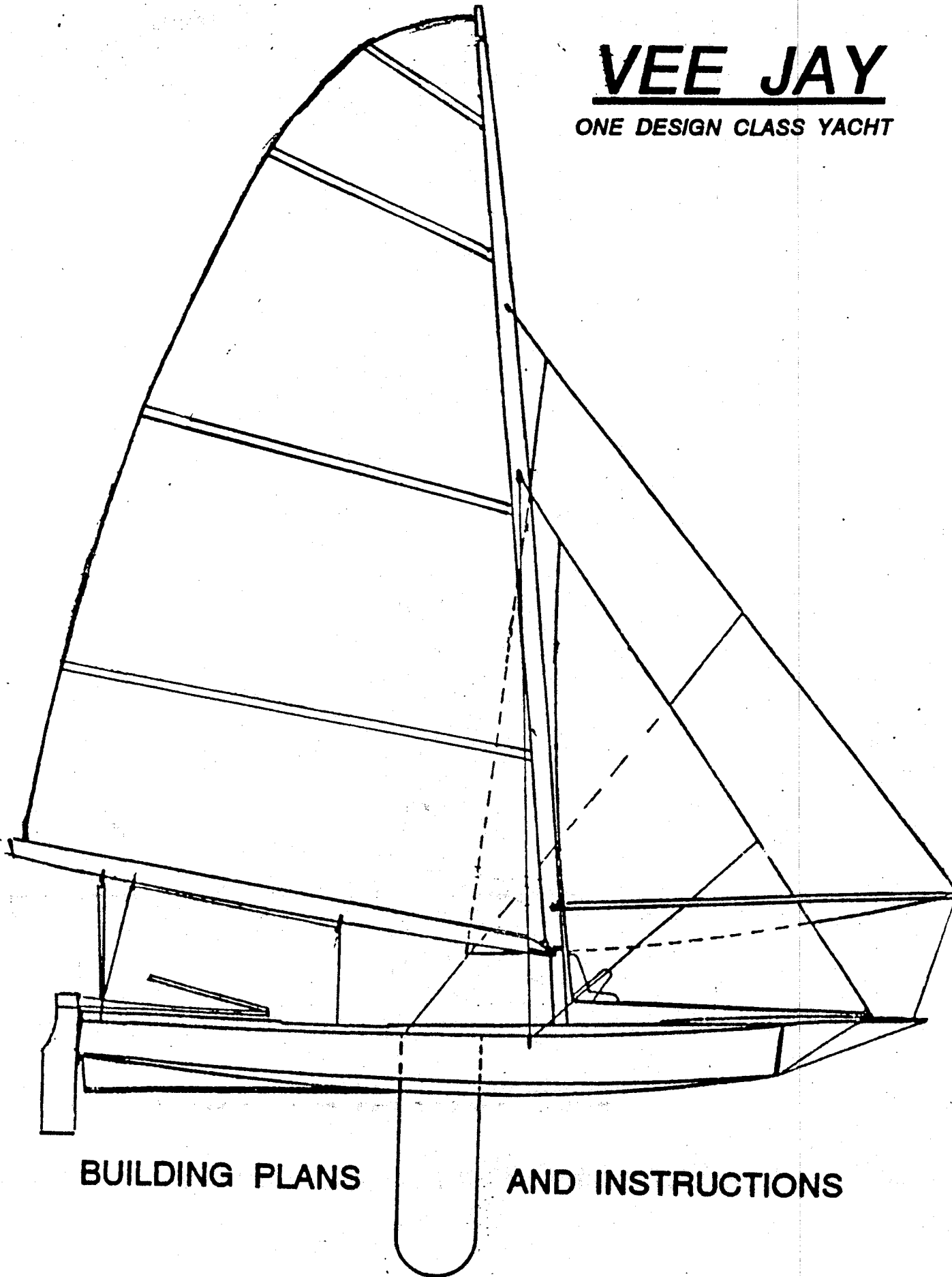


VEE JAY

ONE DESIGN CLASS YACHT

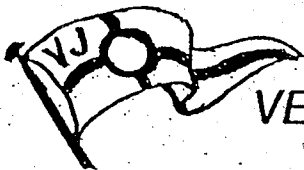


BUILDING PLANS

AND INSTRUCTIONS

Original Design by C. SPARROW

TIMBER



VEE JAY AMATEUR SAILING ASSOCIATION INC.

N.S.W. Southern Branch

Box 146 P.O.

SANS SOUCI 2219

VEE JAY BUILDING PLANS

These building plans are to construct a Vee Jay in TIMBER. An alternative set of plans is available to construct a Vee Jay in fiberglass.

In addition to these plans, the VJ Association has a jig available for hire.

The Vee Jay or Vacluse Junior was designed in 193⁵ by Charles Sparrow as a "safe and exciting, easily sailed small yacht that could be built at home by perhaps a boy and his father". The first boat was "Splinter" built by members of the Vacluse Amateur Sailing Club.

After some minor adjustments, the drawings were finalised and the first boat built to the modified plans was "Chum" owned by Sil Rohu. "Chum" is now in the Powerhouse Museum, Sydney.

The original plans were redrawn in 1989 by Craig Hughes to incorporate fiberglass construction. To date over 9100 VJ's have been built.

Alan Kildey,
Secretary and Registrar,
VJ Amateur Sailing Association,
(02) 49 58 6836.

JUNE 1999

BUILDING INSTRUCTIONS

1. PREFACE

a. **Introduction.**

Before making a start with the job, study the plans carefully and become familiar with the type of boat you are about to build, bearing in mind that it is to be constructed upside-down. It may be helpful to go to the nearest Club sailing Vee Jays and inspect a completed boat. These Club locations and further advice may be obtained from the Association Registrar, P.O. Box 6B, Booragul 2284.

b. **Warning.**

It is impossible to foresee every innovation which may be thought of in the future or to mention every suggestion that was ruled illegal in the past. If in doubt you must assume that anything in connection with the boat, it's sails or equipment which is not clearly covered by the plans or building instructions is illegal and you must obtain a ruling from the Association before you attempt it.

c. **Measurement of Boats**

All Vee Jay one design class yachts shall conform to the measurement requirements of the Association. These must be checked and submitted by an Official Measurer before the boat will be registered. Reference to the enclosed measurement certificate will indicate that tolerance in measurements are intended to take care of unintentional errors in construction only. No attempt should be made to take advantage of apparent errors in or omissions from these plans and/or building instructions without first obtaining written permission from the Association. It is advisable to seek help from an Official Measurer and endeavour to have two preliminary check measurements, one before fitting the bottom and sides, and the other before fitting the deck. When applying for registration contact the Association Registrar who will supply you with the hull number to be included on the Measurement Certificate.

d. **Materials**

1. **WEIGHT** - Whilst there is no restriction on the internal construction of the Vee Jay, the most satisfactory method is framing, taking care not to make the boat any heavier than necessary. Some of the recommended timber sizes may be reduced by prudent builders in order to save weight, but care will be necessary to ensure that joints are very well made and fastenings well placed. The weight of the hull, empty, clean and dry, including bowsprit and fixed fittings shall be **40.8kg minimum**.
2. **PLANKING** - The Vee Jay class yacht may be planked with plywood, the finished thickness of which shall be **4mm (0.156") minimum**. For the purpose of this ruling "finished thickness" shall mean the thickness of the plywood immediately prior to the application of paint, varnish etc. Some plywood manufacturers supply plywood of a nominal thickness of 3/16" which does fall within the above limits. Builders are advised that plywood manufactured to Australian standard 086-1964 (marine plywood) will meet the Associations measurement requirements, whereas, plywood manufactured to other standards may not. It is strongly suggested that orders be placed with suppliers in writing (with a duplicate copy retained) and should clearly set out the Association's measurement requirements. While some plywoods (e.g. Cedar) are preferable from a weight consideration it must be appreciated that they may have a low impact resistance. Every attempt must be made to obtain a ply which has strong backing veneer e.g. Coachwood. Hulls may also be constructed of fibreglass and purchased as bare hulls to be finished off by owner builders. Names of manufacturers of Vee Jay glass hulls can be obtained from the Association Secretary or Registrar.
3. **GLUE** - Only good quality marine glue should be used. It is recommended that one of the Resorcinol Formaldehydes be used for all frames, swinging planks and in fact, everything that cannot be described as a show joint. Resorcinol glues tend to stain, particularly on Silver Ash, and thus they are not recommended where stains may spoil the look of the boat, e.g. joint of the stem capping, the joints of the rubbing strips and the joints of the plywood at the chines etc. Where resorcinol glue is not used, one of the Urea or Melamine Formaldehydes is recommended. These should have good gap filling properties and can often be bought with a yellow hardener which blends well with Silver Ash. When glueing the best advice available is to follow the Manufacturers instructions, however the following tips may be helpful.

In general:-

- a. Surfaces should be lightly roughened before glueing to improve adhesion, particularly with harder woods.
 - b. Joints should be made while the glue is wet enough to squeeze out under pressure (High pressures are not usually required).
 - c. Check that you will not be using a glue below it's minimum safe temperature. Resorcinol glues should not be used below 16° C.
 - d. Artificial heat may be applied until glue has hardened.
 - e. Care is needed in cleaning up glue that has squeezed out of joints if a clean, unstained job is to result. Methods of cleaning vary with glue types. Generally Resorcinol glues should be allowed to dry completely before chipping, scraping or sanding away, while Urea glues frequently scrape clean when partially set (4-6 hours after mixing).
4. Most builders now use staples placed with a suitable hand staple gun. The depth of the staples can be varied to suit timber thickness. After the glue has set the staples may be removed with a removing tool leaving only pin holes in the timber. A thin veneer of timber is used under the staples to prevent the staples from damaging the plywood.

5. TIMBER

- a. General - There is no restriction on the species of timber used in the construction and those listed and the types quoted are suitable suggestions only. Before choosing the species of timber to be bought, the "colour scheme" of the boat must first be considered. The following are some pertinent facts - colour, weight, availability, cost, durability, ease of working and suitability for the job e.g. Red Cedar, although light is unsuited for swinging plank rails due to it's softness and weakness, compared with Silver Ash. All dimensions quoted on the drawings are finished sizes after dressing. All dimensions in the table below are finished sizes after dressing except where otherwise noted in "remarks" as 'rough sawn'. This list is not fully comprehensive:

<u>ITEM</u>	<u>NO.</u>	<u>SIZE</u>	<u>METRES LENGTH</u>	<u>REMARKS</u>
Building jig				See ply 01 drawing
Stem				See ply 03 drawing
Frames				See ply 04 drawing
Chines	2	25x19	4.27	Hemlock Pacific Maple
Keel	1	63x19	3.60	Pacific Maple
Stringers	4	16x13	3.60	Oregon
Inside gunwhale	2	16x13	3.60	Pacific Maple
Outside gunwhale	2	25x25	3.60	Cedar
Gunwhale rubbing strips	2	25x6	3.60	Silver Ash
Sides	1	3581x1220		4mm Marine ply
Bottom	1	3581x1220		6mm (1800) sheets scarf jntd.
Deck	1	3581x1220		4mm sheets
Transom-Centreboard case etc.	1	1829x944		4mm sheets
King plank	1	50x10	1.5	Hemlock Pacific Maple
Deadwood	1	152x38	2.2	Rough sawn cedar

- b. Quality - All timber should be at least equal to No.2 clear quality stressed timber

c. Cedar - Cedar used should be Australian Red Cedar although Western Red Cedar or New Guinea Cedar are satisfactory substitutes. Usually they are pink in colour and not so pleasing to look at. For internal work other satisfactory substitutes are Kalantas.

d. Silver Ash - Substitutes are Silver Quondong and Ramin. The latter is not recommended due to it's softness and quick discolouring.

e. Maple - True Pacific Maple is a very satisfactory timber but it is frequently unobtainable, thus for weight consideration it is better to order Queensland Maple.

e. Marking Out.

The best advice that can be given for the whole job is: Mark out **accurately** with a knife rather than a pencil and work slowly and carefully with sharp tools.

II BUILDING JIG

A. PREAMBLE

1. The shape of your boat, hence it's sailing qualities, depends very largely on two things:
 - a. The Vee (angle between the two sheets of ply on the bottom). It is determined by the angle on the bottom member of the frames and varies throughout the boat.
 - b. Spring (curvature of the keel). It is determined by the relative heights of the frames on the building jig e.g. by raising the middle frames on the jig more curve is imparted to the keel. The heights of the frames are set by the chocks on the jig, hence, provided the remainder of a frame is correct, the spring of a boat is set by:-
 - (i) The heights of the chocks
 - (ii) The position of the frames along the jig,
 Keep these facts in mind.
2. The quality and the accuracy of the building jig that you use is very important. You are advised to spend a lot of time assuring:
 - a. The top of the jig is flat and horizontal
 - b. The whole structure is fastened squarely and rigidly
 - c. That all measurements are taken accurately.

B. CONSTRUCTION

1. Mark off and cut side bearers.
2. Cut the four cross peices. Accuracy in their length is very important.
3. Bolt the jig together upside-down and check that it is square by measuring diagonally across the corners. If one measurement is long bump that corner with a heavy hammer and check again.
4. Cut and screw the diagonal braces. Make and set the legs.
5. Turn the jig over and level it. Mark off and position the vertical frame supports. Pay particular attention to the placing of these so that the finished position of the frames will match the dimensions on the drawing which are to the centre line of the frame and not the edges. Make sure that all supports are perpendicular to the top of the jig.
6. Make the frame chocks and nail them firmly to the jig. Double check these heights - Frame "C" sits directly on top of the jig. Frames "A" and "B" sit 7mm and 31mm respectively below the top of the jig.
7. Make the stem chock (see drawing Ply 03) and fix it to the jig. Brace the chock (as shown) to the second cross peice, take care to correctly position stem block on the jig as shown in drawings Ply 01 and Ply 03.

III STEM ASSEMBLY

A. PREAMBLE

1. The method of construction of the stem is optional.
2. The size of the stem is governed by Measurement Certificate dimensions to E4.

B. CONSTRUCTION

1. Mark and scribe inner stem block on a 300x100x25 piece of timber.
2. Cut and plane inner stem block to exact dimensions on the bottom, leaving 2mm green on the sides.
3. Cut and plane stem block support. Take care to obtain 5° angle off the vertical on the forward face.
4. Screw the inner stem block to the support with 2 x 45mm long screws from the front side. The screws are to be removed before the stem capping is fitted.

IV

FRAMES**A. CONSTRUCTION**

1. Draw the shape of each frame accurately onto peices of scrap plywood to make templates (some builders might like to buy a sheet of cheap, non waterproof ply to make the templates). Take the dimensions from the "table of offsets", Drawing Ply 01. The offsets have been adjusted for 6mm bottom and 4mm sides ply. That is the offsets are to the inside of the ply. Cut out the templates and plane them all round and as squarely and accurately to size as possible.
2. **WORKING ON EACH FRAME SEPARATELY**
 - a. Cut the timber for the frame members.
 - b. Lay greaseproof paper on the template and tack the deck beam and floor member to the template.
 - c. Cut and fit the two side members, tacking them to the template also.
 - d. Ensure close fitting joints and allow a slight overlap all round the edge of the template for cleaning up after the glue sets.
3. **CUT THE PLYWOOD GUSSETS**
 - a. Frame "F" is a temporary frame. It should be removed when the hull is removed from the jig and turned over.
 - b. Deck beams on frames "C" to "F" are temporary at this stage. These will be replaced with cockpit beams to support wooden cockpit when hull is turned over.
4. Check that all frames are ready for glueing and glue all the gussets to their frames; drilling and nailing right through into the template. Staples may be used instead of nails, clean up the surplus glue.
5. When the glue has dried, all frames may be planed squarely on all edges till they exactly coincide with the templates. Remove the templates from all except the transom frame, glue the second set of gussets on to the mast frame "B".
6. The frames are now ready for setting up in the building jig.

B. SETTING UP THE FRAMES

Working on each frame seperately:

1. Set a frame on its chocks on the building jig and centralise it by measuring from the ends of the deck beam towards the centre of the jig. Clamp the frame to it's supports.
2. Clamp a light straight edge across the frame from point to point on the chines. Measure vertically from the top of the jig to the straight edge through the chines to check if the frame is set truly. If the two measurements are not equal, check the frame. Either correct these or if the frame is correct, alter the chocks so that they are correct. If the straight edge is not parallel to the top of the jig, the boat will have a twist in it.
3. Fix the frame to it's supports by four small bolts through the frame and into the supports. 5mm metal threads are suitable for this. Remove the clamps. The transom frame must be fixed by wood screws from the support into the frame.

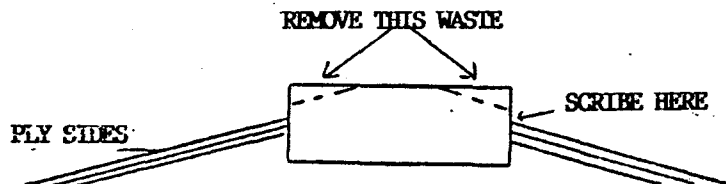
V FRAME CUTOUTS AND BENDING LONGITUDINAL MEMBERS

A. PREAMBLE

1. All marking out from all frame cut outs should be as follows:
 - a. Frames 'A', 'B', 'C' on the aft side of the frame
 - b. Frames 'D', 'E', 'F', 'T' on the forward side of the frame.
2. **NOTE** Frame 'F' is a construction aid only and is removed after laying the ply planking. Deck beams, frames 'C' to 'T' are temporary and will be replaced by cockpit deck beams later.

B. KEEL

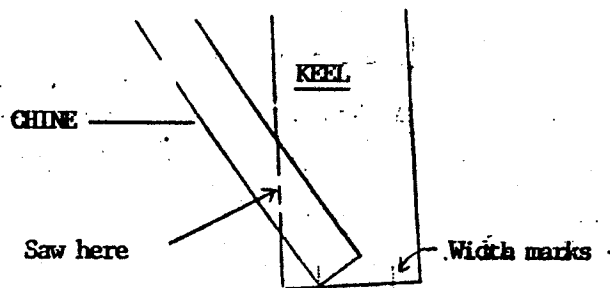
1. Scribe a centreline down the keel on both sides. Make the lines clear preferably using a marking gauge.
2. Plane the sides of the keel on a taper from the maximum 63mm about one metre from the bow, to 36mm wide at the bow end.
3. Mark the thickness of the keel (19mm) down from the apex of each frame. Set up a straight edge across the frames in turn between chines.
4. Using a drawing square resting on the straight edge, draw the frame centre line and then marking from it, the sides of the contour to suit the width of the keel at that point.
5. Remove the straight edge and make two vertical saw cuts, chisel out the waste, using additional saw cuts 6mm apart in the waste material.
6. Lay the keel on the stem (overlapping slightly at the front). Clamp it lightly in position and bend the keel over the frames tying down at the stem.
7. Check the position of the keel by measuring and checking dimension 'E', see drawing Ply 02, at each frame. True up the keel line by removing more timber from the cutouts, angling slightly if necessary. If excess timber has been removed, packing may be inserted under the keel. Be careful with these measurements or the sailing qualities and/or registration of your boat may be affected.
8. Drill through the keel into the frames for two 25x6 gauge screws. Countersink well for the screw heads.
9. Scribe the keel at each frame as shown. Use the template shown on the drawing Ply 03 to help slope the forward end. Remove the keel to the bench and plane off most of the waste timber.



10. Make 6mm ply gusset bracket for between inner stem block and keel.
11. Replace the keel glueing and screwing it to the inner stem block thence to each frame looking towards the stern, with the exception of frame 'F'.
12. Finish shaping keel forward to match the inner block and template 100mm from front jig line.

C. CHINES

1. Make a jig as shown on drawing Ply 04 and mark the chine cut outs on the sides of the frames outlined above in Section 'A'.
2. Lay the chines in place between frame 'C' and the stem so that the outside edge of the chine passes through it's width mark previously made on the end of the keel. While in position, saw off the end of the chine to fit beside the keel.



Clamp the chines to the sides of the keel and bend them around the frames. Drill through the chines into the keel for one 38x6 gauge screw as far aft on each of the two joints as possible.

3. Apply glue and screw chines to keel thence bend these round together fasteneing to every frame except frame "F", with one 38x6 gauge screw placed horizontally. Let the heads in a little. Leave the clamps on over night so that the glue can set before too much weight is placed on the screws.

D. INSIDE GUNHALES

1. Bend, screw and glue these into position using the same method and type of marking jig as used for the chines.
 - a. At the bow they are fixed to the breasthock, which is cut to suit.
 - b. 25x6 gauge screws are sufficient.
 - c. Do not fasten to frame.
 - d. Refer to drawing Ply 03.

E. STRINGERS

1. Lay the stringers on the bottom frame members midway between keel and chine. Mark the depth of the stringers on all frames except the transom. The stringers are cut a few inches short of the transom and finish at frame "A".
2. Cut out the frames using a saw and chisel.
3. Lay the stringers in position.
4. Apply glue and fasten each frame except frame "F" with staples.

VI

COVERING BOTTOM SIDES AND TRANSOM WITH PLYWOODA. TRANSOM

1. Cut off ends of keel, chines and inside gunwhales so that they are flush with the back of the frame.
2. Cut the transom plywood 6mm larger all round than the frame.
3. Lay the plywood against the frame, clamp it lightly and mark the outline of the frame on the back i.e. the forward side
4. Apply glue to the after face of the frame and lightly clamp the ply in position locating it with the outline drawn previously. Drill the frame and nail or staple the ply in position. Scrape away surplus glue.
5. When the glue has dried carefully plane the bottom and side of the ply with the long plane till it is flush with the edge of the frame and at the correct angle. This operation requires care because these joints have to be good or unsightly gaps will be seen in the joint when the bottom and side plys are fitted.
6. Leave planing edge of the ply on the deck beam until the boat is finished and turned over.

B. SIDES

1. Lay a 3581mm x 1220mm sheet of ply along one side of the boat with the best looking veneer on the out side and one edge roughly on the line of the gunwhales. Clamp the sheet lightly in position and mark the outline of the side of the boat. Mark a 38mm overlap in length at the transom and 6mm overlap on all other edges.
2. Unclamp the ply and lay it on the other side of the boat leaving the best veneer on the outside. Check that there is sufficient ply left to form the other side (with overlap for trimming).
3. Cut the ply for the side to the overlap mark.
4. With the long plane, plane the chines and keel till most of the surplus timber is removed (see drawing Ply 05). Alternate from chine to keel to keep the angles correct. Don't touch the centre line on the keel. Do not plane right down to size at this stage.
6. Lightly using the long plane, true up the outer faces of the chines, frames and inside gunwhales until the ply will be truly in position. Keep the planing to an absolute minimum and ensure that the curves are free from bumps or hollows.
Since the ply at the stem will buckle slightly as it is bent round, the line of the ply on the stem will not be straight. Therefore plane the side of the stem to suit the ply, retaining the widths previously marked at keel and deck, i.e. the sides of the stem will be curved between fixed upper and lower marks.
7. Check measure the beam of deck and chines at every frame.
8. Working on each side individually:
 - a. Clamp the ply back on the boat in the following order:
 - b. Gunwhale to chine behind frame "B"
 - c. Gunwhale to chine behind frame "D"
 - d. Gunwhale to chine at the transom
 - e. Gunwhale to chine at frame "A"
 - f. Gunwhale to chine at stem
 Ensure that the ply is flat on the boat.
9. Mark inside of ply, chine and inner gunwhale at both ends and in the middle of the sheet to enable re-location when the glue is spread. Remove the ply and apply glue to face of chines, frames, inside gunwhales, stem and transom and clamp the ply back in position using locating marks.

10. Secure the plywood to the boat with staples in the following order:

- a. down stem from keel
- b. along the chine to the transom
- c. down the transom
- d. the inside gunwhale at the bow thence along the gunwhale to the transom.
- e. Working from the centre of the sheet, place staples progressively towards the end.

It is essential that the ply is held flat all over the boat during this operation.

11. Clean up.

C. BOTTOM

1. With the long plane, plane keel, stringers, chines and edge of side ply until the bottom ply will lie truly on the boat. Be sure of planing a good line on the edge of the side ply.
2. Mark and cut the plywood similarly to the sides, laying the straight edge along the keel. It is not necessary to obtain a good join between the two sheets along the keel, since a gap of up to 6mm is adequately covered by the rubbing strip.
3. Remove the ply, apply the glue to the faces of the keel, chine, frames, stringers and transom and lay the ply back in position locating it as before.
4. Secure the ply to the boat with staples in the following order:
 - a. Along the chine from bow to stern.
 - b. Across the transom.
 - c. Along the keel from stern to bow.
 - d. Along the stringers.
5. Clean up surplus glue before it dries.
6. When the glue is dry, carefully plane:
 - a. The edges of the bottom back to the sides.
 - b. The ends of the bottoms and sides at the stem. The face of the stem should be true to ensure a good joint along the stem capping.
 - c. The bottom at the transom.
 - d. The bed for the deadwood and keel and rubbing strip along the joint of the two bottoms. This bed tapers from 8mm wide at the stem to 32mm wide at the front of the centre case, from where it runs parallel to the transom (see drawing Ply 05).
8. Tack temporary protecting strips on the keel where the boat will sit on the horses when turned over.

D. REMOVE FROM THE JIG.

1. The boat can now be released and lifted from the building jig and turned right side up. Chock the boat level (across the boat) taking care to see that it is not twisted.
2. Remove frame 'F' and temporary deck beams one at a time at frames 'C', 'D', 'E' and 'T'.
3. Fit deck beams at frames 'C', 'D', 'E' and 'T'.
4. Plane along the sides and transom deck beam to bring the plywood overlap down to the inside gunwhale and beam respectively. Do not plane the inside gunwhale at this stage.
5. Make and fit cockpit forward end bulkhead (see drawing Ply 05).

VII

KING PLANK AND OUTSIDE GUNWHALESA. KING PLANK

1. The king plank is fitted between the stem and the forward end of the cockpit.
2. Lay the Plank along the centreline of the boat and mark it's width 50mm on the top of the first and second frames. Cut out the top of the frames for a snug fit. Glue and screw with one 38mm x 8 gauge screw:
 - a. Vertically through the plank into frames "A" abd "B".
 - b. Horizontally through the inner stem block and forward cockpit bulkhead into the ends of the plank.

B. OUTSIDE GUNWHALES

1. Bend the gunwhales around, starting from the bow, line up the top about 3mm above the inside gunwhale, seeing that the gunwhale will lie properly in position.
2. Apply glue to the gunwhale and fasten it to the boat, drilling and nailing from the bow. Place the nails in between the nails that hold the side to the inside gunwhale, i.e. at 76mm centres.
3. When the glue has dried, trim off the ends. The top of the gunwhale, the side ply and the inside gunwhale should now be faired in with the deck beams so that the deck plywood will lie truly on the boat. Bend a piece of scrap ply across the boat as you go to assist in obtaining the correct line. The foredeck has been designed flat.

VIII

CENTRE CASEA. PREAMBLE

1. These are guidelines only as exact dimensions will depend on the design of the centreboard chosen i.e. length and thickness.
2. It will be advantageous to make the ends of the case from a fairly strong timber (oregan, Silver Ash etc.), since these parts can take quite a pounding if the boat runs aground.

B. CONSTRUCTION

1. Measure your boat and centreboard profile thickness to ascertain the exact measurements that will suit your boat. Remember when marking out that you will not have to cut oversize in places to allow the job to be fitted perfectly when assembled.
2. Cut the various parts including:
 - a. Bottom rails, use timber 51mm x 25mm, plane to fit the curve of the keel, cut down the centre line thus producing two rails with the same curve.
 - b. Vertical end pieces.
 - c. Ply sides - cut to fit between frames and leave long in the vertical direction. Plane bottom to fit curve of keel.
3. Prior to assembly, varnish that which becomes the inside. Don't varnish on glueing surfaces.

C. ASSEMBLY

1. Assemble the case in the following order:
 - a. Bottom and top rails to ply sides.
 - b. Clamp ply strengtheners, sides and vertical pieces together and check dimensions. Drill a few nail holes transversley through the ends so that the parts can be assembled easily when spread with glue.
 - c. Glue and nail together.

D. FITTING

1. Fit bottom of case to keel.
2. Mark the keel for the centres of the nails that will hold the case to the keel and drill through the keel from the inside.
3. Place the case in the boat and line it up centrally at both ends. Check the dimension A3 on the Measurement Certificate. Drill up through the holes made in the keel in step 2, thus drilling the bottom rails of the case in position.
4. Spread glue and replace the case, nailing up through the keel.
5. Check the centre alignment at the top of the case with a string line from stem to stern. Glue and screw the two deck beams with one 38mmx8 gauge screw horizontally into vertical pieces.
6. Plane the top of the case level with the deck beams.
7. Cut the slot into the keel, checking dimensions A3, B1, B3 on the Measurement Certificate. One method of doing this is:
 - a. Make an extension drill i.e. a 1.6mm drill fitted to a 406mm length of 3mm diameter steel rod. (this is worth the trouble since it makes three other jobs very easy later in the construction).
 - b. Insert the drill down the case, line it on the centreline of the keel and drill a hole about 5mm from each end.
 - c. Turn the boat over. Enlarge the two holes to 8mm diameter and cut the slot between the holes with a tenon saw.

IX

DEADWOODA. PREAMBLE

1. With the boat upside down, remove the temporary protecting strip.
2. The deadwood runs from 152mm high at the transom to 0mm in the vicinity of the centre case. On the Measurement Certificate the deadwood measurement (M1) is 152mm. This includes a rubbing strip about 6mm thick. Thus the deadwood itself, without a strip is only 146mm at the transom. However no allowance is made at this stage, the unwanted 6mm is planed off after the deadwood has been glued in place.

B. CONSTRUCTION

1. Plane the sides of your timber to bring it to width (32mm).
Plane one edge straight.
2. Lay timber in place on the boat with the straight edge down.
Pack the timber up at the stern.
3. Build up a block with a pencil tacked to the top, adjusting the block till the pencil point is 152mm from the base.
4. With the block resting on the keel, carefully scribe the curve on both sides of the deadwood.
5. Remove the timber and saw the lower side of the line.
6. Plane the curve accurately to fit the keel. Be careful to keep the joint edge square to the centre line of the timber, otherwise the deadwood will not sit squarely on the boat.
7. Line up the deadwood on the boat and drill for a 38mm x 6 gauge screw at the aft end of the centre case. Screw temporarily, setting the head well in.
8. Lay a straight edge along the transom and mark the angle to which the deadwood shall be cut off. Remove and saw off the surplus and plane to the line. Cut off the forward end just past the point of contact to +0 -6.
9. Mark out the taper and plane the timber section.
10. Re screw to the boat and locate the aft end, holding it in place with a tack into the keel at an angle. Mark out and saw the centre case slot.
11. From the inside of the boat, drill at 152mm centres through the centreline of the keel into the deadwood. Use 10 gauge screws, 101mm long at the stern and shorter screws as you move closer to the centre case.

C. ASSEMBLY

1. Remove the deadwood, spread the glue and replace on the boat. Press down and slide backward and forward a couple of inches to ensure a good joint.
2. Locate the forward end and screw with the screw placed in B7 above. Locate and fix the aft end as done previously.
3. Check alignment then drill and screw into keel along the sides of the centre case slot, three screws at 101mm centres.
4. Turn the boat over and check alignment. Screw through the keel starting at the stern. Leave for glue to set.

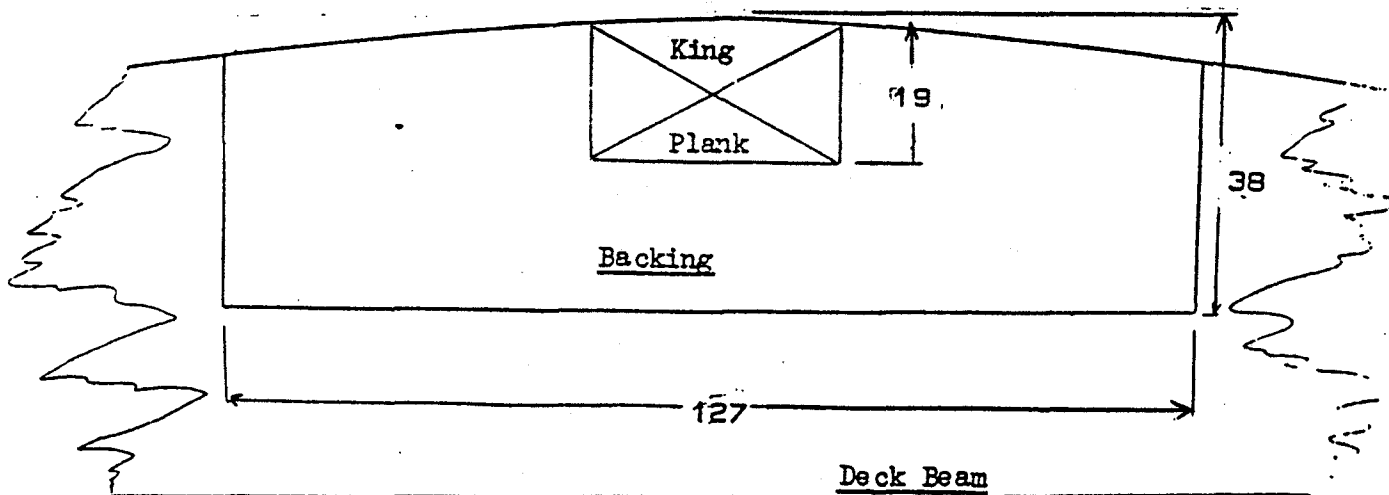
D. FINISHING

1. Taking the thickness of the rubbing strip into account, mark the depth of the deadwood on the after end. Run a string line forward on both sides to the point of contact. Plane to these lines.
2. The centre case, keel and deadwood are all subject to splitting at the back of the centre case if the centreboard accidentally hits the bottom. Make and fit the split arrestor into the deadwood at the back of the case. Set this fitting in epoxy resin for added strength.
3. Prepare the rubbing strip for the keel. Saw it to the appropriate tapers, it is about 10mm wide at the bow, 32mm along the centre case and 19mm at the transom. Ensure that the strip will be properly on the boat giving a good glue joint. The edges of the strip are rounded off and this should be done on the section in front of the case before glueing. At the bow the strip should be Vee shaped to match the bottom.
4. Apply glue and nail the strip every 101mm - 152mm.
5. Plane the after section till it is flush with the sides of the deadwood and round off the edges.

X

SUNDRY INTERNAL WORKA. BACKING BLOCKS

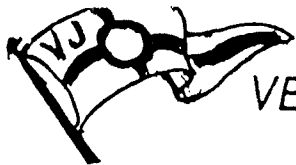
1. Check that you know what fittings you intend to place on the deck and make sure that there is something to screw into when the deck is in place. Below are most of the blocks that will be required to back up the common fittings.
2. Chain plate backing:
 - a. Material 101 x 76 x 25mm thick cedar, two required.
 - b. The chain plates are placed 254mm behind the centreline of the mast. Glue block vertically on each side of the boat, with the top edge hard up under the gunwhales.
 - c. Hold each in place with 4 nails.
 - d. Do not attempt to fit chain plates until deck has been screwed in place.
3. Jib sheet backing:
 - a. Material 38 x 19 x 406mm long approx. Cedar. Two required.
 - b. Cut the length to fit exactly between the frames "B" and "C" inside the gunwhales (38mm side upmost) on each side of the boat.
 - c. Plane the outside edge to fit the curve of the gunwhale.
 - d. Glue in place, screwing through the frames into the ends of the backing blocks with two 38 x 6 gauge screws each end.
 - e. Plane the top face so that the deck will lie truly.
4. Bowsprit strap backing:
 - a. Material 38 x 25 x 127mm Cedar. One required.
 - b. Fit this block on the aft side of frame "A" for the bowsprit strap to screw into. Make a cutout for the kingplank and glue in place.
 - c. Plane the top so that the deck will lie truly in position.

5. STERN POST

- a. Material 38 x 12 x 200mm long approx. Cedar. One required.
- b. The timber has it's 38mm dimension flat against the transom ply and cut must be made at the top and bottom to fit snugly the deckbeam bottom member.
- c. Glue and fix into position with one screw at top and bottom (38 x 8 gauge).

D. MOISTURE PROTECTION

1. A lot of water stains on a hull are caused by moisture through from the inside. In order to reduce this and also preserve the wood and glue, the whole of the inside and underside of the deck are now varnished. Slop the varnish around making sure everything is covered. Don't forget the underside of the deck beams.
2. It is recommended that at least three coats of varnish be applied. Polyurethane based oils have been found very successful for this application. Usually these need two or three days drying time between coats and work may proceed on fittings and spars while the oil dries.



VEE JAY AMATEUR SAILING ASSOCIATION INC.

VEE JAY MEASUREMENT CERTIFICATE

INSTRUCTIONS TO MEASURER

GENERAL: The object of measuring boats of the Vee Jay Class is to ensure all hulls are closely similar. Tolerances in measurements are intended to take care of unintentional errors in construction only. Should a measurer have reason to think that a deliberate attempt to make use of the tolerances to produce a hull markedly different from the official design has been made, he shall report the circumstances to the Association Registrar. The prime duty of the measurer is to report the facts, in regard to the measurements of the particular craft, as set out in this form. It is not the duty of the measurer to decide whether or not a particular boat should be granted registration. All cases must be considered on their merits by the Registration Committee.

EQUIPMENT: necessary to measure a Vee Jay is a 3658mm straight edge steel tape, large and small square, accurate rule and large calipers or trammel.

DATUM OR HORIZONTAL is defined as a line parallel to the top of the standard building frame.(see plans).

SET UP BOAT (right side up) with 3658mm straight edge touching deck at stem and chocked up 334mm from bottom of boat outside planking at transom (see plans). Run a large square off straight edge down stem. From here measure back 502mm at deck and keel also 102mm for station 'X'. A1, A2, A3 measurements may be taken. Depth of stem E4 can be taken with a second smaller square. Run the large square of the straight edge at the transom and measure back 2000mm and 948mm at deck and keel levels also B3 measurement can be taken. Straight edge can be discarded. Square line across and measure F1, F2, D2, D3.

TURN BOAT OVER Square lines across. Measure E1, J1, J2, J4, J5 also measure G1, G2, M1, M2, X1, K2, P. Check bottom and sides for convex/concave tolerances.

STEM MEASUREMENTS are to be measured in relation to a vertical section known as Section 'X' through the bottom of the hull, square to the centre line of hull 102mm exactly from foremost part of hull (see diagram).

MEASURED dimensions are shown on the diagram and are between horizontals and verticals excepting E3, G1, G2, H, P, Q. G2 is measured along the line of the joint. G1, K1, M1 are measured in the plane of the transom. E3, H, P, Q are clearly shown in the diagram. The spring should be measured while the hull is upsidown. Measure vertically 143mm(+/- 13mm) up from the bottom of the ply at the transom and take a taut line forward so it just touches the bottom of boat. The forward spring is then measured from this line to the bottom ply at section 'X'.

CONCAVE AND CONVEX MEASUREMENTS must be a symetrical curve over the whole length.

ROUND ON CHINE The Vee Jay is a hard chined boat and tolerances on the chine are permitted to allow for fibreglass boats and for smooth edges in ply boats. Accordingly, the round on the chine is defined as being the radius of a circle tangent to the bottom of the boat.

REGISTRATION NUMBER must be permanently marked on starboard side of the deadwood in letters at least 13mm high.

NAME OF BOAT to be on transom in letters at least 40mm high or on both sides of the hull in letters at least 100mm high. Name of Club and registration number must also appear.

MAINSAIL NUMBERS must be as near to the peak as possible staggered to avoid confusion, 102mm high and 64mm wide, stroke thickness 13mm. Vee Jay Class insignia must be under numbers, staggered to avoid confusion, 254mm high, 228mm wide, stroke thickness 38mm. All shall be in colour to contrast with sail.

SAILS see measuring sheet held by Club Measurer.

FIXED FITTINGS include bowsprit and fixings on boat, jib attachment on bowsprit, jib cleats, spinnaker cleats on hull, chain plates and necessary cleats for spinnaker leads and braces and any deadeyes, rudder gudgeons, swing plank rails and horses, sheet rope pulley. This does not include any pulleys except where they are permantly attached and cannot be removed with ordinary tools. This does not include any item permanently attached which is not normally connected to the hull and does not include ropes.

MAST may be of timber or alloy. It must not rotate. Contrasting colour bands 20mm wide on the mast at a distance of 4420mm apart (inside to inside). The inside of the top one being no further than 5009mm from the deck at the centre of the mast.

Proposed Name 1 _____ 2 _____

Name of Owner _____ Club _____

Address _____

Proposed Colour Patch _____ Sketch of Colour Patch _____

Name and Address of Builder: _____

Year Built _____

HULL All measurements are in millimetres

Length overall (including Planing boards and capping)	3515 \pm 3	A1
Front of bow to centre of mast at deck	1143 6	A2
Front of bow to front end of opening of centre case	1549 min	A3
Length of opening of centre case	406 max	B1
Width of centre case	32 max	B1a
Length of aft end of case to transom along deadwood	1511 min	B2
Depth of forward end of centre case (Vertical excluding rubbing strip from top of deck ply to outside of bottom Ply) with flat decks use straight edge from gunwhale to gunwhale	360 \pm 6	B3
Length of bowsprit outside front bow	Max 914 min 410	C
Length of cockpit on centre line of hull	2290 max	D1
Maximum depth of cockpit	200 max	D2
Beam at chine at section 'X'	93 max	E1
Width of bow at foremost position	76 max	E2
Length of chine at section 'X' to deck at centre of stem (measured with trammels)	310 \pm 6	E3
Vertical height of stem from outside of ply at centre of hull at 'X' to deck at front of bow	292 6	E4
Width of deck outside planking 102mm from front of bow	200 20	E5
Width of deck outside planking 502mm from front of bow	721 30	F1
Width of deck outside planking 2000mm from transom	1067 6	F2
Width of deck outside planking 984mm from transom	1029 6	F4
Width of deck at transom outside planking	860 6	F5
Depth of transom at chine	186 6	G1
Length of planing boards	38 max	H
Round on chines (see notes)	8 max	H1
Beam at chines 502mm from stem	403 \pm 6	J1
Beam at chine 2000mm from transom	911 6	J2
Beam at chines 984mm from transom	889 6	J4
Width of transom at chine (outside planking)	133 6	J5
Depth of Vee at transom	32 3	K1
Depth of vee 2000mm from transom	57 10	K2

Spring at transom	143 \pm 13	L1
Spring at stem	140 13	L2
Depth of deadwood including rubbing strip (along line of transom)	152 . 3	M1
Thickness of rubbing strip (optional)	Max 9 3 min	M2
Width of gunwhale (measured at underside)	Max 32	
Curvature, convex or concave across bottom keel to chine	Max 6	
Thickness of planking (other than fibreglass bottom 6mm optional sides and deck 4mm)		
Weight of hull and fixed fittings (empty, clean and dry)	Min 40.8kg	
Curvature convex/concave on sides from chine to underside of gunwhales from aft end of centre case to transom	Max 6	
Curvature, convex/concave on sides from chine to underside of gunwhales from aft end of centre case to stem *see notes	Max 35	
MAST length from centre of mast at deck to inside of contrasting band at top of mast	Max 5009	Q1
Width of mast	Max 102	Q2
SPINNAKER POLE length from mast to tip of pole including fittings in line with the centre of the boat	Max 2286	Q3
CENTRE BOARD Material optional, when measured must not exceed 865mm below the bottom of the boat	Max 359	R1
SWINING PLANKS Measured in a straight line from centre of hull to outboard of planks when fully extended	Max 1981	
Width	Max 165	
DEADWOOD The aft end of the deadwood must be measured on the same plane as the transom	+0 -6	
BOOM The boom may be timber or alloy. There is no min. length		
SPINNAKER POLE may be timber or alloy		
CENTRE BOARD may be constructed of any material subject to measurements		
RUDDER must fit into a rectangle 508mm wide, 914mm long. Thickness and type of fittings optional		
PIVOTING POINT OF RUDDER must not exceed 40mm from the transom		
BOWSPRIT includes any fittings, material optional		
FITTINGS AND RIGGING: optional		
SPINNAKER CHUTES ARE NOT PERMISSABLE.		
VARIATIONS: Describe below any variations from the Official Plan or Building Instructions not clearly permitted by the tolerances listed herein.		
THE MEASURER SHALL NOT MEASURE ANY BOAT HE BUILT, OWNS, REGULARLY SAILS OR IN WHICH HE HAS ANY REGULAR INTEREST.		

CERTIFICATE BY MEASURER

I certify that I have measured this boat and all measurements shown are true and correct to the best of my knowledge and I recommend that this boat be considered for Registration.

Signed _____ Official Measurer _____ Club _____
Date _____

* * * * *

CERTIFICATE BY OWNER

I certify that I am the owner of the boat, details of which are listed on this measurement certificate and furthermore, I have read and am aware of the details as recorded hereon.

Signed _____ Club _____
Date _____

* * * * *

OFFICE USE ONLY

Passed _____ Date _____

Signature of Registrar _____

* * * * *

SPECIAL NOTE TO OWNER

The intention of the Measurement Form is to enable a Vee Jay to be built so that all queries can be answered by reference to this form. It could however be that some items might have been missed and if in doubt reference should be made to the Registrar.

* * * * *

VEE JAY AMATEUR SAILING ASSOCIATION INC.

RE-DECKING MEASUREMENT SHEET

Name of Boat _____ Registered No. _____

Builder _____ Club _____

Length of boat _____ A1 _____

Front of bow to centre of mast at deck _____ A2 _____

Front of bow to front end of centre case opening _____ A3 _____

Length of opening of centre case at deck _____ B1 _____

Width of centreboard case _____ B2 _____

Depth of boat at forward end of centreboard case _____ B5 _____

Length of cockpit on centre line of hull _____ D1 _____

Depth of cockpit _____ D2 _____

Width of deck outside planking 102mm from bow _____ E5 _____

Width of deck outside planking 502mm from bow _____ F1 _____

Width of deck 2000mm from transom outside planking _____ F2 _____

Width of deck outside planking 984mm from transom _____ F4 _____

Width of deck at transom outside planking _____ F5 _____

Depth of transom at chine _____ G2 _____

Thickness of planking _____

Weight of hull _____ Minimum Weight 40.8kg _____

Length of centreboard measured from underside of boat _____ Max 865mm _____

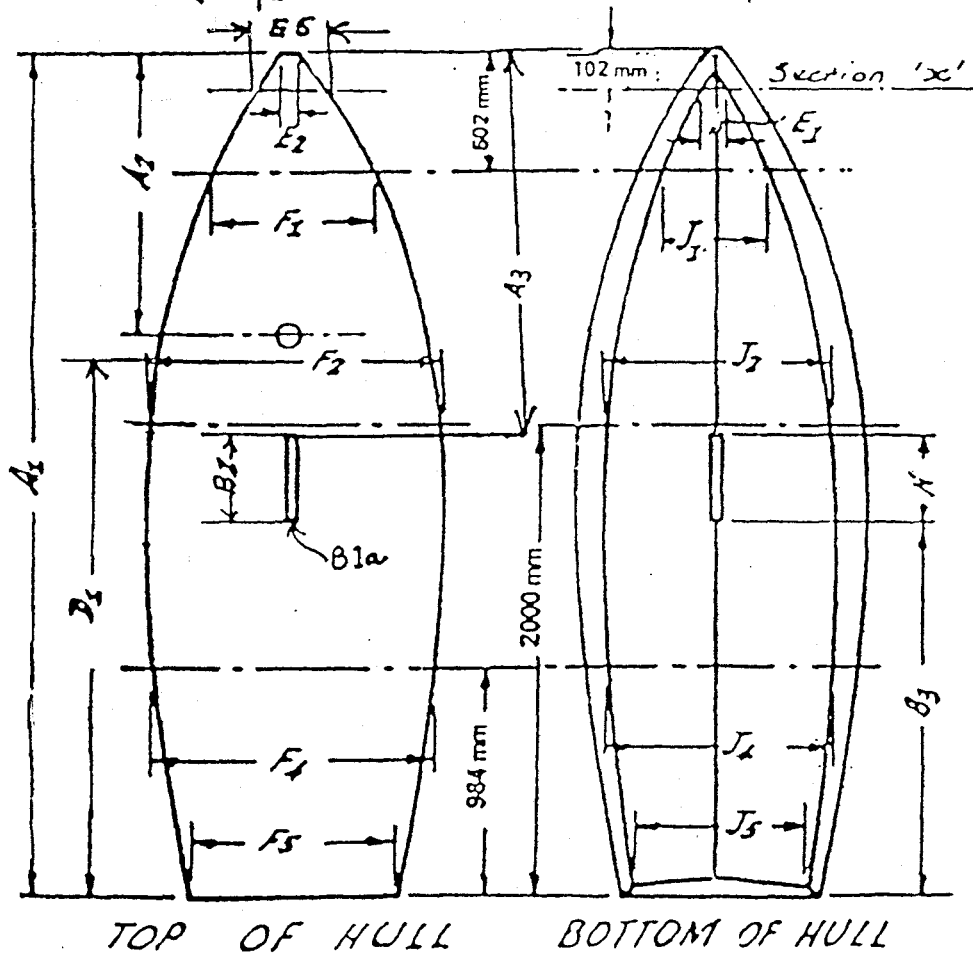
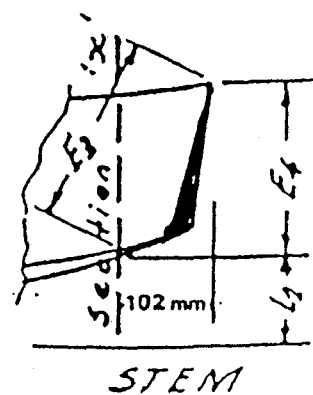
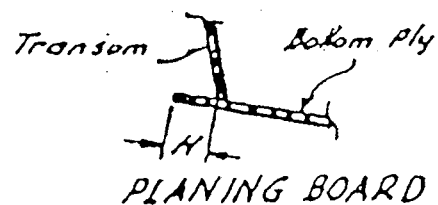
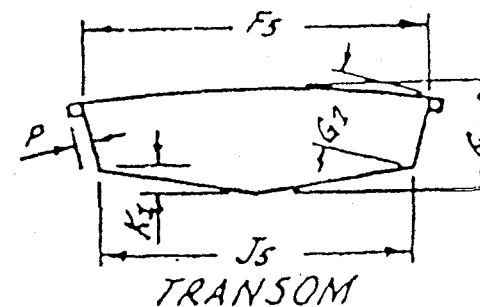
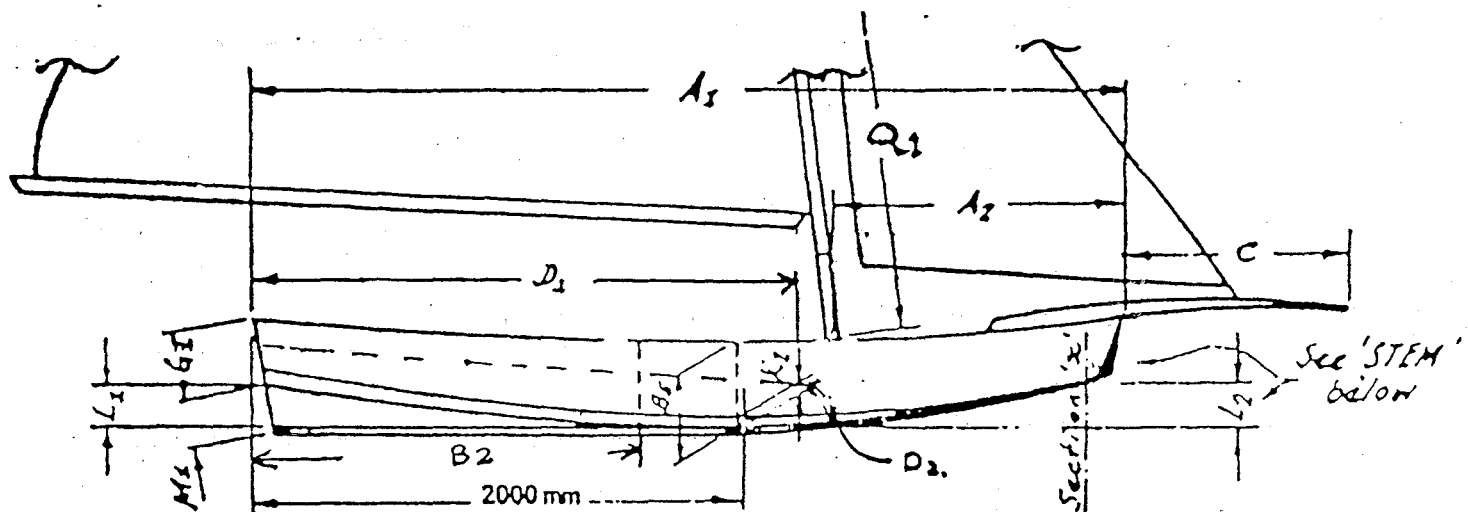
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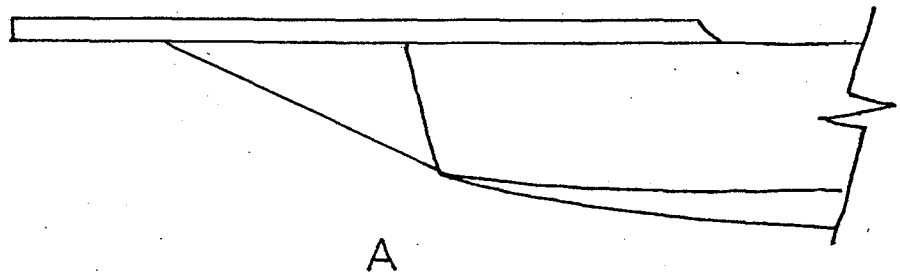
CERTIFICATE BY MEASURER

I certify that I have checked the above measurements and to the best of my knowledge have found them to be within the tolerances allowed.

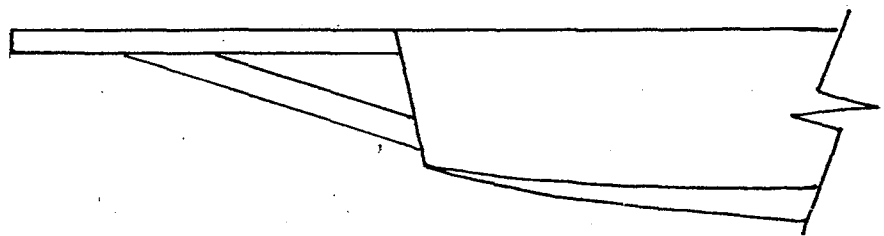
Signed _____ Official Measurer _____ Club _____

Date _____





A



B

TYPES OF BOWSPRITS ALLOWED ON VEE JAY.

A, Conventional type bowsprit bolted or screwed onto deck and held by a wire bob stay

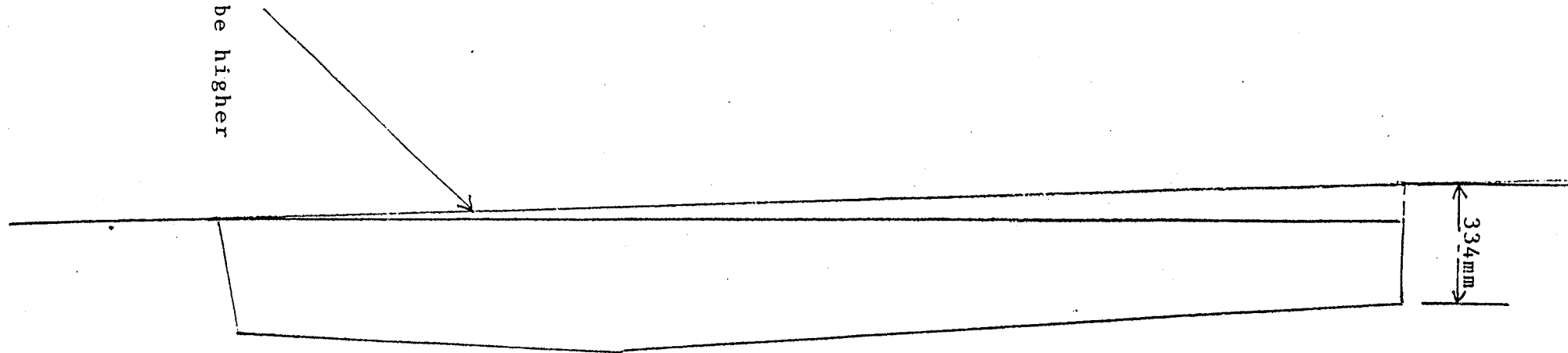
B. Integrated type bowsprit fitted into the bow of the boat and held by a wire bob stay or a solid strut 100mm wide and 12mm thick this strut must be a minimum of 50 mm from the bottom of the boat, a window must be left above the strut so the total length of the boat may be ascertained

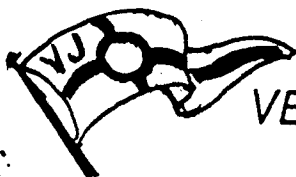
.The bowsprits may be round, oval or square section

METHOD FOR MEASURING CAMBER ON DECK.

Measure up 334mm from bottom of boat at transom, from this measurement lay a straight edge to bow of boat at deck level the camber of the boat must not fall beyond this straight line

Camber must not be higher
than this line





VEE JAY AMATEUR SAILING ASSOCIATION INC.

METHOD FOR MEASURING VEE JAY SAILS

MATERIAL: Sails may be made of natural or synthetic fabrics.

GENERAL: All sails must be dry. Ropes are not included in measurements. Material only to be measured. All measurements must be taken with the sails laid out flat and wrinkles removed. Do not stretch the cloth.

MAINSAIL: A floor plan is required. It will be the maximum outline for the Vee Jay mainsail. Fold the sail in half. Luff A-B. and Leech A-C and measure the Girth at D-E. This measurement must not exceed 1813mm.
Place the sail on the FLOOR PLAN with the Bolt Rope outside but touching the Luff at line "A", the head of the sail and "B" the foot of the Sail. Without applying continued pressure allow the sail to lay flat. The Luff may protrude beyond the Luff Line but must not exceed 100mm at point "X".
The sail must now fit within the Floor Plan but may be moved up or down the Luff Line only. The angle at point "A" must not exceed 90 degrees.
This applies to Mainsails made after 19th June, 1988.

JIB: A Floor Plan is required.
The head and the foot of the jib must be held securely. Allow the Jib to lay flat without applying continued pressure and position the Sail to fit within the diagram (Floor Plan), The Leach may be concave or straight.
The round on the foot of the Sail must be a fair and even curve.

SPINNAKER: A floor plan is not required but the Leeches and the Foot of the Spinnaker must be fair and even curves.

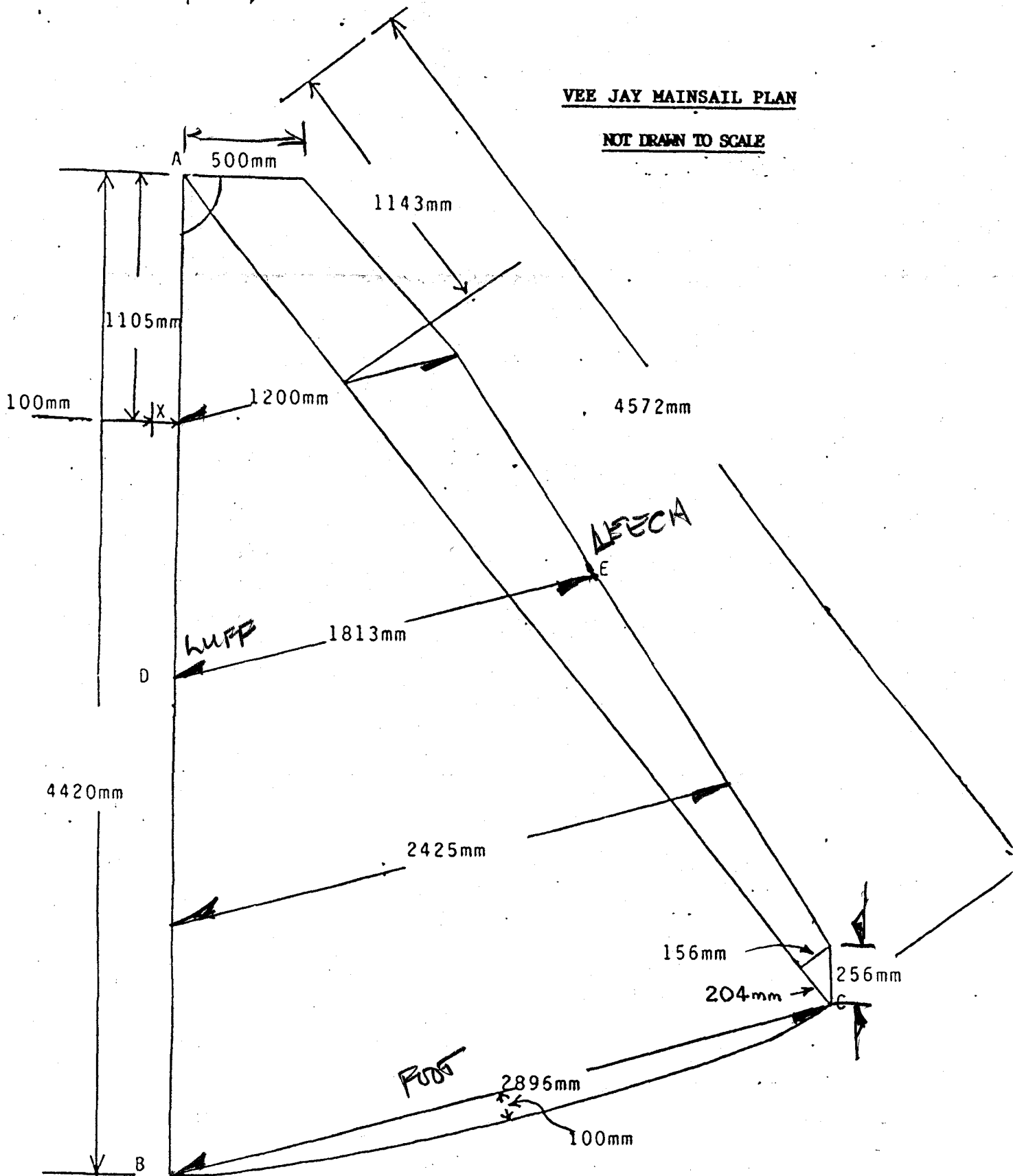
A. Kildey
Registrar/Plans Officer
Vee Jay A.S.A. Inc.
June 1988

METHOD OF MEASURING VJ MAINSAIL (1996 CLARIFICATION)

- STEP 1:** “Fold sail in half luff A-B”, means to fold the sail in half so that Point A & Point B are together. The mid point along the luff so formed is marked as Point D.
- STEP 2:** “Fold sail in half leach A-C” means to fold the sail in half so that Point A & Point C are together. The mid point along the leach so formed is marked as Point E.
- STEP 3:** “Measure the girth at D-E. This measurement must not exceed 1813mm.”
- This means that the girth measurement between Point D marked on the luff and Point E marked on the leach must not exceed 1813mm.

VEE JAY MAINSAIL PLAN

NOT DRAWN TO SCALE



NOTES

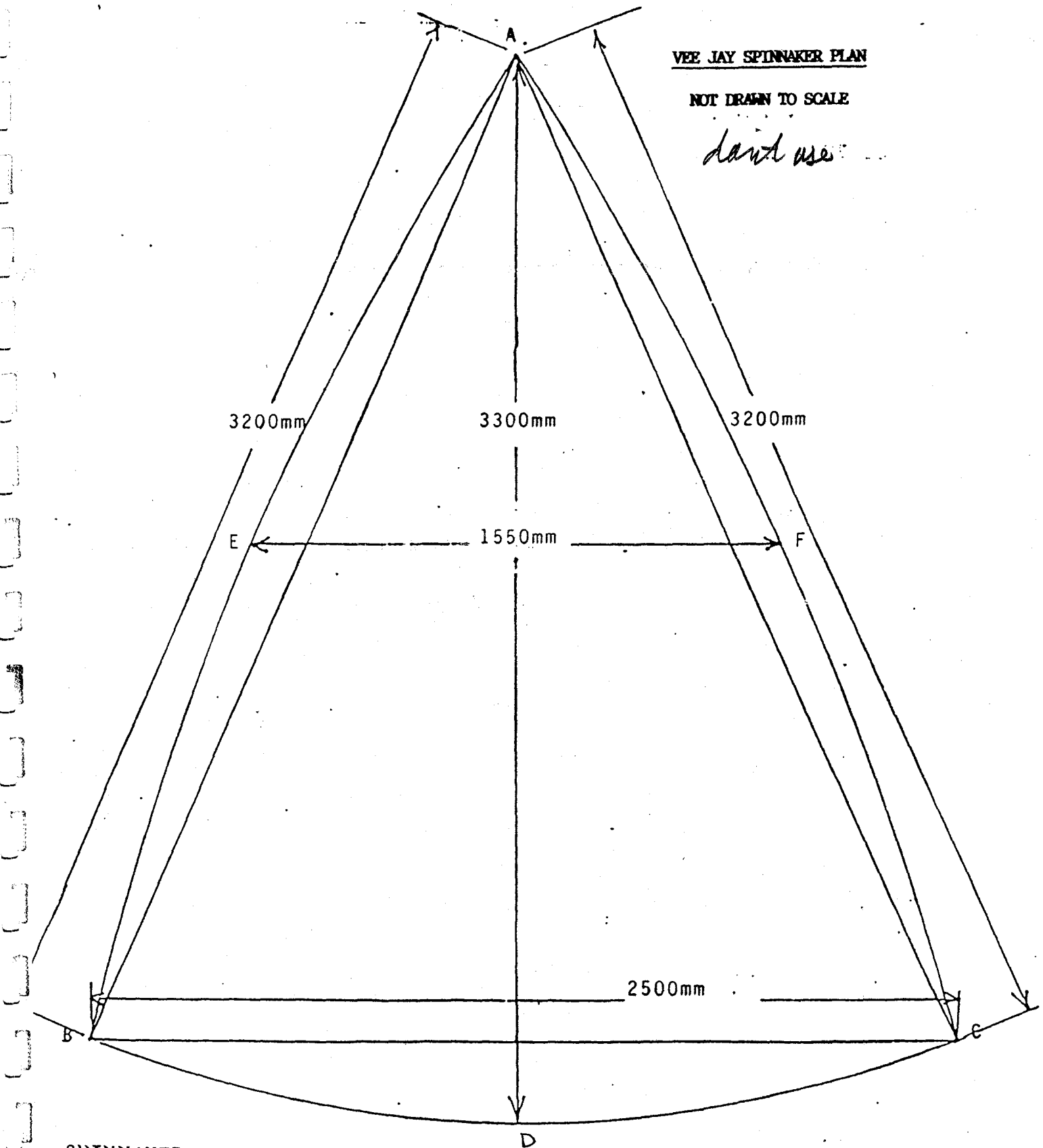
1. The angle at point "A" must not exceed 90 degrees
2. The Luff round at point "X" must not exceed 100mm.

June 1988.

VEE JAY SPINNAKER PLAN

NOT DRAWN TO SCALE

don't use



FLOOR PLAN IS NOT REQUIRED.

1. Measure B-C maximum 2500mm
2. Fold B to C and mark point D at centre
3. Measure A-B, A-C maximum 3200mm. each, A-D maximum 3300mm.
4. Fold A-B mark point E at centre
5. Fold A-C mark point F at centre
6. Measure girth E-F maximum 1550mm

The Leeches and the Foot must be fair and even curves.

June, 1988

A floor plan is required

1. Draw line A-C = 3000mm

2. Draw line B-C = 1530mm

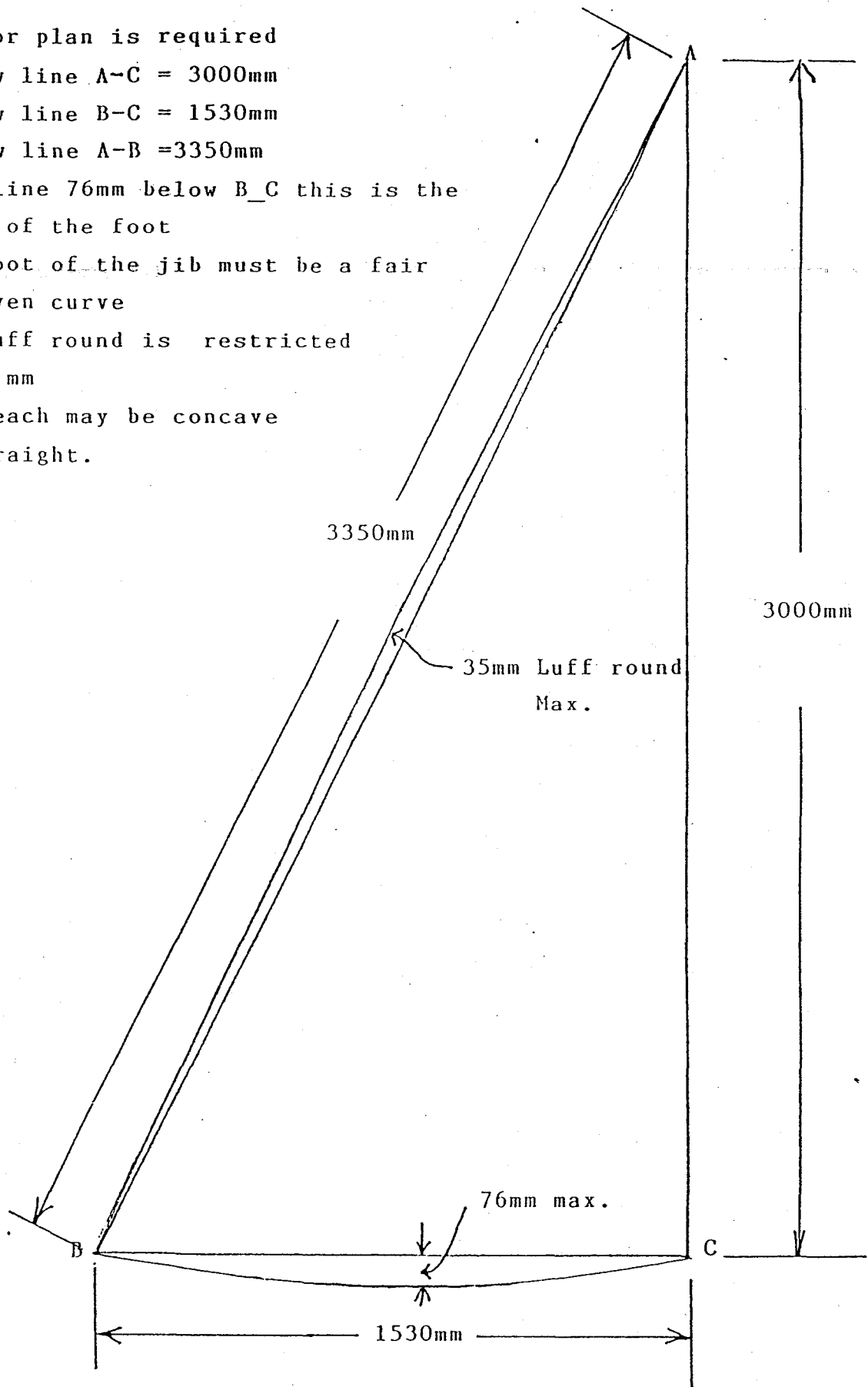
3. Draw line A-B = 3350mm

Mark line 76mm below B-C this is the limit of the foot

The foot of the jib must be a fair and even curve

The luff round is restricted to 35 mm

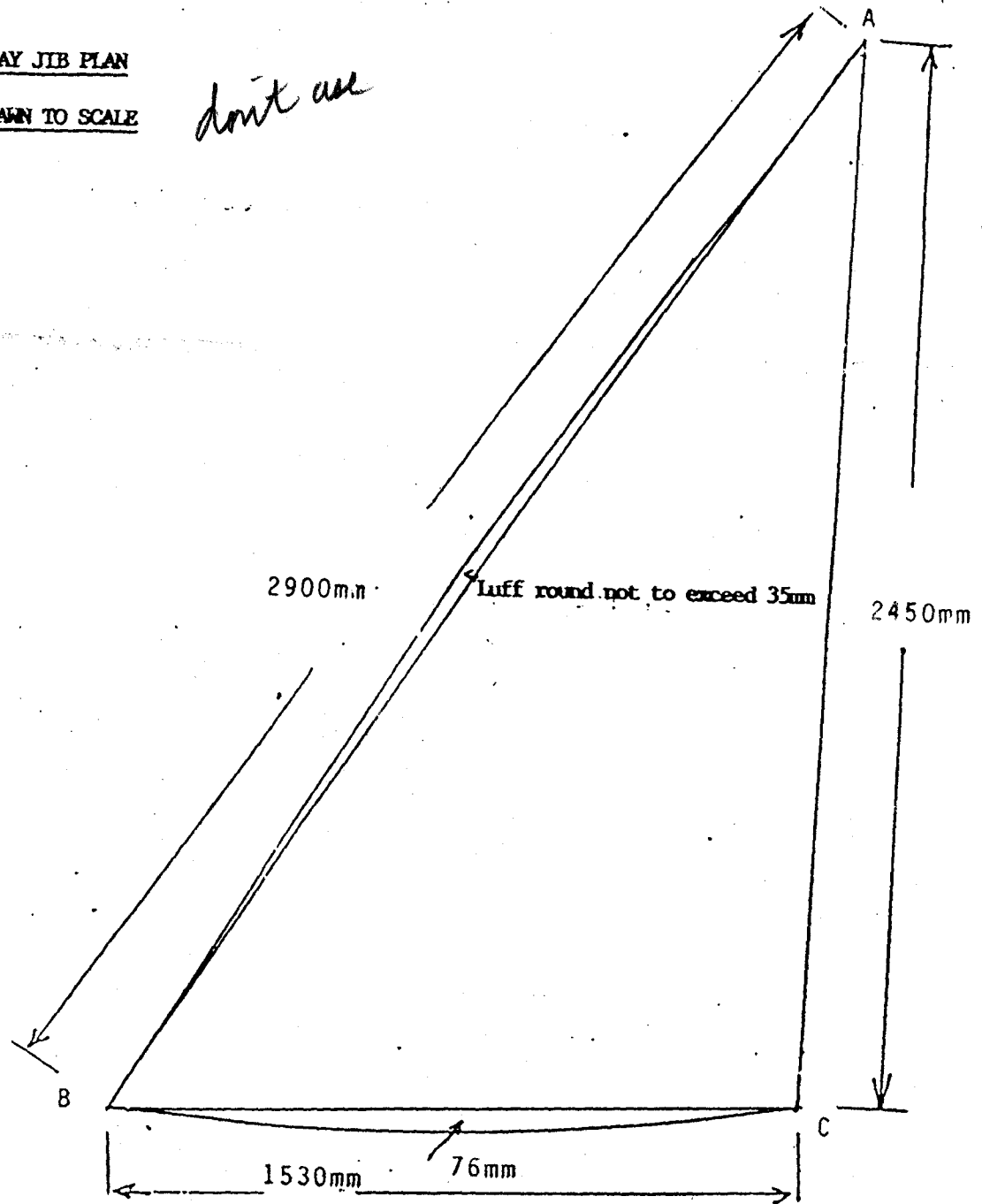
The leach may be concave or straight.



THIS PLAN IS NOT TO SCALE

VEE JAY JIB PLAN
NOT DRAWN TO SCALE

don't use



BASIC FLOOR PLAN REQUIRED.

1. Draw line A-C = 2450mm
2. Draw line B-C = 1530mm
3. Draw line A-B = 2900mm

Mark line 76mm below line B-C. This is the limit of the foot.

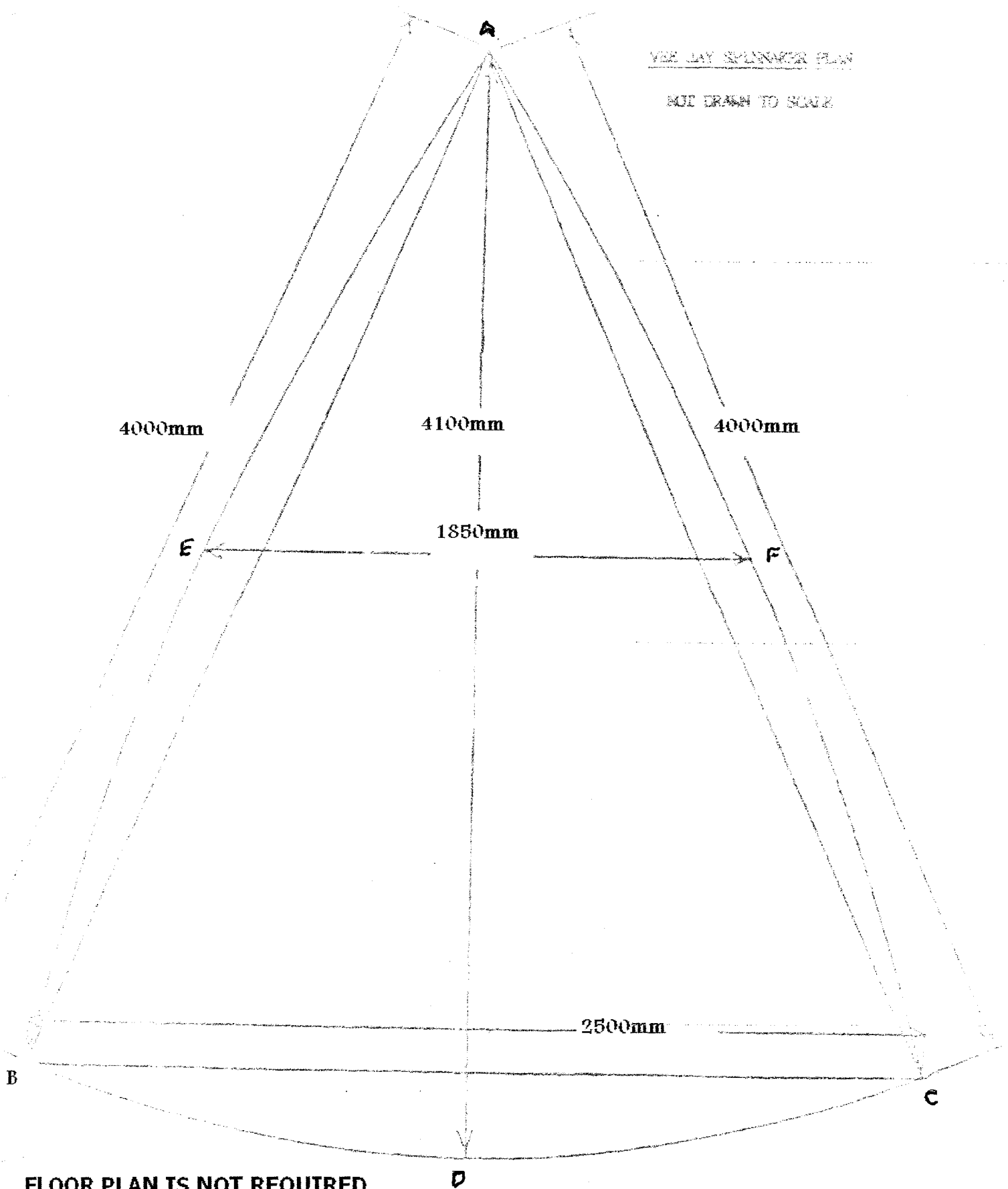
The foot of the Jib must be a fair and even curve.

Round on the Luff restricted to 35mm.

The Leech may be concave or straight

VEE LAY SPANNER PLAN

NOT DRAWN TO SCALE



FLOOR PLAN IS NOT REQUIRED

1. Measure B-C maximum 2500mm
2. Fold B to C and mark point D at centre
3. Measure A-B, A-C maximum 4000mm each, A-D maximum 4100mm.
4. Fold A-B mark point E at centre.
5. Fold A-C mark point F at centre.
6. Measure girth E-F maximum 1850mm.

June, 1908

THE LEECHES AND THE FOOT MUST BE FAIR AND EVEN