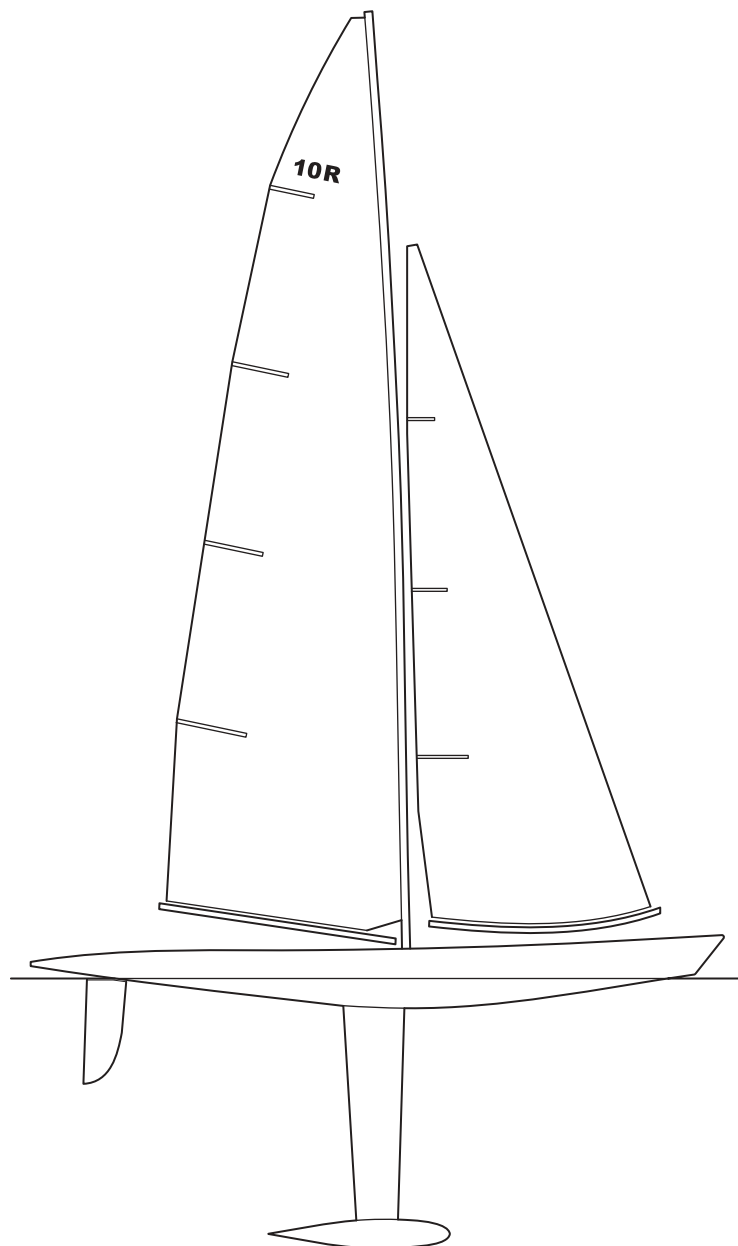


# INTERNATIONAL TEN RATER CLASS RULES

2002



The Ten Rater rule is a direct descendant of the Length and Sail Area rule of 1887.  
It has been used for models since the 1890's.

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## ***Introduction***

*Ten Rater hulls, hull appendages, rigs and sails may be manufactured by any amateur or professional manufacturer without any requirement for a manufacturing license.*

*The rules in Part II and III are open class rules which means that anything not specifically prohibited is permitted.*

*Owners and crews should be aware that compliance with rules in Section C is NOT checked as part of the certification process.*

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

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

# PART I – ADMINISTRATION

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## Section A – General

### A.1 LANGUAGE

A.1.1 The official language of the class is English and in case of dispute over translation the English text shall prevail.

A.1.2 The word “shall” is mandatory and the word “may” is permissive.

### A.2 ABBREVIATIONS

A.2.1	ISAF	International Sailing Federation
	ISAF–RSD	ISAF – Radio Sailing Division
	MNA	ISAF Member National Authority
	DM	ISAF–RSD Member
	ICA	International Class Association
	NCA	National Class Association
	ERS	Equipment Rules of Sailing
	RRS	Racing Rules of Sailing

### A.3 AUTHORITIES AND RESPONSIBILITIES

A.3.1 Where one does not exist, the functions of the ICA, as specified in these **class rules**, shall be carried out by the ISAF–RSD.

A.3.2 The international authority of the class is the ISAF–RSD which shall co-operate with the ICA in all matters concerning these **class rules**.

A.3.3 No legal responsibility with respect to these **class rules**, or accuracy of measurement, rests with:

- the ISAF
- the ISAF–RSD
- the MNA
- the DM
- the ICA
- any NCA
- the **certification authority**
- an **official measurer**

No claim arising from these **class rules** can be entertained.

A.3.4 Notwithstanding anything contained herein, the **certification authority** has the authority to withdraw a **certificate** and shall do so on the request of the ISAF–RSD.

## **A.4 ADMINISTRATION OF THE CLASS**

- A.4.1 The ISAF–RSD has delegated its administrative functions of the class to DMs. A DM may delegate part or all of its functions, as stated in these **class rules**, to an NCA.
- A.4.2 In countries where there is no DM, or the DM does not wish to administer the class, its administrative functions as stated in these **class rules** shall be carried out by the ICA which may delegate the administration to an NCA.

## **A.5 ISAF RULES**

- A.5.1 These **class rules** shall be read in conjunction with the ERS.
- A.5.2 Except where used in headings, when a term is printed in “**bold**” the definition in the ERS applies and when a term is printed in “*italics*” the definition in the RRS applies.

## **A.6 CHAMPIONSHIP RULES**

- A.6.1 The Class Championship Rules shall apply at World and Continental Championships.

## **A.7 SAILING INSTRUCTIONS**

- A.7.1 These **class rules** shall not be varied by sailing instructions except as provided by A.7.2.
- A.7.2 At World or Continental Championships the sailing instructions may vary these **class rules** only with the agreement of the ICA.

## **A.8 CLASS RULES AMENDMENTS**

- A.8.1 Amendments to these **class rules** shall be proposed by the ICA, or a DM, and require to be approved by the ISAF–RSD.

## **A.9 CLASS RULES INTERPRETATIONS**

### **A.9.1 GENERAL**

Interpretation of **class rules**, except as provided by A.9.2, shall be made in accordance with the ISAF–RSD Regulations.

### **A.9.2 AT AN EVENT**

Any interpretation of **class rules** required at an event may be made by an international jury constituted in accordance with the RRS. Such interpretation shall only be valid during the event and the organising authority shall, as soon as practical after the event, inform the ISAF–RSD, the DM and the ICA.

## **A.10 HULL REGISTRATION NUMBER**

- A.10.1 Registration numbers shall be issued by the **certification authority**.
- A.10.2 Registration numbers shall be issued in consecutive order starting at “1”.
- A.10.3 Each **hull** shall have a unique registration number which shall include the national letters and the **certification authority**'s sequential registration number. Under no circumstances may a registration number be used on a **hull** other than the **hull** on which it was first used.

## **A.11 CERTIFICATION**

- A.11.1 For a **hull** not previously **certified**, all items required by the measurement form(s) to be measured shall be measured by an **official measurer** and the details entered onto the form(s).
- A.11.2 The measurement form(s), and **certification** fee if required, shall be sent to the **certification authority** in the country where the **hull** is to be registered within 4 weeks after completion of measurement.
- A.11.3 Upon receipt of a satisfactorily completed measurement form(s) and **certification** fee if required within the 4 week time limit, the **certification authority** may issue a **certificate**.
- A.11.4 The **certification authority** shall retain the original measurement form(s), which shall be transferred to the new **certification authority** upon request if the **hull** is exported.

## **A.12 VALIDITY OF CERTIFICATE**

- A.12.1 A **certificate** becomes invalid upon:
  - (a) a change of ownership,
  - (b) withdrawal by the **certification authority**,
  - (c) the issue of another **certificate**.

## **A.13 COMPLIANCE WITH CLASS RULES**

- A.13.1 A **boat** ceases to comply with the **class rules** upon:
  - (a) use of equipment that does not comply with limitations in the **class rules**,
  - (b) use of equipment that does not comply, or that causes the **boat** not to comply, with limitations recorded on the **certificate**,
  - (c) alteration or repair of equipment required by the measurement form(s) to be measured, except where permitted by the **class rules**,
  - (d) a change of **class rules** that causes equipment in use to cease to be permitted, except where the equipment may comply with the **class rules** in force at the time of its initial **fundamental measurement**.

## A.14 RE-CERTIFICATION

A.14.1 A **hull** may be issued with a new **certificate**, showing dates of initial and new **fundamental measurement** as applicable:

(a) WHEN A CERTIFICATE BECOMES INVALID UPON CHANGE OF OWNERSHIP

and the new owner applies to the **certification authority** in the country where the **hull** is to be registered. The application shall include the old **certificate** and re-**certification** fee if required. In the case of an imported **hull** the **certification authority** shall request the measurement form(s) from the previous **certification authority** and a new hull registration number shall be issued,

(b) WHEN A CERTIFICATE HAS BEEN WITHDRAWN, OR WHEN THE CERTIFICATE AND MEASUREMENT FORM(S) CANNOT BE LOCATED

and **fundamental measurement** as required for initial **certification** has been undertaken.

A.14.2 A **boat** that has ceased to comply with the **class rules** may be brought into compliance:

(a) WHEN THE LIMITATIONS AFFECTING THE EQUIPMENT ARE IN THE CLASS RULES

by carrying out **fundamental measurement** of affected equipment,

(b) WHEN THE LIMITATIONS AFFECTING THE EQUIPMENT ARE ON THE CERTIFICATE

by carrying out **fundamental measurement** of affected equipment as required for initial **certification**.

## Section B – Boat Eligibility

To be eligible to take part in *racing*, the rules in this section shall be complied with.

### B.1 CERTIFICATE

B.1.1 The **hull** shall have a valid **certificate**.

B.1.2 A certificate issued prior to the effective date of these **class rules** remains valid until any of the criteria in A.12.1 is met.

### B.2 CLASS ASSOCIATION STICKER

B.2.1 A valid class association sticker, if required by the NCA or the ICA, shall be affixed to the **hull** in a conspicuous position.

# PART II – REQUIREMENTS AND LIMITATIONS

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

The rules in Part II are **open class rules**. Measurement shall be carried out in accordance with the ERS except where varied in this Part.

## Section C – Conditions for Racing

### C.1 GENERAL

#### C.1.1 RULES

The following ERS rules shall not apply: B.7.1 Mainsail, Foresail and Mizzen Booms set on a Mast and B.7.2 Headsail Booms.

### C.2 CREW

#### C.2.1 LIMITATIONS

The **crew** shall consist of one person.

### C.3 ADVERTISING

#### C.3.1 LIMITATIONS

The **boat** shall display only such advertising as permitted by the ISAF Advertising Code, Category C.

### C.4 BOAT

#### C.4.1 FLOTATION

With the **boat** floating in fresh water:

- (a) the forward waterline ending shall not fall forward of, or more than 30 mm aft of, the aft edge of the forward waterline **limit mark**,
- (b) the aft waterline ending shall not fall aft of, or more than 30 mm forward of, the fore edge of the aft waterline **limit mark**,
- (c) submerged parts of the **hull** shall not extend beyond the inner edges of the waterline **limit marks**.

#### C.4.2 DRAUGHT

The draught, measured to the datum waterplane as defined in D.2.2(b), shall not exceed 700 mm.



## **C.5 HULL**

### **C.5.1 IDENTIFICATION**

The hull registration number shall be displayed on the external surface of the **hull** clearly and legibly with a minimum height of 20 mm.

## **C.6 HULL APPENDAGES**

### **C.6.1 LIMITATIONS**

The same **hull appendages** shall be used during an event except when a **hull appendage** has been lost or damaged beyond repair. Such replacement may be made only with the approval of the race committee who shall then remove or cancel any **equipment limitation mark** attached to the replaced **hull appendage**.

### **C.6.2 USE**

- (a) The **hull appendages** shall not be attached to the **hull** more than 15 mm from the centreplane.
- (b) No part of any **hull appendage** shall cut the datum waterplane as defined in D.2.2(b).
- (c) The **hull appendages** shall not be extended or retracted.

## **C.7 RIG**

### **C.7.1 LIMITATIONS**

- (a) Where the measured rig area recorded on the **certificate** does not exceed 10% of the maximum permitted sail area, the measured area of alternative **spars** shall not exceed the measured area of the **spars** recorded on the **certificate**.
- (b) Where the measured rig area recorded on the **certificate** exceeds 10% of the maximum permitted sail area, the profile of alternative **spars** shall fall within the profile of the **spars** recorded on the **certificate**.

## **C.8 SAILS**

### **C.8.1 LIMITATIONS**

The profile of each alternative **sail** shall fall within the profile of the **sails** recorded on the **certificate**.

### **C.8.2 IDENTIFICATION**

- (a) Identification shall comply with the RRS.
- (b) The class insignia shall be “10R” of dimensions: height 24–30 mm; width, except “1”, 24–30 mm; thickness 5–8 mm and shall be displayed on the mainsail above a straight line between the **three-quarter leech point** and the nearest point on the **luff**.

### **C.8.3 USE**

When a **sail** has a bolt rope or **spar** sliders they shall be set in a **spar** track.

## C.9 REMOTE CONTROL EQUIPMENT

### C.9.1 USE

Except for control unit positioning information, no radio transmissions from the **boat** shall be used.

## Section D – Hull

### D.1 GENERAL

#### D.1.1 RULES

The **hull** shall either comply with the **class rules** in force at the time of its initial **fundamental measurement** or comply with the current **class rules**.

#### D.1.2 CERTIFICATION

See rule A.11.

#### D.1.3 BUILDERS

No licence is required.

#### D.1.4 IDENTIFICATION

The hull registration number shall be marked in an easily visible location on a non-removable part of the **hull** by any of the following means: painting on, engraving in, bonding in, moulding in.

### D.2 HULL

#### D.2.1 LIMIT MARKS

- (a) A forward and an aft waterline **limit mark** shall be placed on the undersurface of the **hull** across the centreplane.
- (a) Waterline **limit marks** shall be of minimum length 25 mm and minimum width 2 mm.

#### D.2.2 DEFINITIONS

##### (a) **Measured Waterline Length**

The measured waterline length shall be taken as the distance between the inner edges of the waterline **limit marks**.

##### (b) **Datum Waterplane**

The datum waterplane shall be taken as the plane through points formed by the intersection of the centreplane and the inner edges of the waterline **limit marks**.

#### D.2.3 MATERIALS

Except in remote control equipment, the density of material shall not exceed that of lead (11,300 kg/m<sup>3</sup>).

#### D.2.4 CONSTRUCTION

- (a) The **hull** shall be a monohull.
- (b) With the following exceptions, hollows in the external surface of the **hull** are prohibited:
  - (1) 40 mm or more above the datum waterplane.
  - (2) 15 mm or less from the centreplane.
  - (3) Trunking for **hull appendages**.
  - (4) Inset transom and upper surface of deck.
  - (5) Hollows which do not exceed 1 mm in depth when checked with a straight edge of length 300 mm.
- (c) The forward 15 mm shall be of elastomeric material. From the foremost point of the **hull** to the point where the bow profile is 45 degrees to the waterplane, the thickness of elastomeric material shall not be less than 5 mm.

## Section E – Hull Appendages

### E.1 GENERAL

#### E.1.1 RULES

**Hull appendages** shall comply with the current **class rules**.

#### E.1.2 BUILDERS

No licence is required.

### E.2 HULL APPENDAGES

#### E.2.1 MATERIALS

Materials shall not be of density higher than lead (11,300 kg/m<sup>3</sup>).

## Section F – Rig

### F.1 GENERAL

#### F.1.1 RULES

**Rigs** shall comply with the current **class rules**.

#### F.1.2 MANUFACTURERS

No licence is required.

### F.2 MEASURED RIG AREA

See Section I.

## Section G – Sails

### G.1 GENERAL

#### G.1.1 RULES

**Sails** shall comply with the **class rules** in force at the time of their initial **fundamental measurement**.

#### G.1.2 CERTIFICATION

The **official measurer** shall **certify sails** at the **tack** and shall date each with the date of **fundamental measurement**.

#### G.1.3 SAILMAKERS

No licence is required.

### G.2 MEASURED SAIL AREA

See Section J.

# PART III – APPENDICES

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The rules in Part III are **open class rules**. Measurement shall be carried out in accordance with the ERS except where varied in this Part.

## Section H – Rating

### H.1 RATING FORMULA

$$\text{Rating} = L \times S \times 8$$

where L is the measured waterline length as defined in D.2.2(a).

S is the sum of the measured rig area given in I.2 and the measured sail area given in J.2.

### H.2 RATING

The **boat** shall have a rating no greater than 10.00 calculated as in H.1.

## Section I – Rig Area

### I.1 GENERAL

- (a) One **boom** with a maximum **boom spar cross section** not exceeding 22 mm may be used to extend the **tack** and/or **clew** of each **sail** without being included in the measured rig area.
- (b) Fittings not faired into a **spar** and no bigger than is reasonably required for their purpose shall not be included in the measured rig area.
- (c) Fittings faired into a **spar** shall be considered to be part of the **spar**.

### I.2 MEASURED RIG AREA

The measured rig area is the sum of the area of the components of the largest **rig** excluding

- (a) **spars** as in I.1 (a),
- (b) fittings as in I.1 (b),
- (c) **rigging** with a maximum cross section of less than 2 mm,

where

- (d) the area of each component shall be found as in I.3 or I.4,

unless the measured rig area exceeds 10% of the maximum permitted sail area when

- (e) the area of each component shall be found as in J.4

### I.3 CONSTANT AND EVENLY TAPERED PROFILES

#### I.3.1 CALCULATION

The area of the **spar**,  $A_m$ , is calculated as:

$$A_m = h \times (m_0 + m_n) / 2$$

where:  $h$  is the length of the **spar** above deck,

$m_0$  is the fore-and-aft or vertical spar cross section at one end,

$m_n$  is the fore-and-aft or vertical spar cross section at the other end.

### I.4 OTHER PROFILES

#### I.4.1 MEASUREMENT

- (a) Mast **spars** shall be placed over the measurement grid perpendicular to the grid lines and with a grid line at deck level. See figure K.1.
- (b) Other **spars** shall be placed over the measurement grid perpendicular to the grid lines and with a grid line at one end. See figure K.1.
- (c) The fore-and-aft or vertical **spar cross sections**  $m_0$   $m_n$  shall be measured at and along all the grid lines that the **spar** cuts. See figure K.1.

#### I.4.2 CALCULATION

- (a) The area of **spar** above the uppermost gridline cutting the **spar**,  $A_t$ , is calculated as:

$$A_t = 0.7 \times m_n \times E$$

where  $E$  is the height of the **spar** above the uppermost grid line.

- (b) The area of the **spar**,  $A_m$ , is calculated as:

$$A_m = 50 (m_0 + m_n) + 100 (m_1 + m_2 + \dots m_{n-1}) + A_t$$

## Section J – Sail Area

### J.1 GENERAL

- (a) During measurement:
  - (1) battens need not be removed,
  - (2) **sails** may be attached to **spars**,
  - (3) forestays inside headsail luff **tabling** need not be removed.
- (b) Parts of **stiffening** which are less than 2 mm in diameter and not covered by sail material shall not be taken as parts of the **sail**.
- (c) Where a **sail** has a bolt rope the cross widths shall be taken to the aft edge of the **spar**.
- (d) Discontinuous attachments on the **luff** shall be disregarded for the purpose of measurement provided that their total length, measured along the **luff**, does not exceed 10% of the **luff** length and that the longest attachment is no more than twice the shortest.

## J.2 MEASURED SAIL AREA

The measured sail area is the sum of the area of the largest **sails** used together.

## J.3 SOFT SAILS

### J.3.1 GENERAL

This method shall be used for **soft sails** with the exception of **double luff** sails.

### J.3.2 MEASUREMENT

- (a) Where the **sail** has no clearly defined **tack point** and/or **clew point**, permanently marked point(s) on the sail shall be used instead.
- (b) The sail shall be placed over the measurement grid with the **tack point** and **clew point** on the same grid line. See figure K.2.1.
- (c) The upper limit of area A1 shall be marked at the **luff** and **leech** where they pass over the gridline. See figure K.2.1.
- (d) Cross widths,  $c_0$  to  $c_n$ , shall be measured from the **luff** to the **leech** at and along all the gridlines which the sail cuts. See figure K.2.2.
- (e) The **sail** shall be placed over the measurement grid so that the **tack point** and **clew point** are on grid lines. The sail shall be so placed that the **foot** cuts the maximum number of grid lines. See figure K.2.3.
- (f) Depths,  $d_1$  to  $d_n$ , shall be measured from the **foot** to a straight line between the **tack point** and **clew point** at and along all the gridlines which the **foot** cuts. See figure K.2.3.

### J.3.3 CALCULATION

- (a) The major area, A1, is calculated as:

$$A1 = 50 (c_0 + c_n) + 100 (c_1 + c_2 + \dots c_{n-1})$$

- (b) The head area, A2, is calculated as:

$$A2 = 0.7 \times c_n \times E$$

where E is the height of the sail above the uppermost grid line.

- (c) The foot area, A3, is calculated as:

$$A3 = 50 (d_1 + d_2 + \dots d_n)$$

- (d) The area of the sail, As, is calculated as:

$$As = A1 + A2 + A3$$

## J.4 OTHER SAILS

### J.4.1 GENERAL

- (a) This method shall be used for :
  - (1) **sails** other than **soft sails**,
  - (2) **double luff** sail/spar combinations,
  - (3) rig components where their combined area found using I.2 exceeds 10% of the maximum permitted sail area.
- (b) Small areas of supporting **spar** not enclosed by a **sail**, and end plates, shall be measured using Sections I and J if appropriate. Where the methods in Sections I and J are not appropriate, any suitable method may be used and the measurements and calculations shall be reported on the measurement form.
- (c) Each element of a group of elements, including those which retract into a parent, shall be measured as a separate item as in J.4.2. See figure K.3.1.

### J.4.2 MEASUREMENT

- (a) Where the element has no clearly defined **tack point** and/or **clew point**, permanently marked point(s) on the element shall be used instead. See figure K.3.2.
- (b) The element shall be placed over the measurement grid with the **tack point** and **clew point** on the same grid line. See figure K.3.3.
- (c) The element shall be marked at the **luff** and **leech** where it passes over each grid line. See figure K.3.4.
- (d) Skin girths,  $g_0$  to  $g_n$ , shall be measured at and along all the grid lines which the element cuts. See figure K.3.4.
- (e) The skin girth at each grid line shall be taken as the distance from the **leech**, round the surface of the element through the corresponding point on the **luff**, back to the same point. Any flaps shall be placed to give the greatest girth. See figure K.3.5.
- (f) The half girth,  $c_n$ , at a grid line is one half of the skin girth,  $g_n$ , at that grid line.
- (g) The element shall be placed over the measurement grid so that the **tack point** and **clew point** are on grid lines. The element shall be so placed that the **foot** cuts the maximum number of grid lines. See figure K.3.2.
- (h) Depths,  $d_1$  to  $d_n$ , shall be measured from the **foot** to a straight line between the **tack point** and/or **clew point** at and along all the gridlines which the **foot** cuts. See figure K.3.2.

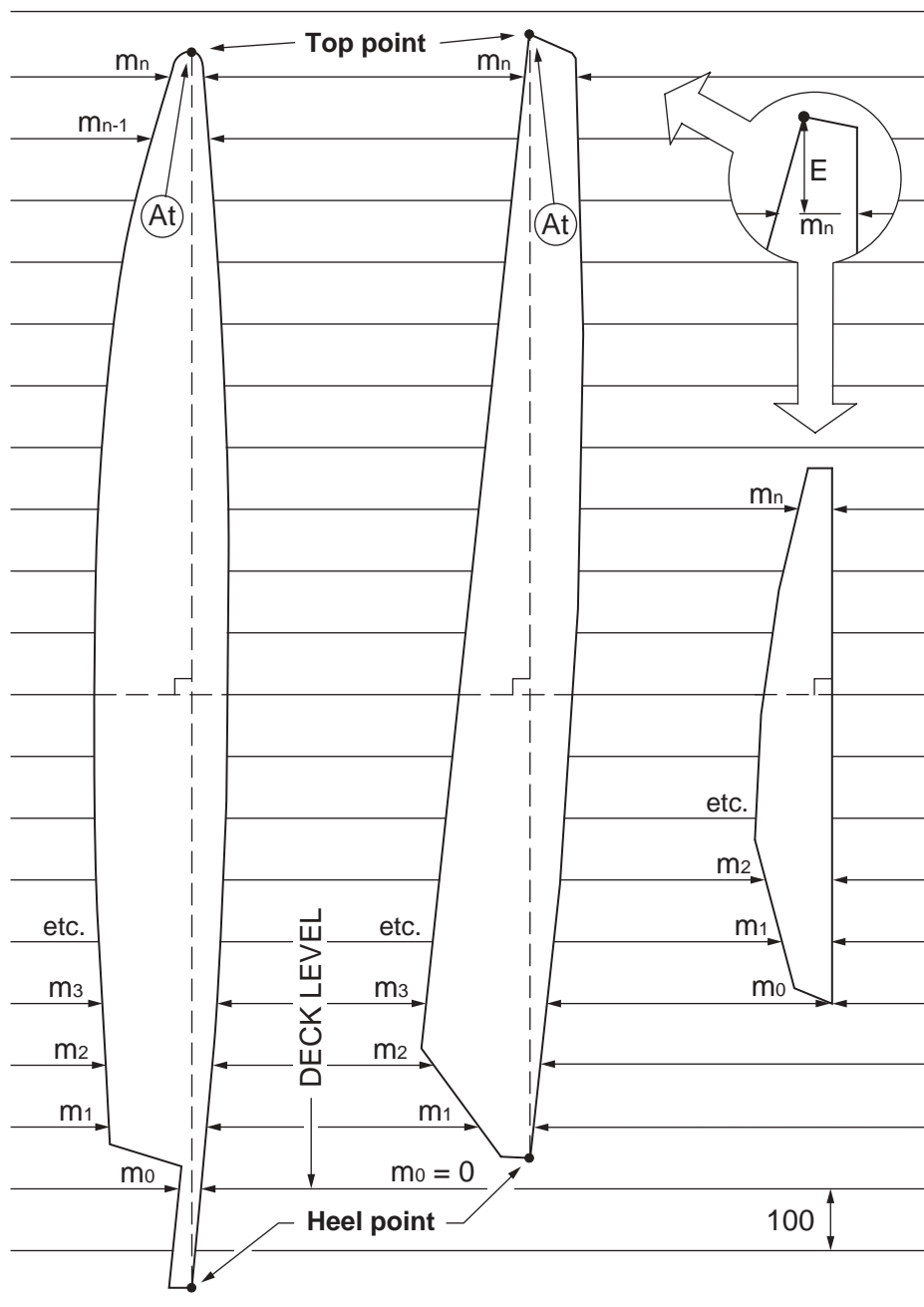
### J.4.3 CALCULATION

The area of the element,  $A_s$ , is calculated as in Section J.3.3.



# Section K – Figures

## K.1 SPAR MEASUREMENT



## K.2 SOFT SAILS MEASUREMENT

FIGURE K.2.1

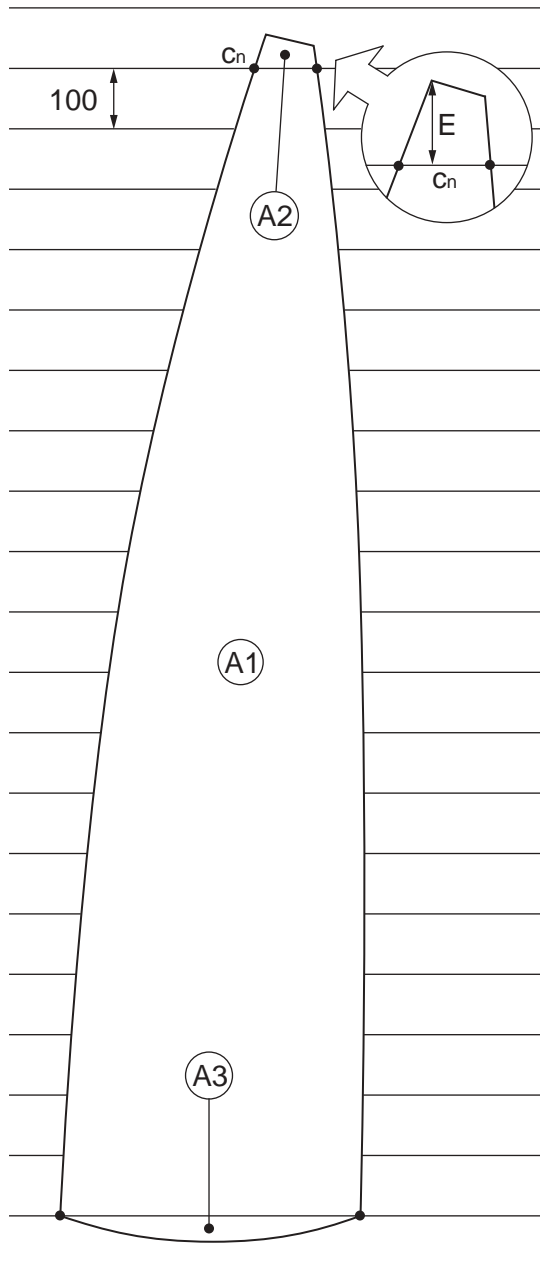


FIGURE K.2.2

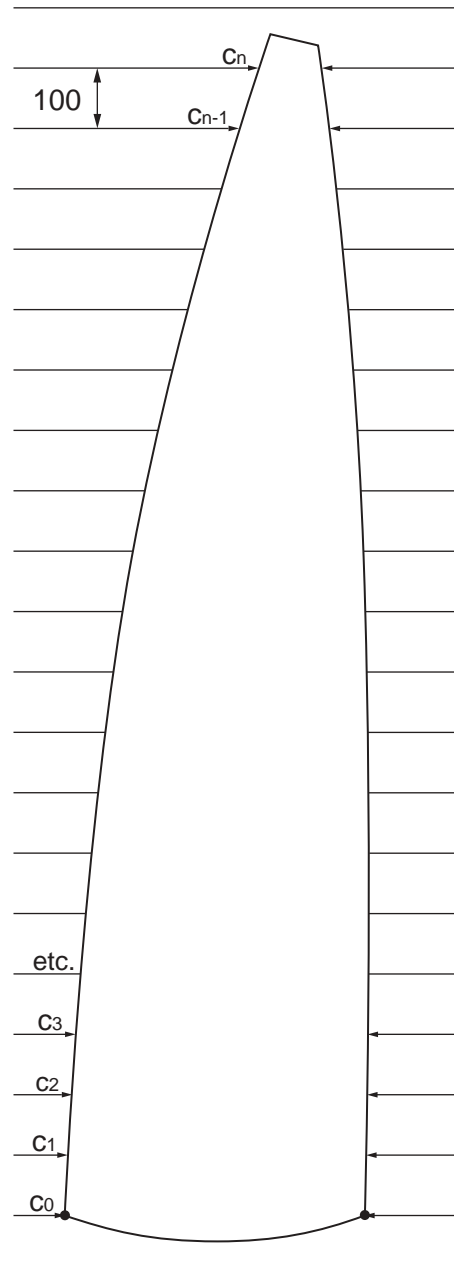
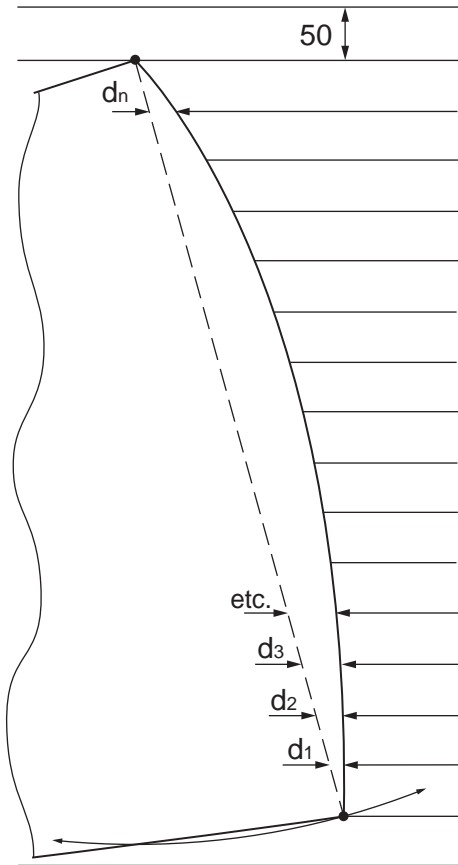


FIGURE K.2.3



### K.3 OTHER SAILS MEASUREMENT

FIGURE K.3.1

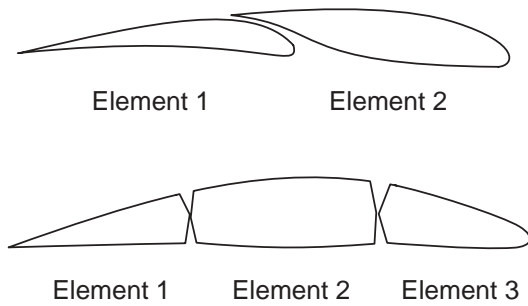


FIGURE K.3.2

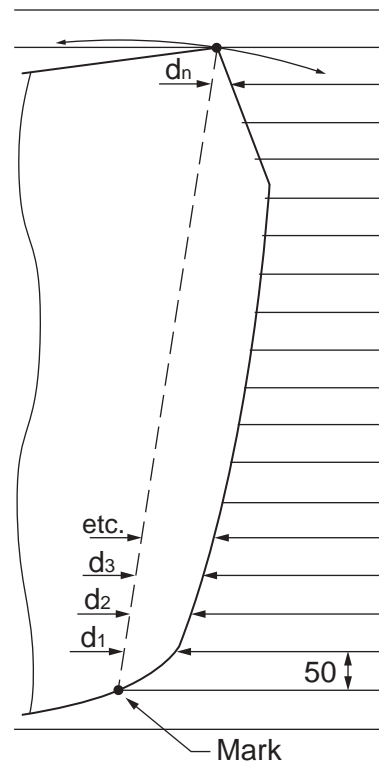


FIGURE K.3.3

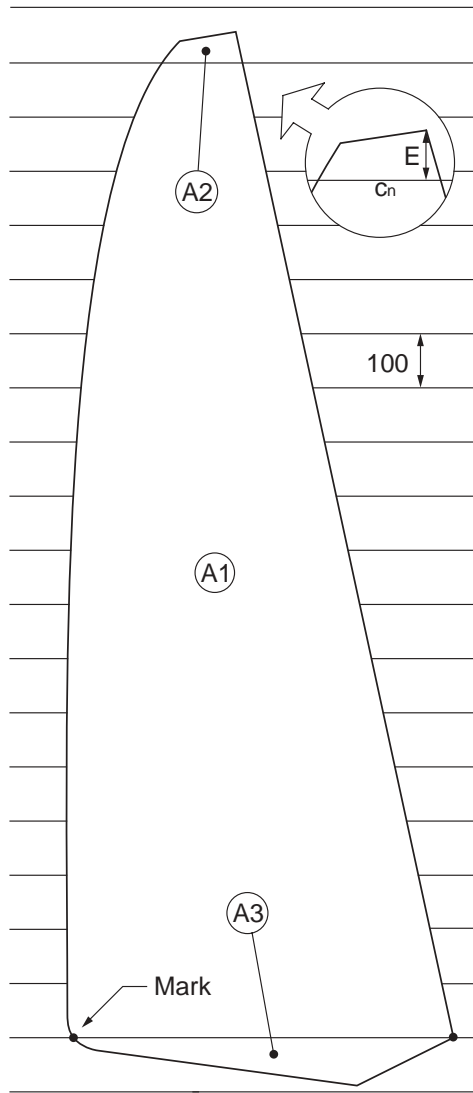


FIGURE K.3.4

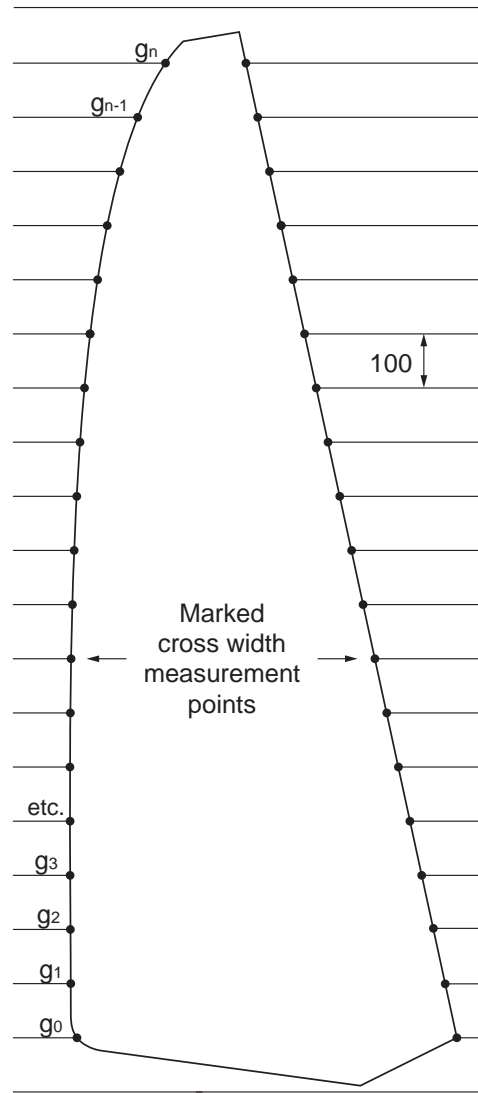
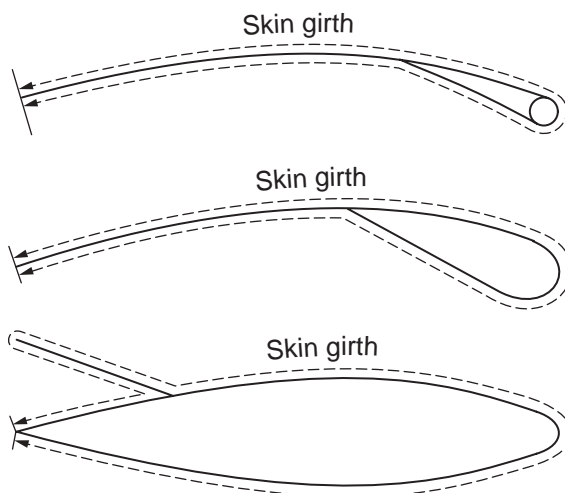


FIGURE K.3.5



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