

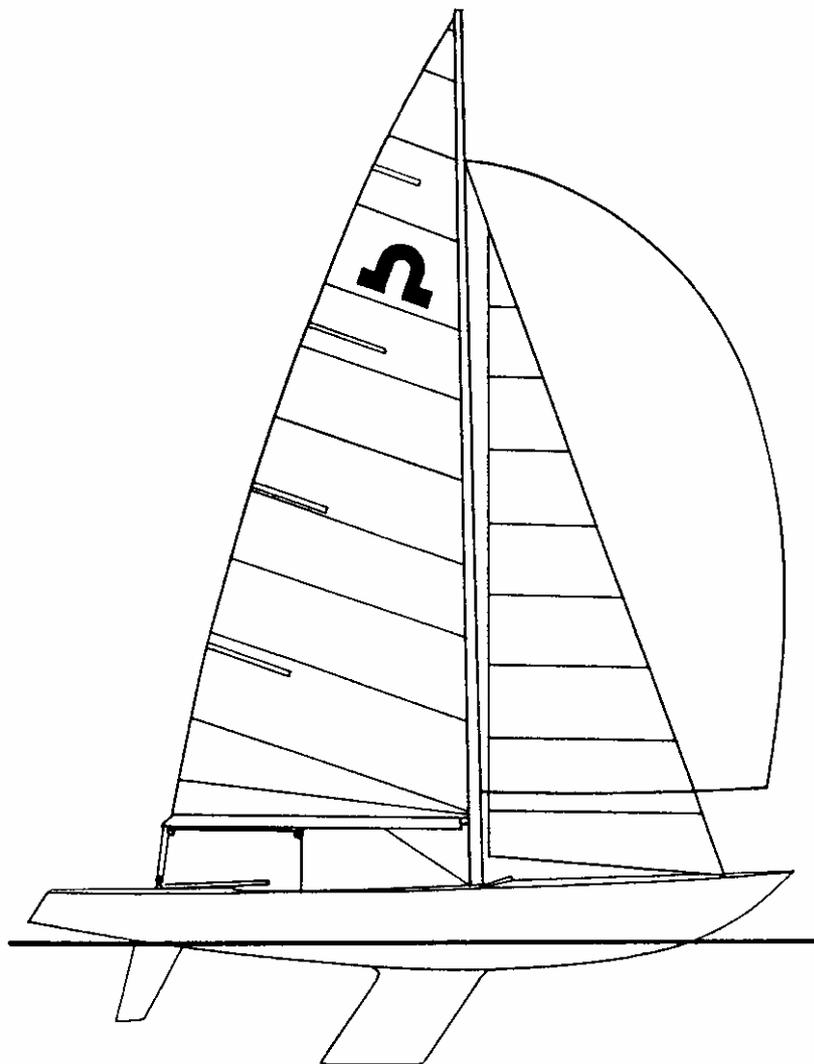
1999



I S A F

International SOLING Class Rules

Authority* : International Sailing Federation



*** The International Sailing Federation (ISAF) is not a National Authority (NA).**

International SOLING Class Rules

The Soling was designed in 1965 by Jan Linge and was adopted as an international class in 1967.

PART I — ADMINISTRATION

Section A — General

A.1 Type of Class Rules

A.1.1 These are **closed class rules**.

A.1.2 This is a One-Design Class. These rules and the official plans are intended to ensure that boats of this Class are as nearly alike as possible as regards shape and weight of hull and decking, shape and weight of keel, shape of rudder, shape and area of sail plan and in some other items which affect performance. All boats shall be built in accordance with the plans, with the exception of spars, standing and running rigging, sheeting arrangements, rudder stock with bearing, tiller and tiller extension, lifting eyes, cleats and fairleads. These items and their fittings need not comply with the official plans but shall, in some cases, be controlled in other ways by the following rules.

A.2 Language

A.2.1 The official language of the class is English and in case of dispute over translation the English text shall prevail.

A.2.2 The word «shall» is mandatory and the word «may» is permissive.

A.3 Abbreviations

A.3.1 ISAF International Sailing Federation
MNA ISAF Member National Authority
ISA International Soling Class Association
NSA National Soling Association
ERS Equipment Rules of Sailing
RRS Racing Rules of Sailing

A.4 Authorities and responsibilities

A.4.1 The international authority of the class is the ISAF which shall co-operate with the ISA in all matters concerning these **class rules**.

A.4.2 The ISAF, an MNA, the ISA, an NSA or an **official measurer** is under no legal responsibility in respect of these **class rules**.

A.4.3 Notwithstanding anything contained herein, the MNA has the authority to withdraw a **certificate** and shall do so on the request of the ISAF.

A.5 Administration of the Class

- A.5.1 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 NSA.
- A.5.2 In countries where there is no MNA, or the MNA does not wish to administrate the class, its functions as stated in these **class rules** shall be carried out by the ISA which may delegate the administration to an NSA.

A.6 ISAF Rules

- A.6.1 These **class rules** shall be read in conjunction with the ERS and measurements shall be taken in accordance with these unless specified. Where a term is used in its defined sense, it is printed in «**bold**» type if defined in the ERS and in «*italic*» type if defined in the RRS.

A.7 Amendments to Class Rules

- A.7.1 Amendments to these **class rules** shall be proposed by the ISA, or an MNA, and shall be approved by the ISAF.

A.8 Interpretation of Class Rules - General

- A.8.1 Interpretations of **class rules** except as provided by A.9, shall be made by the ISAF. Request for interpretation shall be made in accordance with the ISAF regulations.

A.9 Interpretation of the Class Rules - at an Event

- A.9.1 Any interpretation of **class rules** required at an event may be by an international jury constituted in accordance with the RRS, Appendix Q. Such interpretation shall only be valid during the event and the organising authority shall, as soon as practical after the event, inform the ISAF, the MNA and the ISA of such an interpretation.

A.10 International Class Fee and ISAF Plaque

- A.10.1 The International Class Fee shall be paid by the licenced hull manufacturer to the ISAF.
- A.10.2 The ISAF shall after having received the International Class Fee for the hull, send the ISAF Building Plaque and a measurement form to the licenced hull builder.
- A.10.3 Builders shall be licenced by ISAF Limited, and shall only obtain GRP plugs and/or production moulds and templates from suppliers approved by the ISAF. Licences shall be issued after consultation with the ISA.

A.11 Identification on Sail

- A.11.1 Sail numbers shall be issued by the MNA.
- A.11.2 The method of allocating registration numbers shall be at the discretion of the MNA or its appointed representative, provided that the same number shall never be allocated to two boats of the same nationality at the same time.
- A.11.3 The MNA shall inform the ISA of the names and addresses of owners of boats issued with sail numbers.

A.12 Certification

- A.12.1 The certificate shall be obtainable from the MNA in the following way:
- a) In the case of a new boat, or one so substantially reconstructed or repaired (**hull, keel or corrector weight**) as to require re-measurement, the completed measurement form, together with any registration fee that may be required, shall be sent to the MNA in the country where the boat is to be registered,
 - b) In the case of change of ownership by sending the invalid certificate to the MNA for endorsement with any re-registration fee that may be required. A new **measurement certificate** shall then be issued to the new owner.
- A.12.2 Upon receipt of a satisfactorily completed measurement form the MNA may issue a **measurement certificate**. The MNA shall retain a copy of the **measurement certificate** and of the **measurement form**.
- A.12.3 The **measurement certificate** (as required by Rule 78.1 of the RRS) shall be:
- a) The original **measurement form** or a certified true copy, which shall have been stamped by the MNA. Measurement Forms in loose pages shall be identified and signed on each page by the Measurer,
 - b) The official **measurement certificate** issued by the ISAF/ISA or a similar certificate (with all the items of the official certificate) issued by an MNA.
- A.12.4 All certified boats shall be liable to re-measurement at any time on protest or at the discretion of the ISAF, the MNA, ISA, NSA or the Race Committee.
- A.12.5 If a builder is found to have signed a measurement form for a boat that did not measure correctly, he shall be liable to rectify the error, and may have his licence as a builder withdrawn.
- A.12.6 Any re-measurement shall be in accordance with the current Class Rules except for the following Rules: C.4.3, C.9.8, D.3.2.4, E.3.1.3, E.3.4.2, F2.4.2. (a) to (d). Only the foregoing exceptions may, at the owner's option, be in accordance with either the current class rules or the rules in force when the measurer signed the original measurement form. All replacement equipment shall comply with the class rules in force at the time the replacement is made.
- A.12.7 In the event of re-measurement of a sail such re-measurement shall be in accordance with the current **class rules**.

A.12.9 A measurer, either on the first measurement or subsequently, may take random drillings to verify that the specifications of the laminates in the construction plans for the hull or decking or other specifications contained in these rules have been complied with. Such drillings shall be of the minimum size required to verify compliance and shall only be taken if no other adequate method of verification is available.

A.12.10 If it is considered that there has been any attempt to depart from the design or these rules in any particulars, it shall be reported to the MNA, which shall withhold the **certificate** of measurement pending an examination of the case. The MNA may grant a **certificate** if approval is obtained from the ISAF in consultation with the ISA.

A.13 Measurers

A.13.1 **Fundamental measurement** shall only be carried out by an **official measurer**.

Section B — Boat Eligibility

For a **boat** to be eligible to *race* the rules in this section shall have been complied with.

B.1 Certificate

B.1.1 No boat shall be entitled to race as a bona-fide Soling unless:

- a) The owner holds a valid **measurement certificate** in his own name for the yacht concerned.
- b) The annual dues have been paid to his NSA or if there is none for the owner's country to the ISA.
- c) An ISA Sticker for the current year is affixed to the hull (see Rule C.5.1).

B.2 Responsibility of the owner

B.2.1 The owner shall be obliged to satisfy himself that the one-design principle has not been violated and to do nothing during the course of his ownership to cause this principle to be violated.

B.3 Class Membership

B.3.1 The owner shall be a current member of the NSA or, when there is no NSA in his country, a member of the ISA.

PART II — REQUIREMENTS AND LIMITATIONS

The crew and the **boat** shall comply with rules in this Part when *racing*. Measurement required by these, except for Section C, is part of **fundamental measurement**, which shall only be carried out by an **official measurer**.

Section C — Conditions for Racing

C.1 Crew

C.1.1 There shall be three persons on board when racing.

C.2 Advertising

Pursuant to Appendix G of the RRS, the following wording shall be included in the Notice of Race and Sailing Instructions for a Championship:

The event is designated Category B.

C.3 Additional Equipment

C.3.1 PORTABLE EQUIPMENT

1) Mandatory

The following equipment shall be carried on board when racing in the cockpit above the cockpit sole:

- a) Three life jackets or buoyancy vests with positive buoyancy of minimum 6kg each.
- b) One anchor of 8kg ± 2kg weight, with not less than 30 metres of rope of 12mm minimum diameter. A hollow rope shall not be used for the anchor warp.
- c) At least one hand pump capable of pumping water from the bottom of the bilges to the outside of the deck and three hand bailers, the total weight of which shall not exceed 4kg. The capacity of each hand bailer shall be at least 4 litres and while racing the hand pump and three hand bailers shall be attached to the boat and stored in the cockpit.
- d) One paddle not less than 1200mm in length.

2) Optional

The following equipment may be carried on board when racing in the cockpit above the cockpit sole:

- a) Digital compasses and/or devices transmitting or correlating data relative to wind direction or speed, or boat speed or direction and location, by means such as, but not limited to, electronic, mechanical, hydraulic or pneumatic shall be prohibited. Specific models of digital compasses may be approved by the ISA if they offer facilities not exceeding timing, heading and directional memory and do not transmit or receive data.

- b) Depth sounders may be permitted by MNA in races confined to yachts of their own nationality.

C.3.2 ADDITIONAL RULES

- C.3.2.1 With reference to RRS 43.1(b), a competitor's clothing and equipment shall not weigh more than 8 kg, excluding a hiking harness and clothing worn only below the knee.

C.4 Boat

C.4.1 WEIGHT

- a) The dry weight of the complete boat as raced, including one set of sheets only but excluding only the equipment listed below, shall be not less than 1035kg. The only equipment to be excluded when weighing is as follows: sails and battens, paddle, life jackets, hand pump, hand bailers, anchor and anchor rope, mooring line, fenders, lifting slings, tool kit and personal effects.
- b) Inside ballast is prohibited.

C.4.2 CORRECTOR WEIGHTS

Corrector weights, totalling not more than 7kg, shall be fastened to the underside of the deck with two-thirds of the total weight forward and one third aft of the cockpit coaming. Any additional corrector weights required shall be permanently fastened to the underside of the deck. Two-thirds of these shall be not less than 700mm forward of, and one-third not less than 4000mm aft of, the Breakwater Measurement Point. Permanently fastened means screwed or bolted and covered with one layer of glass cloth and resin for the life of the boat. Corrector weights shall be recorded on the **measurement certificate**.

C.4.3 TRANSITION RULES FOR CORRECTOR WEIGHTS

From 1st March 1971, all existing boats shall comply with Rule C.4.1. Boats built prior to 1st March 1970, without a cockpit sole shall, before applying the provisions of Rule C.4.2 be permitted to have up to 15kg of corrector weights, located below the floorboards. Approximately 50% of any such corrector weights shall be permanently fastened to the foremost floor-member and approximately 50% to the aftermost floor-member. Permanently fastened means screwed or bolted and covered with one layer of glass cloth and resin for the life of the boat.

C.5 Hull

C.5.1 MARKINGS

The ISA Sticker for the current year shall be affixed to the outside of the hull on the starboard quarter no more than 100mm forward of the transom and not more than 100mm below the deck.

C.5.2 FINISHES

- a) Sanding and or painting is permitted provided that no part of the yacht is thereby caused to lie outside the measurement tolerances specified in these rules, the official measurement diagram and the official plans. On the rudder and keel only, the addition of fillers is permitted after manufacture within the measurements of the templates. Sanding the hull so as to expose glass fibre is not permitted, and (except for repairing accidental damage or for fairing on or around the self-bailers and on the joint between the keel and the hull) the use of fillers on the hull is prohibited. `Fillers' include the so-called `high build paints' gelcoat and microballoons. The hull may be painted. Painting means the uniform application of paint coatings of even thickness and shall not result in alteration in the shape or contours of the hull.
- b) The use of adhesive materials, coatings or treatment on the surface of the hull, keel or rudder giving a minute ribbed effect ("riblets") is prohibited.

C.6 Hull Appendages

C.6.1 MODIFICATIONS

Polishing and painting of hull shell, deck and **hull appendages** is permitted (see rules E.3.1.4).

C.7 Spars

At an event where the boat is to be measured, only one mast shall be presented for measurement and no other mast shall be used in that event without the express permission of the race committee/jury.

C.8 Sails

C.8.1 CLASS INSIGNIA AND IDENTIFICATION MARKS

The class insignia, the national letters and the competition numbers, as issued by the MNA, shall comply with the RRS except where prescribed otherwise in these **class rules**.

Letters and numbers shall be of the following minimum dimensions (RRS 77 and Appendix H):

- a) Height: 350mm
- b) Thickness: 50mm
- c) Width (excluding number one and letter l) : 230mm
- d) Minimum space between adjoining or opposite characters, or edge of sail: 70mm

C.8.2 LIMITATIONS

Not more than one mainsail, two jibs, one large spinnaker and one small spinnaker shall be carried on board when racing. At an event where sails are to be measured, only the above sails shall be presented for measurement and no other sails shall be used in that event except by express permission of the race committee.

C.8.3 SETTING

(a) **Mainsail**

The highest visible point of the **sail**, projected at 90° to the **mast spar**, shall not be set above the **upper point**. The **leech**, or its extension, shall not intersect the upper edge of the **boom spar** beyond the **boom point**.

C.9 Additional Rules

- C.9.1 In accordance with RRS 86.1(c), RRS 42.3(b) is altered: on a free leg of the course, when surfing (rapidly accelerating down the leeward side of a wave), or planing is possible, the crew may, in order to initiate surfing or planing, pump the sheet(s) and/or any or all of its parts, and the guy controlling any sail, but not more than twice for each wave or gust of wind. In addition, unrestricted pumping of the spinnaker guy is permitted.
- C.9.2 No aids to support the crew outboard are permitted except for:
- Handles on deck which if of rigid material shall not extend outboard of the sheerline and shall not exceed 75mm in height above the deck.
 - Five hand-holes of maximum length 120mm and maximum width 35mm through each side of the deck.
 - Foot straps, which shall be fastened inside the cockpit and shall not be able to extend outboard of the sheerline.
 - Body straps which shall not be attached to, or led through, any point more than 75mm above the sheerline and which shall not be used as footstraps. Such body straps shall not be used without at the same time using the foot straps specified in Rule C.9.2 (c), nor shall they be used to enable a different position to be adopted than would be possible in their absence.
- C.9.3 Any arrangements for supporting the crew when hiking must be such that the crew can disengage himself from the boat completely by releasing not more than one fastening which shall be capable of instant release under tension. That part of the hiking aid which remains attached to the user after such release shall have:
- Positive buoyancy.
 - A wet-weight of not more than 2.5kg. The wet-weight shall be determined after saturation water followed by free draining for one minute after which the weight shall be recorded.
- C.9.5 The fore and aft position of the mast at deck level shall not be altered and no equipment shall be permitted for the purpose of moving the heel of the mast, while racing.
- C.9.6 Adjustment of shroud length shall be made only by threaded screw fittings, and fore and aft movements of the shroud fittings shall not be regarded as altering the shroud length.
- C.9.7 The method of adjusting forestay and backstay tension shall be optional.

- C.9.8 On all boats built after 1st January 1992 no sheeting arrangement shall be permitted through the sides of the hull or through the deck aft of the aft bulkhead. On boats built prior to that date sheeting arrangements through the deck aft of the aft bulkhead shall be permitted provided that the part of the sheet between the aft bulkhead and the deck is wholly encased in a watertight tube.

Section D — Hull and Deck

D.1 Certification

- D.1.1 The **hull and the deck** shall comply with the **class rules** in force at the time of initial **fundamental measurement**.
- D.1.2 Measurement shall be carried out in accordance with the ERS.
- D.1.3 Routine maintenance is permitted, but when a **hull** has been altered or repaired the **measurement certificate** shall cease to be valid until rule B.2.1 has been complied with.
- D.1.4 Construction shall be checked by measurement and official templates in accordance with the official measurement diagram. Tolerances are given to allow minor building errors and distortion through age, but intentional variations within these tolerances shall be prohibited. The boat, before leaving the builder's premises, shall be measured by a measurer appointed by the MNA and approved by the ISA, by applying official templates.
- D.1.5 Any alteration to the general external shape of the hull or deck mouldings by the application of paint coatings, gel coat, fillers or otherwise is prohibited. Gel coat shall only be applied by the builder in accordance with the specifications in the construction plans and shall not be substantially removed.

D.2 Manufacturers

- D.2.1 **Hulls** shall be built by a manufacturer licenced by the ISAF.
- D.2.2 The builder's yard code, hull, plug and mould numbers shall be marked on a plaque, permanently fixed to the aft bulkhead. This plaque shall be obtained from the ISAF, and serves as the International Class Fee Receipt (see A.10.2 above).

D.3 Hull and Deck

D.3.1 MATERIALS

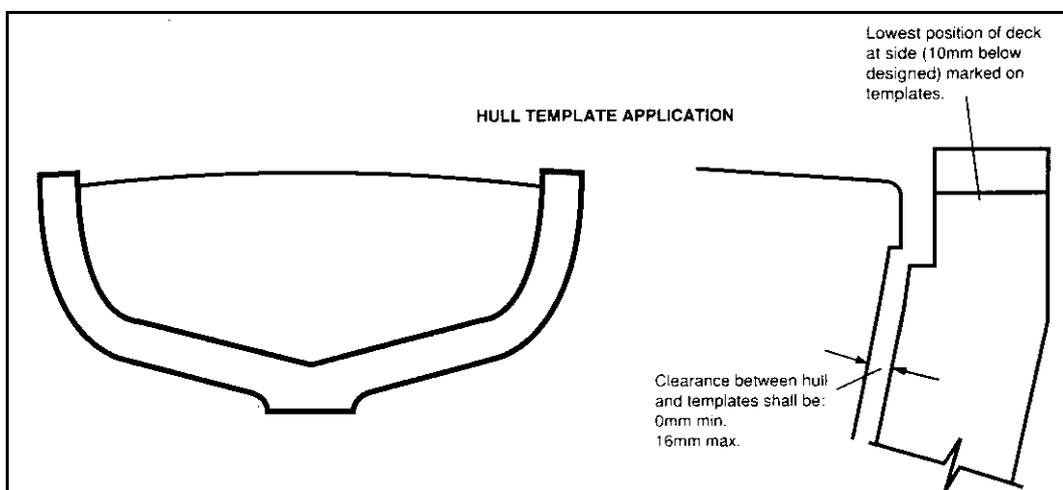
The hull and deck construction shall be in accordance with the official construction plans and specifications and except as shown on such plans any additional strengthening or support of the hull or decking is prohibited.

- D.3.1.1 Construction shall be of glass reinforced polyester resin and shall be in accordance with the relevant general arrangement and construction plans and specification. The use of fibres other than glass is prohibited in the construction of the hull or deck. The builder shall construct the hull by installing the backbone, stringers, bulkheads and floor before it leaves the mould. The hull and the deck shall be assembled with

the deck in the approved mould or in a jig approved by a Measurer appointed by the MNA and approved by the ISA. In either case the necessary support shall be given so that the sheerline is as shown on the plans. Such support shall be approved by a Measurer appointed by the MNA and approved by the ISA.

- D.3.1.2 Production moulds for hull, backbone, deck and rudder shall be made from GRP plugs obtained from the one current official GRP master mould. The casting pattern for the fin keel shall be of aluminium cast from the one current official master pattern. The ISAF Chief Measurer shall measure and issue a certificate giving the dimensions of each plug, keel pattern and rudder mould. Such dimensions shall be within a tolerance of half the permitted building tolerances. The shape and form of the patterns, plugs and moulds shall not be amended or altered unless specifically authorised by the ISAF. The primary control shall be by means of a single uniform source of plugs and moulds.

D.3.2 DIMENSIONS

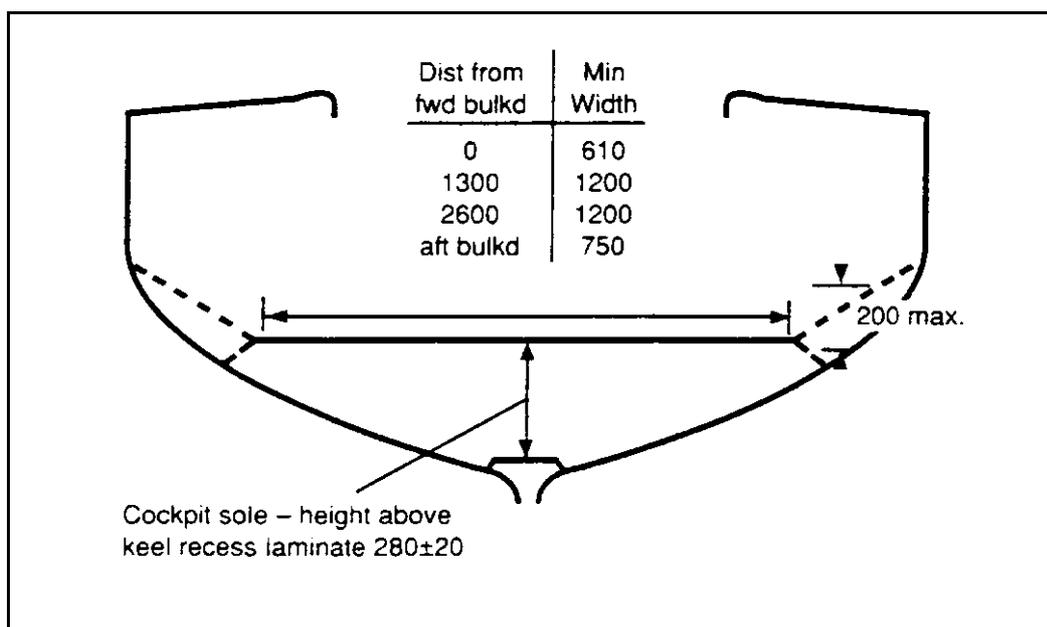


- D.3.2.1 The hull dimensions and shape shall be within the limits shown on the measurement diagram and the GRP construction and lay up shall be as shown on the plans. The hull shape shall be controlled by 5 section templates, 1 stem profile template and 1 transom template.
- D.3.2.2 Transom Measurement Point shall be the intersection of counter and transom extensions.
- D.3.2.3 Breakwater Measurement Point shall be the forward face of the breakwater. The deck at the heel of the mast shall be not more than 80mm above the level of the deck at side (sheerline).
- D.3.2.4 A cockpit sole shall be fitted as shown on the plans such that its height at any point is $280\text{mm} \pm 20\text{mm}$ from the inner surface of the hull above the keel flange. For the purpose of the height measurement the thickness of the keel laminate shall not exceed 20mm. (This shall be compulsory for all boats certified from 1st March 1970). The space below the cockpit sole shall be constructed so as to form a watertight buoyancy compartment.

D.3.2.5 The cockpit sole shall be constructed only of the following materials or a combination of them, no other materials are permitted: glass reinforced plastics (GRP), plywood, or a GRP sandwich with a balsa wood or a PVC closed cells foam. PVC foam shall be closed cell and shall have a thickness of not less than 6mm and a density of not less than 60kg/m³.

D.3.2.6 The access hatch in the cockpit sole (aft of the mast step) shall be securely fastened by not less than 12 screws and shall be watertight.

D.3.2.7 The width of the horizontal part of the cockpit sole shall not be less than the dimensions stated on the measurement diagram. Outboard of this, the cockpit sole shall not extend above its horizontal part by more than 200mm excluding any flange



bonding the cockpit sole to the hull. Such flange (if any) shall not extend more than 50mm above the cockpit sole at its highest point nor itself measure more than 100mm at any point. The cockpit sole moulding may incorporate the forward and aft bulkheads and in this case flanges not exceeding 50mm wide bonding the bulkheads to the inner surface of the hull are permitted.

D.3.2.8 The deck at the heel of the mast shall be not more than 80mm above the level of the deck at side (sheerline).

D.4 Deck (included in D.3)

D.5 Internal Structure

D.5.1 BULKHEADS

D.5.1.1 Bulkheads shall be constructed only of the following materials or a combination of them, no other materials are permitted: glass reinforced plastics (GRP), plywood, or a GRP sandwich with a balsa wood or a PVC closed cells foam. with watertight access hatches similar to those shown on the arrangement plan shall be compulsory.

D.5.1.2 Each hatch cover shall be made of glass reinforced polyester resin or wood which may be covered with gelcoat and shall be fixed to the bulkhead by not less than 12 screws and shall have a gasket which makes it watertight when either the cockpit or the flotation tank is flooded.

D.5.1.3 Screw-in inspection ports with a maximum diameter of 160mm may be installed in the bulkhead hatches or in the cockpit sole hatch. As from 31st March 1984 all boats shall have a watertight inspection port (which may be a screw-in type) located in the cockpit sole forward of the mast step, no inside dimension of which shall be less than 96mm nor greater than 190mm.

D.5.1.4 The bulkheads shall be located 550mm \pm 100mm forward and 3400mm \pm 100mm aft of the Breakwater Measurement Point.

D.5.1.5 Watertight inspection covers for bulkheads and floor shall be positively locked in their proper position when racing and use of these compartments for storage of any items whilst racing shall be prohibited. If it is established that this rule was infringed while racing, the yacht shall be disqualified from the race and may, at the discretion of the jury, be disqualified from the whole of the regatta or series.

D.5.1.6 Holes in bulkheads for miscellaneous rigging and sail control shall be not more than 150mm below the deck.

D.5.1.7 The total area of such holes after the installation of any fittings but before the installation of any rope or wire shall not exceed 3cm² in each bulkhead.

D.5.1.8 Drain holes in the bulkheads are prohibited.

D.5.1.9 Four self bailers are permitted

D.5.2 HOLES IN THE DECK

D.5.2.1 Holes in the deck for the installation of equipment shall be permitted subject to the following restrictions:

- a) No hole shall be cut in the deck moulding except for the installation of fittings, including spars, sheeting arrangements and other controls, and no hole shall be cut for the installation of fittings measuring more than 165mm in any direction.

The distance between the edges of any two such holes (except for handholes), measuring more than 80mm in any direction, shall be at least 35mm.

- b) The total area of holes in the deck forward of the forward bulkhead shall not exceed 2cm² after the installation of any fittings but before the installation of any rope or wire.
- c) The total area of holes in the deck aft of the aft bulkhead shall not exceed 1cm² after the installation of any fittings but before the installation of any rope or wire.

D.5.2.2 Where the handholes described in Rule C.9.2.b) are watertight, a drain hole shall be permitted, measuring not more than 5mm in any direction, to drain water either into the cockpit or to the outside of the hull.

D.6 Hull

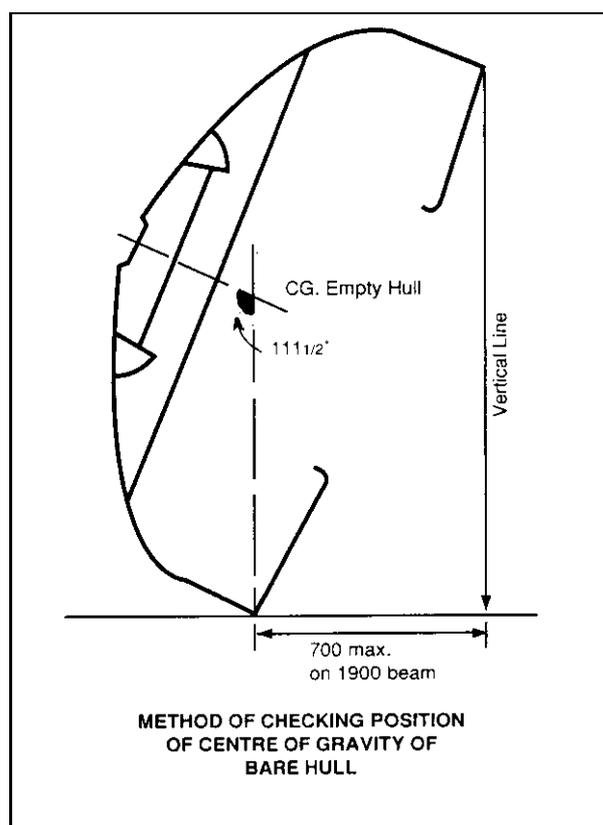
D.6.1 FITTINGS

See rule A.1.2

D.6.2 WEIGHT

The weight of the bare assembled hull and deck, including cockpit sole with hatches fitted, watertight bulkheads with hatch covers, mast support stanchion, forestay fittings, shroud fittings, backstay fitting and rudder stock bearings, but excluding all other fittings, shall be not less than 375kg.

The vertical centre of gravity in the condition specified in Rule 3.2 shall be not lower than that at which the hull would balance when resting on the sheerline at the point of maximum beam (max. beam = 1900mm) and heel to 111.5 degrees (i.e. horizontal distance from the above point to a plumb line from the opposite sheer line shall be not more than 700mm when the boat is at its point of balance).



Section E — Hull Appendages

E.1 Certification

E.1.1 The **hull appendages** shall comply with the **class rules** in force at the time of initial **fundamental measurement**.

E.1.2 Measurement shall be carried out in accordance with the ERS.

E.2 Manufacturers

E.2.1 Manufacturers shall be licenced by the ISAF.

E.3 Keel

E.3.1 MATERIALS

E.3.1.1 The fin keel shall be of cast iron, and shall be cast only from an official aluminium pattern.

E.3.1.2 The keel may be galvanized and/or covered by any synthetic material.

E.3.1.3 The fin keel shall be fastened to the hull by ten 12mm min. diameter non-corrosive stainless steel bolts. Eight of these bolts shall be staggered as shown on the hull construction plan. The keel bolts may be arranged for easy removal of the fin and, for yachts first certified after 1st March 1986, shall be clearly visible through the inspection hatches in the cockpit sole.

E.3.1.4 The keel may be coated with paint, GRP, gelcoat or resin (including on the keel only epoxy resin). The thickness of any such coating added to the gap between the coating and any template shall not exceed 9mm. The maximum thickness of any such coating at any point (including the underside of the keel) shall not be more than 6mm - except for local variations covering an area of not more than 200cm², exclusively to remedy defects in the keel casting. The thickness of the coating can be checked either by drilling or by non-destructive magnetic testing gauges or both.

E.3.2 FITTINGS

E.3.2.1 Lifting eye(s)/strap(s) shall be attached to the keel bolts. Such lifting eye(s)/strap(s) including any permanent slings as permitted in Rule E.3.2.2 shall weigh not more than a total of 3kg.

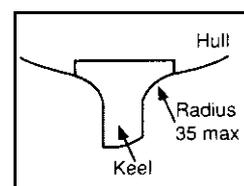
E.3.2.2 Lifting sling(s) may be permanently fastened on to the eye(s)/strap(s) specified in Rule E.3.2.1. In this case the sling(s) shall consist of stainless steel wire rope. Where one sling is used its diameter shall be not less than 9mm. Where two slings are used the diameter of each shall be not less than 7mm. Where four slings are used the diameter of each shall be not less than 4.75mm.

E.3.3 DIMENSIONS

E.3.3.1 The shape of the keel shall be controlled by seven templates, as follows:

- a) a lower template at 75mm \pm 10 mm from the base of the keel
- b) a template at 300mm \pm 10 mm from the base of the keel
- c) a template at 600mm \pm 10 mm from the base of the keel
- d) an upper template at 800mm \pm 50 mm from the base of the keel
- a) a maximum section template
- b) a forward lower radius template
- c) an aft lower radius template.

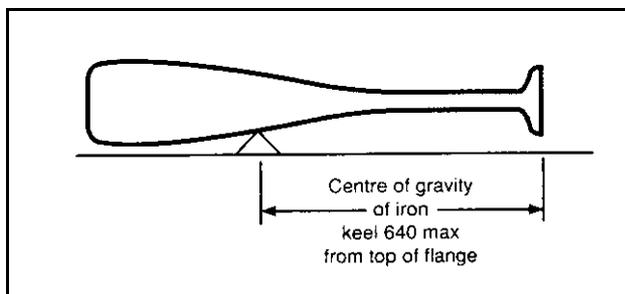
E.3.3.2 The athwartships radius in way of the keel-hull joint shall not exceed 35mm.



E.3.3.3 The leading and trailing edges shall be rounded with a radius of not less than 2mm. The diagram and the measurement plans show permitted and prohibited profiles.

E.3.4 WEIGHT

E.3.4.1 The weight shall be 580kg ± 10kg including coating of which the metal casting (with keel bolts installed) shall weight not less than 562 kg and the distance of the centre of gravity from the top of flange shall be not more than 640mm.



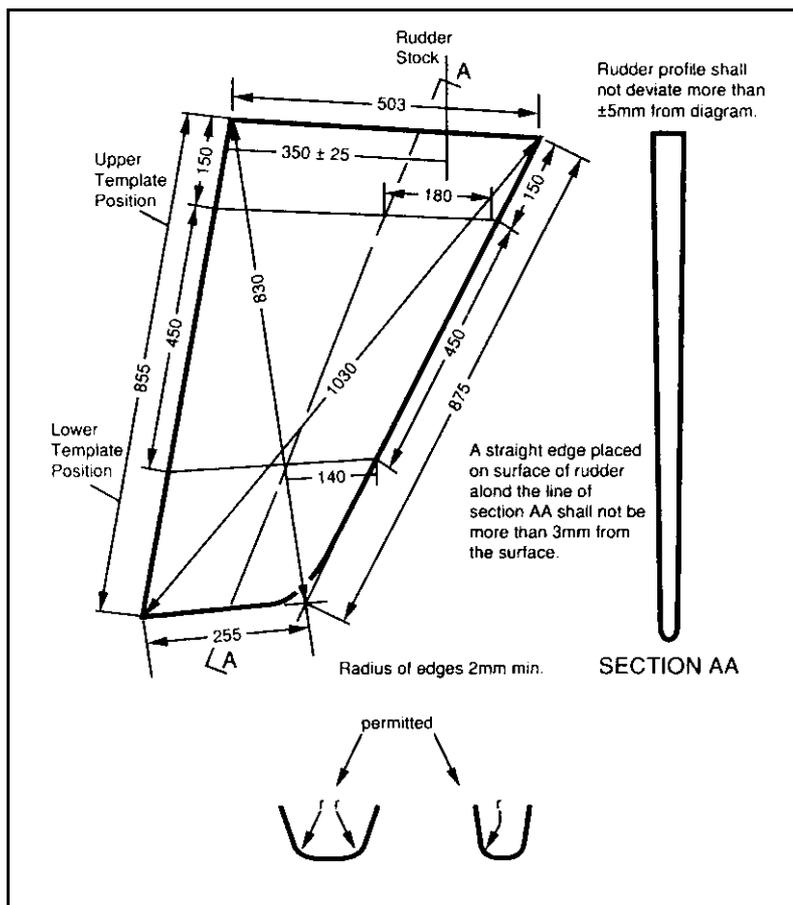
E.3.4.2 For boats first measured after 1st March 1994 the keel casting shall be weighed, measured and numbered before being fixed to the boat. The number shall be engraved on the port side at the location of the upper template, 200mm from the aft edge of the keel.

E.4 Rudder, Rudder Stock and Tiller

E.4.1 MATERIALS

E.4.1.1 The rudder shall be GRP, and shall be made only from an official mould, made from the one current official GRP plug. The method of construction shall be optional subject to complying with the provisions of the Construction Plans and the measurement instructions as set out in Class Rules E.4.1.2 to E.4.2.2 inclusive.

E.4.1.2 The rudder stock shall be constructed of non-corrosive ferrous material of 28mm minimum diameter and shall be solid.



E.4.1 3 The design of tiller and tiller extension shall be optional.

E.4.2 DIMENSIONS

- E.4.2.1 The rudder shape and thickness shall be controlled by two section templates. The measurement sections shall be between points 150mm and 600mm down the leading and trailing edges of the rudder from the uppermost corner. In determining the uppermost corners the leading and trailing edges of the rudder shall be projected to intersect a projection of the top edge. The templates shall determine the maximum size of the sections. Except on the radius of the leading and trailing edges, the clearance between the templates and the rudder shall not exceed 2mm when measured at any point aft of the widest point, or 3mm when measured at any point forward of the widest point. A straight edge placed on the surface of the rudder and extending from its top to its bottom at the point indicated on the measurement diagram shall not be more than 3mm from the surface of the rudder at any point. The leading, trailing and bottom edges shall be rounded with a radius of not less than 2mm. The diagram of the measurement plans show permitted and prohibited profiles.
- E.4.2.2 No concavities in the fore and aft sections of the surface of the rudder are permitted. Yachts built by Polyform prior to 1980 shall not be subject to the template measurement requirements.
- E.4.2.3 The rudder stock shall be located at $1500\text{mm} \pm 25\text{mm}$ from the Transom Measurement Point measured along the centreline of the counter.
- E.4.2.4 The aft upper corner of the rudder shall be $350\text{mm} \pm 25\text{mm}$ from the centre of the rudder stock.

Section F — Rig

F.1 Certification

- F.1.1 The **rig** shall comply with the **class rules** in force at the time of initial **fundamental measurement**.
- F.1.2 Measurement shall be carried out in accordance with the ERS.
- F.1.3 Routine maintenance is permitted, but altered or repaired **spars** shall be re-measured.

F.2 Mast

F.2.1 MANUFACTURER

Manufacturer is optional.

F.2.2 MATERIALS

- F.2.2.1 The mast shall be of an alloy extrusion with a minimum 90 per cent aluminium content with a continuous fixed groove (except as permitted under Rule F.2.4.2) which may or may not be integral with the spar section but shall be of the same material.
- F.2.2.2 Holes may be made in the mast only for fittings and rigging.

F.2.3 FITTINGS

F.2.3.1 Fittings of the mast are optional.

F.2.3.2 A furling device for the jib shall be permitted.

F.2.4 DIMENSIONS (see drawing)

F.2.4.1 The mast shall be stepped on deck and on the centreline. The forward side of the mast shall be located 270mm ± 50mm aft of the Breakwater Measurement Point (see also Rule C.9.5)

F.2.4.2 Below a point 600mm above the top of the band defined in Rule F.2.4.5 (a) the luff groove may be cut away or otherwise modified.

- a) Above a point 6300mm above the band defined in Rule F.2.4.5 (a) the mast may be tapered to a minimum of 40mm athwartships and 55mm fore and aft including the luff groove at the topmost band.
- b) Tapering shall be achieved only by making a cut or cuts down the section, closing them, and making continuously welded butt joints.
- c) No such cut shall extend below the point defined in Rules F.2.4.1 and F.2.4.2.
- d) The finished taper shall not be concave except that hollows not exceeding 3mm and optional fairing within 75mm of the backstay crane shall be permitted.
- e) The sectional weight may be varied only by the removal of material due to the taper.

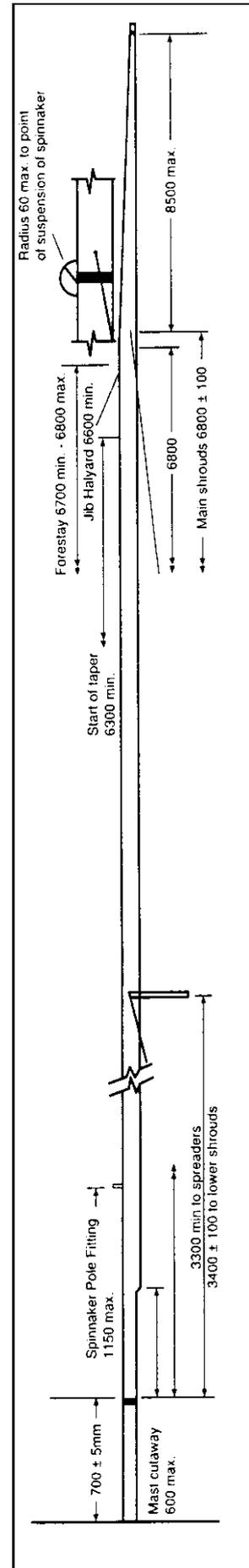
F.2.4.3 Mast spar curvature

Permanently bent masts and rotating masts shall be prohibited. A set, due to distortion, of up to 50mm between upper and lower bands shall be permitted.

F.2.4.4 Mast spar cross section

Except as permitted in Rule F.2.4.2 (a) below a point 6300mm above the band defined in Rule F.2.4.5 (a) the mast shall be of constant section whose dimensions shall be 80mm ± 10mm athwartships and 120mm ± 10mm fore and aft including the luff groove. The mast shall be deemed to be of constant section provided that no variation in fore and aft or athwartships dimension between any two points exceeds 3mm.

	minimum	maximum
Fore-and-aft	110 mm	130 mm
Transverse	70 mm	90 mm



F.2.4.5 **Spar band width** 10 mm min

Bands of contrasting colours shall be painted on the mast as follows:

- a) One with its upper edge 700mm ± 5mm above the deck.
- b) One with its lower edge 6800mm above the upper edge of the band defined by Rule F.2.4.5 (a).
- c) One with its lower edge not more than 8500mm above the upper edge of the band defined by Rule F.2.4.5 (a).

F.2.4.6 **Forestay and shroud heights**

See Rule F.5.3.1. (c)

F.2.4.7 **Spinnaker pole fitting**

The point of attachment of the spinnaker boom shall be on the forward face of the mast and not more than 1150mm above the upper edge of the band defined by Rule F.2.4.5 (a).

	minimum	maximum
F.2.4.8 Spinnaker hoist height, from band defined in F.2.4.5 (b)		60 mm

F.2.4.9 **Spreaders** above the upper edge of the band defined by Rule F.2.4.5 (a).

height 3300 mm

length (bearing point from mast) 640 mm

See also Rule F.5.3.1 (e)

F.2.4.10 **Mast weight**

The sectional weight including the luff groove shall be not less than 2.20kg/m.

F.2.4.11 **Tip weight**.....11 kg

- a) The mast complete with all standing and running rigging and supported at the band defined in Rule F.2.4.5 (a) shall weigh not less than 11kg when it is weighed at the band defined in Rule F.2.4.5 (c).
- b) For the purpose of this measurement the halyards shall be fully hoisted and the standing rigging secured along the mast. The ends of the rigging below the band defined in rule F.2.4.5 (a) may rest on the ground or be removed so as not to affect the tip weight. The weight of the spinnaker shackle, for the purpose of tip weight, shall not be more than 70gr.
- c) The mast shall not be disqualified if a shortfall in the weight measured in accordance with Rule F.2.4.10 can be corrected by the fixing of a corrector weight of not more than 300gr at a point above the top band. The corrector weight shall be fixed by a screw fitting (bolt and nut) attached through holes drilled in the mast or crane.
- d) For the purposes of Rule F.2.4.10 any readily removable fittings such as a wind indicator shall be removed.

F.3 Boom

F.3.1 MANUFACTURER

Manufacturer is optional.

F.3.2 MATERIALS

F.3.2.1 The main boom shall be of a light alloy extrusion with a fixed groove for the mainsail footrope.

F.3.3 FITTINGS

Fittings of the boom are optional.

F.3.4 DIMENSIONS

F.3.4.2 Sectional dimensions between the control mark (See Rule 8.4) and the aft edge of the mast shall be 65mm ± 5mm in width and 80mm ± 5mm in height including the groove except that for a distance not exceeding 600mm from the aft edge of the mast the groove may be cut away or otherwise modified.

F.3.2.3 Tapered or permanently bent booms shall be prohibited. Internal or external reinforcement of the boom section in similar material is permitted. In the case of external reinforcement the addition to the section or part of it of material having a thickness of not more than 6mm and a total length along the boom of not more than one metre shall be disregarded when measuring the maximum dimensions of the boom section. A set, due to distortion, of up to 25mm between band and mast shall be permitted.

F.3.2.4 A band of contrasting colour shall be painted on the boom with its inner edge not more than 3200mm distant from the aft side of the mast, excluding any local curvature.

	minimum	maximum
Boom band distance		3200 mm
Boom spar curvature		25 mm
Boom spar cross section (see rule F.3.2.3)		
Vertical	75 mm	85 mm
Transverse	60 mm	70 mm

F.3.2.5 **Boom weight**..... 1.25 kg/m'

The section weight shall be not less than 1.25kg/m'.

F.4 Spinnaker Pole

F.4.1 MANUFACTURER

(a) Manufacturer is optional.

F.4.2 MATERIALS

The spinnaker boom shall be made of alloy containing not less than 90% aluminium, or wood.

F.4.3 FITTINGS

Fittings may be of any material.

F.4.4 DIMENSIONS

No part of the spinnaker boom including fittings shall be capable to extending more than 2640mm from the mast.

F.5 Standing Rigging

F.5.1 MANUFACTURER

Manufacturer is optional.

F.5.2 MATERIALS

F.5.2.1 The standing rigging shall be of steel construction.

F.5.3 FITTINGS

F.5.3.1 The standing rigging shall consist of only:

- a) Two main shrouds of not less than 3.8mm Ø shall be attached to the mast in such a way that the point of intersection of the outside of the mast and the centreline of the wire (extended if necessary) is located at 6800mm ± 100mm above the band defined by Rule F.2.4.5.
- b) Two lower shrouds of not less than 3.8mm Ø shall be attached to the mast in such a way that the point of intersection of the outside of the mast and the centreline of the wire (extended if necessary) is located at 3400mm ± 100mm above the band defined by Rule F.2.4.5 and a point 100mm below it.
- c) One permanent forestay of not less than 3.8mm Ø shall be attached to the mast in such a way that the point of intersection of the outside of the mast and the centreline of the wire (extended if necessary) is located between the lower edge of the band defined by Rule F.2.4.5 (b) and a point 100mm below it.
- d) One adjustable backstay of not less than 3mm dia. shall be attached to the mast head.
- e) Spreaders for the main shrouds shall be of alloy containing not less than 90% aluminium or of steel or of wood. They may be of a swinging type and the bearing point to the main shrouds shall be not less than 640mm from the side of the mast. The spreaders shall be attached to the mast above the lower shrouds as defined by Rule F.5.3.1 (b).
- f) There shall be a stop on the mast to prevent the upper edge of the boom extending below the upper edge of the band defined by Rule F.2.4.5 (a).

- g) The jib halliard shall meet the mast at a point not more than 200mm below the lower edge of the band defined in Rule F.2.4.5 (b).
- h) All halliards, or their extensions when hoisted, shall intersect the deck not more than 75mm from the mast.

F.5.4 DIMENSIONS

- F.5.4.1 The upper and lower shrouds shall meet the deck at 550mm ± 300mm aft of the Breakwater measurement point, and not more than 100mm from the outer edge of the deck.
- F.5.4.2 The forestay shall meet the deck at 2320mm ± 5mm forward of the Breakwater Measurement Point.

F.6 Running Rigging

F.6.1 MANUFACTURER

Manufacturer is optional.

F.6.2 MATERIALS

See rule A.1.2

Section G — Sails

G.1 Certification

- G.1.1 **Sails** shall comply with the **class rules** in force at the time of initial **fundamental measurement**.
- G.1.2 Measurement shall be carried out in accordance with the ISAF Equipment Rules of Sailing (ERS) except where varied herein. Where a term defined or a measurement given in the ERS is used in these rules, it is printed in "**bold**" type.
- G.1.3 **Sails** shall carry the official **certification mark** near the **tack point**. The mark shall be signed and dated by the **official measurer**.
- G.1.4 The weight in g/m² of the **body of the sail** shall be indelibly marked near the **tack** by the sailmaker together with the date and his signature or stamp.
- G.1.5 All new sails shall be supplied with ISA sail labels. Only measured sails with ISA sail labels shall be accepted in major events.

G.2 Sailmakers

- G.2.1 Sailmaker is optional.

G.3 Mainsail

G.3.1 CONSTRUCTION

- a) The construction of the **sail** is free according to rules G.3.1 (b) to (g).
- b) Two or three **ply** sails are permitted.
- c) Any additional layer of material shall be of the same material as the remainder of the sail (ie woven cloth of non-aromatic polyamides).
- d) The sizes of the **reinforcements** are optional. The following are permitted for the construction of the sail: stitching, glues, tapes, bolt ropes, corner eyes, headboards with fittings, Cunningham eye/pulley, batten pocket elastic, batten pocket end closures, batten pocket patches, mast and boom slides, leech line with a fastener, windows, chaffing patches, flutter patches, reinforcing panels, tell tales, sailmaker label, royalty label, sail buttons, certification mark.
- e) Except for bolt ropes, head and clew boards, tape, cringles, jib hanks and transparent panels as specified below, sails shall be constructed only of woven fibres. Fibres other than those of polyester and non-aromatic polyamide are prohibited. Note, by way of clarification, that Kevlar is an aromatic polyamide and hence prohibited.
- f) Reefing cringles shall be optional.
- g) The diameter of the luff and foot ropes shall be not less than 8mm.
- h) Zippers are prohibited

G.3.2 DIMENSIONS

	minimum	maximum
G.3.2.1 Leech length		9170 mm
Half width		2010 mm
Three-quarter width		1160 mm
Upper width at 510 mm from the head point		340 mm

G.3.2.2 Weight of the **ply** of the **body of the sail** 230 gr/m²
Measurement by thickness may also govern in accordance with ISAF ERS.

G.3.2.3 **Windows** (max. 3) total area..... 0.28m²
Shortest distance from **window** to **sail edges**150 mm

G.3.2.4 Width of the headboard measured at right angles
to the line of luff 120 mm

G.3.2.5 Only four battens shall be permitted in the **leech**.

Batten pocket length:

Uppermost pocket: **Inside**..... 530 mm

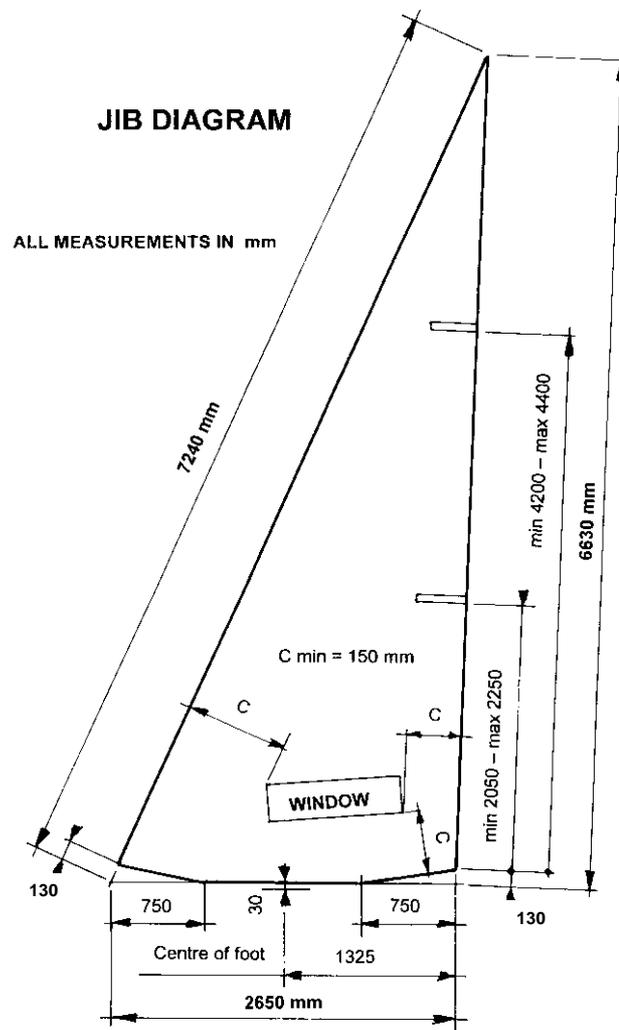
Other pockets: **Inside**..... 830 mm

Batten pocket width: Inside..... 60 mm

G.3.2.6 The batten pockets shall divide the leech into five parts of 1820mm ± 80mm measured to the lower edges of the pockets.

G.3.3 IDENTIFICATION See rule C.8.1

G.4 Jib



G.4.1 CONSTRUCTION

- a) The construction of the jib is free according to rules G.1.1 to G.3.1.c). See also jib diagram
- b) The following are permitted: Stitching, glues, tapes, corner eyes, hanks, batten pocket elastic, **batten pocket patches**, batten pocket end caps, leech line with cleat, three **windows**, sailmaker label, royalty label, sail button, tell tales, sail shape indicator stripes, **certification mark**.

G.4.7 The forestay shall not be detached for the attachment of the jib. The fore edge of the jib luff, or its extension when hoisted, shall intersect the deck aft of, and not more than 50mm from, the forestay.

G.4.8 Double luff jibs are prohibited.

G.4.9 Not more than 20 fasteners each of 40mm maximum dimension measured along the luff shall be permitted.

G.4.10 A clewboard, capable of fitting within a rectangle 250mm x 100mm, is permitted in the jib.

G.4.2 DIMENSIONS

- a) The jib shall be constructed so that when held at the three corners with tension at least sufficient to remove the wrinkles across the line of the luff, leech and foot, the cloth lies totally within the profile of the diagram.
- b) With the jib placed on the diagram as described in Rule G.4.1 a), the centre of the foot shall be marked. With the head of the jib held in place the centre of the foot, when pulled downwards just sufficiently to remove the wrinkles, shall lie not more than 30mm below the centre of the foot marked on the diagram.

		minimum	maximum
G.4.3	Weight of the ply of the body of the sail 200 gr/m ² Measurement by thickness may also govern in accordance with ISAF Equipment Rules.		
G.4.4	Windows (max. 3) total area 0.28m ² Shortest distance from window to sail edges 150 mm		
G.4.5	Only two battens shall be permitted. Batten pocket length: Inside 330 mm Batten pocket width: Inside 60 mm		
G.4.6	The lower edges of the batten pockets shall meet the leech at a distance from the clew point of 2150mm ± 100mm for the lower batten and 4300mm ± 100mm for the upper batten.		

G.5 Spinnakers

G.5.1 CONSTRUCTION

The construction of the spinnaker is free according to rules G.1.1 to G.2.1.

G.5.1.2 The national letters and sail number shall be displayed on the front side of the spinnaker but may be placed on both sides in accordance with RRS Appendix H 1.3 (d).

G.5.1.3 The spinnakers shall be symmetrical about their vertical centre lines and shall not incorporate any device capable of altering their shapes.

		minimum	maximum
G.5.1.4	Weight of the ply of the body of the sail 38 gr/m ² Measurement by thickness may also govern in accordance with ISAF Equipment Rules.	38 gr/m ²	76 gr/m ²

G.5.2 DIMENSIONS

G.5.2.1 Large spinnaker

- a) The **length of luff** and **leech** shall be 7400mm ± 100mm.
- b) The half-width of the foot, when folded tack to clew, shall be 2700mm ± 100mm.
- c) The half-width shall be 2900mm ± 100mm. The half-width shall be measured with the spinnaker folded in half, tack to clew. An arc whose centre is the head of

the sail and whose radius is equal to half the actual luff length shall be made to intersect the luffs and the centre fold. The distance between these two points of intersection is the half-width of the spinnaker.

d) The **foot median** shall not exceed 8750mm.

	minimum	maximum
Leech lengths	7300 mm	7500 mm
Half Foot length	2600 mm	2800 mm
Foot Median		8750 mm
Difference between diagonals		50 mm
Half width - definition see <u>G.5.2.1 (c)</u>	2800 mm	3000 mm

G.5.2.2 Small spinnaker

- a) The **length of luff and leech** shall be 7400mm ± 100mm.
- b) The half-width of the foot, when folded tack to clew, shall be 2500mm ± 100mm.
- c) The half-width shall be 2200mm ± 300mm. The half-width shall be measured with the spinnaker folded in half, tack to clew. An arc whose centre is the head of the sail and whose radius is equal to half the actual luff length shall be made to intersect the luffs and the centre fold. The distance between these two points of intersection is the half-width of the spinnaker.
- d) The **foot median** shall not exceed 8400mm.

	minimum	maximum
Leech lengths	7300 mm	7500 mm
Half Foot length	2400 mm	2600 mm
Foot Median		8400 mm
Difference between diagonals		50 mm
Half width, definition see G.5.2.2 (c).....	<u>1900 mm</u>	<u>2500 mm</u>

PART III — APPENDICES

OFFICIAL PLANS

No. 67 - 1	Lines plan (rev. date March 1969)
No. 67 - 3	Sail plan (rev. date December 1972)
No. 67 - 4B	Arrangement plan (rev. date March 1985)
No. 67 - 5	Hull construction plan (rev. date December 1972)
No. 67 - 6	Deck construction plan (rev. date December 1979)
No. 67 - 7	(Cancelled)
No. 67 - 8	Keel plan (rev. date February 1988)
No. 67 - 9	Full size sections (rev. date April 1969) (For National Authorities, builders and measurers only)
No. 67 - 10	Alternative backbone (rev. date March 1985)

OFFICIAL TEMPLATES

5	Hull section templates
1	Stem template
1	Transom template
7	Keel templates
2	Rudder templates

Permitted instruments see SOLING SAILING (Jan. 1999)

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