



**Listed here are the Class Rules and Measurement Guidelines for the Hartley TS21 Trailable Yacht, as adopted by the committee of the Hartley TS1 8-21 Yacht Club Inc. on 15<sup>th</sup> October 2008 as amended on 29<sup>th</sup> May 2010.**

## **1. General intent**

The Hartley TS21 is a one-design trailer yacht designed by the late Richard Hartley for both limited club racing and cruising.

It is intended to be a safe, seaworthy, classic wooden design which can be towed easily by a family car and provide enjoyable inshore racing at reasonable cost, while at the same time offering simple and spacious accommodation to exploit the cruising potential of the yacht. It is with this combined racing and cruising potential in mind that these rules and specifications for the Hartley TS21 Class have been formed.

It is fundamental to the interpretation of these rules and specifications that racing in Hartley TS1 8-21 Club events shall be a test of skill and seamanship in yachts which are essentially the same. Any yacht which differs from these rules and specifications or, which is deliberately altered in any way to gain an advantage over other yachts of the Class through exploiting a loop-hole in these rules and specifications contrary to the spirit thereof, may not be accepted as being eligible for the Hartley TS21 Class.

The conditions as laid down, and from time to time amended by Yachting Victoria or Yachting Australia shall form part of these Rules.

## **2. Certification and measurement**

To maintain the one-design principle of the Hartley TS21 the certification and measurement of the yachts shall be the responsibility of a Class Measurer appointed by the Committee of the Hartley TS1 8-21 Yacht Club ("the Committee"). Any Measurer requiring clarification of matters arising from these class rules and specifications shall refer to the Committee for clarification.

The Committee or the Measurer may inspect any yacht at any time in order to check that it complies with these rules and specifications.

## **3. General Construction**

The general construction of the yacht, rigging and fittings must be sufficient to withstand the loads to which they will be subjected during normal use. Applications for Certificates may be rejected should a boat not meet this requirement.

The hull may be sheathed or finished with any form of material, however the basic construction must be of wood and plywood, and must be in accordance with the official Hartley plans.

The hull, when painted and varnished, in a dry condition (not having been sailed for at least 5 days) and complete with all fixed fittings, shall weigh not less than 907kg.



Centreplates are to be fabricated from mild steel and shaped in accordance with official plans. Fairing is allowed to a maximum of 38mm from any edge.

Ballast (where fitted) shall be secured to the keel near the base of the mast with sufficient fastenings to retain it in position the event of a knockdown or capsize.

The cockpit must be self draining, with two drain holes in the transom at cockpit sole (floor) level. These drain holes must at least 25mm diameter and must be offset as far as possible from the centreline of the cockpit.

A Bridge Deck between the cabin and cockpit should be built in to ensure that water in a flooded cockpit does not enter the cabin, however, if no Bridge Deck is fitted, a removable stormboard may be placed in position to stop water from entering the cabin. This stormboard must be able to be securely fixed in place.

Bow-sprits or other sail-carrying extensions forward of the bow are not permitted.

All hatches shall be mechanically fastened to the deck or cockpit.

#### **4. Centreplate Tackle and Cleat**

Each yacht shall be fitted with a positive non-friction device which will prevent the keel or centreboard from moving in the event of a knockdown or capsize in strict accordance with the AYF Racing Rules of Sailing.

There are no exceptions to this rule.

#### **5. Buoyancy and Fixing**

Positive buoyancy shall be assured by dedicating a volume of not less than 0.28m<sup>3</sup> to sealed buoyancy tanks or polystyrene floatation foam or a combination of both.

Positive buoyancy of 0.28m<sup>3</sup> approximates to foam material 1200mm wide by 4660mm long, 50mm thick. Positive buoyancy foam is best located under the fore deck and the port and starboard sides, under the cockpit seats.

Buoyancy tanks should be fitted with at least one screw-type inspection hatch. No ducts shall be let into any buoyancy tank.

At least one manual bilge pump should be fitted, operable from outside of the cabin.

#### **6. Anchor**

Each yacht shall carry a minimum of one (1) Anchor with at least 5 metres of 6mm chain and 45 metres of 10mm Polyethylene or Nylon warp attached, adequately secured in a position where it is possible to deploy quickly in an emergency.

Recommended anchor types: either 7kg Plough or 13S Danforth. Note that some racing categories may require two anchors to be carried.

#### **7. Engine**

When racing follow the Yachting Australia Racing Rules of Sailing (RRS) Special Regulations (SR) Part 1 Section 3. Race Category 6 or 7 does not prescribe carrying motors unless described in a Notice of Race and/or Sailing Instruction by the relevant Local Race Authority.



When prescribed as above, each yacht shall carry a suitable outboard motor of not less than six (6) horsepower and fuel tank with sufficient capacity for three (3) hours motoring and shall be secured in a suitable location in the stern of the yacht with the motor on the transom ready for immediate use.

## **8. Steering system**

Each yacht shall be steered by a tiller connected to a rudder to be fitted in such a position and to be of such a size and design as the Committee approve, but in any event shall be of similar size and design as the standard rudder.

Either the standard 'swing-up' rudder (page 13) or dagger-board rudder (page 14) is allowed. Rudder dimensions shall be as per the measurement form and shall be of overall length not greater than 1800 mm and width not greater than 450 mm.

## **9. Electrical system**

Each yacht should carry fixed or portable navigational lighting (a minimum of port, starboard and stern) and 27MHz or VHF marine radio in accordance with relevant Marine Safety legislation.

If non-portable navigational lighting is fitted, each yacht shall carry at least one standard 12 volt DC battery with a minimum capacity of 50 ampere hours fixed in position with sufficient fastenings to retain it in position the event of a knockdown or capsize. Batteries may be considered to form part of the yacht's ballast.

## **10. Mast, Spars & Fittings**

Basic rigging must comply strictly with the plans as modified by the Measurement Form (attached). Both Masthead and  $\frac{3}{4}$  Rigs are acceptable.

Spars: The mast and boom may be constructed of either aluminium or wood. Aluminium spars shall be untapered constant-section only.

Rigging: Spreaders may be angled. Roller reefing, reefing points and furling gear may be fitted if required, however mast rotation systems are not permitted.

Rigging may be adjustable provided that, in the case of an adjustable backstay, a fail-safe wire is permanently swaged to the rigging.

Bow-sprits or other sail-carrying extensions forward of the bow are not permitted.

Trapezes, swing planks or other similar devices will not be permitted.

Fittings: Deck fittings for securing stays and shrouds are optional as to type and must satisfy the Official Measurer as to strength and suitability.

Winches: Mechanical winches are permitted. Sheeting arrangements are left to the owner's discretion, but must be functional and operate to the satisfaction of the Measurer.

Spinnaker pole: Maximum length of the spinnaker pole (from centre of the parrot beak to the face of the mast) is shown on the measurement form attached.

Whisker poles may be used to pole out the jib, but may not be of greater length than the spinnaker pole.



## **11. Hydraulic equipment**

No hydraulic equipment shall be permitted.

## **12. Sails**

Sail Plan and measurements must be according to details set down in the Official Plan and Measurement Form, which show maximum sizes.

A suit of sails shall generally include: Mainsail, Working Jib, Genoa, Storm Jib, Staysail, Spinnaker. Bloopers shall not be permitted whilst racing, nor any sail not specifically provided for in these rules.

Sail Materials: Mainsails shall be fabricated from Dacron or equivalent material, however the use of laminate or composite materials (Mylar etc.) in headsail construction is permitted. Sails shall be of a single colour. Spinnakers shall be of minimum weight 3/4 oz per square metre.

Mainsails may be captive or loose-footed. Headsails shall be secured along the luff to the forestay.

The use of full length battens in the mainsail is optional. The number and length of battens to be left to the Sailmaker's discretion.

Note: On the masthead rig the amount of roach is determined by the backstay configuration, however on the 3/4 rig the top battens must not be used to create a roach on the sail greater than the original design intention. To achieve this the measurement of Hb must not be greater than Hc. (See Sail Measurement Diagram)

## **13. Sail Markings on Mast & Boom**

Black Bands not less than 20mm wide shall be painted on the mast and boom as prescribed. The mainsail shall be set within the black bands on the mast and boom at all times.

If the boom is fixed to the mast, (non adjustable) it should be 300mm from the cabin roof, and the upper edge of the black band should line up with the upper edge of the boom. The lower edge of the second black band at the top of the mast shall be positioned no more than 6750mm up from the lower black band.

Adjustable booms should align with the upper edge of the black band, approximately 300mm above the cabin roof. The lower edge of the second black band shall be positioned no more than 6750mm up from the lower black band at the top of the mast.

On 3/4 rig boats the inner edge of the black band shall be positioned 3230mm from the rear of the mast on the end of the boom

On Mast Head rigged boats the inner edge of the black band shall be positioned 3070mm from the rear of the mast on the end of the boom.

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**HARTLEY TS18-21 YACHT CLUB Inc.**  
**MEASUREMENT FORM FOR TS21**  
 TRAILABLE SWING KEEL CENTREBOARD CABIN YACHT ONLY

Form Revised 29<sup>th</sup> May 2010

Boat Name : .....

Sail No.: ..... Registration No.: (Vic. Only) .....

Owner's Name/s: .....

Address/s: .....

.....

.....

Phone No/s: Home: ( )

Bus: (....)

Mob:

Builder's Name: ..... Date Built: .....

No boat shall be measured unless its' sail number is carved into the After Port side of the centreplate case in letters not less than 25mm.

All measurements are metric and in millimetres unless otherwise stated.

**TS 21**

Item No.	Measurement Detail	Min.	Max.	Actual
1	Weight, Including ballast and centre plate	907 kg	N/A	
2	Overall length from upper face of transom to forward corner of bow	6350	6500	
3	Overall beam excluding gunwales (at No. 5 frame)	2380	2440	
4	Bow to fore edge of mast	2100	2240	
5	Bow to cabin front (at centreline of deck)	N/A	1530	
6	Cabin length overall at deck level	2590	N/A	
7	Fore width of cabin at deck level (at No. 3 frame)	1370	N/A	
8	Aft width of cabin at deck level (at No. 5 frame)	1900	N/A	



Item No.	Measurement Detail	Min.	Max.	Actual
9	Transom width at deck level	1750	1810	
10	Transom depth (outside of planking to top of decking at sheer)	570	N/A	
11	Thickness of skeg (at thinnest point)	32	N/A	
12	Radius of corners on skeg	N/A	10	
13	Skeg depth at forward end of taper	273	N/A	
14	Thickness of ply planking at any point.	8	N/A	
15	Cabin height from keelson at aft and excluding hatches (at No. 5 frame)	1450	N/A	
16	Height from keelson to top of mast step (height of mast support + cabin top).	1450	1600	
17	Moulded depth of hull at frame 4 from top of keelson to underside of deck at sheer	910	N/A	
18	Centre plate bolt, centre of bolt <b>to front of centercase logs.</b>	266	275	
19	Centre plate bolt diameter	19	N/A	
20	Centrecase, length at case logs	1524	N/A	
21	Centrecase height from top of keelson at frame No. 4	610	N/A	
22	Centre plate thickness. Fairing allowed to 38mm from any edge.	9	20	
23	Any two bunks, length at centreline of bunk	1830	N/A	
24	Any two bunks, width at any point	530	N/A	
25	Frames at any point except at stringers	70x19	N/A	
26	Mast Support	110x32	N/A	
27	Stringers	38x16	N/A	
28	Transom frames at any point	70x19	N/A	
29	Chines (allow for bevelling)	45x32	N/A	
30	Flooring thickness (plywood)	9	N/A	

Item No.	Measurement Detail	Min.	Max.	Actual
	Sails - See Sail Plan, page 9			
31	Wooden mast (internal or external track) Alloy mast, (including sail track)	90x70 90x60	N/A	
32	Wooden mast taper from 2/3 height to head. For 3/4 Rig only. Alloy mast (not allowed)	51 x 64	N/A	
33	Length of mast.	N/A	7316	
34	Spreaders from side of Mast to Wire - 3/4 Rig - Mast Head	360 610	N/A	
35	Spreaders from the Mast Head - 3/4 Rig - Mast Head	3850 3450	3930 3530	
36	Lower shrouds: Lower shroud chainplates to centreline of mast.	381	N/A	
37	Boom construction - Wood - Alloy	90x70 80x59	N/A	
38	Length of Boom - 3/4 Rig - Mast Head		3430 3200	
39	Length of Spinnaker Pole - 3/4 Rig - Mast Head		2440 2750	
40	Either the standard rudder or dagger rudder is allowable. Rudder Cheeks:	16	N/A	
41	Rudder Blade. Thickness before tapering. - Wood - Alloy - Steel	16 9 4	N/A	
42	Rudder Depth below the outside planking when hung on pintles	610	700	
43	Rudder Blade Shape: Width at bottom edge excluding rounded corners	290	440	

**MEASURER TO CHECK THE FOLLOWING ITEMS:**

	<b>Hull</b>	
44	Ballast. (check security)	
45	Buoyancy and Fixing (min. 0.28m <sup>3</sup> )	
46	Centreplate Tackle and Cleat	
	<b>Rigging &amp; Fittings</b>	
47	Spars (Mast, Boom & Spinnaker Pole)	
48	Shrouds	
49	Forestay	
50	Spreaders	
51	Halyards	
52	Cleats	
53	Backstay	
54	Rudder / Tiller	
55	Rudder Pintles	
56	Outboard Motor	
57	Foredeck Cleat / Samson Post	
58	Anchor: Minimum of 1 Anchor, Chain and Warp, (adequately secured). If racing 2 anchors are required.	
59	Cockpit drains: Self-draining, with two drain holes (min. 25mm dia.) in the transom at cockpit sole (floor) level.	
60	Bilge Pump(s) ( <i>where fitted</i> )	



## SAIL PLAN TS21

ALL MEASUREMENTS ARE MAXIMUM

### THREE QUARTER RIG



SAIL	LEECH (mm)	Actual (mm)	LUFF (mm)	Actual (mm)	FOOT (mm)	Actual (mm)	Area (m <sup>2</sup> )
Main	7170		6710		3200		
No. 1 Genoa	5410		5640		3430		
Working Jib	4880		5410		2520		
Storm Jib	2750		3050		1910		
	HOIST (mm)	Actual	GIRTH (mm)	Actual	FOOT (mm)	Actual	
Spinnaker	5800		4880		4880		
Pole	2440						

### MAST HEAD RIG

SAIL	LEECH (mm)	Actual (mm)	LUFF (mm)	Actual (mm)	FOOT (mm)	Actual (mm)	Area (m <sup>2</sup> )
Main	7010		6700		3040		10.21
No. 1 Genoa	7010		7310		3660		12.54
Working Jib	6020		6400		2940		8.82
Storm Jib	3810		3050		2130		3.71
Stay Sail	3500		3730		2130		3.53
	HOIST (mm)	Actual	GIRTH (mm)	Actual	FOOT (mm)	Actual	
Spinnaker	7320		4880		4880		18.59
Pole	2750						

Note: - Foot measurements to be taken from clew cringle perpendicular to the luff for jib and along a line between tack and clew for spinnaker.  
 - Spinnaker Girth obtained by folding head to mid-point between tack and clew.



**Measurer's Recommendations:** *(Delete the appropriate paragraph.)*

The Hartley TS21 named in this document meets the requirements of the Hartley TS18-21 Yacht Club to be classed as an "A" Class vessel.

The Hartley TS21 named in this document does not meet the requirements of the Hartley TS18-21 Yacht Club to be classed as an "A" Class vessel. However, it meets the requirements of the following:

"B" Class vessel

"C" Class vessel

**Measurer's Certification:**

Dated : ..... Signed : .....

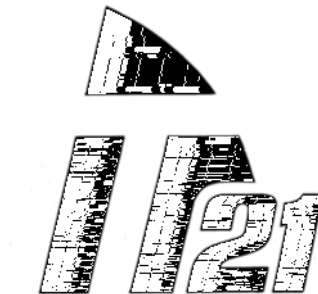
Measurer's Name: .....

Office Use Only:

Details entered in Class Register.

Certificate sent to Owner.

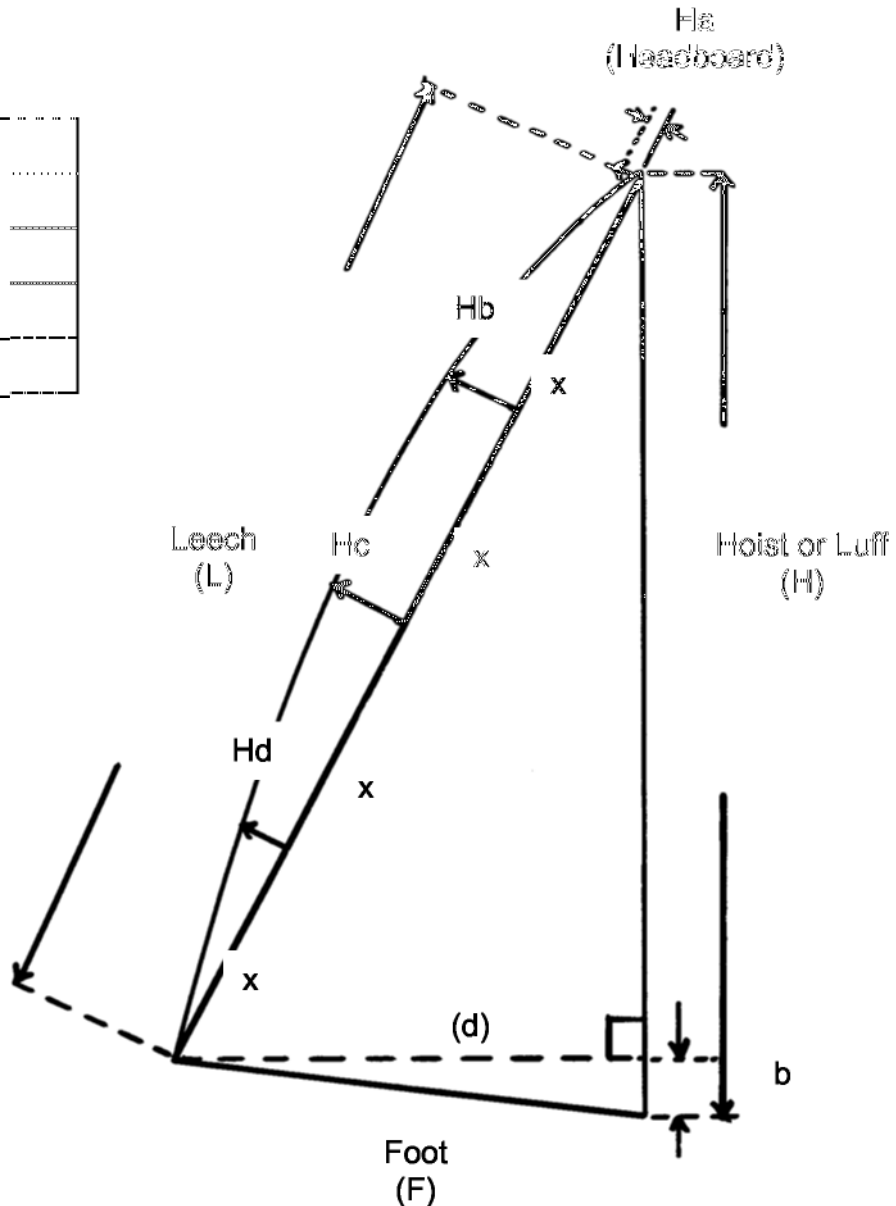
Original Measurement Form Filed.



**SAIL MEASUREMENT – Mainsail**

On the 3/4 rig the top battens must not be used to create a roach on the sail greater than the original design intention. To achieve this, the measurement of Hb cannot be greater than Hc.

Ha	(mm)	
Hb	(mm)	
Hc	(mm)	
Hd	(mm)	



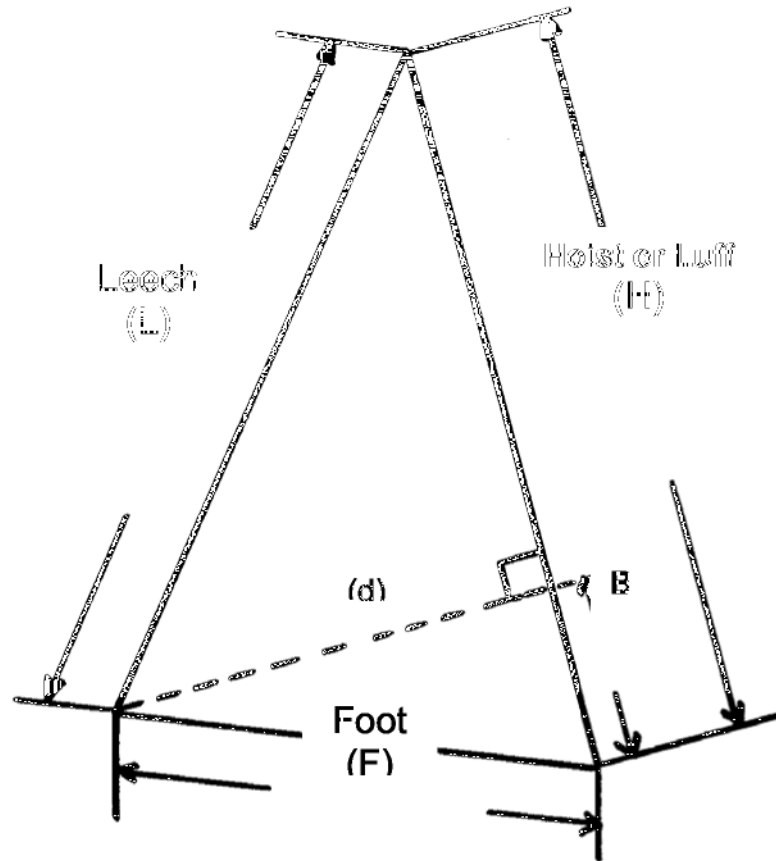
**All dimensions in metres.**

All measurements to be taken with tension applied along line to be measured.

Area of Main Triangle,  $A_1 = H \times d \text{ (m}^2\text{) } 2$

Area of Roach of Main,  $A_2 = X (Ha + 2Hb + 2Hc + 2Hd) = \frac{L (Ha + 2Hb + 2Hc + 2Hd) 2}{8}$

Area of Mainsail =  $A_1 + A_2 \text{ (m}^2\text{)}$

**SAIL MEASUREMENT – Headsails**

**All dimensions in metres.**

All measurements to be taken with tension applied along line to be measured.  
 ie. Head to Tack, Head to Clew etc..

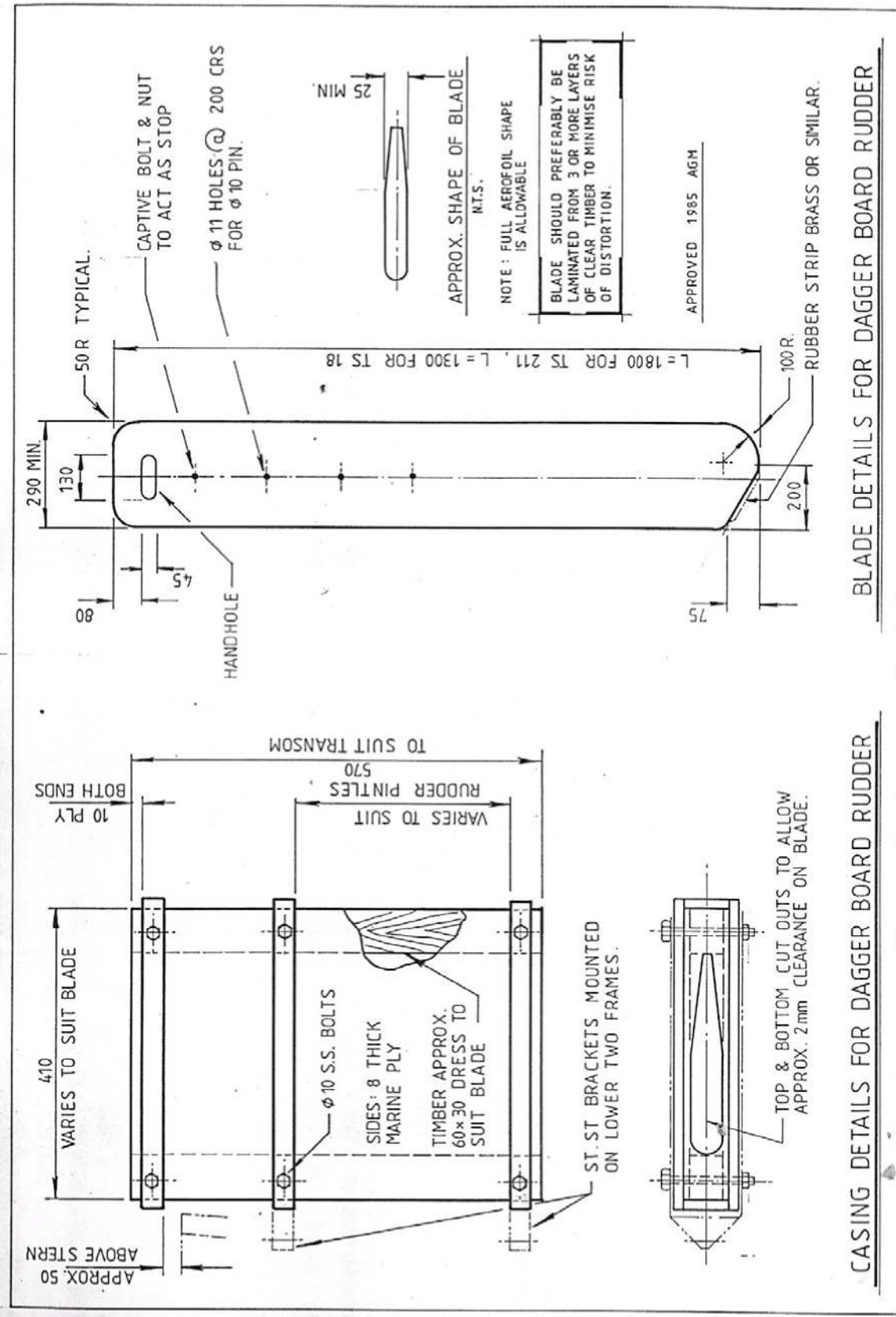
$$\text{Area of Jib} = H \times d \text{ (m}^2\text{) } 2$$

$$\text{Area of Spinnaker} = H ( 2G + d ) \text{ (m}^2\text{) } 4$$

G = spinnaker girth obtained by folding head to mid-point between tack and clew.



# Dagger Board Rudder



HARTLEY 18 & 21 ASSOCIATION OF VICTORIA

