

OFFSHORE MULTIHULL RATING (OMR) SPECIFICATION

1 PREAMBLE

A method for successfully handicapping a wide range of multihulls has been developed by Multihull Yacht Club Queensland (MYCQ). This method is known as the Offshore Multihull Rating (OMR). The OMR is used in all MYCQ events alongside or in place of a conventional Performance Handicap System (PHS) or Performance Correction Factor (PCF). The OMR formulae use the measured physical properties of a multihull to derive the rating, a rating which then remains fixed as long as the underlying physical properties of the vessel remain fixed. Hence the rating will remain constant whether the multihull is sailed poorly or well in races. The rating therefore aims to quantify the performance potential of the vessel rather than of those who sail it, and to present this performance potential in a way that can be compared equitably with other multihulls and hence to effectively provide a set of handicaps for races.

The OMR was first developed and used by MYCQ in February 1997 and while the formulae and definitions have evolved over time, the underlying principles of the system have remained the same. The application of the system is described fully in this specification. As the name implies, the OMR is most relevant for vessels which are designed to be capable of being sailed offshore rather than for off the beach type vessels.

The OMR in itself has nothing to do with a vessel's structural integrity or safety to race. Any safety rules and regulations pertaining to races where OMR is used are governed by Australian Sailing and a valid OMR rating for a vessel in no way indicates that the vessel is compliant with any required rules, regulations or safety category audits.

The OMR is an open system, where all calculation steps and formulae are openly available to all. In this way interested parties can test in the spreadsheets the impact of modifying parameters on different vessels to understand the impact on the OMR of the vessel and hence to allow informed optimisation of their vessel under the rating.

Current OMR Versions: (As at March 2023)

Spreadsheet: OMR Version 9

Specification: OMR Specification 2023

2 ACKNOWLEDGEMENT

This rule is a development of the Texel Rule, which was initiated in Holland. MYCQ gratefully acknowledges the development work of Nico Boon and the KNWV. (Royal Dutch Watersport Association).

3 ADMINISTRATION

3.1 AUTHORITY

MYCQ has the authority for the administration and development of the OMR.

MYCQ (ABN: 97 324 509 351) is based at the Manly Boat Harbour in greater Brisbane. The club postal address is P.O. Box 178, Wynnum, Queensland, 4178. The club website is www.mycq.org.au and the email address for any correspondence about the OMR system is omr@mycq.org.au

Only electronic ratings issued by MYCQ and appearing on its website register, or ready for uploading by the OMR Rating Officer, will be accepted in MYCQ events.

3.2 DEVELOPMENT

This is a development rule. MYCQ reserves the right to alter or amend the rules, formulae or interpretations as it sees fit, without notice. Any significant alterations will be communicated via the MYCQ website.

3.3 INTERPRETATION

The MYCQ Management Committee will appoint an OMR Committee, who together shall be the impartial arbiter of these rules. The OMR Committee shall interpret any part of the text, or sailing innovation in accordance with the spirit of the rule, to ensure fair sailing for all race competitors.

3.4 MEASURERS

All of the measurements used to define the OMR for a vessel should be undertaken by an MYCQ approved measurer (**MYCQ Measurer**). Current MYCQ Measurers are listed along with contact details on the MYCQ website.

Where it is impossible or impractical for an MYCQ Measurer to undertake vessel measurements then an exemption can be sought from the OMR Rating Officer provided that:

- The exemption only applies to vessels being measured in locations where an approved MYCQ Measurer cannot readily attend, i.e. overseas or remote interstate locations.
- The loadcell(s) used for weighing is(are) certified and that a copy of the certification is provided.
- An independent observer (not one of the vessel's owners or crew) be present and that this observer is able to validate that the measurement processes used were as described in these OMR Specifications.
- That all measurements of vessel and sails are recorded on the current MYCQ forms (available on the mycq.org.au website) and that the completed forms are sent by email to the OMR Ratings Officer for entry.
- Vessels measured in this way will have a notation in the OMR spreadsheet to this effect, and may need validation of some or all measurements by an MYCQ Measurer prior to competing in an MYCQ organised event.

In this specification reference to a “Measurer” means the MYCQ Measurer, or where an exemption has been granted under this Section 3.4, the independent person who verifies the vessel’s measurements.

3.5 OWNER’S RESPONSIBILITIES

Throughout these specifications, reference is made to the “Owner” – this is taken to mean either the vessel owner or their authorised representative who is present at the time of measurement. It is the responsibility of the Owner to do the following:

1. To prepare the vessel, sails and equipment for measuring;
2. To ensure that they are the holder of a current rating;
3. To ensure that the vessel’s measurements agree with the published online rating; and
4. To ensure that during races the yacht is equipped in accordance with the prescriptions of the rating.

A failure to do so may mean that the vessel is disqualified from or otherwise penalised for any race for which the vessel is not properly equipped.

The safety of the yacht during measurement, weighing and lifting is solely the responsibility of the Owner and they should be satisfied with the lifting and supporting arrangements and should ensure that the vessels insurance covers it while being lifted. If the Owner is not satisfied with any aspect of the weighing process, they must tell the Measurer and stop the weighing procedure.

The Owner shall be present when measurements are taken, and shall check and sign off on all forms supplied by the Measurer.

3.6 RATINGS

An OMR rating shall be issued by the OMR Rating Officer and shall remain current unless a change is made to any parameter applicable to the rating. A full re-weighing and measuring is mandatory should any changes be made to the structure of the vessel or its rig.

A current rating must be available before a yacht’s entry in an OMR event will be accepted. A yacht shall have only one current valid rating and therefore only one rating will be valid for the duration of any regatta.

A race committee has the right to do spot checks of any vessel before, during or after an event to ensure it conforms to the OMR rating.

3.7 FEES

The following fees may be charged by MYCQ to aid in administering the system and to cover the cost of purchasing, maintaining, calibrating and certifying the weighing and measuring equipment.

Measurement Fee: A measurement fee of \$80 will be charged any time a vessel needs to be weighed or all sails measured. MYCQ members receive the first weighing and measuring of any vessel free of charge. Subsequent reweighing or remeasuring will incur the measurement fee. Measurement of a single sail will incur a fee of \$20.

Other Costs of Measurement: An Owner will be responsible for any other costs of measurement including slipway charges, crane hire and reasonable charges for the approved measurer such as travel costs, meal costs or accommodation costs. It is recommended that Owners take advantage of, or organise, set measurement days where these costs can be shared by a

number of vessels or where costs may be partially or fully subsidised by MYCQ or the club organising a particular race or regatta. Any such cost sharing arrangements need to be negotiated and agreed by all parties for each occurrence.

Payment of all fees is the responsibility of the Owner and ratings will not be issued until all fees and charges are paid. Prior to weighing and measuring, the vessel must be ready in all respects. If not ready, another appointment will be necessary and additional charges may apply.

3.8 USE BY OTHER CLUBS

Other clubs around the world are now using OMR, this use is subject to the agreement of MYCQ and MYCQ retains the sole right to modify the formulae and algorithms used.

Each club providing OMR rating measurements or data for on-line listing must ensure clear identification of the origin of the data, measurement forms and inventory listings, complete with the yacht owner's and approved measurer's signatures. Before accepting a copy of a rating certificate issued by another club, the MYCQ Rating Officer must validate the copy by contacting the relevant official of the issuing club.

3.9 DIVISIONS IN OMR RACES

While race divisions are set and managed by the race officers or the organising club, the strong recommendation from MYCQ is that for races where OMR is being used as the handicapping system, divisions be decided based on the vessel typeform rather than by arbitrary OMR cutoffs. For example, a fleet that is large enough should be split into divisions for bridgedeck multihulls, trailerable multihulls and high performance multihulls (generally racing orientated vessels with high OMR ratings and limited or no accommodation).

3.10 SUPPORTING INFORMATION

These specifications contain the majority of the information required to understand and apply the OMR system. Also on the MYCQ website is the current OMR Spreadsheet with all vessel ratings and data and all of the required inventory and sail measurement forms.

4 ABBREVIATIONS AND UNITS OF MEASUREMENT

4.1 UNITS OF MEASUREMENT.

All dimensions are given and recorded in meters to two decimal places, square meters and kilograms.

4.2 ABBREVIATIONS

The following abbreviations are used.

AOC	Aft overhang component
ARG	Aspect ratio genoa
ARM	Aspect ratio mainsail
BOA	Beam overall
CWA	Crew Weight Allowance
FOC	Forward overhang component
LF	Factor applied to Rated Length

LOA	Length overall, hull
LOAA	Length overall, ama (i.e. the length of float of a trimaran if it is longer than the main hull)
LPG	Perpendicular from clew to luff of genoa
LPM	Perpendicular from tack to longest side of triangle contained by the head, tack and clew of the main
MAM	Measured area of rotating mast
MSAD	Measured sail area drifter
MSAG	Measured sail area genoa
MSAM	Measured sail area mainsail
MSAS	Measured sail area staysail
MSASc	Measured sail area screacher
MSASp	Measured sail area spinnaker
NC	Number of Crew
OMR	Offshore Multihull Rating
RL	Rated length
RSA	Total rated sail area
RSAD	Rated sail area drifter
RSAG	Rated sail area genoa
RSAM	Rated sail area mainsail
RSAMz	Rated sail area mizzen
RSAS	Rated sail area staysail
RSASc	Rated sail area screacher
RSASp	Rated sail area spinnaker
RSAUSc	Rated sail area upwind screacher
RW	Rated Weight
TCW	Total Crew Weight
VLM	Vertical length overall of the mainsail
WCD	Declared total weight of crew in normal fair weather clothing
WE	Weight of removable equipment declared
WM	Weight of vessel and all equipment
WP	Weight Penalty

Note: the calculations shown use Microsoft Excel spread sheet terminology and formulae. For example, an * means multiplication and ^ means raised to the power of the following calculation or number. BODMAS guidelines apply. The calculations shown in this document are at times simplified – the full excel calculations can be viewed in the current OMR Ratings spreadsheet.

5 HULL MEASUREMENT

Measurements are taken from the hull or deck surface at the fore and aft extremities whether they fall above or below the waterline. Bulb bows shall be included. Extensions or fittings such as prodders, anchor rollers, rub rails, rudders etc. are not included. All equipment shall be in its normal position as when racing. No persons shall be aboard.

1. Measure the length overall of the longest hull (LOA or LOAA).
2. If, when the vessel is in racing trim in preparation for weighing, the forward extremity of the LOA overhangs the true waterline, mark a position on the stem 2.5% of LOA above the true waterline (HCE).
3. If the stern extremity of LOA overhangs the true waterline, mark a position on the stern 2.5% of LOA above the true waterline (HCE).
4. Measure the distance from the forward extremity of LOA to the forward extremity of the hull at or below HCE. This is the FOC.
5. Measure the distance from the aft extremity of LOA to the aft extremity of the hull at or below HCE. This is the AOC.
6. Rated length $RL = LOA - (FOC + AOC)$.

7. If the LOAA of a trimaran is equal to, or greater than the central hull LOA then $RL = LOAA$.
8. Measure the beam overall (BOA) of the vessel from the widest extremities at the waterline. This measurement is for potential future use. Measure using plumb bobs suspended from each hull.

As the length of the vessel is an aspect which is generally measured only for a new rating and then not repeated, it is critical that this measurement is correct. For a new rating the vessel length **must** be measured twice, ideally by separate Measurers but at least by the Measurer and then separately by the Owner. The two measurements should be recorded separately to ensure that there is alignment.

6 WEIGHT

6.1 PREPARATION FOR WEIGHING

Prior to weighing, the Owner must complete all of the following checks and ensure that the vessel is in a safe environment. The vessel must be tidy so that all areas are accessible for inspection:

1. All equipment shall be stowed in the location where it is normally kept while racing.
2. An inventory shall be completed by the Owner of all moveable equipment and its location. This inventory shall be provided to the measurer at the time of measurement for checking of each item. Inventory forms are available from MYCQ Measurers or the MYCQ website.
3. The Owner may elect to carry whatever equipment or fittings they want, (unless otherwise prescribed in these specifications) so long as all equipment is inventoried and remains on the vessel while racing. The necessary safety equipment for the category of race being sailed (except any stipulated fuel and water) should be on board and this category should be nominated on the inventory form.
4. The inventory will be signed off by both the Measurer and the Owner and this will form part of the official documentation for the vessel's OMR. A signed copy must be carried on board when racing and made accessible to race officials. The signed copy kept aboard may be a digital copy.
5. The vessel shall be dry with bilges, watertight compartments, lockers, beams and floats checked to ensure that they are free from water. All items on board for weighing must be dry, including sails, ropes, sheets, cushions and furnishings.
6. Water tanks and fuel tanks shall be empty or pressed up. If pressed up, the calculated weight of their contents shall be subtracted from the measured weight, (WM). Portable toilets, or waste holding tanks where carried, shall be empty.
7. The vessel's weight will not include the crew, the crew's personal kit, or consumables such as food and water.
8. The area for weighing is to be flat and on stable ground. The trolley or apparatus that the vessel is to be weighed on must be suitable to take the weight and load distribution.

6.2 WE WEIGHT

WE or "Extra Weight" refers to the measured and declared weights of items that are removable. These are items that are weighed separately and can be removed or added for different events (usually to allow for changes in the safety category). They must be declared prior to an event so that the OMR Data Input Officer can amend the rating.

WE might include items such as life rafts, dinghies, auxiliary outboards, extra anchors, additional safety equipment and additional sails not always carried. Items that may be expected to be WE should be weighed separately and each weight listed on the inventory form. As part of the entry procedure for each race the Owner should declare the WE items being carried, and

the relevant weights will be taken from the vessel's measurement form and entered into the OMR spreadsheet, thus changing the vessel's rating for that race or regatta.

Note that the measured weight of the vessel, WM, must not include any of the WE items, WE adds to WM in the calculation of the Rated Weight, RW.

The Owner must ensure that any WE items included in the calculation of a vessels rating for any race or regatta are carried on the vessel, failure to do so may result in a disqualification.

6.3 WEIGHING PROCEDURE

There are two methods acceptable to weigh a yacht for OMR after 1 July 2019. However, vessels with a valid rating provided prior to this date can retain the current declared weight for the period of validity.

6.3.1 VESSELS LESS THAN FIVE TONNES

For vessels expected to weigh less than five tonnes the MYCQ single load cell should be used. The load cell should be fixed in-line with the lifting crane's cable. An alternative certified and checked load cell can be used if necessary. Basic crane or travel lift scales are not accurate enough and will not be recognised.

6.3.2 VESSELS GREATER THAN FIVE TONNES

The single load cell method described above can be used – if the weight is within the capacity of the load cell. An alternative method to a single load is for the Owner to set the vessel up on a trolley or trailer in such a way as to allow the MYCQ three load cells to be inserted to take the full weight of the vessel and trolley/trailer. The 3 load cell locations should take the form of a triangle with the cells positioned as far apart from each other as practical (on the extremities of the trolley structure) to ensure stability and to get the most accurate read. The load cells should be inserted by jacking up the trolley, using spacer blocks as necessary and inserting the cells under the trolley. Once the vessel and trolley has been weighed the vessel is then launched and the trolley weighed in the same manner to calculate the trolley weight to be deducted from the gross weight.

6.3.3 USE OF MYCQ LOAD CELLS

To help facilitate weighing and to ensure that as much as possible all vessels are weighed using the same equipment, MYCQ will make available the single point load cell and the 3 point load cell system to a single nominated regional representatives who shall be responsible for the cost of transporting the cells to and from the weighing location, including the cost of insurances required and will be responsible for the load cells while in their possession. The load cells are delicate and need to be transported with care, cleaned up and dried after use and returned promptly to MYCQ. If the load cells are returned in poor condition and MYCQ needs to recalibrate them, this cost will be charged to the regional association or club that borrowed the cells.

6.4 WEIGHT PENALTY

Any vessel where the official weight is older than ten years will have a weight penalty (**WP**) automatically applied where $WP = -15\%$ of the last measured weight. This replaces the prior practice where vessels with weights older than ten years were deemed to have an invalid rating and unable to compete in OMR races. It is then in the best interest of the Owner to have the vessel reweighed and remeasured if necessary to allow this WP to be removed.

6.5 CREW WEIGHT

Prior to each race or regatta, the crew number (NC) and the total weight of the all of the crew members in normal fair weather clothing (WCD) shall be declared to the OMR Rating Officer. A nominal weight of 4 kg per crew member is added to the declared weight **in the spreadsheet formulae** as a crew gear provision ($NC * 4 \text{ kg}$).

$$\text{The Total Crew Weight (TCW)} = \text{WCD} + \text{NC} * 4$$

The whole premise of OMR is that adding weight to a vessel will see it go slower. Some light high powered vessels see the opposite, adding additional crew weight in some conditions allows them to go faster while at the same time reducing the OMR rating. The use of a crew weight allowance (CWA) assists in normalising this aspect to reduce the ability for vessels that are lighter than might be typical for their length to make up for this by adding additional crew and using the crew weight as movable ballast to stabilise the vessel at the same time as benefitting from a reduction in their rating.

For vessels with RL of 6.7 m and smaller a crew weight of up to 30 % of the vessel weight is allowed, for vessels with RL of 12.2 m or larger up to 10 % of the vessel weight is allowed as crew weight. Between these lengths the allowance varies linearly. The crew weight actually applied is capped at this allowance. Note that the crew weight allowance is not intended to be an indication of the number or weight of crew required to safely sail a vessel or a recommendation in any way as to what weight of people a vessel requires, it is intended as a way to to mathematically correct for anomalies that may otherwise be seen in the rating formulae.

For a regatta of multiple races the crew weight carried may be varied during the regatta as long as the total declared weight (WCD) doesn't fall by more than 2.5 %. If crew changes are expected during a regatta then the lowest WCD expected should be declared for the full regatta. Spot checks on WCD can be requested by a racing committee at any time prior to, during or after a race or regatta.

6.6 RATED WEIGHT

A vessels rated weight, $RW = WM + WP + WE + \text{MAX}(TCW, CWA)$.

7 SAIL MEASUREMENT

The sail areas that go into the OMR are generally the largest sail of each type. E.g. the largest spinnaker, largest mainsail, largest headsail etc. If more than one screacher is carried, then the largest and the smallest screacher must be measured. All spinnakers must be measured to ensure that they all meet the criteria of a spinnaker and that the largest area is identified.

A genoa is defined as a sail that is attached to or uses the forestay to provide luff tension. Screachers and spinnakers are defined as loose luffed sails that are mounted forward of the forestay, they may or may not include a luff cable Note that if these sails have the ability to carry load in the luff enabling the "normal" forestay to be disconnected, then the luff of these sails is now classed as the forestay meaning that they become (and should be measured as) the genoa. The determinant for whether a sail is measured as a screacher or a spinnaker is the ratio of the sail mid girth measurement to the foot measurement. Sails where this ratio is $\leq 75\%$ class as a screacher and sails where this ratio is $>75\%$ class as a spinnaker.

To measure sails:

1. Sails shall be laid out flat ready for measurement.
2. The measurer shall mark each measured sail near the tack with their name and the date of measurement.

3. Measurement shall be undertaken upon appointment only and preferably on designated measuring days to minimise the time provided by volunteers assisting MYCQ.
4. Sails can be measured by sailmakers.
5. A Measurer or sailmaker should not measure the sails of their own vessel.

The true area of each sail is to be measured as accurately as practicable. Although parameters and formulae for measurement are given for conventional sails, these procedures shall not restrict the Measurer from using alternative means to obtain an accurate area for any sail which is an unusual shape and is deemed to require a different measuring technique. The Measurer shall record the method and parameters used together with the actual measurements of such sails. Any doubts shall be referred to the OMR Rating Officer for a final decision.

Guideline drawings and notes for each sail type are shown in the Appendix along with the detailed calculations that make up the rated sail areas for the OMR.

7.1 MAINSAILS

All mainsails are presumed to be full battened mainsails. For sails without full length battens, the MSAM is reduced by 6%. A sail shall not be considered full battened if the sum of the lengths of the battens does not exceed E and the length of the top batten does not exceed 30% of E.

For vessels with a mizzen or more than one mainsail in fore and aft configuration, the MSAM shall be the area of the largest of the mizzen or mainsail plus 50% of the area of each additional mizzen or mainsail.

For vessels carrying two mains in parallel, the second main shall be rated at $0.8 \times \text{RSA}$.

7.2 JIBS AND GENOAS

The largest sail not otherwise defined set forward of the foremast shall be measured as a genoa.

7.3 STAYSAILS

A staysail is a headsail **carried at the same time as a genoa**, which is flown between the forestay and the main mast. If a sail rigged on an inner stay is only ever used as the solitary headsail and is smaller than the genoa or other headsail, then it does not need to be separately measured and declared as a staysail (for example a dedicated storm jib that is never used in conjunction with another headsail).

For clarification – a staysail can be flown in combination with a screacher or spinnaker without the need for measurement and added rating – it is only if the staysail is intended to be flown at the same time as the genoa that measurement is needed.

A staysail, its area and rated sail area shall be calculated in the same manner as a genoa.

7.4 DRIFTERS

A drifter is a lightweight headsail constructed of nylon sailcloth of not more than 1.5 US ounces per square yard (64 g/m^2). It shall be measured (MSAD) in the same manner as a genoa. Lightweight headsails of other materials shall be measured as genoas.

Rated sail area drifter shall be calculated as follows: $RSAD = 0.3((MSAD)-RSAG)$

7.5 SPINNAKERS

A spinnaker is a lightweight sail with a mid-girth equal to or exceeding 75% of its foot measured at the mid-point of luff and leech.

The measured area of the spinnaker shall not be less than the following:

- The measured area of the genoa.
- The measured area of the screacher.
- $0.36 * RSAM$.

7.6 SCREACHERS

A screacher is a lightweight sail without battens that is not attached to and flown forward of the fixed forestay with a mid girth measured at the mid-point of luff and leech that is less than 75% of the foot. It shall be measured, $MSASc$, in the same manner as a spinnaker.

If the measured area of the screacher is less than the measured area of the genoa or less than $0.36*RSAM$ then it will not contribute to the rating.

If the screacher is the largest downwind sail then the spinnaker area will not contribute to the rating.

7.7 UPWIND SCREACHERS

A screacher with a midgirth less than 52 % of the foot is termed an “upwind screacher”. It shall be measured in the same way as a screacher. For vessels carrying more than one screacher, the largest and smallest screachers must be measured. If the smallest (or only) screacher classifies as an upwind screacher then a component of its area will be added to the upwind sail area of the vessel depending on the utility or effectiveness of the sail as an upwind screacher. An upwind screacher with a midgirth of 47 % of the foot will be deemed as having a utility of 100, while an upwind screacher with midgirth of 52 % will be deemed as having a utility of 0. The utility is intended to represent the proportion of time that the sail may be able to be used effectively as an upwind screacher depending on wind strengths and race conditions. Below 47 % midgirth the utility is extrapolated linearly to a maximum of 150.

7.8 RATED SAIL AREA

The rated sail area of the downwind sails are determined based on the sail configuration which can be one of four types:

1. Mainsail and Genoa / Jib only
2. Mainsail and Genoa / Jib and Screacher only
3. Mainsail and Genoa Jib and Spinnaker only
4. Mainsail and Genoa / Jib and Screacher and Spinnaker

The appropriate downwind sail areas of these sails is then added to the upwind mainsail and genoa with further additions made as required for an upwind screacher, a staysail, drifter, mizzen or second main as applicable. The full formulae for calculating the overall rated sail area (**RSA**) are detailed in Appendix 1.

8 DAGGER / CENTRE BOARDS

All vessels are presumed to have an effective centreboard, daggerboards or fixed keel system. Vessels deemed not to have such an effective centreboard, daggerboards or keel system by the rating officer shall have their OMR decreased by a factor of 0.98. Vessels that are fitted with a keel or fin which cannot be retracted when sailing shall have their OMR decreased by a factor of 0.995.

A vessel with a pivoting centreboard where the underwater case opening remains open when the centreboard is deployed and has no means of improving water flow with devices such as flaps shall have their OMR decreased by a factor of 0.99.

The Measurer shall decide whether such an allowance is applicable and shall make a record accordingly on the measurement form. Any doubt shall be referred to the OMR Rating Officer for a final decision.

9 PROPELLER CORRECTIONS

All vessels are presumed to have either no propellers, or retractable leg systems. Vessels with propellers remaining in the water while racing shall have their OMR decreased in accordance with the following table.

- One folding or feathering propeller 0.995.
- One fixed propeller 0.975.
- Two folding or feathering propellers 0.99.
- Two fixed propellers 0.9625.

The OMR Rating Officer may apply an appropriate factor for propellers which are considered to be intended to or apparently provide a rating advantage.

Any vessel having more than one special adjustment, propellers or centreboards shall have the product of each individual adjustment applied to the OMR. For example, a vessel with a fixed propeller and no effective centreboard, the factor would be $0.975 * 0.98$.

10 RATING CALCULATION

To calculate the OMR the following algorithm is used:

$$\text{OMR} = (\text{Drag/Lift Factors}) * 0.93 * (\text{Rated Length}) ^ (\text{Length Factor}) * (\text{Rated Sail Area}) ^ 0.4 / (\text{Rated Weight} ^ 0.325)$$

11 TIME CORRECTION FACTOR

The OMR Time Correction Factor is provided rounded to three decimal places.

Corrected time = Elapsed time * OMR

[Appendices showing the correct methods to measure sails follow.](#)

MAINSAIL AND MIZZEN MEASUREMENT

The measurer shall record the following.

- B** The sum of the lengths of all of the battens (if the sail is not fully battened).
- Tb** The length of the top batten (if the sail is not fully battened).
- P** The length of the luff from tack to head AB.
- Pr** The depth of the chord, or round of the luff to the vertical P.
- E** The length of the foot from tack to clew BC.
- Er** The depth of the chord or round of the foot to the horizontal E.
- ML1** The distance from the head of the mainsail at the luff, to the clew of the mainsail AC.
- ML2** The distance from the outer, or leech end of HB to the clew DC.
- HB** The width of the head of the sail at the headboard or square head or parabolic head of the sail measured from ML1 and perpendicular to ML1 to the leech of the sail.
- RDM** The roach depth of the main measured perpendicular to ML2.
- LPM** The perpendicular measured from line ML1 to the tack.
- MC** The circumference of a mast at the boom connection in cases where the mast rotates.

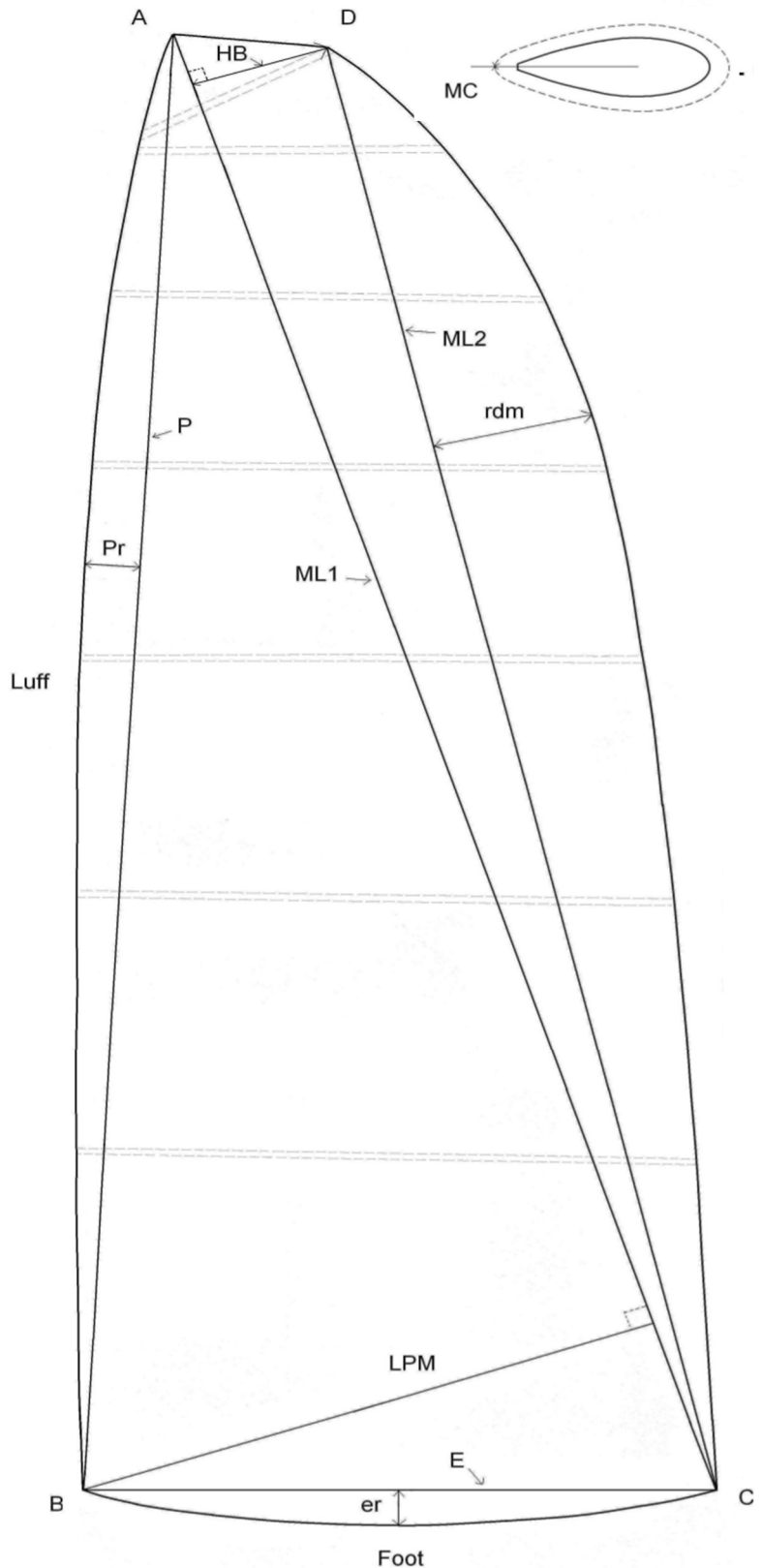
The sail area of the mainsail, is calculated as follows.

$$MSAM = 0.5(ML1 * LPM) + 0.5(ML1 * HB) + 0.66(P * Pr) + 0.66(ML2 * RDM) + 0.66(E * Er)$$

The rated sail area mainsail for fixed mast vessels shall be $RSAM = MSAM$.

The rated sail area mainsail with rotating mast shall be calculated by rating the main and mast area as a unit as follows.

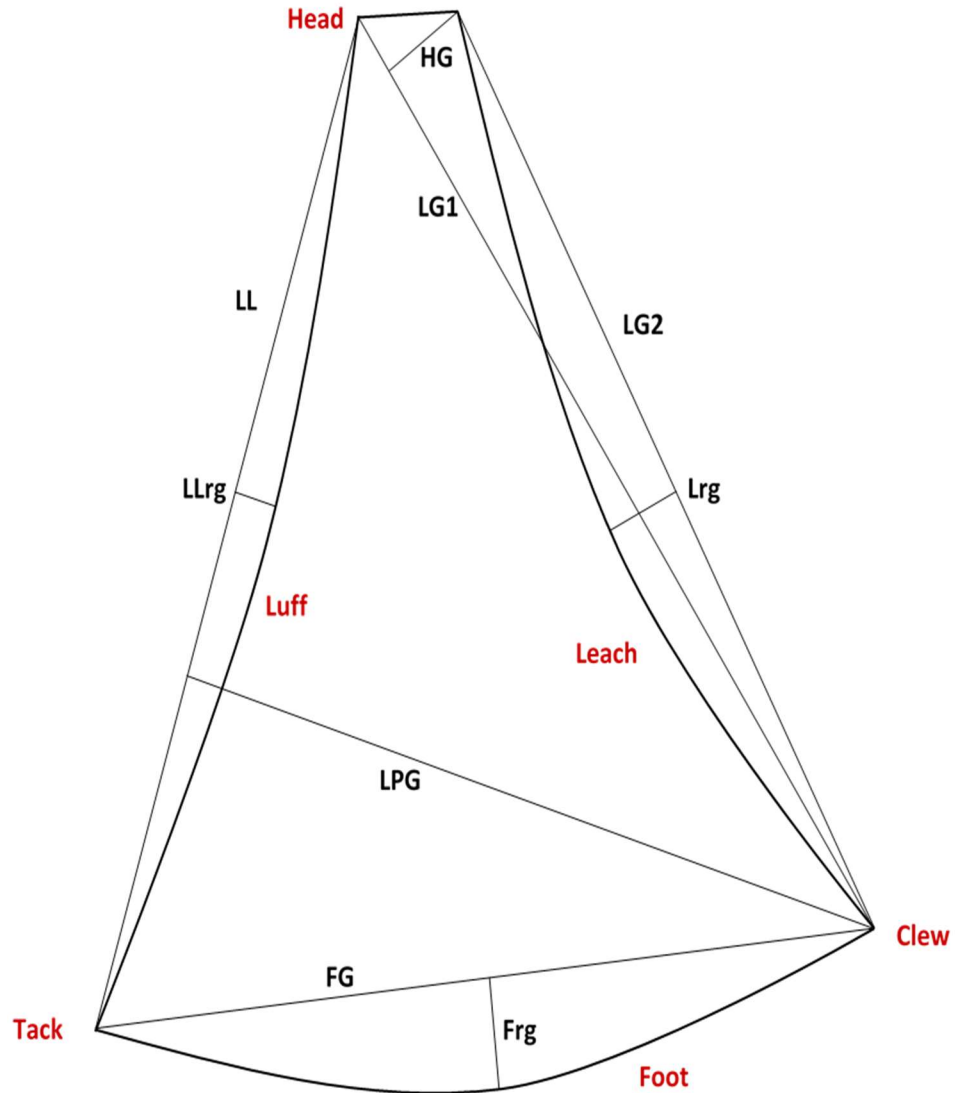
$$RSAM = (\text{Windward rating}) 0.65 * (MSAM + MAM) + (\text{Offwind rating}) 0.35 * (MSAM + MAM)$$



JIB AND GENOA MEASUREMENT

The measurer shall record the following.

- LL** The luff length of the genoa.
- LLrg** The luff round (+) or hollow (-) of the genoa measured from LL.
- FG** The foot of the genoa.
- Frg** The foot round (+) or hollow (-) of the genoa measured from FG.
- LG1** The distance from the head to the clew of the genoa.
- LG2** The distance from the widest point of a quadrilateral genoa other than the head to the clew.
- HG** The perpendicular distance from the widest point of a quadrilateral other than the clew to LG1.
- Lrg** The leech round (+) or hollow (-) of the genoa measured from LG2.
- LPG** The luff perpendicular of the genoa measured from LL to the clew.



The area of a genoa shall be calculated as follows.

$$MSAG = 0.5(LL * LPG) + 0.5(LG1 * HG) + 0.66(LL * LLrg) + 0.66 * (LG2 * Lrg) + 0.66 * (FG * Frg)$$

The rated sail area of a genoa shall be calculated as follows: $RSAG = MSAG$

SPINNAKER MEASUREMENT

The measurer shall record the following for the largest spinnaker.

SL1 - The longest luff of a spinnaker, whether it be symmetrical or not, from tack to head along the edge.

SL2 - The length of the second luff or leech of the spinnaker measured along the edge.

SF - The length of the foot of the spinnaker measured along the edge.

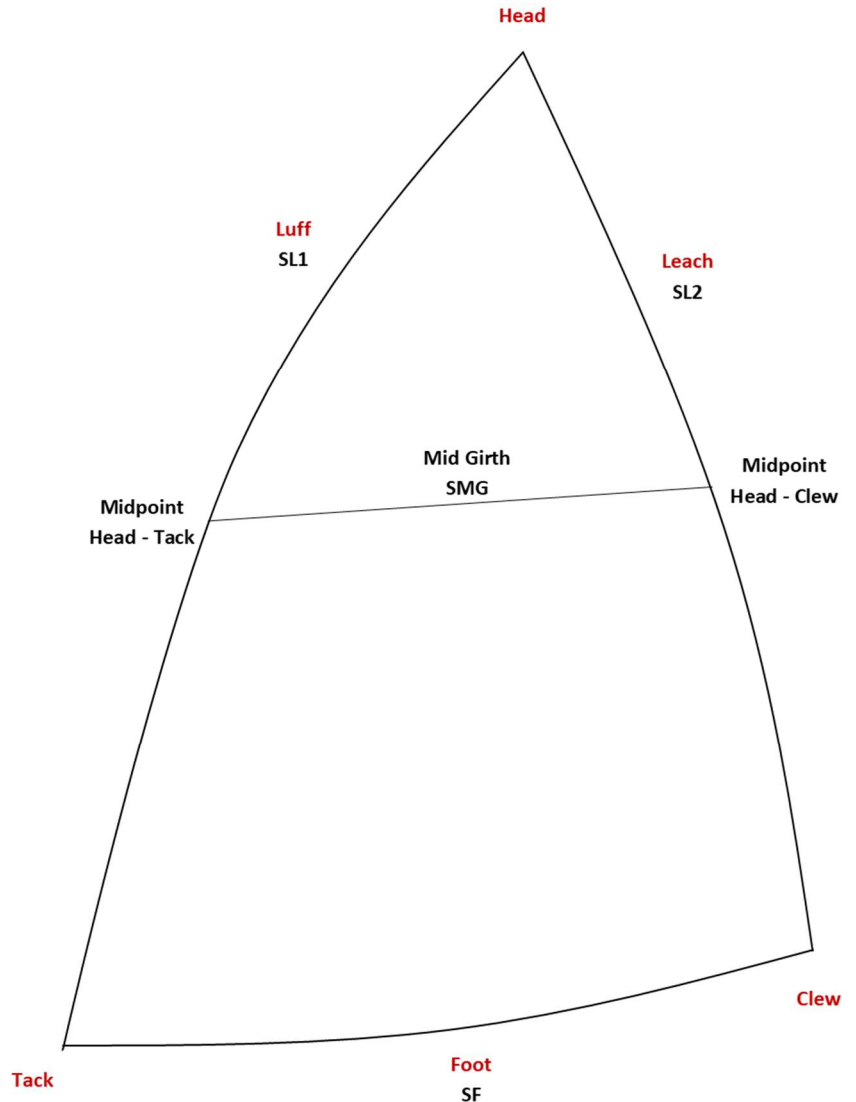
SMG- The mid girth of the spinnaker measured between the midpoint of SL1 and SL2.

SL1, SL2 and SF should be measured by stretching the sail tight from corner to corner. If “round” is still present when the sail is tight then the correct measurement is around the sail edge.

The sail area of a spinnaker shall be calculated as follows:

$$MSASp = SF*(SL1+SL2)/4 + (SMG-SF/2)*(SL1+SL2) / 3$$

Whether the sail is measured as a Screacher or Spinnaker depends on the mid girth – as per section 7.



SCREACHER MEASUREMENT

A screacher shall be measured, MSASc, in the same manner as a spinnaker.

The measured area of the screacher shall not be less than the measured area of the genoa.

If the screacher is the largest downwind sail then the spinnaker measurement will not contribute to the rating.

If MSASc is less than 0.36*RSAM, then the screacher will be deemed ineffective and the RSASc will be zero.

If otherwise satisfying the conditions of a screacher, and having a smaller measured area than the largest downwind spinnaker, then the rated sail area of the screacher is (RSASc) = 0.07*MSASc – RSAG.

SAIL CONFIGURATION

The Rated Sail Area, RSA = RSA(Main) + RSA(Genoa) + RSA(Offwind Sails) + RSA(Upwind Screacher) + RSA(Staysail) + RSA(Drifter) + RSA(Mizzen) + RSA(Second Main).

The four major sail configurations that define the RSA(Offwind Sails) are as follows:

MAINSAIL, GENOA AND SPINNAKER ONLY

If there is no screacher but valid spinnaker, then the calculation shall be as follows.

$$\text{RSA(Offwind Sails, MGSp)} = (0.3 * (\text{RSASp} - \text{RSAG})), \text{ where RSASp} = \text{MSASp}.$$

MAINSAIL, GENOA AND SCREACHER ONLY

If a valid screacher is used but not a valid spinnaker, then the following calculation shall be used.

$$\text{RSA(Offwind Sails, MGSc)} = 0.35 * (\text{RSASc} - \text{RSAG}), \text{ where RSASc} = \text{MSASc}.$$

MAINSAIL, GENOA, SPINNAKER AND SCREACHER.

If a valid screacher and a valid spinnaker are both used, then the following calculation shall be used:

$$\text{RSA(Offwind Sails, MGSpSc)} = 0.28 * (\text{RSASp} - \text{RSAG}) + 0.07 * (\text{MSASc} - \text{RSAG})$$

MAINSAIL AND GENOA ONLY

A vessel carrying no downwind sails will attract a downwind premium on its rated sail area in the RSA algorithm equal to 120% of the rated working sail area treated as a de facto spinnaker. Substituting (RSAM + RSAG) as the area of the spinnaker in the equation for the Mainsail, Genoa and Spinnaker Only equation above gives:

$$\text{RSA(Offwind Sails, MG)} = (1.2 * (0.3 * (\text{RSAM} + \text{RSAG}) - \text{RSAG})) \text{ so } \text{RSA(Offwind Sails, MG)} = 0.36 * \text{RSAM}$$

UPWIND SCREACHER

Where the only screacher, or the smallest screacher if more than one screacher is carried, has a midgirth less than 52 % of the foot then it is classified as an upwind screacher with a component of sail area added to the upwind vessel configuration as follows:

$$\text{Rated Area Upwind Screacher} = 0.25 \times (\text{Utility of Upwind Screacher} / 100) * (\text{MSA Upwind Screacher} - \text{RSAG})$$