

IYRU SAIL MEASUREMENT RULES 1993

INTRODUCTION

From 1st March 1993 the current IYRU Sail Measurement Instructions were replaced by the IYRU SAIL MEASUREMENT RULES 1993 and the IYRU INSTRUCTIONS OF SAIL MEASUREMENT 1993. These, together with appendices giving recommendations, GUIDE FOR STANDARD CLASS RULES FOR SAILS and dimension limits, should give Class Associations, Measurers and Sailmakers all the technical information needed to construct, measure and control "one-design" sails.

The document's contents and the intention of each part will be as follows:

INTRODUCTION

A brief explanation of the document.

AIMS AND OBJECTIVES

The aims and objectives which were determined for the preparation of, and which should be borne in mind when working with, the Rules and Instructions.

IYRU SAIL MEASUREMENT RULES 1993

Definitions of parts of a sail and specific measurements:

PART A dealing with bermudan sails.

PART B dealing with gaff sails, sprit sails and lugsails.

GUIDE FOR STANDARD CLASS RULES FOR SAILS

It is hoped these rules will be used as a basis by as many classes as possible. If sufficient classes use the standard then real benefits will be gained in construction, control and cost. Most of the recommended rules may be used by individual classes purely by the addition of appropriate dimensions. Where, however, the essence of a rule is not appropriate for a particular class, then this can be changed relatively easily. For example, if a class wished to permit woven or laminated sail material of polyester or Kevlar but exclude carbon fibres in the mainsail, then the recommended rule 6.2.1.2 could be changed to read "The *body of the sail* shall consist of the same *ply, laminated ply* throughout. The *ply, laminated ply* shall be of polyester fibres, aramid fibres, polyester film."

RECOMMENDED LIMITS

This is a table giving recommended limits for items such as *primary reinforcement*.

THE IYRU INSTRUCTIONS FOR SAIL MEASUREMENT 1993

This document will detail how measurers should undertake the individual measurements of a sail. For example, by folding the head point to the clew point to find the half leech point.

AIMS AND OBJECTIVES

The Rules and Instructions should:

- Make available definitions and standard instructions and procedures for the measurement of sails.
- Define common measurement points and measurement procedures which can be applied to all sails.
- Make possible a high degree of repeatability of measurement.
- Exclude procedures which complicate the manufacture or measurement of sails.
- Make it possible to measure a sail without the need for it to be set on a spar, standing or running rigging.
- Exclude any need for interpretation by a measurer.
- Exclude any need for the measurer to determine the intent of a manufacturer.
- Make maximum use of illustrative drawings.
- For fundamental measurement, require only the minimum of measurement tools with those needed being commonly available in all countries. However, where the use of a specialised tool will assist in achieving the desired measurement objective, this should be encouraged.
- Not include or specify dimensions, limits and limitations. (An appendix should be included giving recommended formula or limits etc).
- For event measurement, include procedures designed to improve efficiency in time and effort whilst maintaining accuracy and repeatability.

IYRU SAIL MEASUREMENT RULES 1993

PART A - BERMUDAN SAILS

Note: Mainsail shall also be taken to mean mizzen; headsail shall also be taken to mean staysail.

1. DEFINITIONS

Where a term defined in Part 1 is used in its defined sense it is printed in *italic* type.

1.1 SAIL

The *sail* shall include headboard, clewboard, *reinforcement*, bolt ropes. It shall not include parts of fastening such as cringles, hanks, slides etc, which are outside the *edges* of the sail.

1.2 EDGES OF THE SAIL

1.2.1 Luff

Mainsail and headsail: The forward edge of the *sail*.

1.2.2 Leech

Mainsail and headsail: The aft edge of the *sail*.

Spinnaker: The edges of the *sail* other than the *foot*.

1.2.3 Foot

The bottom edge of the *sail*.

1.3 CORNER MEASUREMENT POINTS

1.3.1 Head Point

Mainsail and headsail: The intersection of the *luff* extended if necessary and the line through the highest point of the sail at 90° to the *luff*.

Spinnaker: The intersection of the *leeches* extended if necessary.

1.3.2 Clew Point

The intersection of the *foot* and the *leech*, each extended if necessary.

1.3.3 Tack Point

The intersection of the *foot* and the *luff*, each extended if necessary.

1.4 OTHER MEASUREMENT POINTS

1.4.1 Aft Head Point

The intersection of the *leech* extended if necessary and the line through the *head point* at 90° to the *luff*.

1.4.2 Half Leech Point

The point on the *leech* equidistant from the *head point* and the *clew point*.

1.4.3 Quarter Leech Point

The point on the *leech* equidistant from the *half leech point* and the *clew point*.

1.4.4 Three-quarter Leech Point

The point on the *leech* equidistant from the *head point* and the *half leech point*.

1.4.5 Upper Leech Point

The point on the *leech* a set distance from the *head point*.

1.4.6 Mid Foot Point

Mainsail and headsail: The point on the *foot* equidistant from the *tack point* and the *clew point*.

Spinnaker: The point on the *foot* equidistant from the *clew points*.

1.5 CONSTRUCTION

1.5.1 Ply

A layer or layers of *sail* material (the word *ply* is both singular and plural)

1.5.2 A Woven Ply

A *ply* which, when torn can be separated into fibres without leaving evidence of a film.

1.5.3 A Laminated Ply

A *ply* made up of more than one lamina. A lamina may be woven. Laminas may each be of different weight.

1.5.4 Single-ply sail

A *sail* made of only one *ply* except for *seams, tabling, batten pockets, reinforcements*, class insignia, sail letters and numbers, advertising.

1.5.5 Soft sail

Except in areas of primary reinforcement, a *sail* capable of being folded flat in any direction without damaging the *ply*.

1.5.6 **Body of sail**

The area of a **sail** excluding added parts such as reinforcements, seams, corner boards, bolt ropes, batten pockets, tabling, eyes, cringles, windows.

1.5.7 **Seam**

Ply overlap(s) where two parts of a **sail** are joined together except for **reinforcement**, **tabling** and **batten pockets**.

1.5.8 **Tabling**

Additional **ply** or folded **ply** overlap(s) at the **edge of a sail**. (**Tabling** may be in addition to permitted **reinforcement**).

1.5.9 **Sail Opening**

Any opening in a **sail** other than a normal eye, cringle, Cunningham, reefing eye.

1.5.10 **Window Opening**

A **sail opening** which has been covered by a transparent **ply**.

1.5.11 **Batten Pocket**

Additional **ply** to form a pocket for a batten.

1.5.12 **Double Luff sails**

A **sail** with more than one **luff** or a **sail** passing around a stay or spar and attached back on itself.

1.6 **REINFORCEMENT**

1.6.1 **Primary reinforcement**

An unrestricted number of additional **ply** of permitted material:

- at a corner
- at a Cunningham point
- at a reefing point adjacent to the **luff**
- at a reefing point adjacent to the **leech**
- at a spinnaker recovery point
- where permitted by Class Rules

1.6.2 **Secondary reinforcement**

Not more than two additional **ply** of permitted material each not thicker than the maximum thickness of the **ply** of the **body of the sail**.

- at a corner
- at a Cunningham point
- at a reefing point adjacent to the **luff**
- at a reefing point adjacent to the **leech**
- at a spinnaker recovery point

at a *flutter patch*
at a *chafing patch*
at a *batten pocket patch*
where permitted by Class Rules

1.6.3 Flutter Patch

Secondary reinforcement on the *leech* or the *foot* at the end of a *seam*.

1.6.4 Chafing patch

Secondary reinforcement where a *sail* can touch a spreader, stanchion, shroud, spinnaker pole.

1.6.5 Batten Pocket Patch

Secondary reinforcement at the inside end of a *batten pocket*.

2. MEASUREMENTS

2.1 CONDITION OF SAIL DURING MEASUREMENT

2.1.1 When measured a *sail* shall:

be dry
not be attached to spars or rigging
have all battens removed
have pockets of any type flattened out
have just sufficient tension applied to remove wrinkles across the line of the measurement being taken

2.2 HOLLOW

2.2.1 A hollow in the *edge of a sail* between:

adjacent *batten pockets*,
the *aft head point* and adjacent *batten pocket*,
the *clew point* and adjacent *batten pocket*,
the *tack point* and adjacent *batten pocket*,
at a *measurement point*

shall be bridged by a straight line and the measurements taken through the *measurement point* to the bridging line.

2.3 LENGTHS

2.3.1 Luff length

The distance between the *head point* and the *tack point*.

2.3.2 Leech length

The distance between the *head point* and the *clew point*.

2.3.3 Foot Length

Mainsail and headsail: The distance between the ***clew point*** and the ***tack point***.

Spinnaker: The distance between the ***clew points***.

2.3.4 Luff Perpendicular (LP)

The shortest distance between the ***clew point*** and the ***luff***.

"Note: Only one measurement to be taken at a time and in accordance with requirements of 2.1.1."

2.3.5 Foot Median

The distance between the ***head point*** and the ***mid foot point***.

2.4 WIDTHS

2.4.1 Top Width

The distance between the ***head point*** and the ***aft head point***.

2.4.2 Quarter Width

Mainsail and headsail: The shortest distance between the ***quarter leech point*** and the ***luff***.

Spinnaker: The distance between the ***quarter leech points***.

2.4.3 Half Width

Mainsail and headsail: The shortest distance between the ***half leech point*** and the ***luff***.

Spinnaker: The distance between the ***half leech points***.

2.4.4 Three-quarter Width

Mainsail and headsail: The shortest distance between the ***three-quarter leech point*** and the ***luff***.

Spinnaker: The distance between the ***three-quarter leech points***.

2.4.5 Upper Width

Mainsail and headsail: The shortest distance between the ***upper leech point*** and the ***luff***.

Spinnaker: The distance between the ***upper leech points***.

2.5 OTHER MEASUREMENTS

2.5.1 Reinforcement Size

At a corner the greatest dimension of the ***reinforcement*** from a ***corner measurement point*** point.

Elsewhere the greatest dimension of the ***reinforcement***.

2.5.2 Batten Pocket Length

Inside: The dimension from the **edge of a sail** along the pocket centreline to its inside end. The effect of any elastic or other retaining device shall be ignored.

Outside: The dimension from the **edge of the sail** to the extreme end.

2.5.3 Batten Pocket Width

Inside: The dimension between inside edges measured at 90° to the centreline. Local widening for batten insertion shall be ignored.

Outside: The dimension between the extreme outside edges measured at 90° to the centreline. Local widening for batten insertion shall be ignored.

2.5.4 Seam Width

The width of a **seam** measured at 90° to the **seam**.

2.5.5 Tabling Width

The width of **tabling** measured at 90° to the **edge of a sail**.

2.5.6 Foot Irregularity

The maximum distance between the edges of the **foot** when first the tack point and then the clew point are superimposed on any part of the **foot**.

PART B - ADDITIONS FOR GAFF SAILS, LUGSAILS AND SPRITSAILS

The following definitions and measurements for Gaff sails, Lugsails and Spritsails and Lugsails are additional to or vary those given in Part A.

1. DEFINITIONS

1.2 EDGES OF A SAIL

1.2.4 Head

The top edge of the **sail**.

1.3 CORNER MEASUREMENT POINTS

1.3.4 Peak Point

The intersection of the **head** and **leach**, each extended if necessary.

1.3.5 Throat Point

The intersection of the **head** and **luff**, each extended if necessary.

2. MEASUREMENTS

2.3 LENGTHS

2.3.1 Luff Length

The distance between the *throat point* and the *tack point*.

2.3.2 Leech Length

The distance between the *peak point* and the *clew point*.

2.3.6 Head Length

The distance between the *peak point* and the *throat point*.

2.3.7 Diagonal

The distance between the *throat point* and the *clew point*.

APPENDIX 1

STANDARD CLASS RULES FOR SAILS

To suit the IYRU Sail Measurement Rules 1993

6 SAILS

6.1 GENERAL

- 6.1.1 Anything not specifically permitted by these rules is PROHIBITED.
- 6.1.2 Sails shall be made and measured in accordance with the current "IYRU Sail Measurement Rules", except where varied herein. Where a term defined or a measurement given in the IYRU Sail Measurement Rules is used in these rules it is printed in *italic* type.
- 6.1.3 The manufacturer of **sails** is optional.
- 6.1.4 The weight in g/m² of the **body of the sail** shall be indelibly marked by the sailmaker together with his signature or stamp and date near the **head point**.

6.2 MAINSAIL

6.2.1 CONSTRUCTION

- 6.2.1.1 The construction shall be: **Soft sail, single ply sail**.
- 6.2.1.2 The **body of the sail** shall consist of the same **woven ply** throughout. The **ply** fibres shall be of polyester.
- 6.2.1.3 The **sail** shall have x **batten pockets** in the **leech**.
- 6.2.1.4 The following are permitted: Stitching, glues, tapes, bolt ropes, corner eyes, headboard with fixings, Cunningham eye/pulley, batten pocket elastic, batten pocket end caps, mast and boom slides, leech line with cleat, one window, sailmaker label, royalty button, sail button, tell tales.

6.2.2 DIMENSIONS

		Minimum	Maximum
Leech length	xxxx mm	xxxx mm	
Quarter width	xxxx mm	xxxx mm	
Half width	xxxx mm	xxxx mm	
Three-quarter width	xxxx mm	xxxx mm	
Upper width xmm from Head Point	xxxx mm	xxxx mm	
Top width		xxxx mm	
Ply weight of the body of the sail	xxxx g/m ²		
Primary reinforcement		xxxx mm	
Secondary reinforcement: from corner measurement points	xxxx mm		

for flutter patches	xxxx mm
for chaffing patches	xxxx mm
for batten pocket patches	xxxx mm
Tabling width	xxxx mm
Seam width	xxxx mm
Window area	xxxx m ²
Shortest distance from window to edge of sail	xxxx mm
Greatest dimension of the headboard from the head point	xxxx mm
Batten pocket length:	
Inside:	
Uppermost and lowermost pockets	xxxx mm
Intermediate pockets	xxxx mm
Outside:	
Uppermost and lowermost pockets	xxxx mm
Intermediate pockets	xxxx mm
Batten pocket width:	
Inside	xxxx mm
Outside	xxxx mm
Head point to intersection of leech and centreline of uppermost batten pocket	xxxx mm
Head point to intersection of luff and centreline of uppermost batten pocket	xxxx mm
Clew point to intersection of leech and centreline of lower most batten pocket	xxxx mm

6.3 HEADSAIL

6.3.1 CONSTRUCTION

- 6.3.1.1 The construction shall be: **Soft sail, single ply sail**
- 6.3.1.2 The **body of the sail** shall consist of the same **woven ply** throughout. The **ply fibres** shall be of polyester.
- 6.3.1.3 The **sail** shall have x **batten pockets** in the **leech**.
- 6.3.1.4 The following are permitted: stitching, glues, tapes, corner eyes, hanks, batten pocket elastic, batten pocket end caps, leech line with cleat, one window, sailmaker label, royalty button, sail button, tell tales.

6.3.2 DIMENSIONS (to be measured as a headsail)

	Minimum	Maximum
Luff length	xxxx mm	xxxx mm
Leech length	xxxx mm	xxxx mm
Foot length	xxxx mm	xxxx mm
Foot median	xxxx mm	xxxx mm
Half width	xxxx mm	xxxx mm
Top width		xxxx mm

Foot irregularity		xxxx mm
Ply weight of the <i>body of the sail</i>	xxxx g/m ²	
Primary reinforcement		xxxx mm
Secondary reinforcement:		
from <i>corner measurement points</i>		xxxx mm
for <i>flutter patches</i>		xxxx mm
for <i>chafing patches</i>		xxxx mm
Tabling width		xxxx mm
Seam width		xxxx mm
Window area		xx.xx m ²
Shortest distance from <i>window</i>		
to <i>edge of sail</i>	xxxx mm	
Batten pocket length:		
Inside:		
Uppermost and lowermost pockets		xxxx mm
Intermediate pockets		xxxx mm
Outside:		
Uppermost and lowermost pockets		xxxx mm
Intermediate pockets		xxxx mm
Batten pocket width:		
Inside	xxxx mm	
Outside		xxxx mm

6.4 SPINNAKERS

6.4.1 CONSTRUCTION

- 6.4.1.1 The construction shall be: ***Soft sail, single ply sail***
- 6.4.1.2 The ***body of the sail*** shall consist of the same ***woven ply*** throughout. The ***ply fibres*** shall be of polyester or polyamide.
- 6.4.1.3 The following are permitted: Stitching, glues, tapes, corner eyes, recovery line eyes, sailmaker label, royalty button, sail button, tell tales.

6.4.2 DIMENSIONS (to be measured as a spinnaker)

	Minimum	Maximum
<i>Leech lengths</i>	xxxx mm	xxxx mm
<i>Foot length</i>	xxxx mm	xxxx mm
<i>Foot Median</i>	xxxx mm	xxxx mm
<i>Quarter width</i>	xxxx mm	xxxx mm
<i>Half width</i>	xxxx mm	xxxx mm
<i>Three-quarter width</i>	xxxx mm	xxxx mm
Weight of the <i>body of the sail</i>	xxxx g/m ²	
Primary reinforcement		xxxx mm
Secondary reinforcement		
from <i>corner measurement points</i>		xxxx mm
for spinnaker recovery point		xxxx mm

Tabling width	xxxx mm
Seam width	xxxx mm

6.5 CLASS INSIGNIA, NATIONAL LETTERS AND SAIL NUMBERS

6.5.1 The Class insignia and the sail number and letters, as issued by the Xxxxxx shall be in accordance with IYRR 25, except where varied herein.

6.5.2 Numbers and letters shall be of the following dimensions:

	Minimum	Maximum
Height	xxxx mm	xxxx mm
Width (except number `1' or letter `l')	xxxx mm	xxxx mm
Thickness	xxxx mm	xxxx mm
Spacing between adjoining numbers or letters	xxxx mm	xxxx mm

6.5.3 The class insignia shall conform with the dimensions and requirements as detailed in the diagram contained in xxx of these rules. The class insignia shall not be shown on headsails.

6.6 ADDITIONAL RULES

6.6.1 Only sails endorsed in accordance with rule x.x.x shall be used.

6.6.2 Not more than x mainsail, x headsail and x spinnaker shall be carried on board.

6.6.3 The mainsail shall be set so that the highest visible point at the head is lower than the lower edge of the upper mast measurement band and so that the aftmost visible part of the leech is forward of the inner edge of the boom measurement band.

APPENDIX 2

RECOMMENDED LIMITS

The limits of dimension for the items listed below should be determined for individual classes and detailed in Class Rules. To assist classes in determining suitable limits and to reduce cost by standardisation it is recommended that classes choose their limits from those detailed in the tabulation below. Luff and foot length are in metres with limits in millimetres.

Luff Length	< 3	4	5	6	7	8	9	10	11	12
Primary reinforcement	250	300	300	350	400	400	450	450	500	550
Secondary reinforcement	750	900	900	1050	1200	1200	1350	1350	1500	1650
Flutter Patches	100	100	100	120	140	140	160	160	180	200
Chafing Patches	750	900	900	1050	1200	1200	1350	1350	1500	1650
Batten Pocket Patches	125	150	150	175	200	200	225	225	250	275
Seams	15	15	15	20	20	20	25	25	25	30
Tabling	25	30	30	35	40	40	45	45	50	55
Top Width mainsail	100	100	100	150	150	150	150	150	150	
Top Width headsail	30	30	30	40	40	50	50	50	50	
Foot Length	< 3	4	5	6	7	8				
Foot irregularity	30	40	50	60	70	80				