# THE EQUIPMENT RULES OF SAILING

for 2009–2012

**International Sailing Federation** 

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# INTRODUCTION

The Equipment Rules of Sailing consists of three parts:

- Part 1 Rules for use of the equipment. The **boat** the equipment used in sail racing and the **personal equipment**
- Part 2 Equipment definitions
- Part 3 Rules governing equipment control and inspection

#### Terminology

A term used in its defined sense is printed in "**bold**" type if defined in the ERS and in "*italic*" type if defined in the RRS.

#### Abbreviations

ISAF	International Sailing Federation
MNA	ISAF Member National Authority
ICA	International Class Association
NCA	National Class Association
ERS	The Equipment Rules of Sailing
RRS	The Racing Rules of Sailing

#### Revision

The Equipment Rules are revised and published every four years by the International Sailing Federation (ISAF), the international authority for the sport. This edition becomes effective on 1 January 2009 except that for an event beginning in 2008 the date may be postponed by the Notice of Race and Sailing Instructions. Changes to the Equipment Rules are permitted under ISAF Regulations 32.1.2 and 32.2. No changes are contemplated before 2013, but any changes determined to be urgent before then will be announced through National Authorities and posted on the ISAF website (www.sailing.org).

#### Status

The ERS are adopted by ISAF as a code governing the use of equipment while racing. The ERS are made applicable as stated in Applicability, below:

### Applicability

The ERS may be made applicable by:

- (a) Class Rules.
- (b) Adoption by a rating authority for racing under its jurisdiction.
- (c) Adoption in the notice of race and sailing instructions for an event.
- (d) Prescriptions of an MNA for racing under its jurisdiction.
- (e) Other ISAF codes and rules adopted by Council.

#### Changes

The ERS may only be changed as follows:

- (a) Prescriptions of an MNA may change an ERS rule, for racing under its jurisdiction.
- (b) Sailing instructions may change an ERS rule by referring specifically to it and stating the change, but may not change any portion of the ERS adopted in **class rules**.
- (c) A rating authority may change an ERS rule for racing within its jurisdiction.
- (d) **Class rules** may change ERS rules B.7, B.9, H1, H2, H3, H.4, H5 and H.6.

These restrictions do not apply if rules are changed to develop or test proposed rules in local races. The MNA may prescribe that its approval is required for such changes.

Marginal markings indicate substantial changes and additions to the 2005 - 2008 edition.

# Section A – During an Event

### A.1 CLASS RULES

### A.1.1 Boats without Class Rules

The **boat** and other items of equipment shall comply with the ERS Part 1.

### A.1.2 Boats with Class Rules

The **boat** and other items of equipment shall comply with its **class rules**, and the ERS Part 1 except as changed by its **class rules** to the extent permitted by Changes (c) or  $(d)^1$ .

### A.2 CERTIFICATE

### A.2.1 Having a Certificate

The **boat** shall have such valid **certificate** as required by its **class rules** or the **certification authority**.

### A.2.2 Compliance with a Certificate

The **boat** shall comply with its **certificate**. See also RRS rule 78 Compliance with Class Rules; Certificates.

### A.3 IDENTIFICATION ON SAILS

See RRS rule 77 Identification on Sails.

### A.4 ADVERTISING

See ISAF Regulation 20, Advertising Code. (<u>www.sailing.org/regulations</u>)

### A.5 SKIN FRICTION

See RRS rule 53 Skin Friction.

### A.6 EQUIPMENT INSPECTION

See RRS rule 78 Compliance with Class Rules; Certificates.

<sup>&</sup>lt;sup>1</sup> See page 5, Introduction.

# Section B – When Racing

### B.1 LIFE-SAVING EQUIPMENT AND PERSONAL FLOTATION DEVICES

See RRS rule 1 Safety and RRS rule 40 Personal Flotation Devices.

### **B.2 PERSONAL EQUIPMENT**

See RRS rule 43 Competitor Clothing and Equipment.

### **B.3 LIMITATIONS ON EQUIPMENT**

See RRS rule 47 Limitations on Equipment and Crew.

### **B.4 LIMITATIONS ON CREW AND CREW POSITION**

See RRS rule 47 Limitations on Equipment and Crew and RRS rule 49 Crew Position.

### **B.5 MANUAL POWER**

See RRS rule 52 Manual Power.

### **B.6 EJECTING OR RELEASING OF SUBSTANCE**

See RRS rule 53 Skin Friction.

### **B.7 SETTING OF SPARS**

### B.7.1 Mainsail, Foresail and Mizzen Booms set on a Mast

When the sail is set on a **main boom**, **foremast boom** or **mizzen boom**, the extension of the upper edge of the **spar** shall intersect the mast **spar** above the **lower limit mark**, with the boom **spar** on the mast **spar** centreplane and at 90° to the mast **spar**.

### B.7.2 Headsail Booms

The fore end of the boom **spar** shall be approximately on the **boat** centreplane.

### **B.7.3** Spinnaker and Whisker Poles

See RRS rule 50 Setting and Sheeting Sails.

### **B.7.4** Bowsprits

The inner limit mark shall not be outboard the hull when the bowsprit is set.

### **B.8 SETTING OF RIGGING**

### **B.8.1** Forestays

See RRS rule 54 Forestays and Headsail Tacks.

### **B.9** SETTING, SHEETING AND CHANGING SAILS

#### **B.9.1** Trilateral Mainsails, Foresails and Mizzens

- (a) The sail shall be below the mast upper limit mark.
- (b) The **leech**, extended as necessary, shall intersect the upper edge of the boom **spar** forward of the **outer limit mark**.
- (c) The **foot** of a loose footed sail, extended as necessary, shall intersect the mast **spar** above the **lower limit mark**.

#### **B.9.2** Headsails set on a Bowsprit

The tack of any headsail set on a bowsprit shall be attached aft of the outer limit mark.

See also RRS rule 54 Forestays and Headsail Tacks.

#### B.9.3 Spinnaker Staysails and Mizzen Staysails

The **tack** shall be inboard the **sheerline**. See also RRS rule 50 Setting and Sheeting Sails.

### **B.10 CENTRE OF GRAVITY**

**B.10.1** Corrector weights shall be securely fixed. See also RRS rule 51 Movable Ballast.

### **B.11 ANCHORING, MAKING FAST AND HAULING OUT**

See RRS rule 45 Hauling Out; Making Fast; Anchoring.

### **B.12 FOG SIGNALS AND LIGHTS**

See RRS rule 48 Fog Signals and Lights.

# **Section C – General Definitions**

### C.1 CLASS

### C.1.1 Class Authority

The body that governs the class as specified in the **class rules**.

### C.2 RULES

### C.2.1 Class Rules

The rules that specify:

the **boat** and its use, **certification** and administration.

the crew.

the **personal equipment** and its use, **certification** and administration. any other equipment and its use, **certification** and administration. changes to the Racing Rules of Sailing as permitted by RRS 86.1(c).

#### C.2.2 Closed Class Rules

Class rules where anything not specifically permitted by the class rules is prohibited.

### C.2.3 Open Class Rules

Class rules where anything not specifically prohibited by the class rules is permitted.

### C.2.4 Class Rules Authority

The body that provides final approval of the **class rules, class rule** changes and **class rule** interpretations.

### C.3 CERTIFICATION

### C.3.1 Certification Authority

For the **hull**: the ISAF, the MNA of the owner, or their delegates.

For other items: the ISAF, the MNA in the country where the **certification** shall take place, or their delegates.

### C.3.2 Certify

To issue a **certificate**, and/or to attach a **certification mark** after successful **certification control**.

### C.3.3 Certificate

Documentary proof, issued by the **certification authority**, of successful **certification control** of the **hull**, or any other parts required by the **class rules** or a **certification authority**.

#### Part 2 DEFINITIONS

#### C.3.4 Certification Mark

Proof of successful **certification control** of a part requiring **certification**, attached or made by an **official measurer**.

### C.4 CERTIFICATION CONTROL AND EQUIPMENT INSPECTION

See H.1 and H.2.

#### C.4.1 Fundamental Measurement

The control methods used as the primary means to establish the physical properties of equipment.

#### C.4.2 Certification Control

Control for **certification** required by **class rules**, or a **certification authority**, which may include **fundamental measurement**.

#### C.4.3 Equipment Inspection

Control carried out at an event as required by the notice of race and the sailing instructions which may include **fundamental measurement**.

#### C.4.4 Official Measurer

A person appointed or recognised, by the MNA of the country where the control takes place, to carry out **certification control** and when the **class rules** permit, **certification**.

#### C.4.5 In-House Official Measurer

An **official measurer** appointed in accordance with the ISAF In-House Certification Programme.

#### C.4.6 Equipment Inspector

A person appointed by a race committee to carry out **equipment inspection**.

#### C.4.7 International Measurer

A person authorised by the ISAF to inspect prototype boats of specific ISAF classes and recognised by ISAF as qualified to assist in **equipment inspection** at international events for those classes.

#### C.4.8 Limit Mark

A clearly visible mark of a single colour, contrasting to the part(s) on which it is placed, indicating a measurement point.

#### C.4.9 Event Limitation Mark

A mark placed by a race committee on equipment whose replacement at the event is controlled by the **class rules**.

### C.5 PERSONAL DEFINITIONS

#### C.5.1 Crew

A competitor, or team of competitors, that operates a **boat**.

#### C.5.2 Skipper

The **crew** member onboard who is in charge of the **boat** and the **crew** and all other persons aboard.

#### C.5.3 Personal Equipment

All personal effects carried or worn and items worn on board to keep warm and/or dry, and/or to protect the body, **personal flotation device**, safety harnesses and hiking aids worn to keep the person aboard or afloat.

#### C.5.4 Personal Flotation Device

Personal safety equipment as specified in the sailing instructions to assist the user to float when immersed in water.

### C.6 BOAT DEFINITIONS

#### C.6.1 Boat

The equipment used by the **crew** to take part in a race.

It comprises:

hull(s)

structure(s) connecting hulls

hull appendage(s)

ballast

rig

sail(s)

fittings

boat corrector weights

all other items of sports equipment used excluding consumables and **personal equipment**.

### C.6.2 Boat Types

(a) MONOHULL

A **boat** with one **hull**.

(b) MULTIHULL

A boat with more than one hull.

(c) WINDSURFER

A boat.

(d) KITE-BOARD

A boat.

#### C.6.3 Boat Control Definitions

(a) MAJOR AXES

The three major axes of the boat at  $90^{\circ}$  to each other – vertical, longitudinal and transverse – shall be related to the baseline and the hull centreplane.

See H.3.

(b) MEASUREMENT TRIM

Measurement trim is achieved when either, as specified in class rules,

- (i) two points on the hull(s) are at set distances perpendicular to a plane the plane, the points and distances to be specified in class rules,
- or
- (ii) as determined by flotation with the **boat** in the condition as specified in **class rules**.

#### (c) WATERLINE

The line(s) formed by the intersection of the outside of the hull(s) and

(i) a plane specified in the **class rules**,

or

- (ii) the water surface when the **boat** is floating in **measurement trim**.
- (d) WATERPLANE

The plane passing through the **waterline**.

(e) BALLAST

Weight installed to influence the stability, flotation or total weight of the **boat**.

Ballast types:

(i) INTERNAL BALLAST

Ballast positioned inside a hull.

(ii) EXTERNAL BALLAST

Ballast positioned outside a hull.

(iii) MOVEABLE BALLAST

Internal **ballast** or external **ballast** that may be moved.

(iv) VARIABLE BALLAST

Water **ballast** the amount of which may be varied.

(v) CORRECTOR WEIGHT

Weight installed in accordance with the **class rules** to correct deficiency in weight and/or its distribution.

#### C.6.4 Boat Dimensions

(a) BOAT LENGTH

The longitudinal distance between the aftermost point and the foremost point of the **boat** with **sails** and **spars** set as appropriate.

See H.3.4.

(b) BOAT BEAM

The transverse distance between the outermost points of the **boat**.

(c) WATERLINE LENGTH

The longitudinal distance between the aftermost point and the foremost point of the **waterline**.

(d) WATERLINE BEAM

The transverse distance between the outermost points of the waterline.

(e) DRAFT

The vertical distance between the **waterplane** and the lowest point of the **boat**.

(f) MINIMUM DRAFT

The draft with all hull appendages in their highest position.

(g) MAXIMUM DRAFT

The draft with all hull appendages in their lowest position.

(h) BOAT WEIGHT

The weight of the **boat**.

# **Section D – Hull Definitions**

### D.1 HULL TERMS

### D.1.1 Hull

The shell including any transom, the deck including any superstructure, the internal structure including any cockpit, the fittings associated with these parts and any **corrector weights**.

#### D.1.2 Sheerline

The line formed by the intersection of the top of the deck and the outside of the **hull** shell, each extended as necessary.

#### D.1.3 Sheer

The projection of the **sheerline** on the centreplane.

### D.2 HULL MEASUREMENT POINTS

#### D.2.1 Hull Datum Point

A point on the **hull** specified in the **class rules** from which **hull** measurements can be taken.

### **D.3 HULL DIMENSIONS**

#### D.3.1 Hull Length

The longitudinal distance between the aftermost point and the foremost point on the hull(s), excluding fittings.

See H.3.4.

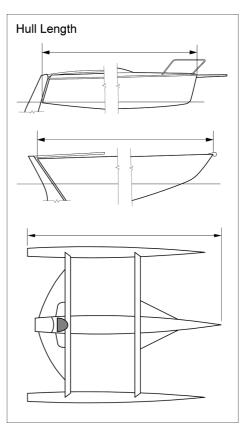
#### D.3.2 Hull Beam

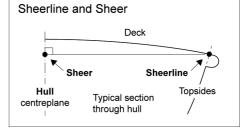
The maximum transverse distance between the outermost points of the **hull(s)** excluding fittings.

### **D.4 WEIGHT**

#### D.4.1 Hull Weight

The weight of the **hull**.





## Section E – Hull Appendage Definitions

#### E.1 HULL APPENDAGE TERMS

#### E.1.1 Hull Appendage

Any item of equipment – including the items listed in E.1.2– which is:

wholly or partly below the **sheerline** or its extension when fixed or when fully exposed if retractable,

attached to the hull shell or another hull appendage, and

used to affect: stability, leeway, steerage, directional stability, motion damping, trim, displaced volume,

Any of the following shall be included in the **hull appendage**:

#### corrector weights,

integral **ballast**, and associated fittings.

#### E.1.2 Hull Appendage Types

(a) KEEL

A fixed **hull appendage**, attached approximately on the **hull** centreplane, primarily used to affect stability and leeway.

(b) BILGE KEEL

A fixed **hull appendage**, attached off the **hull** centreplane, primarily used to affect stability and leeway.

(c) CANTING KEEL

A movable **hull appendage** primarily used to affect stability, attached approximately on the **hull** centreplane and rotating around a single longitudinal axis.

(d) FIN

A fixed **hull appendage** primarily used to affect leeway or directional control.

(e) BULB

A hull appendage containing ballast at the bottom of another hull appendage primarily used to affect stability.

(f) SKEG

A fin attached immediately in front of a rudder.

(g) CENTREBOARD

A retractable **hull appendage**, attached approximately on the **hull** centreplane and rotating about a single transverse axis which may move in relation to the **hull**, primarily used to affect leeway.

(h) DAGGERBOARD

A retractable **hull appendage**, attached approximately on the **hull** centreplane and not rotating, primarily used to affect leeway.

(i) BILGEBOARD

A retractable **hull appendage**, attached off the **hull** centreplane, primarily used to affect leeway.

(j) RUDDER

A movable **hull appendage** primarily used to affect steerage.

(k) TRIM TAB

When a **rudder**(s) is used, a movable **hull appendage**, attached at the aft, or fore edge of another **hull appendage**.

# **Section F – Rig Definitions**

### F.1 GENERAL RIG TERMS

#### F.1.1 Rig

The spars, spreaders, rigging, fittings and any corrector weights.

### F.1.2 Rig Types

(a) UNA RIG

A single-masted **rig** with a **mainsail** only.

(b) SLOOP RIG

A single-masted **rig** with a **mainsail** and one staysail **headsail**.

(c) CUTTER RIG

A single-masted **rig** with more than one staysail **headsail**.

(d) KETCH RIG

A two-masted **rig** with the fore mast – the **mainmast** – taller than the aft mast – the **mizzenmast** – set forward of the rudder stock.

(e) YAWL RIG

A two-masted **rig** with the fore mast – the **mainmast** – taller than the aft mast – the **mizzenmast** – set aft of the rudder stock.

(f) SCHOONER RIG

A two-masted **rig** with the fore mast – the **foremast** – shorter than, or the same height as, the aft mast – the **mainmast**.

### F.1.3 Spar

The main structural part(s) of the **rig**, to, or from which **sails** are attached and/or supported.

### F.1.4 Spar Types

(a) MAST

A spar on which the head or throat of a sail, or a yard, is set. Includes its rigging, spreaders, fittings and any corrector weights, but not fittings that are not essential to the function of the mast as part of the rig.

- Mast Types:
- (i) MAINMAST
  - (a) The only **mast** in a **una rig**, **sloop rig** or **cutter rig**.
  - (b) The fore mast in a ketch rig or yawl rig.
  - (c) The aft **mast** in a **schooner rig**.
- (ii) FOREMAST

The fore **mast** in a **schooner rig**.

(iii) MIZZENMAST

The aft **mast** in a **ketch rig** or **yawl rig**.

(b) BOOM

A **spar** attached at one end to a mast **spar** or a **hull** and on which the **clew** of a **sail** is set and on which the **tack** and/or **foot** of the **sail** may be set. Includes its **rigging**, fittings and any **corrector weights**, but not **running rigging**, **running rigging** blocks and/or any kicking strap/strut arrangement.

Boom Types:

(i) FORESAIL BOOM

A boom attached to a foremast spar to support a foresail.

(ii) HEADSAIL BOOM

A boom attached to a hull to support a headsail clew.

(iii) MAIN BOOM

A boom attached to a mainmast spar to support a mainsail.

(iv) MIZZEN BOOM

A boom attached to a mizzenmast spar to support a mizzen.

(v) WISHBONE BOOM

A double **boom** attached to a mast **spar** to support a **sail** and which has one **spar** on each side of the **sail**.

(c) OTHER SPARS

Other spar types include their **rigging**, fittings and any **corrector weights**, but not **running rigging**.

Other **Spar** Types:

(i) SPINNAKER POLE

A spar attached to the mast spar to set a spinnaker.

(ii) WHISKER POLE

A spar attached to the mast spar and a headsail clew.

(iii) BOWSPRIT

A hull **spar** extending forward to attach **rigging** and/or the **tack** of a **headsail**, or **headsails**.

(iv) BUMPKIN

A hull **spar** extending aft to sheet a **sail** and/or attach **rigging**.

(v) GAFF

A **spar** attached at one end to a mast **spar** to set the peak, throat and/or head of a quadrilateral **sail**.

(vi) SPRIT

A **spar** attached at one end to a mast **spar** or a hull to set only the peak of a quadrilateral **sail**.

(vii)YARD

A spar hoisted on a mast spar at a point between its ends to set the **head** of a quadrilateral sail or the **luff** of a lateen sail.

#### F.1.5 Rigging

Any equipment attached at one or both ends to **spars**, **sails** or other **rigging** and capable of working in tension only. Includes associated fittings which are not permanently fixed to a **hull**, **spar** or **spreader**.

#### F.1.6 Rigging Types

(a) STANDING RIGGING

**Rigging** used to support a mast **spar** or hull **spar**. It may be adjustable.

#### Standing Rigging types:

(i) SHROUD

**Rigging** providing transverse support for a mast **spar** or hull **spar** and which may also provide longitudinal support.

(ii) STAY

**Rigging** mainly providing longitudinal support for a mast **spar** or hull **spar** and or supporting a **sail**.

(iii) FORESTAY

**Rigging** providing forward support for a mast **spar**.

#### (b) RUNNING RIGGING

Rigging primarily used to trim a spar and/or a sail.

#### Running Rigging types:

(i) HALYARD

**Rigging** to hoist a **sail**, **spar**, flag or a combination thereof.

(ii) BACKSTAY

**Rigging** mainly providing aft support for a mast **spar** above the **upper limit mark**.

(iii) RUNNING BACKSTAY

**Rigging** providing aft support for a mast **spar** at a point, or points, between the **upper limit mark** and the **forestay rigging point**.

(iv) CHECKSTAY

**Rigging** providing aft support for a mast **spar** at a point, or points, between the **lower limit mark** and the **forestay rigging point**.

(v) OUTHAUL

Rigging to trim the clew of a sail along a boom spar.

(vi) SHEET

Rigging to trim the clew of a sail, or a boom spar.

(vii)SPINNAKER GUY

**Rigging** to trim the **tack** of a spinnaker.

#### F.1.7 Spreader

Any equipment attached at one or both ends to **spars**, **sails** or other **rigging** and capable of working in compression.

#### F.1.8 Foretriangle

The area formed by the foreside of the foremost mast **spar**, the foremost **forestay** and the deck including any superstructure.

#### F.1.9 Limit Marks

- (a) LIMIT MARK DIMENSIONS
  - (i) LIMIT MARK WIDTH

The minimum width measured in the length direction of the spar.

### F.2 MAST MEASUREMENT DEFINITIONS

#### F.2.1 Mast Measurement Points

(a) MAST DATUM POINT

The point on the **mast** specified in the **class rules** used as a datum for measurement.

(b) HEEL POINT

The lowest point on the **spar** and its fittings.

(c) TOP POINT

The highest point on the **spar** and its fittings.

(d) LOWER POINT

The highest point of the **lower limit mark** at the aft edge of the **spar**.



The lowest point of the **upper limit mark** at the aft edge of the **spar**.

#### F.2.2 Mast Limit Marks

(a) LOWER LIMIT MARK

The limit mark for the setting of a boom spar or sail.

(b) UPPER LIMIT MARK

The limit mark for the setting of a sail.

#### F.2.3 Mast Dimensions

See H.4.

(a) MAST LENGTH

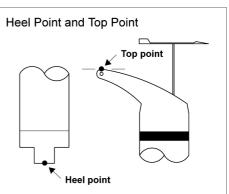
The distance between the **heel point** and the **top point**.

(b) LOWER POINT HEIGHT

The distance between the **mast datum point** and the **lower point**.

(c) UPPER POINT HEIGHT

The distance between the mast datum point and the upper point.



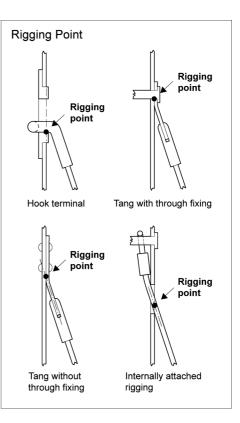
- (d) RIGGING POINT
  - When **rigging** is attached:

BY HOOK TERMINAL: The lowest point of the hook where it intersects the **spar**, extended as necessary.

BY TANG WITH THROUGH FIXING: The lowest point of the **spar** through fixing where it intersects the **spar**.

BY EYE WITH BOLT OR OTHER THROUGH FIXING: The lowest point of the **spar** bolt, or through fixing, where it intersects the **spar**.

IN OTHER WAYS: The intersection of the outside of the **spar**, extended as necessary, and the centreline of the **rigging**.

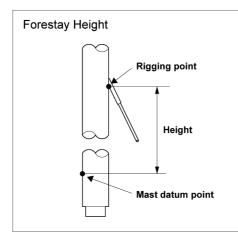


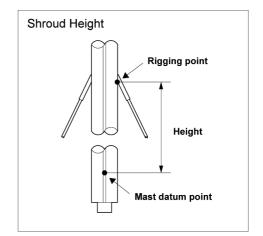
(e) FORESTAY HEIGHT

The distance between the mast datum point and the rigging point.

(f) SHROUD HEIGHT

The distance between the mast datum point and the rigging point.





#### (g) BACKSTAY HEIGHT

The distance between the **mast datum point** and the **rigging point** or the **top point** whichever is the lowest.

(h) CHECKSTAY HEIGHT

The distance between the mast datum point and the rigging point.

(i) TRAPEZE HEIGHT

The distance between the **mast datum point** and the **rigging point**.

#### (j) SPINNAKER HOIST HEIGHT

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

#### (k) MAST SPAR CURVATURE

The greatest distance between

the spar

and a straight line from the **upper point** to the **lower point** 

taken at  $90^{\circ}$  to the straight line when the **spar** is resting on one side.

(I) MAST SPAR DEFLECTION

The difference in distance, at a specified distance from the **mast** datum point, between

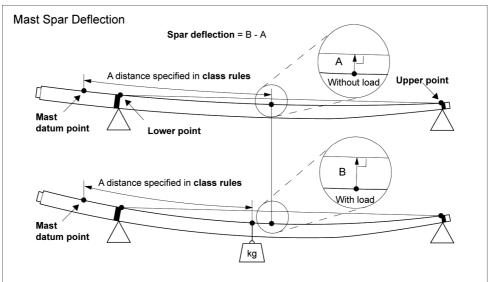
#### the spar

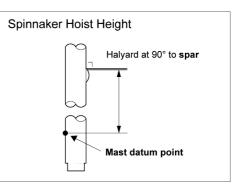
and a straight line from the **upper point** to the **lower point** 

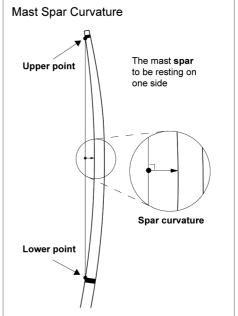
taken at 90° to the straight line with and without a specified load at the specified distance when the **spar** is horizontal at and supported at these points.

- (i) FORE-AND-AFT: Measured with the aft edge up.
- (ii) TRANSVERSE: Measured with one side up.

See H.4.5.







#### (m) MAST SPAR CROSS SECTION

- (i) FORE-AND-AFT: The foreand-aft dimension, including any sail track, at a specified distance from the mast datum point.
- (ii) TRANSVERSE: The transverse dimension, at a specified distance from the **mast datum point**.
- (n) MAST SPAR WEIGHT

The weight of the **spar** including fittings and **corrector weights**.

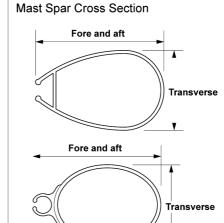
(o) MAST WEIGHT

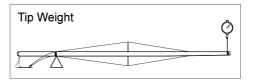
The weight of the **mast**.

(p) MAST TIP WEIGHT

The weight of the **mast** measured at the **upper point** when the **spar** is supported at the **lower point**.

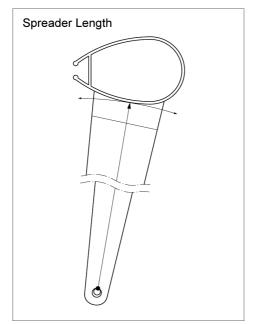


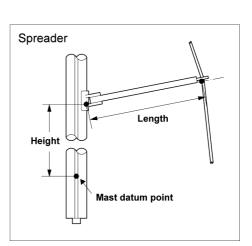




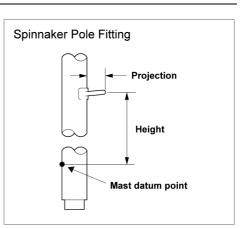
#### F.2.4 Mast Fittings

- (a) SPREADER
  - (i) LENGTH: The distance between the inner edge of the **shroud** at the lower edge of the **spreader** and the intersection of the lower edge of the **spreader**, extended as necessary, and the **spar**.
  - (ii) HEIGHT: The distance between **mast datum point** and the intersection of the lower edge of the **spreader**, extended as necessary, and the **spar**.





- (b) SPINNAKER POLE FITTING
  - (i) HEIGHT: The distance between the **mast datum point** and the centre of the highest bearing part of the fitting.
  - (ii) **PROJECTION:** The shortest distance between the outermost point of the fitting and the **spar**.



### F.3 BOOM MEASUREMENT DEFINITIONS

#### F.3.1 Boom Measurement Points

(a) OUTER POINT

The point on the boom **outer limit mark**, at the upper edge of the **spar**, nearest the fore end of the **spar**.

#### F.3.2 Boom Limit Marks

(a) OUTER LIMIT MARK

The limit mark for the setting of a mainsail, foresail or mizzen.

#### F.3.3 Boom Dimensions

See H.4.

(a) OUTER POINT DISTANCE

The distance between the **outer point** and the aft edge of the mast **spar**, with the boom **spar** on the mast **spar** centreplane and at  $90^{\circ}$  to the mast **spar**.

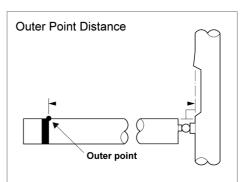
#### (b) BOOM SPAR CURVATURE

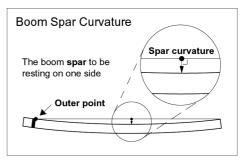
The greatest distance between

#### the spar

and a straight line from the uppermost fore end of the **spar** to the **outer point** or, where there is no **outer point**, to the uppermost aft end of the **spar**,

taken at  $90^{\circ}$  to the straight line when the spar is resting on one side.





#### (c) BOOM SPAR DEFLECTION

The difference in distance, at a specified distance from the **outer point**, between

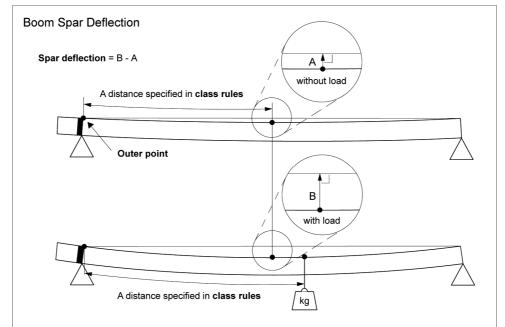
the spar

and a straight line from the **outer point** to the top of the fore end of the **spar** 

taken at  $90^{\circ}$  to the straight line and with and without a specified load at the specified distance when the **spar** is horizontal and supported at these points.

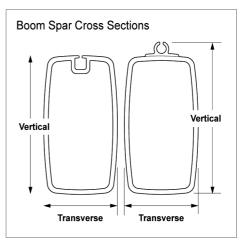
- (i) VERTICAL: Measured with the top edge up.
- (ii) TRANSVERSE: Measured with one side up.

See H.4.5.



#### (d) BOOM SPAR CROSS SECTION

- (i) VERTICAL: The vertical dimension, including any **sail** track, at a specified distance from the **outer point**.
- (ii) TRANSVERSE: The transverse dimension at a specified distance from the **outer point**.



(e) BOOM WEIGHT

The weight of the **boom**.

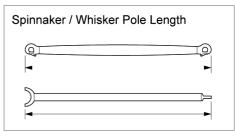
### F.4 SPINNAKER/WHISKER POLE MEASUREMENT DIMENSIONS

See H.4.

(a) SPINNAKER/WHISKER POLE LENGTH

The distance between the ends of the **spinnaker/whisker pole**.

(b) SPINNAKER/WHISKER POLE SPAR CROSS SECTION



The sectional dimensions at specified distances from an end of the **spinnaker/whisker pole**.

#### (c) SPINNAKER/WHISKER POLE WEIGHT

The weight of the **spinnaker/whisker pole**.

### F.5 BOWSPRIT MEASUREMENT DEFINITIONS

#### F.5.1 Bowsprit Measurement Points

(a) BOWSPRIT INNER POINT

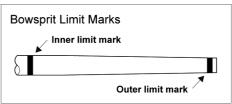
The point of the **bowsprit inner limit mark**, at the upper edge of the **spar**, nearest the outboard end of the **spar**.

(b) BOWSPRIT OUTER POINT

The point of the **bowsprit outer limit mark**, at the upper edge of the **spar**, nearest the inner end of the **spar**, or the outboard end of the **spar** when there is no **outer limit mark**.

### F.5.2 Bowsprit Limit Marks

(a) BOWSPRIT INNER LIMIT MARK The **limit mark** for the setting of the **spar**.



#### (b) BOWSPRIT OUTER LIMIT MARK

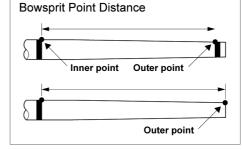
The limit mark for the setting of a headsail.

#### F.5.3 Bowsprit Dimensions

See H.4.

(a) BOWSPRIT POINT DISTANCE

The distance between the **bowsprit** inner point and the **bowsprit** outer point.



(b) BOWSPRIT SPAR CROSS SECTION

The sectional dimensions at specified positions.

(c) BOWSPRIT WEIGHT

The weight of the **bowsprit**.

### F.6 FORETRIANGLE MEASUREMENT DEFINITIONS

#### F.6.1 Foretriangle Dimensions

#### (a) FORETRIANGLE BASE

The longitudinal distance between the intersection of the fore side of the mast **spar**, extended as necessary, and the deck including any superstructure, and the intersection of the centreline of the **forestay**, extended as necessary, and the deck, or bowsprit **spar**.

See H.3.4.

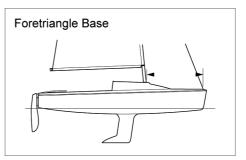
#### (b) FORETRIANGLE HEIGHT

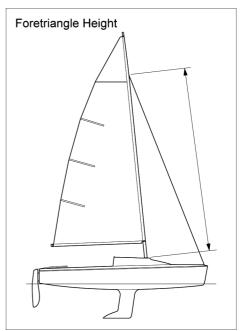
The distance between the intersection of fore side of the mast **spar**, extended as necessary, and the deck including any superstructure, and the **forestay rigging point**.

See H.4.

(c) FORETRIANGLE AREA

Half the product of the **foretriangle base** and the **foretriangle height**.





# Section G – Sail Definitions

### Subsection A – Trilateral Sails

Definitions relating to **sails** with only three **sail edges**:

"MAINSAIL" also applies to foremast sail and mizzen.

"HEADSAIL" also applies to "jib" and "genoa".

"SPINNAKER" also applies to "gennaker".

### G.1 GENERAL SAIL TERMS

### G.1.1 Sail

An item of equipment attached to the **rig**, used to propel the **boat** including any of the following added parts when they are present:

sail reinforcements batten pockets windows stiffening tabling attachments other parts as permitted by class rules.

### G.1.2 Set Flying

A sail set with no sail edge attached to the rig.

### G.1.3 Sail Types

(a) MAINSAILS

A sail with the **luff** attached to a mast **spar**. The lower of the **sails** if more than one **sail** with the **luff** set to that **spar**.

(i) MAINSAIL

A mainsail with the luff attached to a mainmast spar.

(ii) FOREMAST SAIL

A mainsail with the luff attached to a foremast spar.

(iii) MIZZEN

A mainsail with the luff attached to a mizzenmast spar.

(b) HEADSAIL

A sail set forward of the mast spar, or of the foremost mast spar if more than one mast.

### G.1.4 Sail Construction

(a) BODY OF THE SAIL

The sail excluding the areas where parts are added as per G.1.1.

(b) PLY

A sheet of sail material.

(c) SOFT SAIL

A sail where the **body of the sail** is capable of being folded flat in any direction without damaging any **ply** other than by creasing.

(d) WOVEN PLY

A **ply** which, when torn, can be separated into fibres without leaving evidence of a film.

(e) LAMINATED PLY

A **ply** made up of more than one layer.

(f) SINGLE-PLY SAIL

A sail, except at seams, where all parts of the **body of the sail** consist of only one **ply**.

(g) DOUBLE LUFF SAIL

A sail with more than one luff, or a sail passing around a stay or spar and attached back on itself.

(h) SEAM

Overlap where two or more **ply** forming the **body of the sail** are joined.

(i) DART

Overlap where an area cut out of one **ply** is joined.

(j) TUCK

Overlap where a **ply** is folded and joined.

(k) BATTEN POCKET

Additional **ply** to form a pocket for a batten.

(1) SAIL OPENING

Any opening other than openings created by **attachments** or **batten pockets**.

(m) WINDOW

Transparent **ply** covering a **sail opening**.

(n) STIFFENING

Corner boards and battens.

- (o) ATTACHMENTS
  - Bolt ropes
  - tablings that surround, or are fixed to, bolt ropes

luff wires including any cringles and seizing

- cringles
- straps
- hanks
- slides
- adjustment eyes

adjustment points reefing eyes reefing points, and blocks and their fastenings.

See H.5.3.

#### (p) SAIL EDGE SHAPE

The shape of a sail edge as a comparison with a straight line between

#### corner points or,

in the case of a **leech** other than of a gennaker or spinnaker, between the **clew point** and the **aft head point**.

#### G.2 SAIL EDGES

#### G.2.1 Foot

The bottom edge.

#### G.2.2 Leech

The aft edge.

#### G.2.3 Luff

I

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The fore edge.

#### G.2.4 Sail Edge Hollow

Concavity in the shape of a leech between

adjacent batten pockets, or

a batten pocket and the adjacent corner point, or

in the case of a **mainsail**, **foremast sail**, **mizzen** or a **headsail** other than a spinnaker or a gennaker, between the **aft head point** and the adjacent **batten pocket**.

#### G.3 SAIL CORNERS

#### G.3.1 Clew

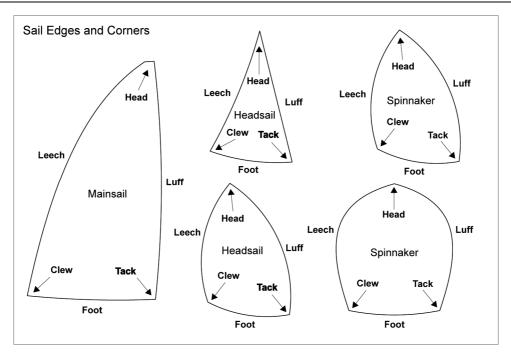
The area where the **foot** and the **leech** meet.

#### G.3.2 Head

The area at the top.

#### G.3.3 Tack

The area where the **luff** and the **foot** meet.



### G.4 SAIL CORNER MEASUREMENT POINTS

#### G.4.1 Clew Point

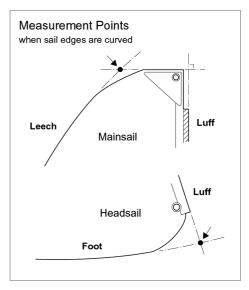
The intersection of the **foot** and the **leech**, each extended as necessary.

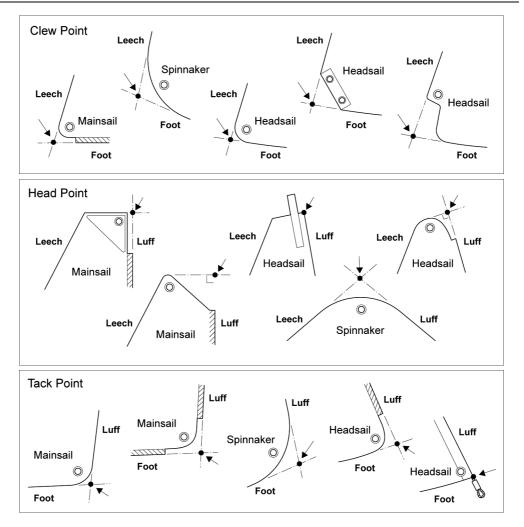
#### G.4.2 Head Point

- (a) MAINSAIL: The intersection of the **luff**, extended as necessary, and the line through the highest point of the **sail** at  $90^{\circ}$  to the **luff**.
- (b) HEADSAIL: The intersection of the **luff**, extended as necessary, and the line through the highest point of the **sail**, excluding **attachments**, at 90° to the **luff**.
- (c) SPINNAKER: The intersection of the **luff** and the **leech**, extended as necessary.

#### G.4.3 Tack Point

The intersection of the **foot** and the **luff**, each extended as necessary.





### G.5 OTHER SAIL MEASUREMENT POINTS

#### G.5.1 Quarter Leech Point

The point on the **leech** equidistant from the **half leech point** and the **clew point**.

#### G.5.2 Half Leech Point

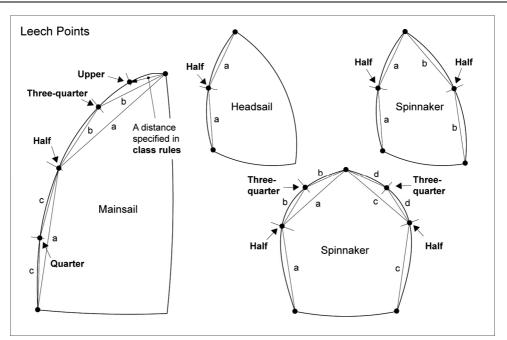
The point on the **leech** equidistant from the **head point** and the **clew point**.

#### G.5.3 Three-Quarter Leech Point

The point on the **leech** equidistant from the **head point** and the **half leech point**.

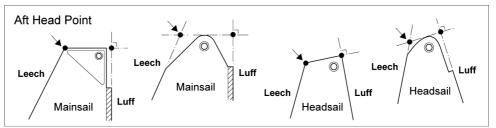
#### G.5.4 Upper Leech Point

The point on the **leech** a specified distance from the **head point**.



### G.5.5 Aft Head Point

MAINSAIL and HEADSAIL: The intersection of the **leech** extended as necessary and the line through the **head point** at 90° to the **luff**.



#### G.5.6 Quarter Luff Point

The point on the **luff** equidistant from the **half luff point** and the **tack point**.

#### G5.7 Half Luff Point

The point on the **luff** equidistant from the **head point** and the **tack point**.

#### G.5.8 Three-Quarter Luff Point

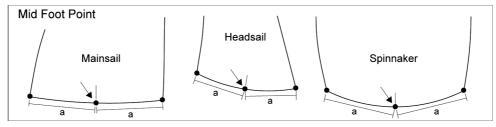
The point on the **luff** equidistant from the **head point** and the **half luff point**.

#### G.5.9 Upper Luff Point

The point on the **luff** a specified distance from the **head point**.

#### G.5.10 Mid Foot Point

The point on the **foot** equidistant from the **tack point** and the **clew point**.



### G.6 SAIL REINFORCEMENT

#### G.6.1 Primary Reinforcement

An unrestricted number of additional layers of **ply** of permitted material:

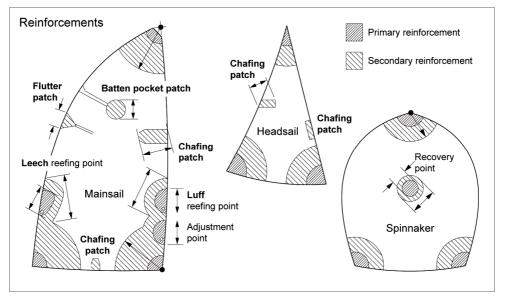
- at a corner
- at a adjustment point
- at a reefing point adjacent to the luff
- at a reefing point adjacent to the leech
- at a sail recovery point
- where permitted by the class rules

#### G.6.2 Secondary Reinforcement

Not more than two additional layers of **ply** of permitted material each not thicker than the maximum thickness of the **ply** of the **body of the sail**:

- at a corner
- at an adjustment point
- at a reefing point adjacent to the luff
- at a reefing point adjacent to the leech
- at a sail recovery point
- to form a **flutter patch**
- to form a chafing patch
- to form a **batten pocket patch**

where permitted by the class rules



#### G.6.3 Tabling

Additional **ply** or folded **ply** overlap(s) at a **sail edge**.

#### G.6.4 Batten Pocket Patch

Secondary reinforcement at the inner end of a batten pocket.

#### G.6.5 Chafing Patch

**Secondary reinforcement** where a **sail** can touch a **spreader**, stanchion, **shroud** or **spinnaker pole**.

#### G.6.6 Flutter Patch

Secondary reinforcement on the leech or the **foot** at the end of a **seam**.

### G.7 PRIMARY SAIL DIMENSIONS See H.5.

.....

### G.7.1 Foot Length

The distance between the **clew point** and the **tack point**.

#### G.7.2 Leech Length

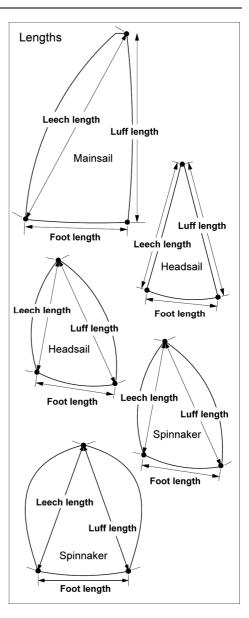
The distance between the **head point** and the **clew point**.

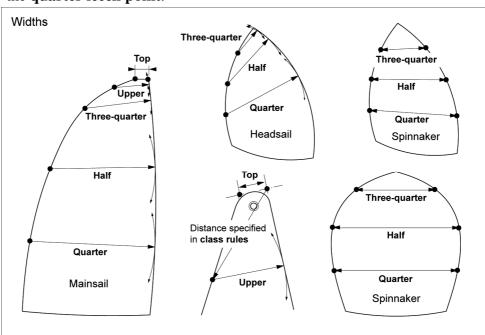
#### G.7.3 Luff Length

The distance between the **head point** and the **tack point**.

### G.7.4 Quarter Width

- (a) MAINSAIL and HEADSAIL: The shortest distance between the **quarter leech point** and the **luff**.
- (b) SPINNAKER: The distance between the **quarter luff point** and the **quarter leech point**.





#### G.7.5 Half Width

- (a) MAINSAIL and HEADSAIL: The shortest distance between the half leech point and the luff.
- (b) SPINNAKER: The distance between the **half luff point** and the **half leech point**.

#### G.7.6 Three-Quarter Width

- (a) MAINSAIL and HEADSAIL: The shortest distance between the **three-quarter leech point** and the **luff**.
- (b) SPINNAKER: The distance between the **three-quarter luff point** and **three-quarter leech point**.

#### G.7.7 Upper Width

- (a) MAINSAIL and HEADSAIL: The shortest distance between the **upper leech point** and the **luff**.
- (b) SPINNAKER: The distance between the **upper luff point** and the **upper leech point**.

#### G.7.8 Top Width

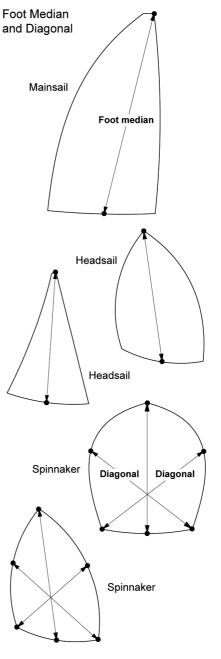
(a) MAINSAIL and HEADSAIL: The distance between the **head point** and the **aft head point**.

#### G.7.9 Diagonals

- (a) CLEW DIAGONAL: The distance between the **clew point** and the **half luff point**.
- (b) TACK DIAGONAL: The distance between the **tack point** and the **half leech point**.

#### G.7.10 Foot Median

The distance between the **head point** and the **mid foot point**.



#### G.7.11 Luff Perpendicular

The shortest distance between the **clew point** and the **luff**.

# G.8 OTHER SAIL DIMENSIONS

See H.5.

#### G.8.1 Batten Pocket Length

- (a) INSIDE: The greatest distance between the **sail edge** and the internal extreme end of the **batten pocket**, measured parallel to the pocket centreline. The effect of any elastic or other retaining device and any local widening for batten insertion shall be ignored.
- (b) OUTSIDE: The greatest distance between the **sail edge** and the external extreme end of the **batten pocket**, measured parallel to the pocket centreline. The effect of any local widening for batten insertion shall be ignored.

#### G.8.2 Batten Pocket Width

- (a) INSIDE: The greatest distance between inside edges of the batten pocket measured at 90° to pocket centreline. Local widening for batten insertion shall be ignored.
- (b) OUTSIDE: The greatest distance

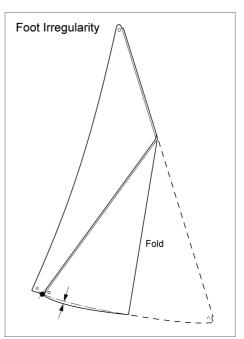
between the outside edges of the **batten pocket** measured at 90° to the pocket centreline. Local widening for batten insertion shall be ignored.

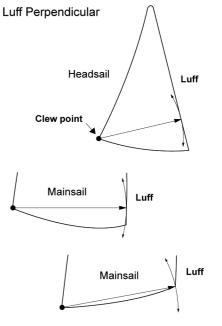
#### G.8.3 Foot Irregularity

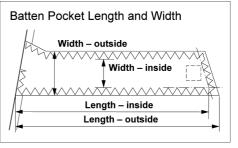
The maximum distance between the edges of the **foot** when first the **tack point** and then the **clew point** are superimposed on any part of the **foot**.

#### G.8.4 Reinforcement Size

- (a) AT A CORNER: The greatest dimension of the sail reinforcement from a sail corner measurement point.
- (b) TABLING WIDTH: The width of a **tabling** measured at 90° to the **sail** edge.
- (c) ELSEWHERE: The greatest dimension of the sail reinforcement.







#### G.8.5 Seam Width

The width of a **seam** measured at  $90^{\circ}$  to the **seam**.

#### G.8.6 Dart Width

The width of a **dart** measured at  $90^{\circ}$  to the **dart** centreline.

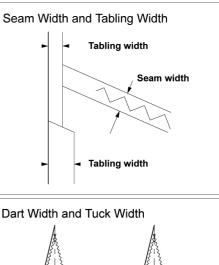
### G.8.7 Tuck Width

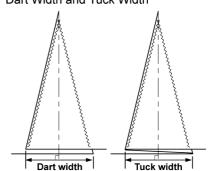
The width of a **tuck** measured at  $90^{\circ}$  to the **tuck** centreline.

#### G.8.8 Attachment Size

- (a) AT A CORNER OR AN EDGE
  - (i) LENGTH

AT THE HEAD: The dimension from the **head point** along the **luff** or its extension to a line through the highest point of the **attachment** at  $90^{\circ}$  to the **luff**.





AT THE TACK: The dimension from the **tack point** along the **luff** or its extension to a line through the lowest point of the **attachment** at  $90^{\circ}$  to the **luff**.

AT THE CLEW: The greatest dimension from the **clew point**.

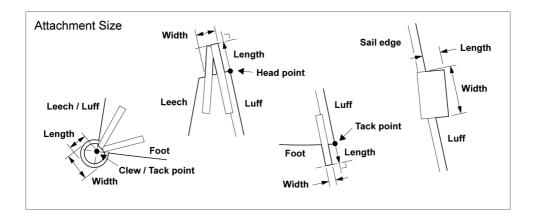
AT AN EDGE: The greatest dimension from the sail edge.

(ii) WIDTH

The greatest dimension measured perpendicular to the length.

(b) ELSEWHERE

The greatest dimension of the **attachment**.



# Subsection B – Additions for Other Sails

The following definitions for non-trilateral sails are additional to or vary those given in Subsection A of this Section.

### G.2 SAIL EDGES

G.2.4 Head

The top edge.

### G.3 SAIL CORNERS

### G.3.4 Peak

The area where the **head** and the **leech** meet.



The area where the **head** and the **luff** meet.

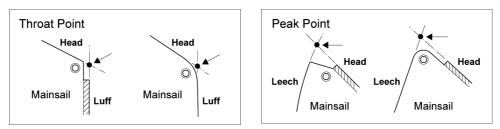
### G.4 SAIL CORNER MEASUREMENT POINTS

### G.4.4 Peak Point

The intersection of the **head** and **leech**, each extended as necessary.

### G.4.5 Throat Point

The intersection of the head and luff, each extended as necessary.



### G.5 OTHER SAIL MEASUREMENT POINTS

### G.5.2 Half Leech Point

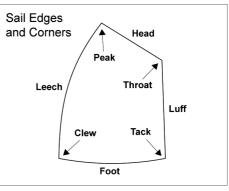
The point on the **leech** equidistant from the **peak point** and the **clew point**.

### G.5.3 Three-Quarter Leech Point

The point on the **leech** equidistant from the **peak point** and the **half leech point**.

### G.5.4 Upper Leech Point

The point on the leech a specified distance from the peak point.



### G.7 PRIMARY SAIL DIMENSIONS

See H.5.

#### G.7.2 Leech Length

The distance between the **peak point** and the **clew point**.

#### G.7.3 Luff Length

The distance between the **throat point** and the **tack point**.

#### G.7.9 Diagonals

(a) CLEW DIAGONAL

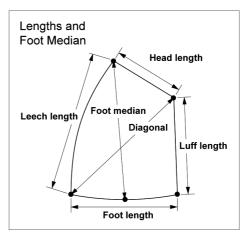
The distance between the throat point and the clew point.

#### G.7.10 Foot Median

The distance between the **peak point** and the **mid foot point**.

#### G.7.12 Head Length

The distance between the **peak point** and the **throat point**.



# **Section H – Equipment Control and Inspection**

### H.1 CERTIFICATION CONTROL

- H.1.1 An official measurer shall not carry out certification control of any part of a boat owned, designed or built by himself, or in which he is an interested party, or has a vested interest, except where permitted by the MNA or ISAF for In-House Certification.
- **H.1.2** If an **official measurer** is in any doubt as to the application of, or compliance with, the **class rules** he shall consult the **certification authority** before signing a certification control form or attaching a **certification mark**.
- **H.1.3** An official measurer shall only carry out certification control in another country with the prior agreement of the MNA for that country.

### H.2 EQUIPMENT INSPECTION

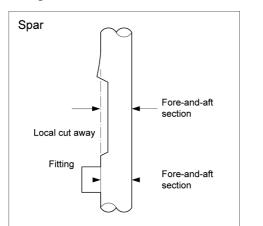
**H.2.1** If an **equipment inspector** is in any doubt as to the application of, or compliance with, the **class rules**, the question should be referred to the authority responsible for interpreting the **class rules**.

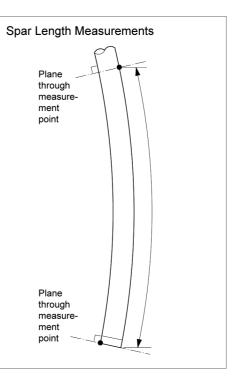
### H.3 MEASUREMENT AXES

- H.3.1 For a boat, unless otherwise specified, words such as "fore", "aft", "above", "below", "height", "depth", "length", "beam", "freeboard", "inboard" and "outboard" shall be taken to refer to the boat in measurement trim. All measurements denoted by these, or similar words, shall be taken parallel to one of the three major axes.
- **H.3.2** For a component, unless otherwise specified, width, thickness, length etc. shall be measured as appropriate for that component, if relevant without reference to the **major axes**.
- **H.3.3** Unless otherwise specified, measurements shall be the shortest distance between the measurement points.
- **H.3.4** Unless otherwise specified, longitudinal measurements shall be taken parallel to the longitudinal **major axis**.

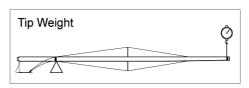
### H.4 RIG MEASUREMENT

**H.4.1** Measurements in the length direction shall be taken along the **spar** at the side relevant for the measurement and between sectional planes through the measurement points at 90° to the **spar** at each point.





- **H.4.2** Fittings, local curvature and local cut away, shall be ignored when measuring a **spar** or dimensions taken to a **spar**.
- **H.4.3** No external pressure shall be applied to a **spar** when measuring unless specifically prescribed.
- **H.4.4** Adjustable fittings shall be set in the position that gives the greatest value when the measurement is taken.
- **H.4.5** Mast spar deflection and boom spar deflection shall be checked with free ends of rigging not supported by the spar.
- H.4.6 Mast tip weight shall be checked with any halyards fully hoisted and rigging tied to the spar at the lower limit mark with lower ends hanging free or resting on the ground.



### H.5 SAIL MEASUREMENT

#### H.5.1 Conditions of Sail

The sail shall:

be dry

not be attached to spars or rigging

have all battens removed

have pockets of any type flattened out

have just sufficient tension applied to remove wrinkles across the line of the measurement being taken, and

have only one measurement taken at a time.

#### H.5.2 Hollows in Sail Edges

Where there is a **sail edge hollow** and a measurement point falls in the hollow:

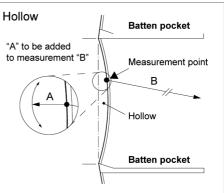
between adjacent batten pockets

- between the aft head point and adjacent batten pocket
- between the clew point and adjacent batten pocket

between the tack point and adjacent batten pocket

at an **attachment**.

the **sail** shall be flattened out in the area of the **sail edge**, the **sail edge hollow** shall be bridged by a straight line and the shortest distance from the measurement point to the straight line shall be measured. This distance shall be added to the measurement being taken.



### H.5.3 Excluding Attachments

Attachments at a sail edge, other than a bolt rope and tabling, shall be ignored when measuring.

### H.6 CHECKING MATERIALS

Unless specifically prescribed by the **class rules**, materials are not subject to **certification control**.

### H.7 WEIGHT MEASUREMENT

### H.7.1 Conditions for Weight Measurement

The **boat** shall:

be dry.

be in compliance with the **class rules**.

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\*<sup>1</sup> See Section G, Subsection B – Additions for Other Sails