

MEASURING A GWEN 12 YACHT - HULL.

The following instructions are designed to guide State and Club Measurers to measure the Hull, Sails and spars of the National Gwen 12 Yacht. It is essential to maintain the one design standard of the Class and any queries regarding the use, interpretation or the improvement of these measurement standards shall be referred to the National Measurer for his guidance and decision.

The basic "tools" for measuring the hull are :-

- (a) a measuring square with its short side 678mm. (2'2-11/16") and its long side 3810mm. (12'-6") and constructed of 75mm. x 25mm. (3"x1") oregon or similar. The joint must be screwed and glued.
- (b) a small square, short arm 457mm. (18"), long arm 914mm (3'0") constructed of 50mm. x 25mm. (2"x1") oregon or similar and a tight joint.
- (c) a pair of calipers capable of spanning at least 1676mm. (5'6") and having a sharp point and constructed of 50mm. x 25mm. (2"x1") oregon - the pivot pin should be fitted with a butterfly nut to allow the calipers to be locked when a measurement is taken and to be unlocked when adjusting to another frame position.
- (d) a frame side marker, (see the following diagram) to assist in the measurement of frame width at deck level, it can be built from a piece of 5mm. (3/16") ply.
- (e) a 7000mm. (20'0") steel measuring tape, a string line, a roll of masking tape, a fine pencil, a hammer and nails, a piece of oregon block 165mm. x 50mm. (6 1/2"x2") say 229mm. (9") long and a second piece 152mm. x 50mm. x 229mm. (6" x 2" x 9").

The large square, starting from the junction of the two timbers, should be marked off at each frame position as shown on the plan for frame 1, frame 2 and frame 4 and also at 3632mm. (11'11") and 3658mm. (12'0"). These marks should be made with a very fine saw cut 2mm. (1/16") deep and colored for easy reference.

HOW TO MEASURE THE HULL. First turn the hull right side up in the sailing position (in a sack if possible) and lay the large square down its length as close as possible to the centreline with the short arm hard against the stem head. Check the length, 3632mm. (11'11") to 3658mm. (12'0") overall.

Now place the small square with the short arm on the long arm of the

large square, slide it to the frame positions in turn and stick a small piece of masking tape at the gunwhale. We should have, say at frame 1, a piece of masking tape on the gunwhale, now take the small square again and very accurately mark on the tape, with the pencil, a line at right angles to the centreline of the hull at the frame 1.

Then using the frame side marker, mark the position of the extension of the external face of the side planking. You now have the width of the hull at frame 1 marked for measurement with the calipers. This should measure between 1184mm. (46-5/8") and 1172mm. (46-1/8"). Do this again at frame 4 and at the stern transom and enter the results on the measurement form.

Check the cockpit floor rise by pulling a string tight between two points 203mm. (8") either side of the centreline. The depth at the centreline of the cockpit shall be 19mm. (3/4").

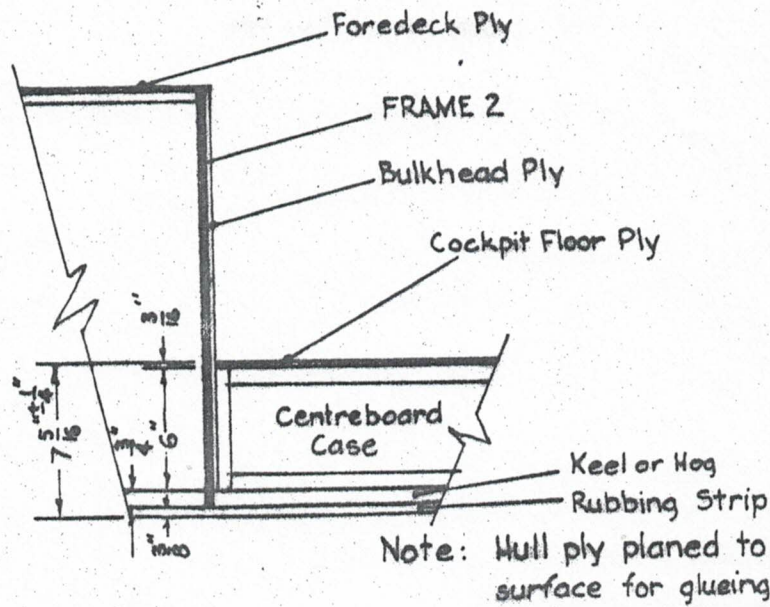
The hatch areas measured are the actual openings NOT the area of the hatch covers.

Now turn the hull upside down and again lay the large square down the centreline of the hull with the short arm against the stem head and the 165mm. (6 1/2") block used as a spacer to hold the long arm 165mm. (6 1/2") above the rubbing strip at the stern transom. The square is now touching the hull at three places, the stem head, somewhere between frame 2 and 3 and on the block at the stern. Now measure the spring at each of the frame positions as marked on the long arm of the square.

To mark the chine at each of the frames, take the small square and tape the chine square of the marked positions and then very accurately mark with the pencil. Measure the width at chine with the calipers at frame 2 this should be between 1197mm. (47-1/8") and 1210mm. (47-5/8") including side ply.

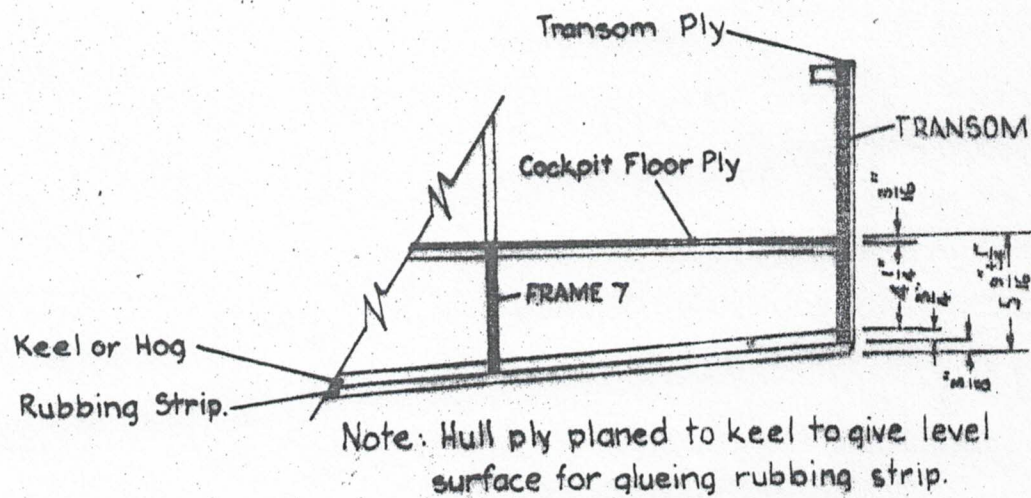
Inbuilt bouyancy shall be checked in accordance with the Constitution, Appendix 1, Clause 2g part 3.

All other measurements are straight forward if you follow the measurement form. Note the depth of the rudder is to be measured below the outside of the ply at the keel NOT below the rubbing strip.



SECTION THROUGH CENTRE OF FRAME 2

CLAUSE 2 (a) (iii) (e) 1.



SECTION THROUGH CENTRE OF TRANSOM

CLAUSE 2 (a) (iii) (e) 2

MEASURING A NATIONAL GWEN 12 YACHT.

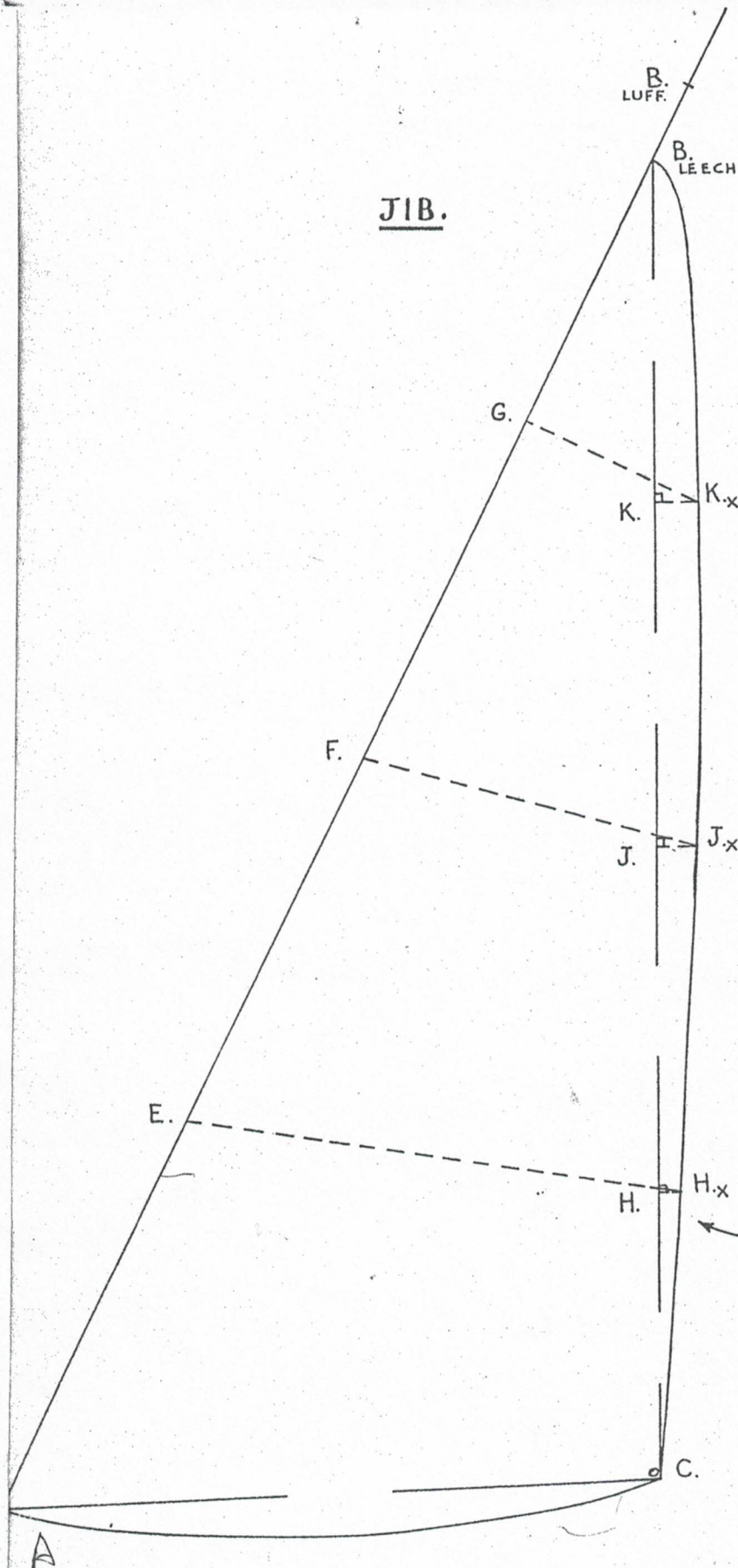
SAILS.

Whilst measuring the sails constantly refer to these notes, the drawings and the photographs to get the definite points of measurement as laid down by the National Measurer.

ALL dimensions are MAXIMUM and must not be exceeded.

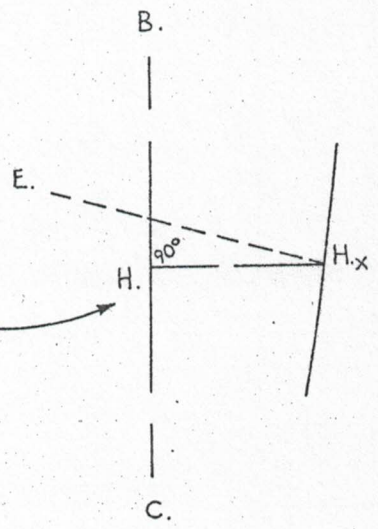
JIB.

1. Lay the sail flat on the floor.
2. The TACK is point "A".
The HEAD is point "B".
The CLEW is point "C".
2. Start by marking the following points on the LUFF from point "A" towards point "B".
point "E" is 1,143 millimetres (3'-9") from "A".
point "F" is 2,210 millimetres (7'-3") from "A".
point "G" is 3,200 millimetres (10'-6") from "A".
point "B" is 4,191 millimetres (13'-9") from "A".
3. Lay a straight edge from the CLEW (point "C") to the HEAD (point "B").
4. On the outside edge of the straight edge starting from the CLEW (point "C") and working towards the HEAD (point "B") mark the following points :-
point "H" is 762 millimetres (2'-6") from "C".
point "J" is 1,676 millimetres (5'-6") from "C".
point "K" is 2,591 millimetres (8'-6") from "C".
point "B" is 3,505 millimetres (11'-6") from "C".
5. Project points "H", "J", and "K" from the back edge of the straight edge to the LEECH of the sail using a square.
6. Girth dimensions of the Jib now may be measured.
"A" to "C" is 1,753 millimetres (5'-9").
"E" to "H" is 1,321 millimetres (4'-4").
"F" to "J" is 914 millimetres (3'-0").
"G" to "K" is 508 millimetres (1'-8").
7. There is no limit to the round in the foot.



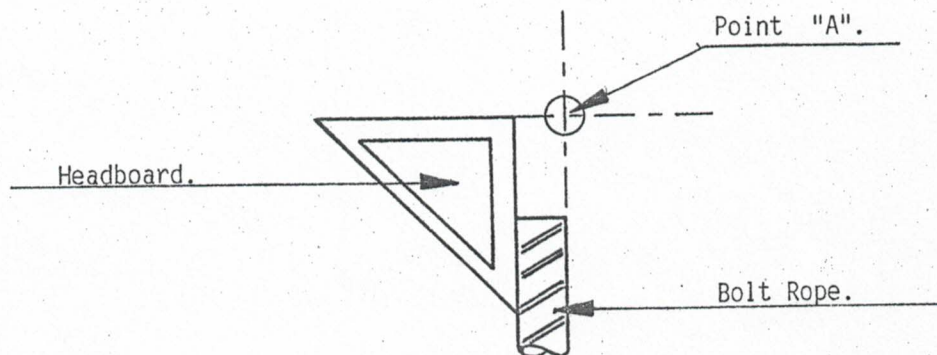
JIB.

NOTE: Leech point B. on "Low Foot" Jibs does not usually fall on Luff point B.



MAINSAIL

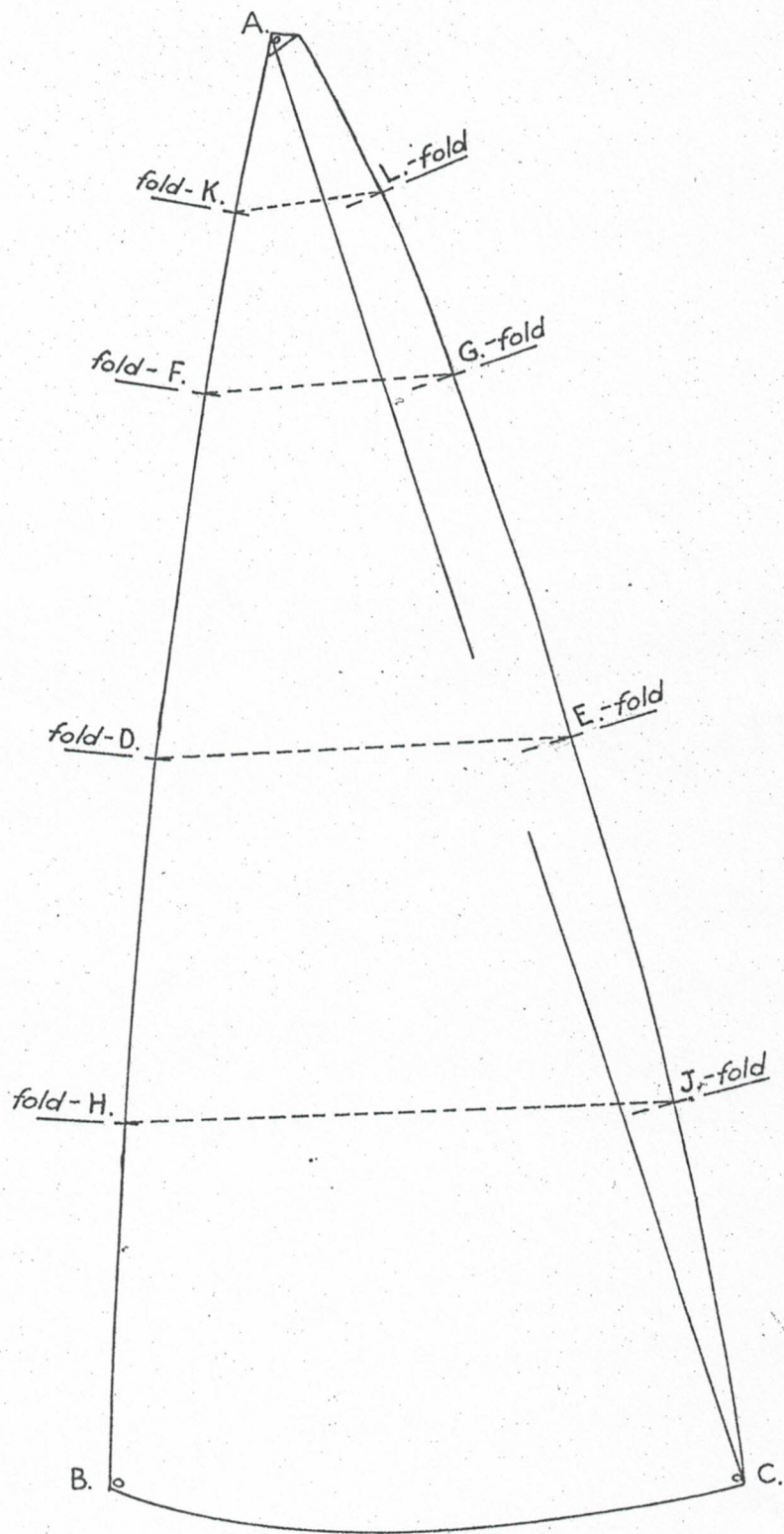
1. Lay the sail flat on the floor.
2. The HEAD is point "A".
The TACK is point "B".
The CLEW is point "C".
3. Starting with the LUFF fold "A" to "B" and mark point "D" in the crease formed.
If the bolt rope does not extend to the top of the HEADBOARD then the bolt rope must be projected to this point.



4. Fold point "A" to point "D" and mark point "F" in the crease.
5. Fold point "A" to point "F" and mark point "K" in the crease.
6. Fold point "B" (TACK) to point "D" and mark point "H" in the crease.
7. Now mark the LEECH. Important Note :- Make sure that the same side of the sail is used.
8. Fold point "A" to point "C" and mark point "E" in the crease.
9. Fold point "A" to point "E" and mark point "G" in the crease.
10. Fold point "A" to point "G" and mark point "L" in the crease.
11. Fold point "C" to point "E" and mark point "J" in the crease.
12. Girth dimensions can now be measured.

Half girth "D" to "C"	1553 mm.	(5'-11/8").
Top quarter girth "F" to "G" is	940 mm.	(3'-1").
Top eighth girth "K" to "L" is	561 mm.	(1'-10").
Bottom quarter girth "H" to "J" is	2057 mm	(6'-9")
Leech Measurement	5715 mm	(15'-9")

MAINSAIL.



MAX 7-432

SPINNAKER.

1. Obtain 4 - 75mm (3") nails, a claw hammer, a ball of string and a roll of masking tape.
2. Drive 1 nail into the floor - this represents the HEAD of the sail. Point "A".
3. Fold spinnaker in half bringing TACKS together.
4. Lay SPINNAKER on the floor with the HEAD against the nail (point "A").
5. Stretch the SPINNAKER gently and using the hammer drive a nail into the floor at the TACK point (point "B").
6. Drive a nail into the floor at the point of the fold (point "C").
7. Pull either the LUFF or the FOLD, depending on the cut of the SPINNAKER into a straight, if possible.
8. Using masking tape, tape the straight edge to the floor.
9. Using string and starting at the HEAD stretch it taut around the outside of the nails and tie it off at point "A".
10. Gently stretch the ROUND edge taut and tape it to the floor. The sail is now ready for measurement.
11. Measure from the nail at point "A" to the nail at point "B".
12. Measure from the nail at point "A" to the nail at point "C".
13. Measure the perpendicular from the longest side to the opposite corner (either point "B" or point "C"). This point of intersection is point "D".
14. Measure the maximum round i.e. from the string to the edge of the sail. The point on the string is point "E" and the point on the sail is point "F".
15. Calculate as follows :-

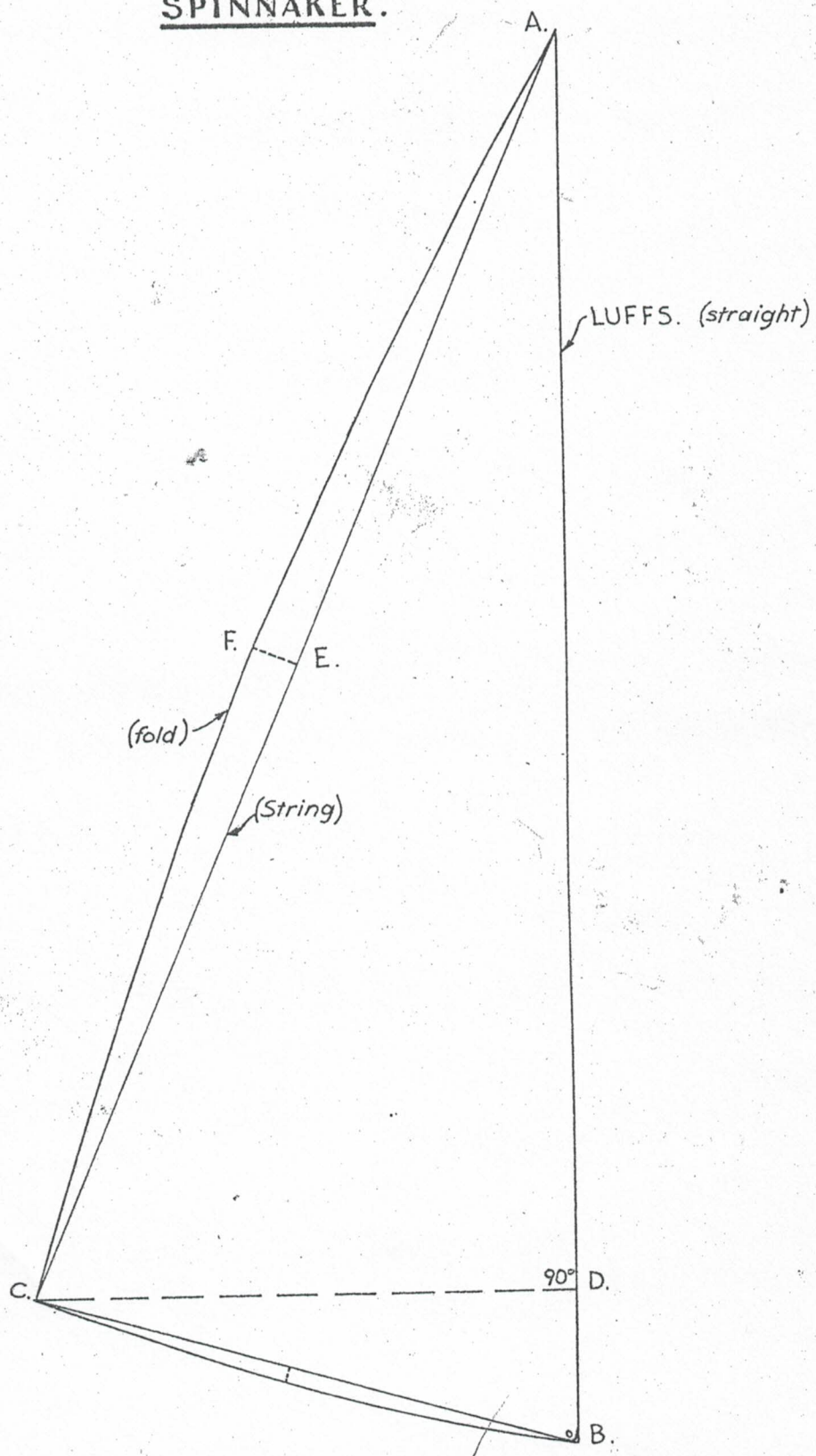
Area of spinnaker body = $AB \times CD$ plus or minus the area of the rounds.

Area of rounds = $AC \times EF \times 1-33$ (1-33 is used because the sail is folded).

This formula applies to one (1) round. If the round is negative the area is deducted.

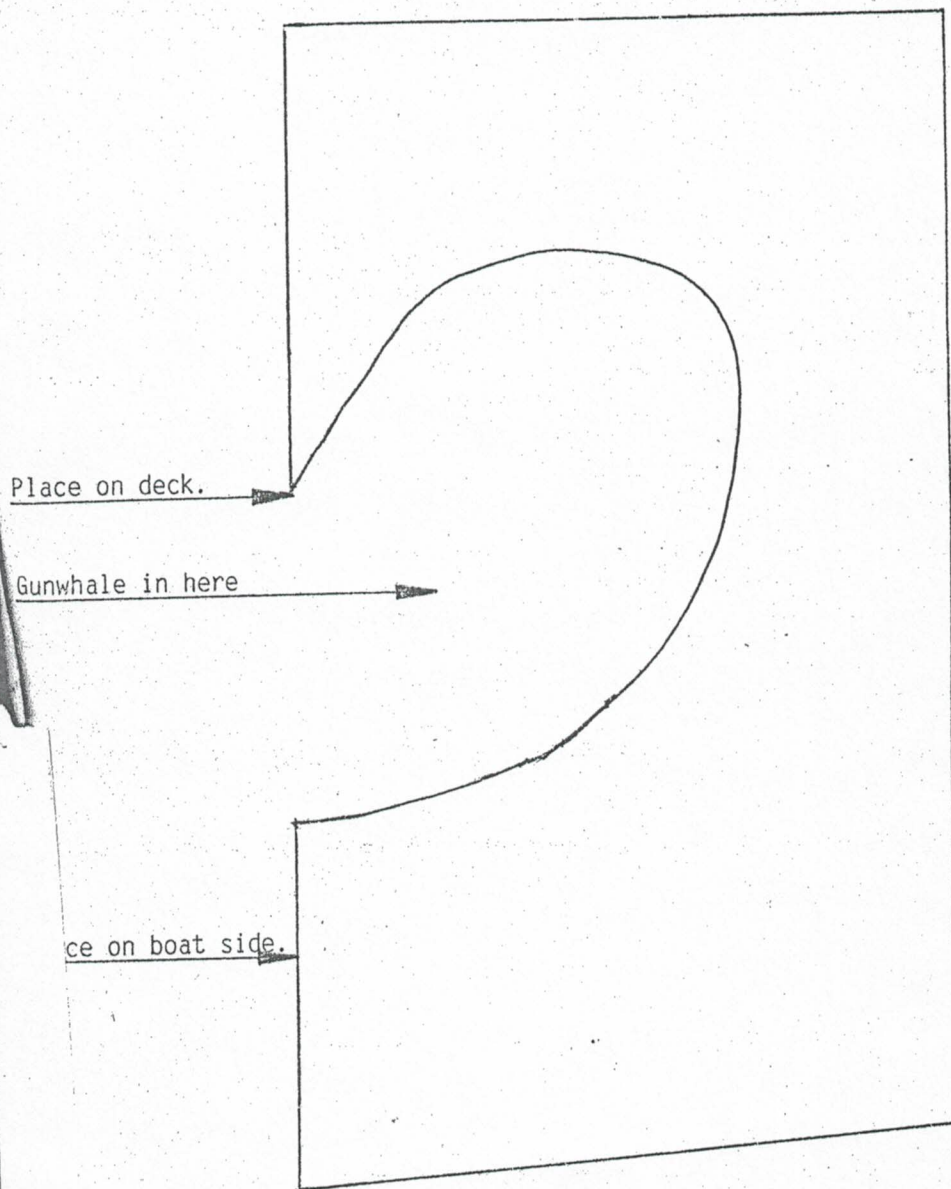
If there are more than one (1) round each round must be calculated separately and added to the area.

SPINNAKER.



NATIONAL GWEN 12' YACHT ASSOCIATION OF AUSTRALIA.

DETAIL OF SIDE MARKER.



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