

Sigma 33 OOD Class Measurement Rules

1 Object

These Rules, Specifications and the Approved Plans are intended to ensure that Sigma 33 One Design Class yachts are as nearly alike as possible as regards:-

- i) Hull and deck shape and weight
- ii) Shape and weight of keel and rudder
- iii) Shape and area of sail plan
- iv) Size and weight of spars and rigging
- v) Weight and distribution of accommodation layout
- vi) Specification and weight of engine, stern-gear, batteries and other machinery Any other matter which may influence the speed or reduce the weight of the yacht
- vii) The yacht and her equipment shall comply with the current Class as interpreted by the Class Association. No Class Rule or Interpretation may contravene the provisions of the current rating system. No alternatives are allowed except as specified in these Rules.

2 Protection of One Design

- 2.1 The administering authority for the Class shall be the Sigma 33 OOD Class Association, which may co-operate with such National or International Authority as will best promote the management and popularity of the Class.
- 2.2 Copyrights of the Sigma 33 design shall remain the property of David Thomas unless otherwise specifically assigned.
- 2.3 Sole rights to build the Sigma 33 shall remain with Northshore Yachts Limited unless otherwise specifically assigned or licensed.
- 2.4 Hull, deck and rudder construction shall be of reinforced plastics in accordance with the lines, construction and general arrangement plans and specifications.
- 2.5 Production moulds for hull, deck and rudder shall be made from GRP plugs only obtainable from the master moulds held by Northshore Yachts Ltd. The casting pattern for the fin keel shall be taken from the master plug held by Irons Brothers.
- 2.6 Hull and deck lay up and stiffening shall be strictly to the specification designed to ensure similarity in shape, strength and weight distribution.
- 2.7 Hull and deck shall be permanently joined, with the hull in its mould, so that the sheerline, profile and all girths, depths and dimensions that affect the hull shape shall be as shown on the lines plan.
- 2.8 In order to qualify for one design status, the yachts shall be put in measurement trim as defined below which shall be equivalent to the FFM (Freeboard Forward Measurement) of not more than 1094mm and FAM (Freeboard Aft Measurement) of not less than 924mm and not more than 945mm. These measurements are taken from points where a 45 degree tangent touches the sheerline to the surface of the water. Measurements shall be taken on both sides of the yacht and averaged to produce the freeboard measurements. FFM measured 634mm aft from the stem. FAM measured aft where the transom meets the sheerline.
Measurement trim is achieved as follows:-
 - a) The yacht shall float upright and free of mooring or anchor effects. No person shall be on board during measurement.
 - b) The yacht must be rigged ready for sailing with sheets and guys stowed aft of the mast. The mainsail shall be furled on the boom and all remaining sails stowed on the cabin sole aft of the mast.
 - c) All mattresses, cushions and bedding shall be stowed on their normal bunks and all navigational and cooking appliances shall be in their normal stowage. Batteries, anchors and chain shall be secured in position as described in 15.
 - d) No clothing food or stores shall be on board.
 - e) Fresh water tanks shall be empty.
 - f) Liferaft shall not be on board during measurement.
Sufficient fuel shall be on board to allow the yacht to proceed under power.
- 2.9 The current Approved Class Sailmaker shall be Elvstrom Sobstad and only sails made the Class Sailmaker are permitted. Changes in the Approved Class Sailmaker shall be authorised only by the Sigma 33 OOD Class Association which may delegate this responsibility to the Committee.

- 2.10 The current Approved Class Sparmaker is Kemp Masts and only masts, booms and spinnaker booms manufactured by the Class Sparmaker are permitted. Changes in the Approved Class Sparmaker shall be authorised only by the Sigma 33 OOD Class Association which may delegate this responsibility to the Committee.
- 2.11 If it is considered that there has been any attempt to depart from the One Design or these Rules in any particular, or from the spirit of these Rules, in order to gain performance advantage, the Committee of the Class Association has the right to invalidate the yacht's Class Certificate from the time the attempt was made until such time as any deviations have been rectified.

3. Measurement and Certificates

IRC Measurement & Certificates

- 3.1 The Measurement Authority shall be the Royal Ocean Racing Club (RORC). Measurers shall be appointed by the Measurement Authority. Changes in the Measurement shall be authorised by the Sigma 33 OOD Class Association which may delegate this responsibility to the Committee.
- 3.2 The Measurers shall:
- i) inspect and measure yachts under construction at the builder's premises
 - ii) inspect and measure sails
 - iii) inspect and measure spars
 - iv) check each boat afloat in measurement trim (Rule 2.8) (when required).
- 3.3 Sails and spars when inspected and found to conform to these Rules shall be marked with the measurer's official stamp; only those so marked shall be used.
- 3.4
- i) On application by the owner and after payment of the due fees to the Measurement Authority, the Measurement Authority having received satisfactory reports from the measurer(s), shall issue a One-Design Rating Certificate for the One-Design Rating currently applicable to the Sigma 33 Class and stating that the yacht complies with the Sigma 33 OOD Class Rules.
 - ii) Such certificates shall remain valid until December 31 in the year of issue of the certificate or change of ownership whichever first occurs.
 - iii) Certificates may be revalidated for a further year (or until change of ownership) on receipt from the owner of a certificate that all sails and spars are duly marked and that no alterations have been made to the boat.
 - iv) The Class Association may require a boat to be checked in measurement trim during any One Design event.
 - v) On change of ownership, a boat shall be inspected by a Measurer and checked afloat in measurement trim before issue of a certificate to the new owner.
- 3.5 The fees payable in connection with measurement and certification shall be agreed from time to time by the Committee of the Association with the Measurement Authority.
- 3.6 **Class Administered One Design Certification**
- i) The Class Association shall issue a Sigma 33 OOD Certificate to those boats that have previously held a valid IRC OOD Certificate in the current ownership.
 - ii) On application by the owner and after payment of the appropriate fee, accompanied by a copy of a previous Sigma 33 OOD IRC Certificate, in the name of the current owner and a statement that the yacht fully complies with all Class Rules, the Class Association shall issue an OOD Certificate.
 - iii) The Class issued Sigma 33 OOD Certificate is valid for the duration of the current ownership of the yacht.
 - iv) The Class Association may require individual yachts to be checked for any local, regional or national event.
 - v) The Class issued Sigma 33 OOD Certificate is issued subject to full compliance with all Class Association Rules and may be withdrawn at the discretion of the Class Association Committee in the eventuality of blatant or continued non-compliance.
 - vi) Boats which have had their Sigma33 OOD Certificate withdrawn must first obtain a new, current IRC Certificate, before applying to the Class Association for a new Class issued OOD Certificate.
 - vii) The fee payable in connection with issuing or replacing a certificate shall be agreed by the committee from time to time.

4 Hull and Deck (Including Cockpit)

- 4.1 The hull and deck construction shall be in accordance with the Approved Plan and Specification.
- 4.2 The minimum empty weight of the yacht shall be 4200kg in measurement trim as defined by current RORC rules for weighting purposes for IRC Rating. Any yacht measured below this weight shall be required to carry corrector weights to bring it up to the minimum.
- 4.3 Spare number.
- 4.4 The cockpit grating must not be removed and must be kept in place while racing.
- 4.5 The removal of moulding marks and blemishes from the hull is permitted provided that the hull is not in any way altered so as to depart from the original shape. Repairs to the hull shall be made so as to return the affected areas to the original shape. Extensive repairs to a yacht must be reported to the Class Association which may require the yacht to be re-measured. The hull below the waterline including keel and rudder may be covered in protective coatings which must not affect the original shape of these areas.
- 4.6 All surfaces of the hull below the waterline including keel and rudder must be coated in antifouling paint at all times whilst racing. The antifouling paint shall be kept in good repair so that bare patches are not allowed to develop.

5 Keel Casting

- 5.1 The fin keel shall be of cast iron, manufactured according to the Master Plug and Mould, bolted in position as shown in the Lines Plan
- 5.2 The weight of the fin keel casting shall be 1505/1575kg.
- 5.3 The removal of foundry blemishes is permitted but the keel shall not be ground, built up or in any way altered so that it departs from standard shape. The keel may be covered with preservative coatings and antifouling. Measurement templates may be applied to the keel to ensure compliance with standards.

6 Rudder

- 6.1 The rudder blade shall be of GRP made from moulds taken from the Master Plug.
- 6.2 The rudder stock shall be made from solid stainless steel rod not less than 45mm diameter.
- 6.3 The design and construction of tiller and tiller extension is optional. Wheel steering is not permitted.
- 6.4 The removal of moulding marks and blemishes from the rudder is permitted provided that the rudder profile or section is not in any way altered so as to depart from the standard shape. Measurement templates may be applied to ensure compliance with this Rule.
- 6.5 The minimum weight of the rudder and stock shall not be less than 40 kg.

7 Mast

- 7.1 The mast shall be of 90% aluminium alloy extrusion with integral full groove. The mast shall be made from constant section extrusion with no tapering allowed.
- 7.2 The sectional weight of the mast shall be not less than 4.71 kg/metre.
- 7.3 Sectional dimensions of the mast shall be 107/117 mm athwartships and 136/156 fore and aft including the luff groove.
- 7.4 The forestay will attach to the forestay plate moulded into the hull in such a way that the horizontal distance between the forestay pin and the forward face of the hull moulding is 237/257 mm.
- 7.5 The straight line distance between the forestay pin and the forward surface of the mast extrusion at its lowest point shall be 3624/3644 mm.
- 7.6 Bands of contrasting colour shall be painted on the mast as follows:-
 - i) with its upper edge 985/1005 mm above the mast plinth in the deck moulding on which the mast step is fastened.
 - ii) with its lower edge 11570/11590 mm above the upper edge of the band defined in (i).
- 7.7 No alterations to the mast are permitted except for approved electronic devices, navigation lights, wind vanes, pre-feeders and like additions. No alterations to the main or genoa halyard exits are permitted, nor any alteration which may change the moment of inertia of the spar. The spinnaker halyard may exit from the port side of the mast. A slot may be cut with its centre point 2380/2420 mm above the bottom of the mast extrusion and its forward edge 25/35 mm forward of the jiggling groove on the side of the mast. If this slot is cut a standard Kemp Masts slot plate shall be fitted but no other jamming or cleating devices shall be fitted to the mast.
- 7.8 A steaming light as originally supplied or similar, shall be fitted to the forward face of the mast in accordance with IRPCS.

8 Mast Rigging

- 8.1 A combined chainplate fitting shall be attached port and starboard. The upper shrouds shall be attached by a rigging screw to the aft pin and the lower shrouds by a rigging screw to the forward pin. The forestay shall be attached by a rigging screw to the forestay chainplate.
- 8.2 The forestay and shrouds shall be of 1 x 19 stainless steel wire rope of not less than 7 mm diameter. The wire strands shall be of round section, each strand being of the same diameter. Alternatively Dyform material of the same dimensions may be used.
- 8.3 The forestay shall be attached to the mast so that the centreline of the wire would intersect the foreside of the mast at a point not more than 9914 mm above the band as defined in 7.6 (i).
- 8.4 Any forestay luff foil is permitted which the Committee authorises under these Rules and which will not affect the Standard Rating. In particular, any forestay luff foil is permitted which measures not more than 35 mm at right angles to its longitudinal axis. The forestay, Rule 8.2, must bear the forestay loads.
- 8.5 The upper shrouds shall be attached to the mast so that the centreline of the wire would intersect the side of the mast 9487/9511 mm above the band defined in 7.6 (i).
- 8.6 The lower shrouds shall be attached to the mast so that the centreline of the wire would intersect the side of the mast at a point 4157/4181 mm above the band defined in 7.6 (i)
- 8.7 One topmast backstay of not less than 5mm 1 x 19 stainless steel wire rope shall be attached to the masthead and to a lever tensioning system at the transom.
- 8.8 The spreaders shall be of fixed type angled aft 22.5 degrees to the athwartships plane of the mast and attached at a point 4427/4451 mm above the band as defined in 7.6(i). The distance between shrouds at the spreader ends shall be 1985/2015 mm.
- 8.9 The spinnaker shall not be hoisted higher than the forestay intersection point as defined in 8.3. Only one synthetic rope spinnaker halyard shall be fitted.
- 8.10 Two jib halyards are permitted, which may be of wire or synthetic rope, and each shall intersect the mast below the forestay intersection point as defined in 8.3.
- 8.11 Tension in the rigging may only be adjusted by means of the rigging screws on shrouds and forestay. Running backstays are prohibited.
- 8.12 In order to vary the basic mast rake and/or prebend, the backstay lower strop attached to the shorter arm of the lever system may be replaced by an alternative strop of equivalent strength and construction (5 mm 1 x 19). The maximum length of this strop shall not exceed 780 mm. The backstay upper span shall not be altered from the specified 3300mm in length. Pre-race tuning may be achieved by using the rigging screw provided at the base of the main backstay wire. Whilst racing, top mast backstay adjustment shall only be achieved by manual adjustment of a rope purchase or tackle driving the long arm of the standard Kemp Masts backstay lever as originally supplied. The lower strop and purchase system shall be secured separately to an eye bolt on each side of the upper face of the transom. Purchase systems may be of any power ratio and may be double ended. Maximum straight line shortening distance of the topmast backstay system shall not exceed 110 mm measured between the lower terminals of the single part upper stay and the centre of the upper face of the rudder post.

9 Main Boom

- 9.1 The main boom shall be of 90% aluminium alloy constant section extrusion incorporating an integral mainsail foot groove.
- 9.2 Sectional dimensions shall be 143 mm in depth including foot groove and 76 mm in width. Sectional weight shall be not less than 3.3 kg/metre.
- 9.3 A band of contrasting colour shall be painted on the boom with its forward edge not more than 3935 mm from the after face of the mast extrusion.
- 9.4 Tapered booms and lightening holes are prohibited.
- 9.5 The main boom shall be equipped with two reefing lines and flattening reef outhaul.
- 9.6 Roller reefing systems are not permitted.

10 Spinnaker Boom

- 10.1 No part of the spinnaker boom including fittings shall be capable of extending more than 3580 mm at right angles from the centreline of the mast when the spinnaker boom is attached to the mast.
- 10.2 The point of attachment for the spinnaker pole to the mast shall be not more than 1369 mm above the band defined in 7.6 (i).
- 10.3 Only one aluminium alloy spinnaker boom shall be used. Reaching struts are prohibited.
- 10.4 The forward end of the spinnaker pole, when stowed, shall not be abaft the after end of the anchor well.

- 10.5 The spinnaker pole shall be the standard extrusion supplied by the Approved Class Sparmaker with end fittings as originally or currently supplied. Upward opening trigger latch type fittings are not permitted.

11 Sails

- 11.1 The sails shall be measured in accordance with the current rating rule.
- 11.2 The number of sails that shall be carried is one each of the following: mainsail, 150% genoa, 135% genoa, working jib, storm jib, light spinnaker, heavy spinnaker. If an owner wishes to cruise after the finish of an offshore race, he may carry old fore and aft sails for this purpose provided that they are not used during the race.
- 11.3 Where applicable these sails shall have dimensions and shall be set in a manner which does not incur penalties under the current Class rating rule.
- 11.4 All sails shall be of woven material except the mainsail and the 150% and 135% genoas, which may be constructed as a laminate to the patented Genesis system. Dimensions in metres are the same for both forms of construction.

Minimum cloth weights are given for woven sails. Film and thread specifications are given for Genesis sails.

Genesis Construction

Base Film: Genesis pre laminate. Lamination: 2 x 0.012 mm PET. Seam Size: 50 mm

2 x 400 x 400 Denier polyester scrim.

Thread Type and Denier: 1800 Denier polyester laid by computer – 1 x thread per cm. Seam

Construction: Bonded epoxy thread to thread with scrim insert.

Corner reinforcement: P.E.T. 0.05 mm with load orientated fibres bonded by heat and pressure set polyester adhesive.

Sail	Luff		Leech		Foot		Min cloth weight (U.S. oz)
	Max.	Min	Max.	Min	Max.	Min	(Dacron Sails only)
Mainsail	11.95	-	12.35	-	3.935	-	8.0
	(Three reefs shall be fitted parallel to the foot at 1.12m, 2.52m and 4.80m from centre of tack cringle)						
150% genoa	11.20	11.10	10.80	10.70	5.60	5.5	5.5
	(Longest perpendicular luff to clew max, 5.31, min 5.21)						
Sail	Luff		Leech		Foot		Min cloth weight (U.S. oz)
	Max.	Min	Max.	Min	Max.	Min	(Dacron Sails only)
135% genoa	10.52	10.42	9.76	9.66	4.88	4.78	6.5
Working jib	9.60	9.50	8.08	7.98	3.66	3.56	6.5
	Luff length		Width				
Light spinnaker	Max.	Min	Max.	Min			
	11.20	11.10	6.44	6.35	0.8		
Heavy spinnaker	11.10	10.90	5.90	5.80	1.5		

- 11.5 The mainsail mid-girth measurement (MGM) shall not exceed 2590 mm and the upper girth measurement (MGU) shall not exceed 1540 mm, measured in accordance with the current rating rule.
- 11.6 The mainsail shall have four battens. The upper batten may be full length and the other three battens shall not exceed 1300 mm.
- 11.7 The mainsail headboard width shall not exceed 152 mm.
- 11.8 The mainsail may be fitted with luff and leech Cunningham holes and may have a 'soft foot' with cloth lighter than 8.0 oz on the shell
- 11.9 The mainsail may only be set within the dimensions governed by the bands specified in 7.6 (i), 7.6 (ii) and 9.3.
- 11.10 Loose footed mainsails are permitted.
- 11.11 The 150% genoa and/or the main may have a window or windows not exceeding a combined total area of 1.5 sqm.
- 11.12 The 135% genoa may have one reef with the luff cringle 765 mm/665 mm from the tack cringle and the leech cringle 1140 mm/1040 mm from the clew cringle.
- 11.13 Only sails made by the Approved Class Sailmaker and carrying the measurement stamp of the Measurement Authority are permitted. Sails may not be re-cut or altered in any particular except by the

- Approved Class Sailmaker. Repairs may be undertaken by anyone provided that they do not affect the shape or size of any sail in any way.
- 11.14 The Sigma symbol in red shall be affixed to both sides of the mainsail above the sail numbers and shall be of a height of 600 mm/620 mm.
- 11.15 Changes to sail wardrobe. Any proposed change to the number of sails as defined in 11.2 or the design of sails as defined in 11.4 shall not be implemented until 21 calendar months have elapsed following notification that the Committee is investigating the proposal. Small changes in the construction of the sails may be introduced as the Committee sees fit but not less than six months notice.

12 Deck Gear

- 12.1 Yachts shall carry two halyard winches (two speed); two primary sheet winches (two speed) on the cockpit winch turrets; two secondary sheet winches (two speed); and one reefing winch on the mast and sited below the main boom. All winches are to be of the size and power equivalent to those originally specified. Self tailing devices are permitted.
- 12.2 Single genoa sheeting tracks shall be permanently fixed to the side decks, port and starboard, adjacent to the coachroof. Four genoa sheet fairleads may be fitted (two per side). Ball-bearing or roller-bearing genoa fairleads, on these tracks, are not permitted. Headsails and spinnakers may be sheeted to the aluminium toe rails.
- 12.3 Yachts shall be fitted with bow and stern pulpits of stainless steel, and eight stanchions with double lifelines in compliance with ORC special regulations currently in force.
- 12.4 A mainsheet track shall be fitted to the inset plinth in the cockpit seats. The track shall be straight and shall fit between the cockpit walls. Packing is permitted under the track and its mountings. The packing shall not exceed 30 mm in thickness.
- 12.5 The removable bridge deck moulding shall always be secured in place during races which necessitate the carrying of a liferaft. In all other races, the removable bridge deck must be on board but not necessarily secured in place.
- 12.6 Mainsheet, traveller, kicking strap or vang are optional. Hydraulic, electric or pneumatic actuators are prohibited.
- 12.7 The arrangements of halyards, sheets, guys and control lines, their turning blocks and cleats are optional within the provisions of these Rules.

13 Interior Accommodation

- 13.1 The builder shall at all times maintain close tolerances on position, size and weight of materials used in interior bulkheads, joinery work, cabin sole and lining in an endeavour to produce yachts of the closest weight and strength tolerances within these Rules. The Class Association shall be kept informed of any proposed change in the specification that might affect the weight or weight distribution of the yacht.
- 13.2 All yachts shall have complete interior structure in way of forecabin, saloon, galley, cooker as originally fitted or of equivalent weight having two hob burners, grill and oven, gas bottle or bottles of total weight not less than 12 lb, chart table, WC toilet compartment and saloon table in the original fixed position. No lightening holes shall be cut or drilled.
- 13.3 All yachts shall carry a full set of berth mattresses of minimum thickness 100 mm on their appropriate berths. The half berth mattress to complete the double berth must always be on board, but it does not have to be on the double berth. Between October 1 and April 30, Area fleets when racing in One Design only may request that the Sailing Instructions for the Winter and Spring Series should specify that this rule is suspended.
- 13.4 All yachts shall have completed head, topside and coachroof linings as fitted by the builders.
- 13.5 Two fresh water storage tanks of minimum capacity 180 litres (approx. 40 galls) shall be installed beneath the after ends of the main saloon berths.

14 Engine and Stern Gear

- 14.1 The engine model and location shall be agreed from time to time by the Class Association and Designer. Its weight and weight distribution (whether by using corrector weights or not) shall not change from those of the Volvo Penta MD7A marine diesel engine of minimum weight 166 kg originally fitted.
- 14.2 A propeller and stern gear shall be fitted as in the Approved Plan. The minimum propeller diameter shall be 380 mm, minimum blade width 90 mm and projected propeller hub diameter shall not be less than 60 mm.

- 14.3 The Class Association shall be kept informed of any proposed change in engine specification that might affect weight, position or stern gear dimensions.
- 14.4 A rigid fuel tank of minimum capacity 68 litres (approx. 15 galls) shall be fitted.
- 14.5 A minimum of 20 litres of fuel in the permanent installed tank.

15 Other Equipment

- 15.1 Two anchors, one with a minimum weight of 25 lb (11.34 Kg), and one with a minimum weight of 15 lb (6.80 Kg) and two fathoms (3.66m of 5/16" (8 mm) chain shall be carried. Both anchors and the chain shall be carried in a marked stowage not more than 2750 mm from the stem.
- 15.2 When racing in One Design Class events, a minimum of Offshore Racing Council Special Regulations Category 4 will be complied with, or the category that is specified by race organisers if higher. ORC Offshore Special Regulations can be found on the ISAF website.
- 15.3 Two batteries each weighing a minimum of 29 kg shall be carried in the battery compartment aft of the main saloon bulkhead.
- 15.4 There is no restriction on radio or electronic aids but automatic, mechanical and wind vane devices for steering must not be used within racing unless specifically permitted in the Notice of Race or Sailing Instructions.
- 15.5 Minor modifications to enhance the safety and comfort of the yacht are permitted, subject to approval of the Class Association.
- 15.6 A Marine radio transceiver with masthead antenna and emergency antenna must be on board and in working order.
- 15.7 Each crew member shall have a safety harness and safety line not more than 2m long with a snaphook at each end and conforms to current regulations.

16 One Design Racing

- 16.1 As a condition for the granting of a One-Design Rating, the Officers and Committee have given an undertaking that all yachts of the Class shall adopt it. Yachts may also have a RORC rating which is to be used only in OOD and Handicap Events.
- 16.2 When racing in IRC, the Class crew limit is seven persons. Unless otherwise specified in the sailing instructions, when racing One Design, one additional crew member under the age of fourteen may be carried.

Amended to 6/2006
