

AMYA America's Cup Class Rules

As modified 01-JAN-07

Note: additional changes taking effect on **01-Jan-08** include the modification of rule 3.2 to remove the "+ BP" portion of the formula, the deletion of rules 2.5 and 3.6, and the addition of rule 4.11 which, reads as follows: **4.11** B shall be greater than or equal to 11.0 inches and less than or equal to 18.0 inches.

1.0 GENERAL

1.1 The purpose of the AC Class Rule is to encourage the development and Corinthian racing of 1/12th scale radio-controlled models of contemporary America's Cup yachts.

1.2 It is the intent of the AC Class Rule to produce model yachts which replicate the true-to-scale appearance, performance, and construction integrity of the America's Cup yachts, to accurately measure the true performance potential of AC Class yachts, and to provide equitable model-yacht racing.

1.3 It shall be assumed that anything not specifically restricted by this rule is permitted, provided that it does not violate the intent or spirit of this rule, particularly rule 1.2.

1.4 Any yacht attempting to circumvent the spirit of this rule shall be denied a rating certificate and summarily dismissed from competition.

2.0 DEFINITIONS

2.1 AG: Aft Girth; measured around the AGS between points on the hull port and starboard located 3.00 inches above the lowest point of AGS.

2.2 *Deleted – 01-Jan-07, refer to rule 4.10*

2.3 AGS: Aft Girth Station; Vertical plane perpendicular to the centerline of the hull located where the centerline of the hull aft intersects a plane 0.66 inches above the measurement waterline. (*modified – 01-Jan-07*)

2.4 B: Maximum measured Beam.

2.5 BP: Beam penalty as per rule 3.6

2.6 D: Maximum measured Draft.

2.7 *Deleted – 01-Jan-07, refer to rule 5.5*

2.8 DSP: actual measured weight.

2.9 E: Mainsail Foot Length; measured along the boom from the forward edge of the measurement band to the aft side of the mast as per rules 7.8 and 9.7.

2.10 FG: Forward Girth; measured around the FGS between points on the hull port and starboard located 4.00 inches above the lowest point of FGS.

2.11 *Deleted – 01-Jan-07, refer to rule 4.12*

2.12 FGS: Forward Girth Station; Vertical plane perpendicular to the centerline of the hull located where the centerline of the hull forward intersects a plane 0.66 inches above the measurement waterline. (*modified – 01-Jan-07*)

2.13 *Deleted – 01-Jan-07, refer to rule 4.14*

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- 2.14** GENOA: any head sail having a foot length greater than J and less than or equal to (J+7.75) inches.
- 2.15** I: Height of the fore-triangle; measured along the deck, with the mast in its forward-most position, from the forward side of the mast to the intersection of the headstay or projected headstay with the deck or projected deck surface.
- 2.16** J: Base of the fore-triangle; measured along the deck, with the mast in its forward-most position, from the forward side of the mast to the intersection of the headstay or projected headstay with the deck or projected deck surface.
- 2.17** JIB: any headsail having a foot length less than or equal to J inches.
- 2.18** L: Rated length as per rule 3.2.
- 2.19** LBG: Length between Girth Stations; measured from FGS to AGS.
- 2.20** LM: Measured length as per rule 3.3.
- 2.21** MEASUREMENT TRIM: the yacht in normal sailing configuration, with all normal racing gear in place, less spars, sails, and standard rigging.
- 2.22** ML: Mainsail Leech; measured from the top-forward corner of the headboard to the clew.
- 2.23** Deleted – 01-Jan-07, refer to rule 7.16
- 2.24** MRA: Estimated Mainsail Roach Area as per rule 3.11. (*modified 01-Jan-07*)
- 2.25** P: Mainsail Luff Length: measured along the mast from the bottom edge of the top measurement band to the top edge of the bottom measurement band as per rules 7.8 and 9.8.
- 2.26** S: Rated Sail Area as per rule 3.9.
- 2.27** SM: Measured Sail Area as per rule 3.10.
- 2.28** MG: Mainsail Girth locations consisting of MH and three (3) points along the leech of the mainsail as defined by rules 2.29, 2.30, 2.31 and 2.32. (*added 01-Jan-07*)
- 2.29** MH: Mainsail Head length as defined by rule 7.14. (*added 01-Jan-07*)
- 2.30** $\frac{1}{4}$ MG: The point on the leech of the mainsail 25% of the leech length down from the head. (*added 01-Jan-07*)
- 2.31** $\frac{1}{2}$ MG: The point on the leech of the mainsail 50% of the leech length down from the head. (*added 01-Jan-07*)
- 2.32** $\frac{3}{4}$ MG: The point on the leech of the mainsail 75% of the leech length down from the head. (*added 01-Jan-07*)
- 2.33** GL: Mainsail Girth Length as defined by rule 7.16 (*added 01-Jan-07*)
- 2.34** B-AGS: Beam at AGS; beam measured at the outermost points where the AGS intersects the deck. (*added 01-Jan-07*)

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3.0 FORMULAS

3.1 Rating; which shall be 98 maximum = $(L + (1.25 * S^{(1/2)}) - 9.80 * (DSP * 27)^{(1/3)}) * 1.95$ *(modified 01-Jan-07)*

3.2 $L = LM * (1 + 0.03 * (LM/3.28 - 21.20)^8) + BP$ *(modified 01-Jan-07)*

3.3 $LM = LBG + 6.25$ *(modified 01-Jan-07)*

3.4 Deleted – 01-Jan-07, refer to rule 4.12

3.5 Deleted – 01-Jan-07, refer to rule 4.10

3.6 BP: if B is less than 18.00 and greater than 16.00 then BP = 0.00. If B is greater than 18.00 then BP = $4 * (B - 18.00)$. If B is less than 16.00 then BP = $4 * (16.00 - B)$.

3.7 Deleted – 01-Jan-07, refer to rule 5.5

3.8 Deleted – 01-Jan-07, refer to rule 4.14

3.9 $S = SM * (1 + 0.01 * (SM^{(1/2)} * 0.388 - 20.3)^8)$. *(modified 01-Jan-07)*

3.10 $SM = I * J/2 + P * E/2 + MRA$.

3.11 $MRA = ML * (E * 0.38) * 0.67$. *(modified 01-Jan-07)*

4.0 HULL

4.1 Yachts shall be monohull configuration.

4.2 The sheerline in profile shall be a continuous fair concave curve from the bow to AGS.

4.3 The radius of the hull-deck joint shall not exceed 0.32 inches.

4.4 Deck crown, not including cockpits, coamings, or hatches, shall not exceed 6 percent of the beam at any station, and shall not be negative except in the case of a cockpit located aft of the mast. *(modified 01-Jan-07)*

4.5 Tumblehome shall not be allowed.

4.6 Hollows shall not be allowed on the surface of the hull except that an appendage may have fairing radius not to exceed 0.82 inches.

4.7 Movable ballast shall not be allowed.

4.8 Yachts in measurement trim shall not weigh less than 20.40 pounds nor more than 31.90 pounds.

4.9 Yachts in measurement trim, less keel, shall not weigh less than 7.00 pounds. *(modified 01-Jan-07)*

4.10 AG shall be greater than or equal to 8.5 inches and less than or equal to 12.0 inches measured as per rule 2.1. *(added 01-Jan-07)*

4.12 FG shall be less than or equal to 9.0 inches measured as per rule 2.10. *(added 01-Jan-07)*

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4.13 B-AGS shall be less than or equal to B – 2.0 inches measured as per rule 2.34. (*added 01-Jan-07*)

4.14 Freeboards shall be greater than or equal to 4.9 inches at the FGS, 4.1 inches at the 50% between FGS and AGS, and 4.0 inches at the AGS. (*added 01-Jan-07*)

5.0 APPENDAGES

5.1 Keels shall be removable for weighing the hull, but fixed while racing.

5.2 Retractable appendages shall not be allowed.

5.3 Only two movable surfaces shall be allowed.

5.4 No part of any appendage shall extend beyond either Girth Station.

5.5 D shall be less than or equal to 19.0 inches. (*added 01-Jan-07*)

6.0 SPARS and RIGGING

6.1 Yachts shall be sloop-rigged with a single mast.

6.2 The mast shall not be permanently bent or rotating.

6.3 The mast shall not move more than 1.00 inches fore and aft on deck.

6.4 The mast shall not be higher than 106.00 inches above deck. (*modified 01-Jan-07*)

6.5 The mast, jib club and spinnaker poles shall not exceed 1.00 inches in diameter.

6.6 *Deleted – 01-Jan-07*

6.7 Spinnaker poles shall not extend more than $(J * 1.35)$ inches from the mast.

6.8 The top of the boom at the mast shall not be more than 5.75 inches nor less than 3.50 inches above the deck or projected deck surface.

6.9 The boom shall not exceed 2.00 inches in depth or 1.30 inches in width, and the top of the boom shall be straight.

6.10 *Deleted – 01-Jan-07*

6.11 The measurement of I shall not exceed $(0.80 * (P + 5.75))$ inches.

7.0 SAILS

7.1 *Deleted – 01-Jan-07, refer to rule 7.16*

7.2 Battens shall not be allowed in Genoas or Spinnakers.

7.3 Battens shall be limited to 10 in number per sail in Mainsails and Jibs.

7.4 Battens shall not extend beyond the leech of any sail.

7.5 The maximum girth of any Genoa or Jib, measured between the mid-points of the luff and leech, shall not exceed 60 percent of the length of the foot.

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- 7.6** Mainsail foot rounds shall be straight. *(modified 01-Jan-07)*
- 7.7** The aspect ratio of (P / E) shall not exceed 3.60.
- 7.8** No part of the Mainsail shall at any time extend beyond the horizontal or vertical projection of the inner edges of the measurement bands as prescribed by rules 9.6 and 9.7. *(modified – 01-Jan-07)*
- 7.9** The Mainsail shall display the IACC insignia approximately $\frac{1}{4}$ of the "P" measurement down from the head. *(modified 01-Jan-07)*
- 7.10** All mainsail leeches shall be smaller than or equal to a smooth curve formed by a constant section batten connecting a point at the MH limit set by rule 7.16, the girth measurement points on the mainsail and the clew. There shall be no bending induced into the batten between the girth points or beyond the head or clew. *(modified 01-Jan-07)*
- 7.11** No suit of sails shall exceed the profile of the largest suit.
- 7.12** No part of any sail at any time exceed 0.10 inches in thickness.
- 7.13** Mainsails are required to have sail numbers and country designation. Sail numbers and country designation shall be four inches tall +/- .2 inches and located approximately 50% down the luff of the main. *(added 01-Jan-07)*
- 7.14** MH is measured along the top edge of the head from the front corner to the aft corner. *(added 01-Jan-07)*
- 7.15** Each MG is located on the leech perpendicular to a straight line connecting the front corner of the head and clew. Girth Locations are located on the leech only. *(added 01-Jan-07)*
- 7.16** GL for each of the MG locations is found by measuring the shortest distance from each of the MG points to the luff of the main. See table below. *(added 01-Jan-07)*

Mainsail Girth limits

MH = 25% of E
1/4 MG = 52% of E
1/2 MG = 74% of E
3/4 MG = 89% of E

- 7.17** All girth locations shall be permanently marked by the sail maker. *(added 01-Jan-07)*

8.0 CONSTRUCTION

- 8.1** Decks and Hulls shall not be translucent.
- 8.2** Fabric of other non-rigid decks shall not be allowed.
- 8.3** No construction material shall be more dense than pure lead.
- 8.4** All construction materials shall be commercially available.

9.0 MEASUREMENT

- 9.1** All measurements shall be taken in inches and pounds, and decimals thereof, rounded to the nearest one decimal place of accuracy.

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- 9.2** All floating measurements shall be taken in fresh water.
- 9.3** Yachts shall be weighed and measured in measurement trim.
- 9.4** FGS, AGS and LBG shall be measured using a pre approved method. All measurement methods shall be approved by the Class Secretary. *(modified 01-Jan-07)*
- 9.5** Yachts shall have both girth stations marked on the hull, on the centerline such that the marks are clearly visible. *(modified 01-Jan-07)*
- 9.6** The mast shall have measurement bands 0.10 inch wide corresponding to the limits of P as per rules 2.25 and 7.8. P shall be measured from the bottom edge of the top band to the top edge of the bottom band.
- 9.7** The boom shall have a measurement band 0.10 inch wide located at the aft limit of E as per rules 2.9 and 7.8. E shall be measured from the forward edge of the band to the aft side of the mast.
- 9.8** The deck shall have a measurement band 0.10 inch wide located with its aft edge at the J measurement point as per rule 2.16. *(added 01-Jan-07)*

10.0 CERTIFICATION

- 10.1** No yacht shall be considered registered until a rating certificate has been completed and endorsed by a designated measurer, and forwarded in duplicate to the Class Secretary. Upon approval, the Class Secretary shall return one endorsed copy to the owner.
- 10.2** Yachts shall be measured by designated measurers, who shall be appointed by the Class Secretary. If a designated measurer is not available, a yacht may be measured by its owner; however, such a yacht shall be re-measured by a designated measurer prior to participation in any National or Divisional class championship event.
- 10.3** No yacht shall have more than one valid rating certificate at a time.
- 10.4** Any change to a yacht which affects any measurements on the yachts rating certificate shall render the certificate invalid, and shall be re-measured and a new rating certificate obtained.
- 10.5** Once a yacht has entered an event, no modification to or replacement of the yacht's hull or appendages shall be allowed during that event.