

# 1927 UNIVERSAL RULE

FOR MARCONI RIGGED R CLASS SLOOPS  
LAUNCHED AFTER JAN 1, 1925

AS ADOPTED BY

**THE NORTH AMERICAN YACHT RACING UNION**

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WITH APPENDICES ADDED 2009  
AMMENDED TO - SEPTEMBER 15TH 2009

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1	<u>MEASUREMENT RULE</u>		September 15th 2009 page 3
1.1	<u>Rating Formula:</u> Yachts shall be rated according to the following formula:		
	For sloop rigged R class yachts: Measurement = $.18 * L * (SA^{1/2}) / (D^{1/3}) = 20$ feet maximum		
	<i>18% of the product of length, multiplied by the square root of sail area, divided by the cube root of displacement.</i>		
1.2	Measurements shall be made in accordance with the provisions of this rule.		
1.3	<b>Appendices A &amp; B provide additional limitations to those found in rules 1 - 7</b>		
2	<u>LENGTH</u>		
2.1	a	<u>Hull Marks:</u> Before being measured, a yacht must have a “load waterline plane” established and permanently marked at the bow and stern and on each side of the yacht at the point of greatest waterline breadth. The load waterline plane shall be, as nearly as practicable, the plane of flotation when in racing trim. <b>see Appendix B3 - measurement condition</b>	
	b	Yachts must have the extreme points of measurement of the quarter-beam length, corresponding to the established waterline plane, plainly and permanently marked on the hull.	
	c	Each side mark shall consist of two equilateral triangles, whose apices touch at the established plane of flotation and whose bases are parallel to such plane. The total height of each side mark shall one two-hundredth (1/200) of the load waterline length. <b>see Appendix B4 - (side marks may be 2" high)</b>	
	d	The bow and stern marks shall be rectangular marks 6” long, 3” wide on each side of the centreline and ½” in width, the long side in a vertical plane. <b>see Appendix B4 - (optional alternate marks system)</b>	
	e	The quarter-beam marks shall be circular; 1” in diameter, and the centre shall indicate the point of measurement. <b>see Appendix B4 - (optional alternate marks system)</b>	
	f	Marks may be countersunk. All marks shall be standard patterns, approved by the Executive Committee of the Union. <b>see Appendix B4 - (optional alternate marks system)</b>	
	g	When in trim, both under cruising and racing restrictions, the vessel floating on an even keel in water of the usual density, both side marks must be cut by the surface of the water.	
	h	Measurement Afloat: Measurement afloat shall be taken in saltwater of the usual density.	<b>see Appendix B2 - (S.G. = 1.025)</b>
2.2	<u>Load Waterline Plane:</u> This “load waterline plane” is to be the plane from which all calculations are made, including displacement, quarter beam length and draft. When once established, it cannot be changed before the beginning of the next racing season, unless the yacht has undergone extensive alterations in hull. Notice of such alterations must be filed with the Measurer at least two weeks prior to the day of the start of any race in which the yacht may compete.		
2.3	<u>L.W.L.:</u> “Load waterline length” (L.W.L.) is the distance in straight line (after bridging as hereinafter specified) between the farthest point forward and farthest aft in the established plane, and likewise “load waterline breadth” is the extreme breadth in the established plane.		
2.4	<u>Q.B.L.:</u> Quarter beam length (Q.B.L.) shall be measured in a line parallel with the middle fore and aft vertical plane, at a distance from it equal to one-quarter of the load waterline breadth and one-tenth of this breadth above the load waterline plane.		
2.5	<u>L:</u> The length used in calculating the L measurement (L in the formula) shall be the “load waterline length” plus one-half the excess of quarter-beam length over the percentage of the waterline length given by the formula:		
	Percentage % = $100 - (LWL^{1/2})$		
2.6	<u>Concavities:</u> Any concavity in the plane of measurement of the quarter-beam measurement, in either the quarter-beam buttock or the tenth-beam waterline, shall be bridged by a straight line of a length equal to one-third of the greatest waterline beam. The centre of such straight line to which the quarter-beam length shall be measured shall be placed horizontally opposite the point of measurement.		
2.7	Any local concave jog or notch (curved or angular) at the plane of measurement of either end of the load waterline length, shall be bridged by a straight line and the L.W.L. shall be taken to the intersection of such lines with the established load waterline plane. The stem or stern profile lines where they cross the load waterline plane, may be fair and easy curves; but any concavity in the stem line shall be bridged by a straight line equal to one-third (1/3) of the greatest load waterline beam, placed equally above and below the waterline plane. The load waterline (L.W.L.) shall be measured to the intersection of this line with the established load waterline plane.		

3	<u>SAIL AREA</u>		September 15th 2009	page 4
3.1	The Measurer shall make the following measurements, calculate the sail area therefrom in accordance with the following formulae, and the square root of this area shall be the $(SA^{1/2})$ in the rating formula.			
3.2	<u>Boom – B:</u> The length of the boom measured from the afterside of the mast to the outboard end, including fittings or ornamental caps. In case of any device or extension by means of which the outhaul may be increased beyond the end of the spar, the measurement shall be taken to the extreme possible point of out-haul device. <b>see Appendix A5.20 ( foot of mainsail must be attached to the boom)</b>			
3.3	<u>Height of Mainsail - P.:</u> A perpendicular to be measured along the afterside of the mast from the higher of the following points: - the top of the highest sheave in the mast, or the highest juncture of the mast with the eyebolt (centre of eye) or pennant of the highest main halyard block: - to the upper side of the boom when the gooseneck is in its lowest position, which points shall be defined by the upper edge of a black band at least one inch in width. ----- <b>see Appendix A 5.19 - upper black band</b>			
3.4	<u>Rake – R:</u> The horizontal distance from the afterside of the mast, at the upper side of the boom, to a plumb-line suspended from the upper point of measurement of P, when the yacht is floating parallel to the established plane.			
3.5	<u>Formula of mainsail area:</u> The area of the mainsail shall be obtained from the above measurements by the formula: Mainsail area = $\frac{1}{2} \times B \times (P^2 - R^2)^{1/2}$ <b>see Appendix A5.14, A5.15 - limits on mainsail widths</b>			
3.6	<u>Measurements of Headsails – J:</u> The base of J to be measured from the foreside of the mast to the point where the line of the luff of the foremost headsail when extended cuts the bowsprit or deck.			
3.7	<u>Forestay Height: P2:</u> A perpendicular to be measured along the forward side of the mast from the higher of the following points: - the top of the highest sheave in the mast used for headsails or spinnaker, or the highest juncture of the mast with eyebolt (centre of eye) or pennant of a halyard block used for headsails or spinnaker: - to the deck. But in no case shall the upper point of measurement be taken below the point of the intersection of the line of the luff of the foremost headsail, when extended, and the mast. <b>see Appendix A5.7 - ( max P2 height = 78% of max allowed mast ht.)</b>			
3.8	<u>Length of spinnaker boom:</u> The length of the spinnaker boom shall be limited to 40% of the entire base line determined by the sum of B plus J plus the diameter of the mast at the gooseneck. Any excess in the length of the spinnaker boom over the limit above shall be added to the base J of the foretriangle when computing the area of the headsails. The spinnaker boom shall be measured when in position and at right angles to the centreline of the boat from its outboard end to the centre of the mast.			
3.9	<u>Formula for headsails:</u> In all yachts the area of the headsails shall be obtained by multiplying J by P2, dividing the product by 2 and taking 85% of the result. <b>see Appendix A 5.8, A5.9, A5.10 - ( maximum Genoa and Jib foot lengths)</b>			
	Formula: Headsail area = $0.85 \times \frac{1}{2} \times J \times P2$			
3.10	<u>Total Sail Area - SA:</u> Total Sail Area shall be the sum of the mainsail area and the headsail area.			
3.11	<u>Battens:</u> The number of battens in any sail shall be limited to four. Length of battens shall not exceed the following: Upper and lower battens 10 per cent of the B or J respectively plus one foot; intermediate battens 12 per cent of the B or J respectively plus one foot. <b>see Appendix A5.16, A5.17 - ( alternate mainsail batten lengths) and A5.6 - ( battens are not permitted in genoas)</b>			
3.12	<u>Spinnaker Limits:</u> A spinnaker may have a headstick or board not longer than one-twentieth of the length of the spinnaker pole, but not a footyard or more than one sheet, or any other contrivance for extending the sail to other than a triangular shape. <b>see App. A5.11, 5.12, 5.13 spinnaker sizes</b>			
3.13	<u>Jibstay strut:</u> In case a yacht shall carry a forward or jibstay strut, the actual area between the stay and the mast shall be calculated, and 85 per cent. of the excess of such area over that of the foretriangle shall be added in computing the total area for determining the measurement.			
4	<u>DISPLACEMENT</u>			
4.1	<u>Calculation of displacement:</u> D. Displacement of R class yachts shall be obtained by weighing upon scales approve (sic) by the Union.			
4.2	<u>Weight of water:</u> For the purpose of determining a yacht's displacement by weighing, the weight of a cubic foot of water shall be regarded as sixty-four (64) pounds in salt water and sixty-two and four tenths (62.4) pounds in fresh water.			
4.3	When the displacement of a yacht has been properly ascertained, it need not be re-determined except in case of specific protest, or upon notice as provided for in the paragraph under the heading "Load Waterline Plane".			

5	<u>LIMITS AND PENALTIES</u>		September 15th 2009 page 5
5.1		<u>Draft limit:</u> The limit of draft of yachts shall be in feet: Max draft =16% of the LWL + 1.75 ft. Any excess of draft, exclusive of centreboard, as per the above formula, shall be multiplied by 3 and added to the rating measurement.	
5.2		<u>Limit of Displacement factor:</u> There shall be no limit on the actual displacement of yachts, but the cube root of the displacement, D, as used in the measurement formula, shall not exceed: Max D = 20% of the LWL + 0.5.	
5.3		If the actual displacement is smaller than that allowed by the limit, the actual displacement shall be used in computing the measurement; if the actual displacement be greater, then the limiting value of the cube root of D shall be used in computing the measurement.	
5.4		A sloop shall not have more than 82% of its sail area measured abaft the mast.	
5.5		<u>Limit on mainsail height:</u> The height of triangular mainsails shall be limited as follows:	
		The distance from the deck at the after side of the mast to the upper halyard sheave or highest point of attachment of the halyard, shall not exceed the following:	
	a	Maximum height of mainsail = 1.7 times the square root of sail area, plus 5	
	b	Should this limit be exceeded, the excess shall be multiplied by two and added to the perpendicular (P) in computing sail area.	
	c	When a headboard or club is used, the intersection of the projection of the leech with the after side of the mast shall not exceed these limits. <b>see Appendix A5.18- ( headboard size), A5.19 (upper black band on mast)</b>	
5.6		<u>Permanently curved masts:</u> Permanently curved masts are prohibited except in yachts which have been so equipped prior to April 30 1927	
6		<b>SCANTLINGS</b>	
		<u>Scantling Rules:</u> The scantlings of yachts shall conform to the following restrictions: ----- <b>also see Appendix A1, A2 - ( alternate scantling arrangements)</b>	
6.1	a	<u>General Formula:</u> - Sectional Area in square inches, of any frame, deck beam, shelf, clamp, or bilge stringer shall be expressed in terms of the square root of the displacement in cubic feet times a constant.	
	b	The thickness in inches of planking, deck, or house deck shall be expressed in terms of the cube root of the displacement in cubic feet times a constant.	
	c	The displacement shall be that of the yacht as when first measured, and any later increase in the same shall not entail a proportional increase in scantlings.	
6.2	a	<u>Frames:</u> Frames to be white oak. On the basis of 12-inch spacing on centres.	
	b	Minimum Sectional Area, in square inches,	
	c	heels = $(D)^{1/2} \times 0.2$	
	d	heads = $(D)^{1/2} \times 0.12$	
	e	Taper between heels and heads to be straight. The bevel, due to angle of planking, to be allowed from these areas.	
6.3	a	<u>Shelf or Clamp:</u> To be hard pine or white oak or at least its equivalent in weight.	
	b	Minimum Sectional Area in square inches = $(D)^{1/2} \times 0.4$ to run from stem to transom with taper allowed due to necessary bevelling.	
6.4		<u>Bilge Stringer:</u> To be hard pine or at least its equivalent in weight. Minimum Sectional Area in square inches = $(D)^{1/2} \times 0.3$ To extend at least two-thirds the overall length of the yacht and be of full sectional area for at least half its length, allowing taper at ends of a 20 per cent reduction of area.	
6.5	a	<u>Deck Beams:</u> On the basis of 12-inch spacing on centre.	
	b	All beams to be white oak or its equivalent in weight.	
	c	Minimum Sectional Area of Main Beams in square inches = $(D)^{1/2} \times 0.3$	
	d	Minimum Sectional Area of Auxiliary Beams in square inches = $(D)^{1/2} \times 0.2$	
	e	Minimum Sectional Area of Half Beams in square inches = $(D)^{1/2} \times 0.15$	
	f	There must be two Main Beams at the mast, one at the fore end of the cabin house, one (or its equivalent in weight at this height) at the after end of cabin house, and two at each skylight, hatch and companion.	
	g	The Minimum Sectional Area of Main and Auxiliary Beams shall be at the centre of the beam, allowing a taper in molding of 25 per cent. reduction of area at each end.	

		<b>Scantlings con't</b>	<b>September 15th 2009</b>	<b>page 6</b>
<b>6.6</b>	<b>a</b>	<b>Planking:</b> Minimum Thickness in inches = $(D^{1/3}) \times 0.16$ . Minimum Thickness in inches = $(D^{1/3}) \times 0.14$ , if hard pine or at least its equivalent in weight is used.		
	<b>b</b>	If, as in case of double planking, a light wood and a heavy wood make up the total thickness of planking, these formulae shall be applied in direct proportion to the weight of their respective woods.		
<b>6.7</b>	<b>a</b>	<b>Deck:</b> Minimum Thickness in inches = $(D^{1/3}) \times 0.15$		
	<b>b</b>	Minimum thickness of Deck may be reduced by one-eighth inch if canvas covered		
<b>6.8</b>	<b>a</b>	<b>House Deck:</b> Minimum Thickness in inches = $(D^{1/3}) \times 0.13$		
	<b>b</b>	Minimum thickness of House Deck may be reduced by one-eighth inch if canvas covered.		
<b>6.9</b>	<b>a</b>	<b>House Sides and Forward End:</b> To be white oak or its equivalent in weight.		
	<b>b</b>	Minimum Thickness in inches = $(D^{1/3}) \times 0.16$		
<b>7</b>		<b>CABIN HOUSE RESTRICTIONS</b>		
<b>7.1</b>		Cabin house construction of yachts shall conform to the following restrictions:		
	<b>a</b>	Cabin sides must be vertical. Minimum area of top of cabin house shall be 25 square feet.		
	<b>b</b>	Minimum height above the deck of sides and end, including cabin top, shall be 6 1/2 inches.		
	<b>c</b>	Under cabin houses there shall be clear openings in the deck of the same area as the cabin house unobstructed by decking, beams, carlings, etc. This provision shall not apply to yachts whose keels have been laid prior to April 30 1927.		
		<b>APPENDICES</b>	<b>September 15th 2009</b>	
	<b>A</b>	<b>Additions and Limitations to the 1927 Universal Rule</b>		
	<b>B</b>	<b>Measurement Instructions</b>		
	<b>C</b>	<b>Certificate of Measurement</b>		
	<b>D</b>	<b>Identification on Sails - Class Sail Insignia and Number diagram</b>		
	<b>E</b>	<b>Sailmaker's Declaration</b>		
	<b>F</b>	<b>Initial Measurement Process</b>		
	<b>G</b>	<b>Abbreviations</b>		
	<b>H</b>	<b>Technical Committee Appointment and Responsibilities</b>		
		<b>Appendix A - Additions and Limitations to the 1927 Universal Rule</b>		
	<b>A1</b>	<b>Measurement &amp; Scantlings</b>		
	<b>A1.1</b>	Yachts shall measure for rating under the 1927 rule (1927 NAYRU Yearbook) as modified by these rules including appendices.		
	<b>A1.2</b>	All hull and deck structure shall comply with Herreshoff scantlings or equivalent weight or greater based on NAYRU 1927, 1929 or original Herreshoff 1908 scantlings		
	<b>A1.3</b>	Alternative scantling arrangements to those given in rule 6 shall be acceptable provided they comply with Appendix A.		
	<b>A1.4</b>	For hull, deck and deckhouse surfaces; structures having a demonstrated weight/sq foot (panel weight, including framing ) equal to or greater than an equivalent Herreshoff scantling requirement in A 1.2 shall be acceptable.		
	<b>A2</b>	<b>Conformity - Deck, Hull, Keel and Rudder</b>		
	<b>A 2.1</b>	The lines of the hull, keel and rudder shall conform to original the lines for the yacht.		
	<b>A 2.2</b>	Structural layout shall be generally the same as that used in the original R boats of the 1920s.		
	<b>A 2.3</b>	Fastenings and metallic structural elements may be different from the original design provided the overall weight of these items is not less than the original design		
	<b>A 2.4</b>	For wooden elements, the species of wood may be different from the original provided the original overall required scantling weight is maintained as per appendix A 1.2, 1.3 & 1.4		
	<b>A 2.5</b>	Seams may be splined. Modern glues, reinforcements and coatings may be used. Plywood underlayment is allowed in decks.		
	<b>A 2.6</b>	Deck and cabin geometry shall be consistent with that of 1920s R boat layouts		
	<b>A 2.7</b>	If a yacht's original plans cannot be provided the Technical Committee (see Appendix E) may establish conformity to the original 1920s design period with respect to paras. A 2.1, A 2.2 & A 2.6.		
	<b>A3</b>	<b>Equipment limitations</b>		
	<b>A3.1</b>	Yachts shall carry safety gear in compliance with the Federal Government requirements of their particular country		
	<b>A3.2</b>	Permanently installed electronic wind instruments are not permitted		
	<b>A3.3</b>	Instrument displays shall not be mounted on the mast or cabintop.		

	<b>Equipment limitations con't</b>	<b>September 15th 2009</b>	<b>page 7</b>
<b>A3.4</b>	Cabins must be capable of be closed off from the cockpit and deck. Two full length berths, minimum length 6'-0" shall be installed.		
<b>A3.5</b>	An installed toilet is permitted		
<b>A3.6</b>	Electric bilge pumps are permitted		
<b>A3.7</b>	Hydraulic controls shall not be used while racing.		
<b>A3.8</b>	Not more than 6 winches may be installed on the mast, deck, house or below decks - no self-tailing winches are permitted.		
<b>A3.9</b>	The spinnaker tack may be lead to any point on the centreline of the deck forward of forestay landing, the spinnaker may be flown without a pole.		
<b>A3.10</b>	Permitted sail controls: -main, jib & spinnaker halyards, main, jib & spinnaker sheets, spinnaker guys, spinnaker sheet twings, spinnaker tack downhaul, spinnaker pole lift & downhaul, boom vang/preventer, cunningham, main boom downhaul, mainsail outhaul, upper and lower runners, adjustable permanent backstay, adjustable headstay.		
<b>A 3.11</b>	Non-permitted sail controls: – adjustable traveller controls, jib barber hauls of any configuration (single point lead direct to track mounted car only), headsail sheeting cars must be pin stop type – not towed, mast heel may not be moved while racing, headsail furling may not be used while racing, backstay buggy whips, towed spinnaker pole cars - must be fixed ring or pin-stop on track type.		
<b>A4</b>	<b>Spar and Rigging limitations</b>		
<b>A 4.1</b>	The shrouds and forestay shall be made using stranded wire		
<b>A 4.2</b>	Standing rigging, except for any permanent backstay or headstay, shall not be adjusted while racing.		
<b>A 4.3</b>	The materials used for running rigging are optional		
<b>A 4.4</b>	A wooden spinnaker pole shall be carried, a second spinnaker pole of any material may be used.		
<b>A 4.5</b>	Mast and boom shall be wood		
<b>A 4.6</b>	Mast weight: the mast including all fixed fittings but no standing or running rigging shall not weigh less than 145 Lbs.		
<b>A 4.7</b>	The centre of gravity of the mast shall not be less than 17 feet above the lower P2 point.		
<b>A 4.8</b>	Midway between the upper P2 point and the deck the average of the fore & aft and athwartships dimensions of the mast section shall not be less than 5 1/2".		
<b>A 4.9</b>	The athwartships dimensions of masts, which are not round, may not be less than 65% of the corresponding local fore and aft dimension at any point.		
<b>A 4.10</b>	Boom size: the boom (excluding fittings) shall be able to pass through a 6 inch diameter circle.		
<b>A 4.11</b>	Boom shape: the height to width ratio of the boom shall not exceed 2:1		
<b>A5</b>	<b>Sail &amp; Sail plan limitations</b>		
<b>A 5.1</b>	A maximum of 7 sails may be used in any event: 1 Main, 1 Jib, 2 Genoas, 2 large Spinnakers & 1 small Spinnaker.		
<b>A 5.2</b>	All sails shall be built using panelled construction		
<b>A 5.3</b>	Laminated materials shall not be used in the body of any sail		
<b>A 5.4</b>	Sails may be equipped with vision windows of any material		
<b>A 5.5</b>	Grooved luff support devices for headsails are not permitted.		
<b>A 5.6</b>	Battens are not permitted in genoas		
<b>A 5.7</b>	Max P2 = 78% of max allowable mast height - (see rules 3.7 & 5.5)		
<b>A 5.8</b>	The genoa foot measurement shall not exceed 19 feet		
<b>A 5.9</b>	The 1/2 height width of genoas shall not exceed 50% of the foot length		
<b>A 5.10</b>	No jib foot measurement shall not exceed 12 feet		
<b>A 5.11</b>	On any spinnaker, the average of the spinnaker luff and leech measurements ( for both small and large spinnakers) shall not exceed: 37.5 feet		
<b>A 5.12</b>	Max spinnaker 1/2 height width for small spinnakers shall not exceed: 19 feet		
<b>A 5.13</b>	Spinnaker half height widths (line joining mid points of leech & luff) shall not be less than 75% of the foot length		
<b>A 5.14</b>	The maximum half width of the mainsail is 61% of the B measurement		
<b>A 5.15</b>	The maximum three quarter width of the mainsail is 33% of the B measurement		
<b>A 5.16</b>	Upper and lower mainsail battens shall not exceed 65"		
<b>A 5.17</b>	Intermediate mainsail battens (2) shall not exceed 75"		
<b>A 5.18</b>	The top width of the mainsail shall not exceed 6 1/2"		
<b>A 5.19</b>	If the top width of the mainsail ( headboard) exceeds 4" the mast shall be equipped with a 1" wide black band whose lower edge is located 1 1/2 times the actual mainsail top width below the upper P point. The mainsail shall not be hoisted above the lower edge of this band.		
<b>A 5.20</b>	Mainsails shall be connected to the boom with a boltrope or slides, loose footed mainsails are not permitted.		

		All boats shall be weighed and the hull measurements shall be taken, Sailmaker's certifications regarding sail sizes shall be accepted. The measurer shall record all measurements shown on the Certificate of Measurement ( <b>Appendix C</b> ).
<b>B1</b>		<u>General</u> : All measurements shall be taken in decimal feet unless otherwise set out. Hull and spar measurements shall be taken to 2 decimal places. Sail measurements shall be taken to 1 decimal place. Weighing for boat weight shall be rounded to the nearest 20 pounds
<b>B2</b>		Yachts shall be measured afloat in saltwater with a base S.G. of 1.025 - freeboard correction for each 0.005 change in S.G. from 1.025 = 0.005 feet ( Higher S.G. equals greater freeboard).
<b>B3</b>		<u>Measurement Condition</u> : For weighing and for measurement afloat, the yacht shall be in same measurement condition which is as follows:
	<b>a</b>	Fore and aft rigging shall be slack
	<b>b</b>	Mast, boom and wooden spinnaker pole shall be aboard and rigged in their normal upwind sailing positions
	<b>c</b>	The following three sails shall be onboard; mainsail, genoa and spinnaker. The mainsail shall be stowed on the boom. The genoa and spinnaker shall be stowed at the base of the mast. No other sails shall be onboard.
	<b>d</b>	All of the following equipment shall be onboard. No other loose equipment or gear shall be onboard:
	<b>i</b>	One set of all running rigging including winch handles - all stowed in the normal upwind sailing positions
	<b>ii</b>	One anchor and rode with a combined weight of at least of 30 pounds - the location of which shall be noted on the measurement certificate
	<b>iii</b>	A suitable bilge pump
	<b>iv</b>	Internal ballast - if any - the weight and location of which shall be noted on the measurement certificate
	<b>v</b>	Fitted batteries - if any - the weight and location of which shall be noted of the measurement certificate
	<b>vi</b>	Two berth cushions - minimum thickness 4"
	<b>vii</b>	Anchor and rode - minimum total weight 30 pounds.
<b>B4</b>		Optional Alternative Marks: When the marks described in B4 (a,b, c & d) are installed, the marks described in Rule 2.1 (d & e) need not be fitted. Notwithstanding the waterline length of the yacht, the side marks may be 2" high
	<b>a</b>	The measurer shall install #4 Phillips flat head screws in the hull surface within 1" of the sheer, port and starboard, centered on each of the following fore and aft stations: the forward ending of the load waterline without correction for bridging of concavities, the station of greatest waterline breadth, station of maximum draft and the aft end of the load waterline.
	<b>b</b>	The measurer shall install #4 Phillips flat head screws in the hull surface, on the centerline at the fore and aft designed waterline endings NOT corrected for concavity bridging or notch bridging.
	<b>c</b>	The measurer shall install #4 Phillips flat head screws in the hull surface, port and starboard, centered on each of the quarter beam measurement points in both fore and aft locations, all without correction for concavity bridging.
	<b>d</b>	The measurer shall install #4 Phillips flat head screws in the hull surface, port and starboard, on the load waterline plane centered on the point of greatest waterline breadth.
<b>B5</b>		Sails and spars shall be measured in accordance with the ISAF Equipment Rules of Sailing unless otherwise set out in these rules.
<b>B6</b>		Measurement Certificates shall be valid for 2 years from the date of issue.
<b>B7</b>		Re-measurement shall be required:
	<b>a</b>	at the expiration of 2 years from the date of the last certificate
	<b>b</b>	when changes to LWL or the Sail plan are made
	<b>c</b>	in the event of re-measurement, verification of the line of floatation shall be sufficient evidence that displacement, quarter beam length, beam and draft have not changed and do not need to be re-measured.
	<b>d</b>	particular events may require partial or complete measurement

## 1927 UNIVERSAL RULE FOR R CLASS MARCONI SLOOPS

Enter all data on the table to the right

rev. 15th Sep '09

Yacht:		Sail #:		Date measured:	
Year of build:	Designer:			Measured by:(signed)	
Owner:					
Address:					

all measurements in decimal feet except as noted

see Appendix G for the definitions of the Abbreviations marked in **Bold: XXXxxx**

**Beam**

BWLmax	1/4 BWLmax	1/3 BWLmax
BWLsta (feet aft of bow)		1/10 BWLmax

**LWL**

LOA		
fwd overhang OHF		
aft overhang OHA	LWLd	
LWL corrections		
Notch aft		
Concave + Notch fwd	Total LWL corr	rated LWL

**QBL**

QBLport	corr QBLport	QBL %
Concave fwd Pt	corr QBLstbd	rule QBLmax
Concave aft Pt		corr QBLmeas
QBLstbd	corr QBLmeas	QBLexcess / 2
Concave fwd Stbd		rated LWL
Concave aft Stbd		

L for rating

**Draft**

DRsheer	avg	DRrule	draft excess x 3
DRfbdpt		DRmeas	
DRfbdstbd		DRfbdavg	draft penalty DRpen
DRsta (feet aft of bow)			

**Displacement**

S.G.meas.	S.G. correction:	(+/- change in freeboards)
weight lbs Dlbs	allowable Wt. max	measured D
FBDbow	allowable Dmax	measured D <sup>1/3</sup>
FBDaft	allowable Dmax <sup>1/3</sup>	D <sup>1/3r</sup> for rating
Internal ballast wt.lbs.	Internal ballast loc'n	Weight locations are relative to forward side of mast at mast heel: plus = aft, minus = fwd.
Anchor & rode wt.lbs.	Anchor & rode loc'n	
Battery/s weight lbs.	Battery/s location	

**Rig & Sails**

B	MHTrule	MHTpen
P	max mainsail widths	3/4 height
R		1/2 height
BAD	jib batt max	Mainsail area
Mast F&A	(top & bottom)	Headsail area
P2	(int)	Total S.A.
Mainsail top width (max = 0.54 ft = 6 1/2")	MHTexcess	S.A. <sup>1/2</sup>
J	allowable SPL	Pole excess Area
SPL	pole excess	Jib Strut Area
MHTmeas		Excess mast ht. Area
Max jib foot	12.0 max	Corrected S.A.
Max genoa foot	19.0 max	Corrected S.A. <sup>1/2</sup>
Small spin 1/2 width	19.0 max	S.A. <sup>1/2</sup> for rating
Spin. leech, luff avg	37.5 max	

Jib strut deflection

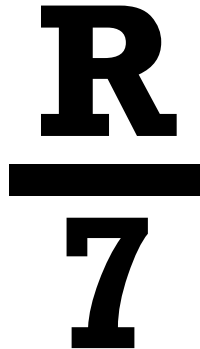
**Rating**

$$R = 0.18 * (L * S.A.^{1/2}) / D^{1/3} = 20.0 \text{ max}$$

**Rating =**

0.000

I have read the R class rules & I am familiar with my responsibilities under the rule. **Signed by owner:**

D 1.1	Sail numbers and Sail insignia shall comply with the ISAF Racing Rules of Sailing unless otherwise set out in this appendix
D 1.2	Required identification: Sail numbers and class insignia are required on the mainsail only.
D 1.3	National letters are optional and if used shall be located below the sail numbers.
D 1.4	The height of both the R class insignia and the sail numbers shall be 15".
D 1.5	The font used for the R class insignia and the sail numbers shall be <b><u>Rockwell bold</u></b> .
D 1.6	Positioning: The R class insignia and the sail numbers shall be positioned as follows:
	(a) Shall be located in the zone described by the following arcs whose centres are at the head point: on the top, an arc of 30% of the mainsail leech length, and on the bottom by an arc of 50% of the mainsail leech length.
	(b) The sail number shall be centered below the class insignia. On each side of the sail, the distance between the lower edge of the class insignia and the top edge of the sail numbers shall be 12".
	(c) The identification shall be placed on both sides of the sail with the starboard side uppermost.
D 1.7	On each side of the sail, the class insignia and the sail number shall be separated by a bar 3" high, 15" long and the same colour as the sail insignia. The bar shall run horizontally and be vertically centered between the insignia and the sail numbers.
	<p>EXAMPLE: ROCKWELL BOLD</p> 

Sail manufacturer: \_\_\_\_\_ loft location: \_\_\_\_\_

Form completed by (PRINT NAME) \_\_\_\_\_

**I declare that I have personally checked the sails described below and have found them to be in compliance with all aspects of the R class rules and the ERS and that the measurements below are complete and accurate.**

Signed: \_\_\_\_\_ - See initials below opposite each measurement

Date: \_\_\_\_\_

Yacht: \_\_\_\_\_ Sail number: \_\_\_\_\_

<b>Mainsails</b>		<b>Sail A</b>	<b>Sail B</b>	<b>Sail C</b>	<b>Initial</b>
Design "B" measurement					
Top width (headboard as per ERS) (max 6 1/2")					
Top batten length (max 65")	P/F				
Upper Int Batten length (max 75")	P/F				
Lower Int Batten length (max 75")	P/F				
Lower Batten length (max 65")	P/F				
1/2 height width as per ERS (max 61% B)	P/F				
3/4 height width as per ERS (max 33% B)	P/F				
Not loose footed	P/F				
Sail numbers and sail insignia are per class rule	P/F				
Paneled sail - no laminates	P/F				
Sail date of manufacture					
Manufacturer's sail I.D. # or invoice #					

<b>Genoas</b>		<b>Sail A</b>	<b>Sail B</b>	<b>Sail C</b>	<b>Initial</b>
Foot length (max 19.0 feet)					
1/2 height width must not exceed 50% of foot	P/F				
Paneled sail - no laminates	P/F				
No battens	P/F				
Sail date of manufacture					
Manufacturer's sail I.D. # or invoice #					

<b>Jib</b>		<b>Sail A</b>	<b>Sail B</b>	<b>Sail C</b>	<b>Initial</b>
Design J measurement					
Foot length (max 12.0 feet)	P/F				
Battens - upper and lower (max 10% of J + 1 foot)	P/F				
Battens - intermediate (max 12% of J + 1 foot)	P/F				
Paneled sail - no laminates	P/F				
Sail date of manufacture					
Manufacturer's sail I.D. # or invoice #					

<b>Spinnakers</b>		<b>Sail A</b>	<b>Sail B</b>	<b>Sail C</b>	<b>Initial</b>
Luff length					
Leech length					
(Average of luff and leech length for any sail must not exceed 37.5 feet)	P/F				
1/2 width ( must not be less than 75% of foot length)	P/F				
Max 1/2 height width for small spinnakers = 19.0 ft.	P/F				
Paneled sail - no laminates	P/F				
Sail date of manufacture					
Manufacturer's sail I.D. # or invoice #					

**In Water**

- |   |  |
|---|--|
| 1 | The boat shall be set up in measurement condition as per rule B3   |
| 2 | Freeboards at transom & bow on centerline shall be measured using the intersection of the stem or transom face with the local deck surface |

**Weighing**

- |   |   |
|---|---|
| 3 | The boat shall be hoisted and weighed in the same measurement condition as used in 1 above. |
|---|---|

**Measurement Ashore**

- |    |  |
|----|--|
| 4  | The boat shall be leveled both athwartships and fore and aft using the freeboards as measured in 1 above.  |
| 5  | The waterline plane shall be marked on the boat at each of the following:  |
| a  | the fore and aft ends of the waterline on the centerline   |
| b  | in the amidships area of the boat, port and starboard in the stations of maximum draft and maximum waterline beam  |
| 6  | The maximum waterline beam station shall be found and the maximum waterline beam shall be recorded and its location fore and aft shall be marked on the sheerline            |
| 7  | The QBL intersections shall be marked as follows:  |
| a  | in the vicinity of the QBL measurement stations, port and starboard, for and aft a waterline plane shall be established 1/10 of BWL above the waterline plane                |
| b  | in the vicinity of the QBL stations a buttock line shall be established 1/4 of BWL from the centerline   |
| 8  | The amount of any QBL concavities shall be recorded in accordance with rule 2.6  |
| 9  | The fore and aft location of the QBL stations shall be marked on the centerline ( Use average of port and starboard  |
| 10 | The LOA shall be measured and the following overhangs shall be recorded: (without correction for hollows or notches see rules 2.6 & 2.7).                                    |
| a  | LWL overhang forward - OHF   |
| b  | LWL overhang aft - OHA   |
| c  | QBL overhang forward ( CL to bow)  |
| d  | QBL overhang aft ( CL to stern)  |
| 11 | The vertical distance from the sheer (P&S) to the point of maximum draft shall be measured and its fore and aft location shall be marked on the sheerline port and starboard |

**Rig measurement**

- |    |  |
|----|--|
| 12 | The length of the boom shall be measured from the back face of the mast to the extreme aft end of the boom - see rule 3.2 If the boom is equipped with a black band at it's after end, the forward side of this band shall be used for the aft point of the B measurement.   |
| 13 | The rake of the mast shall be measured from the back face of the mast to a plumb line hanging from the main halyard - see rule 3.4   |
| 14 | The fore and aft length of the mast shall be measured at the level of the boom - see rule 3.8  |
| 15 | The length of J shall be measured from the front face of the mast to the intersection of the jib luff with the deck - see rule 3.6   |
| 16 | The length of the spinnaker pole shall be measured with the pole in place on the mast from the CL of the mast to the extreme end of the pole with the pole at 90 degrees to the centerline - see rule 3.8  |
| 17 | The height of the boom shall be measured from the deck surface to the top surface of the boom with the boom in its lowest position - see rule 5.5  |
| 18 | The height of the fore triangle shall be measured from the deck surface on the centerline in front of the mast to the point on the mast where the jib luff intersects the mast or, if higher, the point at which the spinnaker halyard intersects the mast when drawn out horizontally. - see rule 3.7, appendix A 5.7 |
| 19 | The mast height is measured from the deck surface adjacent to the mast to the top of the main halyard sheave - see rule 5.5  |
| 20 | The mainsail black band distance is measured from the top of the main halyard sheave to the bottom of the top mainsail black band - not less than 1 1/2 times the mainsail top width - see rule appendix A 5.19  |

**Sail measurement**

21	Sail measurements may be based on sail maker's declarations, if supplied. If the Sailmaker's Declaration is not supplied the sails shall be measured. The required sail measurements are:
22	The mainsail top width is the horizontal width of the top of the mainsail - headboard - see ERS rule
23	The mainsail 1/2 width from the mid point of the leech to the closest point of the luff
24	The mainsail 3/4 width from the 3/4 height on the leech to the closest point on the luff
25	The mainsail intermediate batten length (2) max 65"
26	The mainsail top and bottom batten lengths (2) max 60"
27	The genoa foot length shall not exceed 19.0 feet
28	The jib foot length shall not exceed 12 feet
29	Jib batten lengths - top, bottom & intermediate.
30	The half height width of the genoas must not exceed 50% of the foot length
31	Spinnaker widths at half height must not be less than 75% of the foot length
32	The small spinnaker 1/2 height width shall not exceed 19 feet
33	The average of the luff and leech lengths of each spinnaker must not exceed 37.5 feet

<b>Abbrev.</b>	<b>Rule</b>	<b>Description - see rule for detailed definitions</b>
B	3.2	boom length - mast to end of boom or fore side of black band if present
BAD	3.3	boom height - deck to top of boom with boom in lowest position
BWLmax	2.1(a)	Maximum beam at waterline
BWLsta	2.1(a),(c)	Waterline Beam max station - distance aft of bow
D	4.1, 5.2	Measured Displacement in cu feet (= Weight in pounds (Dlbs) divided by 64).
D <sup>1/3</sup>	4.1	Cube root of measured displacement (D)
D <sup>1/3r</sup>	5.2	Cube root of D for rating - smaller of Dmax or D (measured displacement)
Dlbs	4.1	Actual weight of boat in pounds as weighed.
Dmax	5.2	Maximum allowable displacement in cu feet
Dmax <sup>1/3</sup>	5.3	Cube root of maximum allowable Displacement (Dmax)
DRexcess	5.1	Excess of measured Draft vs allowable draft (DRrule-DRmeas)
DRfbdavg	5.1	Average of freeboards port & starboard at Draft station (DRsta)
DRfbdpt	5.1	freeboard at Draft station - port
DRfbdstbd	5.1	freeboard at Draft station - starboard
DRmeas	5.1	measured max draft
DRpen	5.1	Draft penalty - 3 times excess draft (DRexcess)
DRrule	5.1	Draft maximum allowed by rule
DRsheer	5.1	Max draft point to sheerline avg P & S
DRsta	5.1	Max draft station - distance aft of bow
FBDaft	appendix F 2	Freeboard at stern on centerline
FBDbow	appendix F 2	Freeboard at bow
J	3.6	Foretriangle base - mast to forestay at deck level
L	2.5	rated Length
LOA	appendix F 10	Length Over All
LWL	2.3, 2.7	Rated waterline length- measured LWL + corrections (LWLd + corrections)
LWLcorr	2.7	Total of waterline length corrections (for hollows and notches)
LWLd	2.2, 2.3	Design waterline length - LWL as measured without corrections
Mast	3.8	fore and aft width of mast at gooseneck level
MHT	5.5	actual measured Mast Height - deck to top of P (top of mainhalyard sheave)
MHTexcess	5.5 b	excess mast height beyond allowable rule mast height (MHTrule)
MHTpen	5.5 b	Mast Height penalty - two times excess mast height (MHTexcess)
MHTrule	5.5	Max allowable mast height - deck to top of P
OHA	appendix F 10a	Overhang Aft - aft LWL ending to stern
OHF	appendix F 10b	Overhang Fwd - forward LWL ending to bow
P	3.3, A5.19	Mainsail Luff - top of boom in lowest position to top of mainhalyard sheave
P2	3.7	Foretriangle height - deck at CL to intersection of forestay and mast
QBL	2.4	Quarter Beam Length
QBL%	2.5	allowable Quarter beam - as a % of LWL
QBLexcess	2.5	Excess of measured QBL (QBLmeas) over Allowable QBL (QBLmax)
QBLmax	2.5, 2.6	Maximum allowable Quarter Beam Length without penalty ( QBL% x LWL)
QBLmeas	2.4	actual Measured Quarter Beam Length - average of Port and Starboard
QBLpt	2.4	Quarter Beam Length port side
QBLstbd	2.4	Quarter Beam Length starboard side
R	3.4	Rake of mast between top of P to top of boom measured along boom
Rating	3.4	rating of boat in feet ( maximum allowed = 20.0 feet)
S.A.	3.10	Total sail area S.A.= ( Mainsail + Headsail)
S.A. <sup>1/2</sup>	1.1, 3.1	Square Root of Total Sail area ( sq. root of S.A.)
S.G.	appendix B2	Specific Gravity of water during flotation measurements
SPL	3.8	Spinnaker Pole length - mast CL to end of pole with pole at 90 degrees to CL

**Status & Applicability**

- |   |  |
|---|--|
| 1 | Appendix H is part of these class rules but is not in effect unless it is made applicable by the Notice of Race or the Sailing Instructions for a particular event             |
| 2 | The Organizing Authority for an event may make Appendix H applicable by including Appendix H as part of the rules in the Notice of Race or Sailing Instructions for the event. |

**Appointment of Technical Director**

- |   |  |
|---|--|
| 3 | When Appendix H is made applicable, the Organizing Authority for the event shall appoint a <b>Technical Director</b> who shall ensure compliance with the R class rules and to make any necessary interpretations with respect to the R class rules in accordance with the provisions of this appendix |
|---|--|

**Selection and Appointment of the Technical Committee.**

- |   |   |
|---|---|
| 4 | The Organizing Authority shall determine the number of members to be selected for the <b>Technical Committee</b> . It is recommended that the <b>Technical Committee</b> consist of not less than three members including the <b>Technical Director</b> |
| 5 | The <b>Technical Director</b> may propose additional <b>Technical Committee</b> members to the Organizing Authority for their approval.   |

**Technical Committee Responsibilities**

- |   |  |
|---|--|
| 6 | The Technical Committee shall be responsible for the following:              |
|   | a) To ensure that all boats comply with all aspects of the R class rules     |
|   | b) To interpret the R class rules as written                                 |
|   | c) The Technical Committee is not responsible for making any new class rules |

**Technical Committee Guidelines**

- |   |  |
|---|--|
| 7 | The rulings of the <b>Technical Committee</b> shall be guided by the following:  |
|   | a) Sail Plans, Rigs and Sails shall be controlled by the class rules except for any unusual features which may require an interpretation by the <b>Technical Committee</b> .                               |
|   | b) Hardware - No system may be added beyond those listed in the class rules without a <b>Technical Committee</b> interpretation permitting the proposed system.  |
|   | c) Construction - Hull and Deck construction shall generally have the same aspect as that in use in the 1920s. Weights must meet or exceed the rule scantling requirements as set out in appendix A 1 & A2 |
|   | d) Lines: Hull, Deck Keel and Rudder lines must follow the original design.  |
|   | e) Measurement: Each boat must be measured and must rate 20.0 or less under the class rules.   |
|   | f) The <b>Technical Committee</b> shall be guided by the class rules as written not by any perceived intent of the rules.  |

**Technical Committee Interpretations**

- |    |  |
|----|--|
| 8  | <b>Confidential Interpretations</b> and <b>Public Interpretations</b> shall be issued by the Technical Committee sequentially and shall form part of the R class Rules for the event.  |
| 9  | <b>Confidential Interpretations</b> may be sought by a <b>Competitor</b> prior to July 30 <sup>th</sup> 2010 by request in writing to the <b>Technical Director</b> , and shall be issued as follows:  |
|    | a) The <b>Technical Committee</b> shall publish and distribute copies of all <b>Confidential Interpretations</b> on August 15th 2010.  |
|    | b) <b>Public Interpretations</b> may be sought by a Competitor by request in writing to the Technical Director.  |
|    | c) A <b>Public Interpretation</b> may be initiated by the <b>Technical Committee</b> . <b>Public Interpretations</b> shall be issued by the <b>Technical Committee</b> who shall simultaneously distribute copies to all Competitors.  |
| 10 | In preparation of <b>Interpretations</b> , the <b>Technical Committee</b> may consult other parties at its discretion.   |
| 11 | Verbal interpretations will not be issued.   |
| 12 | If, during measurement of a yacht, the Measurer is in doubt as to the interpretation of an R class Rule, the Measurer shall request a <b>Public Interpretation</b> in accordance with Rule app <b>H9(b)</b> or alternatively, subject to the time limits set out in Rule <b>app H9</b> , the Competitor may request a <b>Confidential Interpretation</b> . The measurement shall be deemed incomplete until the <b>Interpretation</b> has been issued. |
| 13 | Any <b>Competitor</b> who does not obtain an <b>Interpretation</b> in a timely manner in respect of any unusual or unique feature (to the R class) of its boat acknowledges and accepts that if the <b>Technical Committee</b> determines that the boat fails to comply with the R class rule, the <b>Technical Committee</b> shall withdraw the boat's <b>Certificate of Measurement</b> .  |