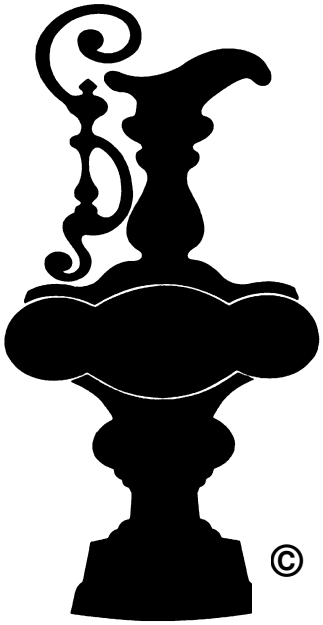

AMERICA'S CUP© CLASS RULE

Version 5.0

15 December, 2003

VISION

1. This vision statement does not form part of the **ACC Rule**.

2. The America's Cup Class is intended:

   (a) to produce wholesome, fast and manoeuvrable day sailing monohulls of similar performance intended for spectacular match racing in a wide wind range while fostering design developments that will flow through to the mainstream of yachting; and

   (b) for yachts that are raced "around the buoys" with tenders present, as opposed to off-shore in high wind and rough sea conditions.

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SECTION A - GENERAL

1. STATUS

1.1 This Version 5.0 of the America's Cup **ACC Rule** applies to America's Cup XXXII and supersedes all previous versions and their attendant interpretations.

1.2 Amendments may be made to the **ACC Rule** by the **Defender** and the **Challenger of Record** with the approval of all other **Challengers** except those **Challengers** who have been eliminated from America's Cup XXXII competition or have otherwise ceased to qualify as a Challenger.

1.3 The **ACC Rule** applies only to **competitors** for America's Cup XXXII. The **ACC Rule** confers no rights or obligations on owners of yachts that have been issued with a sail number under previous versions of this **ACC Rule** and who are not **competitors** in America's Cup XXXII.

1.4 The words "America's Cup" and the image of the America's Cup as shown in Appendix E are the trademark property of America's Cup Properties Inc. No person or entity may use such trade marks in any manner without authority of and written licence from America's Cup Properties Inc.

1.5 Copyright in these **ACC Rules** is owned by the then current **Defender** and **Challenger of Record**. All rights are reserved.

2. LANGUAGE AND DEFINITIONS

2.1 The official language of the America's Cup **ACC Rule** is English. If these **ACC Rules** are translated into another language, this English text shall prevail. Except words specifically defined below, the meaning of any word shall be determined by reference to the Oxford English Dictionary second edition (1989) – CD Rom Version 3.0 (Oxford University Press 2002) or any later published version.

2.2 The word "shall" is mandatory; and the words "may" and "can" are permissive.

2.3 Unless the context otherwise requires, the plural means the singular and vice versa.

2.4 The metric system shall be used for all measurements unless otherwise prescribed.

2.5 When a term defined below is used in its defined sense, it is printed in **bold** type.

(a) "**ACC**" means the America's Cup Class.

(b) "**Amidships**" means a transverse vertical station at 50% of LBG.

(c) **"Appendage"** means any element outside the **hull** up to the **sheerline** but excludes bowsprits. **Appendage** may also include an element of an **appendage** which may extend from outside the **hull** into the yacht (eg. fin tower or rudder stock).

(d) "**Ballast**" means material used to provide stability and/or measurement compliance and has a density greater than 9000 kg/m^3 and less than 11,300 kg/m^3. **Ballast** may contain naturally occurring trace elements which have a density greater than 11,300 kg/m^3, however these trace elements shall not exceed 1 part per million. Elements with a density greater than 11,300 kg/m^3 shall not be added to the **ballast** in any quantity.

(e) "**Bowsprit**" means a fixed spar extending beyond the stem at or above **deck** level for the tacking of a sail or leading of a spinnaker foreguy.

(f) "**ACC Rule**" means the America's Cup Class Rule Version 5.0 including appendices, and any **Interpretation** issued thereunder.

(g) "**Challenger**" means a yacht club whose challenge has been accepted by the **Defender** under Article 3 of the **Protocol** and includes a person or entity which undertakes that yacht club's challenge as its representative.

(h) "**Challenger of Record**" means the yacht club whose challenge has been accepted by the **Defender** yacht club under the terms of the Deed of Gift for the America's Cup dated 24 October 1887 and whose challenge is current.

(i) "**Cockpit**" means a recess in the **deck** aft of the aft side of the mast, inboard of and extending below the adjacent **sheerline**.

(j) "**Competitor**" means the **Defender** or a **Challenger**.

(k) "**Confidential Interpretation**" means a confidential interpretation of the **ACC Rule** issued by the **Measurement Committee** pursuant to **ACC Rule** 3.2

(l) "**Cure**" means the irreversible change of properties of a thermosetting resin by the chemical reaction of ring closure (polymerisation) via linking agents.

(m) "**Deck**" means the upper surface of the yacht above the **hull** and inside the **sheerline**, which is horizontal or near horizontal, and any transom, but excluding **cockpits**, recesses and troughs. For the purposes of this definition "near horizontal" means less than 45^{o} to the horizontal.

(n) "**Defender**" means the yacht club holding the America's Cup and includes a person or entity which undertakes that yacht club's defence as its representative.

(o) "**Fibre modulus**" means the batch-nominal elastic modulus of the fibres in an FRP laminate as determined by the SACMA-SRM16 with modulus measured in the strain range between 1000 and 6000 microstrains.

(p) "**FRP**" means commercially available carbon fibre or glass fibre reinforced thermoset plastics. Small quantities of non-structural stitching and binding materials are permitted in **FRP** laminates.

(q) "**Headsail**" means a three-sided sail which is tacked forward of the mast while set.

(r) "**Hull**" means the fair body of the yacht up to the **sheerline** and does not include the **deck**, nor the **appendages**.

(s) "**Interpretation**" means a **Confidential Interpretation** or **Public Interpretation** issued in writing by the **Measurement Committee** in accordance with **ACC Rule** 3 after this **ACC Rule** has been adopted;

(t) "**Measurement Committee**" means the committee appointed pursuant to Article 5.2(b) of the **Protocol**.

(u) "**Measurement condition**" means the condition of the yacht as specified in **ACC Rule** 43.

(v) "**Measurer**" means a person appointed to provide measurement or compliance services.

(w) "**Notice of Race**" means, where the context requires, the notice of race issued for America's Cup XXXII, or any regatta held before America's Cup XXXII for the **Competitors** in which AC Management Limited is the Organising Authority.

(x) "**Owner**" means the owner (or charterer) or the designated representative of a **Competitor**.

(y) "**Protocol**" means the Protocol Governing America's Cup XXXII dated 2 March 2003 and any subsequent amendments.

(z) "**Public Interpretation**" means an interpretation of the **ACC Rule** issued by the **Measurement Committee** pursuant to **ACC Rule** 3.3.

(AA) "**Racing Rules** " means the racing rules adopted by a **Notice of Race**.

(BB) "**Regatta Director**" means the person appointed pursuant to Article 5.1 of the **Protocol**.

(CC) "**Running Rigging**" means rigging which is used to hoist, trim, or control sails or spars and includes running backstays, checkstays, halyards, sheets, tack line and forestay strop, but does not include **Standing Rigging**.

(DD) "**Sheerline**" means the line formed by the intersection of the **deck** and the **hull** or the intersection of the fair projection of the **deck** and the **hull**. (See also **ACC Rule** 14).

(EE) "**Standing Rigging**" means rigging which supports a spar and maintains the same approximate relative position and orientation to a spar whilst sailing and includes forestay, fixed backstays, sidestays, diagonal stays, diamond stays, jumper stays and bobstays but does not include **Running Rigging**.

(FF) "**Technical Director**" means the person appointed by the **Defender** and **Challenger of Record** who shall be Chairman of the **Measurement Committee**.

3. INTERPRETATION

3.1 **Confidential Interpretations** and **Public Interpretations** shall be issued by the **Measurement Committee** sequentially and shall form part of these **ACC Rules.**

3.2 **Confidential Interpretations** may be sought by a **Competitor** prior to 30 March 2006 by request in writing to the **Technical Director**, and shall be issued as follows:

(a) The **Measurement Committee** shall issue a **Confidential Interpretation** in writing to the **Competitor** seeking the **interpretation** within 30 days of the request being received by the **Technical Director** unless an extension of the time has been agreed with the **Competitor**.

(b) The **Measurement Committee** shall publish and make available to all **Competitors** a copy of every **Confidential Interpretation** on 1 May 2006.

3.3 **Public Interpretations** may be sought by a **Competitor** at any time by request in writing to the **Technical Director.** A **Public Interpretation** may be initiated by the **Measurement Committee**. **Public Interpretations** shall be issued by the **Measurement Committee** who shall simultaneously distribute copies to all **Competitors**. **Public Interpretations** shall be issued within 30 days of the request being received by the **Technical Director** unless an extension of the time has been agreed with the **Competitor**.

3.4 In the preparation of an **Interpretation**, the **Measurement Committee** may consult other parties at its discretion.

3.5 Neither the **Measurement Committee** nor a **Measurer** will issue verbal interpretations. A **Competitor** shall place no reliance on any advice or opinion from the **Measurement Committee** or a **Measurer** unless it is set out in an **Interpretation**. The **Measurement Committee** shall not be bound by any advice or opinion given in any form, other than in an **Interpretation**.

3.6 If, during measurement of a yacht, the **Measurer** is in doubt as to the interpretation of an **ACC Rule**, the **Measurer** shall request a **Public Interpretation** in accordance with **ACC Rule** 3.4 or alternatively, subject to the time limits set out in **ACC Rule** 3.3, the **Competitor** may request a **Confidential Interpretation**. The measurement shall be deemed incomplete until the **Interpretation** has been issued.

3.7 Any **Competitor** who does not obtain an **Interpretation** in a timely manner in respect of any unusual or unique feature (to this class) of its competing yacht, or one which requires an unusual or unique application of the **ACC Rule**, acknowledges and accepts that if the **Measurement Committee** determines that such yacht fails to comply with this **ACC Rule**, the **Measurement Committee** shall not issue, or shall withdraw the yacht's measurement certificate.

4. ABBREVIATIONS

The following abbreviations are used:

ABREV.	DESCRIPTION
ABC	aft beam correction
AG	aft chain girth
AGC	aft girth correction
AGS	aft girth station
ALM	aft length mark positioned at the aft end of LBG
B	beam
BAD	height of top of boom above datum band
CO	mainsail clew offset
D	draft
DSP	displacement in cubic metres
E1, E2, E3, E4, & E5	mainsail girths
FBC	forward beam correction
FG	forward chain girth
FGC	forward girth correction
FGS	forward girth station
FLM	forward length mark positioned at the forward end of LBG
FP	freeboard penalty
FTA	mainsail foot triangle area
G	girth component of LM
I	height of foretriangle
J	base of foretriangle
L	rated length in metres
LBG	length between girth stations
LM	measured length
MSA	mainsail area
MWL	flotation waterline in **measurement condition**.
P	mainsail luff length
S	rated sail area in square metres
SF	spinnaker foot length
SLE	spinnaker leach length
SLU	spinnaker luff length
SM	maximum allowable sail area to achieve a solution of 24.000 metres using the formulae in ACC Rules 5 and 7.2
SMG	spinnaker mid-girth
SP	spinnaker hoist height
SSA	spinnaker sail area
STP	standard atmospheric temperature and pressure
TC	core thickness
W	weight of yacht in kilograms
WP	weight penalty
Θ	the mean of the angles port and starboard of the topsides measured at FGS relative to the vertical in degrees
Φ	the mean of the angles port and starboard of the topsides measured at AGS relative to the vertical in degrees

SECTION B - FORMULAE

5. **FORMULA**

The formula is

$$\frac{L + 1.25 \times \sqrt{S} - 9.8 \times \sqrt[3]{DSP}}{0.686} <= 24.000 \text{ metres}$$

6. **LENGTH**

6.1 The length L in the formula is determined by the equation

$$L = LM \times (1 + 2000 \times (LM - 22.1)^4) + FP + WP,$$

where

$$LM = LBG + G.$$

6.2 LBG shall be measured at a height of 200 mm above MWL. MWL is the plane of flotation of the yacht, in **measurement condition**, in sea water of 1.025 specific gravity. Both the LBG and MWL planes shall be defined forward and aft on the centreline of the **hull** as described in **ACC Rule** 42.

6.3 G shall be determined by the formula

$$G = FGC + AGC,$$

where

(a) FGC is the greater of

0.3 m OR $1.25 \times (FG - 2.4 + FBC)$,

where FG is measured around the surface of the **hull** (great circle) through FLM from points on the surface of the **hull** port and starboard in a transverse vertical plane 1.200 m above FLM; and

FBC is the greater of

-0.116 OR $-1.8 \times [(1 / \cos\Theta) - 1]$,

where Θ shall be measured on the vertical transverse plane at FLM (FGS) between points 1.000 m and 1.200 m vertically above FLM; and

(b) AGC is the greater of

1.6 m or 0.75 x (AG - 1.8 + ABC),

where AG is measured around the surface of the **hull** (great circle) through ALM from points on the surface of the **hull**, port and starboard 0.900 m in a transverse vertical plane above ALM; and

ABC is the greater of 0 or 1.414 - 1 / cos Φ,

where Φ shall be measured on the vertical transverse plane at ALM (AGS) between points 0.700 m and 0.900 m vertically above ALM.

6.4 FP and WP are penalties as defined in **ACC Rules** 10 and 12.

7. SAIL AREA

7.1 The yacht shall be sloop rigged with one mast only.

7.2 Sail area S shall be calculated as follows:

$S = SM \times (1 + 0.0001 \times (SM - 320)^4)$,

provided

MSA shall not be greater than SM - (I x J) / 2 (see also **ACC Rule** 29).

8. DISPLACEMENT

8.1 Displacement shall be defined as the weight in kilograms of the yacht divided by 1025, i.e.,

$DSP = W / 1025$

8.2 The weight of the yacht shall be recorded and used in the formula rounded to the nearest 20 kilograms.

SECTION C - LIMITATIONS AND PENALTIES

9. LENGTH

9.1 FLM and ALM shall be on the lower surface of the **hull**.

9.2 The slope of the 250 mm buttock between the aft end of the MWL plane and AGS shall not be greater than 12.5 degrees. This angle shall be measured between a horizontal plane (MWL plane) and the buttock.

9.3 No part of the **hull** at or below the measurement waterline plane shall extend forward or aft of MWL.

10. FREEBOARD

10.1 In **measurement condition** the yacht shall have the following minimum freeboards measured to the **sheerline**:

(a) Minimum Freeboard at FLM: 1.500 m.

(b) Minimum Freeboard at 50% LBG: 1.265m.

(c) Minimum Freeboard at ALM: 1.200 m.

10.2 If at any freeboard station the mean freeboard is less than the permitted minimum then these deficiencies shall be summed such that:

FP = 4 x (sum of freeboard deficiencies).

10.3 FP shall be added to L in the calculation of the rated length.

11. DRAFT

11.1 In **measurement condition** the maximum draft shall be 4.100 m.

11.2 Lifting **appendages** are permitted but shall be fixed whilst racing in their **measurement condition** position.

11.3 The draft as measured ashore is intended to replicate as closely as possible the yacht's static, afloat draft in **measurement condition**. The yacht shall be blocked ashore in such a way that the forward, aft, and midships marks lie in a plane, with the majority of the weight of the yacht borne by the keel. If the **Measurer** believes that the measured draft with the yacht supported in this manner does not accurately reflect the static, afloat draft, he may require that the yacht be supported or suspended in some other way for the measurement of draft.

12. MAXIMUM WEIGHT

12.1 The weight of the yacht in **measurement condition** shall not be greater than 24000 kg without penalty.

12.2 If the yacht's weight is greater than that required by **ACC Rule** 12.1, then WP shall be added to L in the calculation of the rated length:

WP = 4 x [(cube root of yacht's weight in kgs) – 28.845].

12.3 The immersed volume of the **hull** shall not be less than 80% of the immersed volume of the complete yacht in **measurement condition**.

13. **BEAM**

13.1 Maximum overall beam including any part of the yacht's **standing rigging**, mast or mast support devices, shall be 4.500 m. The beam of the yacht shall be measured between verticals at each side of the yacht set up in a transverse plane perpendicular to the yacht's centreline.

13.2 When the yacht is in **measurement condition**, the beam of an **appendage** in any position shall not exceed the maximum beam of the **hull** vertically above that **appendage.**

14. **SHEER AND SHEERLINE**

14.1 For measurement purposes, the **sheerline** shall be the intersection (in any transverse section) of the fair extension of **deck** and **hull**. The fair extension of the **hull** shall be tangential from a point 100 mm below the **sheerline**. With the exception of the **hull** to **deck** joint as described in **ACC Rule** 14.2, tumblehome is not permitted.

14.2 The **hull**-**deck** joint may be of any shape in the transverse vertical plane within 100 mm inboard of the maximum local beam at this section and 100 mm below the adjacent **deck** except it shall not extend transversely beyond the local **sheerline** nor extend vertically above the height of the local **deck**.

14.3 The **sheerline** in elevation of the yacht between the point 200 mm aft of the foremost point of the **hull** and AGS shall be a fair continuous concave curve whose minimum radius of curvature shall not be less than 20.000 m at any point.

14.4 The minimum longitudinal radius of curvature of a line 100 mm below the **sheerline** in plan view from a point 200 mm aft of the forwardmost point of the **hull** to AGS shall be 20.000 m at any point.

14.5 Forward of a point 200 mm aft of the foremost point on the **hull**, the **sheerline** and associated stem profile or stem in plan may be any shape.

14.6 Aft of AGS the **sheerline** may be any shape.

15. **HOLLOWS**

15.1 Hollows in the surface of the **hull** or between the **hull** and fixed **appendage** below a point 100 mm below the **sheerline** are prohibited except:

(a) between MWL and AGS and within 500 mm of the intersection of the **hull** with the forward and aft edge of a fixed **appendage.** Any hollow within this permitted zone shall have the following transverse limits:

(i) from the forward end of the MWL to a point at 0.25 LBG, hollows may extend transversely 125 mm each side of the hull centreline; and

(ii) aft of 0.25 LBG to AGS, hollows may extend transversely 250 mm each side of the centreline;

(b) minor hollows which do not occur at measurement points and which do not exceed 1 mm in depth in a length of 1.0m, or 3 mm in any length; and

(c) hollows associated with specific legitimate fittings. Examples of these fittings are self bailers, bobstay fittings, and spinnaker pole downhaul exit fittings.

SECTION D - CONSTRUCTION

16. HULL, DECK AND INTERNAL STRUCTURE

16.1 The structural integrity of the yacht is the responsibility of the **Competitor**. Compliance with the following requirements does not relieve the **Competitor** from ensuring the yacht is of adequate strength.

16.2 The **owner**, designers and builders of the **hull**, **deck** and internal structure shall provide to the **Measurement Committee** a signed declaration as set out in Appendix C confirming the **hull**, **deck** and internal structure have been constructed from materials and using methods permitted by **ACC Rule** 16.

16.3 For the purposes of **ACC Rule** 16 only, **deck** includes a transom, recesses, troughs, cockpit sides, cockpit soles and cockpit islands.

16.4 The **hull** and/or **deck** shall not be loaded or deformed by any device or with any force that may create deflections that may improve the performance of the yacht other than normal loads and deflections imposed by the sea or by normal rigging arrangements.

16.5 Except as provided elsewhere in this **ACC Rule**, the **hull**, **deck**, but excluding internal structure, shall be made from **FRP** sandwich laminates complying with the following:

(a) The minimum skin laminate weights specified below shall not include core adhesive, filling and fairing. For the purposes of determining compliance with this **ACC Rule**, the removal of any core adhesive, filling and fairing shall be carried out by the **Measurer**. The weight, in kilograms per square metre, rounded to two decimal places, shall be determined from samples of approximately 50 mm in diameter.

Position	Skin	Minimum Weight per m^2	Minimum Thickness
Hull laminate below LBG Plane	Outside Inside	2.90 kg/m^2 1.80kg/m^2	1.90 mm 1.10 mm
Hull laminate above LBG Plane where inner skin is not exposed	Outside Inside	2.30kg/m^2 1.40kg/m^2	1.50 mm 0.90 mm
Hull laminate above LBG Plane where inner skin is exposed	Outside Inside	2.30kg/m^2 1.90kg/m^2	1.50 mm 1.20 mm
Deck laminate where inner skin is not exposed	Outside Inside	1.90kg/m^2 1.40kg/m^2	1.20 mm 0.90 mm
Deck laminate where inner skin is exposed	Outside Inside	1.90kg/m^2 1.90kg/m^2	1.20 mm 1.20 mm

"Exposed" in the table above means areas where the inner skin is the outermost surface of the **hull** or **deck** which is not enclosed or covered by another rule-legal structural element. Examples of these areas would be the underside of **deck** and inner skin of **hull** aft where cockpit sides are not fitted, and the inner skin of a sugar scoop stern where no rule-legal **deck** is fitted above the **hull** laminate.

(b) Core materials shall comply with the following:

Area	Minimum Thickness	Maximum Thickness	Minimum Density
Hull below LBG Plane Fwd of **Amidships**	29 mm	51 mm	72 kg/m^3
Remainder of **Hull**	29 mm	51 mm	57 kg/m^3
Deck	14 mm	36 mm	43 kg/m^3

Any component materials used in the manufacture of core shall have a modulus in any direction not exceeding 140 GPa. Metallic core materials are prohibited in the construction of **decks** of yachts where the construction of the **deck** was completed after 2 March 2003.

(c) The minimum weights per square metre (rounded to the nearest one decimal place) for the shell laminate including skins, core bonding compound and core shall be as follows. These shell weights per unit area shall not include paint or fairing compound.

Position	Minimum weight in kgs per m^2
Hull laminate below LBG Plane forward of **Amidships**	5.1 + 0.072 x TC kg/m^2
Hull laminate below LBG Plane aft of **Amidships**	5.1 + 0.057 x TC kg/m^2
Hull laminate above LBG Plane	4.1 + 0.057 x TC kg/m^2
Deck laminate	3.7 + 0.043 x TC kg/m^2
Hull laminate where the inner skin is exposed	4.6 + 0.057 x TC kg/m^2
Deck laminate where the inner skin is exposed	4.2 + 0.043 x TC kg/m^2

where TC is the actual thickness in mm of the core used in that particular area.

"Exposed" in the table above means areas where the inner skin is the outermost surface of the **hull** or **deck** which is not enclosed or covered by another rule-legal structural element. Examples of these areas would be the underside of side decks aft where cockpit sides are not fitted, and the inner skin of a sugar scoop stern where no rule-legal **deck** is fitted above the **hull** laminate.

(d) If the core thickness is less than the minimums specified (i.e., in single skin areas and the surrounding core taper area), the panel weight per square metre shall exceed the following:

	Hull below LBG Plane Fwd of **Amidships**	Remainder of **Hull**	**Deck,**
Minimum Panel Weight when core is below minimum thickness	11 kg/m^2	8 kg/m^2	6 kg/m^2

(e) Except where filling and fairing materials do not create the inherent shape of the yacht (eg., covering ballast flange bolt heads), filling and fairing of an outer "rule-legal" laminate is limited to a maximum thickness of 102mm measured normal to the surface. Changes to the inherent shape of the yacht, once completed, are bound by Protocol Article 14 "Modification to Yachts". Fairing and filling materials shall comply with the material properties and building process limitations defined in **ACC Rule** 16.7.

(f) Within 200 mm of the stem profile measured in the centreline plane and perpendicular to the stem profile, between the stemhead and FLM, the core thickness limitations of **class rule** 16.5(b), and the filling/fairing thickness limitations of **class rule** 16.5(e) shall not apply.

(g) Should the sampling of the **hull** or **deck** demonstrate non-compliance with the minimum weights per unit area or thicknesses in (a), (c) or (d), correction of any shortfall over the non-compliant area shall be made. This shortfall shall be by additional **FRP** laminate to the satisfaction of the **measurer**.

16.6 The internal structure shall be constructed of aluminium alloys, **FRP**, or steel and steel alloys, or a combination thereof, and shall comply with the following:

(a) Aluminium alloys - 2000, 5000, 6000 and 7000 series alloys with a density greater than 2650 kg/m^3.

(b) **FRP** - with **fibre modulus** not exceeding 245 GPa; (Yachts whose construction was completed prior to March 2, 2003 may be constructed from materials with a fibre modulas not exceeding 250 GPa.

16.7 **FRP** and building methods used in the construction of the **hull**, **deck** and internal structure shall comply with the following:

(a) the **fibre modulus** shall not exceed 245 GPa; (Yachts whose construction was completed prior to March 2, 2003 may be constructed from materials with a fibre modulas not exceeding 250 GPa;)

(b) the temperature of the component shall not exceed 105 degrees Celsius at any time during the building process;

(c) the use of electric current or electron beam through the laminate during **cure** is prohibited;

(d) pressure applied at any time during construction shall not exceed 1 atmosphere, but this limitation shall not prohibit normal hand-building methods including the use of clamps or mechanical fastenings, etc;

(e) a material manufacturer's certificate of compliance, and, if required by the **Measurement Committee**, samples, shall be supplied to the **Measurement Committee**;

(f) a material-usage schedule as shown in Appendix D shall be supplied to the **Measurement Committee**, that shall include the quantity supplied, relevant batch numbers, and a description to assist identification; however, documentation is not required for wet-laminate **FRP** materials used in the construction of the **hull**, **deck** and internal structure, provided that the total quantity of wet-laminate **FRP** is less than 5% by weight of the total **FRP** materials used in the construction of the **hull**, **deck** and internal structure. Nonetheless, wet-laminate **FRP** mechanical properties shall comply with **ACC Rule** 16.7 and shall be covered by a declaration referencing this clause as set out Appendix C;

except that a maximum of 80 kgs of cured **FRP** components from commercially available ex-stock material (eg. tube, plate, etc.) may be used in the construction of the **hull**, **deck** and internal structure, provided that no single component exceeds 5kgs. These components are not limited by the building methods set out in **ACC Rule** 16.7, however, the **fibre modulus** shall not exceed 245 GPa. These materials shall be covered by a declaration referencing this clause as set out Appendix C.

16.8 The requirements of **ACC Rule** 16.7 apply to the processes used by the boat builder to construct the **hull**, **deck** and internal structure, but not to the manufactured constituent materials such as carbon fibre, resin systems and core materials.

16.9 Core thickness requirements of ACC Rule 16.5 (b) shall not apply within 100 mm of the **sheerline.**

16.10 Minimum hull laminate weight and skin thickness requirements of ACC Rule 16.5 (a) shall apply up to a line that is a fair extension of the underside of the deck. Above this line minimum deck laminate weight and skin thickness requirements of ACC Rule 16.5 (a) shall apply.

16.11 Any fastening (bolt, screw, rivet, nail, etc.) that carries only tension or shear and that is used to attach, fix or secure one element of the yacht to another element may be of any material provided the density of the fastening is not greater than 9,000 kg/m^3.

17. APPENDAGES

17.1 **Appendages** shall be constructed from **FRP** and/or metals.

17.2 Metal used in the construction of **appendages** shall have:

(a) a tensile modulus less than 215 GPa;

(b) a specific tensile modulus not greater than 2.7x 10^6 metres;

(c) a density not greater than 11300 kg/m^3 and

(d) a manufacturer's test certificate or similar which specifies the material designation; the **Technical Director** may also require a manufacturer's certificate stating the tensile modulus and density of the material supplied.

17.3 **FRP** and building methods used in the construction of **appendages** shall comply with the following:

(a) have a **fibre modulus** that shall not exceed:

(i) 245 GPa for an **appendage** that supports a second **appendage** which contains **ballast**; and

(ii) 385 GPa for any other **appendage**;

(b) the temperature of the **appendage** shall not exceed 135 degrees Celsius at any time during the building process but this limitation shall not prohibit hand building methods including the use of a hand-held heat gun;

(c) the pressure applied to the **appendage** at any time during construction shall not exceed 5 atmospheres, but this limitation shall not prohibit normal hand-building methods including the use of clamps or mechanical fastenings etc;

(d) a material manufacturer's certificate of compliance, and, if required by the **Measurement Committee**, samples, shall be submitted to the **Measurement Committee**;

(e) a material-usage schedule as shown in Appendix D shall be submitted to the **Measurement Committee** that shall include the quantity supplied, relevant batch numbers, and a description to assist identification; however, documentation is not required for wet-laminate **FRP** materials used in the construction of the individual **appendage**, provided that wet-laminate **FRP** is less than 5% by weight of the **FRP** component of that **appendage**; nonetheless, wet-laminate **FRP** mechanical properties shall comply with **ACC Rule** 17.3 and shall be covered by a declaration referencing this clause as set out Appendix C.

17.4 The requirements of **ACC Rule** 17.3 apply to the processes used by the **appendage** builder to construct the **appendages**, but not to the manufactured constituent materials such as carbon fibre, resin systems and core materials.

17.5 Sandwich construction techniques may be used. Sandwich cores may be of any material provided the materials used in the manufacture of the core comply with the **ACC Rules** 17.1, 17.2 and 17.3.

17.6 For each **appendage**, the **owner**, **appendage** designers and **appendage** builders shall provide to the **Measurement Committee** a signed declaration as set out in Appendix C confirming each **appendage** has been constructed from materials and using methods permitted by **ACC Rule** 17.

17.7 An **appendage** may extend into the **hull;** however, the **Measurement Committee** shall be satisfied that it is designed solely to attach the **appendage** to the **hull** and not to significantly contribute to the strength or stiffness of the **hull**. The **appendage** shall be able to be removed without damaging the structural integrity of the **hull**.

17.8 **Appendages** may only be attached to the **hull** within the "hollows permitted" zones described in **ACC Rule** 15.1(a). The width of an **appendage** shall not exceed the tranverse limits of the local "hollows permitted zone" (as defined in ACC Rule 14.7) for a distance of 1000mm below the local surface of the **hull;** however an **appendage** attachment flange that is not outside the lower surface of the **hull** may exceed a width of 500mm.

17.9 **Appendages** shall not extend forward of the forward end of MWL nor aft of AGS**.** Fixed **appendages**, including any associated fairing strips, shall not extend aft of the after end of MWL. A moveable **appendage** may extend aft of the after end of MWL.

17.10 The maximum number of movable **appendages** shall be two, and:

(a) movement is limited to rotation only;

(b) the axis of rotation of each movable surface shall be in the vertical fore and aft centreline plane of the **hull** and at an angle to the MWL plane exceeding 45 degrees;

(c) **appendage** rotation shall not increase the righting moment nor change the fore and aft trim. A moveable **appendage** whose nett density is less than 5000kg/cubm does does not infringe this rule;

(d) any part of a moveable **appendage** that extends aft of the after end of the MWL, shall not exceed a transverse width of 250 mm above a point 200 mm below the MWL plane;

(e) a movable device whose sole purpose is the removal of weed or debris from the **hull** or **appendages**, and which in no other way enhances the performance of the yacht, shall not constitute a movable **appendage**. Such a device may be retracted;

(f) **appendages** which contain **ballast** shall not rotate.

17.11 Fixed **appendages** shall not deform more than 5% of their span, measured from the fair body attachment of the **appendage**, when subjected to a pressure of 6.4 kPa applied normal to a plane defined by the chordwise and spanwise axes of the appendage.

17.12 Fairing strips between a fixed and moveable **appendage** are permitted provided:

(a) they are constructed from a material with a modulus of less than 245 GPa;

(b) their deflection away from their position when the moveable **appendage** is centred is caused only by contact with the surface of the moveable **appendage**;

(c) they are attached, connected, or constrained along one edge only to the fixed **appendage**;

(d) their chord length, measured from the aftermost point of attachment perpendicular to the axis of rotation, is less than 100 mm.

17.13 Cross-flow closing devices between a fixed and moveable **appendage**, or between the **hull** and a moveable **appendage** are permitted provided they:

(a) shall not exceed 25 mm when measured in the spanwise direction of the moveable **appendage**;

(b) may only be fitted at the top and bottom of the moveable **appendage**;

(c) are flexible, sprung or hinged.

17.14 A rotating plate which closes a movable appendage against the hull is permitted provided it does not extend outside the "hollows permitted" zone.

18. DECK

18.1 The upper surface of the **deck** shall not fall below a straight line from the **sheerline** on one side of the yacht to the **sheerline** on the transversely opposite side of the yacht. Small transverse hollows are permitted provided they are solely the result of irregularities in the building process and do not exceed 1 mm in 1 m or 3 mm in any length. Open (sugar scoop) sterns are not prohibited by this **ACC Rule**.

18.2 Recesses in the **deck** are permitted, provided they:

(a) accommodate fittings and are no larger than necessary to provide access to such fittings;

(b) are reasonably watertight, however, they may drain into the **hull** through small openings not exceeding 10 mm in diameter;

(c) are built in accordance with the **deck** construction requirements of **ACC Rule** 16.

This **ACC Rule** does not apply to **cockpits**.

18.3 Further to **ACC Rule** 18.2:

(a) there shall be no more than one trough to accommodate the spinnaker pole and it shall not be wider than 800 mm nor deeper than 200 mm measured from the immediately adjacent **deck**;

(b) there may be a recess to accommodate the forestay attachment and jib tack fitting provided it is no deeper than necessary to accommodate the fittings and is no larger than necessary to give reasonable hand access to the fittings; it may be part of the spinnaker pole trough;

(c) there may be recesses for winches that comply with **ACC Rule** 22;

(d) recesses for tracks shall be no larger than required for the travel of the car on that particular track.

19. COCKPITS

19.1 **Cockpits** shall be watertight except that:

(a) they shall self-drain overboard;

(b) hatches are permitted in accordance with **ACC Rule** 20;

(c) small openings are permitted in accordance with **ACC Rule** 21; and

(d) small ports for hand access are permitted, provided each does not exceed 0.1 sq metre in area and is closed by a hinged or screwed watertight cover.

19.2 Forward of AGS, **cockpits** shall not be deeper than 750 mm nor shallower than 400 mm below the adjacent **sheerline,** provided that:

(a) these depth requirements shall apply 100 mm inboard of the **cockpit**/**deck** corner or the intersection of the **deck** and **cockpit**/**deck** radius; and

(b) the 100 mm offset shall also apply in the longitudinal dimension for the measurement of cockpit depth at forward and aft cockpit sides and bulkheads.

19.3 Any covering over part or all of a **cockpit** or sugar scoop shall comply with the **deck** construction requirements.

19.4 **Cockpit** islands are permitted provided:

(a) they comply with the **deck** construction requirements;

(b) they are no higher than the local **sheerline**;

(c) they are watertight, except for small openings permitted under **ACC Rule** 21; and

(d) their size is commensurate with providing a base for normal equipment.

20. HATCHES

20.1 The minimum horizontal distance from a hatch opening to the adjacent **sheerline** shall be 800 mm.

20.2 Each hatch shall be closed by a cover permanently attached to the **deck** by hinges, slides or similar arrangement and shall be reasonably watertight when closed.

20.3 There may be only one hatch forward of the mast. The maximum area of this hatch opening shall be 2.0 square metres.

20.4 There may be a maximum of four hatches aft of the mast. The combined area of these hatch openings shall not exceed 3.0 square metres. Hatches required in ACC Rule 20.7 shall not be included in the limitations of this rule.

20.5 Hatches fitted in **cockpit** soles shall be watertight. Watertight in this context means a closed hatch shall prevent the ingress of water from a hose applied in any direction.

20.6 The weight of hatch covers without hinges or slides attached shall be equal to or greater than the rule minimum weight of **deck** or **cockpit** area they replace.

20.7 A compartment or compartments, freely draining to the bilge, with a watertight hatch cover, shall be provided in the cockpit sole or the deck located not more than 2 m forward of AGS. The sole purpose of this compartment shall be to house the regatta supplied media equipment. The dimensions and construction specifications of these compartment(s) shall be specified in a Public Interpretation which shall be issued no later than January 1, 2005.

21. SMALL OPENINGS

21.1 Small openings in **cockpits** and the **deck** for passing rigging or similar lines and attachments are permitted provided:

(a) they are no larger than required for their specific task;

(b) they are at least 200 mm above the **cockpit** sole; and

(c) if the area exceeds 4000 square millimetres a rubber gaiter boot or other means of closing the opening shall be fitted.

21.2 Lightening holes in **decks** are prohibited.

22. WINCH PLACEMENT

22.1 Winch drums primarily used for sheeting or hoisting sails shall be positioned on or above the **deck**. For a winch with the gearing mounted inside the lower part of the drum, the drum is deemed to commence at the intersection of the fillet radius and the tangent line to the lower vertical section of the drum as shown in Figure 1 of Appendix F.

22.2 Winches and their pedestals shall be located such that they can only be operated, including tailing, from the **deck** or **cockpit**.

22.3 **Headsail** sheet winches shall be located such that crew members are not required to operate or tail such winches within the area bounded by the winch, the turning block, the **deck** edge and the chainplate.

22.4 A snubber drum, the sole purpose of which is to assist in holding a sheet prior to release, is not a "winch" for the purposes of **ACC Rule** 22. It may be ratcheting to prevent rotation in one direction, however, it shall not be driven in any way. A snubber drum may be mounted below **deck** level.

23. SURFACE FINISHES AND BOUNDARY LAYER INTERFERENCE

23.1 The **Regatta Director** shall specify the paint system to be applied to all outermost surfaces of the **hull** and **appendages**. This system shall be applied to and maintained on all required surfaces as directed by the **Measurement Committee**. The **Measurement Committee** may permit the use of other materials for temporary repairs. The **Competitor** shall submit to the **Measurement Committee** a declaration of compliance to this **ACC Rule** in the form as set out in Appendix C.

23.2 This **ACC Rule** does not prohibit the application of vinyl-film over the painted surface of the **hull**, provided:

(a) its sole purpose is branding or advertising;

(b) it shall not be textured in any way;

(c) the area of the vinyl shall be no larger than required to portray the branding or advertising; and

(d) it shall not be applied below MWL.

23.3 The outermost surfaces of the **hull** or **appendages** may be sanded and/or cleaned with normal concentrations and quantities of detergents or similar materials. However, while afloat on a scheduled race day, no substances shall be present on the outermost surfaces of the **hull** and **appendages** other than those permitted in **ACC Rules** 23.1 and 23.2.

23.4 Devices in, on or near the surface of the **hull** or **appendages**, the purpose or effect of which is or could be to bleed off or alter the flow (of any fluid) in or near the boundary layer, are prohibited. Such devices include but are not limited to holes in surfaces, textured surfaces, riblets, Large Eddy Break-Up Devices (LEBUs), and compliant surface structures. This shall not prohibit fairing strips and cross-flow closing devices, as defined in **ACC Rules** 17.12, 17.13 and 17.14 and normal through-hull fittings (such as self-bailers, drains, boatspeed transducers, weed-removal devices,) approved by the **Measurement Committee**.

23.5 Electric, magnetic, sonic, thermal and other methods, the purpose or effect of which is to modify the flow characteristics of the water in the boundary layer of the **hull** and **appendages**, are prohibited.

SECTION E - SPARS

24. SPAR CONSTRUCTION

24.1 **Spars**, including masts, booms, spinnaker poles, bowsprits and reaching struts, shall be constructed principally from **FRP. FRP** and building methods used in the construction of **spars** shall comply with the following:

(a) the **fibre modulus** shall not exceed 385 GPa;

(b) the temperature of the **spar** shall not exceed 135 degrees Celsius at any time during the building process;

(c) the pressure applied at any time during construction shall not exceed 5 atmospheres, but this limitation shall not prohibit normal hand-building methods including the use of clamps or mechanical fastenings etc;

(d) a material manufacturer's certificate of compliance, and, if required by the **Measurement Committee**, samples, shall be submitted to the **Measurement Committee**; and

(e) a material-usage schedule as shown in Appendix D shall be submitted to the **Measurement Committee** that shall include the quantity supplied, relevant batch numbers, and a description to assist identification; however, documentation is not required for wet-laminate **FRP** materials used in the construction of the individual spar, provided that wet-laminate **FRP** is less than 5% by weight of the **FRP** component of that spar; nonetheless, wet-laminate **FRP** mechanical properties shall comply with **ACC Rule** 24.1 and shall be covered by a declaration referencing this clause as set out in Appendix C.

24.2 The requirements of **ACC Rule** 24.1 apply to the processes used by the spar builder to construct the spars, but not to the manufactured constituent materials such as carbon fibre, resin systems and core materials.

24.3 Sandwich construction techniques may be used. Any component materials used in the manufacture of core shall have a modulus in any direction not exceeding 140 GPa.

24.4 For each spar, the **owner**, spar designer and spar builder shall provide to the **Measurement Committee** a signed declaration as set out in Appendix C confirming the spar has been constructed from materials and using methods permitted by **ACC Rule** 24.1.

25. MAST

25.1 The minimum weight of the mast in mast-measurement condition as specified in **ACC Rule** 25.2 shall be 750 kgs, having its centre of gravity no less than 12.25 m above the mast datum band.

25.2 Mast-measurement condition:

(a) includes all **standing rigging**, spreaders, jumpers and jumper systems, diamonds, all backstays, runner fly blocks (but excluding runner tails), check stays, instruments, instrument sensors, cameras, cables, hydraulic rams and pipework (but excluding any vang ram and vang pipework)

(b) includes all mast fittings required to sail the yacht, including mast jacks if an integral part of the mast, headboard car, halyard locks, spreader fittings, vang brackets, spinnaker pole slides and fittings, gooseneck bracket and gooseneck toggle (but excluding the vang system);

(c) excludes all **halyards**, **running rigging**, runner tails and spinnaker pole lifting tackle, however, halyards may be replaced with light weight mouse lines not exceeding 4 mm diameter;

(d) is with equipment positioned as follows:

(i) all **standing rigging** in place and pulled tight down the **mast**;

(ii) headboard car placed at the upper black band; and

(iii) all moveable fittings except headboard car set in their lowest sailing position; and

(e) is with inter-changeable fittings and rigging configured to achieve the minimum weight and the lowest centre of gravity.

In principle, if a component remains attached to the mast when the mast is removed from the yacht (except **halyards**, spinnaker pole lifting tackle and the vang system), it is deemed to be part of the mast for measurement purposes.

25.3 The mast tube:

(a) in section shall be a continuous single-surface tube except in way of laminated or mechanically-fastened joins;

(b) silhouette in the fore and aft and athwartship directions shall be a fair convex curve between the upper measurement band and the datum band;

(c) may be locally reinforced either internally or externally in way of fittings; provided that the minimum dimensions in **ACC Rule** 25.4 and the fair convex curve of the mast tube shall be maintained under any local reinforcement;

(d) may deviate from a fair convex curve by no more than 1 mm in 1.0 m or 3 mm in any length, provided that the mast tube does not fall within a straight line defined by the minimum dimensions at the measurement points stated in **ACC Rule** 25.4; and

(e) shall be symmetrical about a fore and aft centreline within a tolerance of 5 mm.

25.4 The mast tube at any point shall not exceed 430 mm in the fore and aft dimension, and shall comply with the following dimensional limitations and measured in accordance with guidelines in Figure 2 of Appendix F :

Position	Maximum Fore and Aft	Minimum Fore and Aft	Minimum Athwartships
At datum band	430 mm	300 mm	150 mm
At I point	364 mm	260 mm	150 mm
At top band	210 mm	150 mm	130 mm

25.5 A mainsail bolt rope track which is not part of the single-surface mast tube shall comply with **ACC Rule** 24.1, and shall not be measured in the fore and aft dimension of the mast provided that:

(a) the bolt rope recess and the bolt rope on the mainsail shall be no larger than necessary; and

(b) the distance from the forward side of the bolt rope recess shall not be more than 6 mm from the aft face of the mast tube.

25.6 Any mainsail bolt rope track shall be fixed and on the fore and aft centreline of the mast tube.

25.7 The mast shall have three clearly discernible measurement bands not less than 30mm wide as follows:

(a) datum band, with the upper edge not more than 500 mm above the **sheerline** at the forward face of the mast when the mast is vertical;

(b) lower band (BAD), with the upper edge at least 1.300m but not more than 1.500m above the datum; and

(c) upper band, with the lower edge not more than 32.000m above the datum.

25.8 A mast is prohibited if it:

(a) is hinged in any way;

(b) has a permanent set exceeding 200 mm between the upper and lower measurement bands on the aft edge;

(c) has holes or joints whose function is to reduce the torsional stiffness of the mast, even if filled or covered with rule legal materials;

(d) has spreader attachments below the I point that allow fore and aft movement of the **standing rigging** at the spreader tip relative to the mast tube; however, hinged spreader attachments (providing the axis of the hinge is within 20 degrees of the horizontal plane) and normal tolerances (not exceeding plus or minus 0.5 degrees) on rigid spreader attachments are permitted;

(e) has a device to move the athwartships or rotational position of the mast at its heel or at the **deck**;

(f) has a device to move the mast to windward of its normal sailing position, however this shall not prevent the normal use of running backstays or asymmetrically-adjusted jumpers/diamonds, provided the centreline of the jumper/diamond struts are above the I point, nor does it prevent adjustable spreader-end fittings that touch, shape or support a headsail as permitted by **ACC Rule** 32.7(b); or

(g) has slots, slats or similar devices, or other contrivances, whose primary function is to enhance the aerodynamic performance, except the following which are permitted:

(i) fittings to attach sails and rigging, etc.;

(ii) Slots and holes for specific purposes such as halyard exits or fittings etc. are permitted however they shall be no larger than required to fulfil their intended purpose;

(iii) local covers or normal fairings over fittings;

(iv) a spinnaker pole butt track as permitted in **ACC Rule** 25.9.

25.9 A spinnaker pole butt track of any shape is permitted provided that:

(a) it is no longer than necessary for the pole to be dipped so that the outboard end of the spinnaker pole clears the inside of the forestay at 1.5m above the **deck**; and

(b) if external to the mast tube:

(i) it is clearly distinguishable from the mast tube;

(ii) it is solely mechanically fastened to the mast tube; and

(iii) it does not extend more than 40mm forward nor 20 mm aft of the forward face of the mast tube

(c) if internal and housed in a recess in the foreside of the mast, the mast tube adjacent to the spinnaker pole butt track must always comply with **ACC Rules** 25.3 and 25.4.

25.10 A spinnaker pole butt track may have a cover provided the cover:

(a) is removable without damaging the mast tube or pole butt track;

(b) does not extend more than 50 mm forward or aft of the forward side of the mast; and

(c) does not extend more than 200 mm above the spinnaker pole butt track.

25.11 All standing rigging and backstays shall be attached to the mast such that their line of action passes within 12 mm of the fair surface of the mast tube as shown in Figure 3 of Appendix F.

25.12 The mast shall be restrained such that it cannot rotate, at the height of the local deck, more than +/- 2 degrees about a vertical axis.

25.13 The mast at the local deck level shall not be able to move fore and aft more than 20 mm.

25.14 The heel of the mast shall be stepped at or below the MWL plane. The heel of the mast is the underside of the lowest compressive load-bearing component of the mast which remains part of the mast when the mast is removed normally from the yacht.

25.15 Masts may be fitted with internal bulkheads provided that they do not carry a significant proportion of vertical compression loads and bending moments. Materials used for internal bulkheads shall comply with **ACC Rule** 24.

25.16 Fairings between the mast and mainsail are prohibited, including fairings over headboards and headboard cars, batten cars or batten car tracks.

26. BOOM

26.1 The boom, including any sail groove or sail track but excluding other fittings and associated local reinforcements, shall not exceed 600 mm in depth. No part of the boom shall exceed 400 mm in width. Struts and outriggers are prohibited.

26.2 The top longitudinal surface or edge of the boom shall be straight within a tolerance of 20 mm between the extreme ends of the top of the boom, except that a recess for an outhaul track is permitted.

26.3 When the boom is horizontal and at its lowest position on the mast, the line of the top of the boom (including an external sail track) when extended shall be at or above BAD.

26.4 The clew point of the mainsail shall be no more than 150 mm above the top longitudinal surface or edge of the boom.

27. SPINNAKER POLE

The spinnaker pole length shall be measured from the centreline on the forward side of the mast to the outer extremity of the pole or end fitting in the position which gives the longest measurement.

28. BOWSPRIT

28.1 A **bowsprit**, if fitted, shall be removable from the **hull** without damaging the structural or watertight integrity of the **hull.**

28.2 The **bowsprit**, if fitted, shall be fastened to the **hull** by mechanical means only (bolts, rivets, etc.) This requirement shall not preclude the use of small quantities of non-structural sealing compound at the point(s) of attachment to the **hull.**

SECTION F - SAILS

29. **MEASURED SAIL AREA** (see also **ACC Rule** 7)

29.1 **Mainsail**

(a) The intention of this **ACC Rule** is to find the actual area of the mainsail using the formula below. If, in the opinion of the **measurer**, the area is not being accurately measured using the following formula, he may use another method after reference to the **Measurement Committee**:

MSA = (P-0.5) x (E1 + 4E2 + 2E3 + 4E4 + E5)/12 + FTA,

where E5 > E4 > E3 > E2 > E1, and

where P is the distance between the lower edge of the upper measurement band and the upper edge of the lower measurement band on the mast.

For the purposes of mainsail measurement a grid shall be used. The grid shall be laid out such that the vertical grid line is defined by a line joining a point on the luff 500mm below the head point (E1 luff point), and a point on the luff, or the projection of the luff, at a distance P below the headpoint (E5 luff point). See Appendix G.

(b) E1 shall be the distance, measured perpendicular to the vertical grid line, from the E1 luff point, to the leech.

(c) E5 shall be the distance, measured perpendicular to the vertical grid line, from the E5 luff point, to the leech (or projected leech).

(d) E2, E3 and E4 luff points shall be equally spaced between the E1 luff point and the E5 luff point. E2, E3 and E4 shall be the distances measured perpendicular to the vertical grid line from their respective luff points to the leech.

(e) Any leech hollows shall be bridged for measurement purposes.

(f) FTA = E5 x CO/2,

where CO equals the perpendicular distance from the E5 measurement line to the clew point. If the clew point is below the E5 measurement line, CO is positive. If the clew point is above the E5 measurement line, CO is negative. FTA may be a negative component in calculating MSA. In the case where the actual length of the mainsail luff exceeds P, CO equals the perpendicular distance from E5 measurement line to the clew point.

(g) The sail area above the E1 measurement line and below a line joining the E5 luff point to the clew point shall not be measured.

(h) The foot round offset below a line joining the E5 luff point and clew point shall not exceed 750 mm.

29.2 **Foretriangle**

The area of the foretriangle shall be calculated using the following formula:

(I x J) / 2,

where:

(a) I is measured from the upper edge of the mast datum band to a height not exceeding

I <= 0.8 x (P + BAD); and

the upper point of I shall be the highest of:

(i) the intersection of the line of the forward side of the genoa or jib luff support device into which the luff of a headsail is fitted, with the forward side of the mast tube disregarding any local reinforcement;

(ii) the intersection of a line parallel to the forestay with the forward side of the mast through any contrivance which supports a jib halyard forward of the face of the mast.

A halyard which has its bearing surface above the "I" point defined in **ACC Rule** 29.2(a) may be used to raise a sail in the foretriangle provided the halyard is restrained by a contrivance as defined in **ACC Rule** 29.2(a)(ii) which is at or below the "I" point. This contrivance may be open to allow the halyard to be used for another purpose however when it is being used to raise a genoa, jib or staysail the halyard must be retained by the contrivance.

(b) J is the greatest measurement of:

(i) the forward side of the mast to the intersection of the line of the forward side of the genoa or jib luff support device with a transverse line joining points on the local **sheerline** port and starboard; or

(ii) the spinnaker pole length divided by 1.40.

The measurement of J as defined in (i) above shall always be taken to the forwardmost point of the mast tube and disregard any spinnaker pole track. The spinnaker pole track shall always comply with **ACC Rule** 25.9.

(c) Neither I nor J may be extended by the attachment of any device.

29.3 **Spinnaker**

(a) A spinnaker is defined as a headsail with a mid-girth, SMG, greater than 0.65 X SF.

(b) Spinnaker area shall not exceed 1.60 x SM and shall be measured by the following formula:

SSA = (SLU + SLE) x (SF/12 + SMG/3)

(c) SP measured from the upper edge of the mast datum band to a height defined in **ACC Rule** 29.3(d) shall not exceed:

SP <= 1.25 x I.

(d) The upper point of SP shall be the highest of:

(i) the bearing surface of the spinnaker halyard sheave in the mast above which the sail cannot be hoisted; or

(ii) the intersection of a line parallel to an imaginary stay with the forward side of the mast to the forward end of J through any contrivance which supports a spinnaker halyard forward of the face of the mast.

Vertical rollers which are offset from the centreline and are parallel to the centreline of the mast and each side of the spinnaker halyard sheave do not constitute a contrivance which supports the halyard forward of the mast provided they are of a size and offset forward of the mast commensurate with their function of only providing a fair lead for the halyard onto the halyard sheave.

30. SAILS - GENERAL

30.1 Sails shall be measured in accordance with Appendix G.

30.2 Subject to **ACC Rule** 33.3, non-woven and multi-ply sails are permitted.

30.3 (a) Within 700 mm of the head point, clew point, or tack point, reinforcement can be any number of layers of fabric, webbing, or similar materials. Any rigid materials used in these areas shall comply with the sail hardware dimensional constraints of **ACC Rule** 30.4.

(b) Beyond 700 mm from the head point, clew point, or tack point, a sail shall be flexible and capable of being folded without damaging the sail or reinforcement.

(c) Spreader patches and similar chafing areas may have a single protective ply of fabric of any size of up to 300 grams/m^2 placed on each side of the sail. Any additional plies of fabric or padding in the spreader impact zone beyond two layers of 300 grams/m^2 material shall be limited in area to 1.0 sq metre on each side of the sail. This reinforcement shall be flexible and capable of being folded without being damaged or damaging the sail.

For the purposes of **ACC Rule** 30.3, damage is defined as, apart from clearly visible structural failure, failure of the sail to return to near flat after being folded.

30.4 The dimension of any sail hardware, in any direction, shall not exceed 250 mm.

30.5 Specifically prohibited are:

(a) artificially thickened sails, eg. foamed sails or rigid sails; and

(b) multiple-surface sails, whether inflated by the action of the wind or otherwise, except battens and batten pockets as provided in **ACC Rule** 34.

30.6 The head of any sail, when normally set, shall be in close proximity to the mast.

30.7 Sail repairs and alterations to sails measured for an event are permitted with specific approval of a regatta measurement committee and in accordance with the following limitations:

(a) no more than 10% of the original projected area of fabric of any mainsail, genoa, jib or staysail may be replaced;

(b) no more than 20% of the original surface area of fabric of any spinnaker may be replaced;

(c) no measured dimension, excluding CO and E1 on mainsails, of any sail may be altered by more than 10% from its original measurement. Alterations to CO and E1 on mainsails is not limited;

(d) for the purpose of this rule "original" means the area or dimension(s) of a sail when first measured.

30.8 No sail or sail control line, or spinnaker pole downhaul shall be attached forward of 1.25 x J or aft of AGS.

31. MAINSAIL

31.1 Maximum headboard width shall be 250 mm measured from the aft side of the mast.

31.2 Luff zippers are not permitted.

31.3 No device shall be used to control the mainsail except:

(a) mainsheet;
(b) vang;
(c) halyard attached in close proximity to the head of the mainsail;
(d) cunningham system attached in close proximity to the tack;
(e) outhaul system;
(f) one leech line which follows the entire length of the leech from head to clew, except that at either the head, clew, or reef points, the line may exit the sail to permit adjustment;
(g) footline; and
(h) normal reefing systems.

This **ACC Rule** shall not preclude the use of secondary control devices (eg. mainsheet travellers) which are only used to control the primary control devices listed above.

31.4 The mainsail luff, over its complete length, shall be attached directly to the mast by a bolt rope or by closely-spaced slides; However, at the head and tack, the luff may be free from the mast for a distance not exceeding 1.0 m.

31.5 The head point of the mainsail shall not be hoisted above the lower edge of the upper measurement band.

31.6 Mainsails shall be able to be lowered to the **deck** without the necessity of a crew member going aloft.

32. GENOAS, JIBS AND STAYSAILS

32.1 A genoa is a headsail with a foot length, including the fore and aft length of any luff support device, greater than J.

32.2 A jib is a headsail with a foot length, including the fore and aft length of any luff support device, less than or equal to J.

32.3 A staysail is a headsail set aft of and in addition to another headsail.

32.4 The maximum foot length of any genoa or staysail, including the fore and aft length of any luff support device, shall be (J + 3.0 m).

32.5 The attachment points of a genoa, jib, or staysail shall be limited to:

(a) a halyard on the head;
(b) a tack system on the tack;
(c) a cunningham system near the tack;
(d) sheets on the clew;
(e) a tacking line near the middle of the foot, the purpose of which is to bring the clew of the sail forward during a tack or gybe, provided it is not used to sheet the genoa or jib in any way;
(f) a luff support device on the forestay.

32.6 Further to ACC Rule 32.5(f), except when a spinnaker is set, genoas, jibs and staysails shall be attached to a luff support device over their entire luff length except they are not required to be attached within 2 metres of the tack point and 1 metre of the head point.

32.7 The use of:

(a) secondary control devices (eg., genoa lead car systems) which are only used to control the primary control devices listed above; or
(b) spreader ends or spreader-end fittings that touch, shape or support a headsail, provided they do not have any means of attachment to the sail and do not restrict the movement of the sail to slide past the spreader end.

are specifically permitted.

32.8 The girths of any genoa, jib or staysail shall be subject to the following limits and measured as defined in Appendix G:

	Maximum girths as % of foot length
3/4-girth	37%
mid-girth	60%
1/4 girth	82%

32.9 When in use, a genoa, jib or staysail shall be tacked aft of the forward end of J such that the clew cannot extend more than 3.0 m aft of the forward side of the mast.

32.10 **Headsails** shall be able to be lowered to the **deck** without the necessity of a crew member going aloft.

32.11 The tack of a genoa or jib shall be constrained such that, at the forward end of J, the tack point or projection of its luff shall be no more than 30 mm from the **hull** centreline.

33. SPINNAKERS

33.1 The attachment points of a spinnaker shall be limited to:

(a) a halyard attached to the head;
(b) a tack line(s) attached to the tack;
(c) a cunningham attached near the tack of the sail;
(d) sheet(s) attached to the clew; and
(e) a retrieval line which shall only be tensioned when retrieving the spinnaker.

33.2 Other than sail hardware, intentional openings in the sail are prohibited.

33.3 Other than sail hardware and lines in the luff and leech(es), spinnakers shall only be constructed from commonly available woven nylon or polyester fabrics.

33.4 A tack line attached to a spinnaker may be lead to or through a bowsprit or the **deck** at a point not more than 1.25 x J forward of the forward face of the mast in its aft most position. This tacking point shall be defined by the intersection of the centreline of an imaginary stay from the mast head with the top of the bowsprit or **deck**.

33.5 Reaching struts used only to deflect the spinnaker afterguy are permitted. A reaching strut may be set on each side of the yacht and does not need to be attached to the mast.

34. BATTENS

34.1 The maximum number of battens are as follows:

Mainsail	10
Jib	5
Genoa	5
Staysail	5
Spinnaker	0

34.2 A batten:

(a) shall be able to pass through a 100 mm diameter circle;

(b) is prohibited below a line joining the tack and clew of any sail (foot);

(c) shall comply with the material limitations specified in **ACC Rule** 24, however, there are no limitations on the method of fabricating battens;

(d) may consist of multiple elements that need not necessarily be attached to one another, provided they shall be in close proximity over their entire length, and the multiple-element array complies with (a) above;

(e) shall be approximately straight within a tolerance of 100 mm either side of a straight line;

(f) shall have one end of the batten positioned on the leech;

(g) shall not be adjusted when a sail is set;

(h) in a mainsail shall not be closer than 700 mm from the head point. This measurement shall be taken from the head point to the closest point on the batten;

(i) may be inflatable. However, when a sail is set, the inflation of the batten shall not be adjusted. If inflatable, the provisions of **ACC Rule** 34.2 shall apply to the batten (including all elements of the batten) inflated to the maximum pressure used when racing;

(j) shall not be oriented at an angle of less than 30 degrees to the local luff;

(k) may be inside a pocket not exceeding 300 mm in width measured normal to the batten.

34.3 In genoas, jibs, and staysails:

(a) No part of a batten shall be closer than 3 metres from the head point. This measurement shall be taken from the head point to the closest point on the batten.

(b) Within the surface of the sail the longitudinal axis of a batten, projected if necessary, shall not join or intersect another batten.

(c) The longitudinal axis of a batten, projected if necessary, must intersect the luff.

35. CLASS INSIGNIA, NATIONAL LETTERS AND SAIL NUMBERS

35.1 The class insignia shall be the image of the America's Cup as depicted in Appendix E. This image shall not be changed in style. The image shall be 2.5 m high and shall be placed back to back on the mainsail with the "pouring lip" side of the America's Cup closest to the luff of the mainsail.

35.2 America's Cup Properties Inc. is the owner of the class insignia and the class insignia may only be used under licence. The class insignia shall only be used on yachts of **competitors** for America's Cup XXXII.

35.3 Class insignia, national letters and sail numbers shall be carried on the mainsail only.

35.4 The sail numbers may be placed on the same line following the national letters.

35.5 The following are the minimum sizes for national letters and sail numbers.

Height	1200 mm
Width	800 mm*
Thickness	180 mm
Space between adjoining letters/numbers	240 mm

* except the number "1" and the letter "I".

35.6 A new sail number shall be allotted by the **Technical Director:**

(a) when construction of the yacht is commenced. Construction is deemed to commence upon lamination of the first skin of the **hull**. The first skin shall be the inner skin of a **hull** constructed on a male mould or alternatively the outer skin on a female mould. Where the **hull** is built in sections it shall be the first skin on any **hull** component exceeding 25% of the **hull** by area; or

(b) when otherwise required by the **Protocol**.

35.7 The allotted sail number shall be issued to the yacht by the **Technical Director** when a measurement certificate is issued.

35.8 Sail numbers shall be allotted sequentially, irrespective of nationality. When a yacht's ownership is transferred from one country to another, it shall retain the same sail number with only the national letters being changed.

SECTION G - OTHER RULES

36. RIGGING, FITTINGS AND OTHER EQUIPMENT

36.1 **Standing rigging** excluding jumper stays, all backstays and forestay (but not including fittings such as clevis pins, turnbuckles, spreader tip cups etc.) shall be made of Nitronic 50, or an equivalent approved by the **Measurement Committee**.

36.2 Jumperstays, forestay and all backstays including running backstays shall be made of material approved in **ACC Rule** 36.1 or of carbon, aramid, and polymer fibres with a **fibre modulus** not exceeding 310 GPa.

36.3 All other **running rigging**, except backstays (including running backstays) may be made of steel alloy, or rope of natural or synthetic materials such as Kevlar(TM) , Vectran(TM) , Dyneema(TM) , and Spectra(TM).

36.4 A forestay strop is permitted provided that:

(a) it is attached at the lower end of the forestay and is no longer than required to take up the slack forestay when running; and

(b) it shall remain attached at the forward end of J and the forestay at all times whilst racing.

36.5 The **owner** shall provide to the **Measurement Committee** a signed declaration similar to that shown in Appendix C stating the materials used for the **standing** and **running rigging** comply with **ACC Rules** 36.1 and 36.2.

36.6 **Standing** and **running rigging** which is metal shall be of a circular cross section within a tolerance of 5% on diameter. Non-metallic **standing** and **running rigging,** excluding the forestay, shall be of a circular cross section within a tolerance of 10% on diameter.

36.7 Multiple-element **standing rigging** stays are prohibited and if two or more **standing rigging** stays are near parallel to each other then they shall have a clear space between the two stays of at least 50 mm along their length.

36.8 Fairings on **standing rigging** and **running rigging** are prohibited except for a headsail luff support device as defined in ACC Rule 36.9.

36.9 The maximum cross-sectional dimension of a genoa or jib luff support device or the headstay shall not exceed 75 mm.

36.10 Fittings shall not be constructed of boron or beryllium. Any other material with a density of less than 9,000 kgs/m^3 may be used.

36.11 No device shall be used to project a crew member's weight outboard for the purpose of increasing stability. For the purposes of this **ACC Rule**, "device" means any fitting, rigging or structure which, if removed singularly or severally, would result in the crew member falling overboard. "Increasing stability" means if the crew member's weight ceased to be projected outboard of the **sheerline**, the yacht's righting moment would decrease.

36.12 Compartments or containers that hold liquid in a manner that may increase performance are prohibited. Any compartment or space which could hold water shall be drained with limber holes of size consistent with the rapid draining of that compartment.

36.13 Yachts shall be fitted with a lifting eye(s) which enable weighing by lifting from a single point not more than 2.0m above the deck, and placed such that when lifted, the yacht shall be approximately horizontal.

36.14 **Running rigging**, **standing rigging** and **appendages** shall only be adjusted manually using mechanical systems as necessary. The use of stored energy is not permitted, except:

(a) for springs, shockcord, and similar devices;

(b) low pressure hydraulic accumulators which provide back pressure to a hydraulic system;

(c) batteries to power electric bilge pumps provided their total capacity is no greater than 50 l/min; and

(d) batteries to power any permitted electronics.

36.15 For the avoidance of doubt, remote actuation of valves or other control systems by any source of stored energy is not allowed.

37. CREW

37.1 The number of crew shall be seventeen (unless the number is reduced due to accident or injury), whose total body weight shall not exceed 1570 kgs. The **Notice of Race may** set out how compliance is to be verified to the reasonable satisfaction of the **Measurement Committee**.

If a Post-Race Inspection for compliance with this rule is ordered, a yacht to be inspected may request that the Measurement Committee grant permission for the consumption of food and fluids to re-hydrate the crew after racing. If the Measurement Committee grants the request, the Committee shall take into account the weight of food and fluids consumed up to a maximum allowance of 17 kgs.

37.2 In addition to the number of crew required by **ACC Rule** 37.1, there may be an 18th person who shall:

(a) not contribute to the racing of the yacht other than by the positioning of their weight. Unless otherwise prescribed by the Sailing Instructions, a person with acknowledged technical or tactical skill (yacht designers, sail designers or sailing coaches would be specific, though non-exhaustive examples) shall be considered to be contributing to the racing of the yacht whether or not that person does "contribute to the racing of the yacht" during that particular race;

(b) be positioned aft of the yacht's helm and with their torso inboard of a vertical line above the **sheerline**;

(c) wear clothing of a colour which distinguishes the 18th person from other members of the crew;

(d) not act as a representative of the yacht; and,

(e) not take video or still pictures.

37.3 The yacht shall carry additional weight such that the total weight of the 18th person fully clothed and any corrector weights is at least 100kgs. In the event there is no 18th person on board a yacht, that yacht shall carry 100kgs of additional weight.

37.4 Any corrector weights shall be carried in the **cockpit** between AGS and 3 m forward of AGS.

37.5 The crew members and the 18th person shall not wear or carry clothing for the purpose of increasing their weight.

SECTION H - INSPECTION AND MEASUREMENT

38. MEASUREMENT - GENERAL

38.1 Unless otherwise prescribed, all measurements shall be taken without crew on board.

38.2 At the time of measurement ashore and afloat, backstays, runners and forestays shall be slack.

38.3 Calculations shall be rounded to the nearest millimetre, or the third place of decimals for measurements of area. The angles θ and ϕ shall be measured to two decimal places. The weight of the yacht shall be rounded to the nearest 20 kg.

38.4 A yacht may be re-measured at the discretion of the **Technical Director** or the **Measurement Committee**.

38.5 As new technology is rapidly evolving for the conduct of tests for materials and methods, at the discretion of the **Measurement Committee**, the yacht may be subjected to tests for compliance which may not otherwise be specifically set out in these **ACC Rules**.

39. MEASUREMENT COMMITTEE AND MEASURERS

39.1 The **Measurement Committee** and **Measurers** shall be appointed in accordance with the **Protocol**.

39.2 In the event the **Measurement Committee** becomes aware that a **Competitor** may have failed to comply with any rule set out in Article 12 of the **Protocol**, they shall make a report to the Jury appointed under the **Protocol** and/or the **Notice of Race**. A **Measurer** who becomes aware that a **Competitor** may have failed to comply with any Rule set out in Article 12 of the **Protocol**, shall advise the **Measurement Committee**.

40. COMPLIANCE AND ASSISTANCE

40.1 **Competitors** shall permit and assist all inspections and measurements by a **Measurer** and the **Measurement Committee** and shall afford all reasonable facility to carry out such measurements and inspections.

40.2 **Competitors** shall ensure that the yacht, its spars, sails and equipment comply with the **ACC Rules** at all times while racing and that any alterations, replacements and repairs do not invalidate the measurement certificate.

41. DECLARATIONS AND POST-CONSTRUCTION INSPECTIONS

41.1 Upon completion of the **hull** and **deck** and prior to the issue of the Measurement Certificate, **Competitors** shall submit declarations to the **Measurement Committee** that the **hull** and **deck** have been constructed in accordance with the **ACC Rule**. The declaration(s) shall be signed by the yacht's designer(s), builder(s), and **owner**. The form of this declaration shall be as shown in Appendix C.

41.2 A post-construction inspection shall be carried out by the **Measurer** prior to or upon completion of the **hull** and **deck,** but prior to painting.

41.3 A minimum of eight laminate samples (at least 5 from the **hull** and 3 from the **deck**) of approximately 50 mm diameter shall be taken from the yacht. These samples shall be taken in the presence of the **Measurer**, and at positions selected by the **Technical Director** or, at the discretion of the **Technical Director**, by the **Measurer**. All samples shall be indelibly marked with the sail number of the yacht and the position from which the sample came. The samples shall be sent to the **Technical Director** upon his request.

41.4 Additional laminate samples may be taken at the discretion of the **Measurer**.

41.5 The **Measurer** shall submit to the **Measurement Committee** a diagram indicating the approximate positions on the **hull** and **deck** from which the samples have been taken.

41.6 If a **Competitor** disputes the **Measurer's** selection of the number, method or position of sampling or testing, the matter shall be referred to the **Technical Director** whose decision shall be final.

41.7 The **Measurement Committee** may submit such samples to an independent laboratory, selected by the **Measurement Committee** and approved by the **Regatta Director**, for testing to establish the cure temperature and material properties.

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41.8 Upon completion of the spars and **appendages**, a **Competitor** shall submit to the **Measurement Committee** a declaration for each item that the construction materials and methods used are in accordance with the **ACC Rule.** The form of the declarations shall be as shown in Appendix C.

41.9 Upon completion of the yacht but prior to the issue of a certificate, a **Competitor** shall submit to the **Measurement Committee** a declaration that the rigging, paint finish (**ACC Rule** 23.1) and wet laminates comply with the relevant **ACC Rules**. The form of the declarations shall be as shown in Appendix C.

42. INITIAL MEASUREMENT

42.1 After assembly of the **hull**, **deck** and **cockpits**, but prior to the yacht sailing for the first time, the **Competitor** shall present the yacht to a **Measurer** for marking of **hull** measurement points and any additional inspections required by the **Measurer**, including compliance with **ACC Rules** 14, 15, 18, 19, 20, 21, 22 and 36. The **appendages** shall not be attached to the yacht for this initial measurement.

42.2 The **Measurer** shall permanently mark original measurement points with a cross head screw fixed into the **hull** as shown in Appendix B. The centre of the cross head screw shall mark the measurement point.

42.3 When measurement points are re-located due to a measurement re-configuration of the yacht, they shall be marked by an indentation in the surface of the **hull**. The original measurement points shall always remain present and visible on the **hull**.

43. MEASUREMENT AFLOAT

43.1 For the measurement afloat, the yacht shall be in **measurement condition**. **Measurement condition** shall be with:

(a) a measured mast, boom and spinnaker pole. The mast shall be vertical;

(b) all appendages fitted;

(c) fore and aft **running** and **standing rigging** slack (with running backstays at any position between their aft rigged position and the mast);

(d) no sails, sail bags, sail furling equipment, or battens;

(e) no crew, crew clothing, food, drinking fluids, or safety equipment.

Other equipment may be removed or remain on board the yacht during its measurement afloat, however, attention is drawn to the provisions of **ACC Rule** 44.1.

43.2 With the yacht afloat, the **Measurer** shall check that the yacht floats on the MWL by measuring freeboards to the upper measurement points at the FGS and AGS stations.

43.3 The specific gravity of the sea water shall be measured and recorded at the time of measurement afloat.

43.4 When specific gravity of the sea water varies from 1.025, the **Measurer** shall allow 0.35 mm sinkage or bodily rise for each 0.001 variation in specific gravity.

43.5 Immediately prior to measurement afloat and with the yacht in **measurement condition** as defined in **ACC Rule** 43.1, the **Measurer** shall weigh the yacht. Upon a successful flotation, this shall be the weight used in the calculation of rating.

43.6 With the exception of internal **ballast**, all moveable equipment on board for the measurement afloat shall be positioned between the aft face of the mast and 5m aft of that point.

44. COMPLIANCE WHILST RACING

44.1 Whilst racing:

(a) the weight of the yacht without:

(i) the crew, including 18th person and any associated weight correctors;

(ii) crew clothing;

(iii) food and drinking fluids;

(iv) any equipment prescribed or supplied by the Organising Authority; and

(v) the sails, sail bags, sail furling equipment and battens

shall not be less than its weight in **measurement condition** nor more than 100kg greater than its weight in **measurement condition**;

(b) the total weight of sails, sail bags, sail furling equipment and battens carried on board shall not exceed 650kgs.

(c) the total weight of consumable stores and their containers carried shall not exceed 100 kgs;

(d) sails and equipment shall not be moved for the purpose of changing trim or stability; and

(e) sails not in use must be stowed forward of a line 9m aft of the aft face of the mast;

(f) running backstays, topmast backstays and check stays shall not be lowered or removed from the mast or the fly block;

(g) **standing rigging** or spreaders shall not be adjusted, except as specifically permitted in **ACC Rule** 25.8(f);

(h) internal **ballast** shall be fixed in the position recorded in the yacht's certificate.

44.2 When carrying out post-race measurement checks to ensure compliance with **ACC Rules** 44.1(a) and (b), the **Measurer** shall allow a reasonable time to drain water from the yacht and equipment and allow the substitution of wet **running rigging** with equivalent dry **running rigging**.

45. MEASUREMENT CERTIFICATE

45.1 Following inspection and measurement, the **Measurer** shall send the completed measurement forms and supporting documentation to the **Technical Director**. When the **Measurement Committee** is satisfied that the yacht has been inspected and measured correctly, the **Technical Director** shall issue to the **Competitor** a measurement certificate in the form appearing in Appendix A and shall retain a copy for their records. The **Measurement Committee** shall provide a copy of the front page of that measurement certificate to the **Regatta Director** for public dissemination.

45.2 The measurement certificate ceases to be valid if there is any change:

(a) to the yacht's **appendages** except as provided in **ACC Rule** 45.3;

(b) in the position of the mast relative to the **deck** except as provided in **ACC Rule** 25.13;

(c) to the yacht that would alter any information recorded on the yacht's measurement certificate except that masts, boom and spinnaker poles may be substituted, provided the **Competitor** notifies the **Measurement Committee** and the yacht, whilst racing, complies with **ACC Rule** 44.1. A yacht shall always be able to return to its weight recorded its measurement certificate.

45.3 A damaged **appendage** may be replaced, with the written approval of the **Measurement Committee**, provided:

(a) the **Measurement Committee** is satisfied that the damaged **appendage** cannot be repaired in a reasonable regatta-constrained time;

(b) the **Measurement Committee** is satisfied that after all the necessary changes associated with replacing the damaged **appendage**, the yacht complies with **ACC Rule** 45.2(c);

(c) **appendages** with a nett density of 10,000 kg/m^3 or more shall not vary more than 2% of the weight and wetted-surface from the original (certificate) **appendage**;

(d) **appendages** with a nett density of 1000 kg/m^3 or less shall not vary more than 10% in weight and wetted-surface from the original (certificate) **appendage**;

(e) **appendages** with a nett density between 1000 and 10,000 kg/m^3 shall vary proportionally to its nett density based on the allowable variation given above (ie. Density= 5000 kg/m^3 allowable variation 6.44% on weight and wetted-surface);

(f) in the case of fins, trim tabs, wings and rudders, the span and chord length shall not vary by more than 10% from the original **appendage**; and

(g) in the case of bulbs, the edges of the circumscribing rectangular prism of the bulb shall not vary by more than 10% from the original **appendage**.

The **appendage** weight in (c), (d) and (e) above shall include any integral stock-type permanent attachments. The wetted surface in (c), (d) and (e) above shall only include surfaces exposed to the flow of water (not stocks and attachment components).

45.4 A measurement certificate may be withdrawn by the **Measurement Committee** at any time if the **Measurement Committee** believes, on reasonable grounds, that the yacht is no longer in compliance with these **ACC Rules** or an **Interpretation**.

45.5 When a certificate is invalidated, a new measurement certificate will be issued following a partial or complete re-measurement, as appropriate.

45.6 A yacht shall have only one valid measurement certificate at any one time.

45.7 The **Technical Director, Measurers** and the **Measurement Committee** shall hold certificates in confidence until after America's Cup XXXV.

APPENDIX A

AMERICA'S CUP CLASS

Measurement Certificate No

Office Use Only

Original to Owner ( )
Copy to TD File ( )
Other Copies ( )

_____

_____

Yacht's Name

National Letters
and Sail Number

Designer(s)

Builder(s)

Owner(s)

VALIDATION

This yacht has been measured by measurer(s) approved in accordance with the America's Cup Class Rule and has been found to be in compliance with the Rule.

This certificate is dated

Supersedes Certificate No and Date

_____
ACC Technical Director

APPENDIX A

RATING CALCULATION

Yacht		Sail Number	

OVERALL LENGTH				
Overhang Forward to FLM				
Overhang Aft to ALM				
Total Overhang				
LBG (Length Between Girth Stations)				
FG (Forward Girth)				
Θ				
FBC (Max(-.116 or -1.8(1/CosΘ-1)))				
FGC (Max(0.3 or 1.25(FG-2.4+FBC)))				
AG (Aft Girth)				
Φ				
ABC (Max(Φ or 1.414-(1/CosΦ)))				
AGC (Max(1.6 or 0.75*(AG-1.8+ABC)))				
G (FGC + AGC)				
LM (Measured Length = LBG+G)				
FP (Freeboard Penalty See Page 3)				
WP (Weight Penalty See Page 3)				
L (Rated Length=LM*(1+2000*(LM-22.1)^4)+FP+WP)				
SM (Maximum Sail Area : See Page 4)				
S (Rated Sail Area = SM*(1+0.0001*(SM-320)^4))				
1.25 * S^0.5				
W (Weight of Yacht in Kgs)				
DSP (Displacement (m^3)=W/1025)				
9.8 * DSP^(1/3)				
RATING (L + 1.25*S^0.5 - 9.8*DSP^(1/3)) / 0.686				

Certificate No		Date	
Measurer		Signature	

APPENDIX A

RATING PENALTIES

Yacht		Sail Number	

FREEBOARD		
Mean Freeboard at FLM		
Minimum Freeboard at FLM	1.500	
Deficiency		
Mean Freeboard at 50% LBG		
Minimum Freeboard at 50% LBG	1.265	
Deficiency		
Mean Freeboard at ALM		
Minimum Freeboard at ALM	1.200	
Deficiency		
Sum of Deficiencies		
FP (Freeboard Penalties = Deficiencies * 4)		
WEIGHT		
Actual Weight		
Maximum Allowable Weight in Measurement Condition	24000	
Excess or Deficiency		
WP (Weight Penalty = (Excess or Deficiency) * 4)		
Maximum Weight whilst racing (refer 44.1(a))		
DRAFT		
Actual Maximum Draft		
Maximum Allowable Draft	4.100	
BEAM		
Actual Beam		
Maximum Allowable Beam	4.500	

Certificate No		Date	
Measurer		Signature	

APPENDIX A

SAIL AREAS

Yacht		Sail Number	

Maximum Allowable Sail Area (SM)	

Foretriangle	
I	
J	
Foretriangle Area	

Mainsail	
P	
BAD	
Maximum Allowable Mainsail Area	

Spinnaker	
Maximum Allowable Spinnaker Area	
Maximum Spinnaker Pole Length	

FLOTATION

Yacht		Sail Number	

Actual Specific Gravity of Water

Description and Location of Internal Ballast

Designated Equipment at Flotation

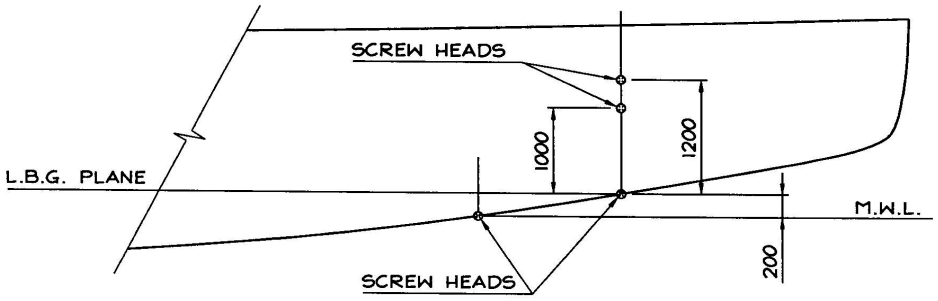
Mast	
Boom	
Spinnaker Pole	
Fin Strut	
Bulb	
Wings	
Rudder	
Trim Tab	

Certificate No		Date	
Measurer		Signature	

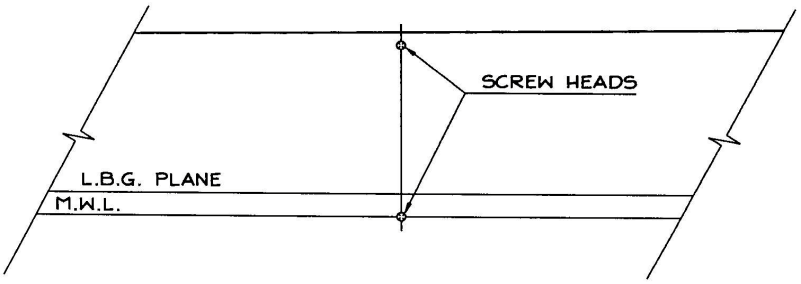
APPENDIX B

MEASUREMENT MARKS

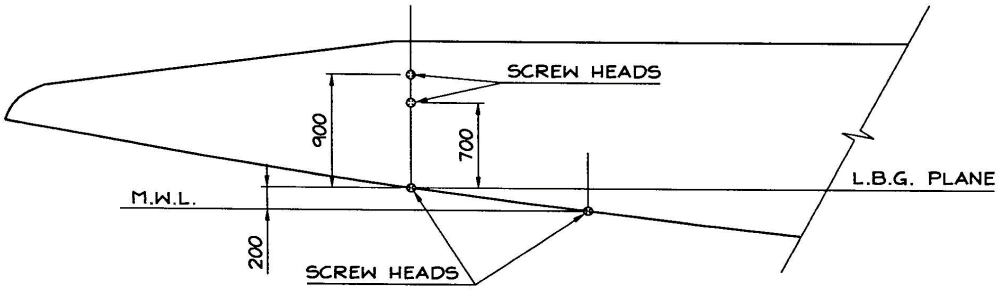
Measurement marks shall be painted or fastened to the surface of the hull at measurement points as follows:



BOW



AMIDSHIPS (LBG/2)



STERN

APPENDIX C

HULL CONSTRUCTION DECLARATION

DESIGNER'S DECLARATION

I, the designer of the yacht _____ declare that the hull has been designed and to the best of my knowledge, built, only from materials, and using building methods, as permitted in the America's Cup Class Rule.

Designer (Block Letters)_____

Signature_____Date_____

BUILDER'S DECLARATION

I, the builder of the yacht _____declare that the hull has been built only from materials, and using building methods, as permitted in the America's Cup Class Rule.

Builder (Block Letters)_____

Signature_____Date_____

OWNER'S DECLARATION

I, the owner of the yacht _____declare that the hull has been built only from materials, and using building methods, as permitted in the America's Cup Class Rule.

Owner (Block Letters)_____

Signature_____Date_____

This declaration is to be preceded by a completed material usage schedule as set out in Appendix D.

APPENDIX C

COMPONENT DECLARATION

YACHT _____

COMPONENT _____ **DATE** _____

DESIGNER'S DECLARATION

I declare that the component named and referenced above has been designed and to the best of my knowledge, is constructed, only from materials, and using building methods, as permitted in the America's Cup Class Rule.

Designer (Block Letters) _____

Signature _____ Date _____

BUILDER'S DECLARATION

I declare that the component named and referenced above, is constructed only from materials, and using building methods, as permitted in the America's Cup Class Rule.

Builder (Block Letters) _____

Signature _____ Date _____

OWNER'S DECLARATION

I declare that the component named and referenced above, is constructed from materials, and using building methods, as permitted in the America's Cup Class Rule.

Owner (Block Letters) _____

Signature _____ Date _____

This declaration is to be preceded by a completed material usage schedule as set out in Appendix D.

America's Cup Class

Hull Construction Material Usage Schedule

Date:		*Yacht Name:*					*Sail Number:*	
Area:		**Material Description**	**Supplier Batch Number**	**Quantity Supplied**	**Supplier C of C Number**	**Material Type**	**Manufacturer Batch Number**	**Manufacturer C of C**
Hull	Inner Skin							
	Outer Skin							
Deck	Inner Skin							
	Outer Skin							

America's Cup Class

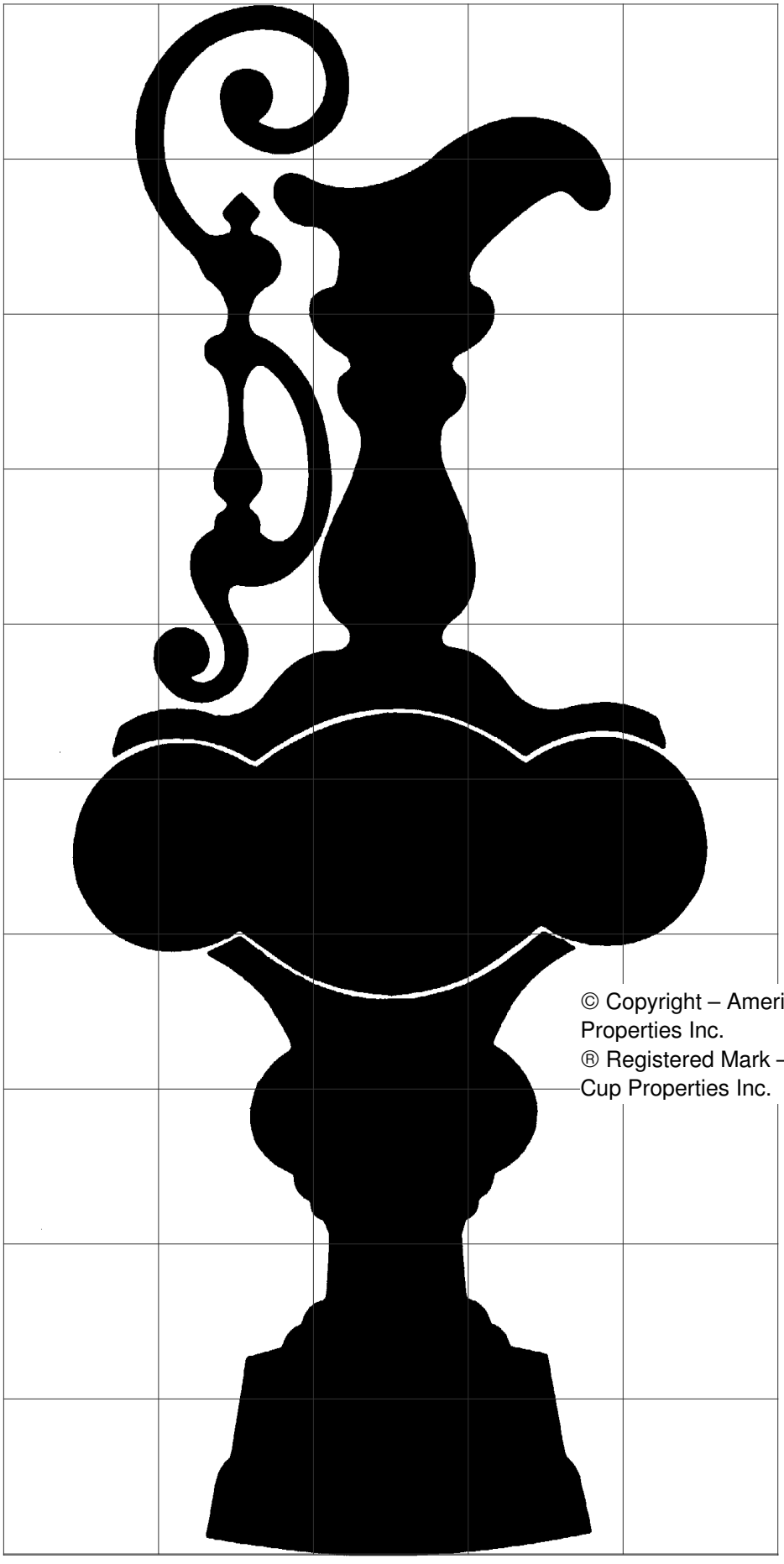
Component Construction Material Usage Schedule

Date:	*Yacht Name:*	*Sail Number:*

Component:

Material Description	Supplier Batch Number	Quantity Supplied	Supplier C of C Number	Material Type	Manufacturer Batch Number	Manufacturer C of C

APPENDIX E



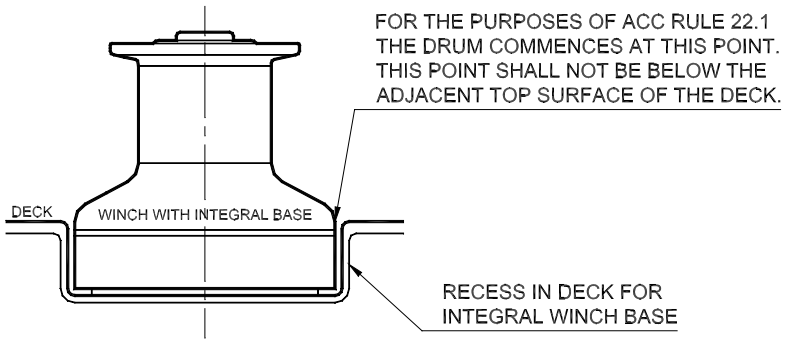


FIGURE 1

ACC RULE 22.1

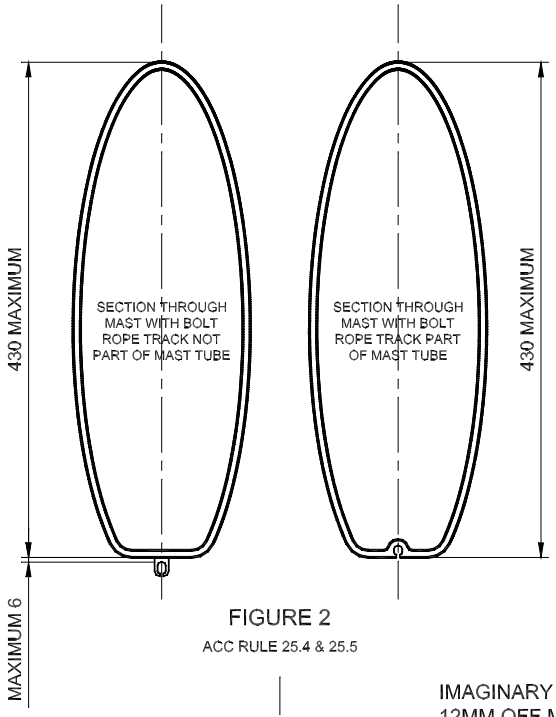


FIGURE 2

ACC RULE 25.4 & 25.5

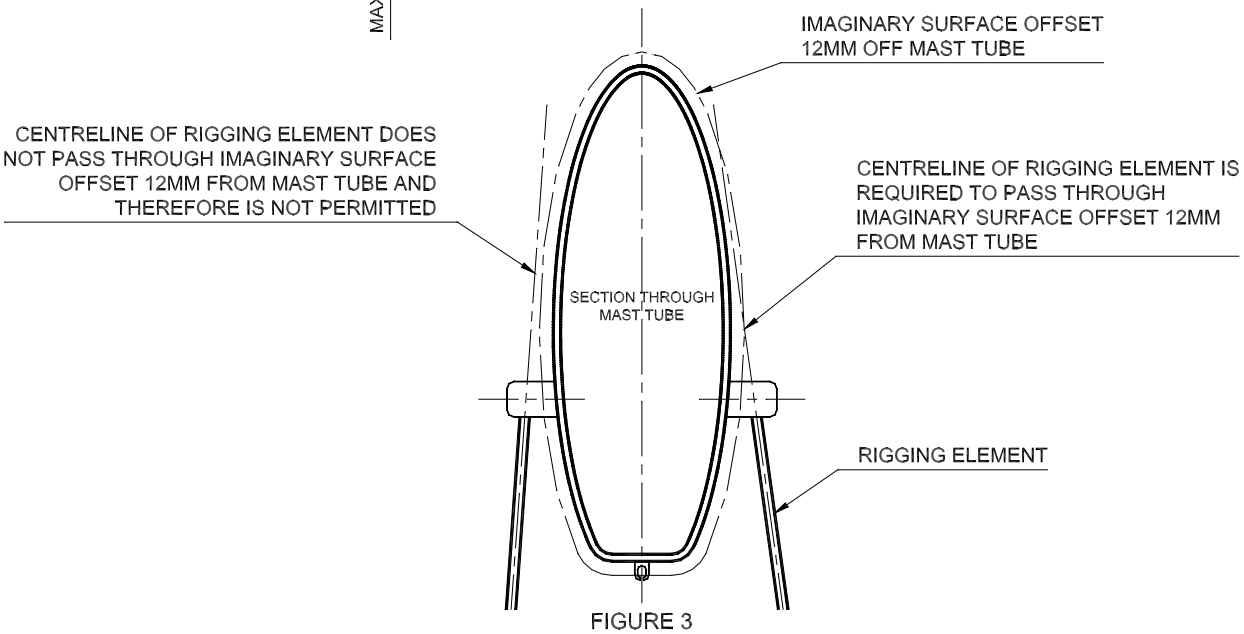


FIGURE 3

ACC RULE 25.11

APPENDIX G

ACC Sail Measurement Definitions

The **Forward, Aft, Bottom, and Top** edges of a sail are measured in the same co-ordinate system as the yacht:

a) **Forward** means closer to the bow.
b) **Aft** means closer to the stern.
c) **Bottom and Top** refer to the height above the waterline.

Foot

The **Bottom** edge of the sail in its normal configuration when in use.

Head

The **Top** edge or point of the sail in its normal configuration when in use.

Luff

a) Mainsail and Headsail: The **Forward** edge of the sail.
b) Spinnaker: One of the edges that connect the **foot** to the **head**.

Leech

a) Mainsail and Headsail: The **Aft** edge of the sail.
b) Spinnaker: The other edge that connects the **foot** to the **head**, which was not measured as the **luff.**

Tack

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

Clew

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

Head Ordinate Line

The line through the highest point on the sail, at 90 degrees to the **luff,** projected as necessary.

Head point

a) Mainsail and headsail: The intersection of the **luff** and the **Head Ordinate Line**, projected as necessary.
b) Spinnaker: the intersection of the **luff** and the **leech**, projected as necessary.

Clew point

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

APPENDIX G

Tack point

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

Luff length

The distance between the **tack point** and the **head point,** measured around the curve of the **luff.**

Leech length

a) Headsail and Mainsail: The distance between the c**lew point** and the **head point**, measured as the shortest path between these points.
b) Spinnaker: The distance between the **clew point** and the **head point,** measured around the curve of the **leech.**

Foot length

The distance between the **tack point** and the **clew point**, measured as the shortest path between these points.

Foot shelf

A sail fabric assembly on the foot of the mainsail, subject to ACC Rule 29.1(h) and ACC Rule 30, which is below the straight line joining the **tack point** and the **clew point**.

Spinnaker mid-girth (SMG)

The distance between the midpoints of the **luff** and the **leech**, measured as the shortest path on the surface of the sail.

Genoa, Jib and Staysail girth measurement

The **mid-luff point** shall be located on the luff by folding the **head point** to the **tack point**.
The **mid-leech point** shall be located on the leech by folding the **head point** to the **clew point**.

The **¼-luff point** shall be located on the luff by folding the **tack point** to the **mid-luff point**.
The **¼-leech point** shall be located on the leech by folding the **clew point** to the **mid-leech point**.

The **¾-luff point** shall be located on the luff by folding the **head point** to the **mid-luff point**.
The **¾-leech point** shall be located on the leech by folding the **head point** to the **mid-leech point**.

Genoa **mid-girth**

The distance between the **mid-luff point** and the **mid-leech point**, measured as the shortest path on the surface of the sail, except that hollows between battens shall be bridged for measurement purposes.

Genoa **¼-girth**

The distance between the **¼-luff point** and the **¼-leech point**, measured as the shortest path on the surface of the sail, except that hollows between battens shall be bridged for measurement purposes.

Genoa **¾-girth**

APPENDIX G

The distance between the **¾-luff point** and the **¾-leech point**, measured as the shortest path on the surface of the sail, except that hollows between battens shall be bridged for measurement purposes.

OTHER DEFINITIONS

Batten

A device that is attached to the sail to perform one or more of the following functions:

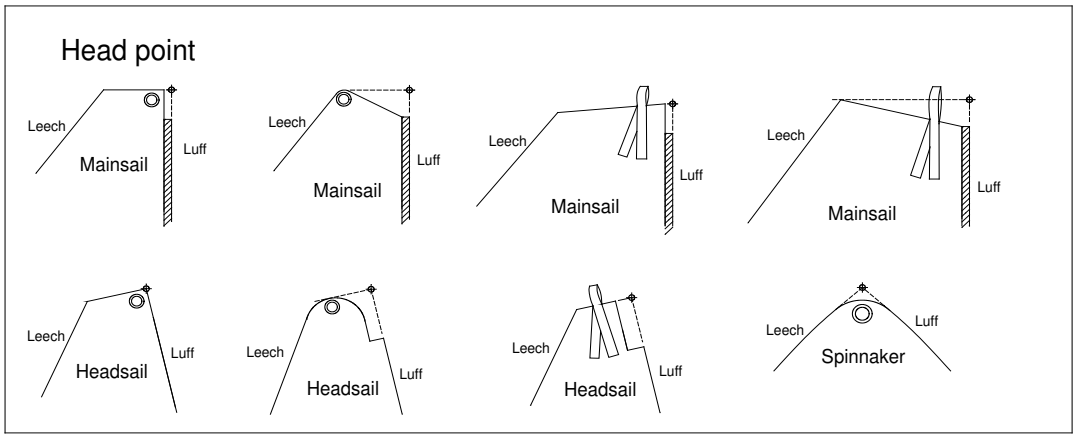
a) provide support for the leech roach;
b) provide local stiffening and support in the body of the sail.

Sail hardware

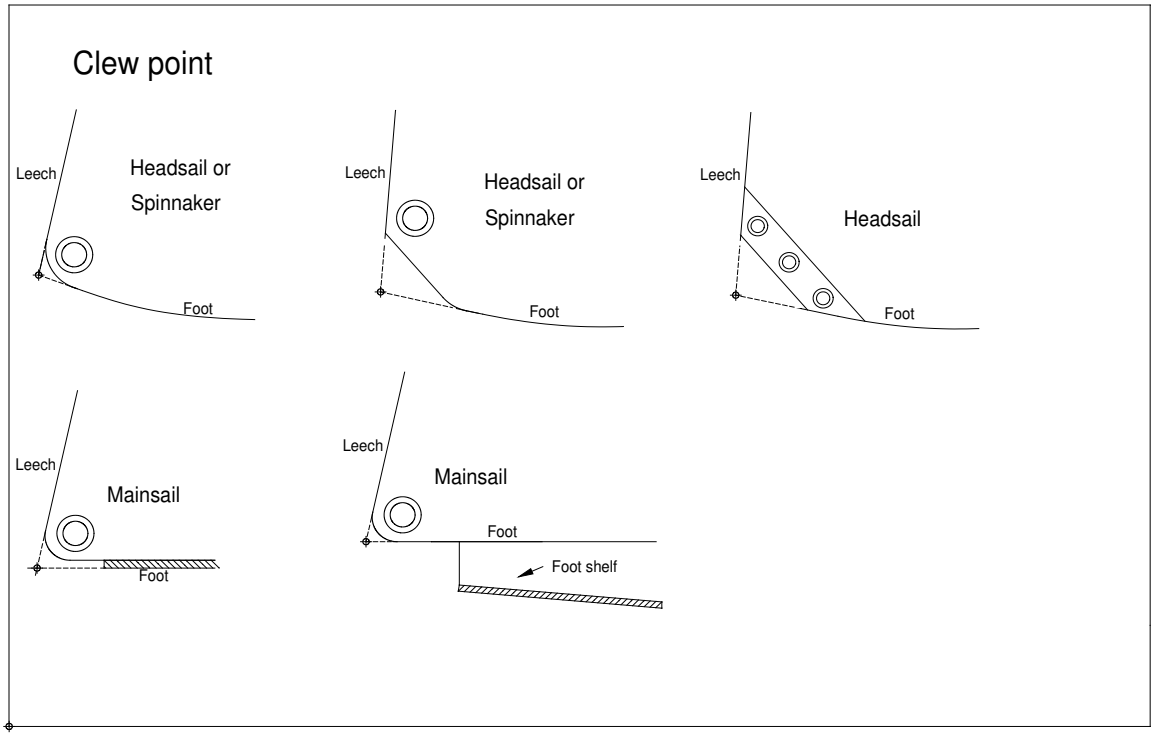
A component of the sail, not including battens, constructed of metal, plastic, or FRP, that is attached to the sail to perform one or more of the following functions:

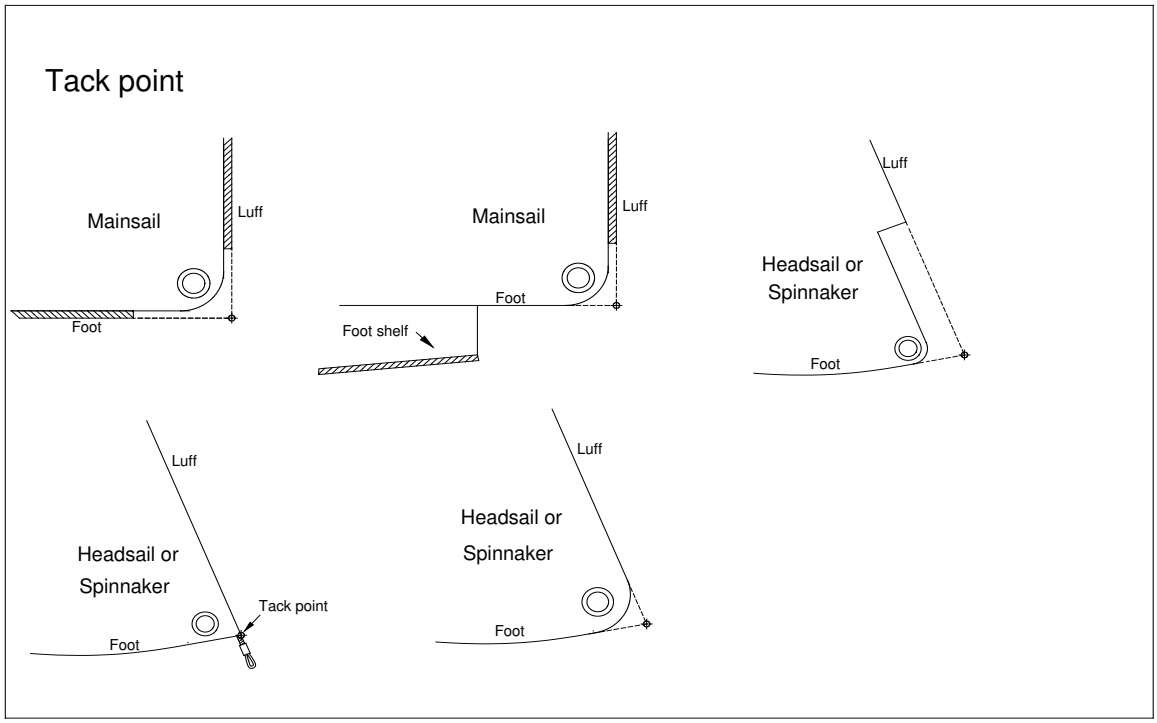
a) provide a means of attachment for sail controls;
b) provide a means of attachment for a batten;
c) provide local stiffening near a corner;
d) act as part of a control system on the sail.

Such components include but are not limited to corner rings, headboards, batten fittings, cord system cleats, cord system blocks.

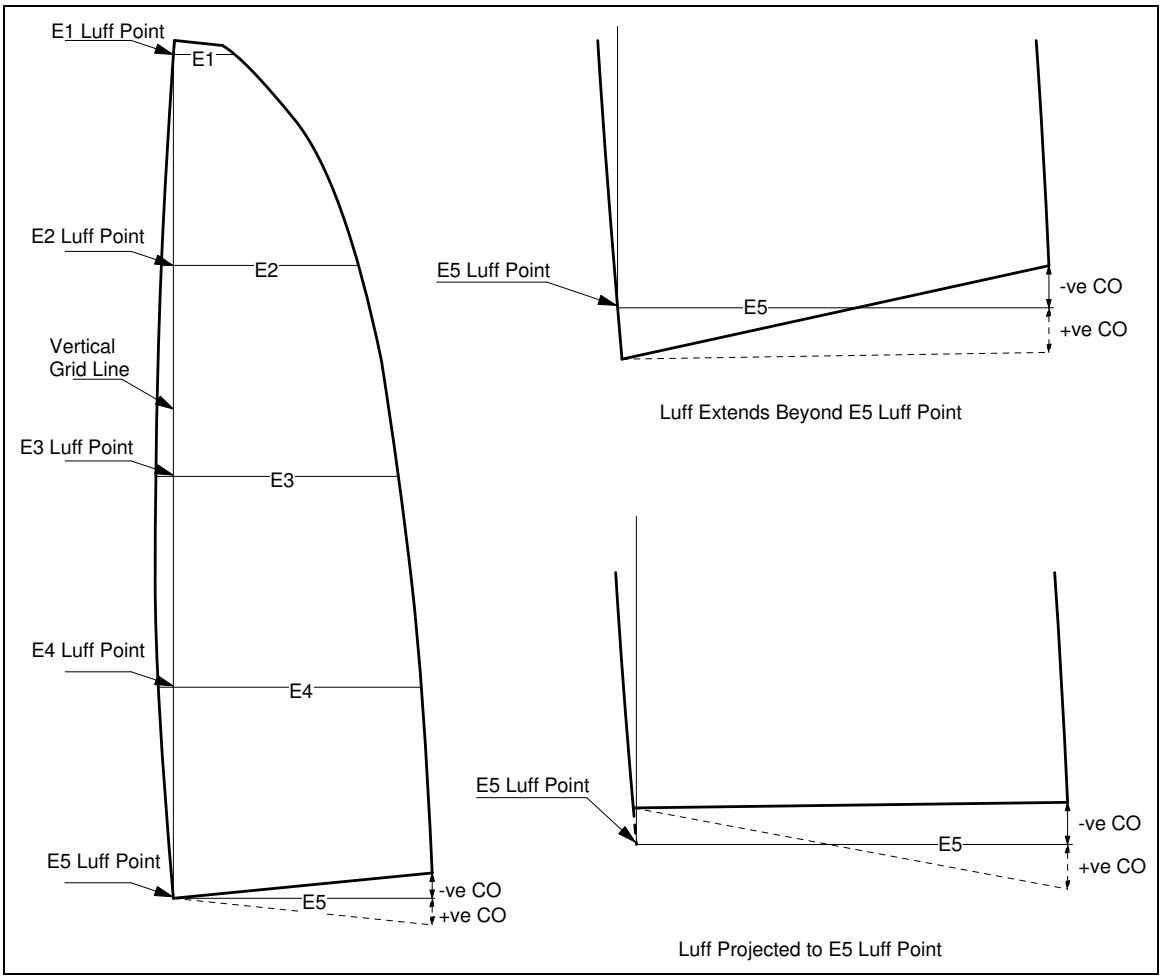


APPENDIX G


Clew point
Leech
Headsail or
Spinnaker
Foot
Leech
Headsail or
Spinnaker
Foot
Leech
Headsail
Foot
Leech
Mainsail
Foot
Leech
Mainsail
Foot
Foot shelf


Tack point
Mainsail
Luff
Foot
Mainsail
Luff
Foot
Foot shelf
Luff
Headsail or
Spinnaker
Foot
Luff
Headsail or
Spinnaker
Tack point
Foot
Luff
Headsail or
Spinnaker
Foot

APPENDIX G


E1 Luff Point
E1
E2 Luff Point
E2
Vertical
Grid Line
E3 Luff Point
E3
E4 Luff Point
E4
E5 Luff Point
E5
-ve CO
+ve CO
E5 Luff Point
E5
-ve CO
+ve CO
Luff Extends Beyond E5 Luff Point
E5 Luff Point
E5
-ve CO
+ve CO
Luff Projected to E5 Luff Point

APPENDIX H

SCHEDULE OF REQUIRED DECLARATIONS & CERTIFICATES OF CONFORMITY

CLAUSE	SUBJECT	SUPPLIED
16.2	Component Declaration for Materials and Methods - Hull, Deck & Internal Structure	
16.7	Component Declaration for Commercially Available FRP Ex-stock Material - Hull, Deck, & Internal Structure	
16.7 (e)	Material Usage Schedule and Manufacturer's Certificates of Conformity for FRP - Hull, Deck, & Internal Structure	
16.7 (f)	Component Declaration for Wet-Laminate FRP Mechanical Properties - Hull, Deck, & Internal Structure	
17.3 (d)	Material Usage Schedule and Manufacturer's Certificates of Conformity for FRP - Appendages (One for Each Appendage)	
17.3 (e)	Component Declaration for Wet-Laminate FRP Mechanical Properties - Appendages (One for Each Appendage)	
17.6	Component Declaration for Materials and Methods - Appendages (Owner, Designer, & Builder) (One for Each Appendage)	
23.1	Component Declaration for Materials and Methods -Surface Finishes & Boundary Layer Interface	
24.1 (d)	Material Usage Schedule and Manufacturer's Certificates of Conformity for FRP - Spars (One for Each Spar)	
24.1 (e)	Component Declaration for Wet-Laminate FRP Mechanical Properties - Spars (One for Each Spar)	
24.4	Component Declaration for Materials and Methods - Spars (Owner, Designer, & Builder) (One for Each Spar)	
36.5	Component Declaration for Materials - Standing and Running Rigging	