RULES

A. GENERAL

A.1 Authority

These regulations are published under the authority of World Sailing.

A.2 Official language

The official language of these regulations is English. In the event of a dispute, the English text shall prevail over any translation.

The word *shall* is mandatory and the word *may* is permissive.

A.3 Amendments

World Sailing has the right to amend these regulations if necessary.

A.4 Interpretations

Any interpretations shall be made by World Sailing.

A.5 Spirit of the regulations

In case of doubt about any part of these regulations, the meaning, i.e. the spirit of the regulations governs.

A.6 Limits

Notwithstanding anything contained in these regulations, World Sailing or a National Authority shall have the power to refuse to grant, or withdraw, the status of recognized Class or a rating certificate from any Multihull, giving reasons in writing for taking such action.

A.7 Responsibility

World Sailing does not accept any legal responsibility in respect of these regulations.

B. ADMITTANCE

These rules are intended to allow a wide range of catamarans to race together. Boats from established classes with class rules must comply with their class rules and can use the ratings on the SCHRS list.

Any catamaran of a type not listed on the SCHRS list must have an individual SCHRS rating certificate signed by a measurer recognized by World Sailing or a National Authority.

B.1 Quality of boats

These rules are created mainly for production boats.

Non-productions catamarans, experimental boats and new types with provisional rating may be ranked apart.

B.1.1 Production boats

A production boat belongs to a registered class or to a registered type.

The qualification of registered class or registered type requires the following conditions:

1. A minimum of 5 boats should have been built all with the same measurements as in C2 below.
2. There should be published class rules (effective for new types after 01/06/2001) which include the data listed in C2.
3. The boat should be (or have been) available to the wider public for purchase.
4. The boat should have been presented to the nautical press.

B.1.2 Non-production or experimental boats

A non-production boat is any boat which does not belong to a registered class or to a registered type. A boat built as a registered boat but which is modified in such way that she contravenes her class rules will be considered as a non-production boat.

B.2 Rating certificate

To be permitted to race, unlisted boats shall provide a Rating Certificate recognised by World Sailing (SCHRS) as described below.

The Rating Certificate is obtained as follows:

- The request will be accepted only for the catamarans, or variants, not listed in the SCHRS ratings Table for the current year
- No competitor will be granted more than one individual certificate per calendar year
- The request for a Rating Certificate should be made by the owner, on the form which is downloadable from the SCHRS website. It must be completed and signed by a measurer recognized by World Sailing or a National Authority and must be sent by e-mail in pdf format to the Technical Committee of SCHRS. It is helpful (but not necessary) if a copy of the calculator is also attached
- Within fifteen days after receiving the request form, correctly completed and signed by a measurer, the Technical Committee will send the "Individual Rating Certificate" to the owner, with a copy to the measurer
- The Rating Certificate will be registered on the SCHRS website
- The Rating Certificate is valid for the current calendar year. The SCHRS committee makes annual changes to the formula, and a new certificate will be therefore be required each year
- The Rating Certificate should be presented at registration for official sailing races. Any changes which modify the data or characteristics of the boat would lead to the invalidity of this certificate
- The Rating Certificate is not invalidated by change of ownership, providing the data remains constant. It is the current owner's responsibility to ensure compliance

N.B. A National Authority or recognized measurer may require a fee.

C. RATING

C.1 Principle

Ratings, (i.e. time dividing factors,) are calculated on the basis of measurable data, warranted by classes, builders or importers, and are calculated using the formula described as follows, verifiable by anyone.

C.2 Data

The inputs to the formula are as follows:

- **WC** Reference weight of the crew.
- **WS** Minimum weight of the catamaran ready to sail.
- **AL** Maximum overall length of the hulls.
- **WL** Maximum waterline length (before Jan 1st 2007).
- **CM** Maximum authorised mainsail area.
- **VLM** Maximum vertical projection of the luff of the mainsail.
- **CJ** Maximum authorised jib area.
- **VLJ** Maximum vertical projection of the luff of the jib.
- **CSPI** Maximum authorised spinnaker area.
- **MGR** Mid girth spinnaker/Foot <75%.
- **LB** Maximum Length of Centre or Dagger board below the hull.
- **BEAM** Maximum beam of the boat.
- **NUMTRAP** Maximum number of crew using trapeze.
- **SMS** Shape of Mainsail, value 0 for pinheads, 1 for square tops and 2 for decksweepers.
- ~~**LTM** Length of the Top of the Mainsail.~~
- **B2007** if boat designed before 2007.
- **SH** apply Sinking Hull adjustment.
- **LF** apply Lift Generating Foils adjustment.

C.3 Formula

All the following formula use metric units.

C.3.1 Rated Measurements

- **Rated Length L**
- Rated Length, after 1/1/2007, L = AL
- Rated Length, before 1/1/2007, L = WL + 0.1 x (AL - WL)
- **Rated Weight W** = WS + WC
- **Rated Sail Area A** = M + J
- **Rated mainsail Area M** = CM x ME
- Mainsail efficiency ME = SE %
- **Rated Jib Area J**
- Multihulls without spinnaker J = CJ x JE / 100
- Multihulls with spinnaker J = (CJ x JE/100) + (CSPI * 0.11)

- Jib efficiency JE = SE %
- **Mainsail Adjustment**
- Mainsail efficiency ME = SE x CMS
- for Pinheads, **CMS** = 0.88
- for Square tops and Deck sweepers, **CMS** = 1 - ((CM/VLM)^{4} x 0.127)
- **Sail efficiency SE**
- Sail efficiency SE = 40.1 + (18.31 x X) - (2.016 x X^{2}) + (0.07472 x X^{3})
- where X is the respective sail aspect ratio, as shown below
- Mainsail Aspect ratio XM = VLM^{2} / CM
- Jib Aspect ratio XJ = VLJ^{2} / CJ

C.3.2 Intermediate calculations

- Removed, no longer used.

C.3.3 Corrections and Penalties

- **Lift Generating Foil is:** LF
- where **LF** is the penalty applied for specific classes to the Board Correction. The values can be seen in the ratings table
- **Board Correction is:** BC = 0.01 + LB / 35 x LF
- where **LB** is capped at 25.5% of AL
- **Sinking Hull adjustment is:** SH = 1.014
- and is the adjustment applied for specific classes on the final Rating.

C.3.4 Power Factor

- **Heeling Moment HM** = ((0.42 x (VLM + 1) x CM) + (0.33 x (VLJ + 1) x CJ)) x 9.7037
- **Righting Moment RM** = (0.5 x BEAM x WS) + (BEAM x CW x WC) + (0.93 x NUMTRAP x WC)
- **Power Factor PF** = HM / RM$^{1.1}$
- Power Factor (PF) takes into account both the Heeling (HM) and Righting moments (RM) and where the Power Factor is subject to a maximum of **1.027** and a minimum of 0.983

C.3.5 Rating (or Time Dividing Factor)

$$R = \frac{1.111 \times W^{0.3}}{L^{0.325} \times A^{0.41}} \times PF \times (1 - BC) \times SH$$

where the final rating will be calculated to 3 decimal places and where **SH** is the Sinking Hull adjustment applied to specific classes.

D. MEASUREMENT

All measurements must be undertaken according to World Sailing measurement rules and instructions.

For "Formula" type classes such as Formula 18 and A-Class, the rating is to reflect the limiting values for all relevant measurements permitted by the class rules. Where a measurement is required by SCHRS but not governed by class rules the figure used by SCHRS should be based on best practice, as used by a sample of boats in the top 10% of the fleet.

D.1 WC : Weight of the crew

The weight per crew member (WCM) is assumed to vary according to the length of the boat and the number of crew in accordance with the following formula:

- **WCM** = 70kg + Rated Length (L) in excess of 5m x 10 capped at 80kg (double handed)
- **WCM** = 70kg + Rated Length (L) in excess of 5m x 10 capped at 80kg (single handed for L>5.48m)
- **WCM** = 67kg + Rated Length (L) in excess of 5m x 10 capped at 75kg (singled handed for L<5.48m)

D.2 WS : Minimum weight of the catamaran ready to sail

- The sailing weight is the weight of the catamaran ready to sail, excluding personal equipment, such as buoyancy aids or trapeze harnesses.
- The boat itself, and all gear and sails weighed, should be in a dry condition. If this is not possible every effort should be made to dry the items as much as possible, and then the measurer should apply a correction for the weight of the remaining water.
- All "normal" and "reasonably sized" sheets and lines used for sailing are to be included, if always carried.
- Paddles are to be included, if always carried.
- Other items, if always carried, will be included, or a fraction of the weight thereof included, in the WS measurement at the discretion of the measurer, who will also decide what is "normal" and "reasonably sized"
- A maximum of 10kg of corrector weights, in accordance to the class rules if applicable, may be used to bring the weight up to the WS.

D.3 AL : Maximum Overall Length

The horizontal distance between the forwardmost point on the hull proper, to the aftmost point on the hull proper (normal rudder fittings to be excluded).

D.4 WL : Maximum Waterline Length (before Jan 1st 2007)

To be measured with the boat at sailing weight WS plus crew weight WC. For transom sterned boats, the added weight WC will be distributed until both transoms just touch the water. Other boats will be measured with the weight distributed so that the waterline is parallel to the sailing weight waterline. WL only applies to boat designs established before 1st January 2007.

D.5 CM : Maximum Authorized Mainsail Area

Maximum mainsail area allowed by the class rules or, in default, registered by the builder. CM includes spars if mast rotates (World Sailing measurement rules and instructions).

D.6 VLM : Maximium Vertical projection of the Luff of the Mainsail

To be measured along the aft side of the mast, between two bands. When sailed, the mainsail head shall not be hoisted higher than the bottom of the upper band, and the tack point shall not be downhauled lower than the top of the bottom band. For classes or types which have no requirement in their class rules for a lower black band, the VLM will be measured by hoisting the sail and downhauling it just enough to take out any creases, and then measuring the sail from the top of the headboard to a point on the aft side of the mast which is at right angles to the lowest part of the sail.

D.7 CJ : Maximum authorized Jib Area

Maximum Jib area allowed by the class rules or, in default, registered builder.

D.8 VLJ : Maximum Vertical projection of the Luff of the Jib

To be measured along the forward side of the mast. Where this is time consuming the measurer may use an approximation as follows:

VLJ = LJ x 0.95 (where LJ is the length of the Luff).

D.9 CSPI : Maximum authorized Spinnaker area

Asymetric spinnakers are allowed.

Where the Mid Girth Ration (MGR) is greater than or equal to 75% of the foot length

CSPI = SF x ((SL1 + SL2) / 4) + (SMG - (SF / 2)) x 2/3((SL1 + SL2) / 2)

Where SF = foot; SL1 = luff; SL2 = leech; SMG = half width

Stiffening devices such as headboards and battens are prohibited.

Racing Rules of Sailing RRS 50.4 shall not apply.

Where a spinnaker has an SMG measurement which falls short of 75% of SF, CSPI shall be increased according to the following formula:

CSPI = CSPI x (1 + (0.75 - SMG/SF)/2) ^2))

and any headsail capable of effective use upwind shall be rated as a jib.

D.10 LB : Maximum Length of Centre or Dagger board below the hull.

For the standard dagger board this is the length of the board below the hull. For T Foil this is the combined vertical and horizontal measurements. For curved dagger boards this is the measurement around the external circumference of the board.

D.11 BEAM : Maximum beam of the boat

The maximum width of the boat, including wings, racks, sliding seats or other appendages, excluding those that have no impact on righting moment.

D.12 NUMTRAP : Maximum number of crew on trapeze

The maximum number of crew on trapeze

D.13 B2007 : Rated Length adjustment

Measurers should enter B in this box for designs established before 1st January 2007. The calculation of rated length takes into account the waterline length of older boats (WL) as well as the overall length (AL).

D.14 SMS : Shape of Mainsails

A pinhead mainsail is one where the horizontal length of the headboard does not exceed 15cms and where the leech of the sail falls away at an angle exceeding 55 degrees. A square top mainsail is any mainsail that doesn't qualify as a pinhead. A deck-sweeper mainsail is one whose foot extends to the trampoline (Note: this definition is to be refined for 2020. There is no specific deck-sweeper penalty in 2019.

D.15 SH : Sinking Hull adjustment

Measurers should only apply the Sinking Hull adjustment to deep V hulls such as those on the Hobie 14 and Hobie 16.

D.16 LF : Lift Generating Foils adjustment

Where in the opinion of the measurer the main foils are curved with constant radius or otherwise designed to generate lift to enable the boat to skim the surface of the water, then an additional penalty of 1.5% shall be added to the Board Correction Factor (BC).

If in addition to curved main boards there are fins on the rudders, then the additional penalty shall be increased to 2%.

Where in the opinion of the measurer the main foils are designed to enable the boat to fly above the water then the additional penalty shall be 4%.

E. RACING RESULTS

E.1 Corrected time

The racing results are calculated by dividing the sailing time by the rating (or time dividing factor) to obtain corrected time.

E.2 One-design classes and subgroups

As mentioned in the preamble, National Authorities or organisers may consider separate arrangements or rankings with one-design or level rating classes or subgroups present in sufficient numbers.

E.3 Non-production or experimental boats

Non-production or experimental boats may be ranked apart.

E.4 Boats sailing under provisional rating

Boats sailing under provisional rating may be ranked apart.

E.5 Foiling boats

Foiling boats may be ranked apart.

F. ATTRIBUTION

F.1 Competence

Ratings are assigned by World Sailing, according to the report of the measurer officially recognised by World Sailing or a National Authority.

F.2 Existing types

For existing types which comply with the production boat qualifications, classes and builders shall register each type a standard form giving the data mentioned at paragraph C.2. World Sailing will assign for each a rating which will be valid from the first of January each year.

F.3 Approval of a new type

To get a rating for a new type, a class or builder shall register a standard form giving the data mentioned in paragraph C.2., so that World Sailing can compute a provisional rating.

World Sailing will send the class or builder measurement forms in sufficient number.

As soon as the conditions required to be considered as a production boat are completed (see paragraph B.1.1.), World Sailing may publish a list of updates which become effective on the date of issue unless otherwise stated.

G. VALIDITY

G.1 Issue

Each year, after the November meeting of World Sailing, it will issue a list of ratings which will be valid from the 1st of January of the following year, unless otherwise prescribed by World Sailing or a National Authority.

During the year, World Sailing may publish lists of updates which will become effective at the date of issue unless otherwise stated.

G.2 Builders liability

It is the builder's or his representative's inescapable responsibility to ensure that his hulls, spars, sails, foils and equipment comply with the class rules and these rules at the time of delivery and that alterations to the product are registered with World Sailing before being produced.

G.3 Adjustments

When dimensions of a design are found to differ substantially form the original measurements, World Sailing can decide to alter the original rating to a more penalising one.

Deviation from the maximum and minimum dimensions in one or other direction from the data given on the official lists will never lead to a change to a less penalising rating.

If a class has a rule change or any development which may influence the SCHRS rating then its rating is to be recalculated on the new basis and the number published as appropriate.

G.4 Provisional ratings

Provisional ratings are assigned by World Sailing (see paragraph E.3.).

H. CONTROL

H.1 Inspection or measurement during a regatta

A race committee or a National Authority has the right to conduct an inspection or a measurement during a regatta to check the compliance with the class rules and with these rules.

H.2 Identification marks

Catamarans of recognised classes or registered types shall carry identification marks, indicating the type of catamaran on hulls and sails.

H.3 Responsibility of the owner or his representative

It is the owner's or his representative's inescapable responsibility to ensure that his hulls, spars, sails, foils and equipment comply with the rules of the class in which he enters and these rules at all times, and that alterations, replacements or repairs to the hulls, spars, sails, foils and equipment do not contravene the class rules and these rules and are reported in the measurement form.

New or altered sails shall be measured by a measurer who shall mark the sail near the tack. If the measurements exceed those on the measurement certificate or the class rules then a new certificate is required.

It is the owner's or his representative's responsibility to ensure that their boat conforms to the current rating certificate.

H.4 Rule compliance

In case of a measurement dispute in respect of hulls, spars, foils, sails, battens, type of fittings or equipment and the placing of the same if controlled by these regulations, the following procedures shall be adopted:

- A sample of ten boats of the same class shall be taken at random and measured by the same identical techniques.
- The dimensions of the disputed boat shall be equal to, or between the maximum and minimum dimensions obtained from the ten sample boats.
- If the protested boat is outside these dimensions, the matter, together with any relevant information shall be referred to the chief measurer of the National Authority under whose jurisdiction the race takes place, who shall give a ruling.

H.5 Responsibility of the measurer

A measurer shall not measure hulls, spars, sails, foils or equipment built by himself, or in which he is an interested party or has a vested interest.