

# X-79 CLASS RULES

2019



**X-79**



# CLASS RULES



**2019**

**German X-79 Class Association**

The X-79 was originally designed and constructed in 1979 by Niels Jeppesen at “Nordsø Bådeværft”, the later “X-Yachts” of Haderslev, Denmark.

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These 2017 class rules have been accepted by the German X-79 Association at the Annual Meeting on 03. Feb 2017. These 2017 class rules supersede all earlier class rules. The class rules are in effect in Germany from 01. April 2017.

Date: ..... Signed: .....

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## Part I – Administration

### SECTION A – General

#### A.1 Type of Class Rules

A.1.1 These are **closed class rules**. This means that any type of material and equipment is prohibited unless permitted by the **class rules**. A.1.2 Not used.

A.1.3 The **class rules** and the original drawings, listed in Part III, Section H, along with revisions and changes decided and agreed by the German X-79 Class Association (hereafter NCA) and the ISAF Member National Authority (hereafter MNA), shall ensure that all **boats** are build and equipped as alike as possible. The paragraphs of the **class rules** concerning construction, equipment and all hereto related are hereby:

- either bound as being identical for all X-79
- or left for the individual **boat** owner to decide

By these **class rules**, structures, materials and equipment not described or left for the individual **boat** owner to decide are excluded from use.

A.1.4 Tolerances are only given to allow insignificant dimensional deviations during construction. Purposely exploitation of given tolerances is consequently not allowed.

A.1.5 Class *Racing* shall from the above and to the widest extent possible take place on equal terms and thus only be settled by the skill of the individual crew and by fair sailing.

#### A.2 Language

A.2.1 The official language of the **class rules** is English and in case of dispute over translations, 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 (Deutscher Segler-Verband)  
NCA National X-79 Class Association (German X-79 Class Association)  
ERS Equipment Rules of Sailing  
RRS Racing Rules of Sailing

#### A.4 Authorities and Responsibilities

A.4.1 The national authority of the class is the MNA, which shall co-operate with the NCA in all matters concerning these **class rules**.

A.4.2 Neither the ISAF, the MNA, the NCA, nor any **Official Measurer** is under any legal responsibility in respect of these **class rules** or any measurement and no claim arising from them can be entertained.

A.4.3 Notwithstanding anything contained herein, the MNA has the authority to withdraw a **certificate**, see A.13, A.14 and A.15.

**A.5 Administration of the Class**

A.5.1 The MNA has delegated its administrative functions of the class to the NCA.

**A.6 ISAF Rules**

A.6.1 These **class rules** shall be read in conjunction with the ERS and measurements must be taken in accordance with these rules, unless something else has been prescribed.. 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 Sailing Instructions**

A.7.1 Sailing instructions except as provided by A.7.2 shall not overrule these **class rules**.

A.7.2 At World, Continental or Regional Championships the sailing instructions may overrule these **class rules** only with the agreement of the MNA and the NCA.

**A.8 Amendments to Class Rules**

A.8.1 Amendments to these **class rules** shall be proposed by the NCA, and shall be approved by the MNA.

**A.9 Interpretation of Class Rules – General**

A.9.1 Interpretation of **class rules**, except as provided by A.10, shall be made by the NCA and reported to the MNA within two weeks. The interpretation is not valid until ratified by the MNA.

**A.10 Interpretation of the Class Rules – At an Event**

A.10.1 The *race committee* or *jury* may in accordance with the RRS perform any interpretation of the **class rules**, as needed at an event. Such interpretation shall only be valid during the event and the organising authority shall, as soon as practical after the event, inform the MNA and the NCA of such interpretation.

**A.11 Boat Building Rights and Hull Production No’s.**

A.11.1 Building moulds are owned by X-Yachts. The MNA shall approve the moulds for use and their storage. No official X-79 offset table (hull shape table) exists, however the Danish Sailing Association has such offset file, as a result of an IMS measurement of an X-79 performed on the 26<sup>th</sup> of April 1987.

A.11.2 The **hull shell**, **deck**, optional foredeck hatch, garage for sliding hatch, **rudder** and **keel** can only be manufactured by companies approved by the MNA for this manufacturing. **Hull shell** and **deck** shall only be cast in moulds approved by the MNA.

A.11.3 X-Yachts, or any other licensed owner of the moulds, shall provide any new **boat** with an engraved Hull Production No., which shall appear on a stainless metal production plaque. The plaque, 95 mm wide and 60 mm high, shall be placed and fastened near the centreline of the **boat** on the cockpit side of the bulkhead to the aft storage room. All new **boats** must be furnished with a measurement form.

<b>X-79</b>	
Design: Niels Jeppesen Denmark	Project: X-Yachts Denmark
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## A.12 Identification on Sails

- A.12.1 The identification number displayed on sails shall be identical to the Hull No, or a 4 or more digit National IMS number, if such is given by the MNA.
- A.12.2 The same registration/hull production number must never be issued to two **boats** at the same time.

## A.13 Initial Certification

- A.13.1 For a **boat** not previously **certified**, all items required to be measured by the measurement form shall be measured by an **Official Measurer** and the details entered onto the form.
- A.13.2 The measurement form, together with any **certification** fee, shall be sent to the MNA within 4 weeks after completion of measurement and shall include the **boat** owners name and Yacht Club affiliation.
- A.13.3 Upon receipt of a satisfactorily completed measurement form and the fee within the specified time limit the MNA may issue a **certificate**. The MNA shall retain the original measurement form.
- A.13.4 Certificates are issued by the MNA to X79s that comply with the class rules

## A.14 Validity of Certificates

- A.14.1 A **certificate** becomes invalid upon:
- The date of expiration
  - Change of ownership
  - Any alteration or repair to items required to be measured by the class measurement form, other than permitted routine maintenance. Any doubt in this respect shall be settled by the MNA.
  - Any alteration to corrector weights.

## A.15 Re-Certification

- A.15.1 Upon expiration the owner shall apply to the MNA for a new **certificate** together with any re-**certification** fee that may be required. A new **certificate** shall then be issued to the owner.
- A.15.2 Upon change of ownership the new owner shall apply to the MNA for a new **certificate**, returning the old **certificate** together with any re-**certification** fee that may be required as well as his name, address and Yacht Club affiliation. A new **certificate** shall then be issued to the new owner.
- A.15.3 Upon alteration or repair to an item required to be measured by the measurement form the relevant item shall be re-measured by an **Official Measurer** and the details entered onto a new form. The new form together with the old **certificate** and any re**certification** fee that may be required shall be sent to the MNA within 4 weeks after completion. A new **certificate** may then be issued to the owner.
- All **boats** with a certificate are subject to re-measurement in connection with a protest, or following a request from the MNA, the NCA or a *race committee*.
  - If a re-measurement reveals attempts to circumvent the **class rules**, then the Official Measurer shall inform the MNA and the NCA, both organisations, which can deny the **boat** permission to *race* in the Class until any and all doubt has been settled.

A.15.4 Upon alteration to corrector weights the **boat** shall be re-weighed by an **official measurer** and the details entered on the old invalid **certificate**. The old **certificate** and any re-**certification** fee that may be required shall be sent to the MNA within 4 weeks after completion. A new **certificate** may then be issued to the owner.

- a. Any X-79 can by the MNA be required to be weighed as documentation for fulfilling the weight requirements given in Section C.5.

## A.16 Measurer

A.16.1 **Fundamental measurements** can only be executed by an **official measurer** recognised by the MNA.

## SECTION B – Boat Eligibility

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

### B.1 Certificate

- B.1.1 The **hull** shall have a valid **certificate** including corrector weight details. Further:
- a. The certificate for the hull, including necessary corrector weights, shall be issued in the name of the **boat** owner.
  - b. The **boat** owner / skipper shall ensure himself that the One-Design principle is not violated and that no action has been taken during his ownership to violate this principle.
  - c. The **boat** owner shall be an active regular member of a Yacht Club recognised under the MNA.
  - d. The **boat** owner shall have paid his dues as an active regular member of his NCA in order to take part in class *races*.

### B.2 Certification Marks

- B.2.1 Items that require **certification marks** shall be so marked.  
The MNA certificate button / sail button (or for sails, measured before the 1st of January 1990, just an SC stamp) shall be mounted in all sails measured.

### B.3 Class Association Sticker

- B.3.1 A valid class association sticker, if required by the NCA, shall be affixed as prescribed.

## Part II – Requirements and Limitations

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

### SECTION C – Conditions for Racing

#### C.1 Maximum Wind Strength and Use of Sails

##### C.1.1 LIMITATIONS

- a. Except for long distance races, no class race may be started in winds exceeding 13 m/sec.
- b. Except for long distance races, the *race committee* shall in case of winds at 10 m/sec or more fly maritime signal flag J at least 10 minutes before the warning signal. This orders all **boats** to use their jib.
- c. The *race committee* can - in case of dropping wind strength - fly maritime signal flag G at the last upwind mark, from where the use of a genoa is again permitted

#### C.2 Crew

##### C.2.1 LIMITATIONS

- a. At championships and all class races the crew shall consist of 4 or 5 persons. Before the first race, or any other time limit given in the sailing instructions, a complete list of all crewmembers with name and Yacht Club affiliation for each crewmember shall be handed over to the organising Yacht Club. No crew can hereafter be replaced unless a motivated application (with name of crew to be replaced and name and Yacht Club affiliation of the new crew person) has been filed with the *race committee* and a written permission from the *race committee* has been granted. The permission shall be obtained before the first race. Only exception from this rule is documented illness, in which case application and permission shall still be obtained before the replacement can be effectuated. Crew lists for all **boats** shall be available during the entire event.
- b. For long distance races of more than 40 nautical miles according to programme, the crew is free.
- c. When hiking, no part of a crew's body, from his feet to the mid of his thighs, may be outside of the gunwale and rubbing strakes. During racing no part of a crew may touch the **hull** freeboard.
- d. Foot straps are allowed for reasons of safety. Foot straps shall be fastened in the cockpit and no part of the straps may extend above the deck level. No hanging device may hinder the user thereof from immediately freeing himself from the **boat**.
- e. The use of trapezes, handles or the like for balancing of the **boat** is not allowed. If the **boat** is equipped with optional stanchions and lifelines, then RRS applies in this respect.
- f. The crew must be dressed in accordance with RRS during racing.

## C.2.2 MAXIMUM WEIGHT

- a. At championships and all class races the total weight of the crew - wearing at least underwear - shall not exceed a maximum of 352 kg.
- b. For long distance races of more than 40 nautical miles according to programme, the weight of the crew is free.

## C.3 Advertising

### C.3.1 LIMITATIONS

The boat and crew shall display only such advertising as permitted by RRS, Rule 79, Appendix 1, Category C.

## C.4 Portable Equipment

The rules under this section intend to define the equipment, including safety gear, which every boat shall carry as minimum when racing, irrespective of the requirements of the sailing instructions.

### C.4.1 FOR USE

#### a. Mandatory:

- i An anchor with chain or corresponding weights on the anchor line. The total weight of anchor, chain or weights and line shall be not less than a minimum of 15 kg.
- ii The anchor line shall have a minimum diameter of 10 mm and a minimum length in one piece of 30.0 m.
- iii An approved life west or swim west for each crew member on board.
- iv One bilge pump or at least one bucket with a minimum volume of 5 litres.
- v One emergency relief box sufficiently equipped for proper emergency treatment.
- vi At least one magnetic compass.
- vii One acoustic fog horn.
- viii One approved integrated red/green/white lantern mounted on top of the mast. The lantern must have resources for a minimum time of operation according to the sailing instructions and not less than 12 hours.
- ix A battery with a weight of at least 15.0 kg placed and secured in front of the main port bulkhead as shown on Drawing No 2.
- x A throw line of minimum 15.0 m length. The line shall float on water.
- xi Tools to sever the rigging from the boat (either a wire cutter heavy enough to cut a 5 mm wire or a metal saw with high-speed blade or similar)

- b. Optional:
  - i Safety harnesses
  - ii Foot straps
  - iii A round sliced synthetic tube with maximum dimensions according to D.9.2(b) may be used on the rubbing strake.
  - iv A radar reflector, placed at least 1500 mm over the water surface.
  - v A rescue or bathing ladder.
  - vi A floating flashlight.
  - vii Electronic navigation instruments

**C.4.2 Optional, NOT TO BE USED WHILE RACING**

- i Mooring lines
- ii Towing rope
- iii VHF or any other radio or telephone
- iv Outboard engine
- v Paddles / Oars.
- vi One easily accessible fire extinguisher of minimum 2.0 kg
- vii Flutes and emergency flashing lights for each swim-vest.
- viii Approved emergency flares:
  - 2 red parachute flares
  - 4 red handheld flares
  - 4 white handheld flares or signal pen with white miniflares.

**C.4.3 HEAVY EQUIPMENT**

Any heavy equipment (batteries, anchor, outboard engine or the like) shall be securely fastened or tied, in order not to be able to tear loose, irrespective of the boat heeling.

**C.5 Boat**

**C.5.1 DIMENSIONS**

Length overall.....	7,890 mm
Max. width (Bmax) .....	2,870 mm
Draught.....	1,330 mm

Inboard engine installation is not permitted. Outboard engine may be onboard, but compensation will not be given regarding corrector weights or when calculating race results.

**C.5.2 WEIGHT**

The weight of the boat in dry condition shall be minimum 1,552 kg.

Weighing shall be made with the boat empty, i.e. without sails and all portable (mandatory and optional) equipment as described in Section C.4, except for the battery, which shall be securely fastened and shall be left in the boat.

### C.5.3 CORRECTOR WEIGHTS

- a. Corrector weights of lead or steel shall be permanently fastened to the **hull** interior when the **boat** weight is less than the minimum requirement.
- b. The necessary corrector weight is divided in three equal parts and shall be positioned and fastened within the hull as follows:
  - i Two parts shall be fastened to the underside of the deck next to the starboard and port chainplates. Each corrector weight shall have a maximum height of 100 mm measured perpendicularly to the underside of the deck.
  - ii The third part is fastened to the inside bottom of the **boat**, immediately aft of the **mast**. This part shall not be counted as part of the keel weight.
- c. The total corrector weight is free, but shall appear on the certificate of the **boat**.

### C.5.4 FLOTATION CHECK

No flotation checks shall be required for any individual **boat**.

## C.6 Hull

### C.6.1 LIMITATIONS

Only routine maintenance of **hull** and deck is permitted.

## C.7 Hull Appendages

### C.7.1 LIMITATIONS

Only routine maintenance of **keel** and **rudder** is permitted.

## C.8 Rig

### C.8.1 LIMITATIONS

Only one set of **spars** and standing **rigging** shall be used during a championship, except when an item has been lost or damaged beyond repair. Such replacement may be made only with the approval of the *race committee*.

### C.8.2 MAST

#### In use

- a. The **spar** shall be stepped in the **mast** step in such a way that the **heel point** is not capable of moving. The position of the **mast** step in the longitudinal centreline direction is free, but the step shall be securely fastened and may not be trimmed or moved during *racing*.
- b. The **spar** shall be placed in the centreline of the **boat** and can only be fixed against the deck by stationary wooden, rubber or similar blocks, which may not be trimmed or moved during racing.

### C.8.3 BOOM

#### In use

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

#### C.8.4 SPINNAKER POLE

##### In use

- a. Not more than 2 spinnaker poles may be onboard during racing. Only one spinnaker pole may be used at a time, for any headsail or the spinnaker, without limitations.

#### C.8.5 STANDING RIGGING

##### In use

- a. A forestay headfoil or furl is not permitted.
- b. No hydraulics are permitted.
- c. No trimming of forestay or any shrouds are permitted during racing.
- d. Fastening of backstays is free, however backstay chainplates may not be closer to the centreline than 730 mm.
- e. Running checkstays shall be sheeted on the genoa/jib tracks.
- f. The layout of trim lines for the aft stay, the backstays and the running checkstays is free.
- g. No trim arrangement of any kind may exist under deck in the aft storage room, except for the aft stay, which may be taken through the aft storage room.

#### C.8.6 RUNNING RIGGING

The running rigging and sheeting of sails is free within the limitations given in the RRS and the following:

##### In use

- a. All use of **sails** and their trimming shall take place over deck. No trim arrangement shall exist below deck.
- b. All halyards and up-hauls, may have only one trim line, which shall be taken to cleats on the garage in front of the galley entrance.
- c. No halyard or up-haul may be equipped with any gearing, except for the use of a winch.
- d. Positioning of clamps / cleats for hauls and halyards taken to the garage shall be fastened to the garage. A relief cleat for the topping lift may however be fastened to the mast **spar**.
- e. The sheeting of the mainsail shall be to a horse/track and traveller placed in a recess in the cockpit benches.
- f. Reefing lines shall be taken to the garage unless trimmed on the **boom**.
- g. Sheeting of the jib/genoa shall be through a fairlead slider, which can be slid forward and aft on the genoa/jib tracks. The number of fairlead sliders is free. Adjustments of the fairlead slider position shall be between pre-bored holes in the tracks.
- h. **Headsail** sheets may not be equipped or trimmed through gearing of any kind except for a winch. In order to sheet a **headsail** further out, a barber haul is permitted, for which the positioning and layout is free.

## C.9 Sails

### C.9.1 LIMITATIONS

- a. Only **sails** measured by an **official measurer** and which have been equipped with an MNA certificate button / sail button (or an SC stamp for sails measured before 1<sup>st</sup> of January 1990), see Clause B.2.1, can be used for *racing*. From 1<sup>st</sup> of March 2004 all sails onboard shall comply with C.9 and Section G.
- b. Sheeting of sails are limited by RRS and Section C.8.6.
- c. Only 1 mainsail, 1 genoa, 1 jib, 1 storm jib and 1 spinnaker may be onboard during *racing*.
- d. At class championships or events where **sails** are checked only the following sails may be registered for the check: 1 mainsail, 1 genoa, 1 jib, 1 stormjib and 1 spinnaker. No other **sails** may be used in the event, except for **sails** lost or damaged beyond repair. Such replacement can only occur with the approval of the *race committee*.
- e. **Sails** to be used for a class championship shall be stamped, re-measured or registered on a list of **sails** before the first race of the event. Date and time for stamping, re-measuring or handing in of **sails** lists shall be announced in the event invitation and sailing instructions. Only one set of **sails** as mentioned in (a) and (d) may be checked and stamped/listed.
- f. In case of loss or damage beyond repair of any sail during the event, the *jury* or *race committee* may permit the use of substitute **sails** not checked, stamped or listed on the **sails** list before the first race of the event. Such **sails** shall however carry evidence of earlier approval and shall as far as possible be re-measured or stamped and entered onto the **sails** list before use. Otherwise this must be done immediately after the finish of the respective race.

### C.9.2 MAINSAIL

#### a. Identification

- i National identification letters and the sail number shall comply with the RRS, rule 77, except where prescribed otherwise in these **class rules**.
- ii The winner of the national championship and the national ranking list champion may further display a star in the mainsail. The star layout and positioning shall be as shown in Section H.2 and on Drawing 6.2. The national champion star shall be yellow and the ranking list champion shall be green. The national champion star may be displayed by the reigning champion until a new national champion has been found. The ranking list champion is determined at the end of the sailing season and may display the green star for the following sailing season.

#### b. In use

- i The **sail** shall be hoisted using a halyard. The use of the halyard shall be entirely over deck and the arrangement shall permit hoisting and lowering of the **sail** at sea.
- ii The highest visible point of the **sail**, projected at 90° to the mast **spar**, shall not be set above the lower edge of the **upper limit mark**. The intersection of the **leech** and the top of the boom **spar**, each extended as necessary, shall not be behind the fore side of the **outer limit mark**. (iii) **Luff** and **foot** bolt ropes shall be in the **spar** grooves or tracks.
- iii Any method for reducing **sails** area is permitted, however there shall be at least two sets of reefing cringles, both consisting of a luff and a leech cringle.

- iv The use of sail depth indicators (colored lines) to show the sails depth is permitted.
- v The use of ticklers / tell-tales to show the flow of wind over the sails surface is permitted. Type, number and positioning is free.

### C.9.3 HEADSAIL

#### a. Identification

- i No specific identification is required.
- ii National identification letters and sail number are permitted in the genoa, but shall comply with the RRS, rule 77.

#### b. In use

- i The **sail** shall be hoisted using a halyard. The use of the halyard shall be entirely over deck and the arrangement shall permit hoisting and lowering of the **sail** at sea.
- ii **Headsails** shall be mounted onto the forestay using hanks.
- iii Trimming of the tension in the **luff**, **leech** and **foot** of any headsail is free.
- iv The jib may be equipped with a set of reefing cringles allowing reduction of the effective jib area.
- v The use of sail depth indicators (colored lines) to show the sails depth is permitted.
- vi The use of ticklers / tell-tales to show the flow of wind over the sails surface is permitted. Type, number and positioning is free.

### C.9.4 SPINNAKER

#### a. Identification

- i National identification letters and sail number are permitted in the spinnaker, but shall comply with the RRS, rule 77, except if otherwise described in these **class rules**.

#### b. In use

- i The **sail** shall be hoisted using a halyard. The use of the halyard shall be entirely over deck and the arrangement shall permit hoisting and lowering of the **sail** at sea.
- ii The use of sail depth indicators (colored lines) to show the sails depth is permitted.
- iii The use of ticklers / tell-tales to show the flow of wind over the sails surface is permitted. Type, number and positioning is free.

## SECTION D – Hull

### D.1 Component Parts

#### D.1.1 MANDATORY:

- a. Hull shell
- b. Deck
- c. Gunwale rubbing strakes
- d. Bulkheads and accommodation

#### D.1.2 OPTIONAL:

- a. Any extra accommodation

### D.2 General

Hull shell, deck, hatches, sliding hatch and garage to sliding hatch shall be manufactured to comply with official drawings and specifications. Dimensions shall be within given tolerances listed on drawings and in fibre glass laminate specifications.

A hinged hatch may be mounted in the foredeck.

#### D.2.1 MEASUREMENT

Measurement shall be carried out in accordance with the ERS.

#### D.2.2 MAINTENANCE

Routine maintenance such as painting and polishing is permitted, but an altered or repaired **hull** shall be re-measured and re-**certified** with the new **certificate** showing the dates of initial and new **fundamental measurement**.

### D.3 Certification

The **hull** shall comply with the **class rules** in effect at the time of the original **fundamental measurement**.

### D.4 Identification

The **hull** shall carry a stainless metal plaque with **hull** production No as described in Clause A.11.3.

### D.5 Builders

D.5.1 The **hull** shall be built by a builder licensed by the Danish Sailing Association.

D.5.2 All moulds shall be approved by the Danish Sailing Association.

### D.6 Hull Shell

#### D.6.1 MATERIALS

The hull shell shall be made of fibreglass reinforced polyester. Exotic materials with different strength, stiffness or density, e.g. such as carbon fibres or kevlar, are not permitted.

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**D.6.2 CONSTRUCTION**

- a. The hull shell shall be made in accordance with fibreglass laminate specifications, using a monolithic mould manufactured in agreement with linedrawing No 8.1.A.
- b. Fibreglass laminate specification according to Drawing No 7.1:
  - i. 2 layers of gelcoat.
  - ii. 1 layer of 300 g/m<sup>2</sup> powder bound fibreglass mat over the entire section, using a minimum of 10 cm overlap in the centreline.
  - iii. 1 layer of 300 g/m<sup>2</sup> fibreglass mat for the foreship until 1 m behind the keel flange.
  - iv. 1 layer of 450 g/m<sup>2</sup> fibreglass mat over the entire bottom until the waterline, using a minimum of 10 cm overlap in the centreline.
  - v. 2 x 1 layers of 450 g/m<sup>2</sup> fibreglass mat over the keel flange.
  - vi. 2-3 layers of 450 g/m<sup>2</sup> fibreglass mat reinforcement around rudder stock opening and aft stay and backstay chainplates.
  - vii. 1 layer of 450 g/m<sup>2</sup> fibreglass mat over the entire section followed by 10 mm "Divinycell", 10 mm balsa and/or plywood reinforcements.
  - viii. 1 layer of 450 g/m<sup>2</sup> fibreglass mat over the entire bottom until the waterline, using a minimum of 10 cm overlap in the centreline.
  - ix. 1 layer of 450 g/m<sup>2</sup> fibreglass mat for the entire foreship until 15 cm in over the keel flange.
  - x. 2 layers of 450 g/m<sup>2</sup> fibreglass mat reinforcement around rudder stock opening and aft stay and backstay chainplates.
  - xi. 2 x 2 layers of 450 g/m<sup>2</sup> fibreglass mat as reinforcement over the keel flange.
  - xii. 2 layers of 10 cm wide 450 g/m<sup>2</sup> fibreglass reinforcement bands along the sheerline.
  - xiii. 1 layer of 300 g/m<sup>2</sup> fibreglass mat over the entire section, using a minimum of 10 cm overlap in the centreline.
  - xiv. 1 layer of 300 g/m<sup>2</sup> "Roving" over the entire section, laid parallel to the sheerline and with 10 cm bands of 300 g/m<sup>2</sup> fibreglass mat over the "Roving" edges.
  - xv. 5 floor timber over the keel flange, covered by 6 layers of 450 g/m<sup>2</sup> fibreglass mat, followed by 4 layers of 450 g/m<sup>2</sup> fibreglass mat between each floor timber.
  - xvi. 2 floor timber at rudder stock opening, covered by 8 layers of 450 g/m<sup>2</sup> fibreglass mat.
  - xvii. Fastening of accommodation parts using respectively 2 and 3 layers of fibreglass mat of 450 g/m<sup>2</sup>.
  - xviii. Surface treatment of the entire section with Topcoat.

## D.7 Deck

### D.7.1 MATERIALS

The deck shall be made of fibreglass reinforced polyester. Exotic materials with different strength, stiffness or density, e.g. such as carbon fibres or kevlar, are not permitted.

### D.7.2 CONSTRUCTION

- a. The deck shall be made in accordance with fibreglass laminate specifications, using a monolithic mould manufactured in agreement with linedrawing No 8.1.B.
- b. Fibreglass laminate specification according to Drawing No 7.2:
  - i. 2 layers of gelcoat.
  - ii. 1 layer of 300 g/m<sup>2</sup> powder bound fibreglass mat over the entire section.
  - iii. 1 layer of 300 g/m<sup>2</sup> fibreglass mat for the foreship until the cockpit.
  - iv. 1 layer of 10 cm wide bands of 450 g/m<sup>2</sup> fibreglass mat over all edges of the cockpit.
  - v. 2 layers of 450 g/m<sup>2</sup> fibreglass mat reinforcement at rudder stock opening, sliding hatch edges and cleat fastenings.
  - vi. 1 layer of 450 g/m<sup>2</sup> fibreglass mat over the entire section followed by 10 mm "Divinycell", reinforcement pieces of 10 mm balsa and/or plywood.
  - vii. 1 layer of 450 g/m<sup>2</sup> fibreglass mat over the entire section.
  - viii. 1 layer of 10 cm wide bands of 450 g/m<sup>2</sup> fibreglass mat over all edges of cockpit, at winch fastenings, chainplate openings and cleat fastenings.
  - ix. 1 layer of 300 g/m<sup>2</sup> fibreglass mat with colour paste all over the cockpit.
  - x. 4 mm of plywood reinforcement around foredeck hatch and sliding hatch laid in the last fibreglass mat.
  - xi. Surface treatment of the entire section using structural Topcoat, except at the fastening points for the main bulkheads and the aft bulkhead.
  - xii. Garage:
    - 2 layers of gelcoat.
    - 3 layers of 450 g/m<sup>2</sup> fibreglass mat.
    - 1 plate of 6 mm plywood.
    - 3 layers of 450 g/m<sup>2</sup> fibreglass mat.
    - Surface treatment with Topcoat
  - xiii. Sliding hatch:
    - 2 layers of gelcoat.
    - 2 layers of 450 g/m<sup>2</sup> fibreglass mat.
    - 1 layer of "Firret".
    - 1 layer of 450 g/m<sup>2</sup> fibreglass mat.
    - 3 layers of 5 cm wide bands of 450 g/m<sup>2</sup> fibreglass mat over the edges.
    - Surface treatment with Topcoat.
  - xiv. Aft storage room hatches, 2 Nos:
    - 2 layers of gelcoat.
    - 2 layers of 450 g/m<sup>2</sup> fibreglass mat.
    - 1 layer of 10 mm Divinycell, with plywood and aluminium reinforcement.
    - 1 layer of 450 g/m<sup>2</sup> fibreglass mat.
    - Surface treatment with Topcoat.
  - xv. A pre-fabricated foredeck hinged hatch is permitted.

## D.8 Joining of Hull Shell and Deck

### D.8.1 CONSTRUCTION

- a. Joining of hull shell and deck section to be carried out while in moulds.
- b. Fibreglass laminate specification:
  - i. Hull shell and deck section to be glued together and held together by bolted rubbing strake.
  - ii. Transom and deck to be joined by an adhesive sealant and 6 mm board bolts.

## D.9 Gunwale and Rubbing Strakes

### D.9.1 MATERIALS

The rubbing strakes shall be made of aluminium alloy. They may be equipped with a round sliced tube of synthetic material.

### D.9.2 CONSTRUCTION

- a. The rubbing strakes shall be of a standard profile and run unbroken along the entire length of each gunwale. The rubbing strakes shall be mounted using through-going  $\varnothing$  6 mm stainless steel board bolts every  $100 \pm 20$  mm.
- b. A round sliced tube of synthetic material with a maximum diameter of 75 mm may be mounted on the rubbing strake along the cockpit. The maximum permissible distance from the rubbing strake to the outside of the tube is 50 mm. The length of the tube is free, however the maximum width of the **boat** must not be exceeded anywhere.

## D.10 Bulkheads and Accommodation

- a. The **hull** shall be equipped with standard accommodation in accordance with drawing No 8.2. All accommodation parts shall have dimensions and density same as the standard accommodation. For all of the accommodation, end pieces and edges shall be finished off with wooden garnish moulding.
- b. The accommodation shall at least comprise:
  - i. Foreship: 2 longitudinal bulkheads, extending from main bulkheads in either side to the fore bulkhead. A shelf shall be made to a battery, just in front of the port main bulkhead.
  - ii. Galley: The galley shall hold the main bulkheads and from there aft two longitudinal "bunk front plates", extending under the cockpit to the aft bulkhead and supporting the cockpit. The bunk front plates are supported by two knees. The starboard pantry section shall include fresh water pump connected to a fresh water reservoir and tap, sink, sewer with valve and a main electricity switchboard. The port pantry section shall include room for a cooking device. Over each pantry (under deck) shelves are mounted. Further, 2 longitudinal bulkheads behind the bunks, equipped with upholstered bolsters, and each bulkhead with a shelf between the bulkhead and the **hull** interior. 4 tubular metal bunk frames with canvas base. Floor. 2 thwarts as entrance steps. Shutters for closing of galley entrance. Electricity installation for 5 lamps.
  - iii. Stern: Aft bulkhead separating cockpit and aft storage room.
- c. Any further accommodation details such as fore bunk, galley table etc. is free.

## D.10.1 MATERIALS

Material for bulkheads and accommodation parts shall be marine plywood or other material with similar strength and weight. The minimum density shall be 650 kg/m<sup>3</sup>.

- a. All transversal bulkheads, minimum 12 mm.
- b. All longitudinal bulkheads and bunk front plates, minimum 9 mm.

## D.10.2 CONSTRUCTION

- a. The entire accommodation is mounted and fastened to the **hull** shell with 2 and 3 layers, respectively, of 450 g/m<sup>2</sup> fibreglass mat before the deck section is joined.
- b. Following the joining of the **hull** shell and deck section, the transversal bulkheads are fastened to the deck using 3 layers of 450 g/m<sup>2</sup> fibreglass mat.
- c. All surfaces of fastening are surface treated with Topcoat.

## D.11 Hull

### D.11.1 FITTINGS

#### a. Mandatory

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

- i. Integrated stemhead fitting and forestay chainplate
- ii. Chainplates for main and lower shrouds.
- iii. Mast step.
- iv. Mast collar (around mast hole in deck).
- v. Main sail horse / track with traveller.
- vi. Foresail tracks and fairleads.
- vii. 2 winches on cockpit coaming.
- viii. 1 halyard winch on garage.
- ix. Fore pulpit with life line.
- x. 3 mooring cleats.

#### b. Optional:

- i. Footstraps according to RRS and C.2.1.d).
- ii. Barberhaul.
- iii. Blocks.
- iv. Cleats.
- v. Storage fittings.
- vi. Aft pulpits, stanchions and life lines.

D.11.2 DIMENSIONS

	minimum	maximum
<b>Hull</b> overall length.....	7,870 mm	7,890 mm
Beam of <b>hull</b> , excluding rubbing strakes, at sheerline; at Station (SBmax) 4,720 mm from bow front .....	2,840 mm	2,870 mm
<b>Fore triangle basis</b> (J) .....		2,780 mm
Shrouds chainplates fastened to the main bulkheads using 8 mm board bolts.....		10 Nos
Distance from forestay fastening hole to center of holes in shrouds chainplates over deck .....	2,880 mm	2,920 mm
Transversal distance between center of holes in shrouds chainplates over deck .....	1,330 mm	1,390 mm
Headsails tracks to be placed in the deck thread pattern recess with centreline distance to edge of thread pattern.....	15 mm	35 mm
Length of headsail tracks in deck thread pattern recess .....	Free	Recess
Mainsail horse/track height above benches .....		150 mm
Backstay chainplates, distance from transom centre .....	730 mm	
Fore pulpit height.....	430 mm	
Wire in tension from fore pulpit to fastening point in rubbing strake, length .....	2,000 mm	

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**SECTION E – Hull Appendages****E.1 Component Parts****E.1.1 MANDATORY:**

- a. Keel
- b. Rudder

**E.2 General****E.2.1 MEASUREMENT**

Measurement shall be carried out in accordance with the ERS.

**E.2.2 MAINTENANCE**

Routine maintenance such as painting and polishing is permitted.

- a. An altered or repaired **keel** shall be re-measured and a new **certificate** shall show the original date of **fundamental measurement** and the date of new **fundamental measurement**.
- b. An altered or repaired **rudder** shall be re-measured and re-**certified** showing the new date of **fundamental measurement**.

**E.3 Keel****E.3.1 CERTIFICATION**

The **keel** shall comply with the **class rules** in effect at the time of the original **fundamental measurement** of the **hull**.

**E.3.2 IDENTIFICATION**

The **keel** need not be identified by a number.

**E.3.3 Manufacturers**

Manufacturers shall be licensed by the Danish Sailing Association.

**E.3.4 MATERIALS**

- a. The **keel** shall be cast iron
- b. The **keel** may be galvanised or covered with synthetic material such as fibreglass reinforced polyester or topcoat/gelcoat.

**E.3.5 CONSTRUCTION**

- a. The **keel** shall be manufactured in accordance with drawing No 3 and dimensions given.

**E.3.6 FITTINGS Mandatory:**

The **keel** shall be placed in the **hull** shell opening and shall be fastened to the **hull** shell by 6 Nos Ø16 mm stainless steel bolts as shown on Drawing No 3.

E.3.7 DIMENSIONS

- a. The finished surface treated **keel** shall be measured using templates manufactured in accordance with the measurement diagram on drawing No 3 for profile A and B. The tolerances from the given profiles A and B are -0 / +15 mm. Profile C and D define the radius to the underside of the **keel**.
- b. The vertical height of the aft edge of the **keel** shall be 1,030 ± 15 mm.
- c. The distance from the transom **HDP** referencepoint in the centreplane to the lowest aft edge of the **keel** shall be 3.910 ± 20 mm.
- d. The distance from the transom **HDP** referencepoint in the centreplane to the highest aft edge of the **keel**, excluding rounding, and measured along the bottom and in the centreplane, shall be 3.790 ± 20 mm.

E.3.8 WEIGHTS

The manufacturer shall issue a **keel weight certificate**, to be forwarded to the MNA together with the completed measurement form.

	minimum	maximum
<b>Keel</b> weight including <b>keel</b> bolts and possible exterior coating shall be .....	650 kg	680 kg

**E.4 Rudder Blade, Rudder Stock and Tiller**

E.4.1 CERTIFICATION

- a. The **rudder** blade and **rudder** stock shall comply with the **class rules** in effect at the time of the **fundamental measurement**.
- b. An MNA may appoint one or more persons with a manufacturer to measure and **certify rudder** blades produced by that manufacturer. A special license shall be awarded for that purpose.
- c. The **official measurer** shall **certify rudder** blades and shall sign the **measurement form** and date it with the date of the **fundamental measurement**.

E.4.2 IDENTIFICATION

The **rudder** need not be identified by a number.

E.4.3 MANUFACTURERS

Manufacturers shall be licensed by the Danish Sailing Association.

E.4.4 MATERIALS

- a. **The rudder** blade shall be made of fibreglass reinforced polyester. Exotic materials with different strength, stiffness or density, e.g. such as carbon fibres or kevlar, are not permitted.
- b. The **rudder** stock shall be massive stainless steel of diameter Ø25 mm.
- c. The tiller and tiller extension is free.

E.4.5 CONSTRUCTION

- a. The **rudder** stock shall be formed and placed in the rudder blade as shown on drawing Nos 4.1 and 4.2.
- b. The **rudder** blade shall be manufactured in accordance with drawing No 4.2 and dimensions given.

E.4.6 FITTINGS **Mandatory:**

- a. The rudder stock shall be fastened to the skeg of the **hull shell** by 3 Nos stainless steel bolts and a U shaped stainless steel fitting in accordance with drawing Nos 4.1 and 4.2.
- b. Tiller and tiller extension fittings are free.

E.4.7 DIMENSIONS

- a. The finished **rudder** blade shall be measured using templates manufactured in accordance with the measurement diagram on drawing No 4.2 for profile A, B, C and D. The tolerances from the given profiles A and B are -0 / +10 mm.
- b. The vertical height of the **rudder** blade aft edge shall be 1,030 ± 10 mm.
- c. The distance from the transom **HDP** referencepoint in the centreplane to the lowest aft edge of the **rudder** blade shall be 1.200 ± 10 mm.

E.4.8 WEIGHTS

minimum      maximum

The **rudder** blade and stock combined weight shall be..... 16 kg .....20 kg

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**SECTION F – Rig****F.1 Component Parts****F.1.1 MANDATORY:**

- a. Mast
- b. Boom
- c. Spinnaker pole
- d. Standing rigging
- e. Running rigging

**F.1.2 OPTIONAL:**

- a. One extra spinnaker pole

**F.2 General****F.2.1 MEASUREMENT**

Measurement shall be carried out in accordance with the ERS.

**F.2.2 MAINTENANCE**

Routine maintenance such as painting, polishing and lubrication is permitted, but an altered or repaired **spar** shall be re-measured and re-**certified** showing the new date of **fundamental measurement**.

**F.3 Mast****F.3.1 CERTIFICATION**

- a. The **spar** and its fittings shall comply with the **class rules** in effect and drawing No. 5 and dimensions given, at the time of **fundamental measurement** of the **spar**.
- b. An MNA may appoint one or more persons at a manufacturer to **certify spars** produced by that manufacturer. A special license shall be awarded for that purpose.
- c. The official measurer shall certify the spar and shall sign the measurement form and date it with the date of fundamental measurement.

**F.3.2 IDENTIFICATION**

The **spar** need not be numbered.

**F.3.3 MANUFACTURER**

Choice of manufacturer is free.

**F.3.4 MATERIALS**

- a. The **spar** and **spreaders** shall be of aluminium alloy with an aluminium content of at least 90%. They may be anodised.
- b. Bolts, sheaves and hook terminals are free.
- c. Mast spreader fittings shall be stainless steel and may include a through-going guide.

### F.3.5 CONSTRUCTION

- a. The **spar** extrusion shall include a fixed sail groove which shall be integral with the **spar**. The spar may only be cut for the mounting of fittings and tracking of the mainsail luff plastic sliders into the groove.
- b. The spar shall have conical shape in the top. The cone shall reach down to the spinnaker halyard level, see drawing No 5 and dimensions given.
- c. **Limit Marks** shall be painted in a contrast colour. Alternatively, tape can be used, in which case engraved / scratched clear marks shall be found in the **spar** on the measurement side of the tape.

### F.3.6 FITTINGS

- a. Mandatory:
  - i. Mast head fitting with beak for the aft stay.
  - ii. Hook terminals for shrouds
  - iii. Hook terminal for forestay
  - iv. Hook terminals for backstays.
  - v. A set of fixed spreaders and fitting/guide.
  - vi. Mainsail halyard sheave box
  - vii. Headsail halyard sheave box
  - viii. Spinnaker halyard sheave box and possible crane
  - ix. Spinnaker pole fitting, maximum two eyes.
  - x. Spinnaker pole lift block with attachment or similar sheave box
  - xi. Gooseneck
  - xii. Kicking strap attachment
  - xiii. Mast step
  - xiv. Integrated red/green/white lantern on mast top
- b. Optional:
  - i. Spinnaker pole downhaul block with attachment or similar sheave box
  - ii. Topping lift
  - iii. A mechanical wind direction indicator
  - iv. Compass bracket
  - v. Spinnaker pole storage fittings

F.3.7 DIMENSIONS

	minimum	maximum
<b>Mast length</b> .....		Free
<b>Mast spar</b> cross section		
From <b>mast heel point</b> and 8,200 mm over MI		
Longitudinally .....	120 mm	
longitudinal moment of inertia .....	130 cm <sup>4</sup>	
transversally .....	80 mm	
transversal moment of inertia .....	75 cm <sup>4</sup>	
At the upper point		
longitudinally .....	65 mm	
transversally .....	52 mm	
<b>Mast top cone, height above MI</b> .....	8,200 mm	
<b>Limit mark width</b> .....	15 mm	
Mast datum point = lower point, MI		
Above <b>heel point</b> .....	2,125 mm	2,165 mm
Above <b>sheerline</b> .....	1,130 mm	1,190 mm
<b>Upper point, MII (P)</b> .....		10,000 mm
<b>Mast spar deflection, unloaded</b> .....		50 mm
<b>Forestay height above MI</b> .....	7,980 mm	8,020 mm
<b>Main Shroud height above MI</b> .....	8,180 mm	8,220 mm
<b>Intermediate shroud height above MI</b> .....	5,840 mm	5,880 mm
<b>Spinnaker pole fitting (eyes):</b>		
height .....		950 mm
max. protruding .....		55 mm
Spinnaker halyard height above MI .....		8,260 mm
Spinnaker halyard crane protruding .....		110 mm
<b>Spreaders;</b>		
<b>length</b> between inside of main shrouds .....	1,400 mm	1,430 mm
<b>height</b> above MI .....	3,480 mm	3,520 mm
Lower shrouds height .....	Not above spreaders	
<b>Backstays height</b> .....	Not above forestay	
<b>Running checkstays height</b> .....	Not above intermediate shrouds	

F.3.8 WEIGHTS

	minimum	maximum
<b>Spar weight</b> .....	2.3 kg/m	
<b>Tip weight (*)</b> .....	14.5 kg	
<b>Spreader, including shroud fitting</b> .....	0.6 kg	

(\*) Weighing to be carried out with **mast** completely rigged and standing **rigging** being off the ground, tied up to the bottom of the **spar**. The running **rigging** is hauled to the top and is also tied up to the bottom of the **spar** to be off the ground.

**F.4 Boom**

**F.4.1 CERTIFICATION**

- a. The **spar** and its fittings shall comply with the **class rules** in effect and drawing No 5 at the time of **fundamental measurement** of the **spar**.
- b. An MNA may appoint one or more persons at a manufacturer to **certify spars** produced by that manufacturer. A special license shall be awarded for that purpose.
- c. The official measurer shall certify the spar and shall sign the measurement form and date it with the date of fundamental measurement.

**F.4.2 IDENTIFICATION**

The **spar** need not be numbered.

**F.4.3 MANUFACTURER**

Choice of manufacturer is free.

**F.4.4 MATERIALS**

The **spar** shall be of aluminium alloy with an aluminium content of at least 90%. It may be anodised.

**F.4.5 CONSTRUCTION**

The **spar** extrusion shall include a fixed sail groove, which shall be integral with the **spar** and in accordance with drawing No 5 and dimensions given.

**Limit Marks** shall be painted in a contrast colour. Alternatively, tape can be used, in which case engraved / scratched clear marks shall be found in the **spar** on the measurement side of the tape.

**F.4.6 FITTINGS**

**a. Mandatory:**

- i. Two mainsheet block attachments
- ii. Clew outhaul and sheaves
- iii. Minimum 2 reefing lines, sheaves and attachments
- iv. Kicking strap fitting
- v. Gooseneck attachment

**a. Optional:**

- i. All other **spar** equipment/fittings are free (e.g. spinnaker pole stowage fittings)

**F.4.7 DIMENSIONS**

	minimum	maximum
<b>Boom spar length</b> .....		Free
Boom spar cross section between gooseneck and outer point:		
<b>vertical</b> .....	75 mm	115 mm
<b>transverse</b> .....	45 mm	85 mm
Boom spar deflection, without load.....		20 mm
<b>Limit mark width</b> .....		15 mm
<b>Outer point distance</b> distance, MIII (E) .....		3,500 mm

F.4.8 WEIGHTS

minimum      maximum

Boom weight..... 1.9 kg/m

**F.5 Spinnaker Pole**

F.5.1 CERTIFICATION

- a. The **spar** and the fittings shall comply with the **class rules** in effect and drawing No 5 and dimensions given at the time of **fundamental measurement** of the **spar**.
- b. An MNA may appoint one or more persons at a manufacturer to **certify spars** produced by that manufacturer. A special license shall be awarded for that purpose.
- c. The official measurer shall certify the spar and shall sign the measurement form and date it with the date of fundamental measurement.

F.5.2 IDENTIFICATION

The **spar** need not be numbered.

F.5.3 MANUFACTURER

Choice of manufacturer is free.

F.5.4 MATERIALS

The **spar** shall be of aluminium alloy with an aluminium content of at least 90%. It may be anodised.

F.5.5 CONSTRUCTION

Spar profile and layout is free.

F.5.6 FITTINGS

- a. Fittings are free
- b. The fastening of the spinnaker pole **spar** to the mast **spar** can be at maximum two stainless steel eyes, which shall both be permanently fixed to the mast **spar** front in the centreline of the mast **spar**.

F.5.7 DIMENSIONS

minimum      maximum

Spinnaker pole spar cross section is free

Spinnaker pole length (SPL) ..... 2,750 mm

F.5.8 WEIGHTS

minimum      maximum

**Spinnaker pole weight**, including all fittings ..... 2.3 kg

F.5.9 STOWAGE

Choice of the spinnaker pole stowage is free when it is not in use.

**F.6 Standing Rigging**

F.6.1 CERTIFICATION

- a. The standing **rigging** shall comply with the current **class rules** as well as drawing No 5 and dimensions given.
- b. **Certification** is not required.

F.6.2 MANUFACTURER

Choice of manufacturer is free.

### F.6.3 MATERIALS

The standing rigging shall be of stainless steel. “Dyform” or similar wire is not permitted.

### F.6.4 CONSTRUCTION

- a. Mandatory:
  - i. 1 forestay of Ø 5 mm “non faired” wire
  - ii. 2 main shrouds of Ø 5 mm “non faired” wire
  - iii. 2 intermediate shrouds of Ø 4 mm “non faired” wire
  - iv. 2 lower shrouds of Ø 5 mm “non faired” wire
  - v. 2 running checkstays of Ø 4 mm “non faired” wire or Ultra-High-Molecular-Weight- Polyethylene (like Dyneema)
  - vi. 1 aft stay of Ø 3 mm “non faired” wire or Ultra-High-Molecular-Weight- Polyethylene (like Dyneema)
  - vii. 2 running backstays of Ø 4 mm “non faired” wire or Ultra-High-Molecular-Weight- Polyethylene (like Dyneema)

### F.6.5 FITTINGS

- a. Mandatory:
  - i. Forestay rigging link and terminals
  - ii. Rigging screws and terminals
  - iii. Aft stay, fastened to top point.
  - iv. Forestay, main, intermediate and lower shrouds fastened to the mast spar.
- b. Optional:
  - i. Type of rigging screws and terminals
  - ii. Arrangement to trim the tension in the aft stay and running backstays, however see C.8.5.

### F.6.6 DIMENSIONS

All standing rigging shall be 1×19 stainless steel wire of the diameter specified ± 0.5 mm.

### F.6.7 WEIGHTS

The weight of the standing rigging is free.

## **F.7 Running Rigging**

### F.7.1 CERTIFICATION

- a. The running rigging shall comply with the current class rules.
- b. Certification is not required.

### F.7.2 MANUFACTURER

Choice of manufacturer is free.

### F.7.3 MATERIALS

Choice of material is free.

### F.7.4 CONSTRUCTION

The **running rigging** is free within the limitations defined by the RRS. All use of **sails** / trimming of **sails** shall be above deck. Usually the halyards and sheets mentioned as “mandatory” must be considered a minimum.

#### a. Mandatory:

- i. Mainsail halyard
- ii. Mainsail sheet
- iii. Kicking strap
- iv. Headsail halyard
- v. Headsail sheets
- vi. Spinnaker halyard
- vii. Spinnaker sheet and guy
- viii. Spinnaker pole lift and downhaul

#### b. Optional:

- i. Mainsail Cunningham line
- ii. Mainsail outhaul
- iii. Headsail Cunningham line
- iv. Single line headsail Barber haulers capable of modifying the sheeting angle in outward direction only
- v. Single line spinnaker Barber haulers capable of modifying the sheeting angle in one direction only
- vi. Topping lift

### F.7.5 FITTINGS

#### a. Mandatory:

- i. 3 winches (1 on garage and 1 on each of 2 cockpit coamings). Size and gearing is free. Self-tailing winches are permitted.
- ii. The genoa halyard shall run under the **forestay**.
- iii. The number of blocks / fairlead sliders on the headsail tracks is free. Adjusting of the fairlead sliders shall be to pre-bored holes in the tracks.
- iv. The height of the spinnaker halyard above the **sheerline** shall maximum be 9,450 mm (ISP-dimension), which converted to height from **mast spar band** MI is maximum 8,260 mm.
- v. Spinnaker halyard crane is permitted, however the halyard block shall not be fastened more than 110 mm in front of the **spar** front face.

#### b. Optional:

- i. Cleats to secure halyards and sheets
- ii. One block or eye in each headsail Barber hauler to run on headsail sheet
- iii. One block or eye in each spinnaker Barber hauler to run on spinnaker sheet or guy

## F.7.6 DIMENSIONS

Dimension of halyards and sheets is free.

## F.7.7 WEIGHTS

Weight of halyards and sheets is free.

# SECTION G – Sails

## G.1 Component Parts

G.1.1 Sails, which may be used are:

- a. Mainsail
- b. Headsail (genoa, jib or storm jib)
- c. Spinnaker

## G.2 General

### G.2.1 MEASUREMENT

Measurement shall be carried out in accordance with the ERS and the RRS, unless otherwise appears from the sailing instructions.

### G.2.2 MAINTENANCE

Routine maintenance is permitted, but an altered or repaired **sail** shall be re-measured and re-**certified** showing the new date of **fundamental measurement**.

## G.3 Certification

G.3.1 **Sails** shall comply with the **class rules** in effect at the time of **fundamental measurement**. From 1<sup>st</sup> of March 2004, all **sails** shall comply with the current **class rules**.

G.3.2 An MNA may appoint one or more persons at a sailmaker to measure and **certify sails** produced by that manufacturer. A special license shall be awarded for that purpose.

G.3.3 The **official measurer** shall **certify** mainsails and headsails in the **tack** and spinnakers in the **head** with date and his signature of the **fundamental measurement**. Certified **sails** shall at certification further be equipped with a certificate mark / sail button in the same position. For old sails already measured before 1<sup>st</sup> of January 1990, the former SC stamp shall suffice. Only measured **sails** may be used for *racing*.

## G.4 Sailmakers

G.4.1 Choice of sailmaker is free.

## G.5 Mainsail

### G.5.1 IDENTIFICATION

- a. The class insignia shall be red and shall comply with the design and dimensions given on drawing No 6.2. and dimensions given. The insignia, one on either side of the **sail**, shall be positioned above the national identification letters.
- b. The national identification letters and the sail number shall comply with RRS, rule 77, and these **class rules**, Clause C.9.2(a).

### G.5.2 CONSTRUCTION

- a. The construction shall be: **Soft sail, single ply sail**. No limitations are given regarding the width, direction and weight of sail parts, however the minimum weight shall be fulfilled.
- b. The body of the sail shall consist of (1) a woven ply and/or (2) laminated ply fibre threads and polyester film (e.g. Mylar). Ply fibres shall be polyester, Pentex, Aramid (e.g. Kevlar), Ultra-high-molecular-weight Polyethylen (e.g. Spectra), Vectran or Carbon based materials.
- c. The **sail** shall have: At least 1 plastic slider for each 1,000 mm of **luff**, the entire foot rope threaded in the **boom** groove, 4 batten pockets in the leech (of which only the uppermost may extend to the **luff**), the insignia, minimum 2 sets of reefing reinforcements and cringles and a certificate mark / sail button.
- d. The leech shall not extend beyond a straight line from the aft head point to the intersection of the leech and the upper edge of the upper batten pocket and a straight line from the clew point to the intersection of the leech and the lower edge of the lower batten pocket.
- e. The following are permitted: Stitching, glues, tapes, bolt ropes, corner eyes, headboard with fixings, mini-reef, Cunningham eye or pulley, **batten pocket patches**, batten pocket elastic, batten pocket end caps, mast and boom slides, leech line with cleat, **windows**, supporting bands from luff to leech, tell tales, sail shape indicator stripes, sail identification, sailmaker labels, sail button, **certification mark**.

**G.5.3 DIMENSIONS**

	minimum	maximum
Luff length (P=10,000 mm) see F.3.7 .....		Free
Foot length (E=3,500 mm) see f.4.7 .....		Free
Leech length .....	10,750 mm	
Half width (MGM) .....	2,240 mm	
Three-quarter width (MGU) .....	1,300 mm	
Upper width 500 mm from the head point .....	330 mm	
Top width (HB) .....	140 mm	
Weight of the ply of the body of the sail .....	250 g/m <sup>2</sup>	
Ply, thickness by folding of body of the sail (guiding value only) .....	0,470 mm	
Primary reinforcement .....	450 mm	
Secondary reinforcement:		
from sail corner measurement points .....	1,350 mm	
for flutter patches .....		Free
for chafing patches .....		Free
for batten pocket patches .....	Ø 400 mm	
Tabling Seam .....		Free
Seam width .....		Free
Supporting bands from luff to leech:		
Number .....	4	
Width .....	25 mm	
Weight .....	250 g/m	
Windows total combined area .....	1.0 m <sup>2</sup>	
Window material weight .....	300 g/m <sup>2</sup>	
Window distance to sail edge .....	150 mm	
Batten pocket length		
Uppermost pocket, interior .....		Free
Lower 3 pockets, interior .....	930 mm	
Batten pockets width, interior .....	70 mm	
Head point to intersection of leech and centreline of uppermost batten pocket .....	2,100 mm	
Clew point to intersection of leech and centreline of lowermost batten pocket .....	2,100 mm	
Distance to 2. reef cringles, measured perpendicular to boom .....	2,200 mm	

**G.6 Headsails****G.6.1 GENOA****G.6.1.1 CONSTRUCTION**

- a. The construction shall be: Soft sail, single ply sail. No limitations are given regarding the width, direction and weight of sail parts, however the minimum weight shall be fulfilled. Leech shall be straight or concave.
- b. The body of the sail shall consist of (1) a woven ply and/or (2) laminated ply fibre threads and polyester film (e.g. Mylar). Ply fibres shall be polyester, Pentex, Aramid (e.g. Kevlar), Ultra-high-molecular-weight Polyethylene (e.g. Spectra), Vectran or Carbon based materials.
- c. The sail may be construed to maximum luff, foot and leech lengths and in accordance with the RRS 50.4.

- d. The **sail** shall have: At least 1 hank for each 1,000 mm of **luff** and a certificate mark / sail button.
- e. The following are permitted: Bolt rope of wire, Spectra, Kevlar or similar rope, one reef, Cunningham eye or pulley, stitching, glues, tapes, corner eyes, leech line with cleat, leech and foot lines with cleat, **windows**, tell tales, sail shape indicator stripes, sailmaker labels.

G.6.1.2 DIMENSIONS, GENOA

	minimum	maximum
<b>Luff length</b> (Tmax) .....		9,000 mm
<b>Luff perpendicular</b> (LP) .....		4,140 mm
<b>Leech length</b> .....		8,350 mm
<b>Foot length</b> .....		4,500 mm
<b>Foot median</b> .....		8,710 mm
<b>Top width</b> .....		45 mm
<b>Foot irregularity</b> .....		40 mm
<b>Ply</b> , woven, weight of the <b>body of the sail</b> .....	210 g/m <sup>2</sup>	
<b>Ply</b> , thickness by folding of <b>body of the sail</b> (guiding value only).....		0,390 mm
<b>Ply</b> , laminated, weight (Mylar) of the <b>body of the sail</b> .....	110 g/m <sup>2</sup>	
<b>Primary reinforcement</b> .....		420 mm
<b>Secondary reinforcement:</b>		
from sail corner measurement points.....		1,260 mm
for <b>flutter patches</b> .....		Free
for <b>chafing patches</b> .....		Free
<b>Tabling width</b> .....		Free
<b>Seam width</b> .....		Free
Windows total combined area .....		1.0 m <sup>2</sup>
<b>Window material weight</b> .....	300 g/m <sup>2</sup>	
<b>Window distance to sail edge</b> .....		150 mm

G.6.2 JIB AND STORMJIB

G.6.2.1 CONSTRUCTION

- a. The construction shall be: **Soft sail, single ply sail**. No limitations are given regarding the width, direction and weight of sail parts, however the minimum weight shall be fulfilled. Leech shall be straight or concave in the stormjib.
- b. The body of the sail shall consist of (1) a woven ply and/or (2) laminated ply fibre threads and polyester film (e.g. Mylar). Ply fibres shall be polyester, Pentex, Aramid (e.g. Kevlar), Ultra-high-molecular-weight Polyethylen (e.g. Spectra), Vectran or Carbon based materials.
- c. The sail may be construed to maximum luff, foot and leech lengths, however jib foot shall not exceed 2,900 mm and stormjib area shall not exceed 7.0 m<sup>2</sup> (calculated as ½ times the actual luff perpendicular times the actual luff length).
- d. shall have: At least 1 hank for each 1,000 mm of **luff** and a certificate mark / sail button.
- e. The following are permitted: Bolt rope of wire, Spectra, Kevlar or similar rope, stitching, glues, tapes, corner eyes, leech and foot line with cleat, tell tales, sail shape indicator stripes, sailmaker labels.
- f. The following is only permitted in the **jib**: One reef, windows, a maximum of 3 batten pockets in the leech, batten pocket patches, batten pocket elastic and batten pocket end caps.

## G.6.2.2 DIMENSIONS, jib

	minimum	maximum
<b>Luff length</b> (Tmax) .....		9,000 mm
<b>Luff perpendicular</b> (LP) .....		2,700 mm
<b>Leech length</b> .....		8,400 mm
<b>Foot length</b> .....		2,900 mm
<b>Top width</b> .....		45 mm
<b>Quarter width</b> .....		2,040 mm
<b>Half width</b> .....		1,380 mm
<b>Three quarter width</b> .....		720 mm
<b>Foot irregularity</b> .....		40 mm
<b>Ply</b> , woven, weight of the <b>body of the sail</b> .....	250 g/m <sup>2</sup>	
<b>Ply</b> , thickness by folding of <b>body of the sail</b> (guiding value only) .....	0,470 mm	
<b>Primary reinforcement</b> .....		420 mm
<b>Secondary reinforcement</b> from sail corner measurement points .....		1,260 mm
for <b>flutter patches</b> .....		Free
for <b>chafing patches</b> .....		Free
for <b>batten pocket patches</b> .....		Ø 400 mm
<b>Tabling width</b> .....		Free
<b>Seam width</b> .....		Free
Windows total combined area .....		1.0 m <sup>2</sup>
<b>Window material weight</b> .....	300 g/m <sup>2</sup>	
<b>Window distance to sail edge</b> .....	150 mm	
<b>Batten pocket length</b>		
Uppermost pocket, interior .....		Free
Lower max. 2 pockets, interior .....		550 mm
<b>Batten pockets width</b> , interior .....		70 mm
<b>Head point</b> to intersection of <b>leech</b> and centreline of uppermost <b>batten pocket</b> .....		2,150 mm
<b>Clew point</b> to intersection of <b>leech</b> and centreline of lowermost <b>batten pocket</b> .....		2,150 mm

## G.6.2.3 DIMENSIONS, STORMJIB

	minimum	maximum
<b>Luff length</b> (Tmax) .....		9,000 mm
<b>Luff perpendicular</b> (LP) .....		2,700 mm
<b>Leech length</b> .....		Free
<b>Foot length</b> .....		Free
<b>Top width</b> .....		45 mm
<b>Ply</b> , woven, weight of the <b>body of the sail</b> .....	270 g/m <sup>2</sup>	
<b>Ply</b> , thickness by folding of <b>body of the sail</b> (guiding value only) .....	0,500 mm	
<b>Primary reinforcement</b> .....		420 mm
<b>Secondary reinforcement</b> from sail corner measurement points .....		1,260 mm
for <b>flutter patches</b> .....		Free
for <b>chafing patches</b> .....		Free
<b>Tabling width</b> .....		Free
<b>Seam width</b> .....		Free

**G.7 Spinnaker**

**G.7.1 IDENTIFICATION**

The national identification letters and sail number shall comply with the RRS, rule 77 and these **class rules**, Clause C.9.4(a).

**G.7.2 CONSTRUCTION**

- a. The construction shall be: **Soft sail, single ply sail**. No limitations are given regarding the width, direction and weight of sail parts, however the minimum weight shall be fulfilled.
- b. The **body of the sail** shall consist of the same **woven ply** throughout. The **ply** fibres shall be of polyester or polyamide.
- c. The sail shall have: a certificate mark / sail button.
- d. The following are permitted: Stitching, glues, tapes, corner eyes, tell tales, sail shape indicator stripes, sailmaker label.

**G.7.3 DIMENSIONS**

	minimum	maximum
<b>Leech lengths (SL)</b> .....		9,250 mm
<b>Foot length (SF)</b> .....		4,950 mm
<b>Foot Median</b> .....		11,100 mm
<b>Half width</b> , measured between half leech points at 4,625 mm from the head point (SMW/SMG).....		6,680 mm
Difference between diagonals .....		50 mm
<b>Ply</b> , woven, weight of the <b>body of the sail</b> .....	40 g/m <sup>2</sup>	
<b>Ply</b> , thickness by folding of <b>body of the sail</b> (guiding value only).....	0,120 mm	
<b>Primary reinforcement</b> .....		430 mm
<b>Secondary reinforcement</b> from sail corner measurement points .....		1,290 mm
Tabling width.....		Free
<b>Seam width</b> .....		Free

## Part III – Appendices

### SECTION H – Plans

#### H.1 Official Plans

No	Title	Scale	Dated
8.1 A	Line drawing, hull shell	1:10	No date (*)
8.1 B	Line drawing, deck	1:10	No date
8.2	Profile, deck layout and accomodation	1:10	05.02.1992
3	Keel	1:10	April 2001
4.1	Rudder stock	1:5	April 2001
4.2	Rudder blade	1:5	April 2001
5	Rig	1:40	October 2001
6.1	Sail plan	1:40	April 2001
6.2	Sails	1:50	July 2001
7.1	Laminate specifications, hull shell	1:40	May 2001
7.2	Laminate specifications, deck	1:40	May 2001

(\*)

IMS offset file, prepared 26th of April 1987, is archived with the Danish Sailing Association.

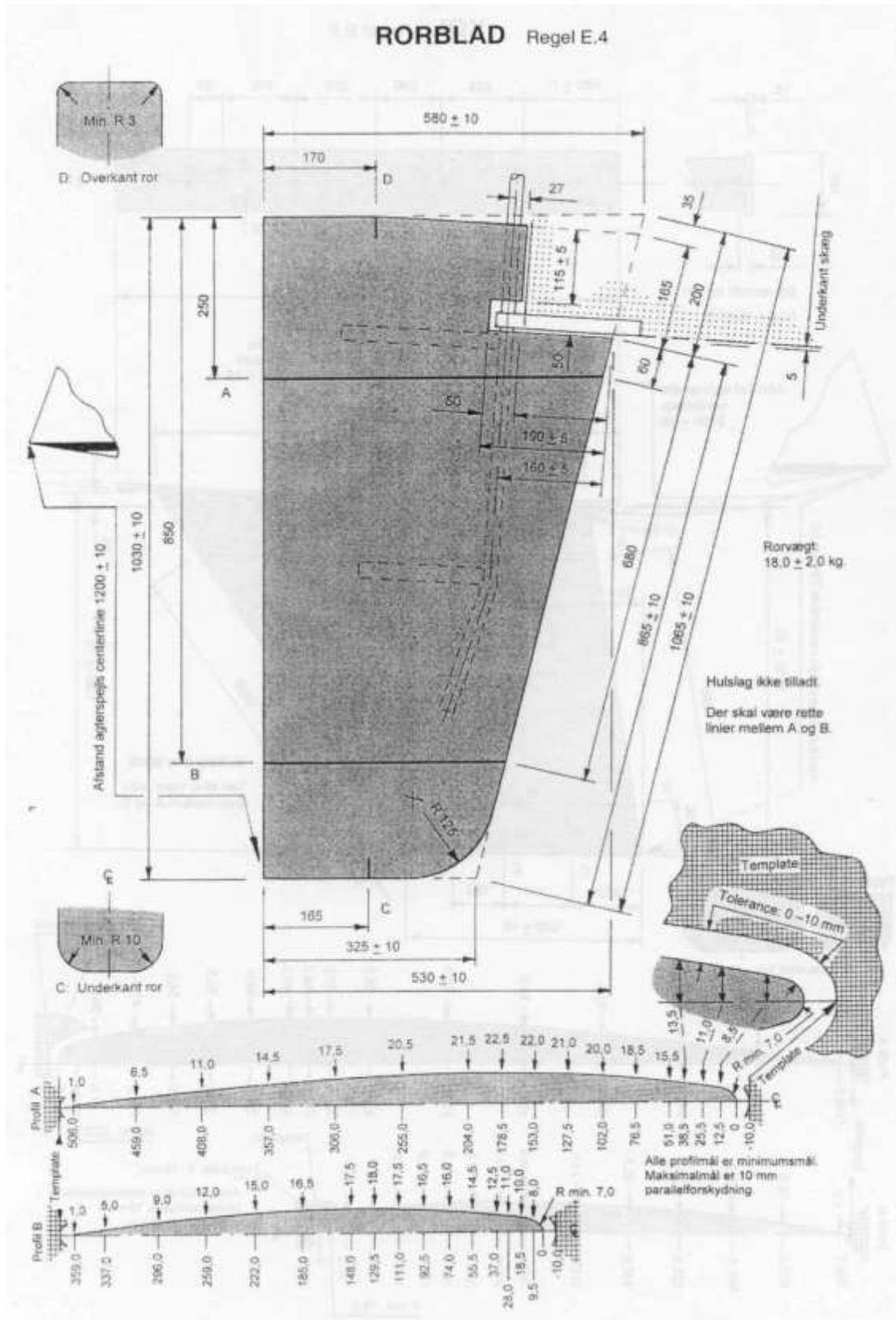
#### H.2 Attached drawings

Keel  
Rudder blade  
Rig  
Sailplan  
Mainsail  
Class insignia  
Champion stars  
Geno  
Jib and stormjib  
Headsails measuring  
Spinnaker

#### H.2 Superseded drawings

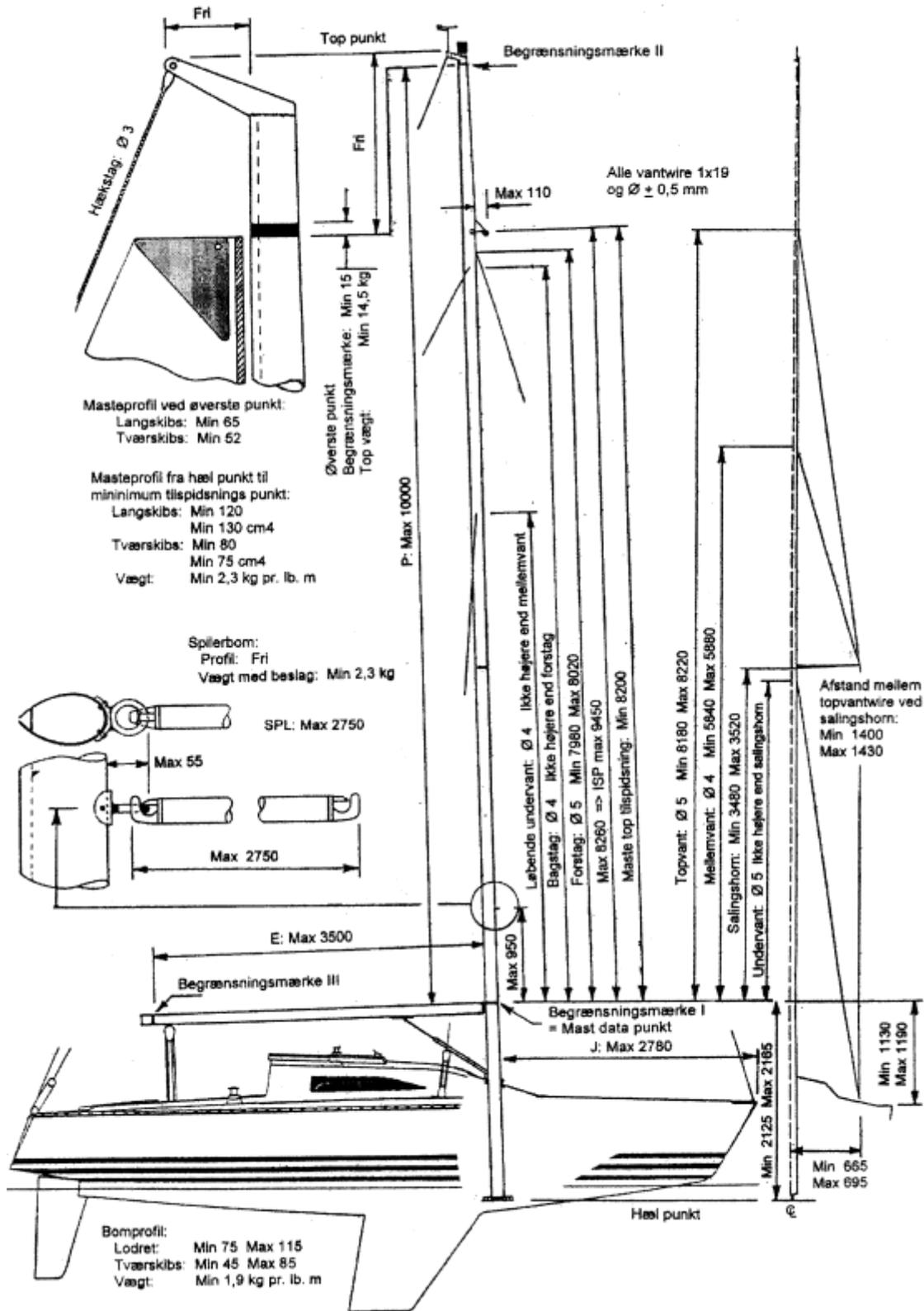
No	Title	Scale	Dated	Superseded
8.3	Keel	1:10	Not dated	CR1996
8.4	Rudder	1:5	Not dated	CR1996
8.5	Rig	1:25	Not dated	CR1996
8.6	Sails plan	1:25	09.01.1990	CR1996
9.3	Keel drawing	x:x	CR1996	March 2002
9.4	Rudder drawing	x:x	CR1996	March 2002
9.5	Rig drawing	x:x	CR1996	March 2002
9.6	Sails drawing	x:x	CR1996	March 2002





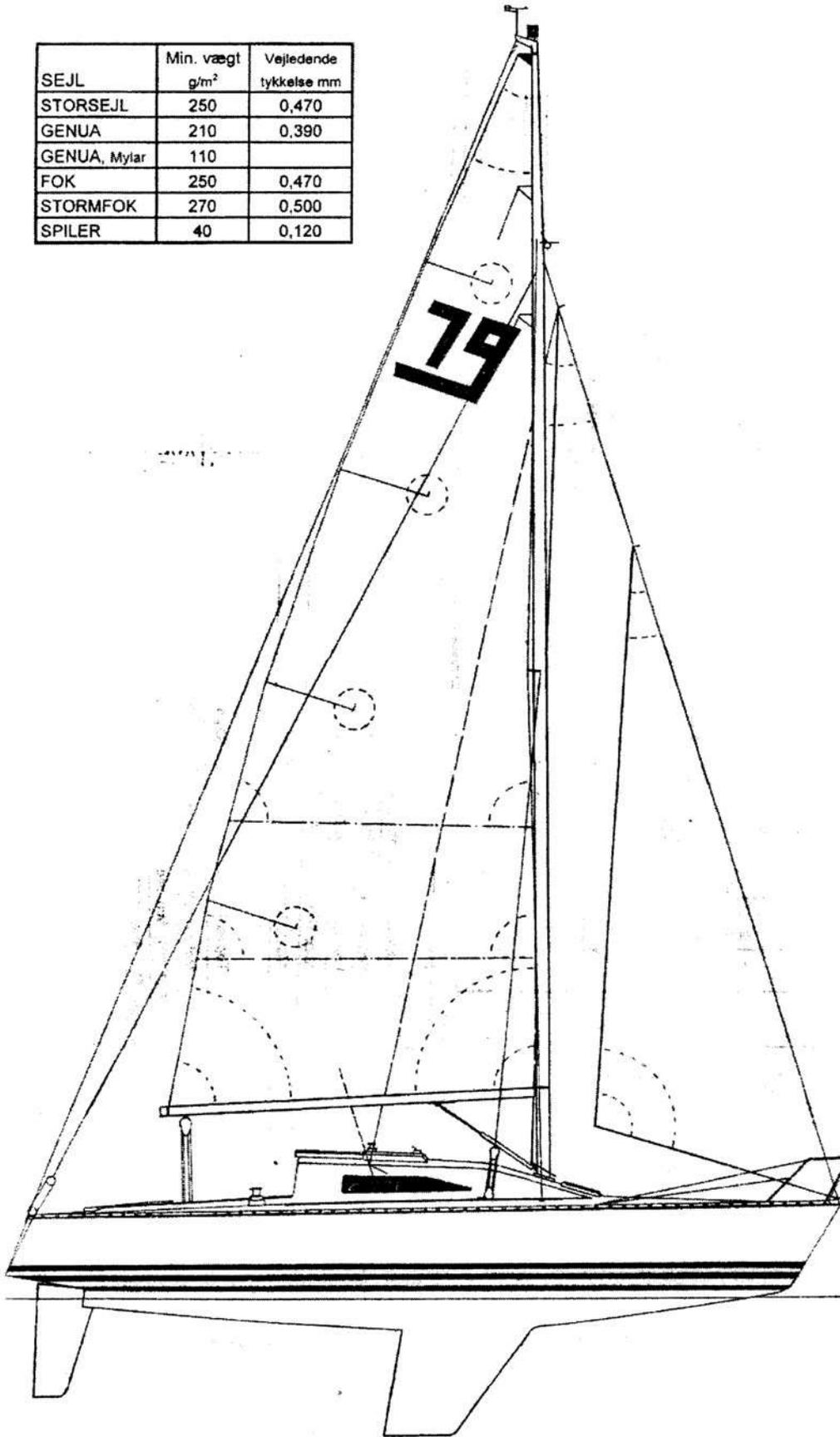
RIG, rule F

RIG Regel F



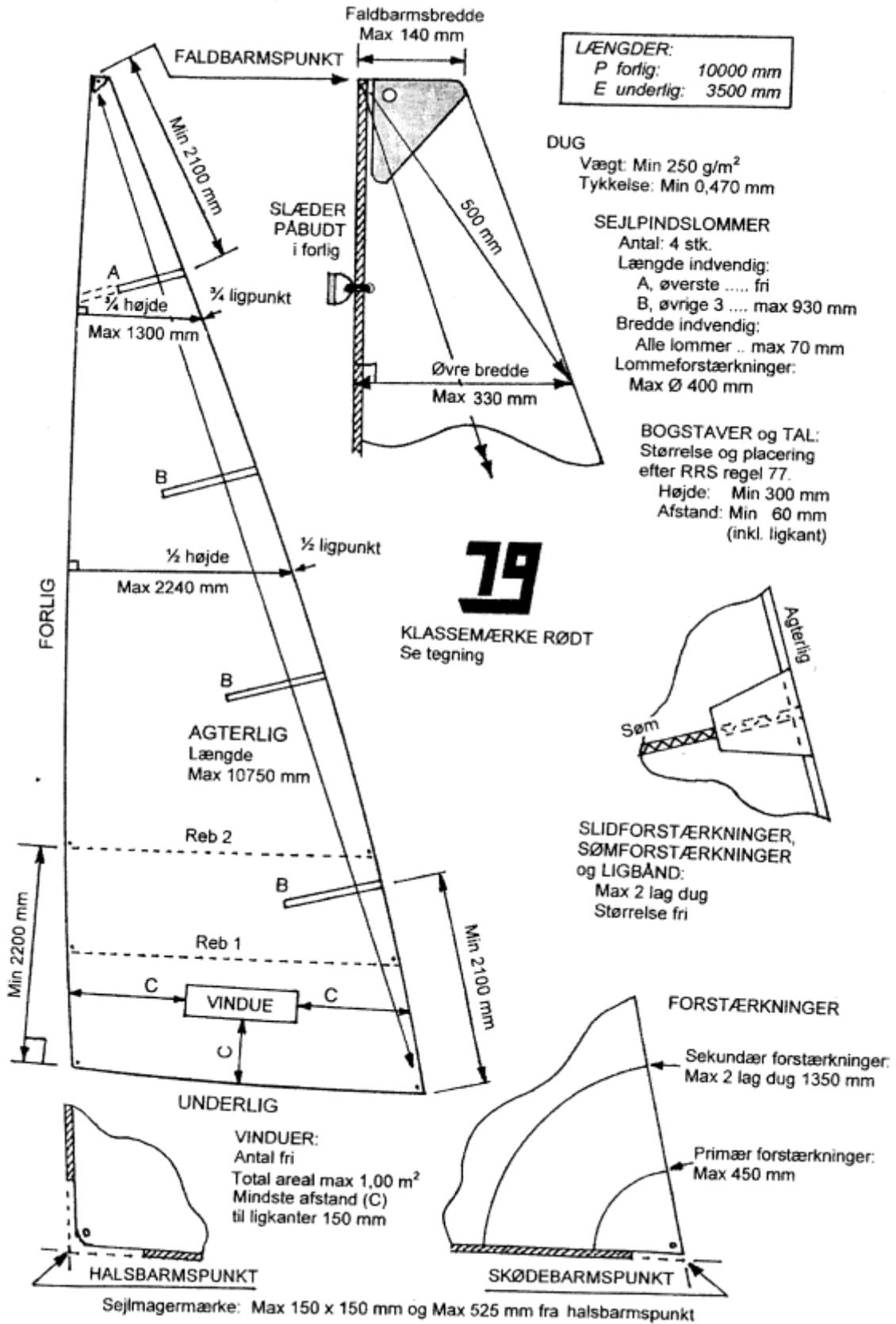
SAIL PLAN, rule G

SEJL	Min. vægt g/m <sup>2</sup>	Vejledende tykkelse mm
STORSEJL	250	0,470
GENUA	210	0,390
GENUA, Mylar	110	
FOK	250	0,470
STORMFOK	270	0,500
SPILER	40	0,120



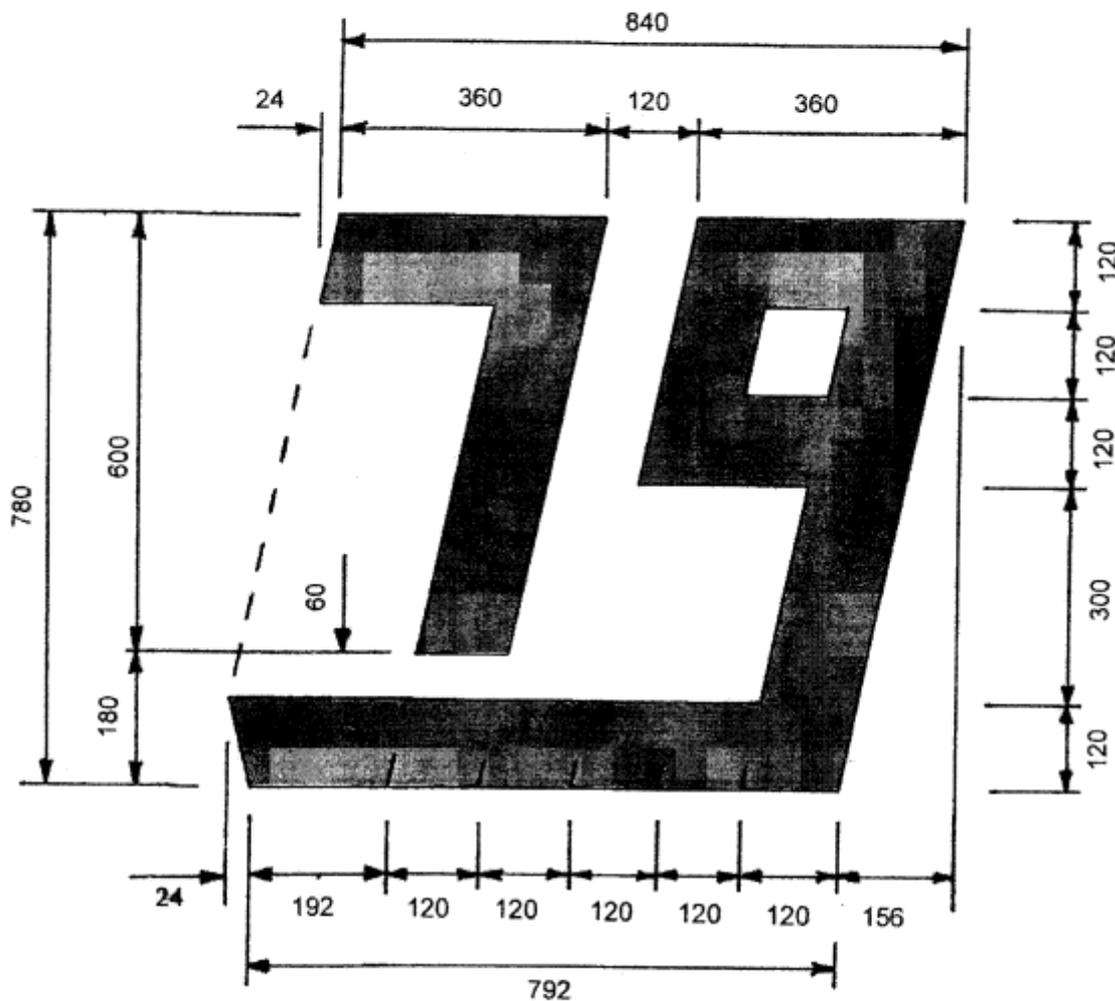
MAINSAIL, rule G.5

### STORSEJL Regel G.5



CLASS INSIGNIA, rule G.5.1

### KLASSEMÆRKE Regel G.5.1

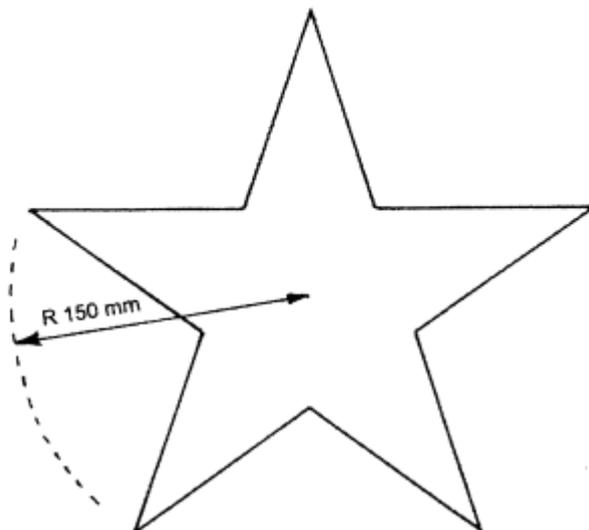


### KLASSEMÆRKER RØDE

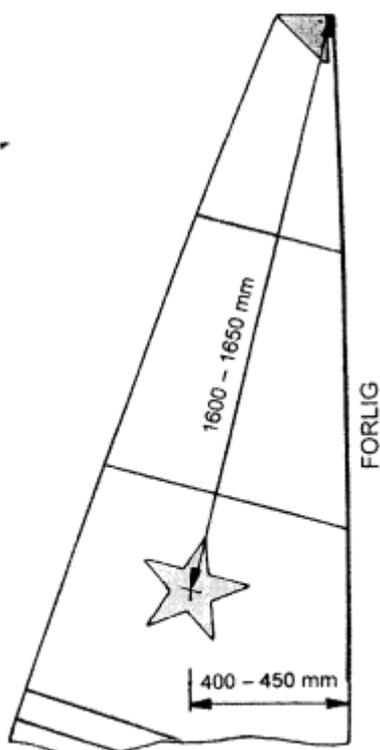
De skal anbringes med et på hver side af sejlet og begge over nationsbogstaver.

CHAMPION STAR, rule C.9.2

### MESTERSKABSSTJERNE Regel C.9.2

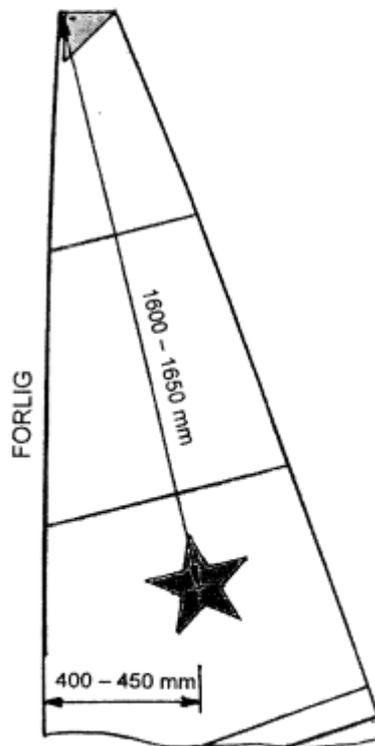


Stjerne fremstilles inden for en cirkel med radius 150 mm



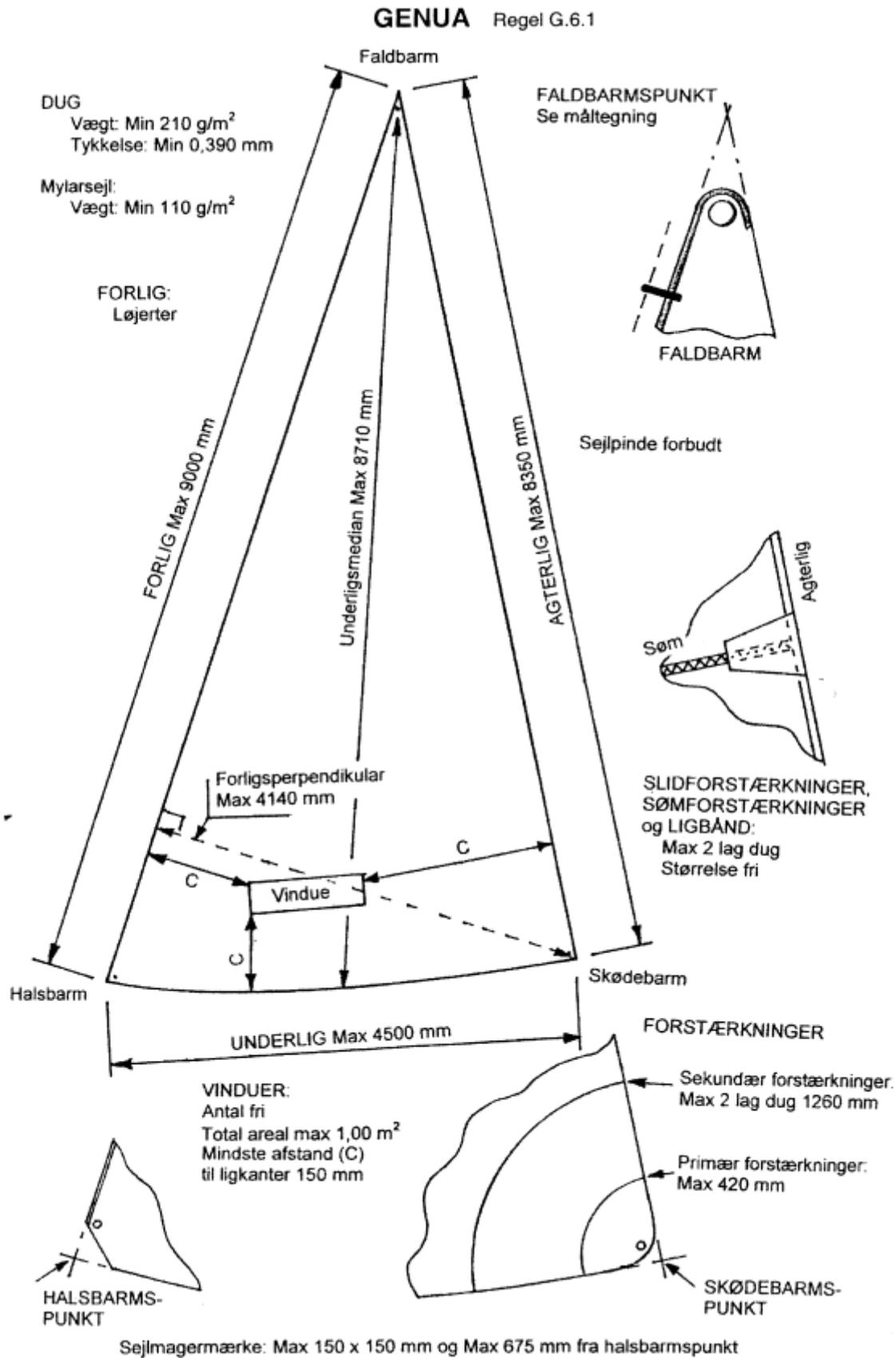
Danmarksmester, GUL

**STJERNEMÆRKER**  
et på hver side  
af sejlet, skal  
anbringes  
således, at de  
falder sammen.



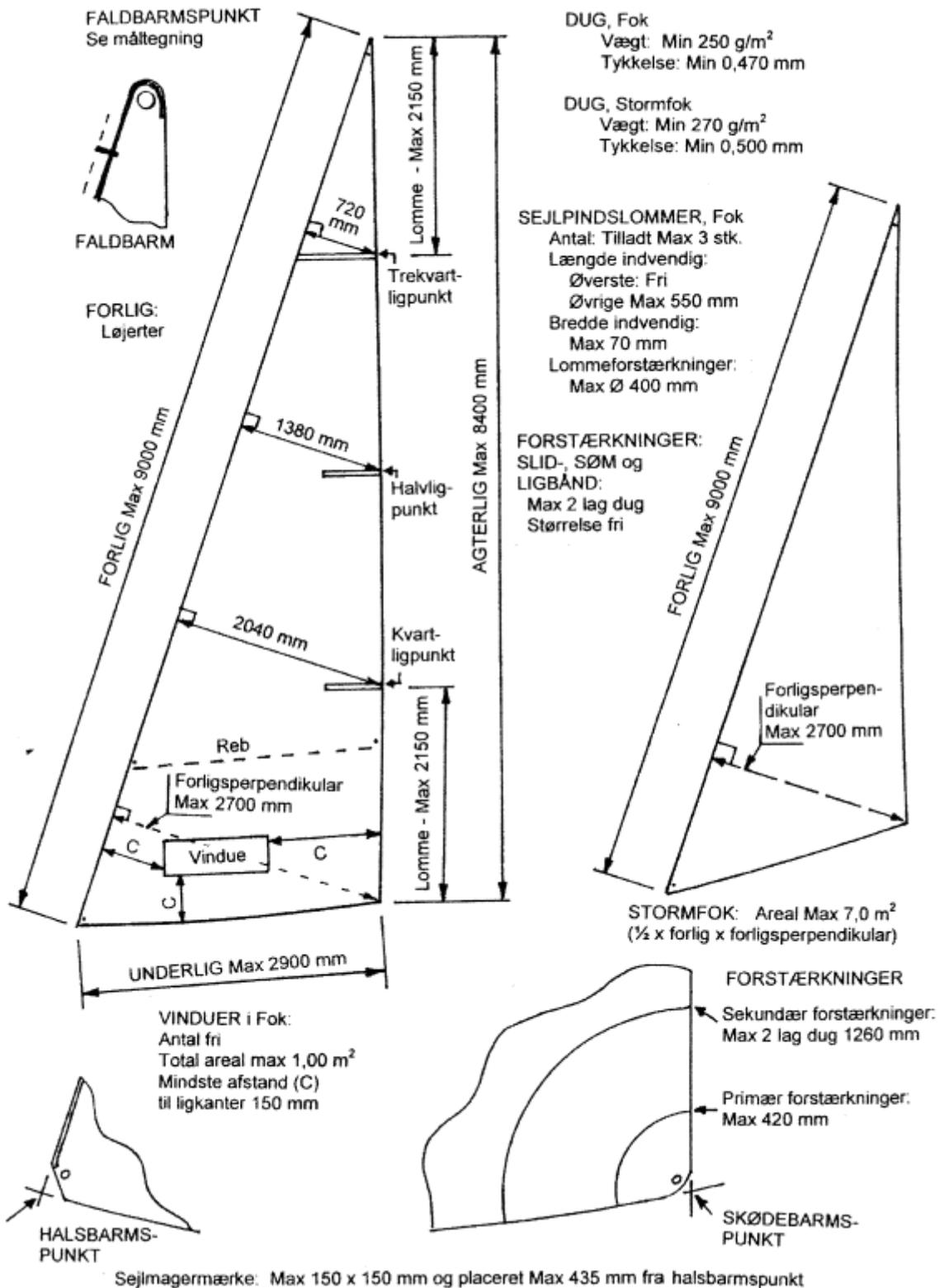
Stjernemester, GRØN

GENOA, rule G.6.1



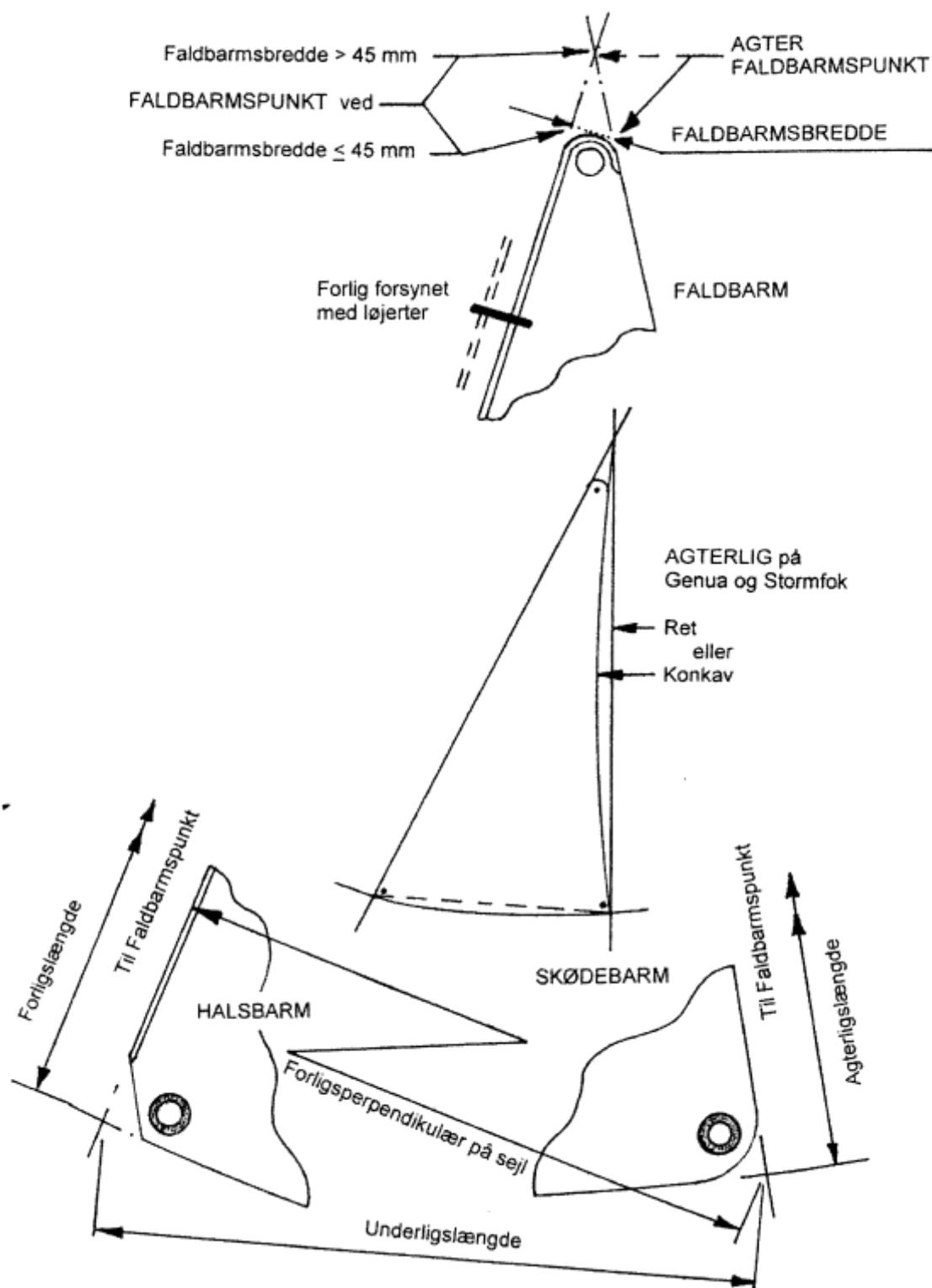
JIB AND STORMJIB, rule G.6.2

**FOK og STORMFOK** Regel G.6.2



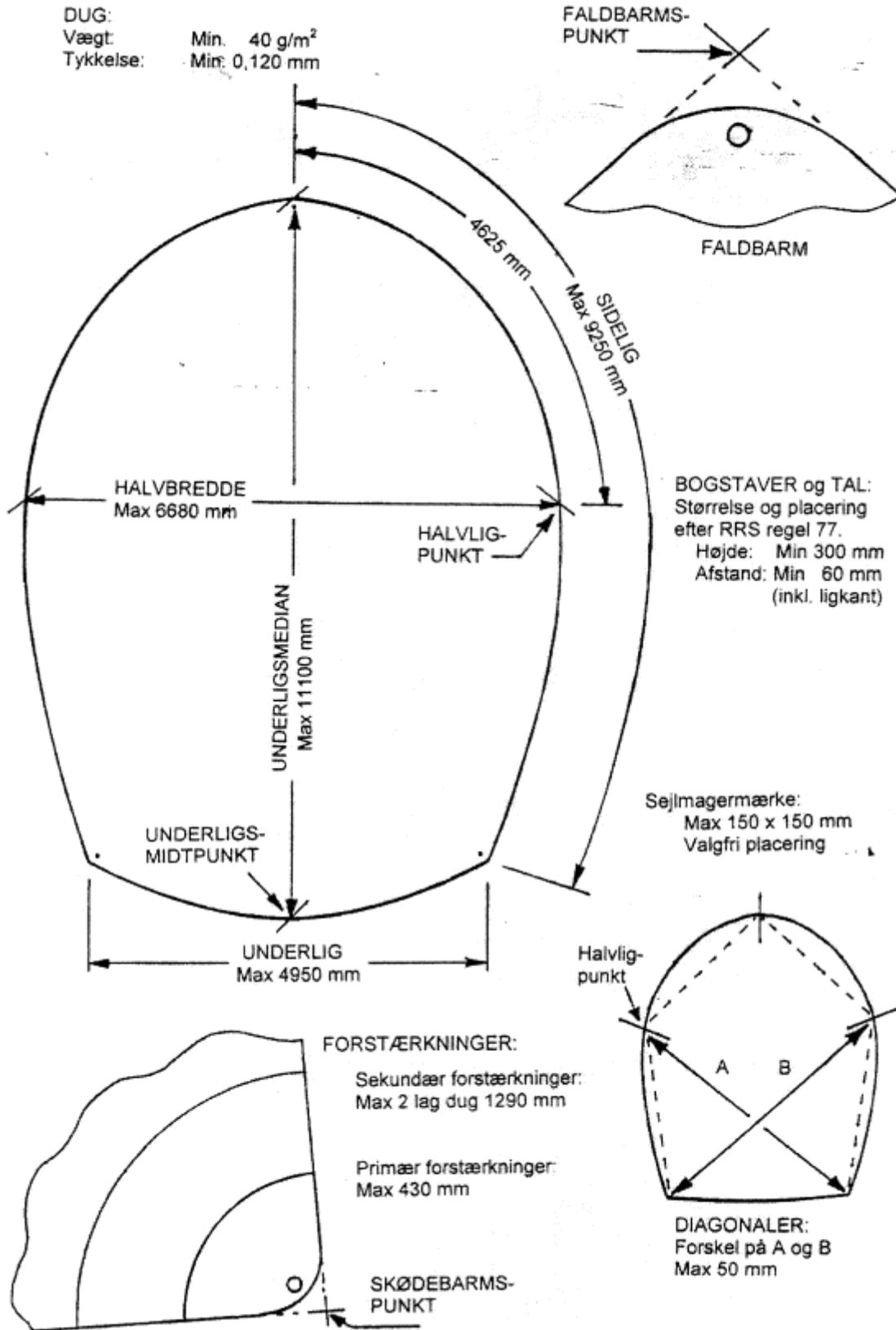
**HEADSAILS MEASUREMENT**

### FORSEJLSMÅLING



SPINNAKER, rule G.7

**SPILER** Regel G.7





# X-79

