

INTERNATIONAL EUROPE CLASS RULES

Authority*: International Yacht Racing Union
60 Knightsbridge, London SW1X 7JX
United Kingdom

1. GENERAL

- 1.1 The Europe is a one design class. The intention of these rules is to ensure that the boats are as alike as possible in all respects affecting performance. Everything that is not actually stated as permitted or optional shall be prohibited.
- 1.2 The official plans, measurement diagrams and measurement form shall be considered an integral part of these rules. In the event of any discrepancy between them the matter shall be referred to the IYRU.
- 1.3 Any interpretation of these rules shall be made by the IYRU which may consult the International Europe Class Union (IECU).
- 1.4 Boats shall be built to comply with these Class Rules, the official plans, measurement diagrams and measurement form.
- 1.5 Neither the IYRU nor the IECU accept any legal responsibility in respect of these rules, the plans, the measurement diagrams and/or the measurement form or any claim arising from them.
- 1.6 ADVERTISING

During Class racing advertising shall be limited to category A of IYRR Appendix 14.

2. ADMINISTRATION

2.1 LANGUAGE

The official language of the class is English. In the event of dispute over interpretation the English text shall prevail.

2.2 BUILDERS

- 2.2.1 Professional builders shall be licensed by the IYRU. A professional builder is anyone who builds or has built boats of any type for sale.

- 2.2.2 A non-licensed builder shall be permitted to build not more than one boat a year.

2.2.3 Building licence

- (i) Applications for a building licence shall be made in writing on the appropriate form to the IYRU, who shall consult the IECU and the appropriate National Authority (NA).

* The IYRU is not a National Authority (NA) as referred to in these rules.

- (ii) The issue of a licence shall not authorise the production of boats for sale until the licence has been ratified by IYRU approval of a prototype hull. Any subsequent proposed change to the production tooling, hull characteristics or layout, method of construction, materials or specification shall require IYRU approval. The procedures for approval of the prototype hull and subsequent changes, which shall include consultation with the IECU, shall be detailed in the licence agreement.

2.2.4 International Class Fee

- (i) The International Class Fee (ICF) shall be paid to IYRU Holdings Limited. The ICF shall be apportioned to the IYRU, the IECU and Europe Class National Association. The amounts due to each shall be decided by the IYRU in consultation with the IECU.
- (ii) The amount of the ICF shall be reviewed by the IYRU annually in consultation with the IECU.
- (iii) The ICF shall be paid by the builder on every hull or kit produced whether or not it is subsequently completed, measured and registered. Payment shall be made direct to IYRU Holdings Limited which will issue a plaque (for serial numbers below 7000) or a sticker (for serial numbers starting at 7000), an ICF receipt and a current measurement form.

2.3 REGISTRATION AND MEASUREMENT CERTIFICATE

2.3.1 No boat is permitted to race in the class unless it has a valid measurement certificate.

2.3.2 The certificate is obtained as follows:

- (i) The builder, or owner shall apply to the National Authority (NA) for a sail number enclosing the ICF receipt. The NA shall issue a sail number only on production of the ICF receipt.
- (ii) The boat shall be measured by an official measurer. See Rule 2.4. The completed measurement form shall be returned to the owner.
- (iii) On completion of measurement the owner shall send the completed measurement form to his/her NA together with any registration fee that may be required. If satisfied, from the evidence presented on the form, that the boat complies with the rules in all respects the NA may then issue a measurement certificate to the owner. See Rule 2.4.4. A certified copy of the measurement form shall be provided with the certificate and shall form part of the certification documents.
- (iv) The certificate shall include the following information. IYRU ICF plaque or sticker serial number, National letter(s) and sail number, Owner's name, address and club, Builder and date built, Name(s) of measurer(s) and date measurement completed, Hull weight, number and weight of correctors, mass moment of Inertia, position of hull centre of gravity, date of issue and issuing authority.

- 2.3.3 Change of ownership invalidates the certificate but shall not necessitate remeasurement. The new owner shall apply to his/her NA for a new certificate, returning the old certificate together with any re-registration fee that may be required and stating the changed particulars. A certificate may then be issued to the new owner. If there is a change of NA, a new sail number in that nation's sequential series shall be issued. The new owner and NA shall be provided with a certified copy of the original measurement form.
- 2.3.4 (i) Subject to prior IYRU approval the NA may delegate the administrative task of issuing sail numbers and measurement certificates to the class national association. The NA shall not delegate their overall responsibility to the IYRU for control of measurement standards.
- (ii) The administration of issuing certificates shall be independent of the administration of measurement.

2.4 MEASUREMENT

- 2.4.1 An official Measurer is a measurer approved and authorised by a NA and/or IECU to measure International Europe Dinghies and equipment. Only an official measurer or measurers, shall measure a boat, spars, sail, foils and equipment.
- 2.4.2 Boats shall be measured using templates obtained from the IYRU.
- 2.4.3 A measurer shall not measure a boat, spars, sails, foils or equipment owned, built or supplied by him/her self, or in which he/she is an interested party or has a vested interest. A measurer shall not compete in a boat or with equipment which he/she has measured.
- 2.4.4 The measurer shall enter all measurements found in the 'actual' column of the measurement form. Any other form of entry is not acceptable.
- 2.4.5 The measurer shall report on the measurement form anything which he/she considers to be a departure from the intended nature and/or design of the boat, or to be against the general interest of the class. Any feature not clearly permitted by these rules, the plans, the measurement diagrams or measurement form must be assumed to be illegal and shall be reported by the measurer on the measurement form.
- 2.4.6 Notwithstanding anything in these rules, on the evidence of a measurer's report and/or other information, even if the specific requirements of the rules are satisfied, the IYRU and/or NA shall have the power to refuse to grant a certificate to, or to withdraw a certificate from, any boat.
- 2.4.7 New, repaired or recut sails shall be measured, or remeasured by an official measurer who shall stamp, sign and date the sail across the IECU sail label. On first measurement the dimensions found shall be entered on the measurement form.
- 2.4.8 Boats and equipment shall be liable to remeasurement at the discretion of the IYRU, a NA or a race committee.
- 2.4.9 It is the owner's responsibility to ensure that his/her boat, including spars, sails and equipment, complies with the class rules at all times and that alterations or repairs do not invalidate the certificate.

2.5 IYRU MEASUREMENT INSTRUCTIONS

- 2.5.1 Except where otherwise specified in these rules, the measurement diagrams, the plans and/or the measurement form, the IYRU Measurement Instructions shall apply.

2.6 IDENTIFICATION MARKS

- 2.6.1 Each boat shall have:

- (i) permanently fixed on the starboard side of the main bulkhead and clearly visible the official IYRU ICF plaque or sticker.
- (ii) the builder's company name clearly shown on the hull on the inside face of the transom on the starboard side.
- (iii) its National letter(s) and sail number engraved on the IYRU plaque or, for boats with IYRU stickers, permanently marked on a plate or sticker below the IYRU sticker.

- 2.6.2 Each sail shall have an IECU sail label sewn on to the starboard side of the sail not more than 400mm from the tack.

- 2.6.3 Each NA shall issue sail numbers consecutively starting with 1.

3. CONSTRUCTION AND MEASUREMENT RULES

3.1 GENERAL

- 3.1.1 Except where otherwise permitted under these rules the boat, spars, foils and sails shall be constructed generally in accordance with and shall comply with the measurements and tolerances specified in the plans, these rules, the measurement diagrams and the measurement form.

- 3.1.2 Tolerances on design dimensions are to accommodate small errors in construction and subsequent distortion during the life of the boat.

- 3.1.3 Protective coatings of any type of paint and/or varnish are permitted on the hull, spars and foils.

- 3.1.4 Backing plates, or locating plates of metal or wood are permitted either behind or moulded into the hull and spars for local strengthening where permitted fixed fittings are to be fastened.

3.2 HULL

3.2.1 Materials

- (i) Permitted materials:

The hull, including deck, side tanks, bulkheads, centreboard case and all structural components shall be made of wood, plywood, glass reinforced plastic (GRP) or any combination of these materials. Sandwich construction, whose total thickness is not more than 12mm is permitted. The type of material used as a sandwich core or filler is optional except as prohibited by rule 3.2.1(ii). Any type of resin may be used.

(ii) Prohibited materials:

Fibres of carbon, boron, aromatic polyamides (such as Kevlar) or other high tensile materials, including any listed in the IYRU catalogue of materials classified as exotic, are prohibited.

3.2.2 Construction and measurement datum

- (i) The 'aft measurement point' (AMPt) shall be the intersection of the underside of the hull on the centerline with the transom, both extended if necessary.
- (ii) The 'aft measurement plane' (AMPn) shall be a transverse plane through the AMPt perpendicular to the base line. It is vertical.
- (iii) The 'base line' shall be as shown on the measurement diagram. It is horizontal.
- (iv) For the purpose of rule 3.2.2(i) the transom is an imaginary surface enclosed by the aft end of the underside of the hull shell and a line joining the port and starboard sheerlines at the aft end of the hull shell.

3.2.3 Hull shell

The outside surface of the hull shall be a fair curve as defined by the lines:

- (i) Aft of station 4 the curve shall be convex or flat except that concavities of not more than 1.0mm measured below a fore and aft straight edge of any length are permitted.
- (ii) At and forward of station 4 the curve shall be convex, flat or concave except that concavities, measured below a straight edge in the horizontal plane shall be not more than 2.5mm and in any other plane shall be not more than 18mm.
- (iii) The radius of the stem, measured in the horizontal plane, is optional.
- (iv) The width and position of the centreboard slot shall be as shown on the measurement diagram. A recess is permitted extending not more than 30mm from each side of and not more than 50mm from each end of the centreboard case slot to accommodate the slot gasket. The depth of the recess is optional.
- (v) Rubbing strakes shall be not wider than:
 - (a) 20mm at the stem
 - (b) 20mm at the transom, including inset or overlap of the transom, forward or aft of the AMPn.
 - (c) 40mm elsewhere.
- (vi) The depth of the rubbing strake shall be not more than 25mm.
- (vii) Holes in the transom are permitted but shall be not more than 0.02m² in total area. These holes may be covered by hinged flaps or fixed windows of any material.
- (viii) Stiffening webs or stringers of any material permitted for hull construction may be fitted to the inner surface of the hull forward of the main bulkhead and inside the side tanks.

3.2.4 Cockpit and deck

The external surface of the deck, sidetanks, main bulkhead and centreboard case shall have a fair profile as shown on the drawings except where varied by these rules.

(i) Main bulkhead

- (a) There shall be a main bulkhead at $2000\text{mm} \pm 20\text{mm}$ from the AMPn.
- (b) The bulkhead shall have not more than 2 hatches with watertight covers. A hatch whose opening has an area more than a circle of 150mm diameter shall be for maintenance access only. It shall be bolted, screwed or securely clipped into place at other times.
- (c) The bulkhead may have not more than two drainholes with watertight plugs or non-return valves which allow water to flow out of but not into the compartment forward of the bulkhead.
- (d) The bulkhead may have not more than eight lead holes for control lines provided they are not in a part of the bulkhead which forms a boundary of the forward buoyancy unit or tank required by rule 3.2.6. Each hole shall be not more than 7mm in diameter and shall be within an area enclosed by lines 100mm from the floor of the hull, the side tanks and the line of the foredeck. Any such holes not occupied by control lines shall be plugged.

(ii) Sidetanks:

The sidetanks shall extend from the main bulkhead to the transom. The shape shall be as defined by the lines:

- (a) the distance between the vertical faces of each side tank shall be $660\text{mm} \pm 20\text{mm}$ at the inner face of the transom and $740\text{mm} \pm 20\text{mm}$ at the main bulkhead.
- (b) The radius of curvature between the top and sides shall be $130\text{mm} \pm 20\text{mm}$.
- (c) Each side tank shall have at least one drain hole, with watertight plug, and/or hatch with watertight cover.

(iii) Centreboard Case:

- (a) The centreboard case shall have sides of single skin or sandwich not more than 12mm thick. It shall be rigidly fixed to the bulkhead at its forward end over not less than 25mm of its depth measured from the top of the case.
- (b) The centreboard case capping shall be not more than 65mm wide each side, measured from the slot, and not more than 65mm deep. The capping may extend down the aft end of the case. The width of any such extension shall be not more than the width of the capping at the top and not more than 150mm at the cockpit floor.
- (c) The after end of the case shall extend not more than 100mm from the aft end of the slot except in the way of a step, to accommodate mainsheet blocks, which may extend 200mm from the aft end of the slot. Any such step shall be not more than 100mm deep and not more than 100mm wide.
- (d) The upper, aft end of the slot shall be not less than 1510mm from the AMPn.
- (e) The width of the slot shall be $20\text{mm} \pm 2\text{mm}$.
- (f) The distance, measured along the keel from the AMPt, to the aft end of the slot at the keel line shall be not less than 1465mm and to the forward end shall be not more than 2005mm.
- (g) At station 7 the distance from top of the case to the height of the sheerline shall be $184\text{mm} \pm 10\text{mm}$.
- (h) The top of the centreboard case shall be parallel to the base line within a tolerance of 10mm.
- (i) Pads of any resilient material may be fitted inside the top and bottom of each end of the slot to protect the edges of the centreboard.
- (j) Strips of any material may be fitted inside the top and/or bottom of the case to reduce friction and/or to match the slot width to the centreboard thickness provided the permitted dimensions of the case are not infringed.

(iv) Thwart

- (a) A thwart of width $105\text{mm} \pm 45\text{mm}$ and thickness $25\text{mm} \pm 10\text{mm}$ shall connect any part of the vertical face of each side tank, abreast the aft end of the centreboard case, with the upper part of the centreboard case at the after end.
- (b) The thwart may be integral with the centreboard case capping.
- (c) One support strut, of maximum width 65mm and maximum depth 30mm may be fitted each side below the thwart between the centreboard case and the bottom of the vertical face of the side tanks.
- (d) As an alternative to (iv)(c), in GRP construction only, the forward and aft vertical faces of the thwart moulding may extend down the vertical face of the side tanks as stiffening webs not more than 45mm wide and with a radius of not more than 100mm between the web and the underside of the thwart.

(v) Foredeck

The foredeck shall have a fair profile as shown on the drawings except that on each side of the centreline not more than one step in the profile, of not more than 5mm in height, is permitted within the overall profile limits set by the tolerances for the sheer height and the deck camber at the main bulkhead. The deck camber at the main bulkhead shall be $52\text{mm} \pm 10\text{mm}$ and at station 3 shall be not more than 30mm.

- (vi) Shaped pads, which may be an integral part of the moulding in GRP boats, are permitted on curved surfaces of the deck, side tanks and cockpit floor to accommodate flat based, permitted, fixed fittings. No part of a pad shall be more than 20mm from the line of the curved surface on which it provides a flat base. One vacant pad may be provided on each side of the boat as an alternative position for overdeck or underdeck control line cleats.
- (vii) Stiffening webs, stringers or beams of any material permitted for hull construction may be fitted to the inner surface of the foredeck and sidetanks.
- (viii) The floor of the cockpit may be stiffened by not more than 1 centreline and 4 other battens. They may be used as supports for hiking straps. A centreline batten shall be not more than 100mm wide. Other battens shall be not more than 55mm wide. Battens shall be not more than 30mm deep. The distance between battens shall be not less than 60mm.
- (ix) Except where otherwise specified the radius of any fairing, flange or fillet between hull components (e.g. main bulkhead, sidetanks, centreboard case, transom, thwart, foredeck) shall be not more than 25mm. The width of flanges used to secure hull components to each other is optional provided the 12mm sandwich thickness limitation is not infringed.
- (x) Not more than 2 transverse battens of any material may be fitted between the side tanks and to the floor of the cockpit as supports for hiking straps. They shall be not more than 55mm wide or 30mm deep. Each batten may be divided into not more than 2 hiking strap support pads in the same transverse line.
- (xi) A centreline knee or strut of any material may be fitted between the inside face of the transom and the floor of the cockpit. No part of it shall extend more than 200mm from the transom nor more than 50mm from the centreline of the hull. In GRP hulls

it may be moulded integrally with a centreline stiffening batten permitted by rule (viii) above.

3.2.5 Fitting and equipment

i Permitted fixed fittings are:

- a ~~(i)~~ Hatches, hatch covers, drains, drain plugs and non return valves as permitted or required elsewhere in these rules;
- b ~~(ii)~~ 2 rudder pintles or gudgeons;
- c ~~(iii)~~ A rudder stock retaining device;
- d ~~(iv)~~ Not more than 3 hiking straps, which may be padded, and an adjustment system for each comprising not more than 2 single sheave blocks and 1 cleat;
- e ~~(v)~~ A mainsheet block which may be a ratchet type;
- f ~~(vi)~~ A mainsheet traveller system comprising track, carriage, mainsheet block, 4 single sheave control line blocks and 2 cleats;
- g ~~(vii)~~ Control systems for cunningham, clew outhaul, tack inhaul and boom kicker (vang) each comprising not more than 6 single sheave blocks and 2 cleats;
- h ~~(viii)~~ Not more than 8 lead eyes or sheaves and sheave boxes fitted in main bulkhead for control lines;
- i ~~(ix)~~ A painter/towing line fairlead fitting at the stem head, which is mandatory;
- j ~~(x)~~ A mast heel fitting, which may incorporate an adjustment system for the fore and aft position of the heel of the mast provided no part of the adjustment system can extend aft of a plane 500mm forward of the main bulkhead and the fore and aft movement of the heel of the mast in any setting of the adjustment system is not more than 5mm;
- k ~~(xi)~~ A deck bearing ring for the mast which shall be fixed and shall have no moving parts;
- l ~~(xii)~~ Not more than 4 automatic (self) bailers;
- m ~~(xiii)~~ Not more than 2 retaining devices for water bottles;
- n ~~(xiv)~~ (a) Fastenings, including shackles where appropriate, for fittings listed.
(b) Fitting types and material are optional except that the use of fittings which are oversize, relative to their specific function, to add or concentrate weight is prohibited.
- ii ~~(v)~~ Fittings and equipments not defined as fixed in Rule 3.2.5(i) are optional except that any electronic or electrically powered fitting or equipment other than a timing device is prohibited. They shall be removed for weighing and weight distribution tests.
- iii ~~(vi)~~ Rigging. Any form of standing rigging is prohibited. Except where otherwise specified in these rules the type, material, size and length of line, rope or wire used for running rigging is optional.

3.2.6 Buoyancy

- (i) There shall not be less than three separate buoyancy units which shall comprise the two side tanks and a forward buoyancy unit.
- (ii) The forward buoyancy unit may be provided by any one or combination of the following: watertight compartment(s); closed cell foam block(s); air bag(s). Not less than 30 litres of the unit's total volume shall be forward of the mast. The forward buoyancy unit, if it is a compartment or compartments, shall be:
 - (a) isolated from the mast position by a watertight bulkhead or bulkheads.
 - (b) fitted with not less than one inspection hatch with watertight cover and/or drainhole with watertight plug.
- (iii) Buoyancy tanks shall be watertight. On first measurement the measurer shall carry

out tests on each tank as follows:

Super or sub-atmospheric air pressure shall be applied to the tank sufficient to produce a differential reading of 130mm on a water gauge. The pressure differential shall not reduce from 130mm to less than 50mm in less than 30 seconds.

3.2.7 Weight

- (i) The hull in dry and clean condition, with permitted fixed fittings, as defined in rule 3.2.5(i) shall weigh not less than 45kg. Mainsheet and control lines, except those forming part of the hiking strap or traveller control systems, shall be removed for weighing.
- (ii) If the hull is found to weigh less than 45kg, but not less than 40kg, a lead corrector weight, or weights, shall be securely fastened to the forward or aft face of the main bulkhead not lower than 200mm from the bottom of the hull. The weight (kg:g) and IYRU plaque number of the boat shall be stamped or engraved on each corrector weight.
- (iii) The hull weight, without correctors, and the weight and number of corrector weights shall be recorded on the certificate.
- (iv) Corrector weights shall not be removed or changed except after reweighing of the hull by an official measurer. The measurer shall record any change on the measurement certificate and send details to the certificating authority.

3.2.8 Weight Distribution

- (i) Any attempt to concentrate the weight of the hull is prohibited.
- (ii) The weight distribution, as defined by the fore and aft mass moment of inertia (I) and the location of the centre of gravity (CG) relative to the aft measurement plane, ie horizontal CG (CGH) and the underside of the hull on the centreline vertically below the CG, ie vertical CG (CGV), shall be determined, for the hull in the same condition as for weighing. 'I' shall be calculated from a radius of gyration (RG) measured using the method detailed on measurement diagram, sheet (vii) and the hull weight.
- (iii) If I is less than 35.5kg/m² (which is the I given by a radius of gyration of 888mm and a hull weight of 45kg) lead corrector weights, marked as in Rule 3.2.7, shall be securely fitted on the centreline, 50% forward of station 3 and 50% aft of station 10.
- (iv) The CGH shall be not less than 1500mm from the aft measurement plane.
- (v) The CGV shall be not less than 200mm above the underside of the hull on the centreline.
- (vi) If CGH and/or CGV is outside the limits specified lead corrector weights, marked and positioned as in Rule 3.2.7, shall be fitted.
- (vii) Corrector weights required to bring weight, weight distribution and centre of gravity within permitted limits shall be applied in that order. Weights required to correct weight distribution and centre of gravity shall be additional to those required to correct for weight.

3.3 CENTREBOARD

3.3.1 Materials

The centreboard shall be made of wood, which may be laminated, or plywood or GRP with plastic foam core, or any combination of these materials.

3.3.2 The profile, cross section and dimensions shall comply with those specified on the centreboard measurement diagram and/or the measurement form.

3.3.3 The weight of the centreboard shall be not less than 2kg.

3.4 RUDDER AND TILLER

3.4.1 Materials

The rudder blade shall be made of wood, which may be laminated or plywood or GRP with plastic foam core, or any combination of these materials.

3.4.2 The profile, cross section and dimensions shall comply with those specified on the rudder blade measurement diagram and/or the measurement form.

3.4.3 ^{ad} The ruder blade, fitted to the rudder stock, hung on the pintles, in the fully down position and aligned fore and aft, shall have its lower edge not more than 600mm below a horizontal plane through the AMPt and its trailing edge not more than 280mm from the AMPn.

3.4.4 The weight of the rudder blade shall be not less than 0.9 kg.

3.4.5 Rudder Stock and Tiller

The materials, type and shape of rudder stock, tiller and tiller extension and associated fittings are optional except that:

- (i) the rudder blade shall be able to pivot about its axis in the rudder stock so that it may be lifted during launching and recovery of the boat. A fixed rudder blade is prohibited.
- (ii) A lanyard, locking pin and/or clamping screw and nut shall be fitted to secure the rudder blade in the fully down position.
- (iii) The weight of the complete rudder stock, tiller and tiller extension assembly, but excluding rudder blade, shall be not less than 1.25kg.

3.5 SPARS

3.5.1 Materials

(i) The mast and boom may be made of any material in any combination.

(ii) The mast deck bearing ring, heel fitting and other permitted fittings may be of any material.

3.5.2 Mast

(i) The mast shall comply with the dimensions and requirements specified on the mast and boom measurement diagram and/or the measurement form.

(ii) The mast shall pivot on its heel. It shall be supported only at the heel and deck ring.

(iii) The mast shall be secured in position in the boat so that the heel cannot be lifted out of the mast step.

3.5.3 Boom

- (i) The boom shall comply with the dimensions and requirements specified on the mast and boom measurement diagram and/or the measurement form.
- (ii) A stop shall be fitted to the boom to prevent the sail being hauled out beyond the inner edge of the measurement band.
- (iii) The boom shall be straight but a permanent set due to distortion of 20mm shall be permitted.
- (iv) The boom shall be fitted to the mast so that they rotate together.

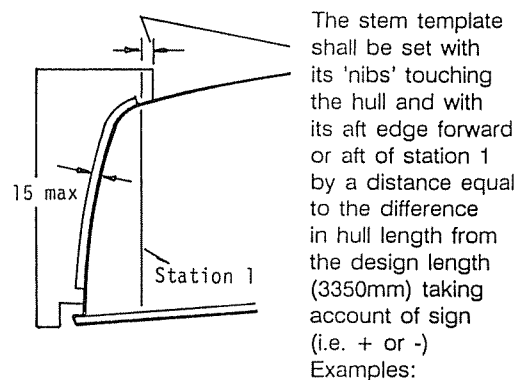
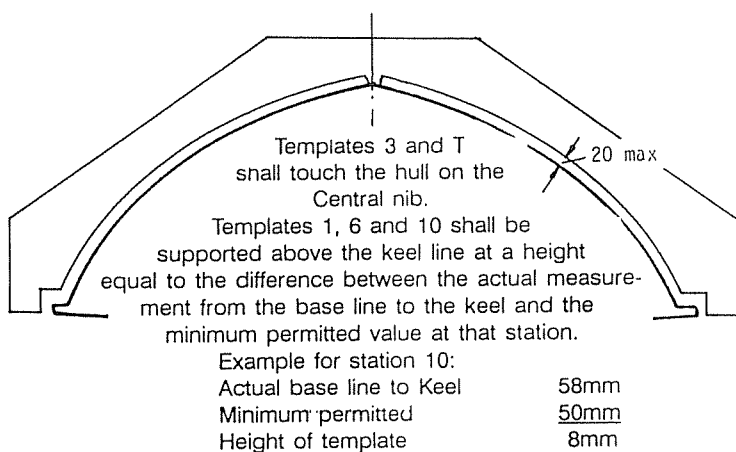
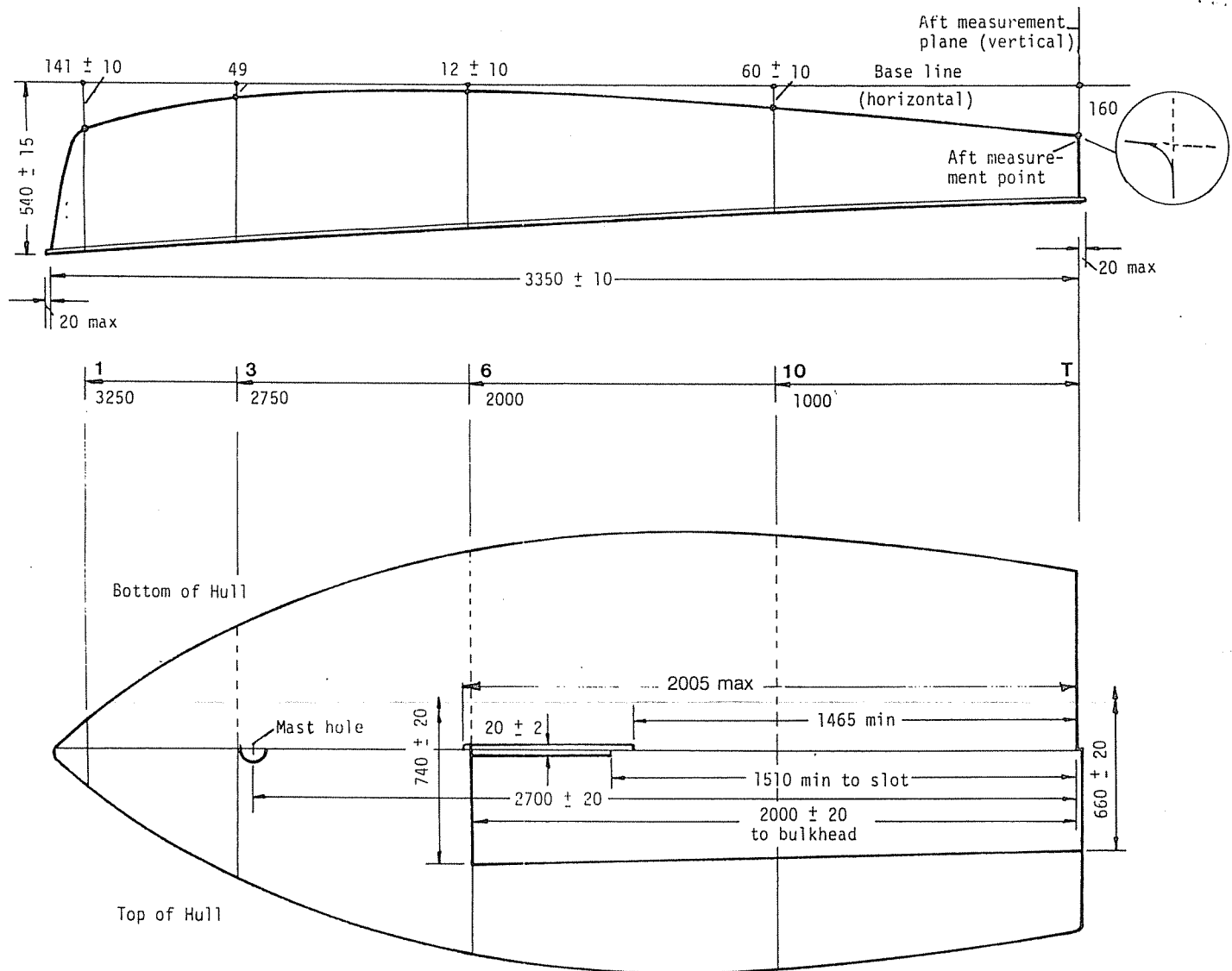
3.6 SAIL

- 3.6.1 The sail shall be made and measured in accordance with the IYRU measurement instructions except where differences are defined on the sail measurement diagram and/or measurement form.
- 3.6.2 The sail shall comply with the dimensions, tolerances and other requirements specified on the sail measurement diagram and the measurement form.
- 3.6.3 The Class Insignia, national letter(s) and sail number(s) shall comply with the dimensions given on the measurement diagram and the measurement form.

3.7 ALL UP WEIGHT

The all up weight is not controlled.

Hull Measurement Diagram



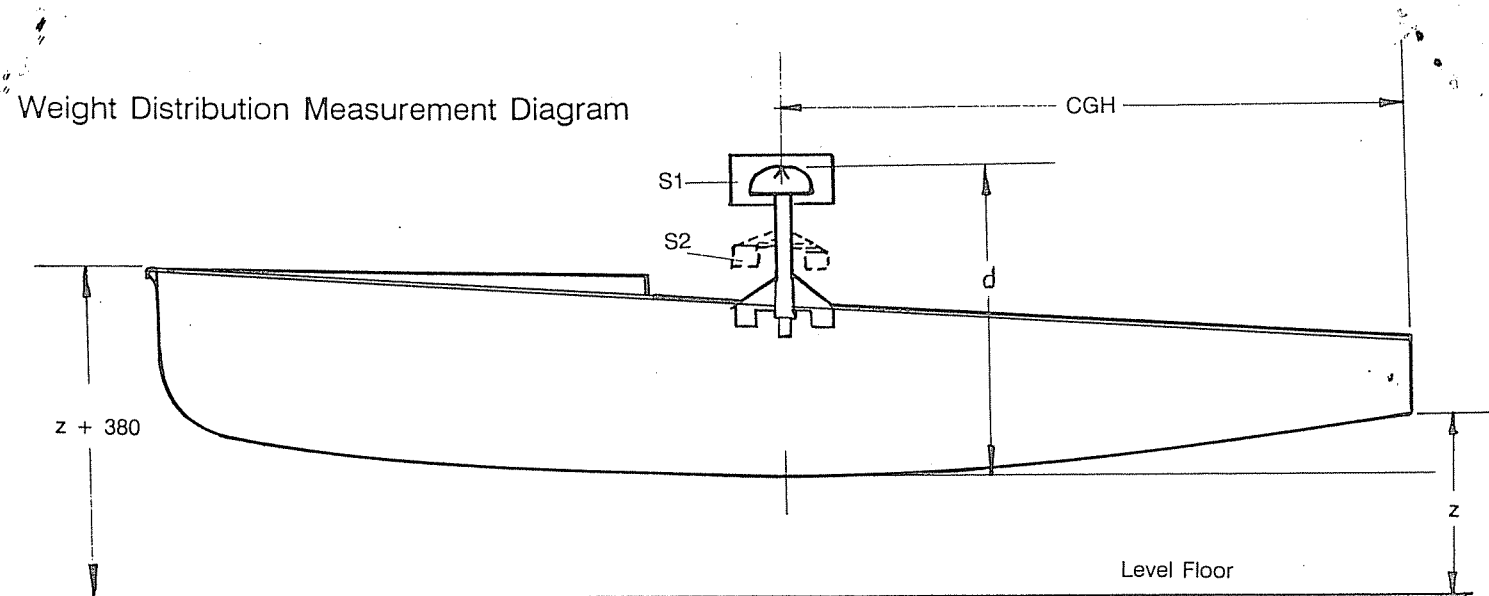
(1) actual length 3348
 design length 3350
 - 2

Aft edge 2mm aft of station 1

(2) actual length 3356
 design length 3350
 + 6

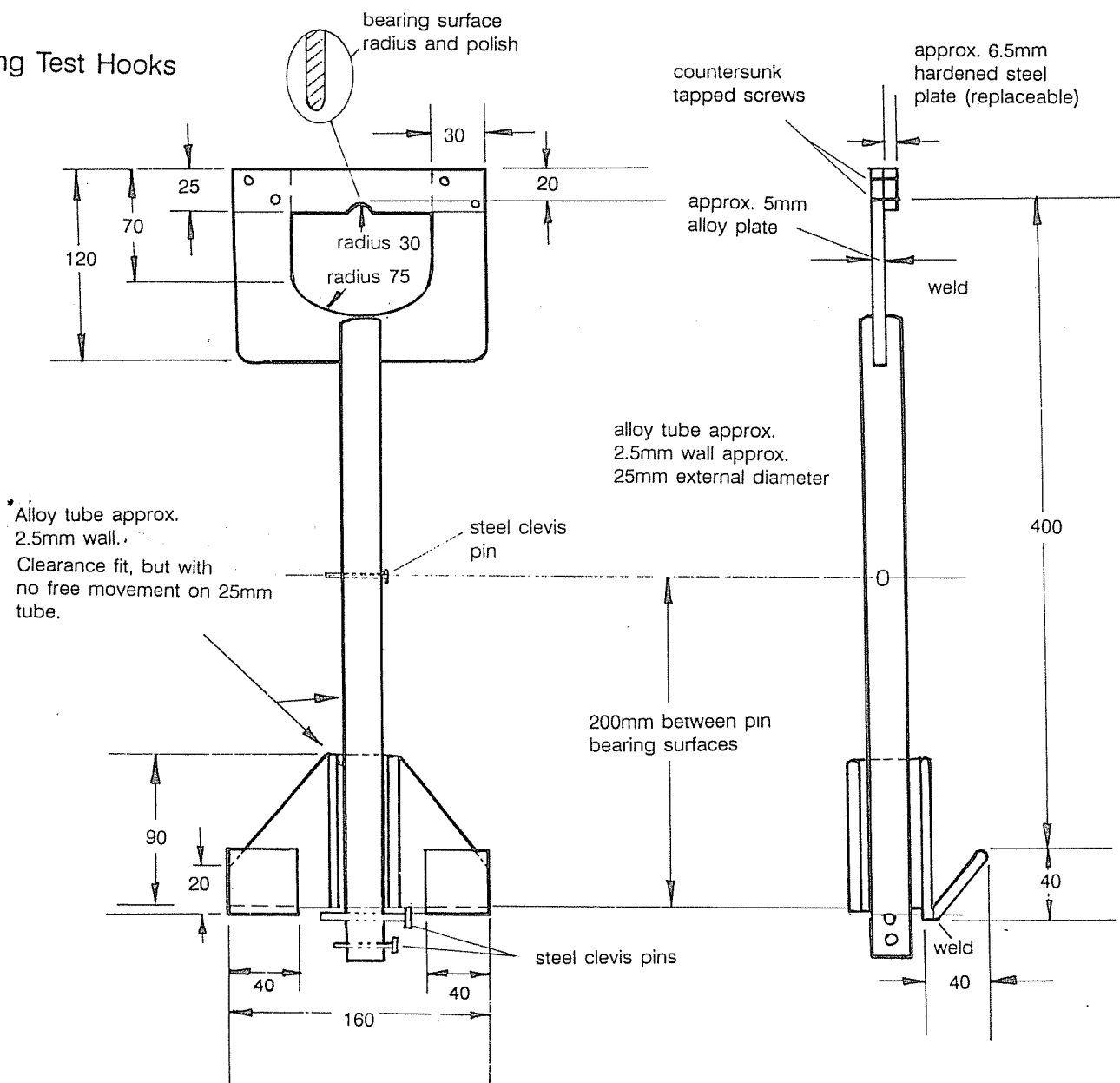
Aft edge 6mm forward of station 1

Weight Distribution Measurement Diagram



A 90 degree knife edge for the support beam pivot axis is recommended

Swing Test Hooks



WEIGHT DISTRIBUTION (SWING TEST) MEASUREMENT DIAGRAM

1. The procedure for the swing test is based on the 'Lambolely Test' used by the International Finn Class. The hull is suspended from brackets hanging from a transverse beam which forms the swing axis. The brackets locate on the hull below the rubbing strake. The bracket design allows the hull to be supported at 2 different heights relative to the swing axis. The swing period is measured at each height.
2. The swing period may be measured using either:
 - (i) A stop watch with 1/100 second readout.
 - (ii) **or** An electro-optical device, such as a photo-electric cell linked to an electronic timer or micro-computer. These notes assume the manual, stopwatch method is used.
3. If the weight of the hull is not known, weigh the hull in conditions as defined in rule 3.2.7. Record as 'M' kg.
4. Suspend the hull, supported on the brackets in position S1 as shown in the diagram, so that it is level fore and aft in condition as for weighing. When level the height of the sheerline at the stem will be 380mm more than the height of the Aft Measurement Point (AMPt) above a level floor. Assuming a level floor the error in fore and aft level will be not more than 15mm in 3350mm, ie less than 0.5%. If the true sheer height at the stem is known, from either the measurement form or when the swing test is conducted as part of hull measurement, apply a correction to the 380mm height as follows: Subtract 540 from the sheer height. Add result to 380.
 e.g. sheer height = 530: $530 - 540 = -10$; $380 + (-10) = 370$
 sheer height = 555: $555 - 540 = +15$; $380 + (+15) = 395$
 Ensure that the suspension axis is at right angles to the fore and aft line of the hull. When it is, the distance from the aft end of each bracket to the transom will be the same. Mark the bracket position on the hull.
5. Measure:
 - (i) the horizontal distance from the vertical plane through the pivot point of the transverse beam and the transom. Record as 'CGH'.
 - (ii) the height of the support axis above the underside of the hull. Record as 'd'.
6. Set up a support post for a reference pointer close to the bow. Ensure it is just clear of the hull when the hull is swung.
7. Mark a level datum on the reference post aligned to a clearly defined mark or feature on the hull. eg the underside of the rubbing strake. Mark a swing start point on the post 50mm below the level datum.
8. Depress the bow to the start position and release. Allow at least 1 complete cycle for the system to settle.
9. Start the stopwatch as the bow passes the level reference. Count and time not less than 10 complete cycles. Record as 'TTI'.
10. Calculate the mean period for the number of cycles completed, eg record mean period as 'TI'.
11. Repeat steps 6 to 9 with the hull suspended on the brackets in position S2. It is important that the brackets are set at the same fore and aft position on the hull as for S1, using the marks made in the procedure of paragraph 4. Record mean period as 'T2'.
12. Calculations.
 - (i) Calculate the radius of gyration (RG) by either; solving the following simultaneous equations:

$$T1 = 2 \times \pi \sqrt{\frac{a^2 + RG^2}{a \times g}} \quad T2 = 2 \times \pi \sqrt{\frac{(a-0.2)^2 + RG^2}{(a-0.2) \times g}}$$
 where; $\pi = 3.142$, $g = 9.815 \text{ m/s}^2$ & a is in metres.
 Calculator and computer programmes for solving the equations are given in the IYRU measurement manual.
 - (ii) Calculate the mass moment of inertia (I) as follow:

$$I = M \times (RG)^2$$
 Where M is the mass of the hull in kg
 Calculate the height of cg above the underside of the hull (CGV) as follows:

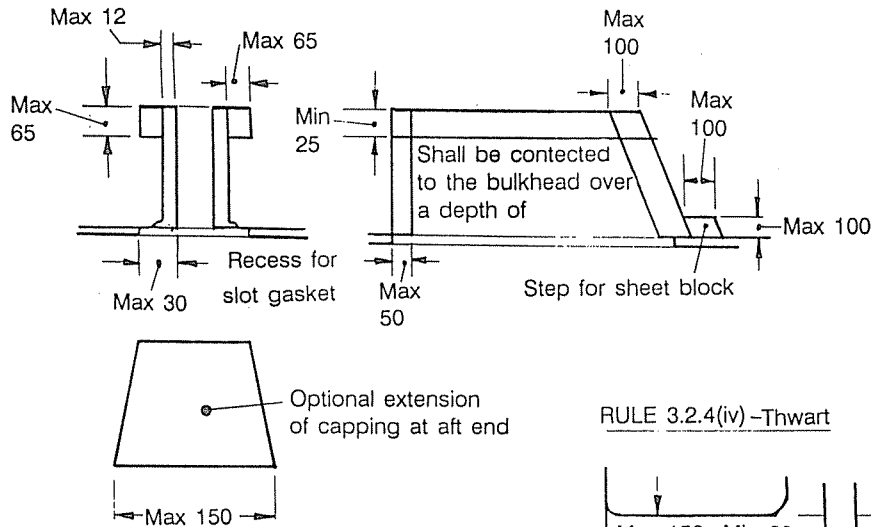
$$CGV = (d - a) \times 1000\text{mm}$$
13. Record data on the measurement form.

drawings/europe

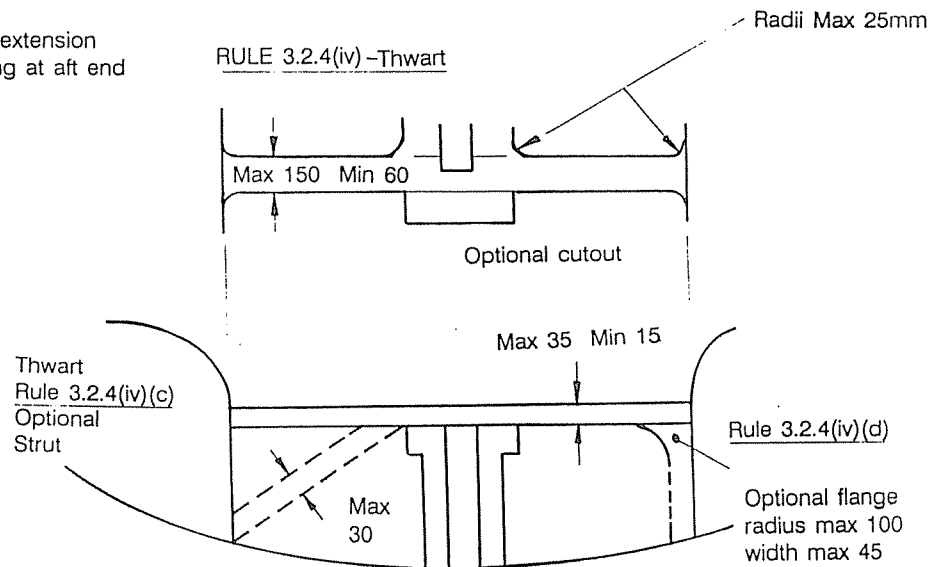
*or using
T1 and T2 in the table in the
Europe chapter*

Hull Detail Measurement Diagram

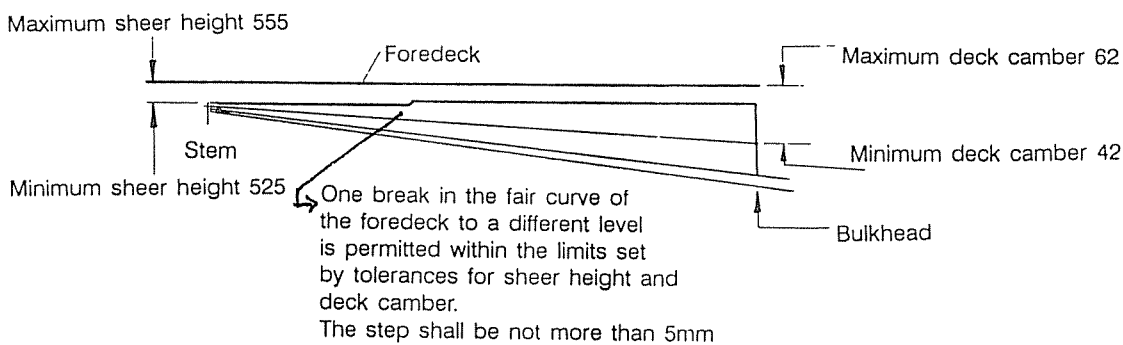
RULE 3.2.4(iii) — CENTREBOARD CASE



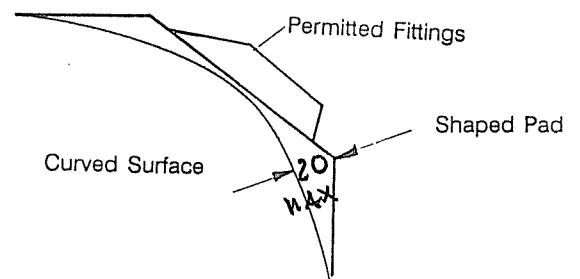
RULE 3.2.4(iv) -Thwart



RULE 3.2.4(v) - FOREDECK

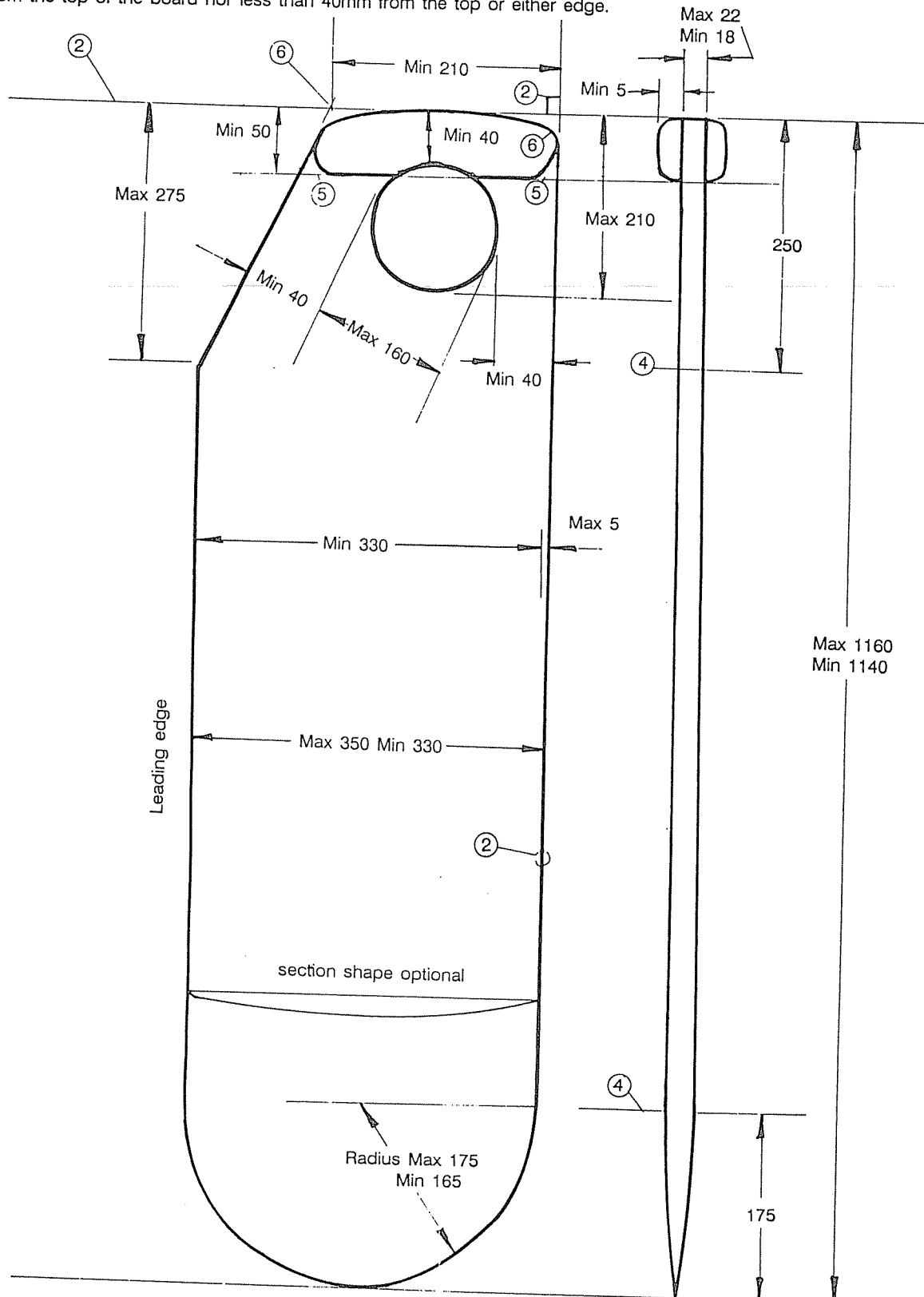


RULE 3.2.4 (vi) - SHAPED PADS



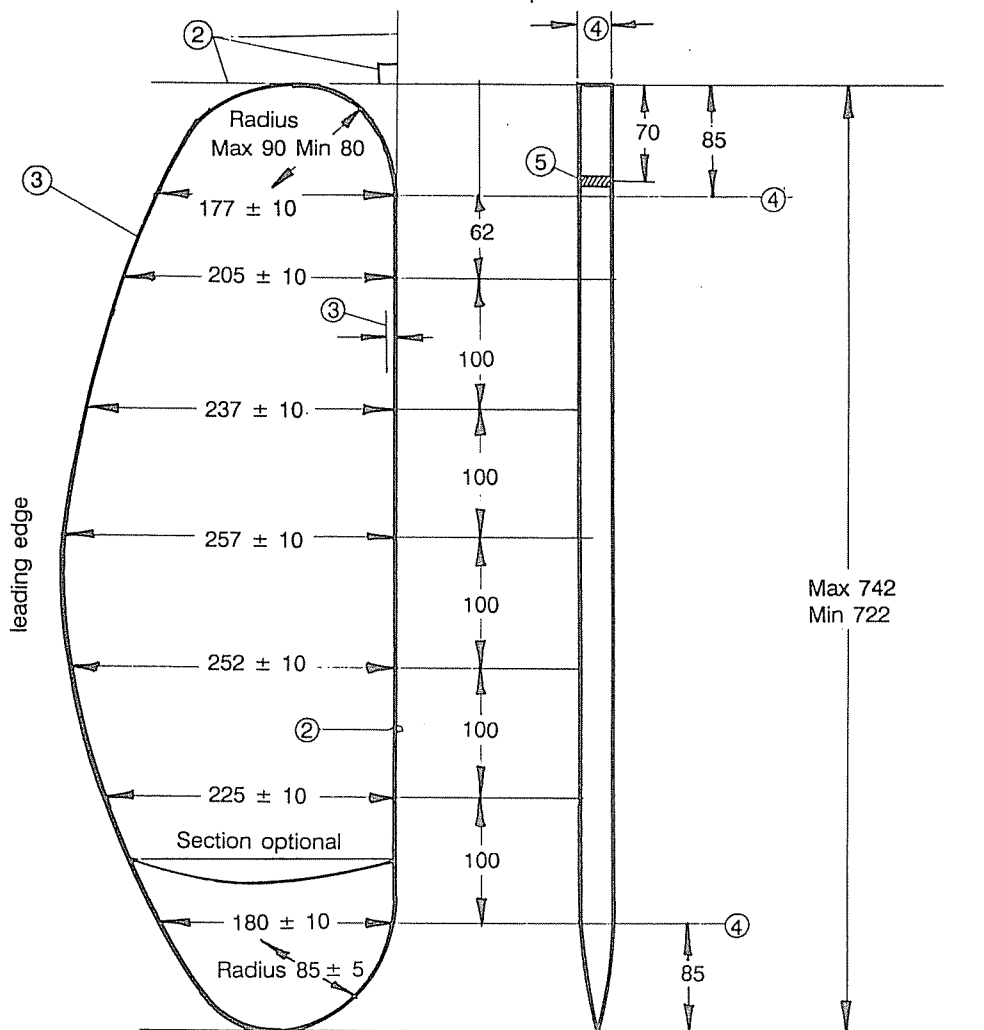
Centreboard Measurement Diagram

1. The profile of the centreboard shall comply with the diagram.
2. Except where otherwise shown the datum lines for profile measurement are:
 - (i) for width, a straight edge placed against the trailing edge of the board.
 - (ii) for length, a straight edge placed against the highest point of the board and at right angles to the width datum line.
3. Except at top and bottom radii any gap between the trailing and leading edges of the board and a straight edge placed against them shall be not more than 5mm. For measurement of width any such concavities in the profile of the trailing edge which extend over not more than 150mm of the boards length shall be ignored.
4. The shape of the cross section is optional except that:
 - (i) below 175mm from the bottom edge the thickness shall be not more than 22mm.
 - (ii) above 250mm from the upper edge the thickness shall be $20\text{mm} \pm 2\text{mm}$. It shall not vary by more than 1mm, *and 2 mm in the area 20 mm from the edge*
 - (iii) between the limits in (i) and (ii) the thickest part of the board in any section shall be $20\text{mm} \pm 2\text{mm}$.
5. A batten of wood or GRP, or stops of wood, rubber or plastic, not less than 5mm thick shall be fitted to each side of the top of the board. ~~They shall be fitted to each side of the top of the board.~~ They shall be positioned so that even if compressed no part of the board less than 50mm from the top, except at less than 20mm from each edge, can enter the centreboard case slot.
6. The upper corners of the board may be rounded with a radius of not more than 25mm.
7. A handgrip hole is permitted. It shall be not more than 160mm across in any direction. No part of the hole shall be more than 210mm from the top of the board nor less than 40mm from the top or either edge.

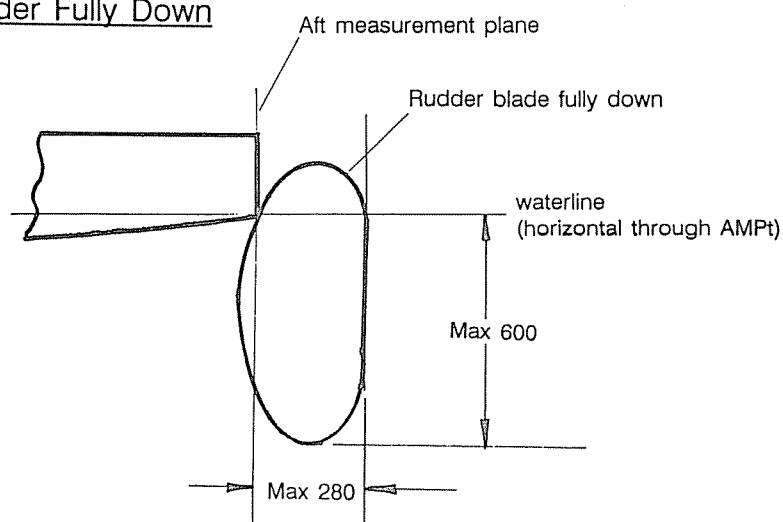


Rudder Blade Measurement Diagram

1. The profile of the rudder blade shall comply with that in the diagram. It shall be a fair curve.
2. The datum lines for profile measurement are:
 - (i) for width; a straight edge placed against the trailing edge.
 - (ii) for length; a straight edge placed against the highest point of the blade and at right angles to the width datum line.
3. Except at the top and bottom radii any gap between the trailing edge of the blade, and a straight edge placed against it shall be not more than 5mm. For measurement of width any such concavity in the profile of the trailing edge which extends over not more than 150mm shall be ignored. The leading edge shall be a fair curve.
4. The shape of the cross section is optional except that:
 - (i) below 85mm from the bottom edge the thickness shall be not more than 22mm.
 - (ii) above 85mm from the upper edge the thickness shall be $20\text{mm} \pm 2\text{mm}$ and shall not vary by more than 1mm.
 - (iii) between the limits in (i) and (ii) the thickest part of the board in any section shall be $20\text{mm} \pm 2\text{mm}$.
5. The centre of the pivot hole shall be not less than 70mm from the top of the blade.

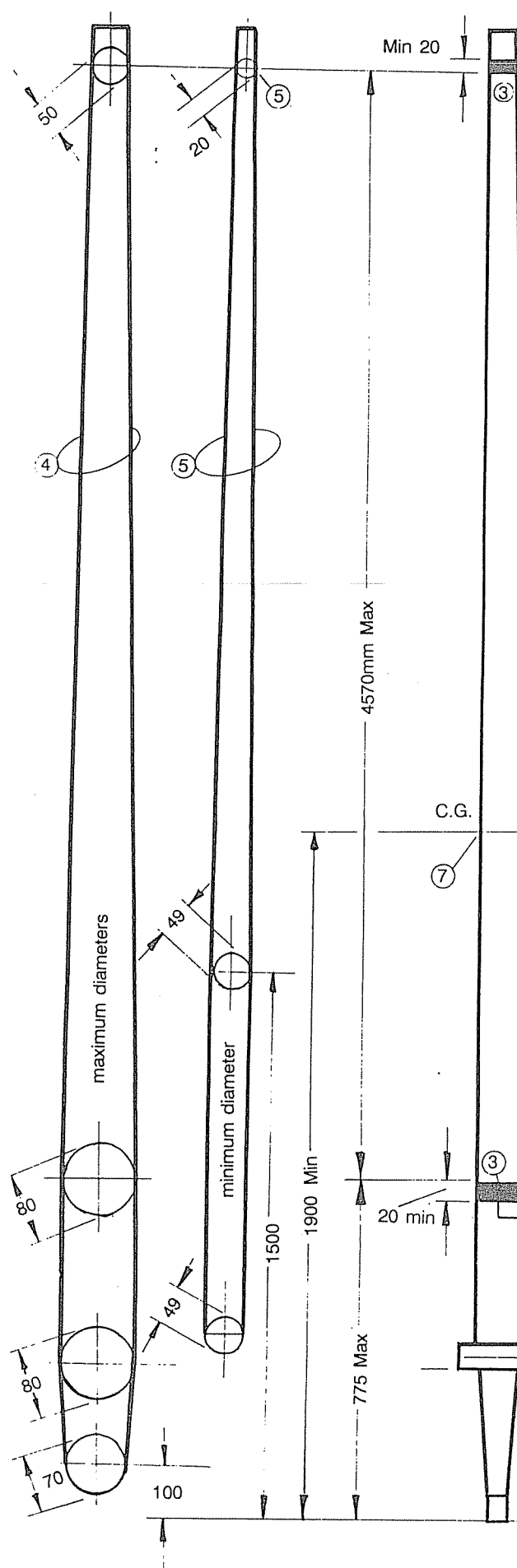


Rule 3.4.3 - Rudder Fully Down



Mast and Boom Measurement Diagram - Sheet 1 of 2

(x) (cylindrical and cone including upward extension of the conic section) developed from:



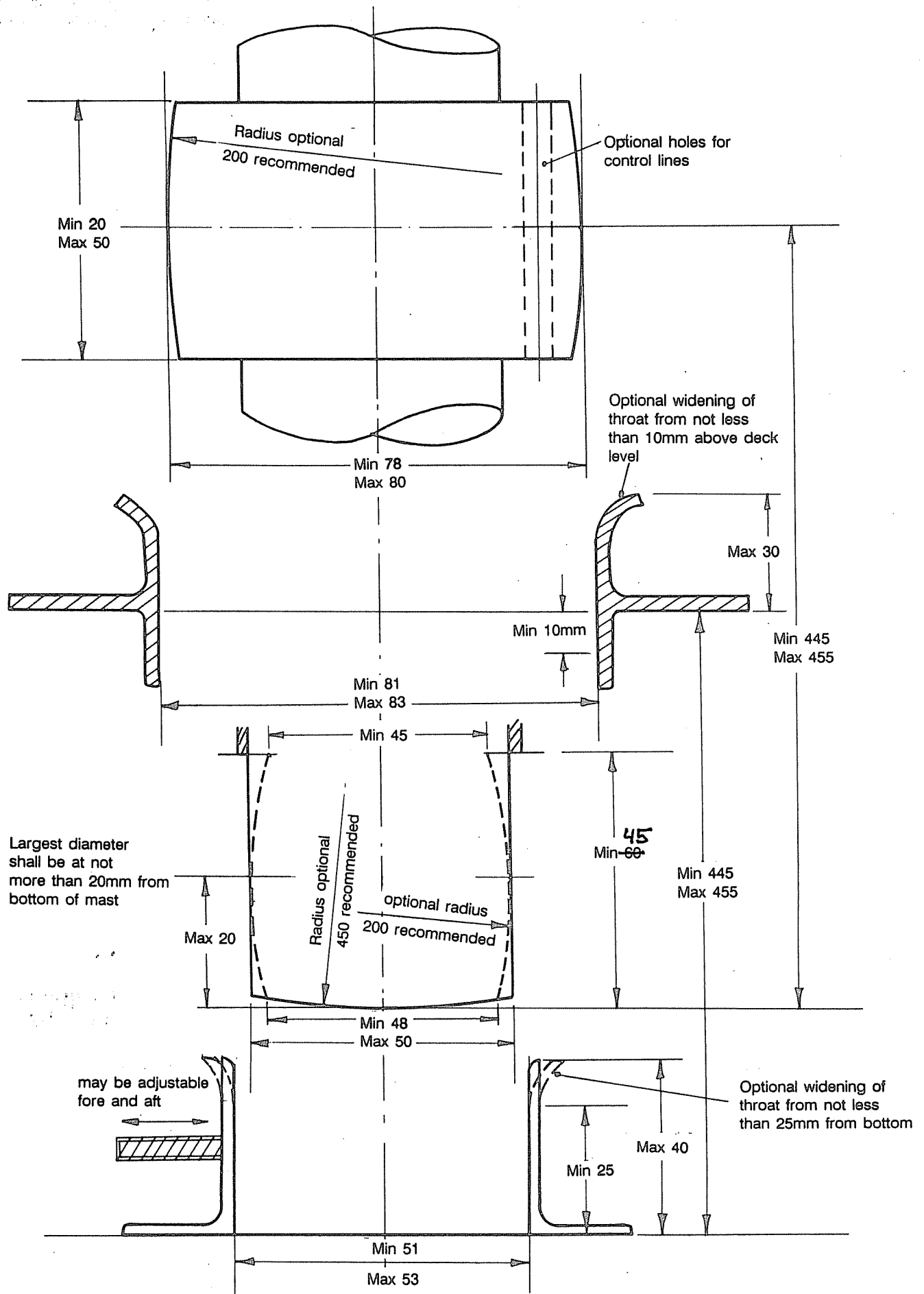
1. A number inscribed in a circle is a reference to the note of that number.
2. The type and material of permitted fittings used on mast and boom are optional except that the gooseneck fitting shall be such that the mast and boom rotate together. Fastenings and backing plates for fastenings for permitted fittings are optional. Permitted fittings are: gooseneck; mast deck bearing ring, which shall have no moving parts; mast heel fitting, which shall have no moving parts; halyard sheave and housing, halyard lock, halyard tail cleat or other securing arrangement, not more than 3 halyard tail locating clips on the fore side of the mast, burgee and/or wind direction indicator, control line sheaves, housings and/or blocks, sheet blocks and securing eyes, boom kicker (vang) system, mast retaining system.
3. The position of the inner edge of the mast and boom measurement bands shall be permanently marked with a scribed line or not less than two indentation marks.
4. No part of the mast including sail track but excluding gooseneck and optional fittings shall lie outside the three contiguous sections, (conic, cylindrical, conic including ~~projections~~ *extension* of the conic sections) developed from:
 - (a) a 50mm diameter circle at the lower edge of the upper measurement band and an 80mm diameter circle at the upper edge of the lower measurement band (conic section).
 - (b) an 80mm diameter circle at the upper edge of the lower measurement band and an 80mm diameter circle at the lower edge of the mast deck ring. (cylindrical section).
 - (c) An 80mm diameter circle at the lower edge of the mast deck ring and a 70mm diameter circle at 100mm from the bottom of the mast. (conic section).
5. Above the deck ring the mast shall not be smaller than a ~~conic section~~ *two conic sections* and its projections developed from:
 - (a) a 49mm diameter circle at the upper end of the deck ring.
 - (b) a 49mm diameter circle at 1500mm from the bottom of the mast.
 - (c) a 20mm diameter circle at the lower end of the upper measurement band.
6. The mast shall be straight
 - (a) It shall be constructed so that the upward extension of the axis through the centres of radius of the heel and the mast deck ring shall pass through a point, at the level of the lower edge of the upper measurement band, which is not more than 50mm from the aft face of the mast.
 - (b) In subsequent use, a permanent set of not more than 40mm, due to distortion from 'wear and tear', measured to a taut line touching the aft or forward face of the mast at the top of the deck ring and the lower edge of the upper measurement band, shall be permitted.
7. If the weight of the mast is less than 5.5kg but not less than 5kg and/or the centre of gravity is less than 1900mm from the bottom of the mast, both measured with halyard removed, a lead corrector weight shall be permanently attached to the outside of the mast.
8. The horizontal movement of the mast at the bearing surfaces on the boat shall be not more than 5mm at the deck and not more than 5mm at the heel including movement of the mast heel position adjustment system.
9. The boom, without fittings, shall be capable of passing through a 76mm diameter circle. It shall be of uniform cross section, within 5mm, throughout except that a change in section is permitted at not more than 100mm from the aft face of the mast, to match to the gooseneck, provided all other measurement criteria are satisfied.
10. Except within 100mm of the aft face of the mast the upper edge of the boom, when the boom is held at right angles to the mast, shall be not lower than the upper edge of the lower measurement band on the mast.
11. A stop shall be fitted to the boom to prevent the sail being hauled out beyond the inner edge of the measurement band.
12. If the weight of the boom, without sheet blocks and their securing eyes, kicker (vang) system and running rigging, is less than 3.0kg but not less than 2.75kg lead corrector weights shall be fitted at the gooseneck end.

See sheet 2 for dimensions and positions of mast deck ring, heel fitting and hull bearings at deck and heel.

Not to scale. All dimensions mm.

Mast and Boom Measurement Diagram - Sheet 2

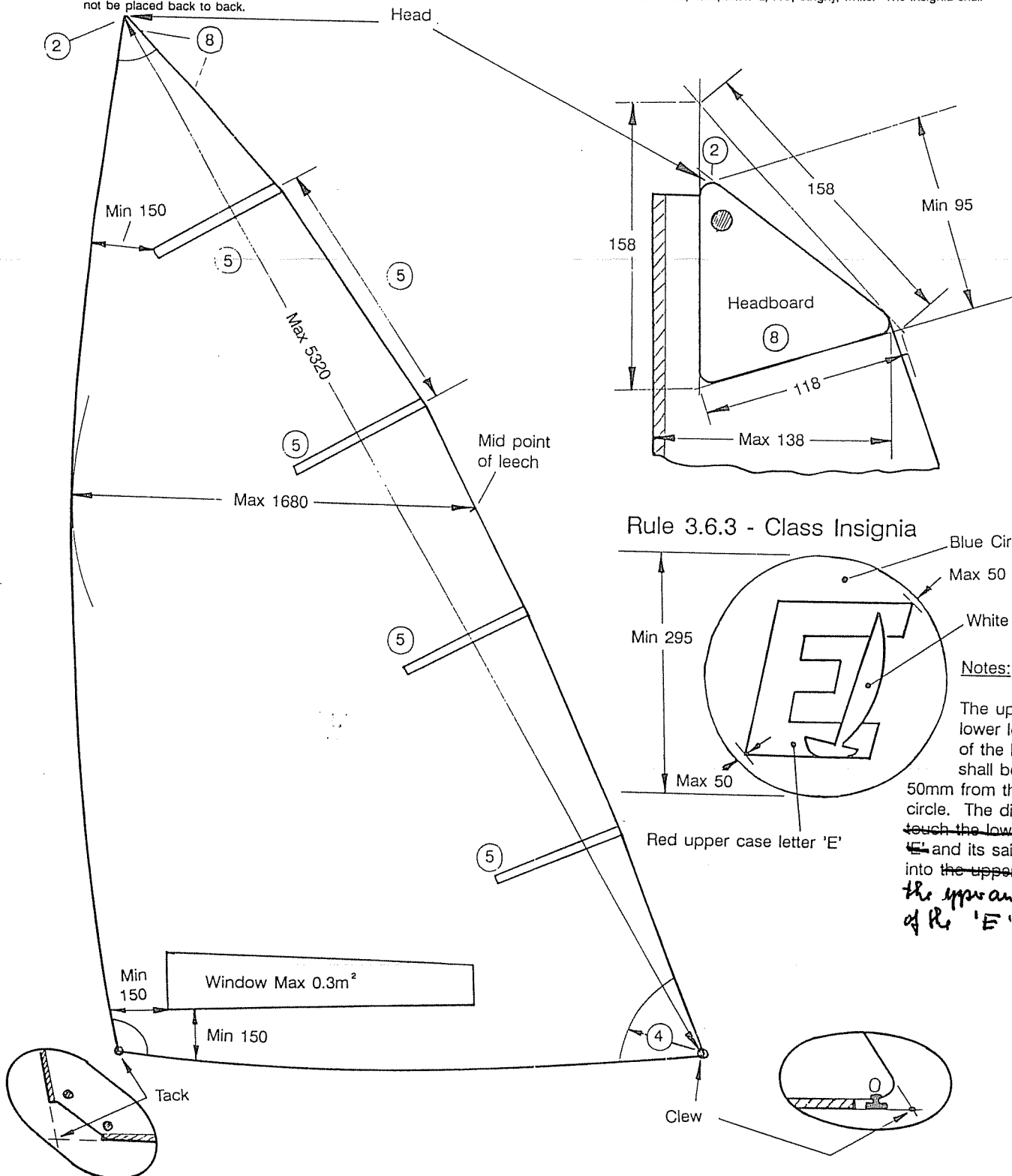
The detail of construction of the deck bearing ring on the mast, the mast bearing ring in the deck, the heel fitting on the mast and the adjustable heel fitting for the mast in the hull are optional provided they comply with the dimensions on the measurement diagrams. All dimensions are in mm. Dimensions not shown are optional.



Sail Measurement Diagram

1. The sail shall be made of the same woven material throughout. The thickness of the material shall not vary from the mean for all panels by more than tolerances specified by IYRU.
2. The datum for measurement at the head of the sail, hereafter referred to as 'head' for leech length measurements and for folding the sail is the highest part of the headboard.
3. Window. There shall be a window or windows of total transparent area not more than $0.3m^2$. No part of a window shall be less than 150mm from any edge of the sail.
4. Reinforcement. Primary reinforcement shall be not more than 295mm from the tack, clew, head and cunningham positions. Secondary reinforcement is optional.
5. Battens and Batten Pockets. There shall be not less than 3 and not more than 4 battens.
 - (i) The total length of all batten pockets shall be not more than 2400mm.
 - (ii) Except at local widening for inserting battens the width of batten pockets shall be not more than 50mm.
 - (iii) No part of any batten pocket shall be less than 150mm from the luff.
 - (iv) At the aft edge of the sail the batten pockets shall divide the leech into equal parts $\pm 50mm$.
6. Leech. The length of the leech measured from clew to head shall be not more than 5320mm.
7. Half-height. The width at half height shall be not more than 1680mm.
8. Headboard. The headboard may be of any shape:
 - (i) It shall be inscribed in an isosceles triangle whose apex is uppermost and whose dimensions are: base 118mm, sides 158mm.
 - (ii) The height of the headboard, measured from the base of the triangle, shall be not less than 95mm.
 - (iii) No part of the headboard shall be more than 138mm from the luff of the sail including bolt rope.
 - (iv) Above the utmost point of the headboard no part of the sail or reinforcement shall extend aft of the edge of the headboard.
 - (v) No part of the aft edge of the sail shall be more than 5mm outside a straight line joining the utmost point of the headboard and the upper aft corner of the top batten pocket.
9. National letter(s) and sail number(s). The dimensions shall be:
 - (i) Height. Not less than 295mm.
 - (ii) Width. (Except for I and 1) Not less than 200mm
 - (iii) Thickness. Not less than 40mm.
 - (iv) Spacing between characters on the same and opposite sides of the sail. Not less than 60mm.
10. Class insignia. The class insignia shall be not less than 295mm in diameter. The colours shall be: Circle, blue; letter E, red; dinghy, white. The insignia shall not be placed back to back.

One reefing eye is permitted within the area of the clew primary reinforcement, but shall not provide a new datum line for adding to the area of clew reinforcement



Rule 3.6.3 - Class Insignia

