Authorities ....................................... 4
A.4 Administration of the Class ............... 4
A.5 ISAF Rules ................................. 4
A.6 Class Rules Variations ................. 5
A.7 Class Rules Amendments .......... 5
A.8 Class Rules Interpretations ......... 5
A.9 International Class Fee and ISAF Building Plaque .... 5
A.10 Sail Numbers ................................. 5
A.11 Hull Certificate .......................... 5
A.12 Initial Hull Certification ............. 6
A.13 Validity of Certificates .......... 6
A.14 Hull Re-Certification .......... 6
A.15 Retention of Measurement Forms ........... 6

**Section B – Boat Eligibility**

B.1 Class rules and Certification .... 7
B.2 Flotation Checks .......................... 7
B.3 ICA Labels ................................. 7

**PART II – REQUIREMENTS AND LIMITATIONS**

**Section C – Conditions for Racing**

C.1 General ....................................... 8
C.2 Crew .......................................... 8
C.3 Personal Equipment ................. 8
C.4 Advertising ................................. 9
C.5 Portable Equipment ................ 9
C.6 Boat ........................................ 9
C.7 Hull .......................................... 10
C.8 Hull Appendages .................... 10
C.9 Rig ........................................... 11
C.10 Sails ........................................ 12

**Section D – Hull**

D.1 General .................................... 15
D.2 Buoyancy Tanks ....................... 16
D.3 Assembled Hull ....................... 16
D.4 Measurement Diagrams .......... 18

**Section E – Hull Appendages**

E.1 Rules ....................................... 24
E.2 Manufacturers .......................... 24
E.3 Centreboard .............................. 24
E.4 Rudder blade, Stock & Tiller .............. 26

**Section F – Rig**

F.1 Rules ....................................... 29
F.2 Manufacturers .......................... 29
F.3 Mast ......................................... 29
F.4 Boom ....................................... 31
F.5 Spinnaker Pole .......................... 32
F.6 Standing Rigging ....................... 32
F.7 Running Rigging ....................... 33

**Section G – Sails**

G.1 Parts ........................................ 34
G.2 General .................................... 34
G.3 Mainsail ...................................... 34
G.4 Headsail ...................................... 36
G.5 Spinnaker ..................................... 36
INTRODUCTION

This introduction only provides an informal background and the International 470 Class Rules proper begin on the next page.

The 470 is a One-Design racing dinghy with an overall length of 4.70m for a crew of two, designed by Andre Cornu in 1963 and adopted as an International/Recognized class in 1969 and became an Olympic Class in 1976 where the class was sailed as an open event before the introduction of separate events for men and women in 1988.

Class rules may evolve, while the intention is to avoid the use of costly, short-lived, risky or environmentally improper materials.

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

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

Owners and crews should be aware that compliance with rules in Section C is not checked as part of the certification process.
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.1.3 The term "secured" shall mean held in place by positive means.
A.1.4 The term "fastened" shall mean held in place with bolts, screws or rivets.
A.1.5 The term "permanent" shall mean unable to be removed with simple tools, or fixed with glue or rivets or by glassing over. For limit marks, it shall mean unable to be removed and repositioned without destroying them.
A.1.6 The term "alteration" shall mean a substantial change from the original condition.
A.1.7 A dimension or other requirement in the text overrides the same in a Figure.
A.1.8 All units are metric.
A.1.9 All dimensions are in millimetres.

A.2 ABBREVIATIONS

A.2.1 ISAF International Sailing Federation
MNA ISAF Member National Authority
ICA International 470 Class Association (470 Internationale)
NCA National 470 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 ICA in all matters concerning these class rules.
A.3.2 Neither the ISAF, an MNA, the ICA, an NCA, a certification authority, or an official measurer are under any legal responsibility in respect of these class rules and the accuracy of measurement, nor can any claims arising from these be entertained.
A.3.3 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 ICA 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 current version of 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.5.3 These rules are complementary to the Building Specification Plan and Measurement Form.

A.6  CLASS RULES VARIATIONS
A.6.1 At World, Continental or Regional Championships the notice of race and sailing instructions may change the class rules only with the agreement of the ICA and the ISAF.
A.6.2 At National events the notice of race and sailing instructions may change the class rules only with the agreement of the NCA and the MNA.
A.6.3 At class events, these class rules shall not be varied by the notice of race and sailing instructions except as provided by A.6.1.

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 INTERPRETATIONS
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 issued by the MNA of the country where the boat is registered, which may delegate this function to the NCA.
A.10.2 Sail numbers shall be issued in consecutive order starting at “1”.
A.10.3 In accordance with ISAF RRS Appendix G1.1 (c), the MNA or NCA may issue personal sail numbers (Sail numbers staying with the owner for every boat he legally possesses as long as he sails 470) for which the authority may raise a fee. This number must be shown on the Certificate and shall not conflict with existing numbers of active boats. After the sale of the boat, the new owner has to use her original sail number or his own personal number on his sails.
A.10.4 Competitors may use the sail number of any hull still owned by them, on any boat chartered or owned by them.

A.11  HULL CERTIFICATE
A.11.1 No boat shall take part in class races unless it has a valid measurement certificate in the owner's name. The measurement certificate is only valid if the owner is a current member of a national 470 Class Association or, if there is no national 470 Class Association in his nation, member of the 470 International.
A.11.2 A certificate shall record the following information:
   (a) Class
   (b) Certification authority
   (c) Sail number(s) in accordance with A.10.
   (d) Owner’s name and address.
   (e) Hull identification (see D.1.4)
(f) Builder / manufacturer’s details
(g) Date of issue of certificate

A.12 INITIAL HULL CERTIFICATION
A.12.1 For a certificate to be issued to a hull not previously certified:
   (a) Equipment certification measurement shall be carried out by an official measurer.
   (b) The measurement form(s), and certification fee, if required, shall be sent to the certification authority.
   (c) Upon receipt of a satisfactorily completed measurement form(s) and certification fee, if required, the certification authority may issue a certificate.

A.13 VALIDITY OF CERTIFICATES
A.13.1 A hull certificate becomes invalid upon:
   (a) the change to any items recorded on the hull certificate as required under A.11.2
   (b) the date of expiry or change of ownership,
   (c) withdrawal by the certification authority,
   (d) the issue of a new certificate.
A.13.2 Older hulls need not be re-certified if the rules under which they were built are changed (grandfather rule).

A.14 HULL RE-CERTIFICATION
A.14.1 The certification authority may issue a new certificate to a previously certified hull:
   (a) When the certificate has become invalid under A.13.1 (a) or (b), after receipt of the old certificate, and certification fee if required.
   (b) When the certificate has become invalid under A.13.1 (c), at its discretion.
   (c) In other cases, by application of the procedure required for initial hull certification.

A.15 RETENTION OF MEASUREMENT FORMS
A.15.1 The certification authority shall:
   (a) retain the original measurement form(s) upon which the current certificate is based and shall provide the owner with a certified true copy of the measurement form(s).
   (b) upon request, transfer those measurement form(s) 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 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.
(c) have valid certification marks as required

B.2 FLOTATION CHECKS

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

B.3 ICA LABELS

B.3.1 Sails shall carry a sail button / sticker issued by the ICA.
PART II – REQUIREMENTS AND LIMITATIONS

The crew and the boat shall comply with the rules in Part II when racing. Measurement to check conformity with rules of Section C is not part of equipment certification measurement.

The rules in Part II are closed class rules. Measurement shall be carried out in accordance with the current version of ERS except where varied in this Part.

Fittings may be combined as long as no additional not-permitted function is added

Section C – Conditions for Racing

C.1 GENERAL

C.1.1 RULES

(a) The following RRS 2013-2016 rules shall apply as amended below:

(1) If the average wind speed is clearly over 8 knots across the course the race committee may signal in accordance with RRS Appendix P5 that pumping, rocking and ooching are permitted. This changes rules RRS 42.2(a), RRS 42.2(b), RRS 42.2(c).

(2) RRS 49.1 is changed to: ‘A crew member shall use no device designed to position his body outboard other than a trapeze, hiking straps and stiffeners worn under the thighs.‘

(3) See C.3.3 (a) for amendments to RRS 43.1(b) and C.10 for changes to RRS Appendix G.

(b) The ERS Part I – Use of Equipment shall apply.

C.2 CREW

C.2.1 LIMITATIONS

(a) The crew shall consist of two persons.

(b) No crew member shall be substituted during an event, unless authorised by the Race Committee.

(c) The trapeze system shall not be used by more than one crew member at any time. A crew member using a trapeze shall be in contact with the hull at all times except in the situation of accidental movement and/or a manoeuvre.

C.3 PERSONAL EQUIPMENT

C.3.1 MANDATORY

(a) The boat shall be equipped with a personal flotation device for each crew member to the minimum standard ISO 12402 Level 50, or USCG Type III, or AUS PFD 1 or equivalent. Inflatable buoyancy vests are not permitted.

C.3.2 OPTIONAL

(a) Trapeze harness. The weight shall not exceed 3 kg, measured according to current version of RRS, appendix H.

C.3.3 TOTAL WEIGHT

(a) In accordance with RRS 43.1(b), the total weight of personal equipment worn, excluding trapeze harness and clothing (including footwear) worn below the knee shall not exceed 9 kg, measured according to current version of RRS, appendix H.
C.4 ADVERTISING

C.4.1 LIMITATIONS
Advertising shall only be displayed in accordance with the ISAF Advertising Code. See ISAF Regulation 20.

C.5 PORTABLE EQUIPMENT

C.5.1 FOR USE
(a) OPTIONAL
(1) One hand bailer or bucket.
(2) Up to two compasses, which may include timing devices. If electronic, only compasses with heading, heading memory and timing functions are permitted.
(3) Electronic or mechanical timing devices which shall be removable. Wrist watches with compass functionality are permitted additionally. No other electrical or electronic devices than those prescribed in C.5.1 and those required by an organizer and the ICA to be carried by boats shall be permitted on board when racing.
(4) Spare parts such as blocks, shackles, ropes, etc.

C.5.2 NOT FOR USE
(a) OPTIONAL
(1) One paddle.
(b) MANDATORY
(1) Towing rope of floating type with a minimum length of 10m and of not less than 8mm in diameter. It shall not be stored inside a buoyancy tank.

C.6 BOAT

C.6.1 WEIGHT
Minimum
The weight of the boat shall be ..............................................120 kg, measured with the boat in dry condition, including compasses, but excluding sails, jib luff wire and all portable equipment.

C.6.2 CORRECTOR WEIGHTS
(a) When the boat weight is less than the minimum, corrector weights shall be fastened under the mast partner or to the top of the forward bulkhead.
(b) The total weight of such corrector weights shall not exceed 2.0 kg.

C.6.3 FLOTATION
(a) If in doubt regarding compliance with B.2, an equipment inspector may order a buoyancy test, afterwards checking the tanks for significant leakage. If the buoyancy is deemed unsatisfactory, the certificate shall be withdrawn and not returned until satisfactory remedial measures have been taken.

C.6.4 All fittings, fastenings and local reinforcement for fittings shall be only for their normal purpose and shall not be used to increase the weight of the boat.
C.7 HULL

C.7.1 MODIFICATIONS AND MAINTENANCE
(a) The hull shell, deck, bulkheads and cockpit floor as supplied by the licensed builder shall not be altered in any way except as permitted by these class rules.
(b) Routine maintenance such as small repairs, painting, sanding and polishing is permitted without re-measurement and re-certification.
(c) If any hull moulding is repaired in any other way than described in C.7.1(b), an official measurer shall verify on the certificate that the external shape is the same as before the repair and that no substantial increase in 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) Non-slip material, tape and low-friction material not exceeding 4mm in thickness may be added anywhere in the boat as long as it does not change the stiffness of that part.

C.7.2 FITTINGS
(a) USE
   (1) Inspection hole covers and drainage plugs shall be kept in place at all times when racing.
   (2) Except when specified otherwise or a system is optional, the direction of the control lines, sheets and ropes shall not be modified by means of shackles, rings, loops or holes in the boat.

C.8 HULL APPENDAGES

C.8.1 LIMITATIONS
(a) Only one centreboard and one rudder blade shall be used during an event, except when a hull appendage has been lost or damaged beyond repair.

C.8.2 CONDITIONS FOR USE, CENTREBOARD
(a) No part of the centreboard, in its raised position, shall project below the hull.

C.8.3 CONDITIONS FOR USE, RUDDER
(a) RUDDER
   The rudder blade shall be in its fully lowered position. However for races sailed in shallow water, the sailing instructions may prescribe that this rule shall not apply.
(b) RUDDER ASSEMBLY
   The rudder consists of a rudder blade, a rudder stock and a tiller. The rudder blade shall be able to pivot around its axis. The rudder shall be detachable from the hull. When mounted on the hull, the rudder blade pivot shall be located at a maximum of 150 mm abaft the transom and its height above the lower corner of the transom shall be a minimum of 120 mm, measured according to the Figure “Rudder Pivot Position”.
C.9 RIG

C.9.1 LIMITATIONS

(a) Only one mast, boom and spinnaker pole shall be used during an event except when an item has been lost or damaged beyond repair.

C.9.2 CONDITIONS FOR USE, MAST

(a) USE

(1) The fore and aft bend of the mast spar may be controlled at the mast partner by one of the following devices:

(i) Chocks between the mast spar and the mast partner (forward of the mast).

(ii) Optional systems of ropes or wires which may include attachments, blocks, levers, grips and cleats, all located on top of the mast partner.

With the mast spar in its most forward position, the grip, end of rope, wire or other parts of the system of the aft bend control shall not be more than 150mm from the mast partner as Figure “Mast Controller Grip” shows:
With the mast in its aft most position the grip of the forward bend control shall not be more than 150mm from the mast partner.

(2) The sideways play between the mast spar and the mast partner may be controlled by strips of any material permanently fastened to the mast partner.

(3) The mast heel position shall not be adjusted when racing.

(4) The forestay under tension shall be entirely in metal and shall prevent the mast from disengaging from the mast partners. To meet this requirement the widest section of the mast shall be within the mast partners when the mast rakes under its own weight and the forestay comes under tension, as Figure “Mast Rake with Tensioned Forestay” shows:

(5) Adjustable spreaders if used shall not be remotely controlled, and shall not be adjusted when racing.

C.9.3 CONDITIONS FOR USE, STANDING RIGGING

(1) The effective length of the shrouds shall not be adjusted when racing.

C.9.4 CONDITIONS FOR USE, RUNNING RIGGING

(1) Sails and sheets may be moved directly by hand without the use of a block.

C.10 SAILS

C.10.1 MODIFICATIONS AND MAINTENANCE

(a) Routine maintenance such as sewing, mending and patching is permitted without re-certification.

C.10.2 LIMITATIONS

(a) Not more than one mainsail, one jib and one spinnaker shall be carried aboard when racing.

(b) Not more than one mainsail, one jib and one spinnaker shall be used during an event, except when a sail has been lost or damaged beyond repair.

C.10.3 IDENTIFICATION

(a) The mainsail and spinnaker shall carry as sail identification the national letters and sail number. The sail number to be carried on the sails shall correspond to the last four digits of the official sail number issued according to A.10. The national letters and sail numbers size and position shall comply with the RRS G.1.2 and 1.3 except where otherwise prescribed in these class rules.
C.10.4 MAINSAIL

(a) IDENTIFICATION

(1) The sail identification shall be red, in paint or durable material, securely attached. It shall be placed as shown in the Figure “Sail Identification Location”, and so that the characters on one side of the sail do not overlap with characters on the other side, leaving at least 60 mm in between. These change RRS G.1.2(a) and G.1.3(c).

(2) Mainsails used in women’s only events shall carry a red rhombus (length of diagonals minimum 240mm, maximum 260mm) above the top batten pocket on both sides. The position should be approximately in the centre of the triangle formed by the top batten and the mainsail head. The rhombus may be retained for racing in other events. This changes RRS G.1.1(a).

(3) The 470 mainsail insignia as per G.3.1 may be replaced by a gold version conforming to the same dimensions when at least one member of crew is an Olympic or World Champion.
(b) **USE**

1. The sail shall be hoisted on a halyard. The arrangement shall permit hoisting and lowering of the sail at sea with the boat upright.

2. **Luff** and foot bolt ropes shall be in the **spar** grooves or tracks.

3. Battens shall be fitted, except in the case of accidental loss.

4. The sail shall be set so that the highest visible point of it, projected at 90° to the mast spar, shall not be higher than the upper point.

5. The sail shall be set so that the aftmost visible part of the leech, projected at 90° to the boom, is forward of the outer point on the boom.

**C.10.5 JIB**

(a) **USE**

1. The jib shall be hoisted and lowered on a halyard. The arrangement shall permit hoisting and lowering of the sail at sea with the boat upright.

2. Only one luff wire of diameter not less than 2.3mm shall be fitted inside the jib luff sleeve.

**C.10.6 SPINNAKER**

(a) **IDENTIFICATION**

1. Identification shall be of a contrasting colour to the body of the sail.

2. As an alteration to RRS Appendix G, national letters may be positioned in line with the sail numbers.
Section D – Hull

D.1 GENERAL

D.1.1 RULES

(a) The hull shall comply with the class rules and official plans in force at the time of initial certification, but all fittings shall comply with the current rules.

(b) For boats first certified after the 1st of March 1993, the hull shall be constructed in accordance with the Building Specification Plan and shall consist of the parts listed therein except where temporary alternatives have been approved for the builder by the ISAF in writing. All boats from any one builder shall be built to the same detailed specification submitted by the builder to ISAF. Any subsequent modifications have to be approved by ISAF before implementation and such approval will not be granted inside the 6-month period before the first scheduled start of the Olympic Sailing Competition.

D.1.2 CERTIFICATION

See Rule A.12.

D.1.3 DEFINITIONS

(a) HULL DATUM POINT

The hull datum point (HDP) is the projection of the AMP on the baseline.

(b) AFT MEASURING POINT

The aft measuring point (AMP) is the intersection on the hull centre plane of the transom external surface with the underside of the hull surface, both extended as necessary.

(c) FORWARD MEASURING POINT

The forward measuring point (FMP) is the sheer point on the stem, as shown in the Measurement References diagram.

(d) Unless otherwise stated, all measurements shall be taken parallel to the baseline.

D.1.4 IDENTIFICATION

(a) The hull shall carry the ISAF Plaque permanently affixed to the starboard side tank close to the transom and bottom.

(b) The hull shall carry, either moulded in or on a plate, permanently affixed, the builder's mark, serial number and mould number, which also appear on the certificate. In addition, the builder's serial number shall be moulded on the outside of the transom on the starboard side.

D.1.5 BUILDERS

(a) The hull shall be built by a builder licensed by ISAF. Hulls shall be supplied only as permanently assembled boat units.

(b) All moulds shall be approved by ISAF.

(c) Application for a licence shall be made through a MNA to the ISAF. The licences shall include clauses requiring good standards of manufacture, compliance with class rules and plans and a guarantee that all fees shall be paid. The ISAF shall consult with the ICA before granting any licence and only sufficient licences will normally be issued in a country to ensure that demand is satisfied. No licences will
be granted inside the 6-month period before the first scheduled start of the Olympic Sailing Competition.

(d) Alteration to moulds and or the building specification made without the approval of the ISAF shall result in the builder's licence being revoked. This same measure shall be taken in case of intentional and/or repeated infringements of the class rules, by the builder.

D.1.6 MATERIALS
(a) Local reinforcement of GRP, wood, plywood or metal as backings for fittings may be added.

D.2 BUOYANCY TANKS
D.2.1 CONSTRUCTION
(a) Buoyancy equipment shall comprise of two foam buoyancy blocks located in the side tanks, one piece in each tank. The minimum volume is 0.05 m$^3$ each, with a minimum length of 1500mm, according to the building specification.

D.3 ASSEMBLED HULL
D.3.1 FITTINGS
(a) MANDATORY
The following fittings shall be positioned in accordance with the Building Specifications unless otherwise noted:

(1) Stemhead fitting.
(2) Shroud plates.
(3) Mainsheet track and/or metal reinforcement, which shall be straight.
(4) Mast step, which may incorporate a means of fore and aft adjustment and which shall bear a mark 3055mm from the AMP engraved on the mast step or its mouldings. Additional dimensions for the mast step are mentioned in D.3.2.
(5) Two rudder fittings, which shall include a device to prevent the rudder becoming detached, bolted to the transom.

(b) OPTIONAL
(1) Jib and spinnaker halyard tensioning systems.
(2) An aft and/or centre mainsheet system may be used. Fittings and the adjustment system are optional, except that if a hoop is used, it shall be of aluminium and/or stainless steel.
(3) Mainsail Cunningham adjustment system.
(4) Kicking strap adjustment system.
(5) Headsail sheet blocks, fairleads and cleats.
(6) Headsail tack adjustment system, consisting of a shackle on the stemhead fitting, one cleat mounted on the foredeck, one fairlead behind the cleat and a single piece of rope.
(7) Fixed or adjustable jib sheet fairleads or pulleys. If traveller tracks are used, no more than one traveller car per track is permitted. Adjustment of the jib fairleads or pulleys may be remotely controlled only in one direction (e.g. fore/aft or in/out or up/down). Additional adjustments to the fairleads or pulleys are only permitted by means of prefixed positions.
(8) Spinnaker sheet and guy adjustment system.
(9) Spinnaker sheet barber hauler adjustment system.
(10) Spinnaker pole uphaul/downhaul adjustment system.
(11) Toe straps fitted within the cockpit.
(12) Fittings for stowage of clips for paddle(s), spinnaker pole and other equipment
(13) Two self-bailers, with a total effective area not exceeding 12.5 cm².
(14) Spinnaker catcher device(s) which shall not project more than 150 mm beyond the bow or beyond the outboard edges of the gunwale.
(15) Sealing strips for the centreboard slot of optional material.
(16) Optional centreboard adjustment system.
(17) Hinged covers or other devices for closing draining ports or drain holes in the transom. These covers or devices shall not obstruct the rudder or act as an extension of the bottom of the hull.
(18) A centreboard pivot including bushing.
(19) Strips of a minimum length of 300mm to reduce friction and/or the distance between the centreboard and centreboard case, but no device shall be attached to the inside of the centreboard case that could cause the centreboard to gybe (angle to windward).
(20) Trapeze return system with elastic cord and blocks/fairleads.

(c) Fittings may be attached to brackets not exceeding 175mm x 125mm fixed to the side tanks.
(d) No fittings, with the exception of spinnaker sheet catcher(s), rudder fittings and transom drainage flaps shall project beyond the outboard edges of the gunwale rubbing strips or beyond the profile of the hull,
(e) No fitting shall serve as an extension of the hull surface.
(f) Control lines and/or sheets shall not pass through the buoyancy compartments or the breakwater.
(g) **Ballast** other than required **corrector weights** shall not be carried.
(h) Materials for permitted fittings are optional.

### D.3.2 DIMENSIONS

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

The sections shall be taken as vertical, transverse planes at the following positions:

- Section 1: at 500 mm from **hull datum point**.
- Section 2: at 1000 mm from **hull datum point**.
- Section 3: at 1500 mm from **hull datum point**.
- Section 4: at 2000 mm from **hull datum point**.
- Section 5: at 2500 mm from **hull datum point**.
- Section 6: at 3000 mm from **hull datum point**.
- Section 7: at 3500 mm from **hull datum point**.
- Section 8: at 4000 mm from **hull datum point**.
- Section 9: at 4500 mm from **hull datum point**.
The baseline shall be on the centerplane of the **hull** at the following vertical distances:

- **at the hull datum point**: 230 mm from the AMP
- **at section 8**: 114 mm from the hull shell

<table>
<thead>
<tr>
<th>Length of hull between AMP and FMP</th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>4690 mm</td>
<td></td>
<td>4710 mm</td>
</tr>
</tbody>
</table>

Vertical distance from baseline to underside of hull shell:

- **at section 1**: 174 mm to 182 mm
- **at section 2**: 129 mm to 139 mm
- **at section 3**: 92 mm to 104 mm
- **at section 4**: 67 mm to 81 mm
- **at section 5**: 54 mm to 68 mm
- **at section 6**: 56 mm to 66 mm
- **at section 7**: 72 mm to 80 mm

Longitudinal distance from **hull datum point** to centre of shroud plate holes: 2770 mm to 2790 mm

Fore and aft position of aft edge of the mast, projected from above the sail entry at step level from **hull datum point**:

- **3055 mm** to **3115 mm**

Mast step bearing surface above the keelson when fitted:

- **5 mm**

Mainsheet track and/or metal reinforcement shall be attached to the top of the centerboard case and mounted at a distance from the **hull datum point**:

- **1610 mm** to **1650 mm**

Inside diameter of buoyancy tank inspection holes: **110 mm** to **160 mm**

Inside diameter of buoyancy tank draining holes: **10 mm** to **25 mm**

**D.3.3 WEIGHT**

<table>
<thead>
<tr>
<th>Hull weight (refer to building specification)</th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>86.0 kg</td>
<td></td>
<td>... kg</td>
</tr>
</tbody>
</table>

**D.4 MEASUREMENT DIAGRAMS**

Note:

1. This part of the Class Rules makes reference to the Building Specification Plan.
2. Only templates supplied by ISAF or ICA shall be used for hull measurement.
D.4.1 HULL DATUM POINT

For measurement, the hull shall be set as in D.3.2, see Figure “Hull Measurement”.

Hull Measurement

All measurements carried out from the hull datum point are parallel to the baseline. Certification measurement shall be performed at the following Sections: T, 1, 3, 5, 7, and 8. Hulls certified after January 1st 2013 shall be produced in moulds approved by prototype measurement performed on all 10 measurement sections. For those hulls, if the measurer is in doubt about their conformity to the rules and lines plans he may control any of the additional sections.

For Sections 4 & 5 which lay in the area of the centreboard case, the distance to the baseline is measured to the prolongation of the hull, as in Figure “Sections 4 & 5 measurement”.

---

Measurement References

transom
breakwater
stem
AMP
HDP
FMP
T
1
1500
2500
3500
4000
4690min.4710max.
500
1
1500
3
2500
5
3500
7
4000
8

D.4.2 STEM
The stem template shall be applied as shown on the “Stem measurement” Figure:

Between the sheerline and a point 420mm above the baseline the template shall clear by not less than 10mm nor more than 30mm.
Below the 420mm point the template shall touch lightly or clear by not more than 15mm.

D.4.3 ATHWARTSHIPS
Templates for the transom and sections 1 to 9 shall be applied as shown on the “Hull profile” figure:
Hull Profile

The top of the deck at the sheerline shall not be more than 10mm above or below the sheer marks on the templates.

The templates shall touch the gunwale rubbing strakes lightly or clear by not more than 35mm. At the transom the distance to the template shall be defined as shown in the diagram.

Below the points 420mm above the baseline the clearance between the hull and the templates shall be between 5mm and 15mm at the transom and between 3mm and 17mm at sections 1 to 9.

The difference between the maximum and minimum clearances shall not exceed 7mm at the transom and 10mm at the other sections.

Above the line 420mm from the baseline, the maximum distance of the surface of the hull from the templates shall be 21mm ± 13mm at section 2, 22mm ± 13mm at section 3, 23mm ± 13mm at section 4, 31mm ± 13mm at section 5, 38mm ± 13mm at section 6 and 41mm ± 13mm at section 7.

Above the line 520mm from the baseline the maximum distance of the surface of the hull from the templates shall be 28mm ± 13mm at section 8 and 23mm ± 13mm at section 9.

The measurer shall test the surface of the hull with a flexible batten to ensure that the shape is fair.

D.4.4 CENTREBOARD PIVOT

The distance of the centre of the centreboard pivot from the HDP shall be 2650mm ± 10mm and its height above the baseline shall be 102mm ± 10mm.

The pivot pin shall pass through the centreboard box and be in a fixed position.
D.4.5 FOREDECK

At section 7, the centre of the foredeck shall be not more than 75mm above the top of the deck at the sheerline.

A straight edge placed on the centreline of the foredeck shall be nowhere more than 5mm from the deck.

At the centreline the aft face of the breakwater shall be 3250mm ± 30mm forward of the HDP and at the sheer 2830mm ± 30mm.

D.4.6 SIDE TANKS

The shape of the side tanks surface above 280mm from the hull is measured by a template at Section 4.

The template shall touch the tank lightly or clear by not more than 35mm.

The distance between the tanks (intersection with the hull shell) shall be verified at the transom (580mm), at Section 4 (830mm), and at Section 6 (770mm) with a tolerance of ± 30mm.
D.4.7 TRANSOM

The transom surface shall be perpendicular to the baseline, with the vertical and horizontal tolerances defined in the Figure "Transom tolerances".
Section E – Hull Appendages

E.1 RULES
(a) Hull appendages shall comply with the current class rules.

E.2 MANUFACTURERS
(a) Manufacturer is optional.

E.3 CENTREBOARD
E.3.1 MATERIALS
The centreboard shall be made from one or a combination of the following materials; wood, plywood, polyester reinforced with glass fibre, epoxy reinforced with glass fibre and/or plastic foam which includes micro balloons and may be painted.

E.3.2 FITTINGS
OPTIONAL
(1) Blocks and associated fittings for hoisting/lowering the centreboard.
(2) A bushing round the pivot of the centreboard.

E.3.3 DIMENSIONS
(a) Dimensions shall conform to the figures “Centreboard measurement” and “Centreboard Lower edge Shape” in E.3.4.
(b) The centreboard shall be of even thickness throughout, minimum 20 mm and maximum 24 mm, except that the edges may be bevelled over distances of 110 mm from the trailing and lower edges, and 55 mm from the leading edge.
(c) Except for permitted bevelling, the thickness shall not vary by more than 1 mm.
(d) The centreboard shall not be pierced by lightening holes.

E.3.4 CENTREBOARD MEASUREMENT DIAGRAMS
The contour of the centreboard is defined by the points A, origin O, E, G, the lines (GH) and (AI), as Figure “Centreboard Measurement” shows.
(a) DEFINITIONS OF MEASUREMENT POINTS AND LINES
The centreboard shall touch points A, B and C. These points are integral to the centre board.

The x and y axes are square to each other.
A is the point on the centreboard leading edge and on the x-axis 975mm from the origin O.
B is the point on the centreboard leading edge and on the x-axis 50mm from the origin O.
C is the point on the centreboard lower edge and on the y-axis 50mm from the origin O.
F is the point on the centreboard trailing edge 100mm from the y-axis.
G is the widest point of the centreboard on the trailing edge.
Point E is the extension of the trailing edge (FG) on the y-axis.
D is the point on the lower edge 100mm from point E, measured along the y-axis.

(b) DIMENSIONS

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from the centre of the pivot hole to the x–axis</td>
<td>85 mm</td>
<td>95 mm</td>
</tr>
<tr>
<td>Distance from the centre of the pivot hole to the y–axis</td>
<td>1015 mm</td>
<td>1035 mm</td>
</tr>
<tr>
<td>Distance from D to the y-axis</td>
<td>110 mm</td>
<td>110 mm</td>
</tr>
<tr>
<td>Distance from E to the x–axis</td>
<td>285 mm</td>
<td>305 mm</td>
</tr>
<tr>
<td>Distance from G to the outmost point of the leading edge (AB)</td>
<td>470 mm</td>
<td>470 mm</td>
</tr>
<tr>
<td>Distance from G to the innermost point of edge (AB)</td>
<td>450 mm</td>
<td>450 mm</td>
</tr>
<tr>
<td>Distance from G to the y–axis</td>
<td>865 mm</td>
<td>945 mm</td>
</tr>
<tr>
<td>Total (positive, negative or both) deviation of an edge from a straight line:</td>
<td>2 mm</td>
<td>2 mm</td>
</tr>
<tr>
<td>Between points A and B from the x–axis</td>
<td>2 mm</td>
<td>2 mm</td>
</tr>
<tr>
<td>Between points C and D from line (CD)</td>
<td>2 mm</td>
<td>2 mm</td>
</tr>
<tr>
<td>Between points F and G from line (FG)</td>
<td>2 mm</td>
<td>2 mm</td>
</tr>
</tbody>
</table>
Line (AI) lies on the x-axis. Line (GH) is parallel to the x-axis. The length of the lines (AI) and (GH) is arbitrary. The contour of the centreboard inside the area AGHI is free, but no part of the centreboard shall lie outside this area.

The shape of the lower corners of the centreboard shall lie within the shaded areas in the Figure “Centreboard Lower Edge Shape”, and no part of the bottom edge of the centreboard shall lie outside the polygon formed between points B, B’, C’, D’, F’ and F. Point B’ is the point on the x-axis 15mm from origin O. Point C’ is the point on the y-axis 15mm from origin O. Point D’ is the point on the y-axis 30mm from point E. Point F’ is the point on line (EG), 30mm from point E.

![Centreboard Lower Edge Shape](image)

E.3.5 WEIGHTS

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Weight in dry condition excluding fittings</td>
<td>4.5 kg</td>
<td>6.5 kg</td>
</tr>
<tr>
<td>(2) Corrector weights are not permitted.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

E.4 RUDDER BLADE, STOCK AND TILLER

E.4.1 MATERIALS

(a) The **rudder** blade shall be made of one or a combination of the following materials; wood, plywood, polyester with glass fibre, epoxy with glass fibre and/or plastic foam, which includes micro balloons and may be painted.

(b) For boats first **certified** after 1st March 2002, the rudder stock and tiller shall be made of aluminium alloy and/or stainless steel.

(c) The rudder stock shall not act as an extension of the hull.

E.4.2 FITTINGS

(a) OPTIONAL

(1) Control lines and two cleats may be used to fix the position of the rudder blade. One block per cleat is permitted.

(2) A bushing round the pivot of the rudder blade

(3) The control lines may be fixed on the rudder blade by an eye-bracket.
(4) A tiller extension, which may be telescopic and of any material.

E.4.3 DIMENSIONS
(a) Dimensions shall conform to the Figures "rudder blade measurement" and "Rudder blade Lower Edge Shape" shown in E.4.4.
(b) The rudder blade shall be of even thickness throughout, minimum 20mm and maximum 24 mm, except that the edges may be bevelled over distances of 70mm from the trailing and lower edges and 55mm from the leading edge.
(c) Except for permitted bevelling, the thickness of the rudder blade shall not vary by more than 1 mm.

E.4.4 RUDDER BLADE MEASUREMENT DIAGRAM
The contour of the rudder blade is defined by the points A, origin O, E, G, and lines (GH) and (AI), as Figure “Rudder Blade Measurement” shows.

(a) DEFINITIONS OF MEASUREMENT POINTS AND LINES
The rudder blade shall touch points A, B and C. These points are integral to the rudder blade.

The x and y axes are square to each other.
A is the point on the rudder leading edge and on the x-axis 643mm from the origin O.
B is the point on the rudder leading edge and on the x-axis 50mm from the origin O.
C is the point on the rudder lower edge and on the y-axis 50mm from the origin O.
Point F is the point on the trailing edge 100mm from the y-axis.
Point G is the point on the trailing edge 516mm from the y-axis.
Point E is the extension of the trailing edge (FG) on the y-axis.
The trailing edge (FG) is parallel to the x-axis: the distance of point (G) from the outmost point of the leading edge, measured along y-axis, shall be equal to width (OE) within 2mm.
Point D is the point on the lower edge 100mm from point E, measured along the y-axis.
(b) DIMENSIONS

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from the centre of the pivot hole to the x-axis</td>
<td>93 mm</td>
<td>103 mm</td>
</tr>
<tr>
<td>Distance from the centre of the pivot hole to the y-axis</td>
<td>743 mm</td>
<td>763 mm</td>
</tr>
<tr>
<td>Distance from E to the x-axis</td>
<td>240 mm</td>
<td>260 mm</td>
</tr>
<tr>
<td>Distance from D to the y-axis</td>
<td>2 mm</td>
<td></td>
</tr>
</tbody>
</table>

Total (positive, negative or both) deviation of an edge from a straight line:
- Between points A and B from the x-axis: 2 mm
- Between points C and D from line (CD): 2 mm
- Between points F and G from line (FG): 2 mm

At no point the width of the rudder blade shall be more than 260 mm or less than 240 mm.

Line (AI) lies on the x-axis. Line (GH) is parallel to the x-axis. The length of the lines (AI) and (GH) is arbitrary. The contour of the rudder blade inside the area AGHI is free, but no part of the rudder shall lie outside this area.

The shape of the lower corners of the rudder blade shall lie within the shaded areas in the Figure “Rudder Blade lower Edge Shape” and no part of the bottom edge of the rudder shall lie outside the polygon formed between points B, B’, C’, D’, F’ and F.

Point B’ is the point on the x-axis 15 mm from origin O.
Point C’ is the point on the y-axis 15 mm from origin O.
Point D’ is the point on the y-axis 45 mm from point E.
Point F’ is the point on line (EG), 45 mm from point E.

![Rudder Blade Lower Edge Shape](image)

E.4.5 WEIGHTS

The rudder blade, dry, with control ropes only: 2.3 kg

If the rudder blade is found to be underweight the difference shall be made up by corrector weights permanently fastened or glued to the upper edge surface.
Section F – Rig

F.1 RULES
(a) Rigs shall comply with the current class rules.

F.2 MANUFACTURERS
(a) Manufacturer is optional.

F.3 MAST
F.3.1 DEFINITIONS
(a) MAST DATUM POINT
   The mast datum point (MDP) is the heel point. Unless indicated otherwise, all measurements are from the MDP.

F.3.2 MATERIALS
(a) The mast spar shall be of aluminium alloy.

F.3.4 CONSTRUCTION
(a) The spar shall include a fixed sail groove or track, which may or may not be integral with the spar.

F.3.5 FITTINGS
(a) MANDATORY
   (1) A gooseneck
   (2) Kicking strap attachment(s)
   (3) Spinnaker pole fitting.
   (4) Spinnaker pole downhaul system.
   (5) Spinnaker pole lift system.
   (6) A pair of fixed or adjustable metal spreaders with optional attachment systems which may include local reinforcement as per F.3.6
   (7) Headsail halyard system.
   (8) Attachments for shrouds, forestay and trapezes.
   (9) Spinnaker halyard system.
   (10) Mainsail halyard system.
   (11) A device to ensure compliance with C.10.4 (b) (4) if the mainsail halyard system itself does not do so.
   (12) Permanently painted/taped limit marks.

(b) OPTIONAL
   (1) A heel fitting
   (2) Fitting(s) for centreboard system.
   (3) Cunningham system.
   (4) Reinforcement as per F.3.6.
   (5) A removable timing device
   (6) Attachment fittings for removable compass.
   (7) A fitting to attach mainsail tack.
(8) Devices attached to the **spreaders** to prevent the spinnaker halyard from getting tangled

(9) A masthead fitting.

(10) One mechanical wind indicator.

**F.3.6 DIMENSIONS**

Minimum | Maximum
---|---

**Mast spar deflection** when loaded at
3500 mm from the **mast datum point**, and supported horizontally at the **upper point** and a point not more than 100 mm from the heel:

- **fore-and-aft** (load 25 kg) ................................................................. 200 mm
- **transverse** (load 15 kg) ...................................................................... 130 mm
- permanent bend **fore-and-aft** ................................................................. 40 mm

**Mast spar cross section** between MDP and 5010 mm;

- **Transverse** ............................................................................................ 55 mm —— 75 mm

**Mast spar cross section** between 1550 mm and 5010 mm;

- **fore-and-aft** .......................................................................................... 65 mm —— 75 mm

In this region the mast section shape and wall thickness excluding external luff groove shall be constant along the length of the spar. Reinforcement is permitted in the regions of the mast partner, spreaders and the connection if the mast is made of two parts. A cut-off for sail entry is permitted.

**Mast limit mark width** ............................................................................ 10 mm

**Lower point height** .............................................................................. 1055 mm

**Upper point** to the **lower point** .......................................................... 5750 mm

**Forestay height** .................................................................................... 4995 mm —— 5025 mm

**Trapeze height** ..................................................................................... 4910 mm —— 5110 mm

**Shroud height** ....................................................................................... 4995 mm —— 5025 mm

Distance between the aft face of the mast and the gooseneck pivot .............................................................................. 35 mm

**Spinnaker pole fitting:**

- **height** ................................................................................................. 1240 mm —— 1260 mm
- **projection** ............................................................................................ 40 mm

**Spinnaker hoist height** .......................................................................... 5170 mm

**Spinnaker halyard projection device, distance from spar** ................. 60 mm

**Spreader height** ................................................................................... 2790 mm —— 2810 mm

The Distance between **mast datum point** and the intersection of the **spar** and the lower edge of the jib halyard, when at 90° to the spar, each extended as necessary .......................................................................................... 4870 mm

Distance from **mast datum point** to centre of gravity in condition as described in ERS H.4.6. The rigging parts to be included in the measurement are those under F.6.2; F.7.2 (a).

The **trapeze** system shall only include the wire
and the handhold. The ends of the halyards are to be left on the ground 2800 mm

F.3.7 WEIGHTS
The weight of the mast includes rigging specified under F.6.2; F.6.3 (a) (1), F.7.2 (a), fittings specified under F.3.5 and riveted or adhesively bonded compass bracket if applicable, but without wind indicator, compass and/or timing device:

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mast weight</td>
<td></td>
<td>10 kg</td>
</tr>
<tr>
<td>Mast corrector weights</td>
<td></td>
<td>0.3 kg</td>
</tr>
<tr>
<td>Corrector weights</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>minimum</td>
<td>maximum</td>
</tr>
<tr>
<td>Corrector weight</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Corrector weights shall be permanently fastened so that no part of the corrector is more than 200mm from the upper point.

F.4 BOOM
F.4.1 MATERIALS
(a) The boom spar shall be of aluminium alloy.

F.4.2 CONSTRUCTION
(a) The boom shall include a fixed aluminium sail groove or track which may or may not be integral with the spar.

F.4.3 FITTINGS
(a) MANDATORY
(1) A gooseneck attachment.
(2) A kicking strap fitting.
(3) Mainsheet block(s) with attachment fitting(s) for the blocks and/or mainsheet which may be adjustable
(4) Mainsail clewouthaul attachment or adjustment system.
(5) A stopper to ensure compliance with C.10.4(b). (5).
(6) Permanently painted/taped limit mark.
(b) OPTIONAL
(1) A fitting to attach mainsail tack
(2) An aft spar end fitting
(3) The spar may be protected in the area where it touches the shrouds by pieces of any material, with maximum length/height/thickness=100/50/5 mm.

F.4.4 DIMENSIONS

<table>
<thead>
<tr>
<th></th>
<th>minimum</th>
<th>maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boom spar deflection</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boom spar cross section</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Radius of convex edges excluding those of external or internal tracks or grooves ........................................ 5 mm

Except within 150 mm from each spar end, the boom section shall be constant.

Limit mark width .......................................................... 10 mm
Outer point distance ......................................................... 2650 mm

F.5 SPINNAKER POLE

F.5.1 MATERIALS
(a) The spinnaker pole spar shall be of aluminium alloy.

F.5.2 FITTINGS
(a) OPTIONAL
(1) A hook at each end.
(2) Fittings approximately at the mid-point for attachment for lift/downhaul.
(3) A fixed line between the fittings described in F.5.2 (a) (1), which may incorporate knots, toggles or short tubes for easier handling.

F.5.3 DIMENSIONS

maximum
Spinnaker pole length ........................................................................ 1900 mm

F.6 STANDING RIGGING

F.6.1 MATERIALS
(a) Unless otherwise specified, the standing rigging shall be of stainless steel wire rope. Rod rigging is prohibited.

F.6.2 CONSTRUCTION
(a) MANDATORY
(1) A forestay of a diameter not less than 2.3 mm.
(2) Two shrouds of a diameter not less than 2.3 mm.
(3) 1 trapeze on each side of the boat. The material of the trapeze is optional, if wire rope is used it shall have a diameter not less than 2.3 mm. Each trapeze system may be provided with handholds, rings and adjustment. Self-tacking trapeze systems are not permitted.

(b) OPTIONAL
(1) Elastic cords on each trapeze approximately at the height of the spreaders.
(2) Shock-cord may be fitted between the forestay and the stemhead fitting, to maintain tension in the forestay.

F.6.3 FITTINGS
(a) MANDATORY
(1) Forestay attachment fittings.
(2) Each shroud shall be attached to the shroud plate by means of plates having rows of adjustment holes. No other arrangement of shroud adjustment is permitted.
F.7  RUNNING RIGGING

F.7.1  MATERIALS
    (a) Materials are optional.

F.7.2  PARTS
    (a) MANDATORY
        (1) Mainsail halyard
        (2) Headsail halyard
        (3) Spinnaker halyard
        (4) Spinnaker pole lift and downhaul
    (b) OPTIONAL
        (1) Mainsail Cunningham line
        (2) Mainsail outhaul
        (3) Mainsail tack attachment

F.7.3  FITTINGS
    (a) OPTIONAL
        (1) One block or eye in each headsail Barber hauler to run on headsail sheet
        (2) One block or eye in each spinnaker Barber hauler to run on spinnaker sheet or guy.
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 current class rules.
   (b) Headsails may be measured with battens inside the batten pockets.
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. Sails may be certified without identification on them.
   (b) Sails shall carry the sail button/sticker issued by the ICA attesting that the class fee has been paid, and located for mainsails and headsails in the tack and spinnakers in the head.
   (c) The ISAF or an MNA may appoint one or more In-House Official Measurers to measure and certify sails produced by that manufacturer.

G.2.3 SAILMAKER
   (a) The sailmaker is optional.

G.3 MAINSAIL
G.3.1 INSIGNIA
   (a) The mainsail shall carry the 470 insignia in dark blue paint or other durable material, securely attached.
   (b) The 470 insignia shall be placed under and in close proximity to the upper batten pocket and shall conform to the Figure “470 Insignia” with a tolerance of 2mm.
G.3.2 MATERIALS
(a) The ply fibres shall be of polyester.
(b) Battens may be made of any material.

G.3.3 CONSTRUCTION
(a) The construction shall be: **soft sail, single ply sail.**
(b) The **body of the sail** shall consist of the same white woven ply throughout except for the panel adjacent to the **foot**, which may be of a different white woven ply.
(c) The **sail** shall have three **batten pockets** in the **leech**.
(d) The **leech** shall not extend aft of straight lines between:
   (1) the **aft head point** and the intersection of the **leech** and the upper edge of the nearest batten pocket,
   (2) the intersection of the **leech** and the lower edge of a batten pocket and the intersection of the **leech** and the upper edge of an adjacent batten pocket below,
   (3) the **clew point** and the intersection of the **leech** and the lower edge of the nearest batten pocket.
(e) The following are permitted: Stitching, glues, tapes, bolt ropes, corner eyes, headboard with fixings, Cunningham eye or pulley, batten pocket patches which may be made from a woven ply thinner than that of the body of the sail, batten pocket elastic, top batten pocket end cap at luff end and tensioning device at leech end, leech line with cleat on leech, not more than two **windows**, one boom slide fixed at the **clew**, tell tales, sail shape indicator stripes, sail identification, sailmaker labels, sail button/sticker, **certification mark**.

G.3.4 DIMENSIONS

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leech length</td>
<td></td>
<td>6265 mm</td>
</tr>
<tr>
<td>Quarter width</td>
<td></td>
<td>2340 mm</td>
</tr>
<tr>
<td>Half width</td>
<td></td>
<td>1790 mm</td>
</tr>
<tr>
<td>Three-quarter width</td>
<td></td>
<td>1050 mm</td>
</tr>
<tr>
<td>Top width</td>
<td></td>
<td>140 mm</td>
</tr>
<tr>
<td>Thickness of ply of the body of the sail</td>
<td></td>
<td>0.165 mm</td>
</tr>
<tr>
<td>Primary reinforcement</td>
<td></td>
<td>325 mm</td>
</tr>
<tr>
<td>Secondary reinforcement:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>from sail corner measurement points</td>
<td></td>
<td>1000 mm</td>
</tr>
<tr>
<td>from the leech</td>
<td></td>
<td>300 mm</td>
</tr>
<tr>
<td>area above top batten pocket</td>
<td></td>
<td>unlimited</td>
</tr>
<tr>
<td>Foot boltrope length</td>
<td></td>
<td>2200 mm</td>
</tr>
<tr>
<td>Total window(s) area</td>
<td></td>
<td>0.3 m²</td>
</tr>
<tr>
<td>Window to sail edge</td>
<td></td>
<td>150 mm</td>
</tr>
<tr>
<td>Extension of headboard from head point</td>
<td></td>
<td>140 mm</td>
</tr>
<tr>
<td>Batten pocket inside length: (Intermediate and lowermost pockets)</td>
<td></td>
<td>800 mm</td>
</tr>
<tr>
<td>Intersection of a batten pocket centreline and leech to adjacent cross width measurement point</td>
<td></td>
<td>100 mm</td>
</tr>
<tr>
<td>Head point to intersection of luff and centreline of uppermost batten pocket when the luff is under sufficient tension to remove wrinkles</td>
<td></td>
<td>1680 mm</td>
</tr>
</tbody>
</table>

470 Class Rules 2013 35
G.4 HEADSAIL

G.4.1 MATERIALS
(a) The ply fibres shall be of polyester.
(b) Battens shall be made any material.

G.4.2 CONSTRUCTION
(a) The construction shall be: soft sail, single ply sail.
(b) The body of the sail shall consist of the same white woven ply throughout.
(c) The headsail shall have a maximum of three batten pockets in the leech.
(d) The leech shall not extend beyond a straight line from the aft head point to the clew point.
(e) The following are permitted: Stitching, glues, tapes, tabling, corner eyes, flutter patches, batten pocket patches which may be made from a woven ply thinner than that of the body of the sail, not more than two windows, tell tales, sail shape indicator stripes, sail identification, sailmaker labels, sail button/sticker, certification mark.

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>4100 mm</td>
</tr>
<tr>
<td>Leech length</td>
<td></td>
<td>3750 mm</td>
</tr>
<tr>
<td>Foot length</td>
<td></td>
<td>1955 mm</td>
</tr>
<tr>
<td>Foot median</td>
<td></td>
<td>3950 mm</td>
</tr>
<tr>
<td>Top width</td>
<td></td>
<td>30 mm</td>
</tr>
<tr>
<td>Foot irregularity</td>
<td></td>
<td>30 mm</td>
</tr>
<tr>
<td>Thickness of ply of the body of the sail</td>
<td></td>
<td>0.165 mm</td>
</tr>
<tr>
<td>Primary reinforcement</td>
<td></td>
<td>275 mm</td>
</tr>
<tr>
<td>Secondary reinforcement:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>from sail corner measurement points</td>
<td></td>
<td>750 mm</td>
</tr>
<tr>
<td>for 1 chafing patch on the luff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>along the luff</td>
<td></td>
<td>300 mm</td>
</tr>
<tr>
<td>perpendicular to the luff</td>
<td></td>
<td>50 mm</td>
</tr>
<tr>
<td>Total Window(s) area</td>
<td></td>
<td>0.3 m²</td>
</tr>
<tr>
<td>Window to sail edge</td>
<td></td>
<td>150 mm</td>
</tr>
<tr>
<td>Batten pocket inside length:</td>
<td></td>
<td>250 mm</td>
</tr>
</tbody>
</table>

G.5 SPINNAKER

G.5.1 MATERIALS
(a) The ply fibres shall be of polyester or nylon.

G.5.2 CONSTRUCTION
(a) The construction shall be: soft sail, single ply sail.
(b) The body of the sail shall consist of the same woven ply material throughout. This limitation does not apply for the color of the ply, which may differ from panel to panel.
(c) The following are permitted: Stitching, glues, tapes, corner eyes, tape eyes, tell tales, sail shape indicator stripes, sail identification, sailmaker labels, sail button/sticker, certification mark.
### G.5.4 DIMENSIONS

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leech lengths</td>
<td>4360 mm</td>
<td></td>
</tr>
<tr>
<td>Foot length</td>
<td>3000 mm</td>
<td></td>
</tr>
<tr>
<td>Foot Median</td>
<td>5100 mm</td>
<td></td>
</tr>
<tr>
<td>Difference between <strong>diagonals</strong></td>
<td>50 mm</td>
<td></td>
</tr>
<tr>
<td>Upper width (<strong>upper leech points</strong> at 200 mm from head point)</td>
<td>350 mm</td>
<td></td>
</tr>
<tr>
<td>Half width</td>
<td>3450 mm</td>
<td></td>
</tr>
<tr>
<td>Three-quarter width</td>
<td>1830 mm</td>
<td></td>
</tr>
<tr>
<td>Primary reinforcement</td>
<td>300 mm</td>
<td></td>
</tr>
<tr>
<td>Secondary reinforcement</td>
<td>Unlimited</td>
<td></td>
</tr>
</tbody>
</table>

### OFFICIAL PLANS

<table>
<thead>
<tr>
<th></th>
<th>Plan Description</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Building Specification Plan</td>
<td>2009</td>
</tr>
<tr>
<td>2</td>
<td>Lines Plan</td>
<td>2011</td>
</tr>
<tr>
<td>3</td>
<td>Class Insignia (Full size)</td>
<td>2011</td>
</tr>
<tr>
<td>4</td>
<td>Full Size Sections</td>
<td>2011</td>
</tr>
<tr>
<td>5</td>
<td>Full Size Templates</td>
<td>2011</td>
</tr>
<tr>
<td>6</td>
<td>Full Size detail of Stem</td>
<td>2011</td>
</tr>
</tbody>
</table>

Published Date: 27th November 2012
Effective Date: 1st January 2013
Previous issues: 1st October 2011

© ISAF (UK) Ltd., Southampton, UK