AC75 Class Rule

v1.0

29 March 2018

Copyright © 2018 Royal New Zealand Yacht Squadron and Circolo Della Vela Sicilia
Contents

1 Introduction 2
2 Language 2
3 Reference frames and units 3
4 General arrangement 4
5 Component limits and modifications 5
6 Materials 8
7 Construction methods 10
8 Surface finishes 12
9 Mass 13
10 Hull 15
11 Deck fittings 18
12 Foils 20
13 Foil Arms 23
14 Foil Flaps 24
15 Rudder 25
16 Bowsprit 26
17 Sails (General) 27
18 Headsails 28
19 Mast and mainsail 31
20 Control systems 38
21 Hydraulic control circuits 40
22 Electrical and electronic systems 41
23 Electronic control circuits 43
24 Instrumentation and logging system 44
25 Crew information system 45
26 Foil cant system 47
27 Crew 48
28 Guest racer 49
29 Branding 49
30 Measurement 50
31 Interpretation 52
32 Amendment 53
33 Dates 53
34 Definitions 54
1 Introduction

1.1 This document defines the rules which govern an AC75 Class Yacht, the class of yacht chosen to compete in the 36th America’s Cup.

1.2 The AC75 Class Yacht is a 75 foot high-performance monohull intended to:

• promote head-to-head match racing and close competition;
• permit technological development to spearhead the development of sailing and maintain the America’s Cup as the world’s premier sailing event;
• ensure the class is relevant to the sport of sailing with connection to the community of sailors;
• be demanding to sail, rewarding the top level of skill for all sailors on the yacht;
• provide competitive racing in light and stronger wind conditions;
• provide a safe position for a guest racer on board the yacht; and
• incorporate practical requirements for the launching, retrieval and transportation of the yacht.

1.3 An AC75 Class Yacht shall comply with the AC75 Class Rule when racing, and at other times as required by the AC75 Class Rule and the Protocol.

1.4 Competitors are ultimately and solely responsible for the safety and structural integrity of the whole (and any part or parts) of their AC75 Class Yacht. No express or implied warranty of safety and/or structural integrity shall result from compliance with the whole or any part of this AC75 Class Rule. Any structural testing required for compliance with the AC75 Class Rule does not guarantee safety or structural integrity nor does it relieve the Competitor of this responsibility.

2 Language

2.1 The official language of the AC75 Class Rule is English.

2.2 Within the AC75 Class Rule, the word “Rule” is a reference to a rule of this AC75 Class Rule.

2.3 Where words or phrases are printed in bold type their meaning shall be as defined in Rule 34. Bold terms defined as singular may be used in their defined sense as plurals, and vice versa.

2.4 In some document viewers, the definition of terms in bold may be seen as a tooltip. Although these tooltips are intended to provide the correct and full definitions, they should not be relied upon; the text printed in Rule 34 is the only authoritative source.

2.5 The interpretation of words not defined in bold shall be made with reference to the Official Dictionary. The Rules Committee shall determine the appropriate definition and may do so by consulting other references.

2.6 The words “can” and “may” are permissive. The words “will”, “must”, and “shall” are mandatory.

2.7 Details marked as “TBA” will be provided as soon as possible in accordance with Rule 32.1 (a).
3 Reference frames and units

3.1 The Measurement Waterline Plane, \textit{MWP} is defined as the horizontal reference plane of the yacht.

3.2 The Longitudinal Centre Plane, \textit{LCP} is defined as the vertical reference plane, orthogonal to \textit{MWP}.

3.3 The Transom Reference Plane, \textit{TRP}, is defined as the vertical reference plane, orthogonal to \textit{MWP} and \textit{LCP}.

3.4 The reference planes \textit{MWP}, \textit{LCP} and \textit{TRP} are fixed to the \textit{yacht}, translating and rotating as the yacht moves in space.

3.5 Except where otherwise specified, terms such as “above”, “below”, “forward” and “aft” refer to relative positions in the yacht-fixed coordinate system.

3.6 The aftmost point on the \textit{hull surface} shall lie on \textit{TRP}.

3.7 The \textit{hull} shall have three measurement reference points. These points shall be located:

(a) on \textit{MWP} and on \textit{LCP}, at 20.700 m from \textit{TRP}; and
(b) on \textit{MWP} and on \textit{TRP}, offset 2.000 m either side of \textit{LCP}.

3.8 Three screws shall be installed on the \textit{hull surface} for the purpose of locating the reference points. If a reference point does not lie on the \textit{hull surface}, the screw shall be installed at declared offsets from the reference point, as close as reasonably possible to the reference point.

3.9 The \textit{hull IGES} shall include the three measurement reference points and the exact locations of the three screws in Rule 3.8.

3.10 The following tolerances shall be applied to all dimensions specified in this \textit{AC75 Class Rule}:

(a) where a measurement is required to be a specific value:

(i) where decimal places for a unit are given, the measurement shall be accurate to the least significant figure indicated. For example, if a Rule states that a length must be 5.0 m, that length must be at least 4.95 m and less than 5.05 m;

(ii) where decimal places for a unit are not given, the measurement shall be accurate to within 1% of the figure indicated. For example, if a Rule states that a component must weigh 1000 kg, that component must weigh between 990 kg and 1010 kg inclusive; and

(b) where a measurement is required to be “at least”, “at most”, “a minimum”, “a maximum”, “between”, “within a range”, or other equivalent wording, no tolerance beyond that limit or outside that range is permitted, but the permitted measurement is inclusive of the limit value. For example, if a Rule states that a length must be less than 5 m, that length must be no more 5.000000 m to the accuracy of the equipment referred to in Rule 30.8.
4 General arrangement

4.1 The AC75 Class Yacht shall have:
   (a) one hull;
   (b) two foils;
   (c) one rudder;
   (d) one bowsprit;
   (e) one mast;
   (f) one set of supplied rigging;
   (g) one mainsail;
   (h) one jib or equivalent ballast (see Rule 9.5);
   (i) one code zero or equivalent ballast (see Rule 9.5); and
   (j) other systems, hardware, fittings and rigging except where prohibited herein.

4.2 The AC75 Class Yacht shall be propelled by sails only.
5 Component limits and modifications

5.1 The components in the table below are restricted as detailed in the following rules:

<table>
<thead>
<tr>
<th>Component</th>
<th>Rule</th>
<th>Quantity</th>
<th>Change allowance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hull surfaces</td>
<td>Open</td>
<td>2</td>
<td>0% &amp; 25% area</td>
</tr>
<tr>
<td>Foil arms</td>
<td>Supplied</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Foil arm trailing edges</td>
<td>Open</td>
<td>6</td>
<td>20% mass</td>
</tr>
<tr>
<td>Foil wings</td>
<td>Open</td>
<td>6</td>
<td>20% mass</td>
</tr>
<tr>
<td>Foil flaps</td>
<td>Open</td>
<td>20</td>
<td>20% mass</td>
</tr>
<tr>
<td>FCSs</td>
<td>Supplied</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Rudder uppers</td>
<td>Open</td>
<td>4</td>
<td>20% mass</td>
</tr>
<tr>
<td>Rudder lowers</td>
<td>Open</td>
<td>4</td>
<td>20% mass</td>
</tr>
<tr>
<td>Mast tubes</td>
<td>Specified</td>
<td>3</td>
<td>20% mass</td>
</tr>
<tr>
<td>Supplied rigging sets</td>
<td>Supplied</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Mainsails</td>
<td>Open</td>
<td>*10</td>
<td>25% area</td>
</tr>
<tr>
<td>Headsails</td>
<td>Open</td>
<td>*29</td>
<td>25% area</td>
</tr>
</tbody>
</table>

†With reference to the Protocol, a Competitor may modify one of its hulls but not the other. *See Rule 5.11.

COR/D is considering a Protocol change that could allow some change of second hull.

5.2 In Rule 5.1, the terms in the column "Rule" have the following meaning:

(a) *Open*: The shape and construction is open to design, within the constraints specified for that component within this AC75 Class Rule.

(b) *Specified*: The outer shape and some aspects of construction are specified by this AC75 Class Rule, but other aspects of construction are open to design.

(c) *Supplied*: The component is supplied as standard to all Competitors. Modifications to the components are prohibited except where specifically permitted by this AC75 Class Rule.

5.3 Competitors may request clarification of the construction or operational requirements of items marked as "Specified" or "Supplied" from the Rules Committee who, after consultation with the designers of those parts, will issue a clarification notice to all Competitors.

5.4 In accordance with Rule 33, a template spreadsheet will be issued to track components listed in Rule 5.1, including fields for identifying a specific component, recording the date each component was first installed, the modification status of each component, and where applicable the component’s weight.

5.5 When a component listed in Rule 5.1 is:

(a) first installed on an AC75 Class Yacht; or

(b) modified and re-installed on an AC Class Yacht,

and that yacht is afloat, the Competitor shall declare that component to the Measurement Committee within 24 hours by emailing an updated version of the spreadsheet described in Rule 5.4.

5.6 A component must be declared and counted in the limits described in Rule 5.7 regardless of whether that component satisfies the specific Rules controlling its parameters in this AC75 Class Rule. Any component that serves or partly serves the purpose of a listed component shall be counted.
5.7 In Rule 5.1, the values in the column “Quantity” are the maximum numbers of each component that a Competitor may declare.

5.8 When a hull is first afloat, or modified and afloat according to Rule 5.5, the Competitor must submit a corresponding hull IGES to the Measurement Committee, as described in Rule 10.2.

5.9 The Protocol states that a Competitor may modify the exterior shape of one of its hulls as determined when the respective hull was launched (“Original Hull Surface”). The “exterior shape”, or “Original Hull Surface” is defined herein as the hull surface.

5.10 For a hull surface that may be modified by up to 25% of its area, when all declared hull IGES files for that hull are aligned according to the reference points required by Rule 3.9, at least 75% of the area of original hull IGES must simultaneously be coincident with all of the other hull IGES surfaces; that is, all of the hull IGES geometries must share a common area with the original hull IGES which must be at least 75% of the original hull IGES area.

5.11 Beyond the allowances specified in Rule 5.1, the Defender is permitted to install on either of its AC75 Class Yachts:

(a) 2 additional mainsails; and
(b) 6 additional headsails,

provided that the sail skins that make up these sails are are built to the same original designs as sail skins that have already been installed on one of its AC75 Class Yachts. Any subsequent modifications to the sail skins of these additional sails, as permitted by Rule 5.12, are not required to be the same modifications that were made to the sail skins of the original sails.

5.12 Up to 25% of any sail skin may be replaced and the replaced area is cumulative. For example, one 12.5% area of a sail skin can be replaced twice only. Addition of material for repairs shall not count as replaced area provided the original sail skin remains. Any modification to a sail skin shall not alter any girth measurement by more than 15%. The limits on sails in Rule 5.1 apply only to the sail skins that make up the mainsail or headsail, replacement of components such as control systems, sail hardware or battens is not limited.

Continued overleaf...
When a component is first declared according to Rule 5.5 that has an “Change allowance” mass percentage in Rule 5.1:

(a) The Competitor must declare to the Measurement Committee:
   (i) a component mass;
   (ii) an IGES file of an exterior component shape; and
   (iii) construction drawings showing the internal structure of the component.

(b) At all times when that component is installed on an AC75 Class Yacht with that yacht afloat:
   (i) at least 80% of the mass of the component must match the original declared component; and
   (ii) at least 80% of the mass of the original declared component must match the component.

(c) The percentage of mass by which two versions of a component match is determined by aligning the unmodified portion of the original and modified component, then identifying all regions where the original and modified component differ, including:
   (i) surface geometry, where a surface is present; and
   (ii) material specification, e.g. fibre type, fibre orientation, ply sequence, resin type. Where repairs are permitted by Rule 5.15, material specification need not be identical, as long as it is equivalent to the satisfaction of the Measurement Committee; e.g. dry fibre may be substituted for an equivalent pre-preg fibre, or two plies of 150 g may be substituted for one ply of 300 g.

The percentage of mass by which two components match is then the mass of all regions where geometry and construction is identical, as a percentage of the total component mass.

(d) In determining whether two regions of a component match, the Measurement Committee may make an allowance for unintended distortion of a component during manufacture, as long as in any local region the two regions of the component can be matched, and the position of one region relative to an adjacent region has not changed at all.

For components with a “Change allowance” mass percentage, it is permitted to declare a hypothetical “original component” which must comply with the relevant rules for that component type, but is not required to be identical to the component when it is first installed and afloat. In this case, the hypothetical component declaration becomes the “original component”, and the component as first launched and subsequently modified must have corresponding declarations, which must satisfy the permitted changes with respect to the hypothetical “original component”.

Except for mainsails and headsails, it is permitted to repair or replace any component marked in Rule 5.1 as “Open” or “Specified” to restore it to a previously permitted state, where:

(a) any construction forming part of the repair or replacement is built or prepared only once that component has been taken out of service, and that component is not installed again on a yacht afloat until that repair is complete;

(b) the restriction in Rule 5.15 (a) does not apply to the construction of commercially available components used within a repair, but does apply to any incorporation of those components within a repair;

(c) a Competitor must inform the Measurement Committee when commencing any repair or replacement, and must provide the Measurement Committee with documentation they require; and

(d) a Competitor alone shall decide whether to repair or replace a component, and no evidence of damage is required.

Components marked in Rule 5.1 as “Supplied” may be repaired to their original condition, but such repair must be approved by the Measurement Committee. If a “Supplied” part is damaged beyond repair, as demonstrated to the Measurement Committee, that part may be replaced by a new “Supplied” part.
6 Materials

6.1 Rule 6 applies to all components except:

(a) supplied components, such as the supplied parts of the foil arms, the FCS and the supplied rigging;
(b) material specified in the supplied mast drawing package;
(c) electrical and electronic components, and their enclosures or housings, provided they have no significant structural contribution; and
(d) commercially available components.

However, components in the four categories above must have a maximum density of 11,400 kg/m$^3$ when taken over each part as a whole, and materials with a density greater than 11,400 kg/m$^3$ cannot be used in volumes that have any significant effect on the distribution of mass throughout the yacht.

6.2 Material property values detailed herein are to be evaluated at 20°C and 1 atmosphere pressure.

6.3 Materials shall have a maximum density of 11,400 kg/m$^3$.

6.4 Materials shall have a maximum elastic modulus as detailed below:

<table>
<thead>
<tr>
<th>Material category</th>
<th>Maximum Modulus (GPa)</th>
<th>Certificates Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibre reinforcement in foils, rudders, masts and bowsprits</td>
<td>395</td>
<td>Yes</td>
</tr>
<tr>
<td>*Fibre reinforcement in thermoplastic components</td>
<td>Unlimited</td>
<td>No</td>
</tr>
<tr>
<td>*Fibre reinforcement in uncontrolled components</td>
<td>Unlimited</td>
<td>No</td>
</tr>
<tr>
<td>Fibre reinforcement in components not listed above</td>
<td>300</td>
<td>Yes</td>
</tr>
<tr>
<td>Core material in all components</td>
<td>75</td>
<td>Yes</td>
</tr>
<tr>
<td>Surface treatments</td>
<td>Unlimited</td>
<td>No</td>
</tr>
<tr>
<td>Other material</td>
<td>220</td>
<td>No</td>
</tr>
</tbody>
</table>

*As described in Rules 7.3 and 7.4.

6.5 Fibre modulus in Rule 6.4 is to be measured by one of the following methods, or an equivalent method approved by the Rules Committee:

(a) SACMA-SRM16;
(b) ASTM D 4018;
(c) JIS R 7601; or
(d) ISO 10618.

6.6 For the avoidance of doubt, modulus limits on fibre and other materials in Rule 6.4 apply to FRP resin additives, such as nanoparticles and microspheres.

6.7 The limit on core material in Rule 6.4 refers to the maximum solid compressive modulus of elasticity, in any direction, of the constituent material. For example:

(a) for aluminium honeycomb, the limit applies to the modulus of aluminium, approximately 70 GPa; and

(b) for a composite core, the limit applies to the modulus of the core laminate, not the individual fibres or matrix.
6.8 Core materials must be commercially available. Unexpanded honeycomb may be expanded, and core material may be cut and shaped for its intended purpose, but it may not be processed to alter its fundamental structure (e.g. it is not permitted to 3D print a core material from plastic, since this would be changing the structure of the material). Only the following core materials are permitted:

(a) aluminium honeycomb (3000 or 5000 series only, which may be surface treated to prevent corrosion);
(b) meta-aramid (Nomex or equivalent) honeycomb;
(c) timber; or
(d) plastic foam.

For the avoidance of doubt, para-aramid cores (N636 or equivalent) are prohibited.

6.9 The “Surface treatment” category in Rule 6.4 only applies to material that is:

(a) contained in a surface layer not more than 0.5 mm thick; and
(b) for the purpose of:
   (i) improving resistance to wear, fatigue, or corrosion; and/or
   (ii) fairing or modifying the appearance of a surface.

6.10 The limit on “Other material” in Rule 6.4 applies to all materials that do not fall into the other categories, and refers to the maximum modulus in any direction.

6.11 Where certificates are required for a category in Rule 6.4, Competitors must submit copies of material certificates for each roll of fibre used for that category, together with a declaration that all components of that category only used fibre for which certificates have been supplied. It is not necessary to submit documentation indicating which rolls of material have been used in each individual part.

6.12 For all categories in Rule 6.4, Competitors must submit a declaration that the material used in all components satisfies Rule 6.

6.13 Further details relating to the information required by Rules 6.11 and 6.12 will be issued according to Rule 33.

6.14 Boron and Beryllium are prohibited except where used in alloys in concentrations of less than 0.00042%.

6.15 Gases shall have a minimum density of 1.1 kg/m$^3$, except for nitrogen used within hydraulic systems.
7 Construction methods

7.1 Rule 7 applies to all components except:

(a) supplied components, such as the supplied parts of the foil arms, the FCS and the supplied rigging;
(b) electrical and electronic components, provided they have no significant structural contribution; and
(c) commercially available components.

7.2 Temperatures and compaction pressures of FRP material shall not exceed the following values at any stage during construction, or after construction:

<table>
<thead>
<tr>
<th>Category</th>
<th>Maximum Temperature (°C)</th>
<th>Maximum Compaction Pressure (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRP material in hulls</td>
<td>135</td>
<td>1.1</td>
</tr>
<tr>
<td>FRP material in sail skins</td>
<td>Unlimited</td>
<td>Unlimited</td>
</tr>
<tr>
<td>Thermoplastic FRP material</td>
<td>450</td>
<td>Unlimited</td>
</tr>
<tr>
<td>Uncontrolled FRP material</td>
<td>Unlimited</td>
<td>Unlimited</td>
</tr>
<tr>
<td>FRP material not listed above</td>
<td>135</td>
<td>7.0</td>
</tr>
</tbody>
</table>

7.3 Thermoplastic FRP material in Rule 7.2:

(a) may be used within any component, including the hull;
(b) is restricted to a maximum total mass of 15.0 kg, combining all such material within the yacht except that excluded by Rule 7.1; and
(c) may be sourced as either:

(i) constituent material (e.g. pre-preg tape or cloth); or
(ii) commercially available pre-consolidated solid laminates in standard shapes (e.g. plate, bar, rod, tube, but not honeycomb), in which case the temperature limit applies only after delivery of the component from the manufacturer.

7.4 Uncontrolled FRP construction material in Rule 7.2:

(a) may be used within any component, including the hull;
(b) is restricted to a maximum total mass of 50.0 kg, combining all such material within the yacht except that excluded by Rule 7.1; and
(c) must be constructed from commercially available pre-consolidated and cured solid laminates in standard shapes (e.g. plate, bar, rod, tube, but not honeycomb).

7.5 The maximum pressures in Rule 7.2 refer to the average pressure applied over the surface of a component, or to that part of a component under pressure. Local regions of higher pressure may be applied, for example by hand clamps or mechanical fastenings, provided the average is not exceeded.

7.6 The component of pressure applied by conventional wrapping and winding methods (for construction around a mandrel, or similar) is excluded from the pressure limits given in Rules 7.2.

7.7 Electron beam or other non-thermal radiation cure of FRP components is prohibited. This does not prohibit curing FRP components by passing electrical current through them to generate heat.
7.8 Construction of a **hull** must meet at least two of the following criteria (where the mould refers to the mould or moulds for at least 80% of the outside skin of the **hull surface**):

(a) the mould plug is constructed of recyclable material (e.g. PET), with that plug being delivered to a recycling plant by 1st January 2021;

(b) the mould plug is constructed of recycled material;

(c) the mould plug is constructed of sustainably sourced material (e.g. timber);

(d) at least 10% of the carbon reinforcement used in the mould is from recycled sources;

(e) the mould is constructed from fibres with low embodied energy (e.g. basalt);

(f) a life-cycle analysis is performed on the **hull** to the satisfaction of the **Measurement Committee**.

7.9 **Competitors** must submit a declaration giving details of how this Rule is satisfied.
8 Surface finishes

8.1 Except as permitted in Rules 8.6 and 8.7, the outermost layer of the hull, foils and rudder must be an approved paint, where approved paints are:

(a) AWLGrip Awlcraft 2000;
(b) Cromax 3050S Cromaclear;
(c) Nautix L2;
(d) Nautix NX194;
(e) Resene Durepox;
(f) Resene Durepox Extreme Clear; and
(g) Resene Durepox High Performance Clear.

Competitors: Please submit paints that you would like added to this list.

8.2 The Rules Committee may approve further paints on request, but shall only approve commercially available paints which are comparable to products in Rule 8.1. The Rules Committee shall inform all Competitors when a new paint is approved.

8.3 Paints that contain additives designed to reduce surface friction (such as PTFE) are prohibited.

8.4 Competitors may not alter the chemistry of paints except with products supplied by the paint manufacturer and used in compliance with the manufacturer’s standard guidelines.

8.5 After painting, surfaces may be sanded, polished and cleaned, providing no substance that does not satisfy Rule 8.1 remains on the surface when the yacht is afloat.

8.6 Competitors may apply vinyl or plastic film over the paint for the purpose of branding, providing it complies with Rule 8.8.

8.7 On areas of the deck where crew operate, or on fittings attached to the deck, Competitors are permitted to apply non-skid products or coatings. These areas shall be no larger than necessary and shall not extend into areas that crew do not access during racing.

8.8 Devices and finishes whose primary purpose is to reduce friction drag by altering the structure of the boundary layer are prohibited. This prohibition includes, but is not limited to, electric, magnetic, sonic, thermal and chemical devices, patterned or textured finishes and LEBUs. This rule does not prohibit passive surface features, such as fences or vortex generators, which extend outside the local boundary layer. The thickness of the boundary layer \( \delta \) shall be determined using the formula:

\[
\delta = \frac{0.37x}{Re_x^{0.2}}
\]

where

\( x \) is the local distance from the forward most point of the object;

\( Re_x \) is the local reynolds number (based on \( x \));

and the following properties and speeds shall be used:

<table>
<thead>
<tr>
<th>Velocity (knots)</th>
<th>Density kg/m³</th>
<th>Dynamic viscosity (Pa.s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>30</td>
<td>1.225</td>
</tr>
<tr>
<td>Water</td>
<td>30</td>
<td>1.025</td>
</tr>
</tbody>
</table>
9 Mass

The masses and centres of mass in this rule are likely to be updated according to Rule 32.1.

9.1 The mass of components and crew on an AC75 Class Yacht shall be:

<table>
<thead>
<tr>
<th>Component</th>
<th>kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platform, mast and mainsail assemblies</td>
<td>6195</td>
</tr>
<tr>
<td>*Platform assembly</td>
<td></td>
</tr>
<tr>
<td>Hull, rudder, bowsprit, systems &amp; equipment</td>
<td>m_{h+s}</td>
</tr>
<tr>
<td>*Port foil</td>
<td>1175</td>
</tr>
<tr>
<td>*Starboard foil</td>
<td>1175</td>
</tr>
<tr>
<td>Supplied media equipment</td>
<td>125</td>
</tr>
<tr>
<td>*Mast &amp; mainsail assembly</td>
<td>m_m</td>
</tr>
<tr>
<td>Mast &amp; mainsail</td>
<td>—</td>
</tr>
<tr>
<td>Supplied rigging</td>
<td>50</td>
</tr>
<tr>
<td>Supplied media equipment</td>
<td>15</td>
</tr>
<tr>
<td>Sails</td>
<td>155</td>
</tr>
<tr>
<td>*Jib</td>
<td>55</td>
</tr>
<tr>
<td>*Code zero</td>
<td>100</td>
</tr>
<tr>
<td>Crew &amp; guest racer</td>
<td>1120 – 1150</td>
</tr>
<tr>
<td>*Crew</td>
<td>960 – 990</td>
</tr>
<tr>
<td>*Crew’s carried equipment</td>
<td>55</td>
</tr>
<tr>
<td>*Guest racer</td>
<td>100</td>
</tr>
<tr>
<td>*Guest racer’s carried equipment</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>7470 – 7500</td>
</tr>
</tbody>
</table>

9.2 In Rule 9.1, items or assemblies marked with an asterisk will be weighed. Items not marked are not weighed individually, but included in an overall assembly weigh. The Measurement Committee will issue procedures for weighing the specified components and assemblies.

9.3 It is not permitted for any weighed component or assembly to have a greater mass than that given in Rule 9.1. Where a mass number is not indicated, there is no mass requirement for that specific assembly.

9.4 Crew must have a mass between the minimum and maximum values shown in Rule 9.1.
If one of the components listed below has a mass lower than that shown in Rule 9.1, ballast equal in mass to the deficit shall be attached to the top of the hull surface at the following locations:

<table>
<thead>
<tr>
<th>Component</th>
<th>Ballast location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jib</td>
<td>On LCP, 11.0 m forward of TRP</td>
</tr>
<tr>
<td>Code Zero</td>
<td>On LCP, 14.0 m forward of TRP</td>
</tr>
<tr>
<td>Crew’s carried equipment</td>
<td>On LCP, 5.0 m forward of TRP</td>
</tr>
<tr>
<td>Guest racer and their carried equipment</td>
<td>On LCP, 1.0 m forward of TRP</td>
</tr>
</tbody>
</table>

Except for crew, if a component or assembly not listed in Rule 9.5 has a mass lower than that shown in Rule 9.1, ballast shall be added to that component to achieve the required mass and/or centre of mass.

The longitudinal centre of mass of the platform assembly (as detailed in Rule 9.1), with:

(a) both foils canted to their lowest positions;
(b) all foil flaps set to the centre of their range of motion;
(c) the symmetry plane of the rudder aligned to LCP; and
(d) the rudder rake set to the centre of its range of motion;
shall lie between 9.000 m and 9.600 m forward of TRP.

The vertical centre of mass of the combination of the hull, rudder, bowsprit, mast and mainsail assemblies (as detailed in Rule 9.1 and with total mass \(m_{H&R} + m_M\)) shall not be above 2.900 m above MWP. In computing this vertical centre of mass:

(a) the mass \(m_{H&R}\) shall be deduced by subtracting the foil and media equipment masses from \(m_P\);
(b) the vertical centre of mass of \(m_{H&R}\) shall be assumed to lie 0.365 m above MWP; and
(c) the vertical centre of mass of the mast and mainsail assemblies shall be as measured.

The centre of mass of each foil shall lie outside a 3.500 m circle centred on the cant axis as shown in Figure 12.1.

When racing, nothing shall be aboard the AC75 Class Yacht that is not included in Rule 9.1.

Water may not held or used for the purpose of increasing weight or righting moment.
10 Hull

10.1 Whenever a hull is afloat, the Measurement Committee must be in receipt of a hull IGES file that the hull surface was designed to, and must match the hull surface (with the hull unloaded and supported in cradles) within a tolerance of 5 mm when the measurement reference points described by Rule 3.7 are exactly aligned.

10.2 The declared hull IGES geometry shall form a single closed volume, and:

(a) penetrations shall be closed with surfaces that connect their edges and are fair with respect to the surrounding hull surface;

(b) internal structure within the closed volume shall not be included, but the positions of bulkheads required to satisfy Rule 10.14 shall be included as separate IGES surfaces.

10.3 The minimum areal density of any part of the hull surface shall be 2 kg/m\(^2\). (Note that this Rule does not imply any stiffness, strength or robustness targets; it exists only to ensure that a hull surface is a solid structure and not, for example, a film-covered space frame structure.)

10.4 The hull shall be a linear component.

10.5 The hull lower surface shall be symmetric about LCP.

10.6 The maximum length of the hull shall be no less than 20.600 m and no greater than 20.700 m.

10.7 The maximum distance of the perimeter line from LCP shall be no less than 2.400 m and no more than 2.500 m.

10.8 At its intersection with TRP, the distance of the perimeter line from LCP shall be at least 2.000 m.

10.9 At any transverse cross-section through the hull lower surface:

(a) a path traced from the lowest point on LCP to the perimeter line must never have a component that points down or towards LCP; and

(b) no vertical line shall cut the cross-section more than once below MWP, except inside regions defined by cylinders of length 4.000 m and diameter 1.250 m centred on each foil cant reference point and whose axes are aligned with the foil cant axes.

10.10 Inside regions defined by cylinders of length 1.600 m and diameter 1.250 m centred on each foil cant reference point and whose axes are aligned with the foil cant axes, movable hull surfaces are allowed for the purpose of fairing the intersection of the hull and foil arms, provided these surfaces are attached to the foil arms and only move as a result of foil cant movement.

10.11 On the hull surface, forward of a plane that is:

(a) 17.000 m forward of TRP, no point shall be more than 1.600 m from LCP; and

(b) 19.000 m forward of TRP, no point shall be more than 1.000 m from LCP.

10.12 The perimeter line projected on to MWP shall be convex; i.e. any line that connects two points on the projected perimeter line shall lie on or inside the perimeter line.

10.13 The second moment of area of the hull surface's waterplane at MWP about the intersection of MWP and LCP shall be at least 20.000 m\(^4\).

10.14 The hull surface shall enclose a volume of at least 70 m\(^3\), which must include:

(a) an enclosed watertight volume of at least 40 m\(^3\), situated entirely forward of plane that is 9.500 m forward of TRP, which may be subdivided; and

(b) a watertight bulkhead situated between 17.000 m and 19.000 m forward of TRP.
10.15 The enclosed volumes of the **hull surface** referred to in Rule 10.14 must be watertight except for penetrations:

(a) within 0.200 m of **LCP** and within 1.500 m of **TRP** in order to permit **rudder** rotation;
(b) within the region defined in Rule 10.10 in order to permit **foil cant**;
(c) on the **deck** and covered by watertight hatches which must not be opened while racing; or
(d) for the passage of systems or rigging, which must be kept watertight by some means while racing.

10.16 Any volume inside the **hull surface** and exposed to the penetrations allowed in Rule 10.15 (a) shall:

(a) be separated from the remainder of the enclosed volume by a watertight boundary which need not satisfy Rule 10.3;
(b) have a total combined volume of no more than 50 litres; and
(c) shall be self-draining and shall self-drain in under 20 seconds at any orientation described in Rule 10.22.

10.17 Any volume inside the **hull surface** and exposed to the penetrations allowed in Rule 10.15 (b) shall:

(a) be entirely above **MWP**;
(b) be entirely within the region defined in Rule 10.10;
(c) be separated from the remainder of the enclosed volume by a watertight boundary which need not satisfy Rule 10.3;
(d) have a total combined volume of no more than 400 litres; and
(e) shall be self-draining and shall self-drain in under 20 seconds at any orientation described in Rule 10.22.

10.18 The **hull surface** shall satisfy flotation Rules 10.19 and 10.20 (a) with:

(a) the **platform assembly**'s measured mass applied at:
   (i) the **platform assembly**'s measured LCG;
   (ii) **LCP**; and
   (iii) an assumed vertical centre-of-mass of 1.000 m below **MWP**;
(b) buoyancy resulting only from the **hull surface** (not the **foils**, **rudder** or other components);
(c) the effect of any flooded volumes not included in the **hull surface** neglected; and
(d) an assumed water density of 1025 kg/m$^3$.

10.19 When floated to equilibrium, the measurement reference points required by Rule 3.7 shall lie no more than 25.0 mm above or below the flotation waterplane.

10.20 When constrained to 90° of heel (such that **MWP** is held perpendicular to the free surface) and left free to float to equilibrium in the other degrees of freedom:

(a) the centre of buoyancy of the **hull surface** shall be at least 0.830 m above **MWP**; and
(b) the angle between **LCP** and the flotation waterplane shall be no more than 5°.

10.21 Any surface that can support the crew must be at least 0.100 m above **MWP**, and any volume below that surface must be watertight.
10.22 Any recess or cockpit in the **hull surface** must be self-draining at any orientation resulting from:

(a) up to ±20° of rotation about a **longitudinal** axis; followed by

(b) up to ±5° of rotation about a (rotated) **transverse** axis.

Openings for self-draining must be at least 0.006 m² in cross-section per 1.000 m³ of recess or cockpit volume.

10.23 Geometric and flotation requirements pertaining to the **hull surface** within Rule 10 will be measured using the **hull IGES** and must be satisfied exactly with no tolerance.

10.24 When the forestay is loaded to 10,000 kg by tensioning either the port or starboard running backstay, neither the **deck** at TRP nor the **rudder** yaw axis shall rotate by more than TBA° relative to a station on the **deck 12 m forward of TRP**. The procedure for measuring this will be issued according to Rule 33, but is anticipated to be as follows:

(a) the **yacht** shall be afloat;

(b) the **foils** shall be in their lowest position;

(c) the rig shall be pretensioned and at a rake specified in the rig plan;

(d) the running backstay deflectors shall be at the fully deflected positions;

(e) the **transverse** angle between two stations on the **deck**, at TRP and 12 m forward of TRP is measured;

(f) one running backstay is loaded until a forestay load of 10,000 kg is achieved;

(g) the **transverse** angle between the two stations is measured again, and the difference when loaded must be less than TBA°;

(h) the procedure is repeated, loading the other running backstay.

The **Rules Committee** or **Measurement Committee** may adjust the procedure or angle measuring stations to ensure that it accurately measures the twist that is restricted by this Rule.
11 **Deck fittings**

11.1 A ball fitting to support the mast shall be positioned at MRP as shown in Figure 19.3. The position of the mast ball shall not be adjusted whilst racing.

11.2 Chainplates shall be positioned as shown in the rig plan (see Rule 19.1 (e)) and shall not be adjusted whilst racing.

11.3 The yacht shall be capable of being lifted from a primary lifting point located forward of MRP, with secondary lines led aft.

11.4 No part of the yacht except the foils and the rudder shall lie below the hull lower surface.

11.5 No part of the yacht except the mast, sails, rigging, supplied media equipment and wind instrumentation shall lie more than 0.200 m above MRP.

11.6 When projected on to MWP, no part of the yacht, other than the foils, mast, sails, rigging, a code zero furling unit (if fitted), supplied media equipment and wind instrumentation, shall lie outside of an area that combines:

(a) an area projected by the hull on to MWP; and

(b) a rectangular area bounded by:

(i) TRP;

(ii) a plane 22.860 m forward of TRP; and

(iii) planes 0.400 m either side of LCP.

11.7 Wind instrumentation that falls outside of the area described in Rule 11.6 must be attached only to the bowsprit and shall be entirely:

(a) aft of a plane 23.900 m forward of TRP; and

(b) below a plane 1.500 m above MRP.

11.8 Apart from permitted movement of foils and control surfaces, parts of the yacht shall only be moved:

(a) to control movement of a control surface;

(b) in preparation of controlling a control surface (e.g. setting a headsail car prior to hoisting; turning an unloaded winch to check it is connected to a drive train);

(c) to organise rigging or deck gear after controlling a control surface (e.g. stowing sheets; stowing a winch handle);

(d) to open or close access panels;

(e) within electrical systems (e.g. a cooling fan); or

(f) for safety reasons.

11.9 Other than the movement of foils or control surfaces, movement of parts of the yacht permitted by Rule 11.8 shall have no significant effect on:

(a) aerodynamic loads;

(b) hydrodynamic loads; or

(c) the centre of mass of the yacht.
11.10 When viewed from above and orthogonal to MWP, neither the crew nor the guest racer shall be covered at any time by any part of the yacht except the mast, sails and rigging, or occasionally by other components provided that only a small part of any crew member is covered, and this covering is not designed to provide an aerodynamic fairing.

11.11 The hull shall have stanchion sockets along the full length of its sides and across the transom, at a maximum spacing of 2.200 m, for the attachment of lifelines when the yacht is ashore. Sockets shall be on the edge of the working deck and to suit 31.8 mm (1¼”) stanchions with a minimum depth of 100 mm. The stanchion sockets may be plugged when sailing, providing such plugs can be quickly removed.

11.12 Lines parallel to TRP, at least 50 mm wide and of a colour contrasting to the deck shall be marked across the deck such that their aft edges are no more than:
   (a) 2.00 m forward of TRP;
   (b) 9.00 m forward of TRP; and
   (c) 11.00 m forward of TRP.

11.13 The following items shall be secured and distributed at locations that would be easily accessible in the event of a capsize:
   (a) at least six blades with lengths of no more than 150 mm;
   (b) at least six personal air supplies containing compressed air equivalent to at least 40 litres uncompressed volume each, which do not require the use of hands when in use.

11.14 Areas or volumes that will be reserved for media equipment, including, but not limited to cameras, microphones, sensors, processors, cabling and batteries, will be specified according to Rule 33.
12 Foils

12.1 Each foil must comprise:
   (a) a foil arm attached to a foil arm trailing edge and a foil wing, which must form a single linear component;
   (b) two foil flaps, each of which must be a linear component; and
   (c) one or more foil flap systems used to rotate the foil flaps.

12.2 For the purposes of Rule 5:
   (a) except for parts of foil flap systems, any fittings, fastenings, fairing compound or other parts or materials which do not move relative to a foil wing or a foil flap must be part of that foil wing or foil flap; and
   (b) foil flap systems shall be only mechanical, electrical and hydraulic components specifically required to connect foil wing to foil flaps and control their movement, and shall not include any parts which contribute significantly to the structure or surface area of the foil wings or foil flaps.

12.3 With the foil arm lowered to its minimum cant angle, and at all foil flap rotation angles, the foil wing and foil flaps, projected to TRP, must lie entirely within the area shaded in Figure 12.1.

12.4 The entire foil must lie between planes 10.000 m and 12.000 m forward of TRP.

12.5 A foil wing must be symmetric about the foil wing symmetry plane, as defined in Figure 12.1, with a build tolerance of 3.0 mm.

12.6 The only foil arm movement permitted relative to the AC75 yacht is cant, being a rotation about the foil arm cant axis, a longitudinal axis whose position is defined in Figure 12.1.

12.7 A foil may touch no part of the yacht except:
   (a) the FCS; and
   (b) moveable hull surfaces permitted in Rule 10.10.

12.8 Except for the permitted rotation of foil flaps, no device shall be used to induce deformation in the foil; any deformation may only be the result of external forces and reactions by components permitted in Rule 12.7.
Foil arm and foil wing assembly centre of mass to be outside a circle bound by a radius of 3500 mm

Figure 12.1: Foil geometry
Figure 12.2: Foil geometry detail B
13 **Foil Arms**

13.1 Further details of the supplied foil arms will be provided according to Rule 33.

   
   Further to Rule 32.1, if there are any significant geometrical variations between manufactured foil arms, the AC75 Class Rule may be amended to require adjustments to be made in some part of the FCS to compensate for these differences.

13.2 Each foil arm assembly shall only be constructed from:

(a) one supplied foil arm; and  
(b) one foil arm trailing edge.

13.3 At all cant positions that can be achieved, a foil arm must not touch any part of the yacht except:

(a) the supplied FCS;  
(b) the foil wing;  
(c) the foil flaps;  
(d) the foil flap systems; and  
(e) a moveable hull surfaces as permitted by Rule 10.10.

13.4 No modification of a supplied foil arm is permitted, except:

(a) for the surface finish (sanding, painting and other details to be specified in accordance with Rule 13.1);  
(b) minor modifications, approved by the Measurement Committee, to attach the foil arm trailing edge to the foil arm. Such modifications must be limited to the aft face and to the recess (see Figure 13.1) of the supplied foil arm;  
(c) minor modifications, approved by the Measurement Committee, necessary to attach the non-structural fairing authorised within a distance of 0.075 m of the foil wing symmetry plane (see Figure 12.1);  
(d) minor modifications, approved by the Measurement Committee, necessary to attach non-structural leading edge fairing within a radius of 670 mm of the foil cant axis; and  
(e) for repairs that return the foil arm to its original state after being damaged in accordance with Rule 5.16.

![Figure 13.1: Foil arm modification limits](image-url)
14  Foil Flaps

14.1 A **foil flap** must be a **linear component** connected to a **foil wing** by a **foil flap system**.

14.2 Each **foil** shall comprise two **foil flaps**, one lying entirely on one side of the **foil wing** symmetry plane, and one lying entirely on the other side of the **foil wing** symmetry plane.

14.3 **Foil flap** systems used to rotate the **foil flaps** must be contained within the **foil wing**, **foil arm** and/or the **foil flaps** such that there are no significant fluid dynamic forces on any parts of those systems.

14.4 For the purposes of Rule 14:

(a) a “cross-section” is defined locally at any spanwise location along the **rondure** of the **foil wing** as a section through a **foil wing** and **foil flap**, on a plane perpendicular to the **rondure** at that spanwise location; and

(b) the “chord length” at a given cross-section and a given **foil flap** rotation angle is the distance between the most forward point and the most aft point on the cross-section, when **projected** on to the **foil wing** projection plane shown in Figure 12.1.

14.5 At any cross-section, the only permitted movement of a **foil flap** relative to a **foil wing** is a rotation about an axis which remains approximately stationary with respect to the **foil wing** at that cross-section. This axis must be designed to be stationary, but is permitted to have some movement resulting from:

(a) play in a mechanical bearing; or

(b) a flexure or soft hinge, such as a thin flexible material joining the **foil flap** to the **foil wing**.

14.6 In the absence of **external forces**, the angle of rotation of a **foil flap** must be the same at all cross-sections within a tolerance of 0.5°.

14.7 Both **foil flaps** of a **foil** shall have the same range of angular rotation. With both **foil flaps** of a **foil** at the same angle of rotation, each **foil flap** shall be **symmetric** with respect to the other about the **foil wing** symmetry plane, with a build tolerance of 3.0 mm (i.e. one of the **foil flaps** shall be a mirror image of the other, but each **foil flap** need not be symmetric with itself).

14.8 At any cross-section and all **foil flap** rotation angles, when **projected** on to the **foil wing** projection plane, the length of a **foil flap** must not be greater than 50% of the chord length. Hinges or other parts of a component which occur at occasional cross-sections for connection purposes can be excluded from the **projected** lengths.

14.9 A **foil flap** may contact a **foil wing**, and in the absence of **external forces**, and at any cross-section and rotation angle, either may cause deformation in the other in a single zone covering not more than 20% of the local chord length. Outside this zone, neither may cause deformation in the other.
15 **Rudder**

15.1 A rudder must be a single linear component, constructed only from:

(a) one rudder upper that must penetrate the hull, attached to
(b) one rudder lower that must not penetrate the hull.

15.2 Any fittings, fastenings, fairing compound or other parts or materials which do not move relative to the rudder must be part of the rudder upper or the rudder lower. Parts or materials which are in contact with both the rudder upper and the rudder lower must be nominated to be part of one or the other for the purpose of Rule 5.1.

15.3 No part of the yacht may touch or be attached to the wetted part of the rudder.

15.4 The wetted part of the rudder must be symmetric about the rudder centre plane, with a build tolerance of 3.0 mm.

15.5 With the rudder centre plane aligned with LCP, and at all rake angles that can be achieved, no wetted part of the rudder shall extend:

(a) below a waterline plane 3.500 m below MWP;
(b) aft of TRP; or
(c) forward of a transverse plane 1.500 m forward of TRP.

15.6 At all yaw and rake angles that can be achieved, no wetted part of the rudder shall extend further outboard than planes offset from LCP by 1.500 m both to port and to starboard.

15.7 Only the following rudder movements are permitted relative to the AC75 yacht:

(a) yaw, being a rotation about an axis joining the lower and upper bearing centres; and
(b) rake, being a rotation about a transverse axis through the lower bearing centre.

15.8 The rudder may touch no part of the yacht except:

(a) a lower bearing, whose bearing centre must lie on LCP and cannot translate;
(b) an upper bearing, whose bearing centre can translate, but must always lie on LCP;
(c) a device whose only purpose is to react yaw moment and control yaw angle, connected to a steering system; and
(d) the hull lower surface within 0.500 m of any yaw axis as defined in Rule 15.7 (a).

15.9 Rudder yaw angle shall be controlled through a steering system by a steering wheel or wheels which have an outside diameter of at least 0.600 m. These wheels, which shall be force input devices, shall be the only input devices for controlling rudder yaw angle.

15.10 The lower and upper bearing centres must be vertically separated by at least 600 mm.

15.11 No device shall be used to induce deformation in the rudder; any deformation may only be the result of external forces and reactions by components permitted in Rule 15.8.
16 **Bowsprit**

16.1 The **bowsprit** shall extend from the **hull** to at least 22.760 m forward of **TRP**.

16.2 No part of the **bowsprit** shall be:
   (a) forward of a plane 22.860 m forward of **TRP**;
   (b) below a plane 0.900 m above **MWP**; or
   (c) more than 0.400 m from **LCP**.

16.3 No part of the **yacht** shall be forward of the **hull** and less than 0.900 m above **MWP** except a bobstay connecting the **hull** to the **bowsprit**, which shall:
   (a) have a maximum chord to thickness ratio of 3:1 at any cross-section perpendicular to its length; and
   (b) fit within a tube of 40 mm diameter, except at terminations extending no more than 200 mm from either end.

16.4 The **bowsprit** shall not be bonded to the **hull** and must be removable for easy replacement.

16.5 The following requirements may be specified in accordance with Rule 33:
   (a) camera attachment details that must be provided on the **bowsprit**; and
   (b) cable conduits from the camera attachment points into the **hull**.

16.6 The **bowsprit** shall be load tested to ensure it meets a minimum load rating. The procedure for measuring this will be issued according to Rule 33, but is anticipated to be as follows:
   (a) the **yacht** shall be afloat;
   (b) the **foils** shall be in their lowest position;
   (c) the rig shall be pretensioned and at a rake specified in the rig plan;
   (d) the running backstay deflectors shall be at the fully eased positions;
   (e) a **code zero**, which may be furled, shall be hoisted and locked at the **head**;
   (f) the **code zero** tack line and one running backstay shall be tensioned until a load of 8,000 kg is achieved at the tack.
17  **Sails (General)**

17.1 Other than as required for sail hardware, intentional openings through sail skins are prohibited. This rule should not prohibit access panels that are covered or closed whilst racing.

17.2 Local hollows or distortions of sail skin edges shall be bridged for all sail measurements.

17.3 Stiff sail skin reinforcements are permitted within 1.0 m of head points, peak points, clew points, tack points. Elsewhere sail skins shall be flexible and capable of being folded without damage.

17.4 Battens:
   (a) shall pass through a 75 mm diameter circle;
   (b) shall be single piece components without hinges or other mechanisms;
   (c) shall have a straight central axis to a tolerance of 5 mm over any 1000 mm length and 25 mm over their entire length;
   (d) shall not be inflatable; and
   (e) shall be inside a sail pocket not exceeding 260 mm in internal width measured normal to the length-wise axis of the batten.

17.5 The 25%, 50% and 75% sail skin girths are taken from the 25%, 50% and 75% leech points to the nearest point on the luff as illustrated in Figures 18.1 and 19.2.

17.6 Sails may be required to have defined areas of transparent windows to improve visibility. The rule will be amended by the Rules Committee under Rule 32.1 (c) (ii) if this is deemed necessary.
18 **Headsails**

18.1 **Headsails** shall have no more than one sail skin.

18.2 Apart from control devices permitted in Rule 18.11, the only components permitted to be attached to or assembled with the sail skin of a jib are:

(a) up to 8 battens, which can terminate on any sail edge, and shall not be adjusted while the jib is hoisted;

(b) sail hardware;

(c) luff attachment devices permitted in Rule 18.9;

(d) head pennants;

(e) soft fairings around head pennants and the local forestay;

(f) instrumentation; and

(g) pieces of light fabric or wool for flow visualisation.

18.3 Apart from control devices permitted in Rule 18.11, the only components permitted to be attached to or assembled with the sail skin of a code zero are:

(a) sail hardware;

(b) luff cables no greater than 40 mm in diameter, excluding end fittings and sail attachments;

(c) head pennants;

(d) soft fairings around head pennants and the local luff cable;

(e) instrumentation; and

(f) pieces of light fabric or wool for flow visualisation.

18.4 Fairings permitted in Rules 18.2 (e) and 18.3 (d) shall be capable of being folded flat along their leading edge and shall have a maximum internal width of 100 mm measured perpendicular to the leading edge.

18.5 With the exception of battens, the largest dimension of any sail hardware for a headsail shall not exceed 250 mm.

18.6 **Headsails** shall be hoisted and lowered without assistance from crew aloft. This should not prevent crew going aloft to resolve occasional issues.

18.7 The head of any jib shall be below IG and the head of any code zero shall be below IZ.

18.8 Jibs, when hoisted, shall be connected to the forestay by hanks or luff pockets or a combination of both.

18.9 Hanks, for connection of the jib to the forestay, shall extend no more than 75 mm forward of the luff, measured perpendicular to the luff, and shall be no more than 100 mm in length, measured parallel to the luff. Hanks shall be no closer than 200 mm to each other, anywhere along the luff of a jib.

18.10 Other than within 100 mm of supplied rigging fittings, luff pockets of headsails, shall be:

(a) capable of being folded flat along the leading edge; and

(b) no more than 150 mm wide, when measured internally, perpendicular to the luff.
18.11 No control system shall be attached to, or bear upon a headsail except:

(a) sheets attached to a single piece of sail hardware within 400 mm of the clew point;

(b) a halyard attached near the head point;

(c) a cunningham system or tackline near the tack point;

(d) the forestay;

(e) luff, leech, head and foot lines no greater than 8 mm in diameter and their associated purchase systems; and

(f) a furling system.

18.12 Self tacking systems such as tracks or cables traversing from the port and starboard headsail sheeting positions are forbidden.

18.13 The outermost headsail set shall be operated with sheets primarily controlled by winches and no other actuator may be directly attached to the sheet. Secondary devices that deflect the sheet such as barber haulers are not restricted by this rule. Sailors must load and unload the sheets of the outermost headsail set to tack or gybe the headsail. Captive winches, where the sheets are permanently loaded are forbidden. This rule does not prohibit the use of self tailing winches and does not apply immediately prior to, or immediately after a sail has been hoisted.

18.14 Headsail sheeting systems and associated secondary control devices such as barber haulers shall transmit the primary sheet loads to the hull no further forward than 10.150 m in front of TRP. This rule should not prevent sheets being led forward of this point after the first point of contact with the hull is made.

18.15 Maximum headsail measurements shall be as follows:

<table>
<thead>
<tr>
<th></th>
<th>Jibs with LL ≤ 18.0 m</th>
<th>Jibs with LL &gt; 18.0 m</th>
<th>Code zeros</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP</td>
<td>7.050 m</td>
<td>7.050 m</td>
<td>12.000 m</td>
</tr>
<tr>
<td>50% girth</td>
<td>0.59LP</td>
<td>(0.869-0.0155LL)LP</td>
<td>0.58LP</td>
</tr>
<tr>
<td>75% girth</td>
<td>0.40LP</td>
<td>(0.859-0.0255LL)LP</td>
<td>0.31LP</td>
</tr>
<tr>
<td>Head girth</td>
<td>0.17LP</td>
<td>(0.699-0.0294LL)LP</td>
<td>0.120 m</td>
</tr>
</tbody>
</table>

18.16 Code zeros shall be tacked forward of 26.760 m in front of TRP.
Figure 18.1: Headsail Measurement
19 Mast and mainsail

19.1 A drawing package for the mast will be issued according to Rule 33. This mast drawing package will include:

(a) the mast surface;
(b) the minimum required mast tube laminate and construction details;
(c) details of the supplied rigging;
(d) details of the one-design mast fittings and spreaders; and
(e) the rig plan, including required chainplate positions on the hull.

19.2 The external surface of the mast tube shall be built to match the mast surface and shall be within 3 mm for any cross-section parallel to the mast lower plane. The aft face of the mast tube shall be straight to a tolerance or 10 mm along the length of the mast tube. The mast tube may deviate from the mast surface within the mainsail attachment zones. Rebates for the attachment of components are permitted as long as such rebates are filled to match the mast surface within the aforementioned tolerances.

19.3 Openings in the aft face of the mast tube, in addition to those already defined in the mast surface, are permitted for access to permitted systems as well as penetrations for control systems and instrumentation cables. Openings in the aft face shall be no larger than required and shall have a maximum dimension of 150 mm and the maximum area of 0.018 m². The combined total area of all openings shall be less than 0.1 m² and the boundaries of any two openings shall have at least 250 mm between them.
19.4 The mast tube laminate provided by Rule 19.1 (b) is a minimum required laminate. Laminates resulting in greater fibre weight, resin content, core density, and/or core thickness than specified in the mast drawing package are permitted. Additional structural components and reinforcements are permitted and may be external to the mast surface but must remain within the tolerances given in Rule 19.2. The outer laminate of the mast tube shall not be sanded other than for local repairs and reinforcements performed after the mast tube has been cured. This shall not prevent the mast tube being painted or covered in branding material such as vinyl.

19.5 The mast shall be positioned and tensioned on the hull in any of the configurations specified in the rig plan described in Rule 19.1 (e). The forestay may be disconnected when the code zero is hoisted.

19.6 All one-design mast fittings and spreaders shall be built and installed according to the supplied mast drawings provided in accordance to Rule 19.1 (d).

19.7 One fairing or vibration mitigation device is permitted per supplied rigging element. Such fairings and vibration mitigation devices on any supplied rigging elements and their terminations are limited to a maximum length of 600 mm and shall fit within a cylinder of 100 mm diameter when installed on a supplied rigging element.

19.8 The supplied rigging shall not be modified other than the addition of fairings and vibration mitigation devices permitted in Rule 19.7. Shock cords or ropes may be attached to supplied rigging to manage slack and prevent sails being fouled.

19.9 No components of the mast, other than spreaders and rigging are permitted to extend more than 100 mm aft of the mast surface with the exception of:

(a) the mast upper zone where the components of the mast may extend up to 300 mm aft of the mast surface; and

(b) the mast lower zone where the components of the mast may extend up to 7700 mm aft of the mast surface.

19.10 The mast shall not be adjusted whilst sailing except for:

(a) control of the forestay;

(b) control of the running backstay or running backstay deflector;

(c) control of mast rotation about MRP by action of a device attached to the mast within the mast lower zone; and

(d) movement of control systems within the mast upper zone and mast lower zone for the purpose of controlling the mainsail.

19.11 Fairings may be attached to the mast including the mast tube and any control systems permitted in Rule 19.10 (d) and such fairings may be extended to the hull surface within the mast lower zone. Fairings below the mainsail may not extend aft of a projection of the aft most leech of the mainsail. Incidental movements of such fairings due to external loads, adjustment of the mast or mainsail or transition of the crew are permitted.
The components that may make up a mainsail are limited to:

(a) any number of sail skins;
(b) battens as described in Rule 19.24 and their associated connections as described in Rule 19.25;
(c) sail hardware;
(d) a single leech, head and foot line per sail skin no greater than 8 mm in diameter;
(e) luff attachment devices such as bolt ropes;
(f) control systems and structures as permitted in Rule 19.22;
(g) fairings as permitted in Rule 19.23;
(h) instrumentation; and
(i) pieces of light fabric or wool for flow visualisation.

For a specific mainsail measurement length or girth, the greatest value from all sail skins shall be taken.

When calculating a mainsail girth, the offset between the local luff of a sail skin and the aft face of the mast surface shall be added (if the luff is aft of the aft face) or subtracted (if the luff is forward of the aft face) from the girth measurement.

Mainsail girths shall be limited as follows:

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>$G_F$</td>
<td>Foot girth (m)</td>
<td>7.000</td>
</tr>
<tr>
<td>$G_{25}$</td>
<td>25% girth (m)</td>
<td>6.175</td>
</tr>
<tr>
<td>$G_{50}$</td>
<td>50% girth (m)</td>
<td>5.200</td>
</tr>
<tr>
<td>$G_{75}$</td>
<td>75% girth (m)</td>
<td>3.975</td>
</tr>
<tr>
<td>$G_H$</td>
<td>Head girth (m)</td>
<td>2.600</td>
</tr>
</tbody>
</table>

Mainsails shall comply with:

$$135.0 < \frac{26.5}{12} \times (G_F + 4G_{25} + 2G_{50} + 4G_{75} + G_H) < 145.0$$

With the exception of battens, the largest dimension of any sail hardware for a mainsail shall not exceed 650 mm.

All sail skins of the mainsail shall be continuously attached to the mast tube from 1.5 m above MRP to 1.0 m below the highest mainsail head point.

Wind instrumentation, if fitted, shall extend no higher than 1.5 m above the mast upper plane, measured orthogonal to the mast upper plane. Any wind instrumentation extending above the mast upper plane must not interfere with the supplied media equipment, and shall be submitted to the Measurement Committee for approval. Wind instrumentation shall have a maximum chord to thickness ratio of 3:1 at any cross-section perpendicular to its local lengthwise axis in the region between the mast upper plane and 100 mm from the uppermost extent of wind instrumentation.

The mainsail shall be lowered to the deck without assistance from crew aloft. This should not prevent crew going aloft to resolve occasional issues.

The mainsail shall be capable of being removed from the mast with the mast stepped without damage to either the mast or mainsail.
19.22 Other than the leech lines of the mainsail, control systems of the mainsail shall only be attached to or bear upon the mainsail in the mast upper zone and mast lower zone. Such control systems may include structures and mechanisms that are hoisted with the mainsail and such control systems are not limited by Rule 19.17. This rule should not prevent adjustment of the mast tube and the effect it has on mainsail shape.

19.23 Mainsail fairings are permitted within the mast upper zone and mast lower zone for the purpose of fairing control systems or sealing the area between the heads of sail skins. Such fairings may be flexible and shall not be considered to be sail skins.

19.24 Between the mast lower zone and mast upper zone sail skins of mainsails may have up to 6 battens that run from luff to leech and 6 battens shorter than 1.0 m that have one edge terminating at the leech. Additional battens are permitted in the mast lower zone and mast upper zone and such battens are not restricted by Rule 17.4

19.25 Battens may be connected to a batten on any other sail skin however such connections are restricted as follows:

(a) rigid or linked connections between battens are permitted only within 0.400 m of the leech or luff of any sail skin;

(b) tethered connections between battens, or battens pockets, are permitted anywhere provided such connections are no longer than 600 mm and can not take compressive forces; and

(c) with the exception of battens that are entirely within the mast lower zone and mast upper zone, batten connections shall not be adjusted.

19.26 The mainsail shall be equipped with solid buoyant material or inflated air bags in order to provide positive buoyancy near the top of the mast. There shall be at least 300 kgs of buoyancy from all combined mainsail buoyancy systems when submersed in salt water with an assumed water density of 1025 kg/m$^3$ and the combined weight of these systems shall be at least 3kgs. The centre of volume of all mainsail buoyancy systems shall be within 1.5 m from the uppermost head of the mainsail and if this centre of volume is greater than 0.5 m from the uppermost head then the minimum buoyancy and minimum weight of the combined buoyancy systems shall be increased by 100kg and 1kg respectively per metre below beyond this limit. Any ballast required to meet the minimum weight requirement of this rule shall be added at the same height above MRP on the mast tube as the centre of volume of the combined buoyancy systems.

19.27 Mast/mainsail measurement condition shall be the representative condition of the mast and mainsail whilst sailing but with the mast supported horizontally and the mainsail hanging below. Mast/mainsail measurement condition shall:

(a) include the mainsail hoisted to its highest sailing position;

(b) have all rigging pulled tight down the mast;

(c) include all halyards, positioned as they would be with all sails hoisted; and

(d) exclude man lines, however, man lines may be replaced with polyester mouselines no larger than 4 mm in diameter.

19.28 In mast/mainsail measurement condition, with the exceptions of wind instrumentation permitted in Rule 19.19 and supplied media equipment, no part of the mast or mainsail shall extend beyond, or be capable of being extended beyond, the mast upper plane.
19.29 In mast/mainsail measurement condition the only components of the mast and mainsail permitted to extend wider than 250 mm from the mast centre plane are:

(a) supplied rigging and associated strops;
(b) spreaders;
(c) instrumentation; and
(d) structures for rotating the mast about MRP as described in Rule 19.10 (c).

19.30 In mast/mainsail measurement condition the projected shape of the mainsail on to the mast centre plane shall extend no further than:

(a) 25 mm beyond of the aft most leech;
(b) 100 mm beyond the uppermost head; and
(c) 100 mm beyond the lowermost foot.
Figures 19.2: Mainsail Measurement

- Peak point
- Head girth
- Head point
- 75% Leech point
- 75% girth
- 50% Leech point
- 50% girth
- Leech
- 25% Leech point
- 25% girth
- Lower leech point
- Clew point
- Luff
- 25% Tack point
- Foot girth
- 26750 mm

AC75 Class Rule v1.0
Figure 19.3: Rig Plan
20 Control systems

20.1 The adjustment of control surfaces, where permitted in Rules 14, 15, 18 and 19 must only be controlled by crew:

(a) by direct contact of the crew on a control surface; or
(b) using one or more control systems.

20.2 No part of a control system may be capable of using feedback from the yacht state to control a control surface, except:

(a) the extent of travel of a control function can be restricted by:
   (i) ratchets, providing they are not controlled by an ECC or HCC, and
   (ii) stops or locks, subject to Rule 20.3;

(b) one or more force input devices may be connected mechanically and/or through an HCC to a single control surface; forces acting on that control surface can only be transmitted to those force input devices;

(c) one or more force input devices may be connected mechanically and/or through an HCC to common mechanical drive trains or common pressure supply lines that provide power to multiple control surfaces; forces acting on those control surfaces can be transmitted through those mechanical drive trains or pressure supply lines to those force input devices;

(d) as permitted within an HCC by Rule 21.4 (d); and

(e) as permitted within an ECC by Rule 23.

For the avoidance of doubt, a control surface can move passively as the result of external forces.

20.3 Stops or locks acting on a single control function may be permanently in place (e.g. in the case of end stops on a hydraulic actuator), or if not permanently in place, may only be engaged and/or disengaged:

(a) directly by the crew;

(b) through a mechanically connected force input device; or

(c) by an ECC and/or HCC, providing the device is only capable of locking the control function:
   (i) in a maximum of two defined positions; or
   (ii) from moving at all, regardless its position.

20.4 Stops or locks permitted by Rule 20.3 (c) shall not be combined to provide more control than two defined positions, or to achieve the effect of indexed control.

20.5 Power that does work on a control surface to adjust its shape, position or orientation can only be supplied by:

(a) external forces;

(b) the crew, via force input devices, only as expressly permitted in Rule 20.2;

(c) the FCS as permitted by Rule 26; or

(d) elastic energy less than 50 J stored within springs or lines (or collections thereof).

20.6 Power supplied by the crew to do work on a control surface must be used directly without being stored, except where permitted by Rule 21.11 within HCCs.

20.7 Energy supplied by the crew to move control surfaces must primarily be transmitted through the crew’s hands; any contact between other parts of the crew and force input devices must not transmit any significant power.
20.8 One or more **force input devices** that are designed to allow more than one crew member to supply power to a common mechanical drive train, a common pressure supply line or a common **control function** must be grinding pedestals or winches that are operated by turning handles in a rotary motion with the hands. This does not prohibit the use of other **force input devices** that occasionally allow more than one crew member to provide simultaneous power (e.g. helm wheels), providing that is not their usual mode of operation.

20.9 The use of flywheels or gyroscopes to store energy or mechanically stabilise the **yacht** is prohibited. Any rotating mass on the **yacht** shall be no larger than required for its permitted purpose.
21 Hydraulic control circuits

21.1 Hydraulic circuits and components are permitted only as part of an HCC.

21.2 Hydraulic circuits and components are permitted only for the purpose of adjusting control surfaces with hydraulic actuators, and for safely managing the flow of hydraulic fluid to and from these actuators.

21.3 Components in an HCC must be sized appropriately for their permitted use. It is prohibited to use oversize components, superfluous reservoirs, etc. in order to control the mass distribution on the yacht.

21.4 Flow of hydraulic fluid through an HCC shall only be controlled by:
   (a) force input devices, only as expressly permitted in Rule 20.2;
   (b) manually operated mechanical (non-electrical) valves;
   (c) valves controlled by an ECC; and
   (d) two port devices, not controlled by an ECC, that limit flow to one direction, regulate flow or regulate pressure, such as:
      (i) two port pressure relief valves;
      (ii) two port check valves; and
      (iii) two port pressure-compensated flow control valves.

21.5 For the avoidance of doubt, the following types of components are prohibited as they are capable of using feedback from the yacht state and are not listed within the permitted exceptions of Rule 21.4 (d):
   (a) external pilot-operated sequence valves;
   (b) external pilot-operated counter balance valves;
   (c) external pilot-operated pressure relief valves; and
   (d) valves that use internal feedback to control flow rate in proportion to an electrical input.

21.6 A hydraulic actuator within an HCC may only be mechanically connected to one control surface.

21.7 Hydraulic fluid may only be discharged from an actuator chamber (via tubing and permitted valves) to:
   (a) a low-pressure circuit;
   (b) another actuator chamber of the same hydraulic actuator; or
   (c) an actuator chamber of a different hydraulic actuator, where both hydraulic actuators are connected to the same control surface.

21.8 The pressure in a low-pressure circuit must never exceed 6 bar.

21.9 Hydraulic reservoirs in a low-pressure circuit may provide back-pressure to high-pressure circuits.

21.10 Pressure relief valves set to no more than 600 bar must be present immediately downstream of all pressure sources, such as pumps, connected to force input devices. A standard type or minimum flow rate for these valves may be specified in accordance with Rule 33.

21.11 Elastic energy may be stored in high-pressure circuits, providing that when all such circuits are pressurised to maximum pressure, no more than 0.25 litres of hydraulic oil is discharged from drain ports when those ports are opened to atmosphere.

21.12 For the avoidance of doubt, Rule 20.5 does not prohibit hydraulic cylinders with a gas spring return, providing the expansion of the gas volume cannot do work on a control surface. Such gas volumes may be physically separate from the cylinders they operate on, but may only be shared between cylinders that act on a common control function.
21.13 Tubing containing more than trace quantities of titanium is prohibited, but this does not preclude the use of titanium in hydraulic actuators, hydraulic pumps or fittings.

22 Electrical and electronic systems

22.1 Electrical or electronic components or circuits are permitted only as:

(a) part of an ECC, ILS, or CIS;

(b) standalone crew indication devices, such as wristwatches, that are incapable of measuring or receiving any part of the yacht state;

(c) standalone hardwired cameras and screens mounted on the yacht to aid visibility of different parts of the yacht, providing no information other than raw audio and video from the yacht is transmitted, played or displayed; and

(d) supplied and required by COR/D, the Rules Committee or the Measurement Committee, including permitted devices connected to these supplied components.

22.2 No information exchange in between ECCs, the ILS, the CIS and other systems is permitted except via the specified communication channels through the supplied FCS and Media System in accordance with Figure 22.1

22.3 A Crew indication device:

(a) must only provide visual and/or audio feedback to the crew; tactile or other non-audio visual feedback is not permitted;

(b) must be incapable of measuring any part of the yacht state, unless it contains no electronic parts; and

(c) must be incapable of significantly affecting the yacht state.

22.4 Batteries or regulated power supplies are permitted to be shared between ECCs, the ILS, the CIS, cameras and screens provided that isolated wiring begins immediately beyond these supplies.

22.5 ECCs, the ILS and the CIS must be powered by DC supplies operating at a voltage less than 60 volts, except where and if expressly permitted by the FCS specification.
Broadcast Race Course Data

Supplied system
Link from or to supplied system with defined protocol

Summary of Media System's internal logic

Hardwired link managed by the competitor (does not need to be strictly one way)

Wireless link managed by the competitor (does not need to be strictly one way)

Passive Input Devices
Crew indication devices
Actuator
Valves

FCS
Competitor ILS
Competitor ECC input
FCS input
Competitor ILS input
Competitor Audio input

Media System
Internal Sensors
Race Course Data
Delay

Alarms

Data processing and distribution

Radio TX/RX
Crew indication device

Sound Generator
WIFI AP

Figure 22.1: Permitted communication between electronic systems
Electronic control circuits

23.1 Only the following sensors within, or inputs to an ECC are permitted:
   (a) outputs from passive input devices;
   (b) one sensor per foil measuring foil flap angle relative to the foil wing, or a proxy for it;
   (c) one sensor measuring rudder rake angle relative to the yacht, or a proxy for it;
   (d) sensors measuring the internal state of the ECC, such as voltage, current, CPU temperature, so long as those sensors provide no yacht state information, and are not used to estimate yacht state information;
   (e) sensors measuring the internal geometric state of a drive clutch or HCC component, so long as those sensors do not directly measure yacht state information, and are not used to estimate yacht state information, for example:
      (i) a sensor measuring the orientation of a spool in a hydraulic valve can be measured in order to drive that spool to a desired position, as long as the orientation of the spool is not used to estimate pressure or flow; but
      (ii) a sensor measuring the position of a plunger in a pressure relief valve cannot be measured, as it provides direct information about pressure in the system; and
   (f) a sensor measuring the pressure of an accumulator permitted by Rule 26.9 (b).

23.2 Except through outputs permitted in Rule 23.3, an ECC must be incapable of having any significant effect on the yacht state.

23.3 An ECC can only provide a data output, or provide power to:
   (a) electrical actuators of hydraulic valves within an HCC;
   (b) electrical actuators of drive clutches;
   (c) electrical actuators of stops or locks permitted by Rule 20.2 (a);
   (d) electrical actuators that rotate the foil flaps;
   (e) electrical actuators that rotate the rudder about its rake axis;
   (f) crew indication devices;
   (g) the FCS; and
   (h) outputs as shown in Figure 22.1.

23.4 An ECC shall:
   (a) be hardwired;
   (b) have wiring that is clearly isolated from other devices and systems, except for:
      (i) connections shown in Figure 22.1; and
      (ii) connections from common power supplies permitted by Rule 22.4; and
   (c) be incapable of wireless communication.
24 **Instrumentation and logging system**

24.1 The **ILS** shall:

(a) be **hardwired**;

(b) have wiring that is clearly isolated from other devices and systems, except:

(i) connections shown in Figure 22.1; and

(ii) connections from common power supplies permitted by Rule 22.4;

(c) be incapable of wireless communication;

(d) not be capable of having any significant effect on the **yacht state**; and

(e) not include any **crew indication devices**.

24.2 The **ILS** must provide a single data stream to the **Media System**, which:

(a) must use a specified protocol;

(b) must include specified data channels for broadcast and/or verification of **AC75 Class Rule** compliance, and these data channels must be:

(i) the most accurate data available to the **ILS**, or the best estimate available if the required data is not measured; and

(ii) at a specified frequency;

(c) may include any other data channels measured, calculated or logged by the **ILS**, and

(d) may include alarm event messages generated by the **ILS**, which may only contain:

(i) an alarm category ID code, being an integer between 1 and 10; and

(ii) a single floating point number representing the magnitude of an alarm value.
25  **Crew information system**

25.1 The **Media System** will make an output available for transmitting data to the **CIS**, and optionally to the **ILS** for logging. This output will use a specified protocol and will include:

(a) the data stream supplied by the **ILS**, delayed by between 0.5 s and 1.0 s, this delay either being fixed or variable, to be specified;

(b) non-delayed alarm event messages supplied by the **ILS**, which:
   (i) once dispatched for a particular category ID, will not be dispatched again for the same category ID for 10 s; and
   (ii) will be limited when racing to a maximum total number of alarms of 20 per race;

(c) non-delayed information from an **ECC**, and

(d) non-delayed information generated by the **Media System**, including:
   (i) time of day, and race start time;
   (ii) latitude and longitude, but not altitude;
   (iii) heading and/or track, but not heel or trim;
   (iv) boat speed;
   (v) race course information, which may include start time, boundary lines, mark positions, penalties, and other information relevant to racing; and
   (vi) possibly some information about other competing **yachts**, which might include a time or distance to a potential collision (or collision of a virtual bounding box around a **yacht**), but will not include position, speed or heading information about those **yachts**.

25.2 The **CIS**:

(a) shall be incapable of measuring any part of the **yacht state**;

(b) shall not be capable of having any significant effect on the **yacht state**;

(c) may use short range wireless communication in **crew indication devices** and associated interface hardware (e.g. access points); and

(d) may include microphones and speakers to allow direct voice communication between crew, and to play audio signals from **CIS** devices.

25.3 As an exception to Rule 22.3 (b), **crew indication devices** in the **CIS** containing sensors such as accelerometers or solid-state gyroscopes may be considered incapable of measuring any part of the **yacht state** if a **Competitor** can demonstrate to the satisfaction of the **Measurement Committee** that those sensors cannot be accessed, e.g. by installation of custom firmware verified by the **Measurement Committee**.

25.4 Additional constraints on **crew indication devices** may be specified, including, but not limited to:

(a) standard display hardware (e.g. mobile phone model) for any **crew indication device** capable of receiving WiFi communication;

(b) custom firmware in standard display hardware (e.g. that disables sensors within a mobile phone);

(c) the display of a time-varying checksum on **crew indication devices** for verification of custom firmware;

(d) installation of screen reading software on **crew indication devices**; and

(e) installation of supplied audio visual recording equipment (e.g. small action cameras) to monitor **crew indication devices** at points requested by the **Measurement Committee**.
25.5 The **Media System** may specify reserved radio frequency bands which must not be used by other systems on the **yacht**.

25.6 Further details and requirements mentioned in the above Rule 24 and 25 will be provided according to Rule 33.
26 Foil cant system

26.1 Details of a FCS to control the cant rotation of the foils will be specified in accordance with Rule 33. This system will allow cant to be changed during manoeuvres and to make low-frequency cant setting changes, but the system will not be designed to provide high-frequency cant adjustment.

26.2 The supplied FCS cannot be modified except as expressly permitted in the supplied specification.

26.3 The FCS will provide, using specified protocols:
   (a) an input for commands to be received from an ECC;
   (b) an output for feedback such as cant angles to be sent to an ECC; and
   (c) an output for system information to be sent to the ILS.

26.4 The foil shall not intentionally be used to generate net downforce (combining gravitational and hydrodynamic loads) unless:
   (a) the foil is at its fully raised position (maximum cant angle);
   (b) the foil is at its fully lowered position (minimum cant angle); or
   (c) the FCS is being commanded to drive the foil to a prescribed cant angle.

If the foil is not in one of these conditions and generates a net downward moment, the FCS shall not support the foil at a fixed cant angle and shall move the foil downwards.

26.5 If an FCS is frequently being commanded to drive the foil to a more raised position, and that foil is generating net downforce, the FCS may:
   (a) reduce the operation of the cant movement, or drive the foil to a lowered position; and/or
   (b) provide information to the Media System for the provision of racing penalties.

26.6 The FCS will include supplied batteries, and may permit expansion of the battery pack with a specified battery model to increase overall power capacity. The supplied batteries are exempt from the requirements of Rule 5.16 and may be replaced as required.

26.7 The cant rotation of a foil can only be controlled using the supplied FCS.

26.8 Unless otherwise indicated in the FCS specification, the following systems may be powered by the FCS’s batteries:
   (a) ECC systems, the ILS and the CIS;
   (b) systems required by COR/D, the Rules Committee or the Measurement Committee, and devices permitted to be connected to those system;
   (c) electrical actuators used to rotate the foil flaps and/or rotate the rudder about its rake axis; and
   (d) one or more pumps supplying high-pressure circuits within one or more HCCs that control only the rotation of the foil flaps and/or the rotation of the rudder about its rake axis.

26.9 If the FCS’s batteries are used to drive a pump within an HCC permitted by Rule 26.8 (d):
   (a) that HCC must be entirely self-contained and hydraulically disconnected from any other HCC; and
   (b) a high-pressure accumulator is permitted to be installed in line with the pump.

26.10 Following sailing trials, COR/D may specify updates to the system which must be installed by all Competitors, these updates being frozen according to Rule 33.
27  Crew

27.1 There shall be eleven crew members, unless reduced by accident, who shall all be human beings.

27.2 The total mass of the crew, dressed only in light underwear, shall be no greater than specified in Rule 9.1.

27.3 When racing, each crew member shall wear:

(a) a buoyancy aid that meets the flotation standard of ISO 12402-5 or ISO 12402-6 (CE 50 Newtons) and that is capable of being removed or deflated in the water within five seconds;

(b) a helmet to a minimum standard of CE EN 1077, CE EN 966, ASTM 2040, or Snell S-98 and with at least 300 cm\(^2\) of the exterior surface brightly coloured. Competitors shall satisfy the Measurement Committee that the brightly coloured region can be seen from above the water with the crew lying face down or face up in the water;

(c) a blade with a length of no more than 150 mm;

(d) at least one personal air supply containing compressed air equivalent to at least 40 litres uncompressed volume each, which does not require the use of hands when in use;

(e) a pocket for carrying media equipment with minimum dimensions 80 mm x 200 mm x 30 mm; and

(f) media equipment as required by COR/D according to Rule 33.

27.4 The total mass of carried equipment worn or carried by each crew member shall weigh between 3.0 kg and 5.0 kg, with clothing and equipment weighed dry. The lower limit must apply at the start of a race, but can be reduced during a race due to consumption of food or drink. Any carried equipment brought aboard by a crew member must be carried by that crew member at all times when racing.

27.5 Clothing and equipment shall not be designed to retain water for the purpose of increasing mass.

27.6 A crew weighing schedule and procedure will be published in accordance with Rule 33.

27.7 Crew shall not enter the watertight volume of the hull.

27.8 Crew shall remain entirely aft of a plane 9.0 m forward of TRP except briefly to cross the boat, handle sails or resolve unforeseen issues.

27.9 Any crew that go forward of a plane 11.0 m forward of TRP may only do so as permitted by Rule 27.8, and must be tethered to the hull by a harness and safety line that complies with ISO 12401, the safety line being no longer than 2 m.

27.10 No part of the crew shall be in a sustained position outside an extrusion of the perimeter line perpendicular to MWP.
28  **Guest racer**

28.1 At the discretion of the **Regatta Director**, **Competitors’ yachts** may carry a guest racer, whose mass will be limited and equalised according to Rule 9. If a guest racer is not aboard, equivalent ballast will be applied according to Rule 9.

28.2 Rules 27.3, 27.4, 27.5, 27.7 and 27.10 shall also apply to the guest racer.

28.3 The guest racer shall remain entirely behind a line 2.0 m forward of **TRP**.

28.4 The **Regatta Director** may require the guest racer to be tethered to the **yacht**.

28.5 Except by moving within the region permitted by Rule 28.3, the guest racer shall not contribute in any way to the racing of the **yacht**.

29  **Branding**

29.1 Parts of the **yacht** may be reserved for **event** branding, class insignia, national flags, etc. This Rule will be amended in accordance with Rules 32.1 and 33 to specify requirements for such branding.
30 Measurement

30.1 Measurement procedures and requirements for measurement documentation will be published according to the schedule provided in Rule 33.

30.2 The Measurement Committee may place measurement marks or seals on yacht components during construction or upon their completion. These marks or seals may include, but are not limited to, reference screws, punch marks, measurers’ signatures, cable ties and stickers, on components or component tooling. Competitors shall permit inspections, allow such marks to be placed, and shall not move, remove or alter any such marks or seals without the express consent of the Measurement Committee.

30.3 Competitors shall permit the Measurement Committee to take samples of material from components of the yacht to ensure compliance with Rule 6.

30.4 Competitors shall permit the Measurement Committee to take samples of paint or vinyl from components of the yacht to ensure compliance with Rule 8.

30.5 If requested, or required by a measurement procedure, Competitors shall provide the Measurement Committee with source code and/or compiled executables of any software installed on the yacht, and shall assist them in the understanding of such code.

30.6 The hull of an AC75 Class Yacht shall be allocated a sail number by the Measurement Committee when it is first launched. Competitors shall inform the Measurement Committee when this occurs, and sail numbers will be allocated sequentially, except that culturally objectionable numbers may be skipped at the discretion of the Measurement Committee.

30.7 Leading up to events, the Measurement Committee will publish dates of measurement periods, during which Competitors may present their yachts for measurement. The Measurement Committee will inspect the yachts for compliance with this AC75 Class Rule, and Competitors shall provide whatever assistance is requested by the Measurement Committee to facilitate this process.

30.8 The Measurement Committee shall use its own equipment for measuring a Competitor’s yacht, except that a Competitor’s equipment may be used at the discretion of the Measurement Committee if it is calibrated against the Measurement Committee’s equipment and sealed to their satisfaction.

30.9 When weighing components of a yacht, Competitors shall be permitted to dry any water on the surface of those components and replace wet rigging with equivalent dry rigging.

30.10 The Measurement Committee shall issue a measurement certificate for a yacht when they have:

(a) concluded that she complies with this AC75 Class Rule;
(b) received completed declarations as required by this AC75 Class Rule and as additionally required by the Measurement Committee or the Rules Committee at their discretion; and
(c) received all documentation as required by this AC75 Class Rule and by other notices published by the Measurement Committee or the Rules Committee, and confirmed that the documentation is satisfactory.

Schedule of when a Competitor is permitted to change Measurement Certificates TBA.
30.11 Information on a yacht’s measurement certificate shall include, but is not limited to, her:

(a) name;
(b) hull identification number and hull IGES reference;
(c) builder(s);
(d) owner(s);
(e) mass and LCG; and
(f) foil, rudder and mast configuration.

30.12 The measurement certificate will be invalidated if:

(a) any details of the yacht listed in Rule 30.11 change;
(b) the Measurement Committee believe that the yacht no longer complies with the AC75 Class Rule; or
(c) the Measurement Committee believe that the certificate was issued in error.

30.13 Competitors shall inform the Measurement Committee immediately if they make any changes or repairs to the yacht that could affect her measurement certificate or her compliance with the AC75 Class Rule.

30.14 The Measurement Committee reserve the right to re-measure or inspect any aspect of a yacht at any time, before or after sailing, and may publish procedures for regular measurement inspections.

30.15 When a measurement period is open:

(a) if the Measurement Committee believes there is ambiguity as to whether an element of a Competitor’s yacht satisfies the AC75 Class Rule, they may seek the advice of the Rules Committee. If the ambiguity remains, the Rules Committee shall rule confidentially on the compliance or otherwise of the yacht, based on the information presented to them by the Measurement Committee, after which a measurement certificate may be issued or withheld;

(b) decisions on the compliance of a yacht made by the Measurement Committee and/or the Rules Committee may subsequently be changed by the Measurement Committee or the Rules Committee if new information comes to light, or if they believe the original decision was made in error. Only an interpretation shall provide a Competitor with a guarantee of continuing compliance of an ambiguous design element; and

(c) if a measurement certificate is withheld from a Competitor, the Measurement Committee shall explain in full the reasons why the yacht does not comply with the AC75 Class Rule, including the detail of decisions made or advice given by the Rules Committee.
31 Interpretation

31.1 A Competitor may seek an interpretation of this AC75 Class Rule by submitting a request to the Rules Committee. The Measurement Committee or the Rules Committee can also initiate an interpretation, providing that the interpretation does not reveal a design characteristic that may not have been considered by some Competitors.

31.2 When a request for interpretation is received by the Rules Committee, the following process shall be followed:

(a) as soon as practicable, the interpretation is anonymised and circulated by the Rules Committee to all Competitors;

(b) within 5 days of receipt, Competitors may supply comments and/or a proposed interpretation response to the Rules Committee;

(c) within 7 days of the feedback from Competitors being due, the Rules Committee agree on a draft interpretation and circulate this to the Competitors;

(d) within 3 days from the draft being sent, Competitors may respond to the Rules Committee with comments on the draft;

(e) within 3 days of feedback from Competitors being due, the Rules Committee then either issues the previous draft as final, or modifies and recirculates the draft, in which case the process reverts to step 31.2 (d).

31.3 The Rules Committee may, at their discretion, shorten any of the times allowed in Rule 31.2, particularly leading up to or during events.

31.4 Interpretations shall be based on the following principles:

(a) interpretations shall consider only the words in this AC Class Rule, not their possible intent;

(b) where wording is ambiguous, the most reasonable and natural interpretation of the written words shall be taken;

(c) interpretations shall not contradict any part of this AC Class Rule unless a part thereof is found to directly contradict another part, in which case a part that refers to more detail shall take precedence over a part that is more general; and

(d) where, after the above Rules are applied, there remains ambiguity or contradiction as to whether a particular feature is permitted, an interpretation shall be permissive.

31.5 The Rules Committee may seek the advice of independent experts, including a member of the Measurement Committee, when considering an interpretation.

31.6 Once an interpretation has been issued as final, it cannot be modified without the explicit agreement of all Competitors.

31.7 Advice or opinions on the meaning of a Rule, from a member of the Measurement Committee or Rules Committee, are not binding except through an interpretation.
32 Amendment

32.1 The AC75 Class Rule may be amended:

(a) before 29th June 2018, by COR/D for any reason;

(b) at any time by unanimous consent of Competitors still competing;

(c) at any time by the Rules Committee, with the agreement of COR/D and the Regatta Director, for changes relating to:

(i) supplied or specified components;

(ii) safety;

(iii) safety equipment;

(iv) media equipment;

(v) event branding; or

(vi) guest racers,

including their impact on masses controlled by Rule 9.

33 Dates

33.1 The following items shall be specified no later than the dates specified:

<table>
<thead>
<tr>
<th>Date</th>
<th>Rule</th>
<th>Who</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBA</td>
<td>5.4</td>
<td>Rules Committee</td>
<td>Template spreadsheet to track components.</td>
</tr>
<tr>
<td>TBA</td>
<td>6.13</td>
<td>Rules Committee</td>
<td>Material certificates and declaration requirements.</td>
</tr>
<tr>
<td>TBA</td>
<td>10.24, 16.6</td>
<td>Rules Committee</td>
<td>Measurement procedures for loads tests.</td>
</tr>
<tr>
<td>TBA</td>
<td>13.1</td>
<td>COR/D</td>
<td>Further details of the foil arms.</td>
</tr>
<tr>
<td>TBA</td>
<td>11.14, 16.5</td>
<td>COR/D</td>
<td>Reserved area for the supplied Media System.</td>
</tr>
<tr>
<td>TBA</td>
<td>19.1</td>
<td>COR/D</td>
<td>The mast drawing package.</td>
</tr>
<tr>
<td>TBA</td>
<td>21.10</td>
<td>Rules Committee</td>
<td>Standard types and positions for pressure relief valves.</td>
</tr>
<tr>
<td>TBA</td>
<td>25.6</td>
<td>COR/D</td>
<td>Media System details and protocols.</td>
</tr>
<tr>
<td>TBA</td>
<td>26.1</td>
<td>COR/D</td>
<td>Details of the FCS.</td>
</tr>
<tr>
<td>TBA</td>
<td>26.10</td>
<td>COR/D</td>
<td>FCS system updates frozen.</td>
</tr>
<tr>
<td>*TBA</td>
<td>27.3 (f)</td>
<td>COR/D</td>
<td>Media equipment worn by crew.</td>
</tr>
<tr>
<td>*TBA</td>
<td>27.6</td>
<td>Rules Committee</td>
<td>Crew weighing schedule.</td>
</tr>
<tr>
<td>*TBA</td>
<td>29</td>
<td>COR/D</td>
<td>Event branding.</td>
</tr>
<tr>
<td>*TBA</td>
<td>30.1</td>
<td>Rules Committee</td>
<td>Measurement procedures and documentation.</td>
</tr>
</tbody>
</table>

*These specifications may be amended provided they are published at least 180 days prior to the first day of racing of the Event in which these specifications apply.
34 Definitions

34.1 AC75 Class Rule

The rule governing the yachts to be used in the America’s Cup World Series, the Christmas Cup, the America’s Cup Challenger Selection Series and the Match and/or in any other regattas sailed in AC75 Yachts (if any), including all amendments to, interpretations of and rulings regarding such class rule.

34.2 AC75 Class Yacht

A yacht that complies with or could comply with the AC75 Class Rule.

34.3 Actuator chamber

A volume occupied by hydraulic fluid within a hydraulic actuator and extending until the first valves in connected lines.

34.4 Batten

A beam used to locally stiffen a sail.

34.5 Bearing centre

The centre of rotation of a bearing.

34.6 Bowsprit

A spar projecting forward from the bow to which the code zero can be attached.

34.7 Cant

Rotation of a foil about the foil arm rotation axis.

34.8 Carried equipment

Clothing, safety equipment, other equipment, food and drink carried aboard by the crew.

34.9 Challenger of Record

As defined in the Protocol.

34.10 CIS

Crew information system: an electronic system connected to the Media System to display the raw or processed Competitor data output from the Media System to the crew, and to provide voice communication between the crew.

34.11 Clew point

The intersection or projected intersection of the leech and foot of a sail skin. The intersection shall be projected when the leech or foot curvature reduces below a radius of 1.0 m.

34.12 Code zero

A headsail set forward of the forestay from the bowsprit.

34.13 Commercially available

This definition is TBA.
34.14 **Commercially available component**

This definition is TBA.

34.15 **Competitor**

As defined in the Protocol.

34.16 **Control function**

A permitted degree-of-freedom of motion, or deformation, of a control surface. All control functions of a control surface must be distinct from each other, with no significant overlap in their functionality, and that functionality must relate to a clear control surface motion or deformation. Examples include each foil flap rotation, rudder rake rotation, rudder yaw rotation, and permitted sail controls such as headsail sheet, sheeting position, cunningham, and mainsail sheet, traveller, head twist, etc.

34.17 **Control surface**

One of the following:

(a) The combination of a mast and a mainsail acting together;
(b) A foil flap;
(c) A rudder; or
(d) A headsail.

Where position, orientation or movement of a control surface is mentioned herein, that position, orientation or movement is implied to be relative to the yacht, or in the case of a foil flap, relative to the foil wing to which it is attached.

34.18 **Control system**

A system used for the adjustment of control surfaces.

34.19 **COR/D**

The Challenger of Record and the Defender jointly.

34.20 **Core**

Material that is bonded between two structural skins in a sandwich construction, primarily to transfer shear. Core includes any material which is bonded to both skins, such as a corrugated laminate between two skins, but excludes solid laminate or metal used within edge, taper or local reinforcement details.

34.21 **Crew indication device**

Any device which:

(a) provides information to the crew;
(b) is worn or installed on the yacht;
(c) can be seen or heard by the crew, directly or indirectly; and
(d) may process data internally, such as a display, LED or speaker.

34.22 **Deck**

The upper of a hull surface that is divided by the perimeter line.
34.23 **Defender**

As defined in the Protocol.

34.24 **Drive clutch**

A device which engages and disengages a common mechanical drive train to or from a device supplying power to a control function.

34.25 **ECC**

Electrical control circuit: an electrical and/or electronic circuit within a control system.

34.26 **Event**

Any regatta that forms part of the 36th America’s Cup.

34.27 **External forces**

Forces applied from outside the yacht to the yacht, such as fluid pressure, fluid dynamic friction and gravity.

34.28 **FCS**

Foil cant system: a system for controlling the rotation of the foils about longitudinal axes in the hull.

34.29 **Foil**

An appendage that provides side force and vertical lift.

34.30 **Foil arm**

Part of a foil that connects the hull to the foil wing.

34.31 **Foil cant reference point**

The point at the intersection of the foil cant axis and the FCS transverse reference plane, as defined in the one-design FCS drawings.

34.32 **Foil flap**

A component attached to a foil wing that moves to control the foil’s lift.

34.33 **Foil wing**

Part of a foil which, in conjunction with a maximum of two foil flaps, produces most of the foil’s lifting force.

34.34 **Foot**

The bottom edge of a sail skin.

34.35 **Foot girth**

The distance from the tack point to the clew point for a headsail sail skin or tack point to the lower leech point for a mainsail sail skin.
34.36 **Force input device**
A device which is moved by a crew member to provide control and/or power input, and whose movement, resistance to movement or response can, where expressly permitted within the AC75 Class Rule, be affected by certain parts of the yacht state. Examples are a sheet or winch connected to a sail, a grinding pedestal connected to a mechanical drive train or hydraulic pump, and a helm wheel connected through cables to a rudder.

34.37 **FRP**
Fiber-reinforced polymer matrix composite.

34.38 **Hardwired**
Physically connected by electrical wires, including localised electromagnetic or optical coupling between system components (e.g. galvanic isolation of protocol bus, optical isolation of IO device) provided information exchange is confined to the wiring circuit.

34.39 **HCC**
Hydraulic control circuit: a hydraulic circuit within a control system.

34.40 **Head**
The top edge of a sail skin.

34.41 **Head girth**
The distance from the head point to the peak point of a sail skin.

34.42 **Head pennant**
A cable used as an extension of a halyard to accommodate a sail with reduced luff length.

34.43 **Head point**
The intersection or projected intersection of the luff and head of a sail skin. The intersection shall be projected when the luff or head curvature reduces below a radius of 1.0 m.

34.44 **Headsail**
A sail set forward of the mast.

34.45 **High-pressure circuit**
All hydraulic circuits within an HCC that are not actuator chambers or low-pressure circuits.

34.46 **Hull**
The main body of the yacht, including the bottom, sides, transom, deck, cockpit and internal structure but not the mast, rigging, sails, appendages or fittings.

34.47 **Hull IGES**
A geometry file representing the as-designed hull surface.

34.48 **Hull lower surface**
The lower part of a hull surface that is divided by the perimeter line.
34.49 **Hull surface**

The external surface of a hull, where:

(a) fittings such as pedestals, helm wheels and deck gear shall be excluded; and

(b) local details may be excluded, provided they have no significant aerodynamic, hydrodynamic or hydrostatic effect. Examples of such details that may be excluded are:

(i) local reinforcements for deck hardware;

(ii) recesses for winches; and

(iii) local foot rests.

The **hull surface** is divided into the **deck** and **hull lower surface** by the **perimeter line**.

34.50 **Hydraulic actuator**

A hydraulic ram, hydraulic motor or functionally equivalent device that converts hydraulic pressure and flow into force and translation, and/or torque and rotation.

34.51 **IG**

The intersection of the centre line of the forestay with the leading edge of the **mast**, as shown in Figure 19.3.

34.52 **ILS**

Instrumentation and logging system: an electronic instrumentation circuit including devices such as sensors, processing units and logging systems.

34.53 **IZ**

The intersection of the centre line of the **code zero** halyard with the leading edge of the **mast**, as shown in Figure 19.3.

34.54 **JG**

The distance between **MRP** and the intersection of the centreline of the forestay and a plane 1.500 m above MWL with the rig at dock tune as defined in Figure 19.3.

34.55 **Jib**

A **headsail** hoisted on the forestay.

34.56 **LCP**

**Longitudinal** centre plane.

34.57 **Leech**

The aft edge of a **sail skin**.

34.58 **Leech points**

For any **sail skin** a **leech point** is the intersection of **leech** and a line perpendicular to the line from the **lower leech point** to the **head point** taken at the corresponding percentage of **LL** from the **lower leech point**. **Leech points** are illustrated in Figures 18.1 and 19.2.
Linear component

A component of the yacht:
(a) that has no moving parts or mechanisms;
(b) for which any two points on or within it must either always be in contact, or never be in contact;
(c) whose overall deformation in response to normal sailing loads is approximately linear; and
(d) that always returns to the same state in the absence of applied load.

Such components may be constructed from multiple parts and fastened together mechanically, but such fastening must be such that the final component satisfies the above conditions.

LL

The distance from the head point to the clew point for a headsail sail skin or the lower leech point for a mainsail sail skin.

Longitudinal

Orthogonal to TRP.

Low-pressure circuit

Hydraulic circuits within an HCC that return hydraulic fluid to reservoirs and supply hydraulic pumps with hydraulic fluid from reservoirs.

Lower leech point

For any sail skin of the mainsail the lower leech point is the intersection of a 26.750 m diameter circle centred at the head point and the leech or the projection of the leech. For any headsail the lower leech point is at the clew point.

LP

The distance, measured perpendicular to the luff, from the luff to the clew point of a sail skin.

Luff

The forward edge of a sail skin.

Mainsail

The combination of sail skins and associated components that are hoisted on the mast.

Mast

All components of the rig that are not hoisted with the mainsail or headsails. This includes mainsail support structures and control systems such as booms that are not part of the mainsail as well as halyards, rigging, spreaders, fittings, fairings, instrument displays, instrument sensors, cameras, cables, flotation systems and hydraulic rams that remain as part of the rig whilst sailing. Sheets shall be considered as part of the mast if they cannot be easily disconnected from mast structures and control systems.

Mast centre plane

The plane perpendicular to the aft face of the mast surface and coincident to the lengthwise centre line of the aft face of the mast surface as shown in Figure 19.1.
34.69 Mast lower plane

The plane perpendicular to the aft face of the mast surface at a height along the aft face of the mast surface of 1.200 m above the MRP as shown in Figure 19.3.

34.70 Mast lower zone

The lower mast zone as illustrated in Figure 19.3.

34.71 Mast surface

The external surface of the mast tube as given in the mast drawing package described in Rule 19.1.

34.72 Mast tube

The principal spar of the rig.

34.73 Mast upper plane

The plane oriented at 5° to the mast lower plane at a height along the aft face of the mast surface of 26.5 m above MRP as shown in Figure 19.3.

34.74 Mast upper zone

The upper mast zone as illustrated in Figure 19.3.

34.75 Measurement Committee

A committee responsible for ensuring a yacht satisfies the AC75 Class Rule.

34.76 Mechanically

Only through contact of components, without the use of hydraulic, pneumatic, magnetic or electrical components.

34.77 Media System

A supplied system for managing the flow of data, audio and video around the yacht and off the yacht for broadcast.

34.78 MRP

Mast rotation point. The point about which the mast base rotates relative to the hull.

34.79 MWP

Measurement waterline plane.

34.80 Official Dictionary

The Oxford English Dictionary as it exists in the official online dictionary available at www.oed.com (or such later official website of the Oxford English Dictionary).

34.81 Passive input device

A device which is moved by a crew member to produce an electrical control signal, where that control signal relates only to the crew member’s manual input and is not significantly affected by the yacht state (except for unintended manual input caused, for example, by a crew member falling on to a button). Examples are buttons, joysticks, sliders or touch screens.
34.82 **Peak point**

The intersection or projected intersection of the *leech* and *head* of a *sail skin*. The intersection shall be projected when the *leech* or *head* curvature reduces below a radius of 1.0 m.

34.83 **Perimeter line**

The line on the *hull surface* which forms the perimeter of the *hull surface* when projected on to MWP. Where the *hull surface* is vertical on its perimeter, the *perimeter line* shall pass through the highest points on that vertical surface.

34.84 **Platform assembly**

The *hull*, *foils*, *rudder*, *bowsprit* and other systems, hardware, fittings, rigging and supplied equipment that is weighed with those components.

34.85 **Projected**

The *projected* shape of a part is the shape of a shadow cast by that part on the specified plane from a parallel light source acting normal to that plane.

34.86 **Protocol**

The Protocol of the 36th America’s Cup between the Royal New Zealand Yacht Squadron and Circolo Della Vela Sicilia.

34.87 **Regatta Director**

The person appointed pursuant to Article 20 of the Protocol.

34.88 **Rondure**

A line formed by the leading edge of an appendage *projected* on to TRP.

34.89 **Rudder**

An appendage positioned on the centreline of the *hull* which is rotated to affect yaw and trim.

34.90 **Rules Committee**

A committee responsible for ruling on *AC75 Class Rule* interpretations and producing measurement procedures.

34.91 **Sail hardware**

Components of a sail for the purpose of attachment or applying pre-tension of sail controls and *battens*. If two or more components are rigidly connected together then they will be considered as a single piece of *sail hardware*.

34.92 **Sail skin**

The thin, flexible membrane of a *headsail* or one of the thin, flexible membranes that may make up a *mainsail*. *Sail skins* include stickers, branding, *batten* pockets, *luff* pockets as well as any reinforcements such as edge tapes or corner patches.

34.93 **Supplied rigging**

The supplied forestay, cap shrouds, lower shrouds, and running backstays.
34.94 **Symmetric**

A component that is required to be symmetric must be designed to be exactly symmetric, and the built shape must lie within the specified tolerance of the designed shape everywhere on its surface. Such a component must be designed to be almost exactly symmetric in its structure, where any structural asymmetry can only be to allow reasonable stagger in ply lay-up, use right-handed screw threads, etc., and not to deliberately induce asymmetric structural behaviour.

34.95 **Tack point**

The intersection or projected of the luff and foot of a sail skin. The intersection shall be projected when the luff or foot curvature reduces below a radius of 1.0 m.

34.96 **Transverse**

Orthogonal to LCP.

34.97 **TRP**

Transom reference plane.

34.98 **Wetted**

The wetted part of a component is that part of a component which extends or can extend outside of the hull's outer skin.

34.99 **Yacht**

AC75 Class Yacht.

34.100 **Yacht state**

The specific condition of the yacht, comprising all of the following:

(a) the position and orientation of the yacht in space;
(b) the position and orientation of any control surface;
(c) the position and orientation of a foil;
(d) the position and orientation of any force input device;
(e) the stress, strain, tension and force in any part of the yacht;
(f) other force-related quantities in any part of the yacht;
(g) the volume, velocity, flow rate or pressure of fluid within, or acting on, any part of the yacht;
(h) all absolute measures of the above and quantities measured relative to each other;
(i) the water or wave height or velocity relative to the yacht;
(j) all time derivatives of the above;
(k) all quantities derived from any of the above; and
(l) all quantities from which the above can be derived or approximated.