

File Name: Const1

**BRISTOL CHANNEL CUTTER
Construction Manual**

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(1)

CONSTRUCTION GUIDELINES

Bristol Channel Cutter

When hull has been completed by the moulders and placed in its cradle it is inspected for gel coat blemishes and any other faults of which the detailing crew must be notified.

When hull is accepted by us we will check its placement in the cradle and chock it properly under keel at all three cross timbers so that weight is on the keel and the vertical shoring pads are loaded only enuf to stabilize the hull.

BOBSTAY DRAWING

Our first installation is the bob stay fitting--done at this time so that the detail man can re-finish around the cutout while he is cleaning up the hull. The cut out is made in forward face of stem from top of the boot stripe and down. This location will keep fitting above the waterline. We will try fitting in place before bonding to be sure its outer part points dead ahead. If not, it will be necessary to correct the angles. Then set the fitting with a thick mish mash between hull and the two flanges and re-check that it is correctly pointed. Final bond is with two mat/woven rovings cut and laid as following^S: 15" x 13" mat, 16" x 14" roving, 23" x 21" mat, 24" x 22" roving.

BALLAST

The 4 blocks of lead ballast are next set in the bilge dry and located so that we have a horizontal dimension of 9'-3" from forward face of stem at top to front face of the forward ballast block.

Alternatively the placement of blocks may be made from stern forward with a horizontal dimension of 9'-2 $\frac{1}{4}$ " from point inside hull where top of aperture meets the transom to the aft face of nearest block. Each block must be in close contact with adjoining blocks. When installed in this manner the overall length of ballast is 8'-7 $\frac{1}{2}$ ".

Hull is next moved into its building station and jacked-up into position using cribbing as required. Hull is levelled exactly both fore and aft and thwartship using a spirit level of clear plastic hose. Lead shot is weighed out in exact amount of difference between designed ballast weight of 4600# and actual scale weight of blocks in the hull. A plywood dam is bonded into hull at after end of the blocks to contain the resin which is to be poured into the voids. This will prevent any resin from flowing aft. Dam should be min. 1" higher than aft block and can be cut off later to proper height. Approximately 1/3 of resin to be used is first poured, then shot is added until just visible, then more resin--more shot until all shot is used and resin has filled all voids and flows over top until level. The resin is allowed to flow forward of the ballast blocks and level itself with the hull. A small amount of filler can be added in this area to stabilize the resin. Resin should be only lightly catalyzed to minimize shrinkage. An aluminum plate 3/8" x 7" x 1/4" is laid on ballast with its center 10'-11 1/2" from forward edge of stem. This plate will provide an absolutely flat surface for mast shoe.

When mast shoe is later centered on this plate it will locate base of mast 1 1/2" forward of center of deck cutout and provide approximately 12" of rake.

Prior to final bonding the hull is cleaned with acetone where bonding will be placed. The bond will cover ballast and extend up hull sides a minimum of 6". It also completely covers the plywood dam, which is left in place at aft end. The bond consists of 2 layups of 1 1/2 oz. mat and 2 1/4 oz. woven roving.

SHAFT DAM

Concurrently with ballast installation we install a 1/2" plywood dam in aft end of hull. This dam is made to fit into bottom of hull 13" forward of the inside fiberglass at bottom. It will be 41" in height and placed so it will be 7" from aperture on an imaginary line following angle of propeller

shaft. This dam is not vertical but angles aft a few inches.

Dam is bonded into hull with one mat and cloth. The lower 6" of the well so formed will be filled with mish-mash to create a solid block thru which the lower gudgeon will later be bolted. The well will be completely filled above this level using a lighter mish-mash with vermiculite or a similar filler up to 6" below point where fiberglass shaft log will seat. In that area we will later fill around the log with a strong mish-mash of milled fibers.

BULKHEADS

At this point in construction we will locate and install the two main bulkheads both of which are of 3/4" A.A. Marine grade fir ply. B/H #6 (engine) will be 4' in depth but must be 9' in length to span the hull.

#3 (main) can be a 4 x 8' sheet but must be splined to an additional piece for proper depth of 65".

Prior to installation we use a power plane to remove the outer ply from both sides, around perimeter of B/H. This margin will be 5 1/2" wide. This offset permits us to bond in the B/H without creating a thick bulge which will be difficult to trim out later.

B/H is then set in place by clamping to a 2 x 4 which has been carefully positioned and clamped across hull at sheer. One inch thick foam spacers are fitted between B/H and hull sides. These are trapezoidal in shape-- 5/8" next to B/H, 1" next to hull. After determining that B/H is perfectly true in the hull--thwartship, vertically and at proper distance from stem, it may be fixed in place with 5 or 6 fiberglass tabs of mat and cloth.

Let these set up before proceeding.

Clean the hull well in bonding area, give the margins a thin coat of resin, then bond bulkheads to hull using one layup of 12" mat (1 1/2 oz) and 12" woven roving (24 oz) plus an additional 12" layup of mat and 7 1/2 oz cloth.

It is advisable at this stage to not bond within 12" of sheer and to do these a reas when you later bond to the deck. This will be of benefit when

remainder of (3)

you set the deck. All other bulkheads are 3/4" A.A. Marine fir except #7.

(lazarette) which may be $\frac{1}{2}$ ". Margins on these bulkheads are made $\frac{1}{4}$ " in width as we will be using 8" f.g. material for the bonds. Since we have not found it necessary to utilize the foam cushion for bulkheads other than Nos. 3 and 6, we will set these into hull in same manner but will leave approximately $\frac{1}{2}$ " space all around to keep hard edge of ply away from hull. These are bonded using 8" strips (1) mat/roving, (1) mat/cloth. In our main bulkhead, #3, we bore $\frac{1}{2}$ " holes thru center of bond margin at top, on 8" spacings. We insert 6" lengths of plain rope roving about $\frac{3}{8}$ " in diameter thru these holes so that an equal length is exposed each side. Now give the margins, on both sides of bulkhead, a coat of resin-splaying out the fiberglass rope so it is flat against B/H and being sure to get resin will into the holes. These ropes will lock together the bonds on each side of B/H rather like a rivet.

ENGINE .A10 74.

Pan is first--gel coat is ground off flanges where bonds will cover. The rough fiberglass underside is ground, where any high spots appear, and cleaned with acetone to provide a fresh surface.

Exact fore end aft location of pan is $10'-9\frac{5}{8}"$ from its forward vertical face to aft side of main bulkhead or $59\frac{1}{2}"$ ^{52 $\frac{3}{4}$ "} from same face to point in center of aperture boss where prop shaft will exit. Thwartship location is best determined by a plumb bob hung from a center line string run from stem to transom. The pan should also be checked for level thwartship at this time. Perimeter of pan is then marked on hull with heavy felt pen and pan is removed. $\frac{1}{2}$ " thick mish-mash is trowelled over area where pan will rest and pan is replaced within the outlines.

Firm pressure is used to set the pan in the mish-mash and pan is then re-checked for level. Excess mish-mash which has exuded is cleaned off and a level is created around perimeter to provide smooth bonding surface. Allow time for mish-mash to set up then bond pan flanges to hull with (2) 8" mat/cloths which will provide about 5" of bond on the hull.

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Engine support locations we marked on pan by use of our jig and engine is placed on pan and lined up with the marks. We do not bolt down the engine at this time. Next we will drill a pilot hole from outside, thru the center of the flat in the aperture, using a $\frac{1}{4}$ " x 12" drill bit, 90° to the flat. When we have pierced the hull we will then extend the bit until it contacts the plywood aft dam, previously installed, and drill thru it also with bit still at 90° to aperture flat. By sighting thru this hole in hull and dam we can determine if we have lined up with center of propeller shaft coupling on engine. Since this is a trial and error procedure we may find it necessary to drill one or two more $\frac{1}{4}$ " holes in dam until we have everything in line. A string can help in the line up. Mark proper hole. Next we bore out the hull with a 2-1/8" hole saw to accept the 2" fiberglass stern tube with clearance for some adjustment and the later bonding of log into hole with mish mash. Next we will use a 2 $\frac{1}{2}$ " hole ^{saw} ~~set~~ to enlarge the hole in dam.

At this point the stern tube with cutlass bearing installed can be inserted in the hull opening and forward thru the dam and a dummy prop shaft can be run thru the tube, and into engine coupling. Engine alignment can now be checked and a measurement may be taken for machining the final shaft.

Next, while keeping temporary shaft in place, the stern tube is carefully mish-mashed into the hull, making certain of proper alignment of tube, shaft and engine. We can then bond forward end of tube into the hole in dam and a bit of adjustment can be made, before fiberglass starts to set, if necessary, to be sure the shaft is free turning.

Now complete filling behind the dam to its top with mish-mash, enclosing stern tube completely to a depth of several inches.

Double check engine alignment one more time, mark on pan where tie down bolts are to be located, drill and tap into the steel plates embedded in the pan. Bolt down engine.

(6)

CABIN SOLE Made from $3/4$ " AA Marine Fir and 2 x 4 clear Doug. Fir
($1\frac{1}{2}$ " x $3\frac{1}{2}$ ")

We construct the plywood cabin sole to obtain 6'-2" headroom when deck is installed. This will provide 6'-1" after insulation and liner is installed under deck and $\frac{1}{2}$ " teak plank is laid over plywood. The substructure is constructed as follows: A thwartship cleat is installed on aft side of B/H #3 using $3/4$ " ply 6" deep. But first cut two notches $1\frac{1}{2}$ " wide x $3\frac{1}{2}$ " deep to accept fore and aft stringers whose inner faces will be $16\frac{1}{2}$ " apart. A second cross support of 2 thicknesses of $3/4$ " ply is bonded into hull with its forward face located $89-3/4$ " from aft face of #3 B/H. This floor will be notched, before installing, to accept the two stringers. Centered between these notches, two more are cut same depth and width for aft stringers whose inner faces will be $10\frac{1}{4}$ " apart. A cleat is then installed on forward face of engine pan with the $10\frac{1}{4}$ " notch spacing.

To obtain proper height of plywood sole we measure, at #3 B/H, $58\frac{1}{4}$ " from top of B/H at center line down, and mark B/H at this point. This will be location of top edge of cleat and top of stringers. From this point a level will determine heights of the other two stringer supports. A check on this: from top of the cross member which supports the aft end of the long stringers we should have $50\frac{1}{4}$ " to a straight edge laid across hull.

After cross members are installed the four stringers may be cut from clear Douglas Fir to the proper length and fitted into notches. These should be bedded and secured. It will be necessary to trim the bottom outboard corners in some areas to conform to hull configuration. The two permanent sections of cabin sole, running from #3 B/H aft $90\frac{1}{2}$ ", are cut to fit hull configuration on outer side and to overlap the stringers by $3/4$ ".

(7)

These will be bonded top and bottom with 2 mat/cloths. A full length removable hatch for this section of sole is made-up 18" in width--leaving enough clearance at edges to allow its removal when dampness causes swelling of the wood.

A section, full width by 12" fore and aft, is cut from aft end of this main hatch to provide access to tank fill. This removable piece is left in place supported by the stringers, crossmember and cleat under forward edge. After mast hole is cut in forward end of hatch, cut the end off 19 $\frac{1}{2}$ " aft of B/H. Then split this piece on its C/L fore and aft. This will provide convenient access hatches to the mast base. These small sections will be supported by the stringers, the forward cleat and an additional cleat under after ends.

The aft section of the main cabin sole will be one piece of ply, bevelled on its outboard sides to conform to hull, while resting on the fore and aft stringers and the cleats at either end. This section will be completely removable. A 13" square is cut from this section on centerline and starting 2" aft of its forward edge. This square will be left in place--supported by cleating and will later be replaced with a grating.

ROUGH-IN INTERIOR

The basic plywood structure of the interior (aside from numbered bulkheads) is built with $\frac{1}{2}$ " plywood ~~sides~~ and except counter tops which are $\frac{3}{4}$ ".

These pieces are bonded to hull with (2) 6" mats and (1) 6" cloth and tied to each other ^{using} cleats, marine glue and S.S. wood screws. The plywood which covers vertical sides of coach roof is $\frac{1}{2}$ " and is bonded to the fiberglass with mish-mash. These pieces must be set in with considerable pressure-- using cross bracing--to ensure a proper spread of mish mash and a good bond. It is a good idea to be painting out the hull interior as you are roughing in the interior furniture. Much easier to paint behind a settee before the top is on. Do not paint in any area where you will later be bonding with fiberglass.

Thru hulls should be installed before counter tops go on and some of the plumbing is best done at an early stage. Under deck wiring is left until after deck, cover boards, bulwarks and stanchions are installed when there can be no danger of damage from wayward bolts or screws.

The standard interior drawing, showing all dimensions, should be self explanatory but if questions arise please contact us for clarification. Should you choose to build a different interior from the standard please be aware of the

following. The #3 bulkhead, at the mast, must be installed as shown or alternatively, it may be located about 18" aft--just forward of coach roof.

In either location it is the most important bulkhead in the boat and must be extremely well bonded, all around and overhead.

The #2, sail locker, bulkhead provides welcome stiffening both to the hull sides and to the deck, as both areas are flattening towards the bow and so provides less inherent structural stiffness. If an alternate interior

layout calls for sleeping accomodation forward then the #2 bulkhead cannot be full height, as in our standard plan. In this case it can only be as high as the bunk and it would be well to install a beam under the deck at

the same location. If you are also moving #3 bulkhead aft to the alternate location then the #2 bulkhead can also come aft, say 9". This will place that stiffener in a better location vis a vis #3 and also move chain locker aft for better boat trim.

Whether we install your bulkheads or you do this work yourself, it is well to remember what interior pieces must be installed before deck is permanently bolted down. The bulkheads which cannot be passed thru the companionway are: #2 sail locker (if full height), #3 mast, #6 engine, #7 lazarette and also the inboard facer of the forward lockers on starboard side. This facer however could be divided vertically and installed in two pieces. All other bulkheads and furniture pieces used in the standard layout, once cut to shape, can be passed thru the companionway.

HULL DECK JOINT

*The gel coat and any irregularities are ground from hull flange where the deck will seat, and the underside of deck perimeter is similarly prepared. Before setting deck on hull a bit of surgery is required to prepare for later woodwork. This consists of trimming one inch off edge of deck in areas beyond end of rubrails. Trim across transom, trim forward 16" from aft corners of deck, trim aft 16" from angle where deck meets the stemhead, and also both sides and forward end of stemhead. This is so trim pieces may be installed under cover boards in these areas where rubrail does not cover edge of deck.

Before going further with the joint itself we install the first section of the wood rubrail around sheer line of hull. This piece will extend above hull flange by $5/8'' - 3/4''$ (later to be planed down) and form a lip within which the deck can be set and lined up for proper fit. (see hull work drawing)

*When deck is placed properly on the hull we then drill and countersink thru deck and hull flange for our $1/4'' \times 1-1/4''$ s.s. flat head machine screws. These will be spaced 5" apart on fore and aft line and will alternate $1-3/8''$ and

2-7/8" from dropin deck.

Start ^{the holes} at 16" aft of angle where deck meets stemhead. Accurate measurements will insure the bolts will not interfere with the large stanchion bolts, on 20" centers, which will be installed later.

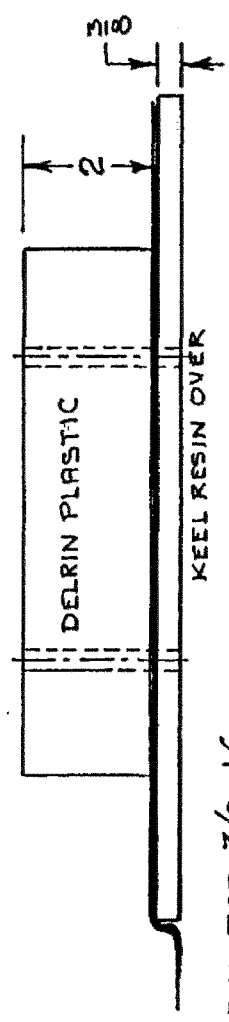
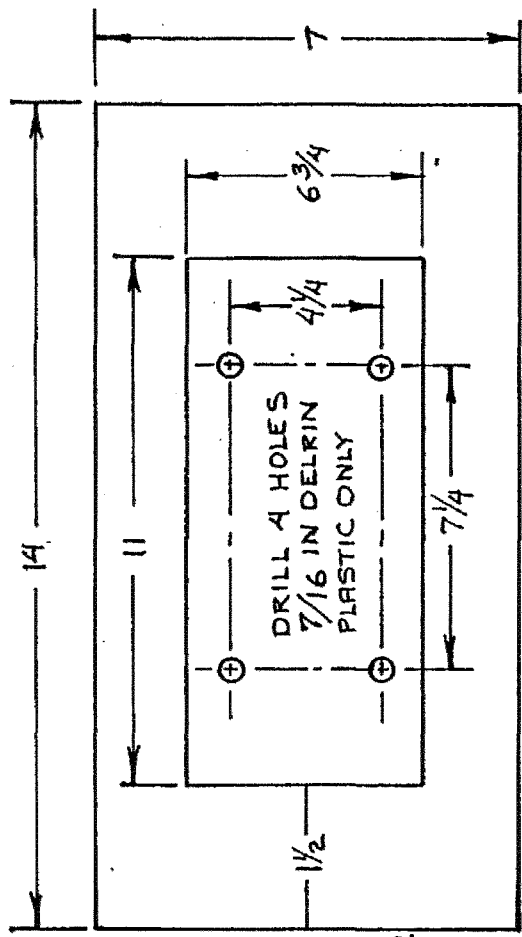
Next lift deck and clean up all drilling residue. Then spread 3M-5200 heavily on hull flange. Three passes with the cartridge gun (extruding a 3/8" ribbon) fore and aft should do it (we use 12 cartridges for this job). It is best to spread the material with a putty knife to ensure even coverage. Use enough 5200 so that it oozes out everywhere when deck is replaced. It is better to spend time cleaning up the mess than to lay the material sparingly and risk a leak in this most vital joint.

Reset deck, line up holes and set in a screw at bow and both aft corners. Then start bolting using flat washers and nylon lock nuts under the hull flange. You will need about 160 each of the machine screws, washers and nuts. This is a two man job and should take no more than 2-3 hours but be sure job is completed within 6 hours so you don't risk having the 5200 start to cure.

After deck is down, and before the 5200 sets up, you should do a thoro cleanup as this material can be extremely tenacious.

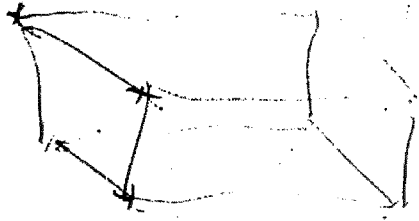
Now you may return to your interior and prepare to complete bonding of bulkheads to the deck.

LOCATE CENTER OF ALUM.
 PLATE WITH PLUMB BOBS
 FROM 6 1/2" FWD. OF
 COACH ROOF ON DECK
 AT DIMPLE AND
 CENTERED ATHWARTSHIP.
 INSTALL ALL THREAD
 BEFORE BONDING
 ALUM PLATE TO KEEL



DRILL AND TAP 3/8-16
 4 HOLES IN ALUM. BASE.
 INSTALL 3/8-16 X 3 1/2
 ALL THREAD SS. RODS
 USING LOCKTITE.

BCC KEEL STEPPED MAST FOOT		APPROVED BY:	DRAWN BY RDO
		SCALE: NONE	REVISED
		DATE: 11-93	
		DRAWING NUMBER	

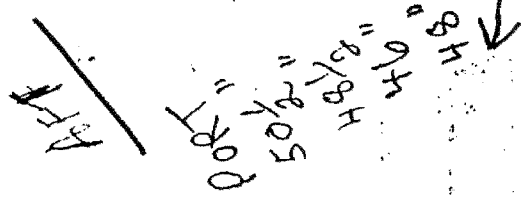
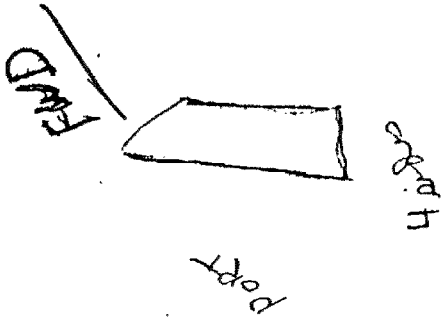
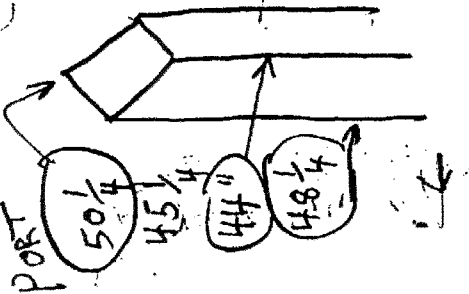


STAR

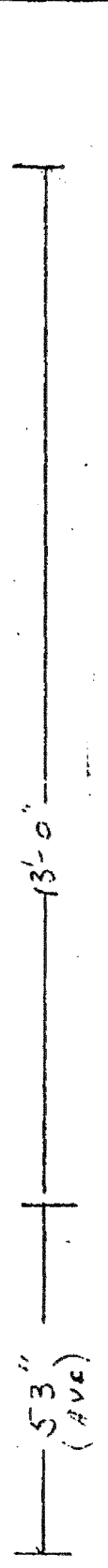
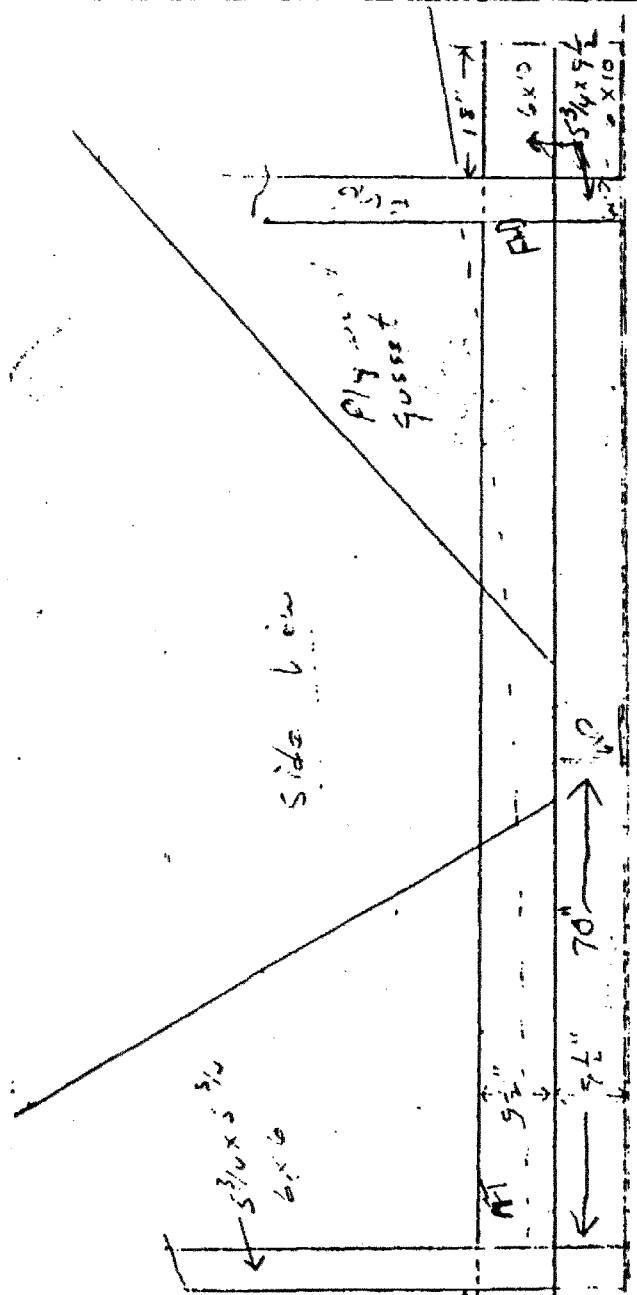
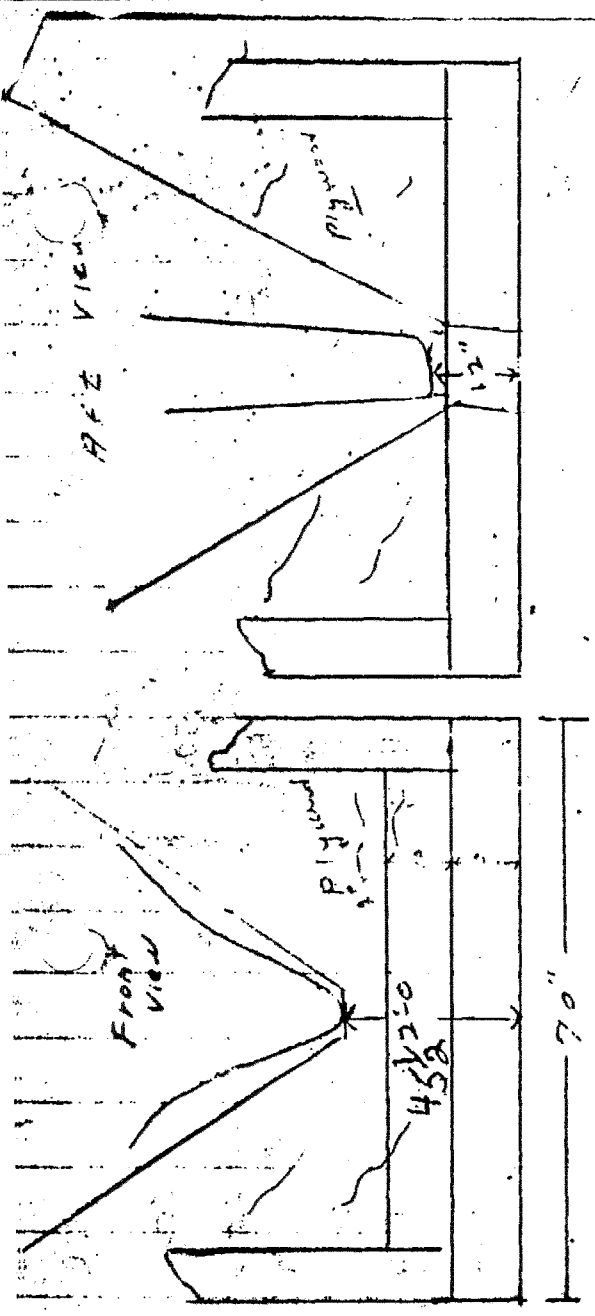
50 1/4
48 1/4
44"
45 1/4 ←

STAR

50 1/2
48"
46"
48 1/2 ←



53" Cradle



ATT: RICH GROVE

	COMPONENT	MATERIAL	QUANTITY	SIZE
1	BITTS	HOND. MAHOG	2	12/4 X "6" X 5' -- S2S to 2 3/4"
2				
3	BOOMKIN	HOND. MAHOG	2	10/4 X "5" X 6' -- S2S to 2 1/8"
4				
5	BOWSPRIT	VERT.GRN D.F.	4	6" X 12' X 2" -- S2S to 1 7/8"
6				
7	BULWARKS	H.M. or TEAK	2	4/4 X "6" X 16' -- S2S to 13/16"
8	All clear straight Grain		2	4/4 X "6" X 14' -- S2S to 13/16"
9			1	5/4 X "8" X 16' -- S2S to 1 1/8"
10			1	12/4 X "6" X 10' -- S2S to 2 3/4"
11			1	10/4 X "8" X 3' -- S2S to 2 1/8"
12				
13	COCKPIT COAMINGS	H.M. or TEAK	6	12" X 7' X 4/4 resawn, S2S to 3/8"
14				
15	COVER BOARDS	H.M. or TEAK	4	4/4 "10" X 11' -- S2S to 13/16"
16			2	4/4 X "12" X 11' -- S2S to 13/16"
17			1	4/4 X "10" X 8' -- S2S to 13/16"
18				
19	RUB RAIL & CHANNELS	H.M. or TEAK	2	4/4 X "7" X 16' -- S2S to 13/16"
20	All clear straight grain		1	4/4 X "7" X 12' -- S2S to 13/16"
21			1	4/4 X "8" X 16' -- S2S to 13/16"
22			1	4/4 X "8" X 12' -- S2S to 13/16"
23			2	4/4 X "6" X 11' -- S2S to 13/16"
24				
25	DECK BOXES	H.M. or TEAK	2	4/4 X "8+" X 12' -- S2S to 13/16"
26				
27	TAFFRAIL	H.M. or TEAK	3	7" X 6' 6" X 6/4 resawn, S2S to 1/2"
28			1	10/4 X "8" X 7' -- S2S to 2 1/8"
29			1	6/4 X "13" X 5' -- S2S to 1 7/16"
30				
31	BOOM GALLOWS	H.M. or TEAK	1	8/4 X "9" X 6' -- S2S to 1 3/4"
32				
33	HATCHES	TEAK	1	6/4 X "6" X 5' -- S2S to 1 1/4"
34			1	4/4 X "7" X 6' -- S2S to 13/16"
35			1	4/4 X "9" X 6' -- S2S to 13/16"
36			3	4/4 X "6" X 12' -- S2S to 13/16"
37			1	4/4 X "9" X 6' -- S2S to 13/16"
38			1	SHEET 1/4" 4' X 8' TEAK PLT
39				
40	RUDDER CHEEKS	H.M. or TEAK	1	8/4 X "9" X 7' -- S2S to 1 3/4"
41			1	12/4 X "7" X 7" -- S2S to 2 1/2"
42				
43	DRIP MOULDING	TEAK	1	5" X 10' X 6/4 resawn, S2S to 1/2"
44				
45	INTERIOR HAND RAIL	TEAK	1	4/4 X "8" X 11' -- S2S to 13/16"
46				
47	MISC. INTERIOR	TEAK	6	4/4 X "8" X 7' -- S2S to 13/16"
48			2	8/4 X "8" X 7' X -- S2S to 1 3/4"
49			20	7" X 7' X 6/4 resawn, S2S to 1/2"

BALLAST

The blocks of lead ballast are next set in the bilge dry and located so that we have a horizontal dimension of 9'-3" from forward face of stem at top to front face of the forward ballast block.

Alternatively the placement of blocks may be made from stern forward with a horizontal dimension of 9'-2 $\frac{1}{4}$ " from point inside hull where top of aperture meets the transom to the aft face of nearest block. Each block must be in close contact with adjoining blocks. When installed in this manner the overall length of ballast is 8'-7 $\frac{1}{2}$ ".

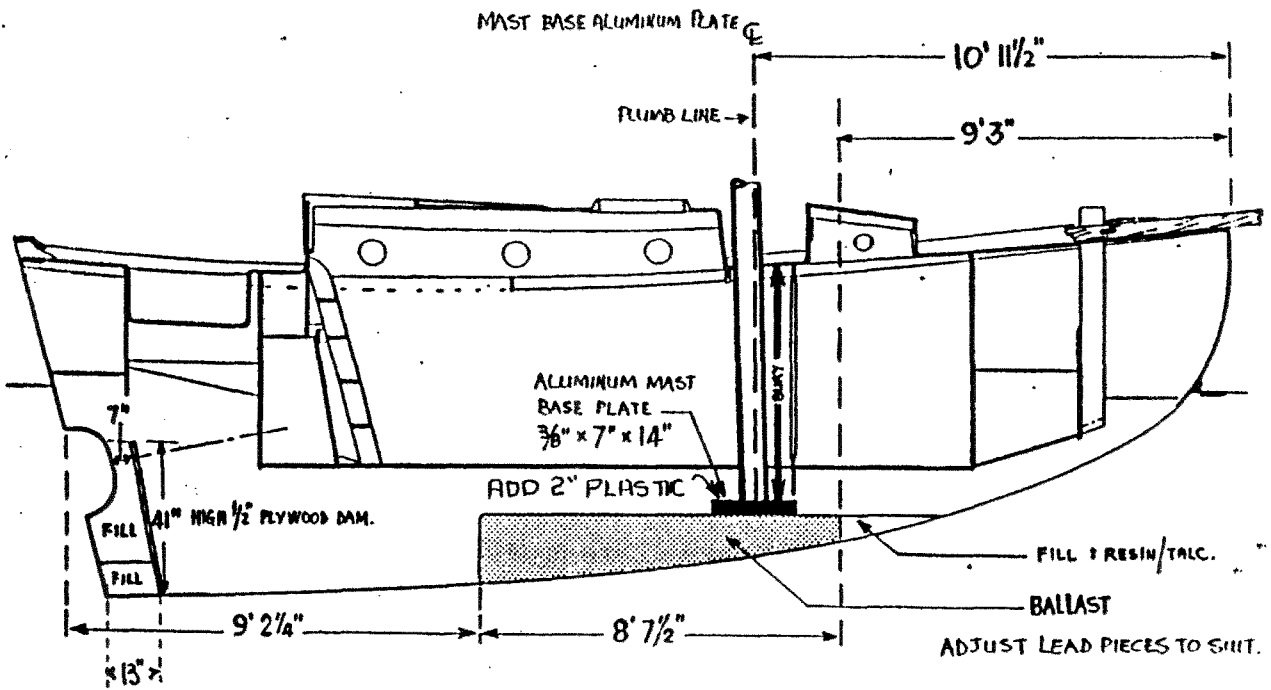
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When mast shoe is later centred on this plate it will locate base of mast 1 $\frac{1}{2}$ " forward of centre of deck cutout and provide approximately 12" of rake. Prior to final bonding the hull is cleaned with acetone where bonding will be placed. The bond will cover ballast and extend up hull sides a minimum of 6". It also completely covers the plywood dam, which is left in place at aft end. The bond consists of 2 layups of 1 $\frac{1}{2}$ oz. mat and 24 oz. woven roving.

SHAFT DAM

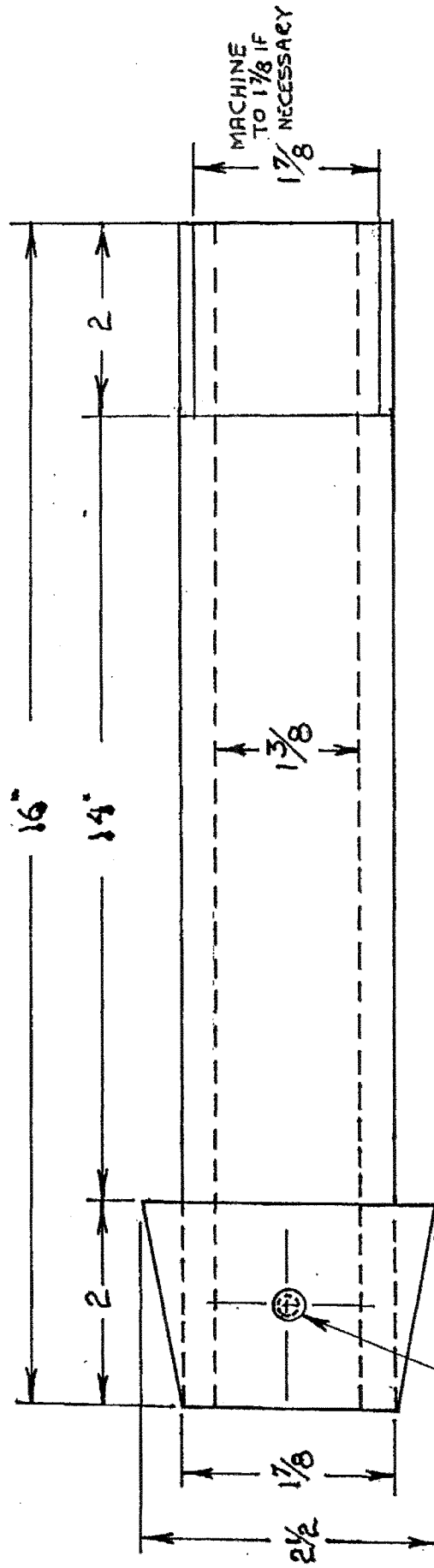
concurrently with ballast installation we install a $\frac{1}{2}$ " plywood dam in aft end of hull. This dam is made to fit into bottom of hull 13" forward of the inside fiberglass at bottom. It will be 41" in height and placed so it will be 7" from aperture on an imaginary line following angle of propeller shaft. This dam is not vertical but angles aft a few inches.

Dam is bonded into hull with one mat and cloth. The lower 6" of the well so formed will be filled with mish-mash to create a solid block through which the lower gudgeon will later be bolted. The well will be completely filled above this level using a lighter mish-mash with vermiculite or a similar filler up to 6" below point where fiberglass shaft log will seat. In that area we will later fill around the log with a strong mish-mash of milled fibers.



NB! BURY 5'-11" (71") DEPTH OF MAST BELOW SURFACE OF DECK

STERN TUBE BCC-FC



DRILL & TAP 1/4-20 3 HOLES
EQUALLY SPACED

REAR END WITH KNOB TO 1 3/8 x 4" DEEP

BULKHEADS

At this point in construction we will locate and install the two main bulkheads both of which are of 3/4" A.A. Marine grade fir ply. B/H #6 (engine) will be 4' in depth but must be 9' in length to span the hull.

B/H #3 can be a 4' x 8' sheet but must be splined to an additional piece for proper depth of 65".

Prior to installation we use a power plane to remove the outer ply from both sides, around perimeter of B/H. This margin will be 5 1/4" wide. This offset permits us to bond in the B/H without creating a thick bulge which will be difficult to trim out later.

B/H is then set in place by clamping to a 2" x 4" which has been carefully positioned and clamped across hull at sheer. One inch thick foam spacers are fitted between B/H and hull sides. These are trapezoidal in shape - 5/8" next to B/H, 1" next to hull. After determining that B/H is perfectly true in the hull - thwartship, vertically and at proper distance from stem, it may be fixed in place with 5 or 6 fiberglass tabs of mat and cloth. Let these set up before proceeding.

Clean the hull well in bonding area, give the margins a thin coat of resin, then bond bulkheads to hull using one layup of 12" mat (1 1/2 oz) and 12" woven roving (24 oz) plus an additional 12" layup of mat (1 1/2 oz) and cloth (7 1/2 oz).

It is advisable at this stage to not bond within 12" of sheer and to do these areas when you later bond to the deck. This will be of benefit when you set the deck. All other bulkheads are 3/4" A.A. Marine grade fir except B/H #7 (lazarette) which may be 1". Margins on these bulkheads are made 4" in width as we will be using 8" f.g. material for the bonds. Since we have not found it necessary to utilize the foam cushion for bulkheads other than Nos. 3 and 6, we will set these into hull in same manner but will leave approximately 1/4" space all around to keep hard edge of ply away from hull. These are bonded using 8" wide strips (1) mat/woven roving, (1) mat/cloth.

BONDING LAYUP FOR BULKHEADS AND BOBSTAY FITTING

General Information on Bulkheads: Use 1" X 1" X 4# foam as cushion strip between all bulkheads and hull. Route 6" wide X 1/8" deep marging around both sides of all bulkheads.

Main Bulkhead: Drill 2" hole 3" from the edge spaced every 15" as shown below. Bond both side through the holes.

- Mat.....12" of 1.5 oz.
- Roving.....12" of 24 oz
- Mat.....12" of 1.5 oz
- Cloth.....12" of 7 oz

Main Bridge Deck:

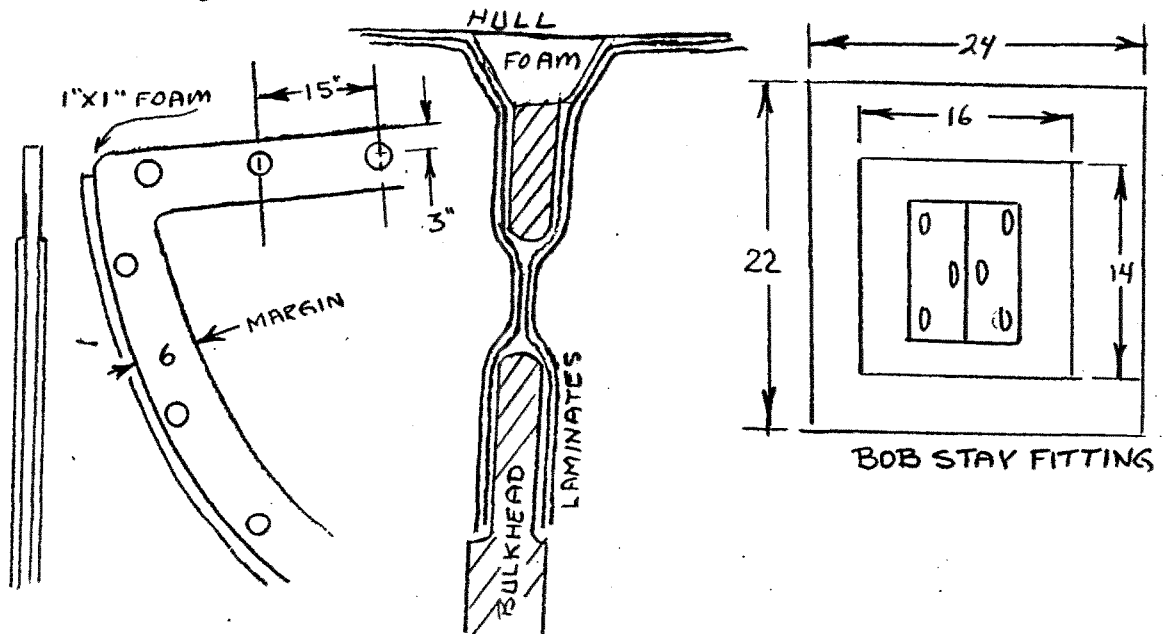
- Mat.....12" of 1.5 oz
- Roving.....12" of 24 oz
- Mat.....12" of 1.5 oz
- Cloth.....12" of 7 oz

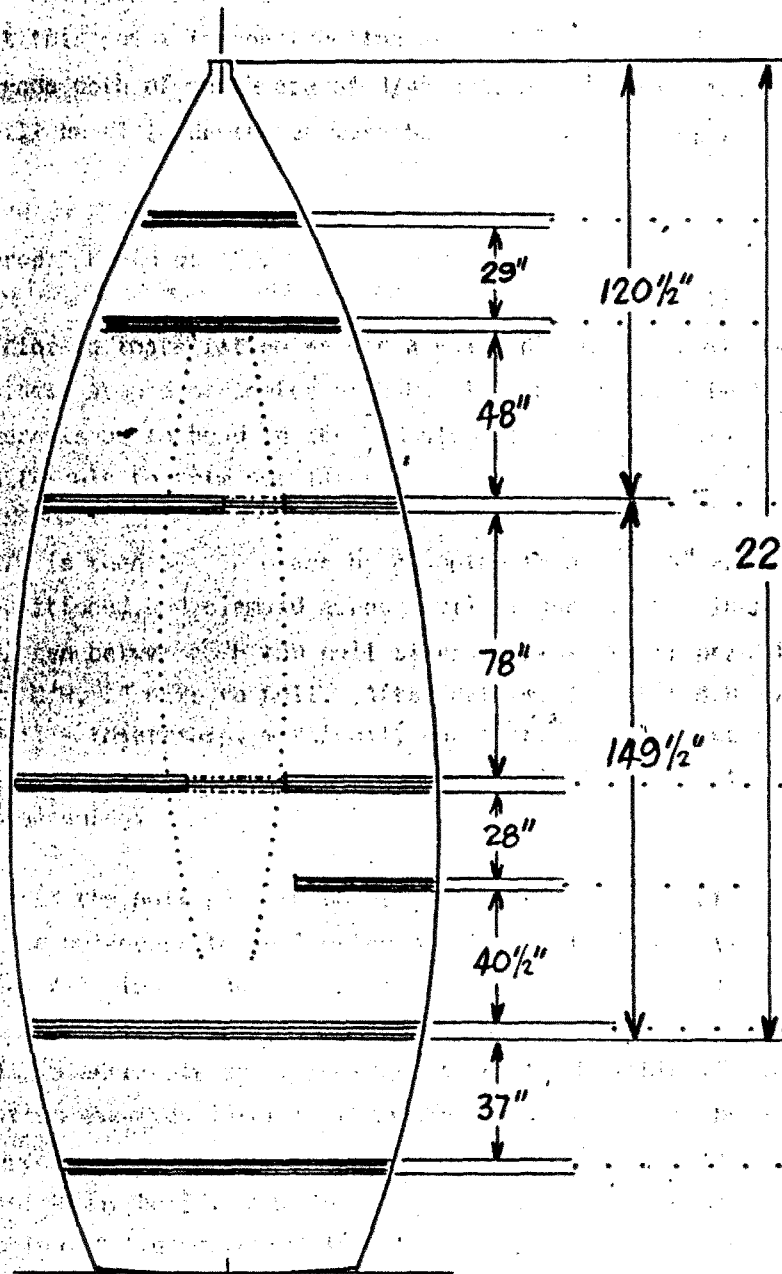
Lazerette and Intermediate Bulkhead: Note, the bond margins may be reduced to 4" instead of 6" so width will vary as per build

- Mat.....8" of 1.5 oz
- Roving.....8" of 24 oz
- Mat.....8" of 1.5 oz
- Cloth.....8" of 7 oz

Bobstay Fitting layup: Install bobstay fitting through the stem and bond with mish mash. Then bond as follows:

- Mat.....15" X 13" of 1.5 oz
- Roving.....16" X 14" of 24 oz
- Mat.....23" X 21" of 1.5 oz
- Roving.....24" X 22" of 24 oz





✓ #1 3/4" AA MARINE FIR

✓ #2 3/4" AA MARINE FIR
(SAIL LOCKER)

✓ #3 3/4" AA MARINE FIR
MAIN B/H

4'x10' SHEET MUST BE
SPLINED TO AN EXTRA
PIECE FOR PROPER
DEPTH OF 65"

#4 3/4" AA MARINE FIR

#5 3/4" AA MARINE FIR

✓ #6 3/4" AA MARINE FIR
MAIN B/H (ENGINE)
4' IN DEPTH BUT 9'
IN LENGTH TO SPAN HULL

✓ #7 1/2" AA MARINE FIR
LAZARETTE

CABIN SOLE

Made from 3/4" A.A. Marine grade fir and 2" x 4" clear Douglas fir (1 1/2" x 3 1/2").

We construct the plywood cabin sole to obtain 6'-2" headroom when deck is installed. This will provide 6'-1" after insulation and liner is installed under deck and 1/2" teak plank is laid over plywood. The substructure is constructed as follows: A thwartship cleat is installed on aft side of B/H #3 using 3/4" ply 6" deep. But first cut two notches 1 1/2" wide x 3 1/2" deep to accept fore and aft stringers whose inner faces will be 16 1/2" apart. A second cross support of 2 thicknesses of 3/4" ply is bonded into hull with its forward face located 89-3/4" from aft face of B/H #3. This cleat will be notched, before installing, to accept the two stringers. Centered between these notches, two more are cut same depth and width for aft stringers whose inner faces will be 10 1/4" apart. A cleat is then installed on forward face of engine pan with the 10 1/4" notch spacing.

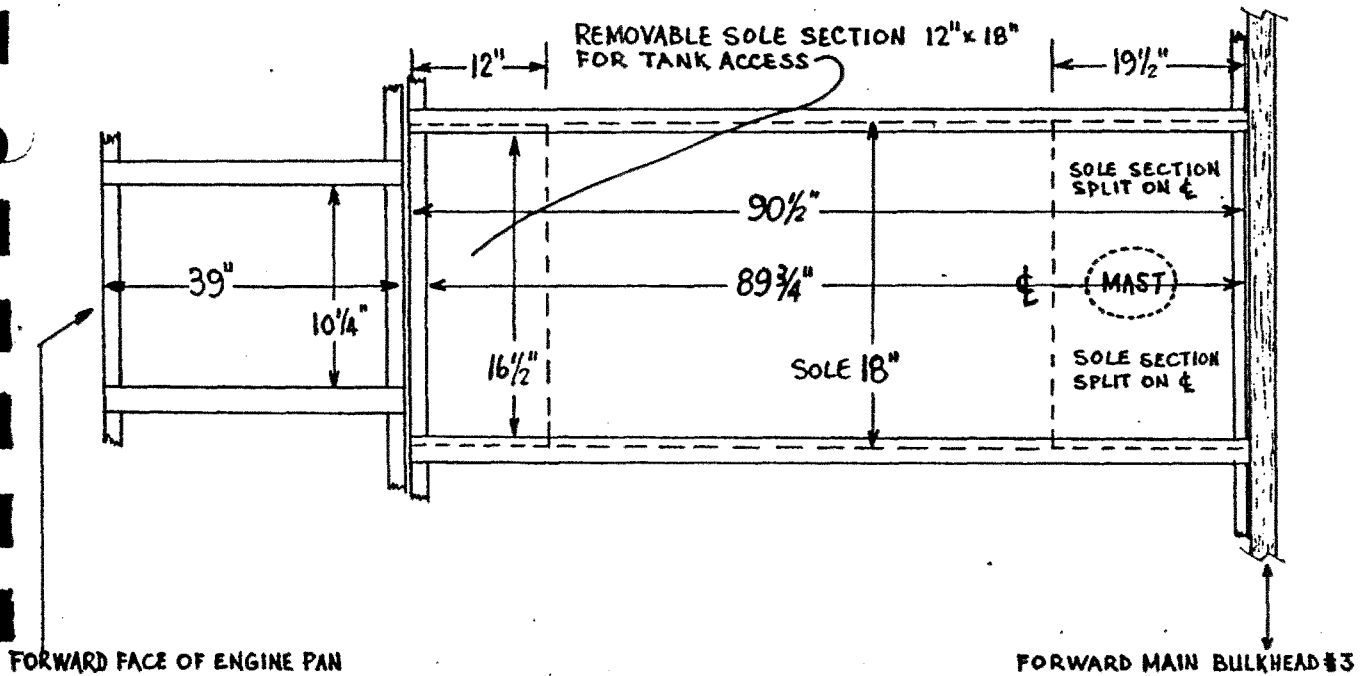
To obtain proper height of plywood sole we measure, at B/H #3, 58 1/4" from top of B/H at centre line down, and mark B/H at this point. This will be location of top edge of cleat and top of stringers. From this point a level will determine heights of the other two stringer supports. A check on this: from top of the cross member which supports the aft end of the long stringers we should have 50 1/4" to a straight edge laid across hull.

After cross members are installed the four stringers may be cut from clear Douglas fir to the proper length and fitted into notches. These should be bedded and secured. It will be necessary to trim the bottom outboard corners in some areas to conform to hull configuration. The two permanent sections of cabin sole, running from B/H #3 aft 90 1/2", are cut to fit hull configuration on outer side and to overlap the stringers by 3/4".

These will be bonded top and bottom with mat/cloth, mat/cloth. A full length removable hatch for this section of sole is made-up 18" in width--leaving enough clearance at edges to allow its removal when dampness causes swelling of the wood.

A section, full width by 12" fore and aft, is cut from aft end of this main hatch to provide access to tank fill. This movable piece is left in place supported by the stringers, crossmember and cleat under forward edge. After mast hole is cut in forward end of hatch, cut the end off 19½" aft of B/H. Then split this piece on its C/L fore and aft. This will provide convenient access hatches to the mast base. These small sections will be supported by the stringers, the forward cleat and an additional cleat under after ends.

The aft section of the main cabin sole will be one piece of ply, bevelled on its outboard sides to conform to hull, while resting on the fore and aft stringers and the cleats at either end. This section will be completely removable. A 13" square is cut from this section on centreline and starting 2" aft of its forward edge. This square will be left in place--supported by cleating and will later be replaced with a grating.

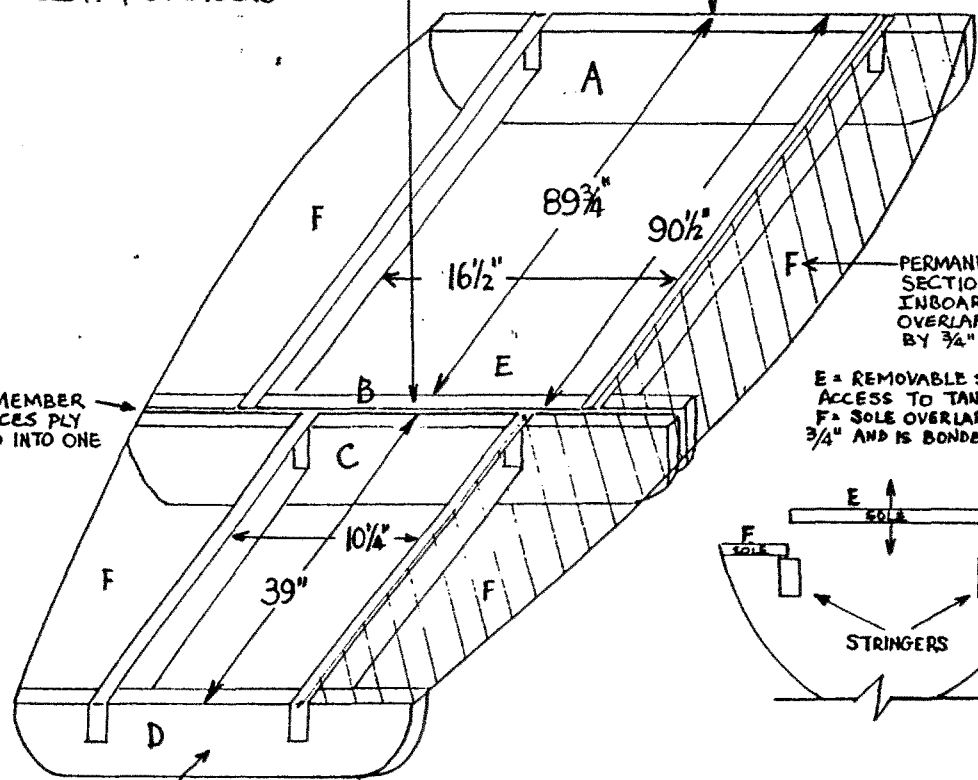


TOP OF BULKHEAD (#3)

58 1/4" TOP OF BULKHEAD TO TOP OF CLEAT & STRINGERS

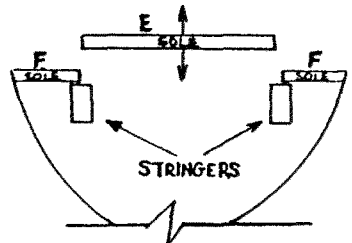
STRAIGHTEDGE LAID ACROSS HULL

FROM STRAIGHTEDGE LAID ACROSS HULL TO TOP OF CLEAT & STRINGERS 50 1/4"



PERMANENT SOLE SECTION. INBOARD EDGES OVERLAP STRINGERS BY 3/4"

E = REMOVABLE SECTION AND ACCESS TO TANK (12" x 18")
F = SOLE OVERLAPS STRINGER BY 3/4" AND IS BONDED TO HULL



IS ONE CROSSMEMBER AND 2 x 3/4" PIECES PLY GLUED AND SCREWED INTO ONE 1 1/2" THICK PIECE

THIS FACE IS AGAINST ENGINE PAN

ROUGHED-IN INTERIOR

The basic plywood structure of the interior (aside from numbered bulkheads) is built with $\frac{1}{2}$ " plywood except counter tops which are $\frac{3}{4}$ ". These pieces are bonded to hull with 6" wide mat/cloth/mat and tied to each other using cleats, marine glue and stainless steel wood screws. The plywood which covers vertical sides of coach roof is $\frac{1}{2}$ " and is bonded to the fibreglass with mish-mash. These pieces must be set in with considerable pressure--using cross bracing--to ensure a proper spread of mish-mash and a good bond. It is a good idea to be painting out the hull interior as you are roughing in the interior furniture. Much easier to paint behind a settee before the top is on. Do not paint in any area where you will later be bonding with fibreglass. Through hulls should be installed before counter tops go on and some of the plumbing is best done at an early stage. Under deck wiring is left until after deck, cover boards, bulwarks and stanchions are installed when there can be no danger of damage from wayward bolts or screws. The standard interior drawing, showing all dimensions, should be self explanatory. Should you choose to build a different interior from the standard please be aware of the following: The #3 bulkhead, at the mast, must be installed as shown or alternatively, it may be located about 18" aft--just forward of coach roof. In either location it is the most important bulkhead in the boat and must be extremely well bonded, all around and overhead. The #2 bulkhead provides welcome stiffening both to the hull sides and to the deck, as both areas are flattening towards the bow and so provides less inherent structural stiffness. If an alternate interior layout calls for sleeping accommodation forward then the #2 bulkhead cannot be full height, as in our standard plan. In this case it can be as high as the bunk and it would be well to install a beam under the deck at the same location. If you are also moving #3 bulkhead aft to the alternate location then the #2 bulkhead can also come aft, say 9". This will place that stiffener in a better location vis a vis #3 and also move chain locker aft for better boat trim. Whether we install your bulkheads or you do this work yourself, it is well to remember what interior pieces must be installed before deck is permanently bolted down. The bulkheads which cannot be passed through the companionway are: #2 sail locker (if full height), #3 mast, #6 engine, #7 lazarette and also the inboard facer of the forward lockers on starboard side. This facer however could be divided vertically and installed in two pieces. All other bulkheads and furniture pieces used in the standard layout, once cut to shape, can be passed through the companionway.

MDO = paper backed.

PLYWOOD

1/4 x 8 x 3/4 FIR AA

8

intermediate
B/H. Counter tops
sole etc.

✓ 4 x 10 x 3/4 FIR AA

2

B/H Man

✓ 1/2 FIR AA

2

small B/H @
galley under
paint.

✓ 1/2 MDO

3

Beak top.
Some bottom
shelves under
galley, bunk bed

1/2 Teak 2 side

2

6

wet locker
hanging locker
any place not to
be painted.

1/2 Teak 1 side

4

mask the side
line, & some
interior

7 complete

Basic Boat

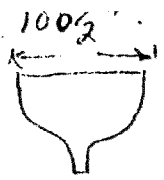
See next page

AP
B/H
to be
1/2
1/2

BASIC 4 x 8'S

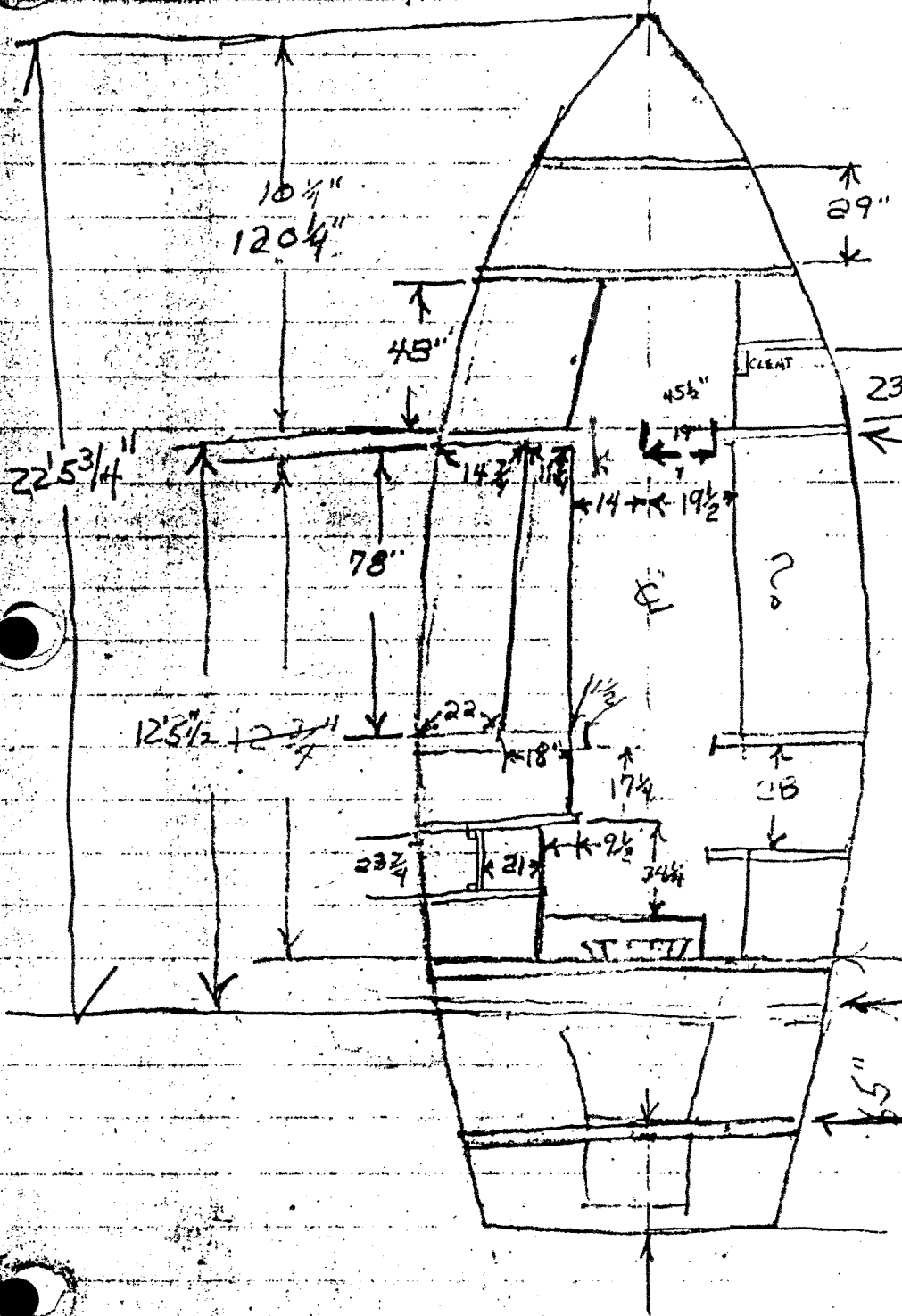
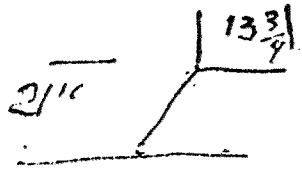
25

ALSO
PTD



Interior

#50



#1 - M

#4 - M

5 - M
36 1/2" - 37 1/4"

30 1/2"

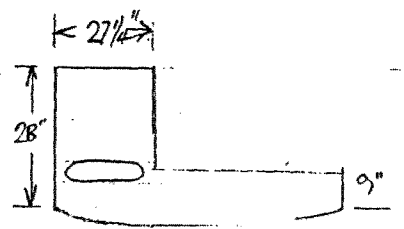
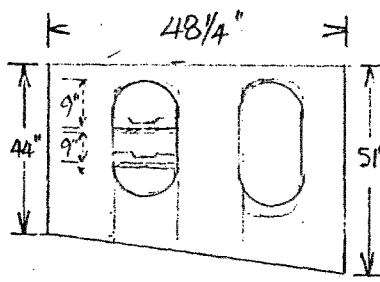
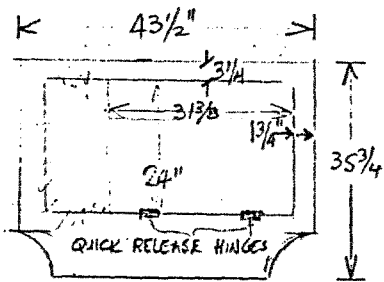
back of transom to front of bulkhead

THESE DRAWINGS ARE FOR "INFORMATION ONLY" - SHAPES AND SIZES ARE APPROXIMATE AND FINAL SIZES MUST BE OBTAINED IN THE BOAT AND HULL SHAPE MUST ALSO BE TAKEN INTO CONSIDERATION

ENGINE ROOM FACE
1/2" FIR PLY - GOOD ONE SIDE

HANGING LOCKER FACE
1/2" TEAK - 2 SIDES

GALLEY FACE
1/2 FIR - PLY

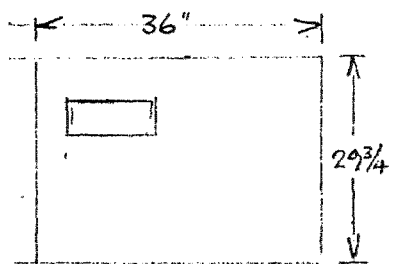
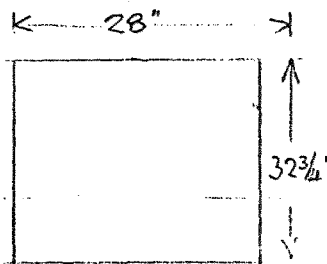
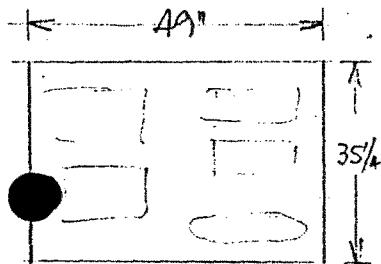


ENGINE DOOR FINISHED WITH
THERMOGLASS PANEL

WORKBENCH FACE
1/2" TEAK - 2 SIDES

CHART TABLE FACE
1/2" TEAK - GOOD 1 SIDE

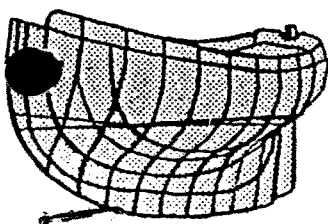
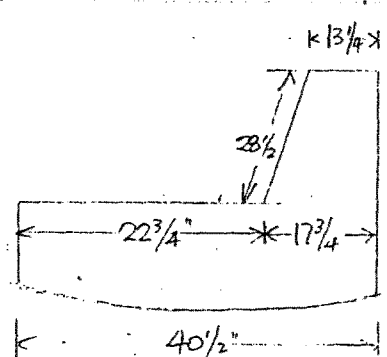
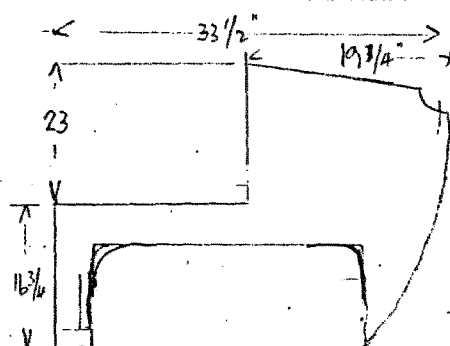
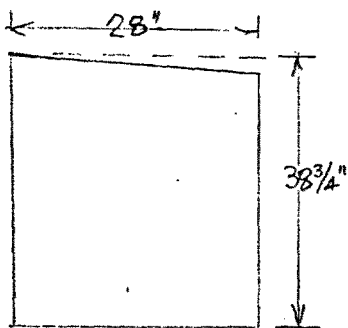
ENGINE SIDE PANEL
1/2" FIR - PLY



ICE BOX / CHART TABLE TOP
1/4" FIR - PLY

LIQUOR CABINET FACE
1/2" TEAK - GOOD 2 SIDES

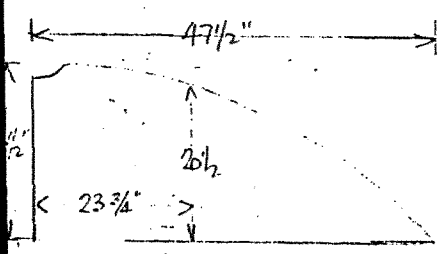
QUARTER BERTH FACE
1/2 TEAK - GOOD 2 SIDES



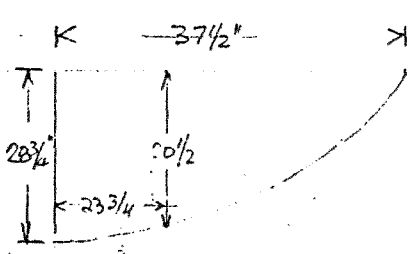
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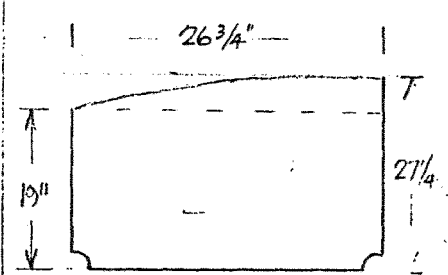
WET LOCKER DIVIDER
1/2" FIR - PLY MDO



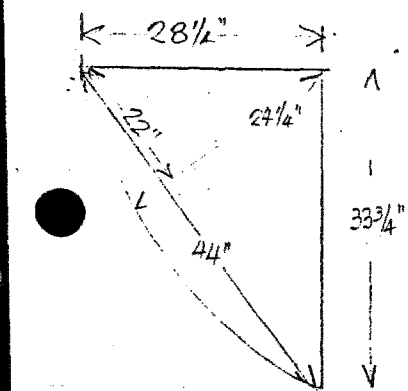
AFT GALLEY BULKHEAD
1/2" FIR PLY



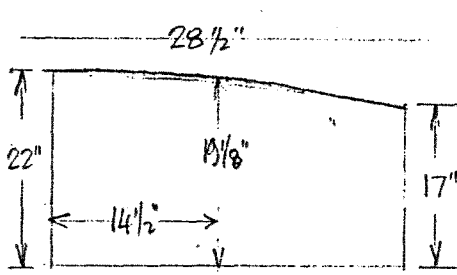
GALLEY STORAGE SHELF
1/2" FIR PLY



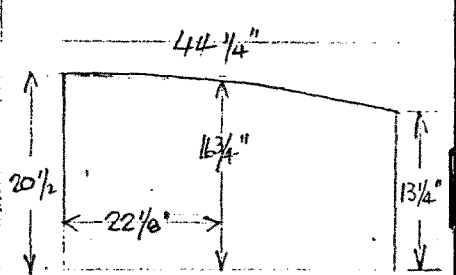
WORK BENCH DIVIDER
1/2" TEAK - GOOD 2 SIDES



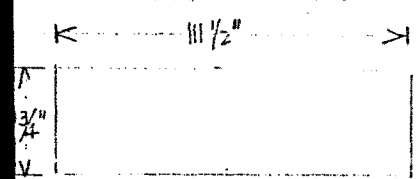
WORK BENCH SHELF
1/2" FIR PLY



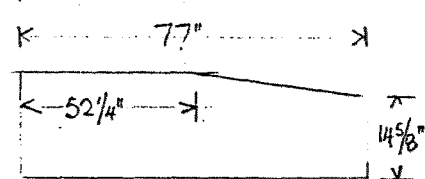
WET LOCKER
1/2" TEAK GOOD 2 SIDES



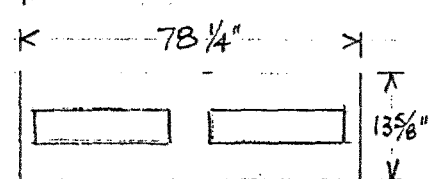
ABIN SIDE LINER
1/2" TEAK GOOD 1 SIDE



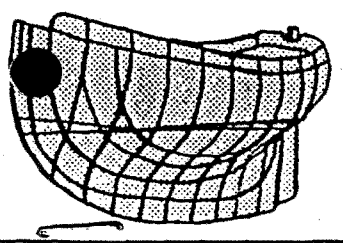
PILOT BERTH SLIDER
1/2" PLY MDO



SETTEE BACK - PORT
1/2" TEAK GOOD 2 SIDES



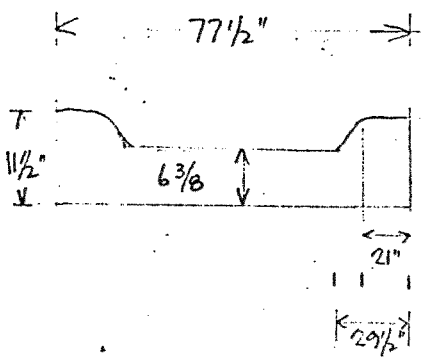
USE SAME PATTERNS REVERSED FOR OPPOSITE SIDE LINER



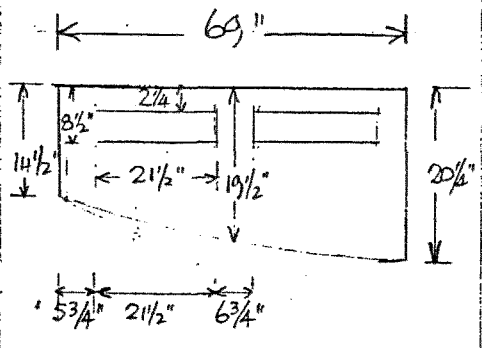
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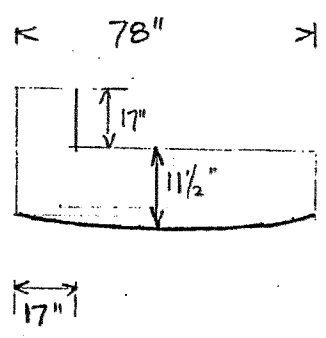
BUNK BOARD
7/8" SOLID TEAK



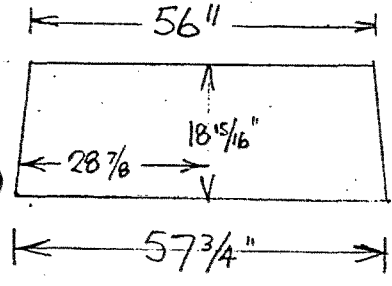
SETTEE BACK - STARBOARD
1/2" TEAK PLY GOOD 2 SIDES



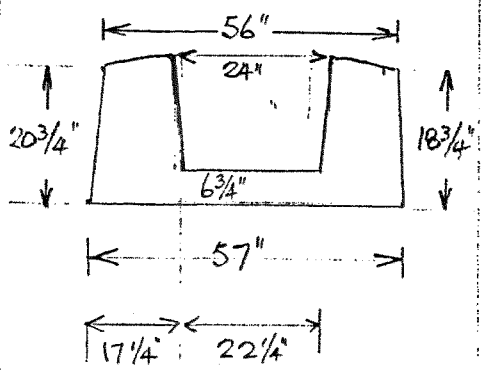
SETTEE FACE - STARBOARD
1/2" TEAK PLY GOOD 2 SIDES



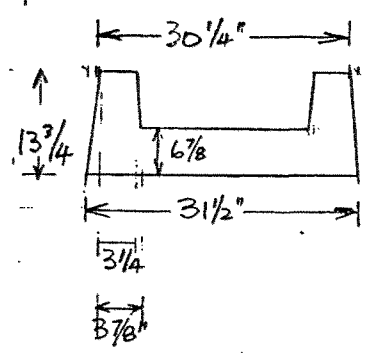
CABIN SIDE FWD LINER
1/2" TEAK GOOD 1 SIDE



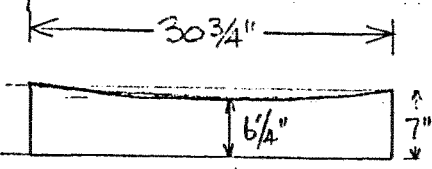
CABIN LINER COMPANIONWAY
1/2" TEAK GOOD 1 SIDE



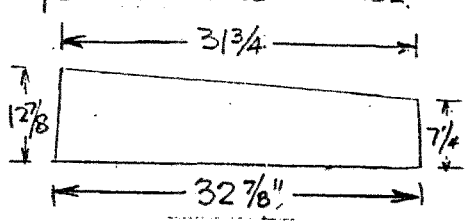
SCUTTLE HATCH LINER
1/2" TEAK GOOD 1 SIDE



SCUTTLE HATCH LINER
1/2" TEAK GOOD 1 SIDE

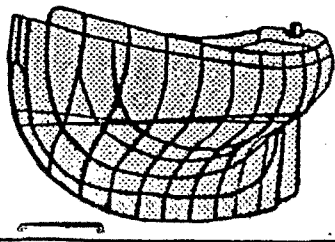
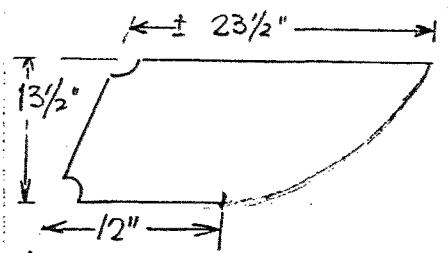


SCUTTLE HATCH PORT LINER
1/2" TEAK GOOD 1 SIDE



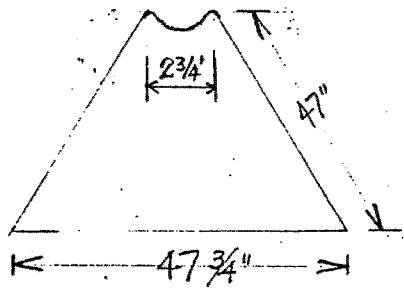
USE SAME PATTERN REVERSED FOR STARBOARD LINER

PILOT BERTH SUPPORT - STBD.
1/2" FIR - PLY

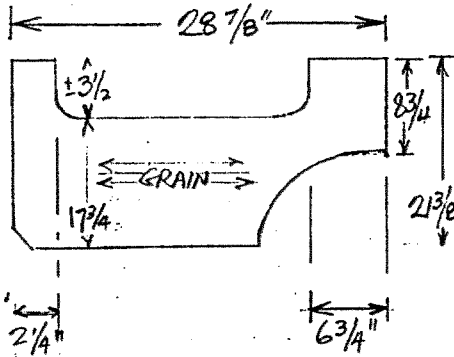


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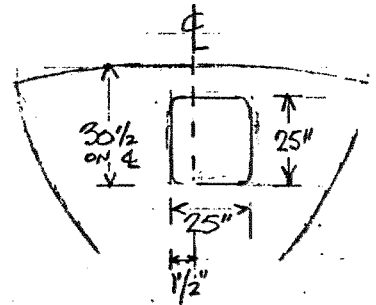
CHAIN LOCKER SOLE
3/4" FIR. PLY



HEAD FACE
1/2" TEAK GOOD. 2 SIDES

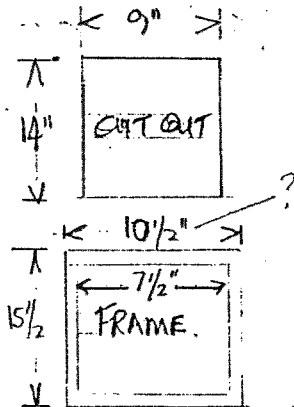


FWD BULKHEAD CUT OUT

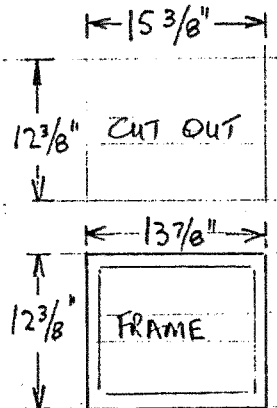


NB! MAIN B/H 20 1/2" WIDE

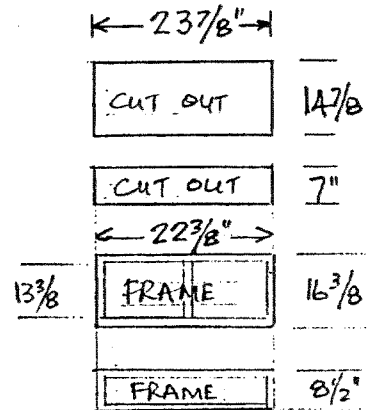
LIQUOR CAB. DOOR FRAME



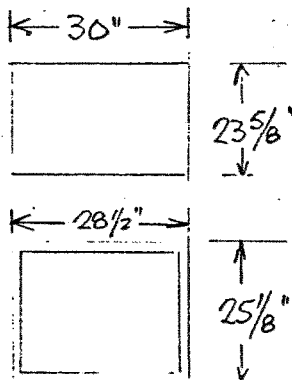
SINK FRAME



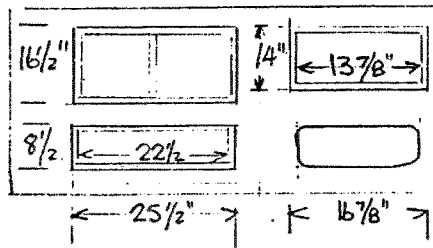
WORK BENCH FRAME



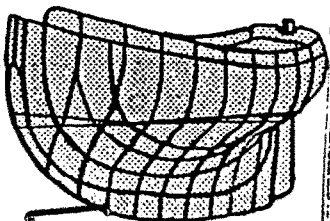
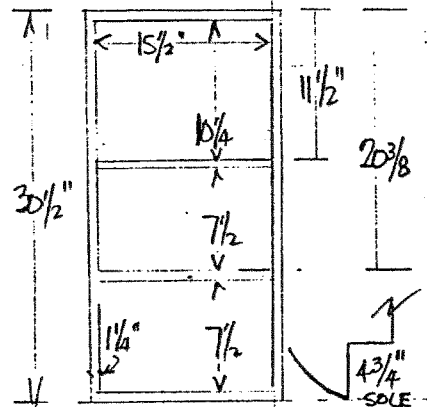
ENGINE FACE



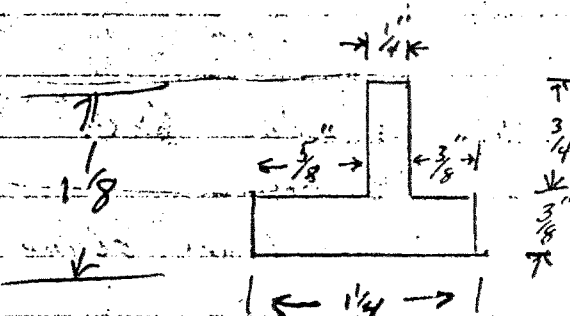
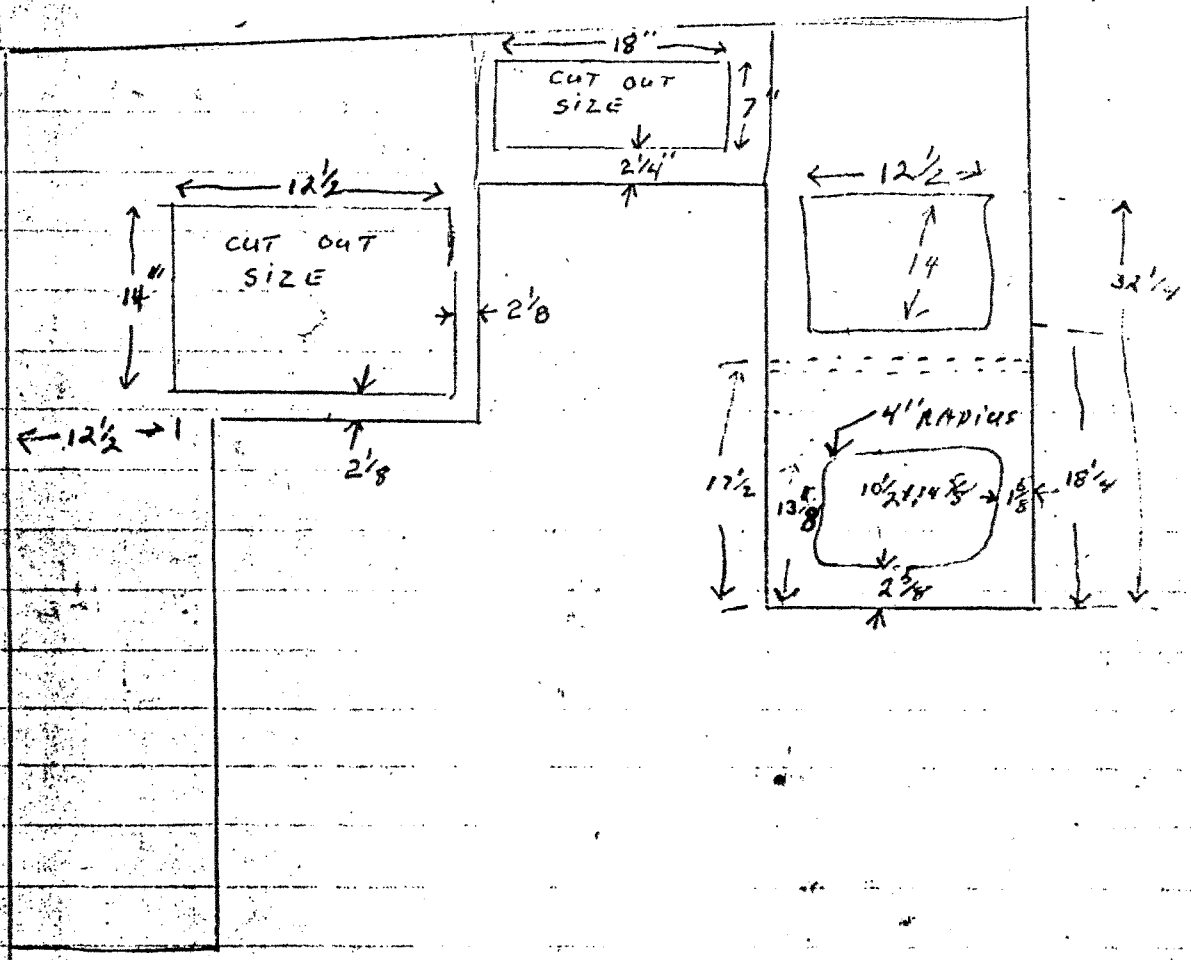
WORK BENCH FACE
DOOR FRAME SIZES



GALLEY FRAMES 1 3/16 STOCK

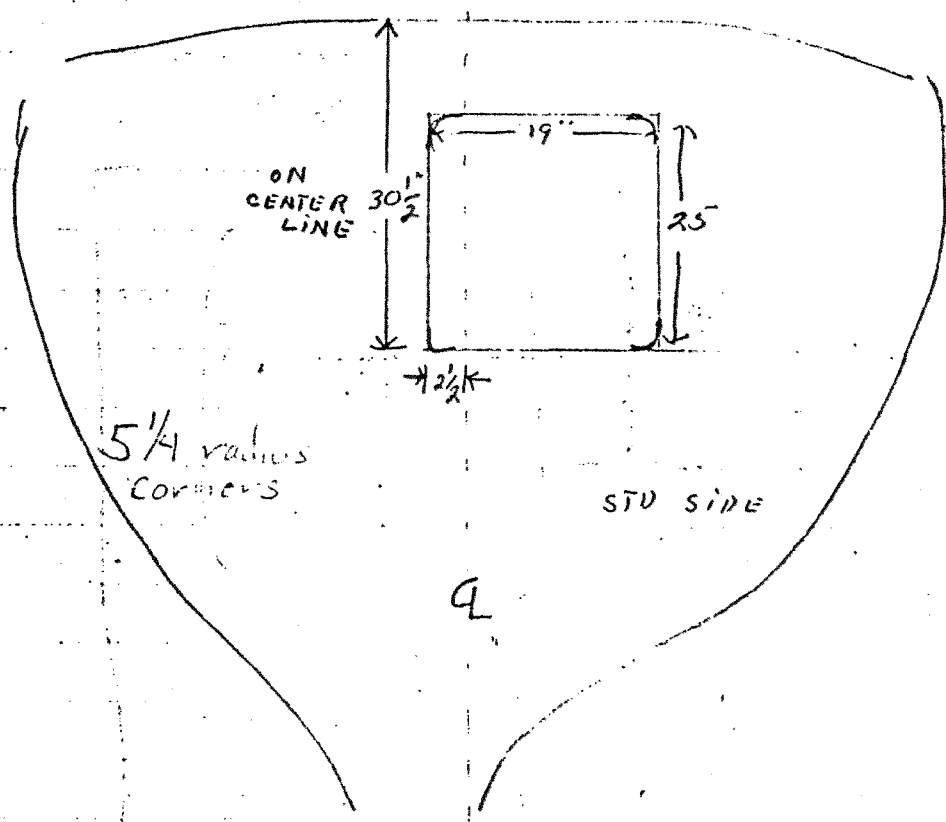


GALLEY TOP CUT OUTS



3 = 6' pcs.

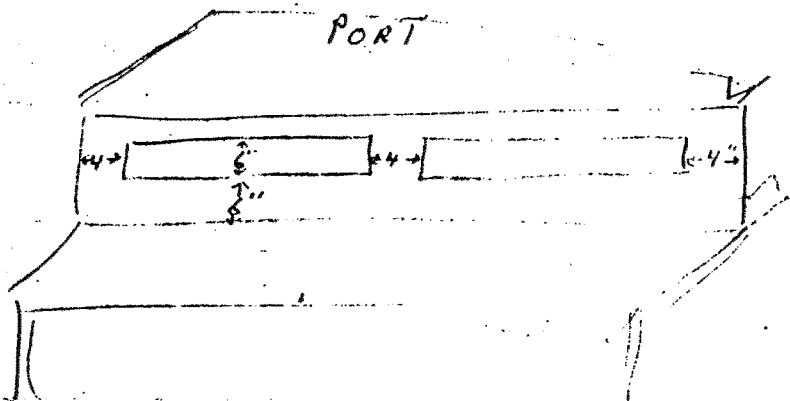
FWD BLK. CUT OUT



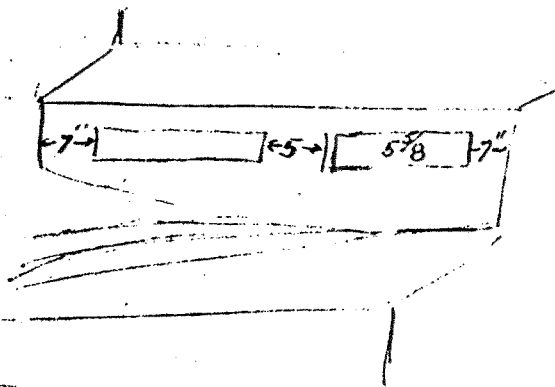
MAIN BLK. CUT OUT

20 1/2" WIDE

BACK REST CUT OUTS

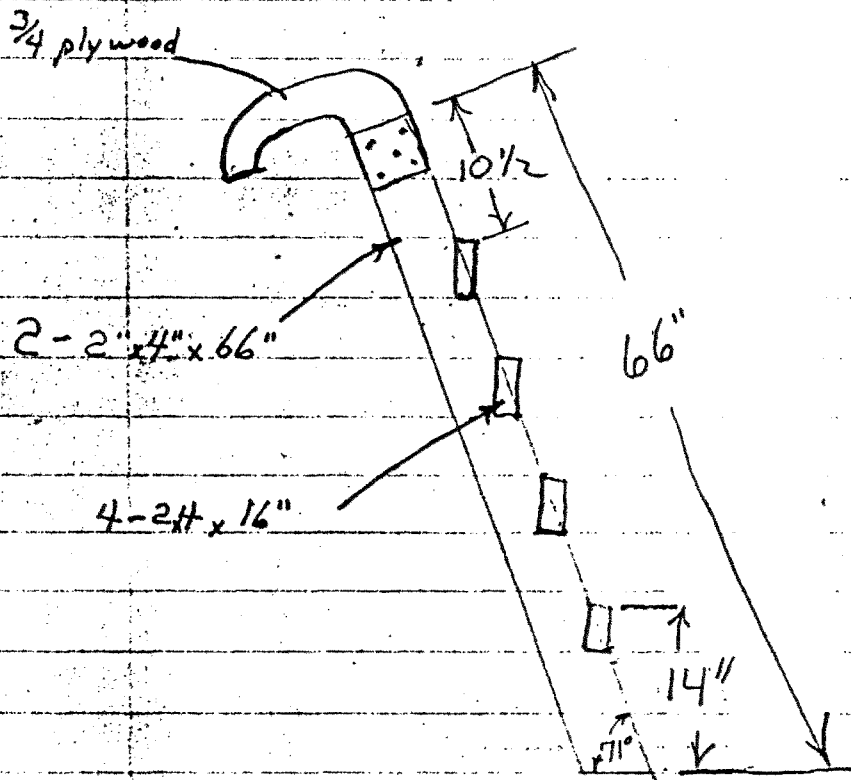


STD.



STANDARD BACK REST DOORS - 3/4" PLY WITH
CUSHION BACK REST.

Work Ladder



HULL DECK JOINT

The gel coat and any irregularities are ground from hull flange where the deck will seat, and the underside of deck perimeter is similarly prepared. Before setting deck on hull a bit of surgery is required to prepare for later woodwork. This consists of trimming one inch off edge of deck in areas beyond end of rubrails. Trim across transom, trim forward 16" from aft corners of deck, trim aft 16" from angle where deck meets the stemhead, and also both sides and forward end of stemhead. This is so trim pieces may be installed under cover boards in these areas where rubrail does not cover edge of deck. Before going further with the joint itself we install the first section of the wood rubrail around sheer line of hull. This piece will extend above hull flange by 3/4" (later to be planed down) and form a lip within which the deck can be set and lined up for proper fit (see bulwark drawing). When deck is placed properly on the hull we then drill and countersink through deck and hull flange for our 1/4" x 1-1/4" stainless steel flat head machine screws. These will be spaced 5" apart on fore and aft line and will alternate 1-3/8" and 2-7/8" from drop in deck. Start the holes at 16" aft of angle where deck meets stemhead.

Next lift deck up and clean up all drilling residue. Then spread 3M-5200 heavily on hull flange. Three passes with the cartridge gun (extruding a 3/8" ribbon) fore and aft should do it (we use 12 cartridges for this job). It is best to spread the material with a putty knife to ensure even coverage. Use enough 5200 so that it oozes out everywhere when deck is replaced. It is better to spend time cleaning up the mess than to lay the material sparingly and risk a leak in this most vital joint. Reset deck, line up holes and set in a screw at bow and both aft corners. Then start bolting using flat washers and nylon lock nuts under the hull flange. You will need about 160 each of the machine screws, washers and nuts. This is a two man job and should take no more than 2-3 hours but be sure job is completed within 6 hours so you don't risk having the 5200 start to cure. After deck is down, and before the 5200 sets up, you should do a thorough cleanup as this material can be extremely tenacious. Now you may return to you interior and prepare to complete bonding of bulkheads to the deck.

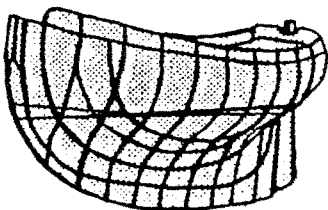
ENGINE

The fibreglass engine pan is first--gel coat is ground off flanges where bonds will cover. The rough fibreglass underside is ground, where any high spots appear, and cleaned with acetone to provide a fresh surface.

Exact fore and aft location of pan is 10'-9-5/8" from its forward vertical face to aft side of main bulkhead or 59½" from same face to point in centre of aperture boss where prop shaft will exit. Thwartship location is best determined by a plumb bob hung from a centre line string run from stem to transom. The pan should also be checked for level thwartship at this time. Perimeter of pan is then marked on hull with heavy felt pen and pan is removed. ½" Thick mish-mash is trowelled over area where pan will rest and pan is replaced within the outlines.

Firm pressure is used to set the pan in the mish-mash and pan is then rechecked for level. Excess mish-mash which has exuded is cleaned off and a level is created around perimeter to provide smooth bonding surface. Allow time for mish-mash to set up then bond pan flanges to hull with 8" wide strips mat/cloth, mat/cloth which will provide about 5" of bond on the hull.

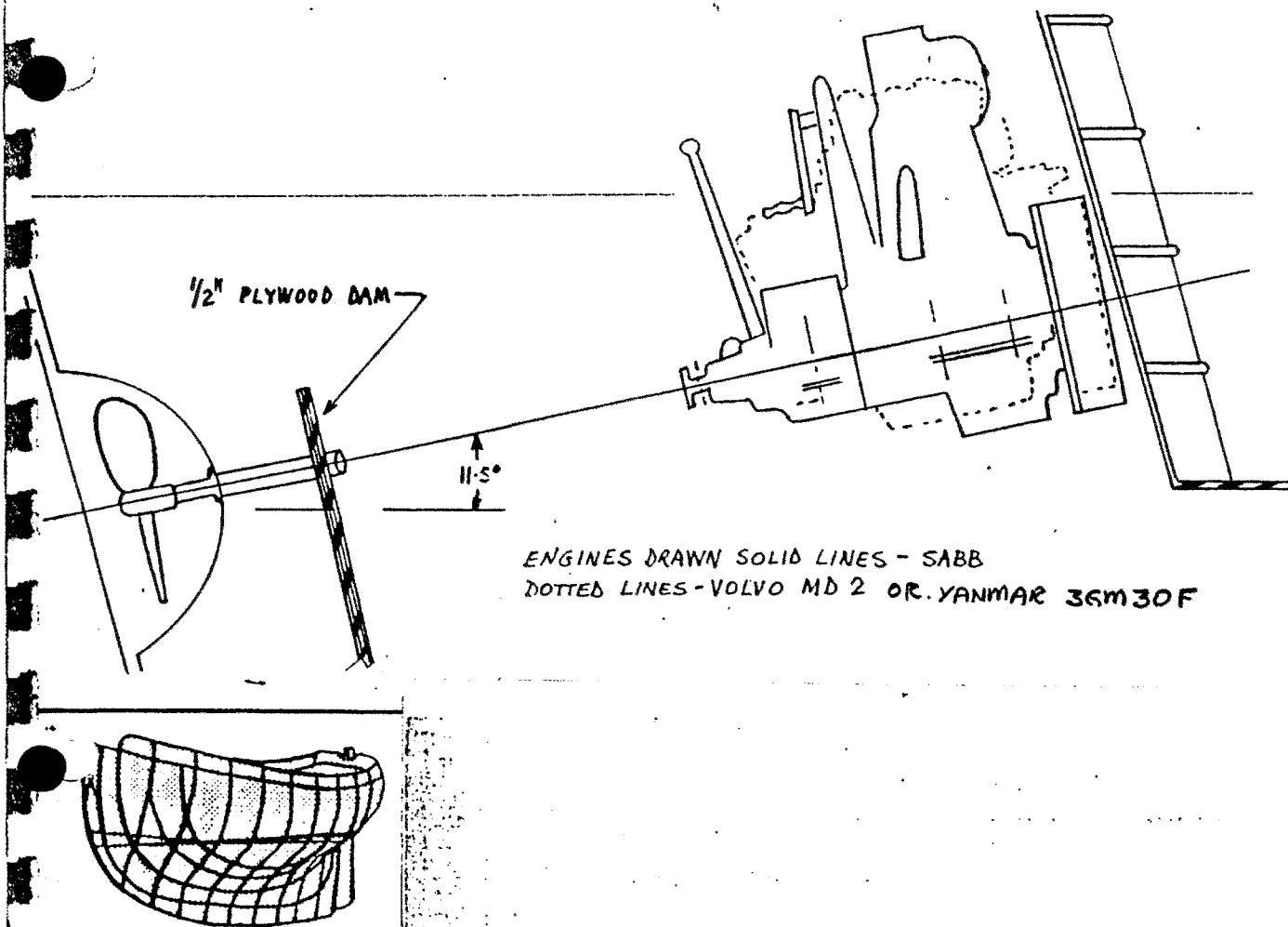
Engine support locations we marked on pan by use of our jig and engine is placed on pan and lined up with the marks. We do not bolt down the engine at this time. Next we will drill a pilot hole from outside, through the centre of the flat in the aperture, using a ½" x 12" drill bit, 90° to the flat. When we have pierced the hull we will then extend the bit until it contacts the plywood aft dam, previously installed, and drill through it also with bit still at 90° to aperture flat. By sighting through this hole in hull and dam we can determine if we have lined up with centre of propeller shaft coupling on engine. Since this is a trial and error procedure we may find it necessary to drill one or two more ½" holes in dam until we have everything in line. A string can help in the line up. Mark proper hole. Next we bore out the hull with a 2-1/8" hole saw to accept the 2" fiberglass stern tube with clearance for some adjustment and the later bonding of log into hole with mish-mash. Next we will use a 2½" hole saw to enlarge the hole in dam.



At this point the stern tube with cutlass bearing installed can be inserted in the hull opening and forward through the dam and a dummy prop shaft can be run through the tube, and into engine coupling. Engine alignment can now be checked and a measurement may be taken for machining the final shaft. Next, while keeping temporary shaft in place, the stern tube is carefully mish-mashed into the hull, making certain of proper alignment of tube, shaft and engine. We can then bond forward end of tube into the hole in dam and a bit of adjustment can be made, before fibreglass starts to set, if necessary, to be sure the shaft is free turning.

Now complete filling behind the dam to its top with mish-mash, enclosing stern tube completely to a depth of several inches.

Double check engine alignment one more time, mark on pan where tie down bolts are to be located, drill and tap into steel plates embedded in the pan. Bolt down engine.

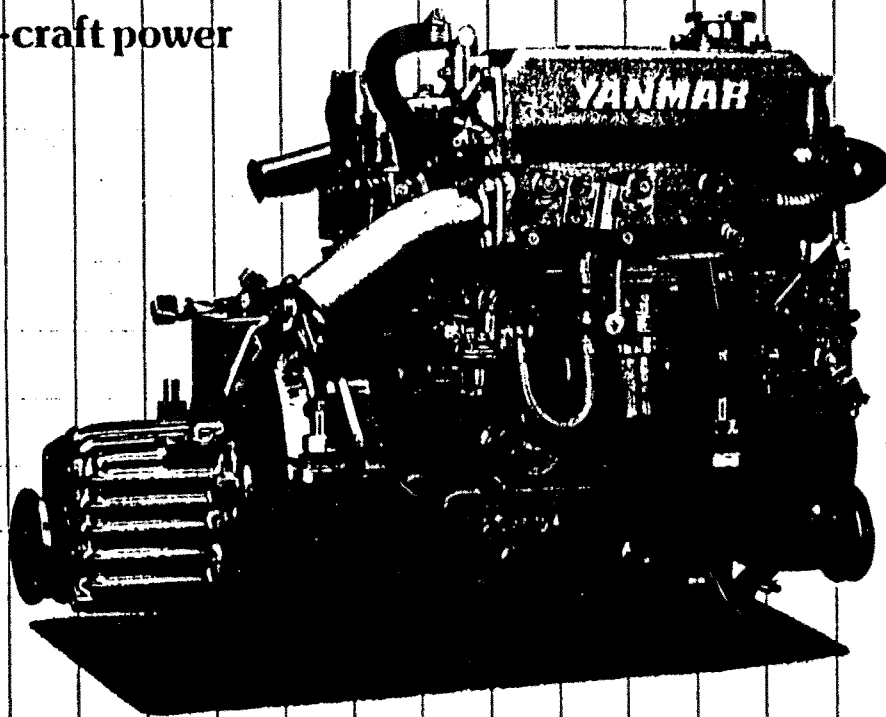


YANMAR

3GM30F

27 hp (20.1kW)

Pleasure-craft power



The Engine with a Built-in 20% Boost of Power

Ups Power, Stays Trim

We've put more punch into our popular 3GM and kept its ideal proportions in creating the new 3GM30F. Power jumps by 20%, giving an extra surge to carry the 3GM30F into a whole lot wider range of boats. Boat owners will get more from their motor, without getting more motor.

Smooth, Clean and Quiet

Comparative tests and actual user reports prove the GM series are more acceptable inboards than equivalent engines. The greater piston bore of the 3GM30F delivers more boost yet still excels in quiet and smooth running from idling to

top revs. Emission levels are the lowest in the history of this class of engine, and the 3GM30F exhaust is soot-free.

More Efficient Electrics

The alternator is highly uprated to 55 amps, providing ample current for auxiliary electric power from the battery and a strong source for charging.

Greater Power from the Prop

With the increase in horsepower the builder can equip the boat with a larger propeller or a more dynamic pitch to give extra thrust without extra bed space or redesigning.

Fresh Water Cooling Designed In

With a fresh water cooling system as an integrated part of this engine it becomes more durable and can readily be adapted for an on-board hot water system.

SPECIFICATIONS

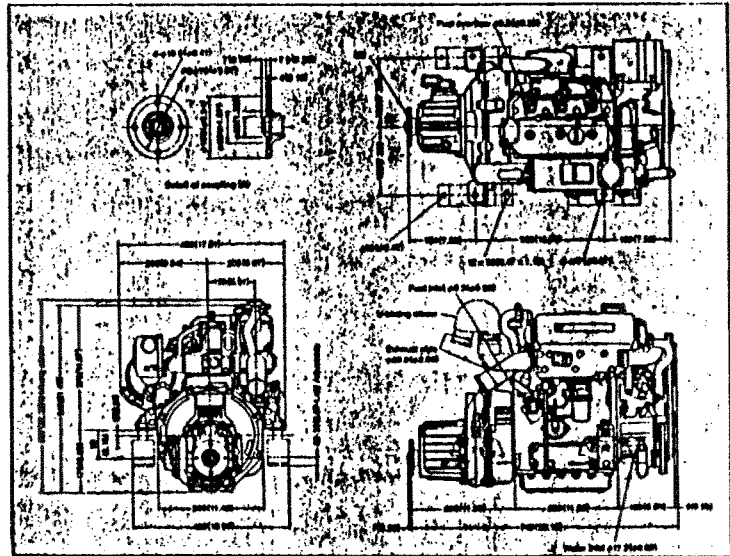
Model	30M30F		
Configuration	4 stroke, vertical, water cooled diesel engine		
Number of cylinders	3		
Bore x stroke	75 x 72 (2.95 x 2.83)		
Displacement	0.954 (58.22)		
Continuous rating output (DIN 6270A)	hp/rpm	24/3400 (17.9/3400)	
Maximum output (DIN 6270B)	hp/rpm	27/3600 (20.1/3600)	
Combustion system	Special swirl type pre-combustion chamber		
Starting system	Electric (D.C. 12V-1.0kW starting motor, 12V-55A A.C. Generator)		
Cooling system	Fresh water cooling with heat exchanger		
Lubrication system	Forced lubrications with trochoid pump		
Reduction and reversing gear	KM3A		
Model	KM3A		
Type	Constant mesh gear with servo cone clutch		
Reduction ratio (Ahead/Astern)	2.36/3.16	2.61/3.16	3.20/3.16
Propeller speed (Ahead) (at continuous rating)	1441	1303	1063
Direction of rotation	Counterclockwise, viewed from stern		
Crankshaft	Counterclockwise, viewed from stern		
Propeller shaft	Clockwise, viewed from stern		
Dry weight	kg (lbs)	138 (304)	

ACCESSORIES

Installation	Standard		Option: ▲	Remarks
	Quantity			
Flexible mount	4	○		
Propeller shaft half coupling, underbored (S/I)	1	▲	φ20	
Propeller shaft half coupling (Taper)	1	▲	φ28 or 30	
Fuel				
F.O. tank and pipe	1	▲	30ℓ, 2m	
F.O. filter, paper element type	1	○		
F.O. lift pump, mechanical type	1	○		
Cooling				
Seawater pump, rubber impeller type	1	○		
Fresh water pump, centrifugal type	1	○		
Temperature switch	1	○		
Thermostat	1	○		
Kingston cock & strainer with hose	1	▲	1m	
Heat exchanger	1	○		
Fresh water reservoir	1	○		
Lubricating				
L.O. filter	1	○		
Pressure switch	1	○		
Evacuation pump	1	▲		
Bilge				
Bilge pump, electrical type	1	▲		
Air intake and exhaust				
Air intake silencer	1	○		
Water mixing elbow, L-type	1	○		
Water mixing elbow, U-type	1	▲		
Starting				
Starting motor, 12V-1.0kW	1	○		
A.C. Generator, 12V-55A	1	○		
A.C. Generator, 12V-35A	1	▲		
Instrumentation and electrical				
A type instrument panel with cable harness	1	▲	3m	
B type instrument panel with cable harness	1	▲	3m	
Cable harness, extension	1	▲	3m	
Battery switch	1	▲		
Control				
Single lever control head, Side mount type	1	▲	MV	
Single lever control head, Top mount type	1	▲	MI-2	
Push pull cable	2	▲	33C, 4m	
Engine stop cable	1	▲	3m	
Others				
On board tool kit	1 set	○		
On board spare parts kit	1 set	▲		
Packing kit	1 set	▲		
Overhauling tools	1 set	▲		

DIMENSIONS

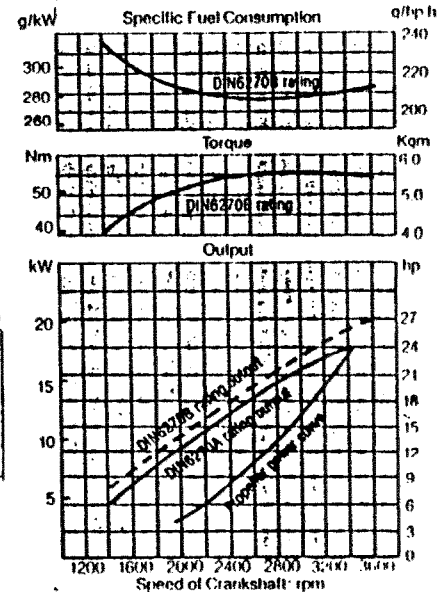
Unit = mm Figures in parentheses = inch



Instrument panel

Instrument panel	Available: ●		Not available: —	
	A type	B type	A type	B type
1. Key switch	●	●	●	●
2. Push button switch for starting	●	●	●	●
3. Alarm buzzer	●	●	●	●
	●	●	●	●
4. Alarm lamps	●	●	●	●
	●	●	●	●
	●	●	●	●
5. Tachometer, electrical type	●	●	●	●
6. Tachometer illumination switch	●	●	●	●

PERFORMANCE CURVES



Note: 1. Output, engine torque and specific fuel consumption are measured at the marine gear. The engine flywheel output is approx. 3% higher.
2. These curves show the average performance of respective engines in test operation at our plant.

Note: All data may be subject to alteration without notice.

YANMAR DIESEL ENGINE CO., LTD.

OVERSEAS OPERATIONS DIVISION

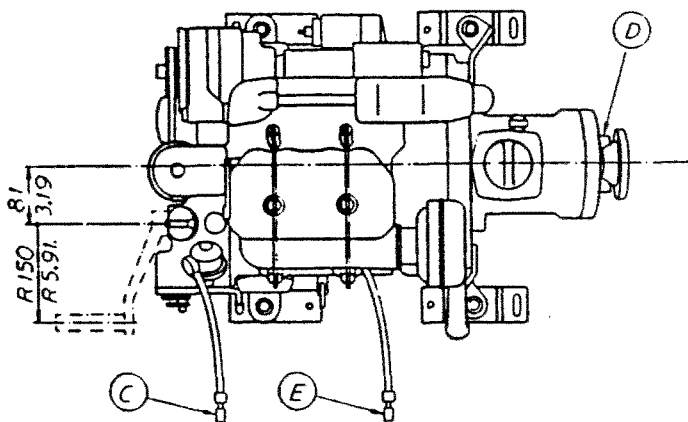
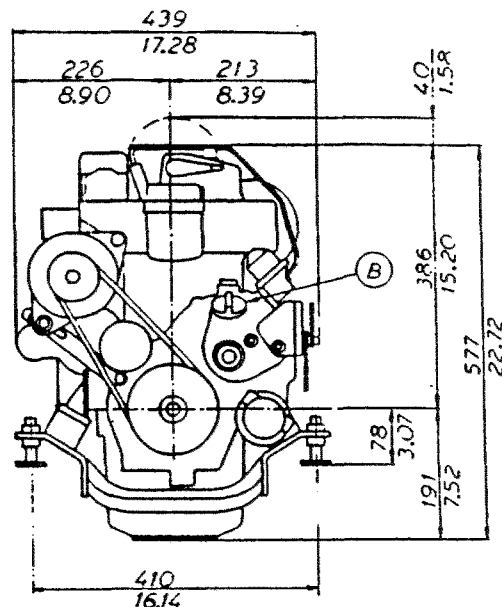
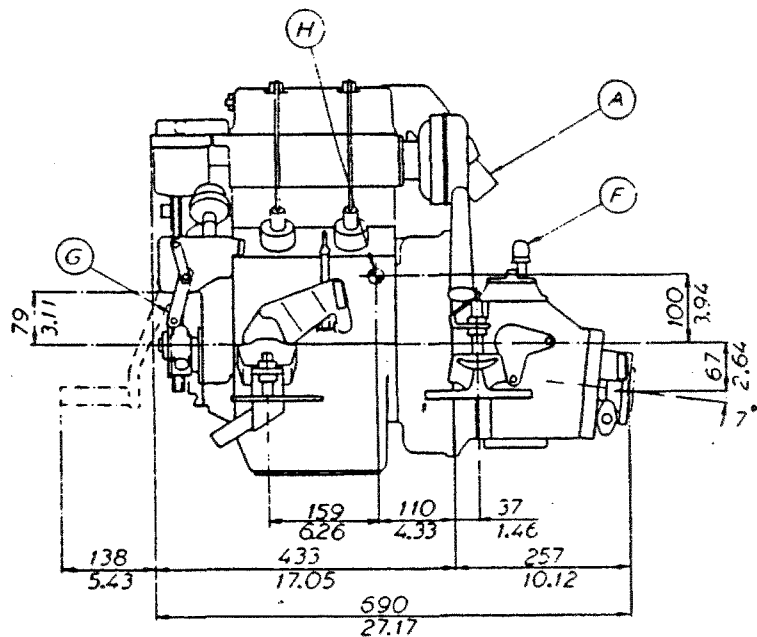
1-1, 2-chome, Yaesu, Chuo-ku, Tokyo 104, Japan

Telex: 0222-4733 Telephone: 03-275-1111

Facsimile: 03-272-0687 Cable: YANMAR TOKYO



60A1306 8505 12 Printed in JAPAN

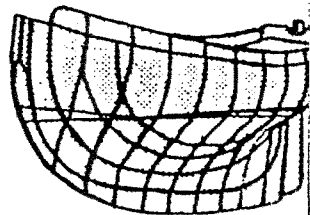


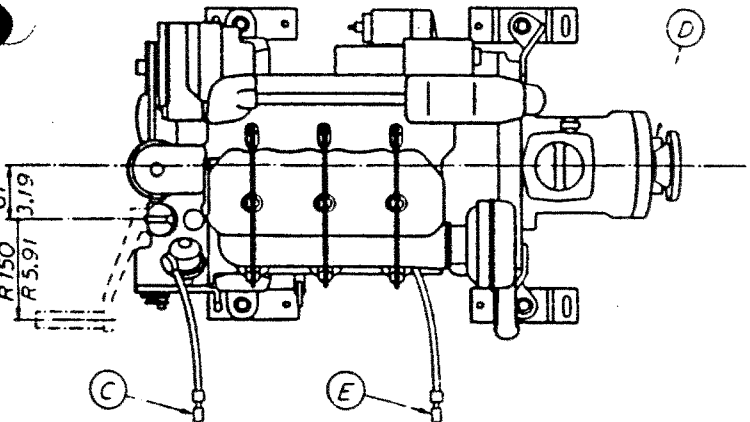
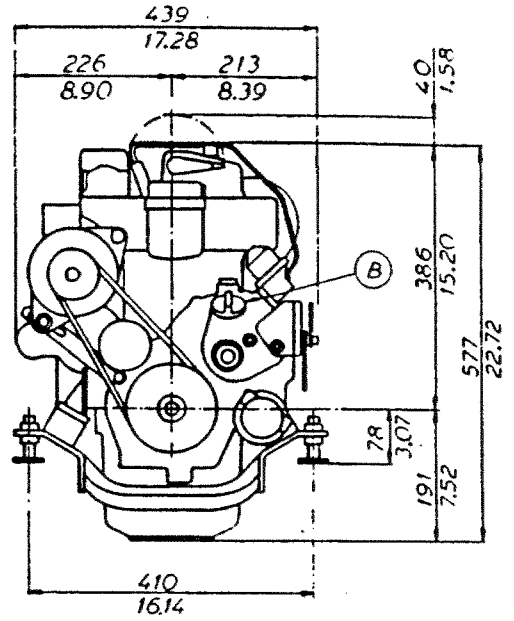
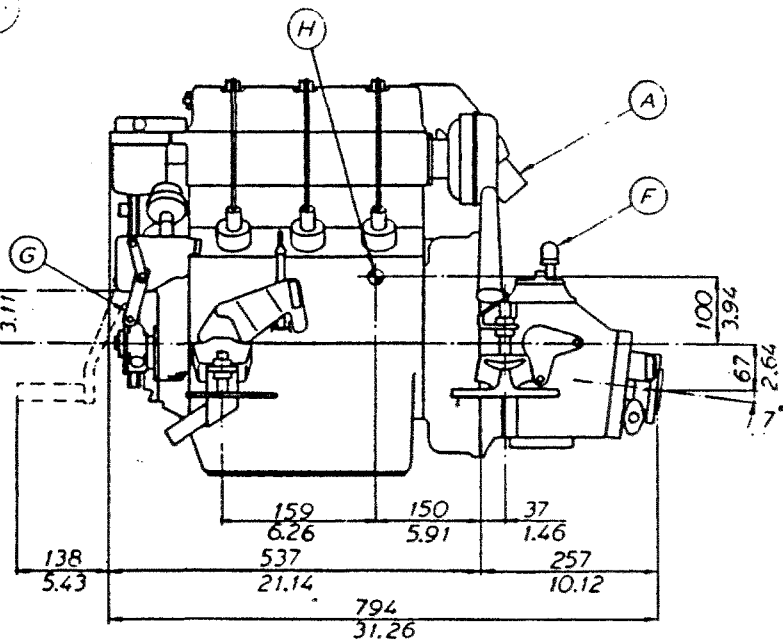
- A = Exhaust elbow for hose I.D. 44/1.75
- B = Oil filling
- C = Fuel connection for pipe 5/16"
- D = Water inlet for hose I.D. 15,5/0.60
- E = Fuel return connection for pipe 5/16"
- F = Oil dip stick, reverse gear
- G = Speed control lever
- H = Centre of gravity

VOLVO PENTA

2002R (R = MS2B)

Dimensions in millimetres and inches
Subject to changes



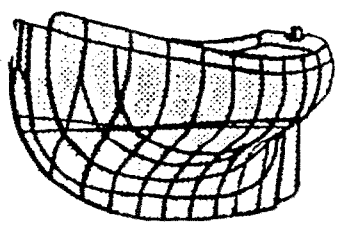


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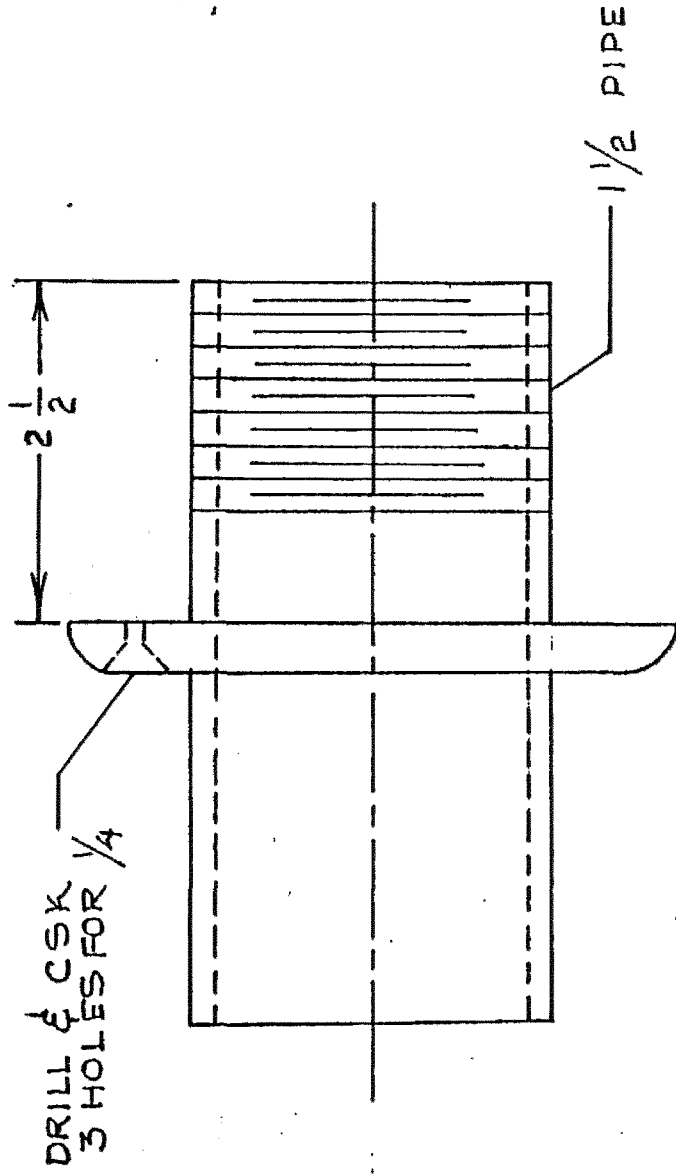
Dimensions in millimetres and inches
Subject to changes

VOLVO PENTA

2003R (R = MS2B)

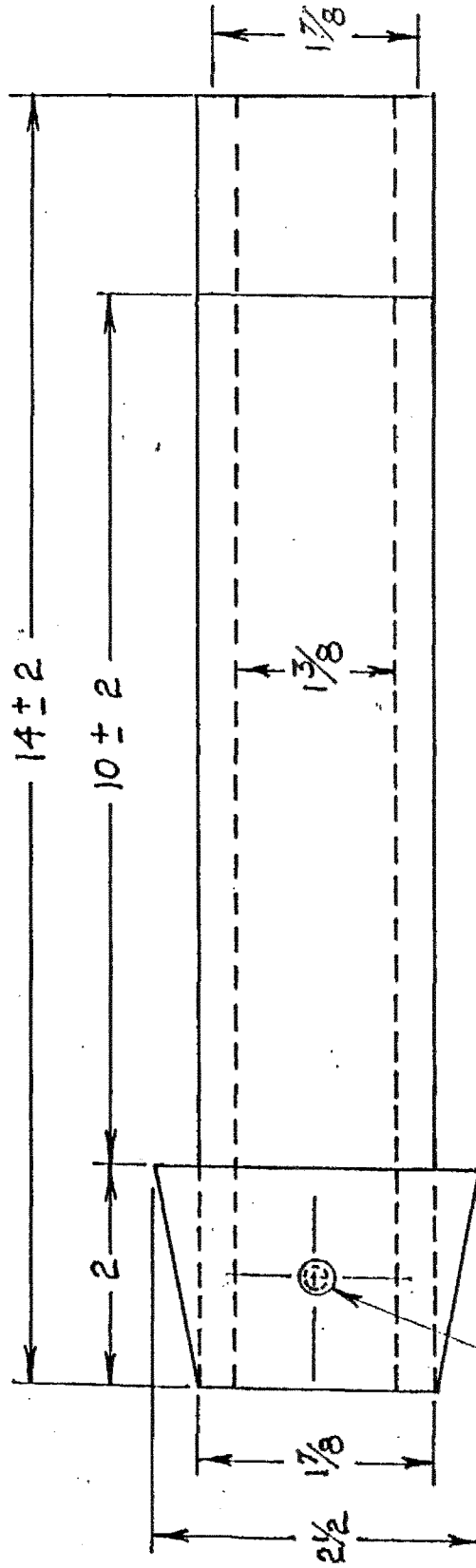


EXHAUST PORT BCC-



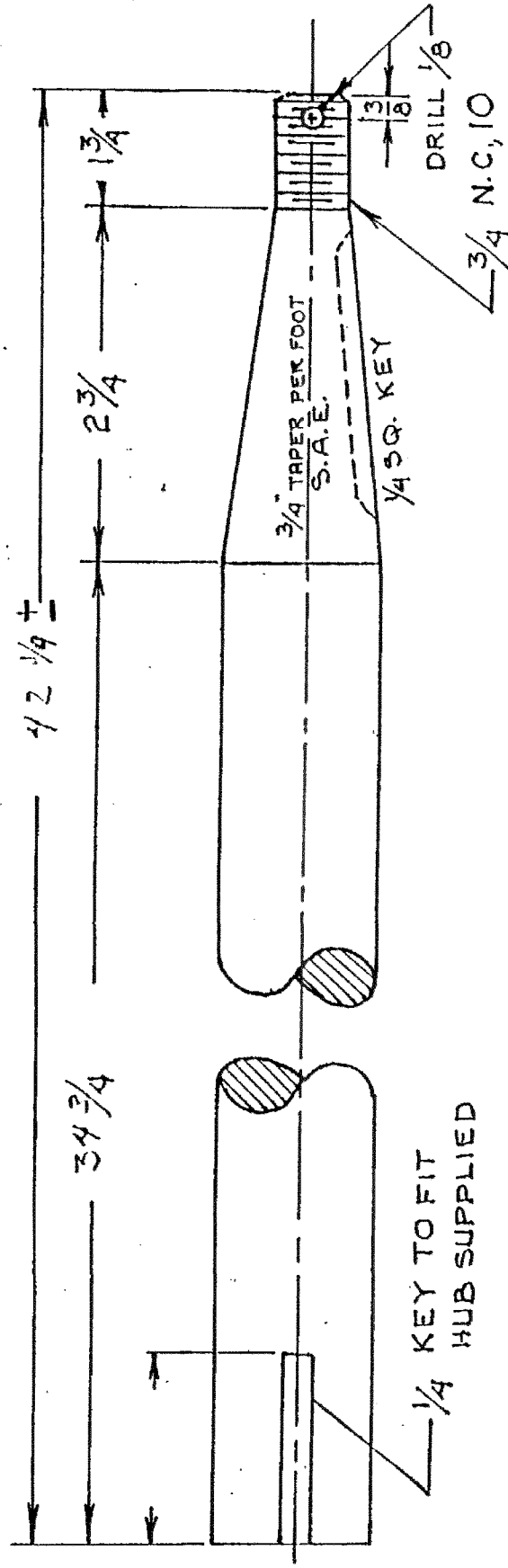
FINISH ALL OVER

STERN TUBE BGC-FC



DRILL & TAP $\frac{1}{4}$ -20 3 HOLES
EQUALLY SPACED

PROP SHAFT BCC & FC



$\frac{1}{4}$ SQ. KEY "STEEL" FOR HUB. $\frac{1}{4}$ SQ. KEY "BRONZE" FOR PROP

ENGINE EQUIP ^{Low Voltage} Tank & Fuel

(FOR SALT WATER - GALLEY)

- ✓ ① 1/2" x 3/4" Seacock thru hull + pipe + strainer (Raw water in for engine) ✓
- ② Berko 493 #4-1/2 Water Strainer.
- ③ Racor Filter
- ④ Anti Siphon Raw Water see ③⑤
- ⑤ M.V. Controls (in cockpit)
- ⑥ 2 x 33C Cables (7)
- ⑦ Stem tube (Complete see ⑮) - what else required?
- ⑧ Propshaft 1" see correct dog & spec
- ⑨ Prop ~~ring~~ ring
- ⑩ 1/2" Exhaust port threaded add elbows, pipe nipple, ^(see No. 12) gate valve, pipe nipple
- ⑪ 1" stuffing box see ⑮ - Prong
- ⑫ 1/2" Gate valve - ext piece
- ⑬ Fuel shut off
- ⑭ Battery Isolator
- ⑮ B.J. Bearings Bloeater Cutlan Bearings Bait 1 x 1 3/8 x 4
- ⑯ 1/2" Bt Deck plate
- ⑰ 1/2" " Conn Nipple ✓ Pipe
- ⑱ 5/8" 1/2" Vent is this same as ⑳ ← *Construction guide shows 5/8" x 5/4" Black Fuel Hose & listing sheet show both ⑱ & ㉑
- ⑲ Battery Cables - o.k.
- ㉑ Battery Selector Switch - in galley area behind ladder
- ㉒ Battery - in 1/4 berth
- ㉓ Water Intake Strainer (3/4"?) See ①
- ✓ ㉔ Hose Exhaust 1 1/8" x 10' engine to muffler 20" Muffler to exhaust 4' 6" = 40' 2" ←
Gates 4 per Marine wet hose
- ✓ ㉕ Hose Water intake 3/4" x 10' Gates of sea-cock to filter 20" filter to engine 54" = 102" = 8' 5" ←
- ✓ ㉖ Hose Water intake 5/8" - 10' Gates of ~~sea-cock to filter 20"~~ vacuum valve ~~filter to engine 54"~~ select through side 35
- ⑳ Hose Fuel Fill 1/2" - 10' (? 6' seems high) Gates → 8" x 1/2"
- ㉗ Hose Tank Vent 5/8" - 14' also see ⑱ *
- ㉘ Stuff Box (Hose) 1 3/4 x 6" see ⑪
- ⑳ Coupling Elk *
Stop cable
- ✓ ㉙ Hose Fuel line 1/4" - 10' Gates or (1 @ 27" 1 @ 35" 1 @ 52") ✓
- ㉚ Misc clamps
- ㉛ " Fittings
- ⑳ ZINC 1" sheet
- ㉜ Vacuum valves ㉝

ENGINE Tank

PIPE FITTINGS ENGINE FUEL

TANK = per construction guide

Want 1 hose barb to make pipe elbows # HE1-10C 5/8" x 3/8"

Section 1 - 3/8" ball valve

2 - sheet elbows 3/8" x 3/8"

1 - Male hose barb to make pipe #201A-40

1/4" x 3/8"

RAMP WITH STRAINER

RAPID

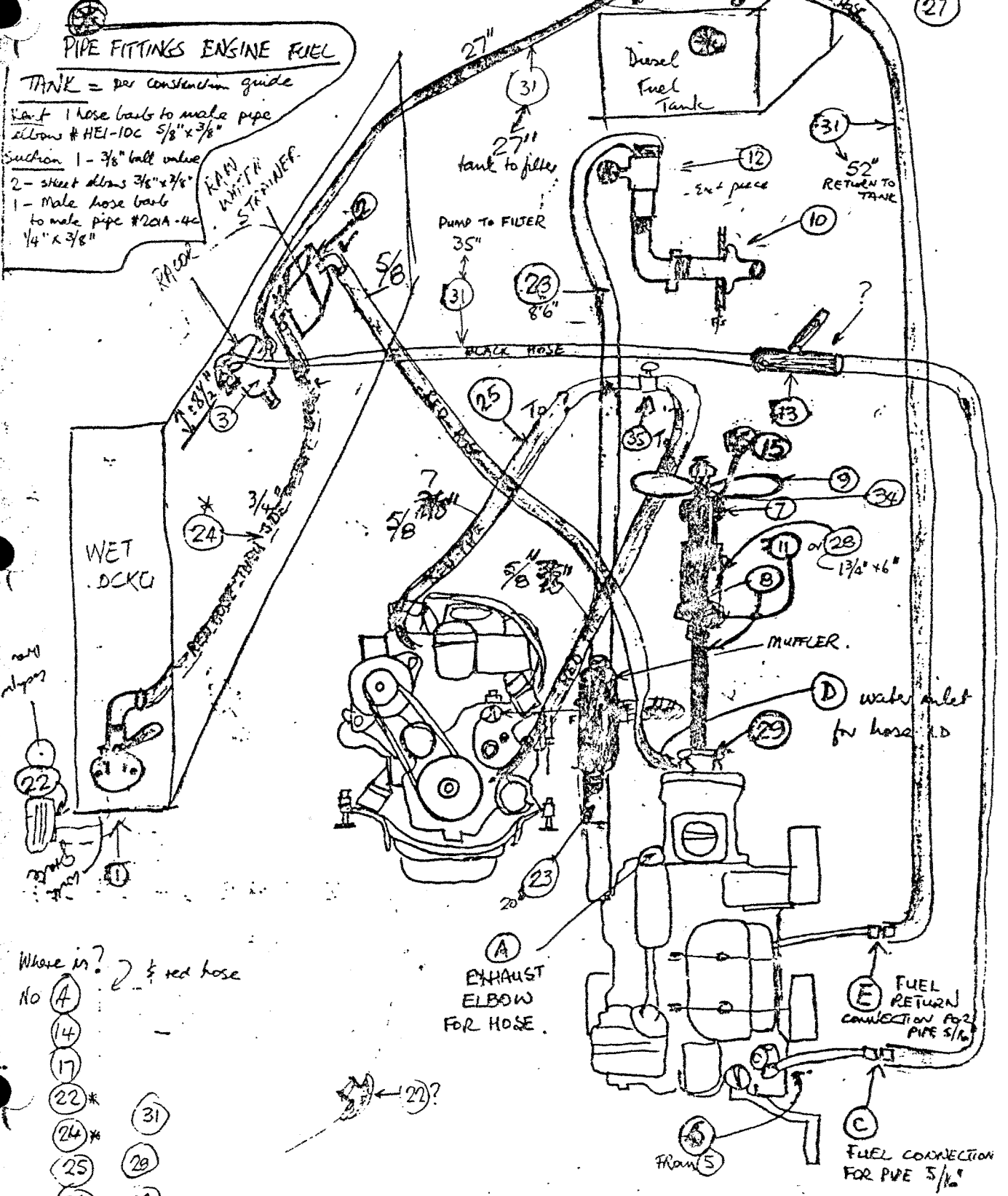
WET DOCK

new clips

Where is? 2 1/2 red hose

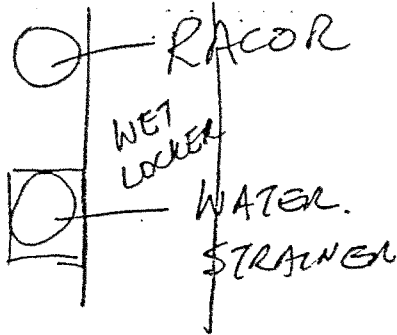
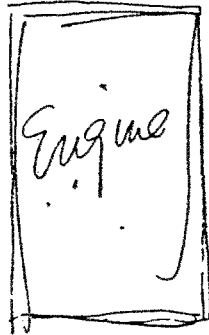
- No 4
- 14
- 17
- 22*
- 24*
- 25
- 26
- 31
- 28
- 29

1 1/2" hose barb (17) (16) (18)
 1/2" - 8" (26)

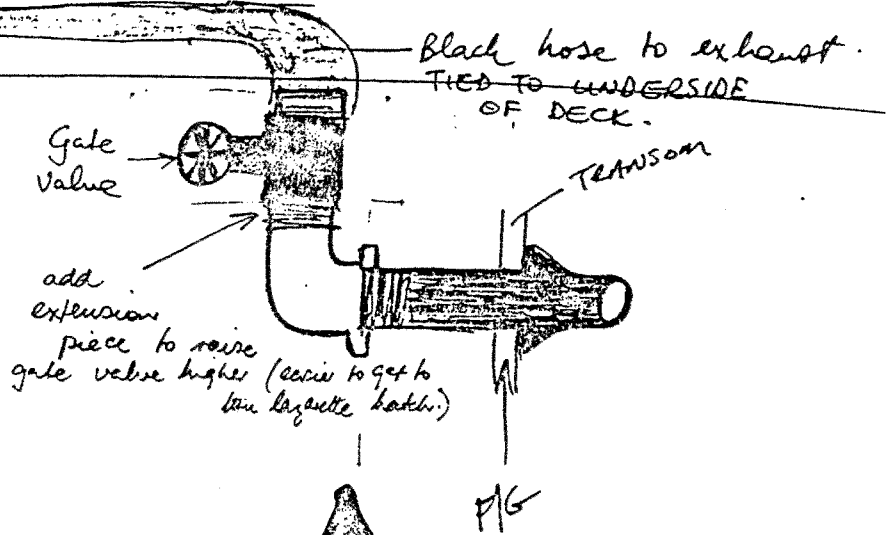


CABIN

FRONT



EXHAUST



EXHAUST

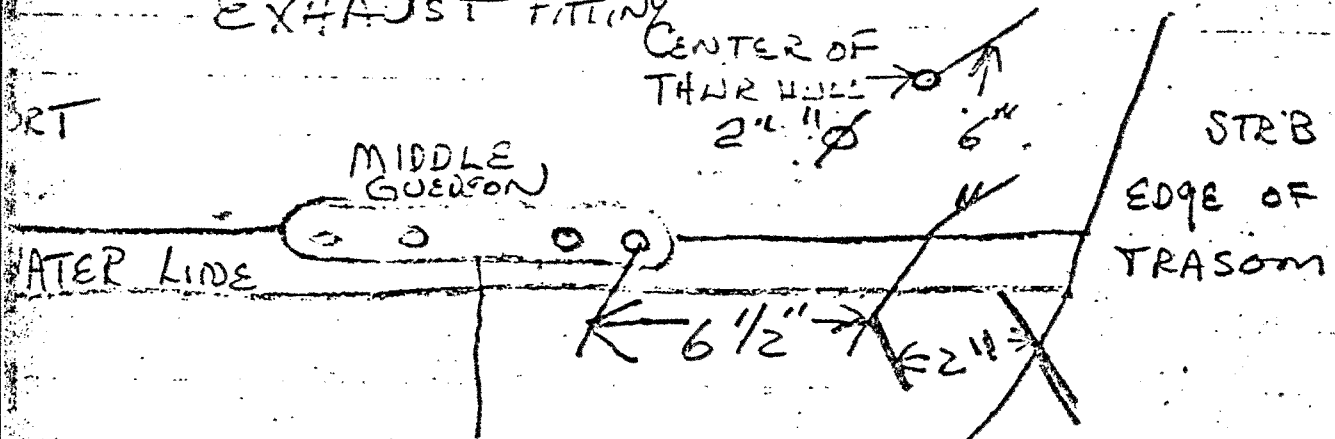
PTO FOR PROP & STUFFING
Box

(75)

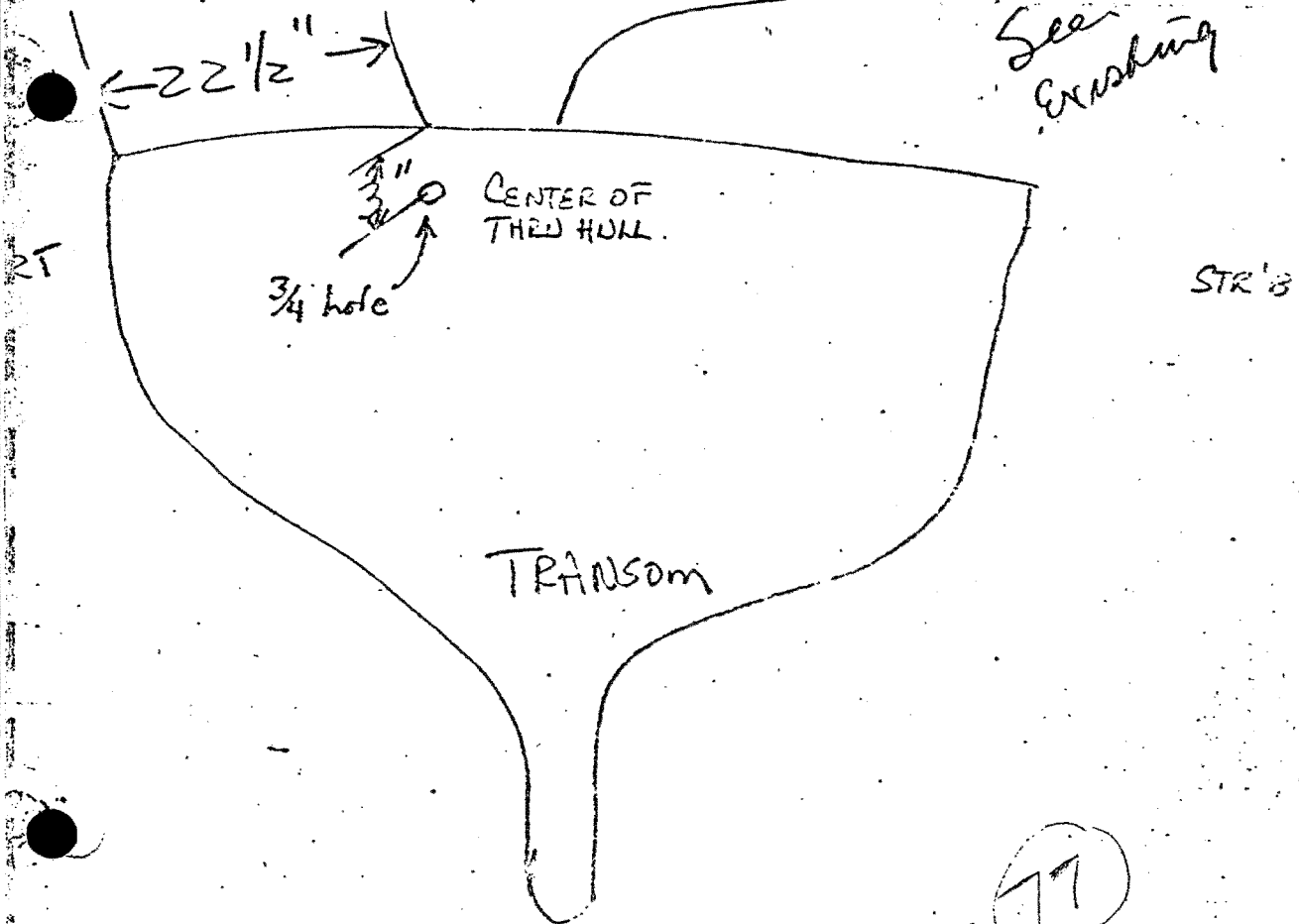
SUPPLIED AS STUDY MATERIAL ONLY ✓

ENGINE FITTINGS

EXHAUST FITTING



TANK VENT



ENGINE FITTINGS

LOCATION OF ENGINE CONTROL

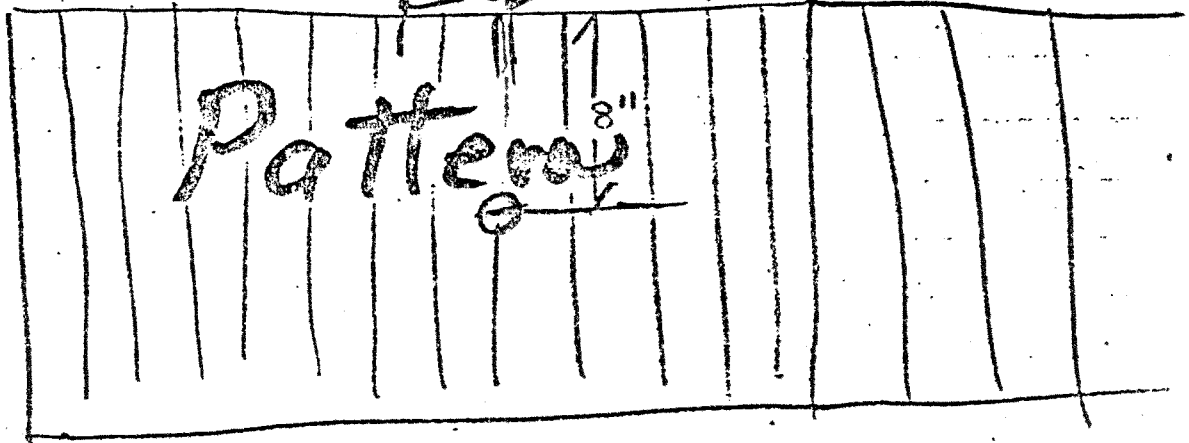
USE TWO 7' CONTROL CABLES -

MORSE CONTROL MODEL "MIR"

FROM HULL #42

STR'B. SIDE OF COCKPIT WELL

8TH STAGING LINE



See Template
Just
AUG - 7 1953

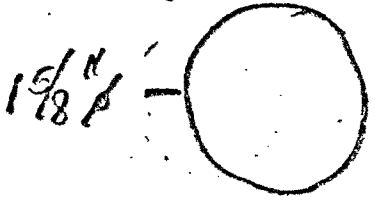
DRILL UPPER FORWARD MOUNT
HOLE JUST FWD. OF 8TH LINE

FROM FRONT OF COCKPIT WELL
COUNTING AFT AND 8" DOWN
FROM DECK

THIS HOLE

0 - 1/4"

DRILL REMAINING
HOLES AS PER



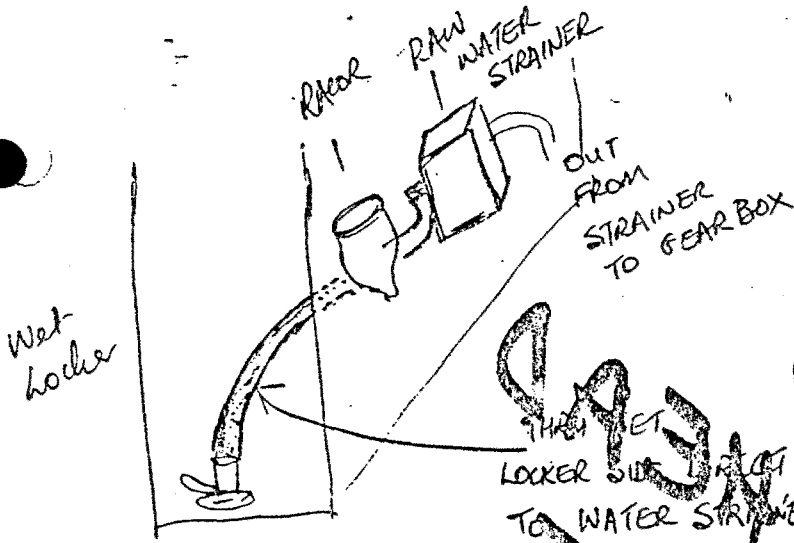
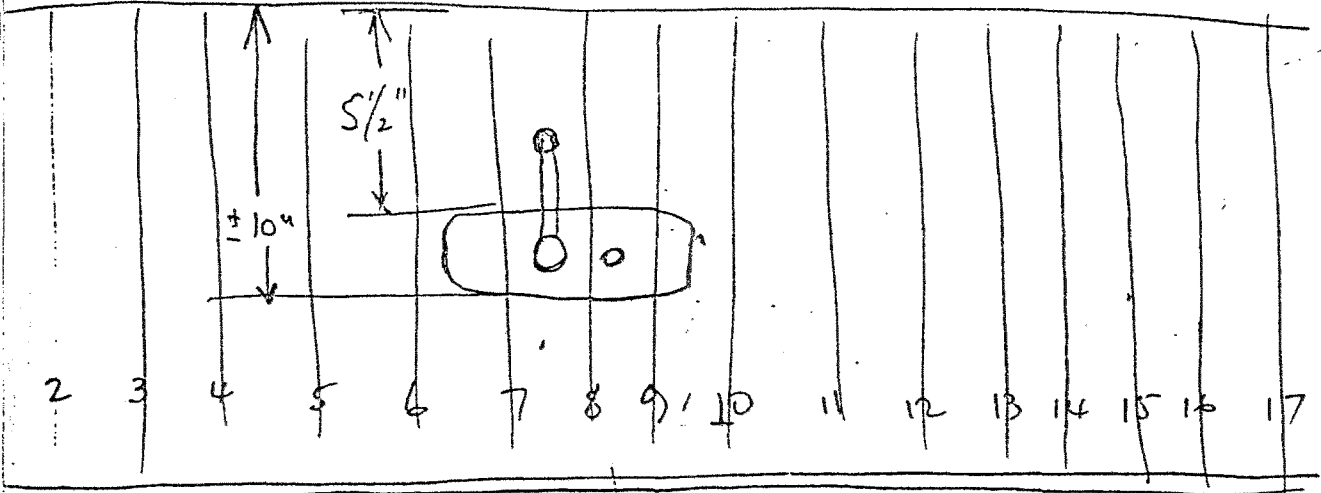
TEMPLATE 0 1/4"



0 - 1/4"

Engine Control

→ TRANSOM

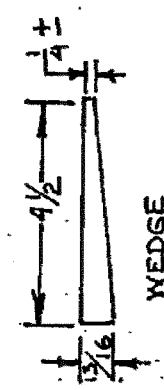
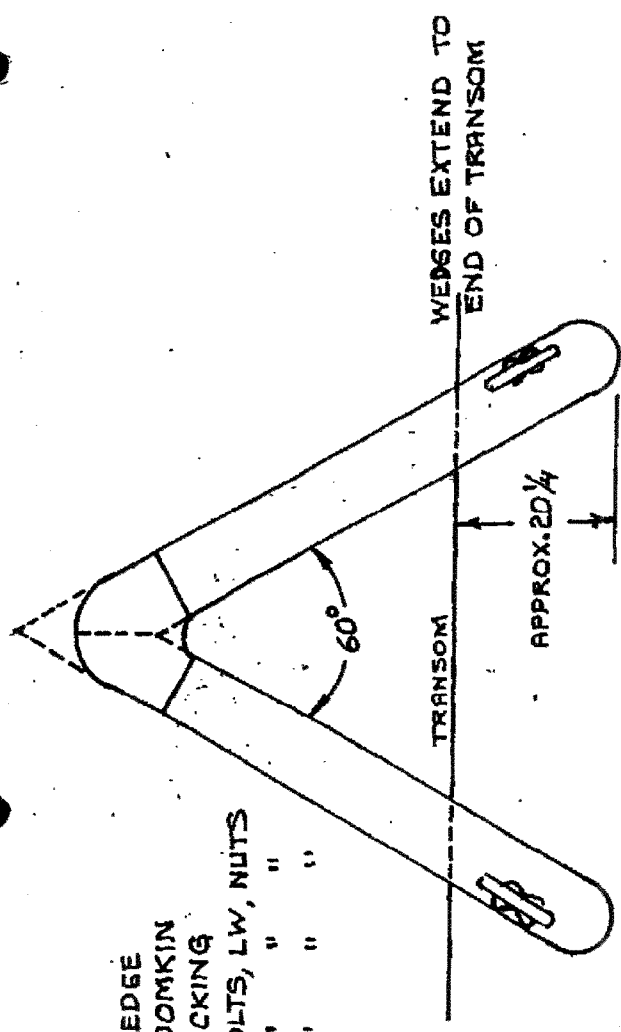


Wet locker
 RAW WATER STRAINER
 OUT FROM STRAINER TO GEAR BOX
 THAT LET LOCKER SUBJECT TO WATER STRAINER

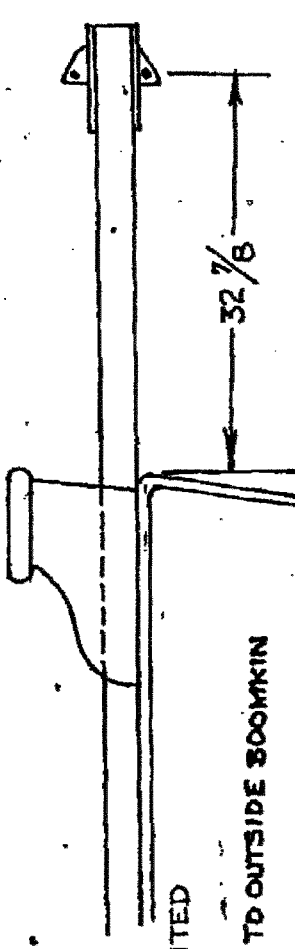
SEE REMEDY FOR INTAKE

SEE REMEDY FOR INTAKE

- 2 - 3/4 x 4 1/2 x 30 WEDGE
- 2 - 2 1/8 x 4 1/2 x 70 BOOMKIN
- 1 - 3/4 x 6 x 28 PLY BACKING
- 6 - 3/8 x 4 SS. CARR. BOLTS, LW, NUTS
- 10 - 3/8 x 3 SS. " " "
- 2 - 1/2 x 3 SS. " " "
- BED WITH 3M 5200

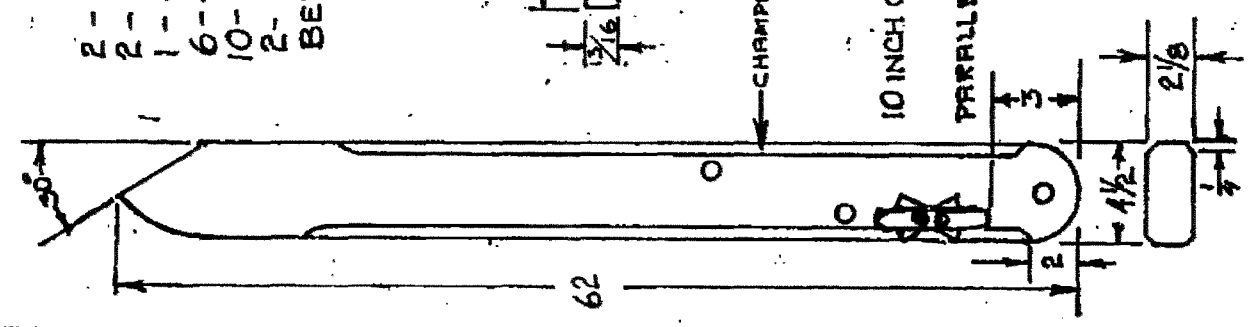


NO CHAMFER ON BOTTOM WHERE BEDED TO WEDGE

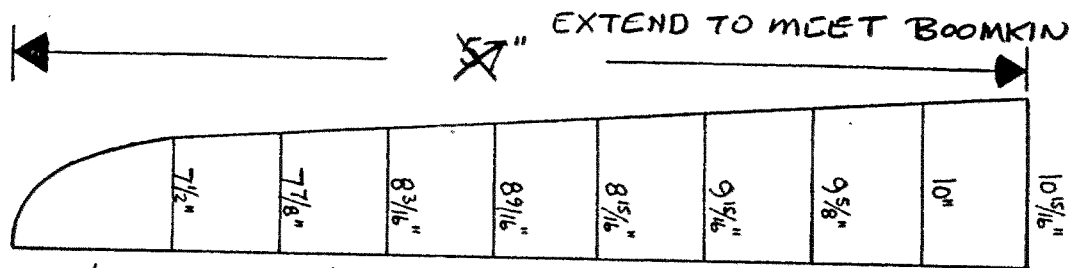


CHAMFER EDGES 1/4"

10 INCH CLEATS MOUNTED PARALLEL AND FLUSH TO OUTSIDE BOOMKIN

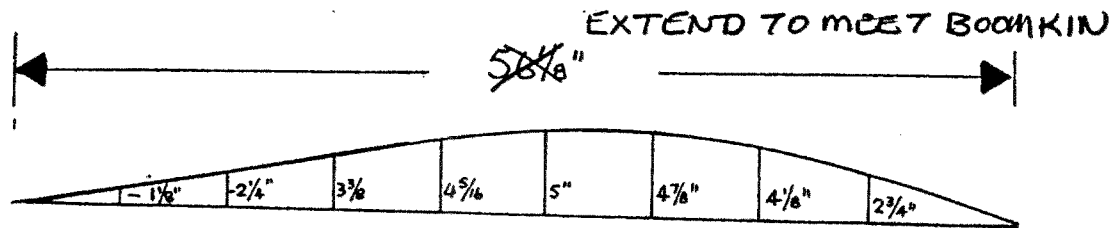


SCALE: NONE	APPROVED BY:	DRAWN BY RDO
DATE: 11-93		REVISED
BCC BOOMKIN		
		DRAWING NUMBER



$6'' * 6'' * 6'' * 6'' * 6'' * 6'' * 6'' * 6'' * 8\frac{1}{8}''$

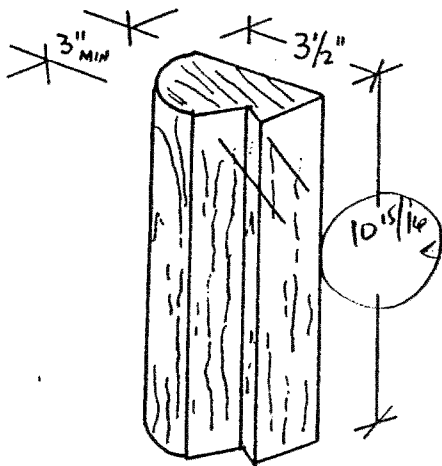
PATTERN OFFSETS
 PATTERN LAID FLAT
 LAMINATE $3 \times \frac{3}{8}''$ PIECES



$6'' * 6'' * 6'' * 6'' * 6'' * 6'' * 6'' * 6'' * 8\frac{1}{8}''$

HORIZONTAL OFFSETS

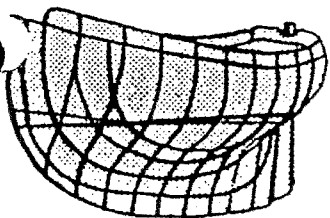
COAMING PERPENDICULAR TO DECK



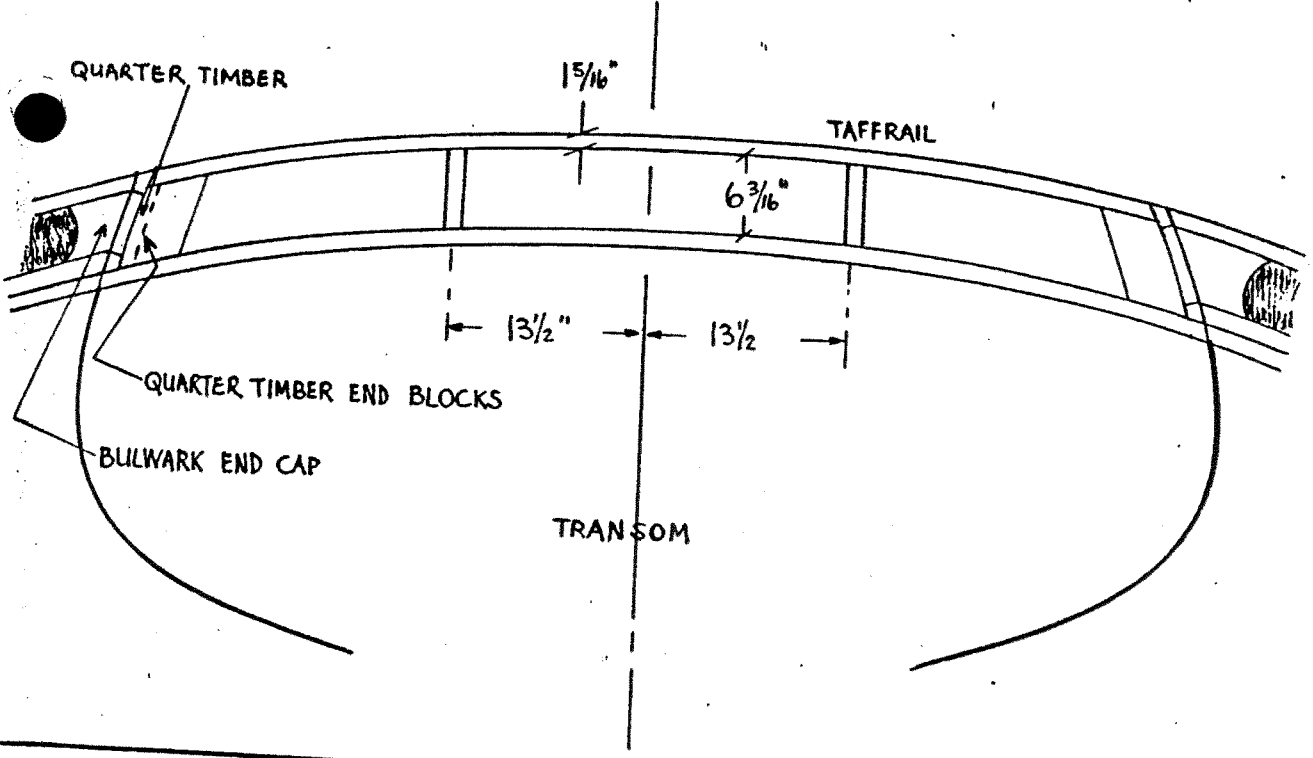
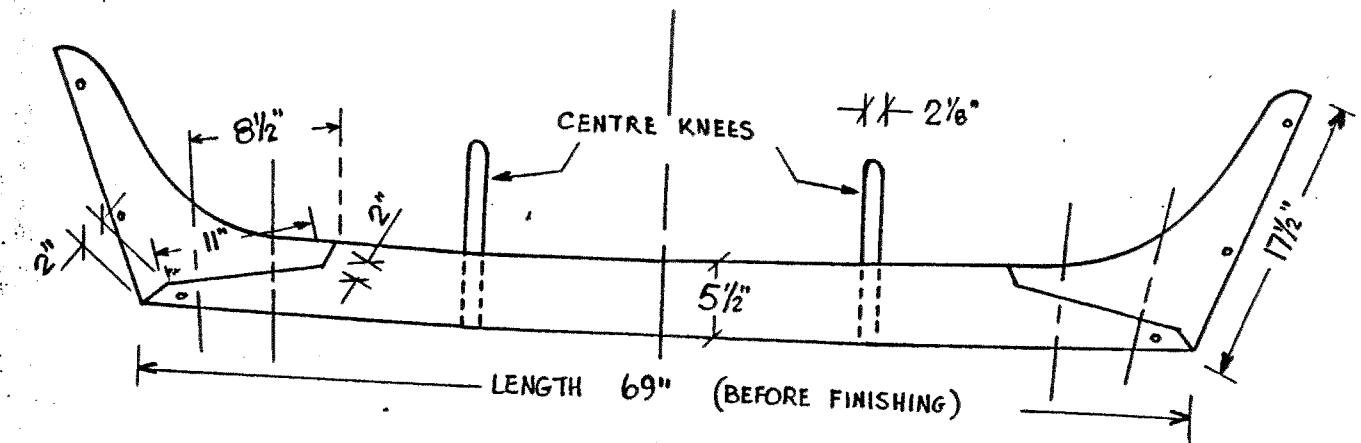
PORT CORNER BLOCK FOR COAMING

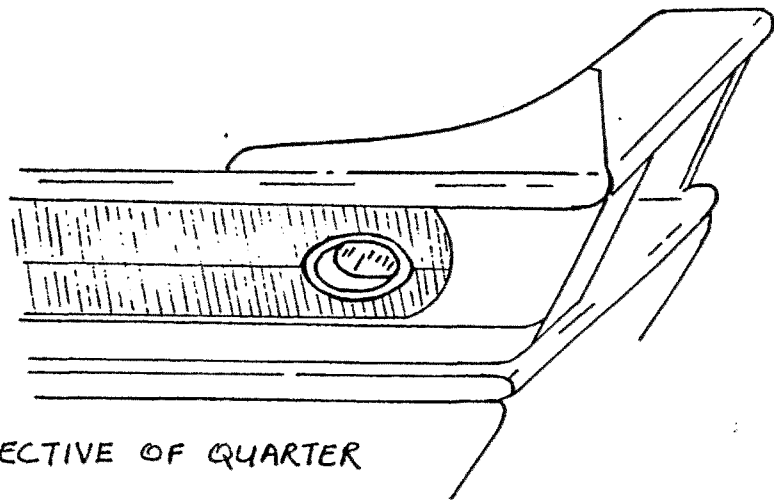
$10\frac{15}{16}''$

PERSPECTIVE OF APPROX SHAPE



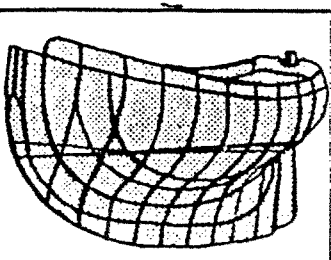
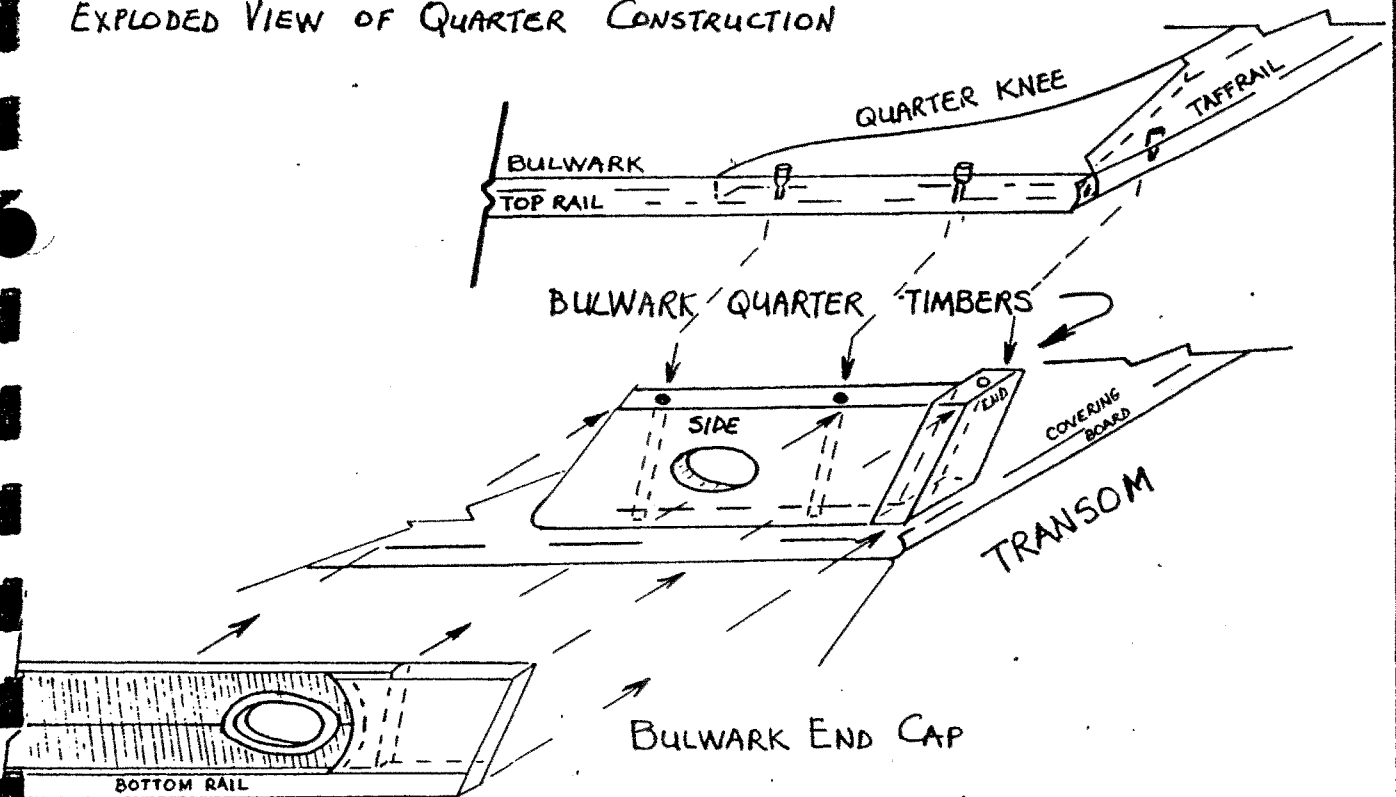
GENERAL LAYOUT

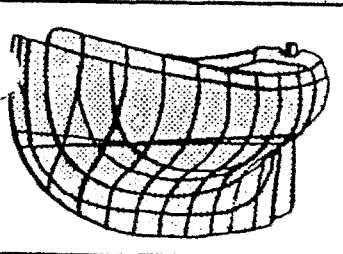
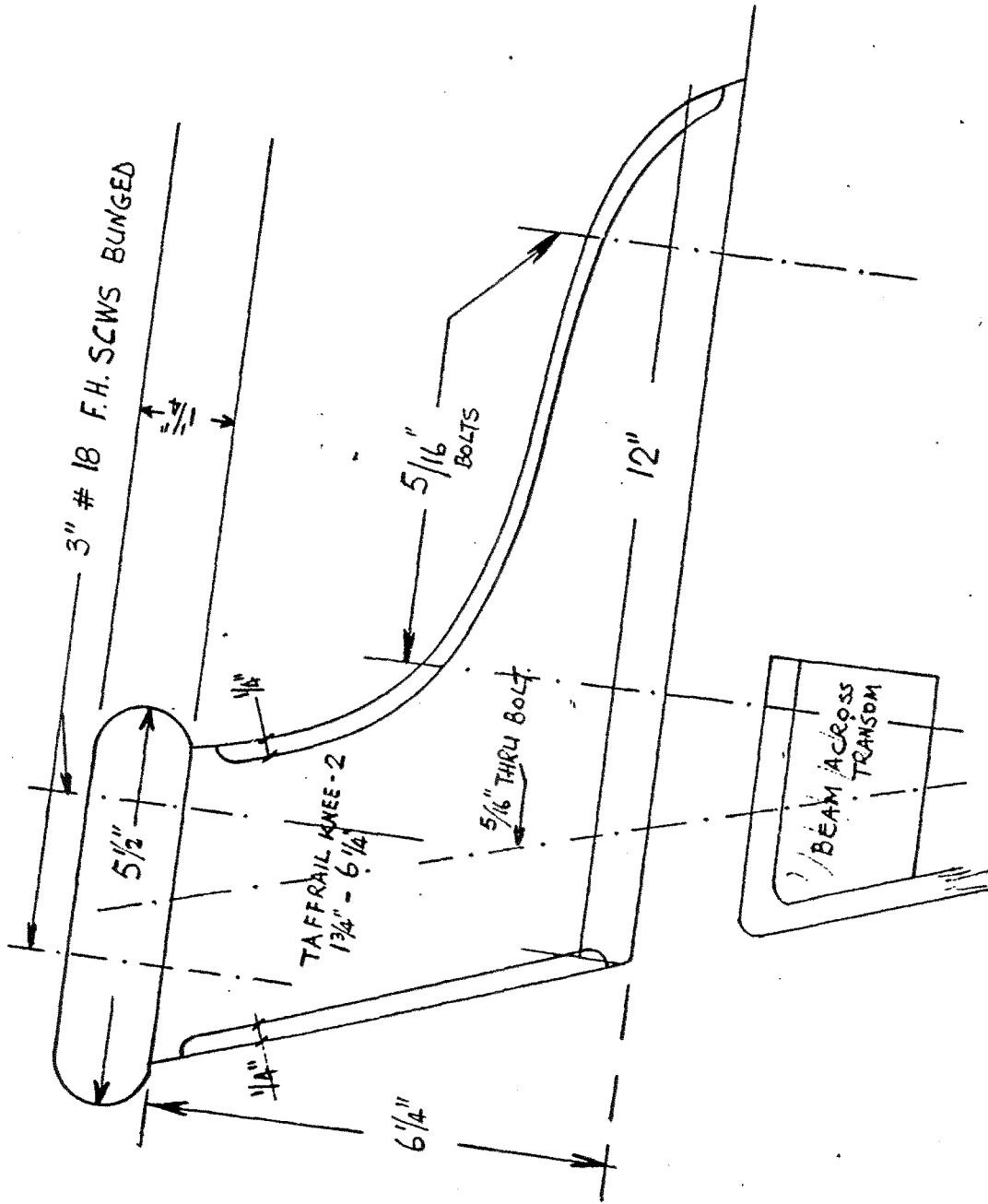




PERSPECTIVE OF QUARTER

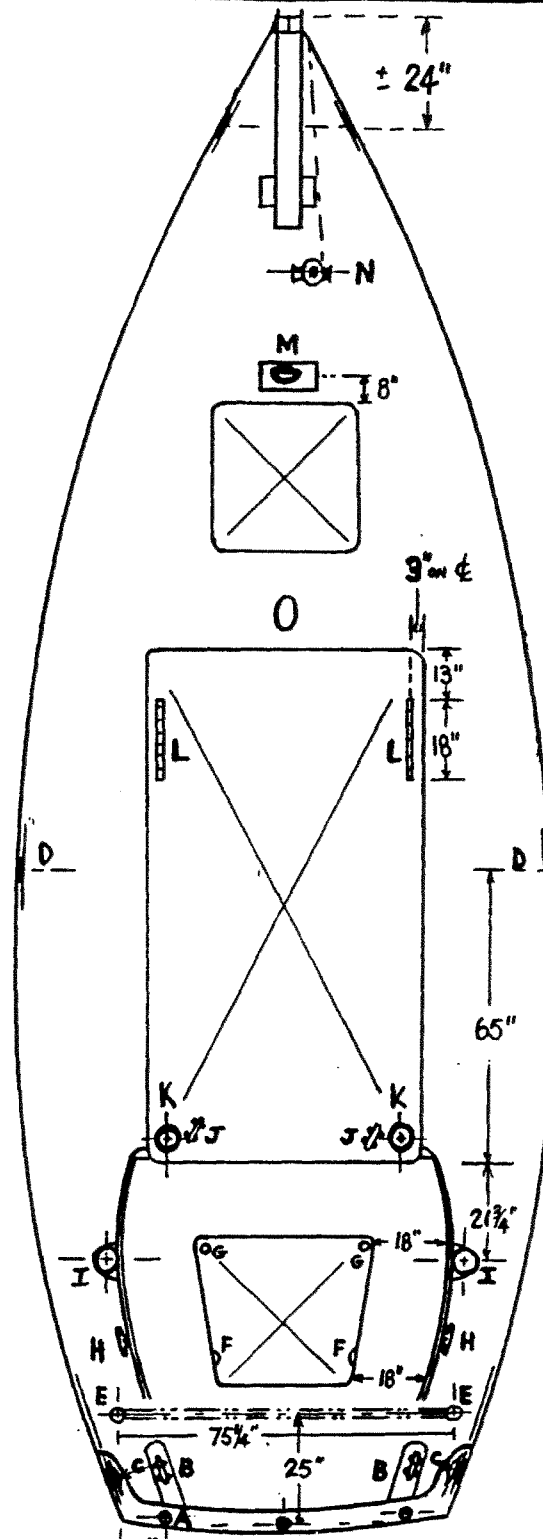
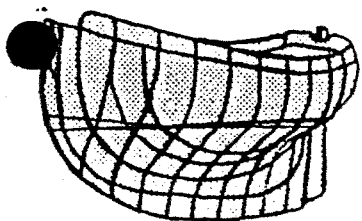
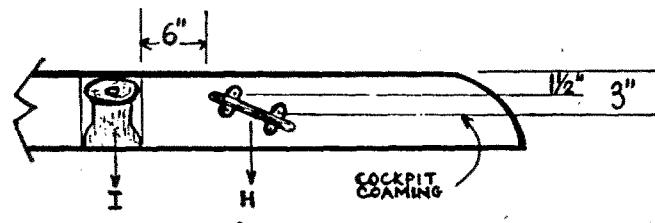
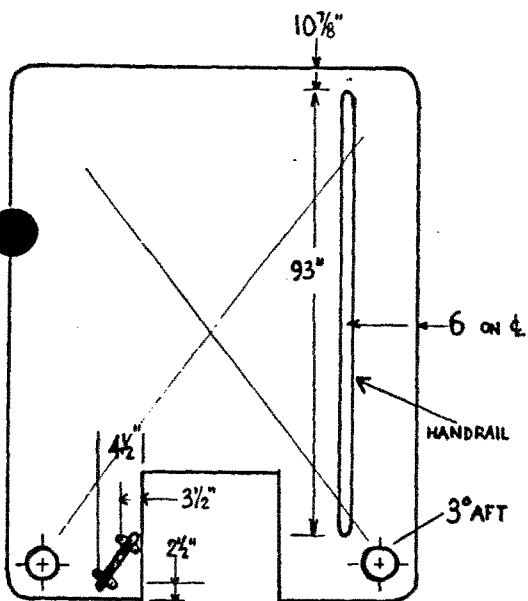
EXPLODED VIEW OF QUARTER CONSTRUCTION

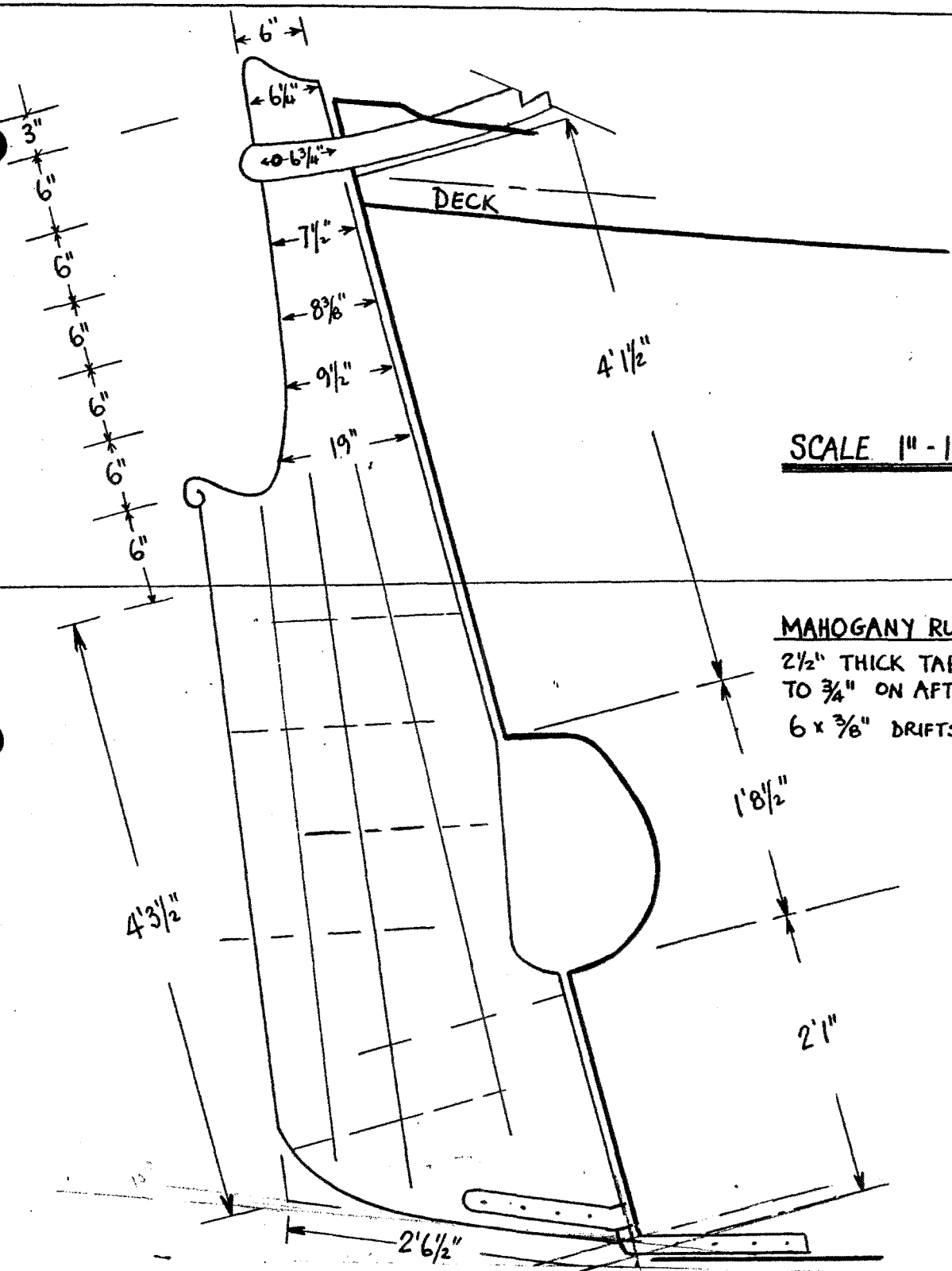




DECK HARDWARE LAYOUT.

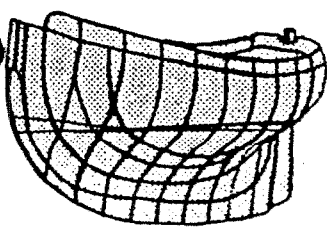
- A = 4" SWIVEL BLOCKS(3)
- B = 10" CLEATS(2)
- C = DRIFTER TURNING BLOCKS(2)
- D = HAWSE (3 per side)
- E = BOOM GALLOW BASES(2)
- F = VENTS
- G = 1½" COCKPIT DRAINS(2)
- H = 8" CLEATS(2)
- I = JIB SHEET WINCHES
- J = 4" CLEATS(2)
- K = STAYSAIL SHEET WINCHES
- L = STAYSAIL SHEET TRACKS
- M = DORADE TYPE VENT
- N = WINDLASS





SCALE 1" = 1'

MAHOGANY RUDDER
 2 1/2" THICK TAPERED
 TO 3/4" ON AFT EDGE
 6 x 3/8" DRIFTS

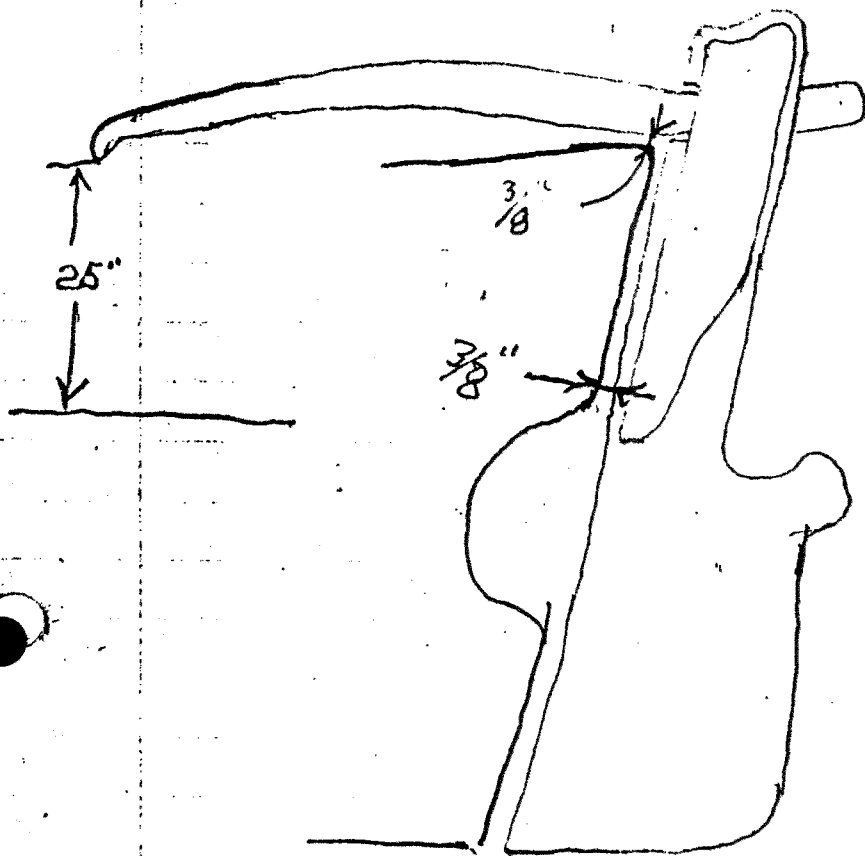


WOODEN RUDDER

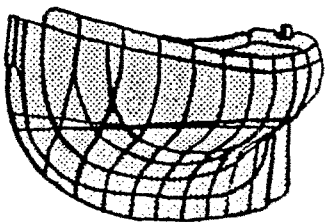
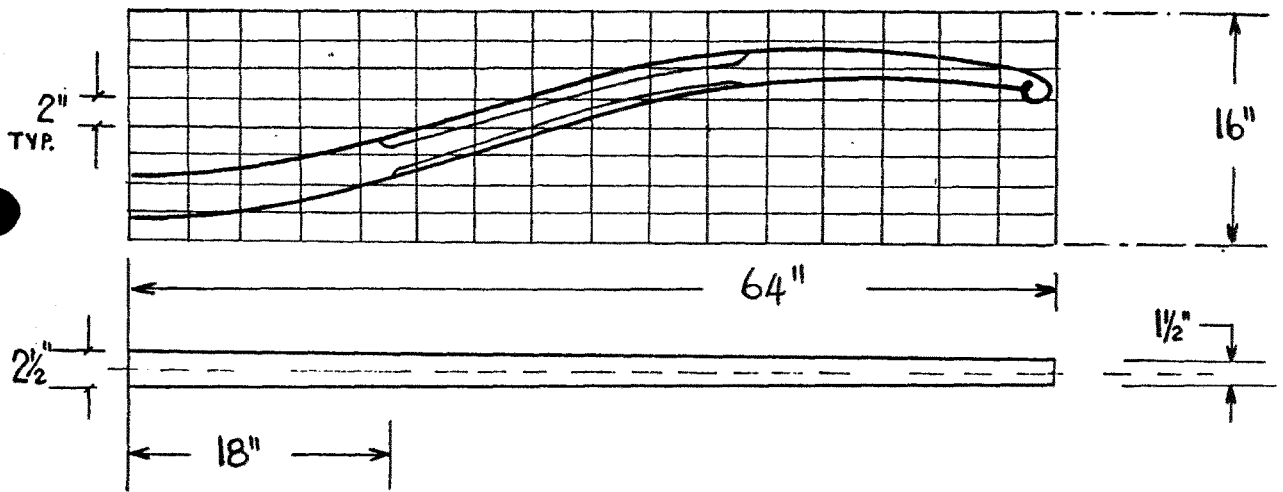
RUDDERS AND DRIFTS

In boring--grease the auger
lubricate bolts (drifts) with soft soap
Stagger the fastenings as per drawing/
Taper point of drift on anvil with light hammer.
Hole should be about $1/32$ " less dia than rod.
Should use clinch ring under head of drift, if not available
then use thickest washer available.
Best drifts are galvanized wrought iron ~~or~~ steel rod (copper
and bronze will not hold as well and this is probably
true of S.S.
The hole for the drift should be made so that the drift will
set against the bottom of hole when fully driven
It is best to drive the drifts at an angle to each other to
lock the parts together.
In choosing pieces for the rudder alternate the grain from
one piece to next to prevent warping.
Second piece is drifted to first piece--then 3rd piece
may be drifted to first two.
Advisable to install cleat at bottom to cover end grain.
Notches for pintles should not be deeper than $1/2$ width of
the stock.

Rudder



4" TYP.



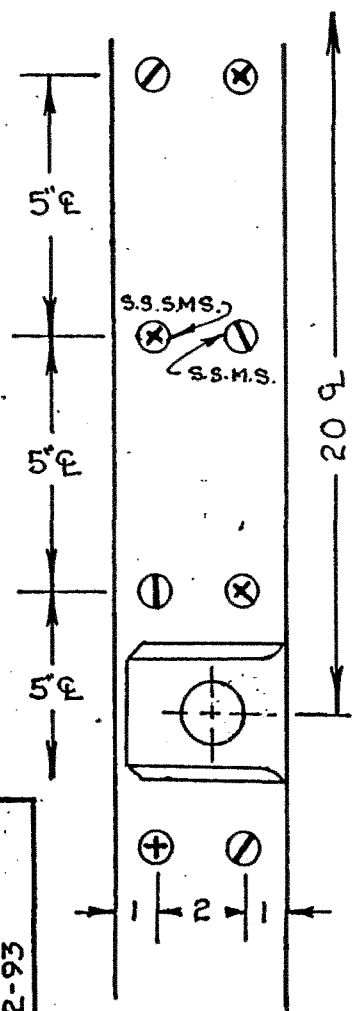
NO. 11
DRAWN ON NO. 10000 CLASSIFICATION

BCC DECK JOIN & BULWARK SECTION

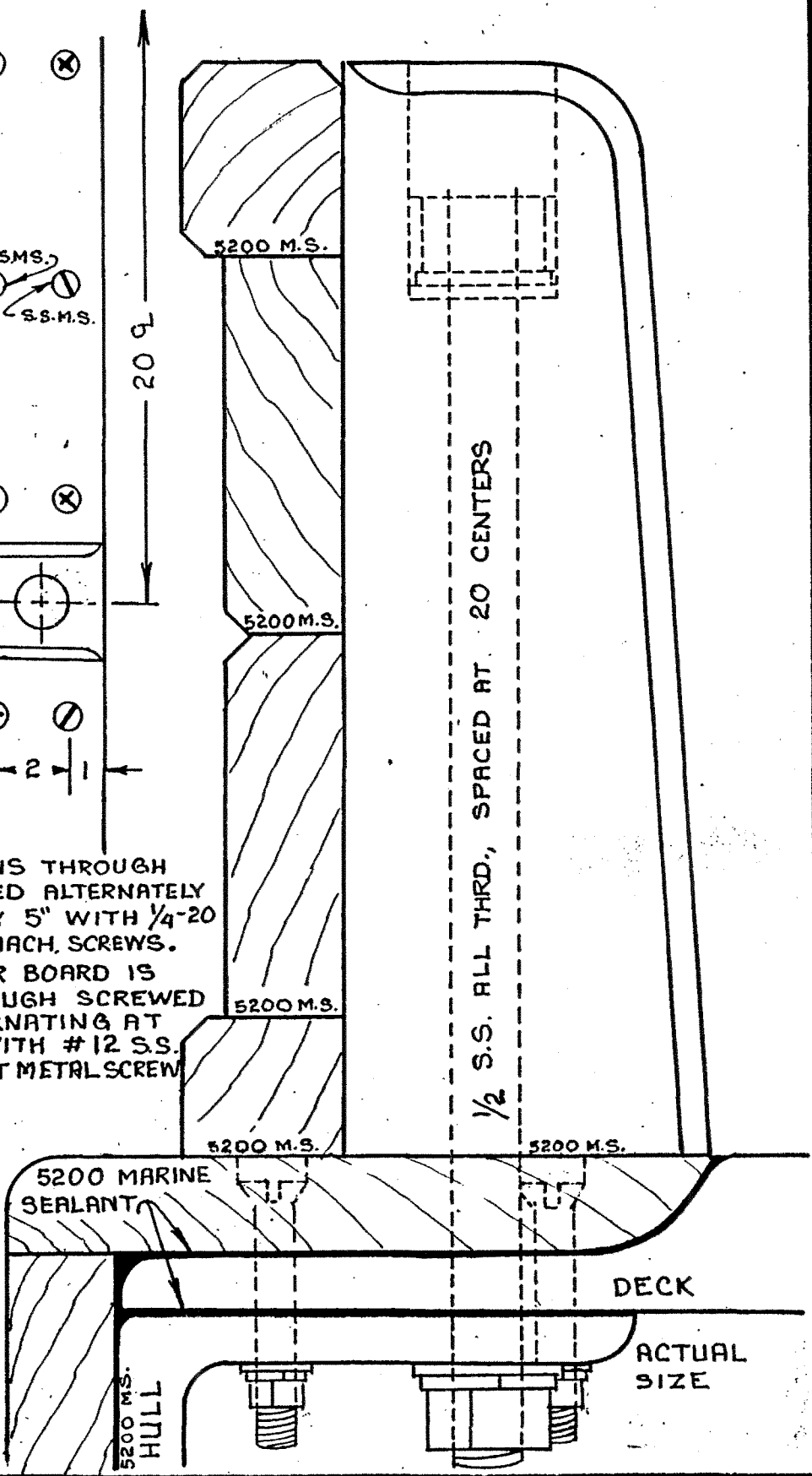
ALL JOINS WITH 5200 MARINE SEALANT

DRAWN BY RDO
12-93

SCALE: FULL



DECK IS THROUGH BOLTED ALTERNATELY EVERY 5" WITH 1/4-20 S.S. MACH. SCREWS. COVER BOARD IS THROUGH SCREWED ALTERNATING AT 5" WITH #12 S.S. SHEET METAL SCREW

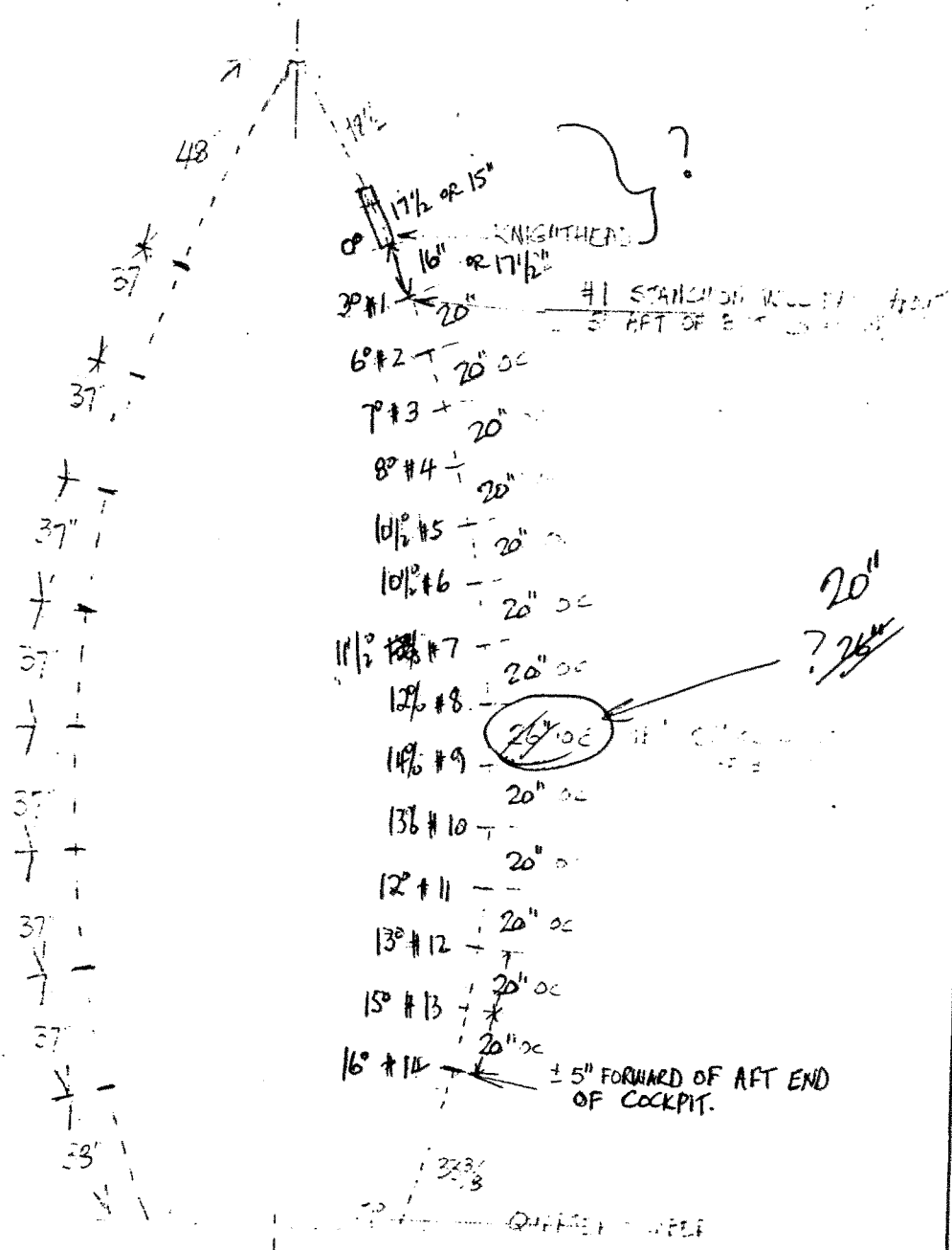


ACTUAL SIZE

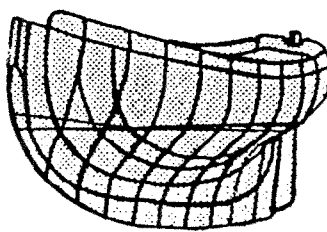
WOODEN STATION BASE LOCATIONS
SHOWN BELOW (TOP SIDE)

(OR)

WOODEN STATION BASE LOCATIONS
SHOWN BELOW (STARBOARD SIDE)



WOODEN STATION BASE LOCATIONS
SHOWN BELOW (TOP SIDE)



BRISTOL CHANNEL CUTTER

BULWARK STANCHION BEVELS

Knighthead	0°
#1 Stanchion	3°
2	6°
3	7°
4	8°
5	10½°
6	10½°
7	11½°
8	12°
9	14°
10	13°
11	12°
12	13°
13	15°
14	16°
Otr Timber	17°

When all bevels are cut, set stanchions in place on cover board and carefully check by eye to see if any adjustments are needed to make the bulwark line perfectly fair.

Mark stanchion locations on deck, inboard of cover board recess, before installing cover boards.

#14 stanchion aft will be centered between deck/hull bolts about 5" forward of aft end of cockpit. Then space 20" O/A going forward. #1 stanchion will fall about 5" aft of bitt location. Then a space of 17½", then Knighthead, which is 15" long x 2-1/8" thick. Be sure space left forward is adequate for the chain.

MATERIALS

LISTEN/USE PER DRAWING

1 - 5" LENGTH OF 1/2" OD TUBING 1.01

2 - 1/2" DIA. TUBING 1.01

2 - 1/2" DIA. TUBING 1.01

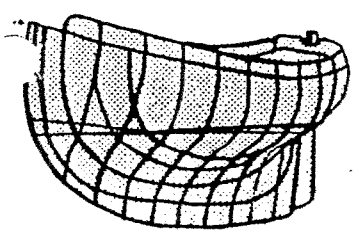
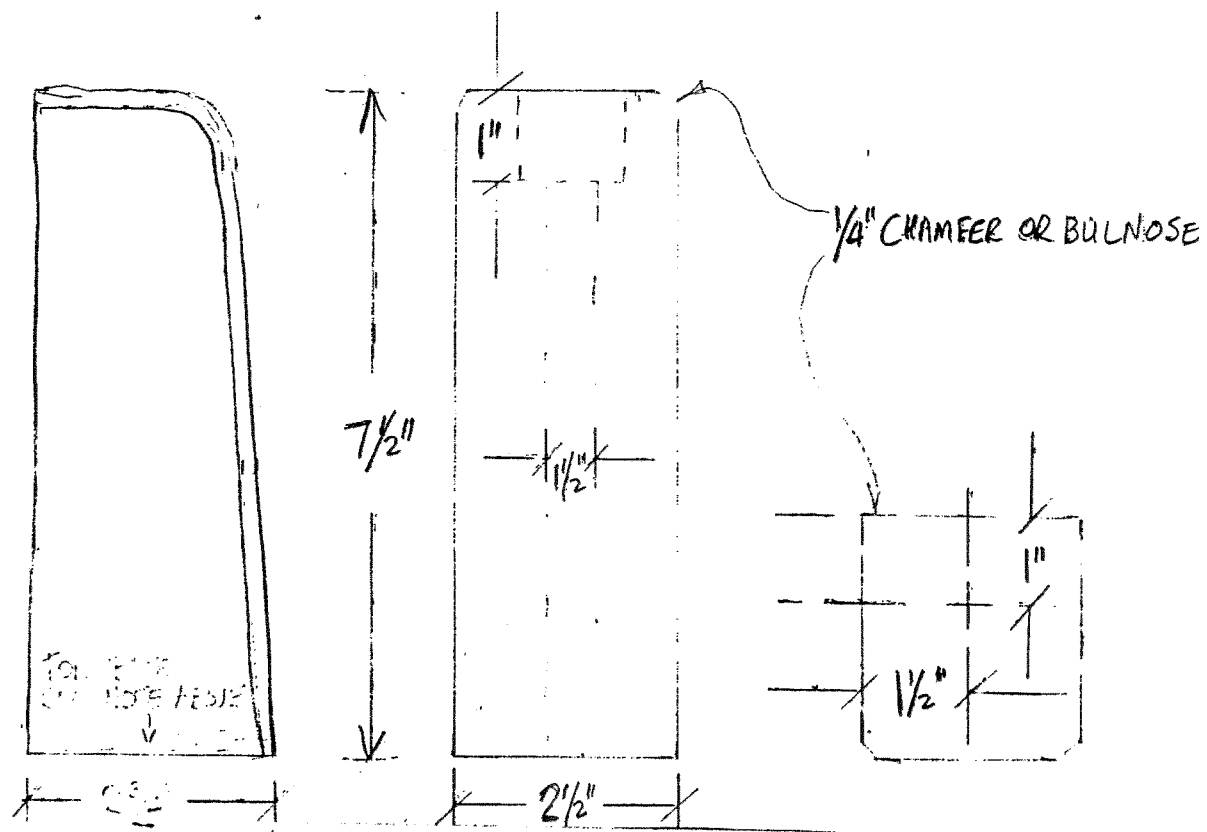
2 - 1/2" DIA. TUBING 1.01

1 - 1/2" DIA. TUBING 1.01 RESIN OR D RING

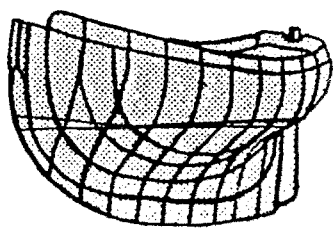
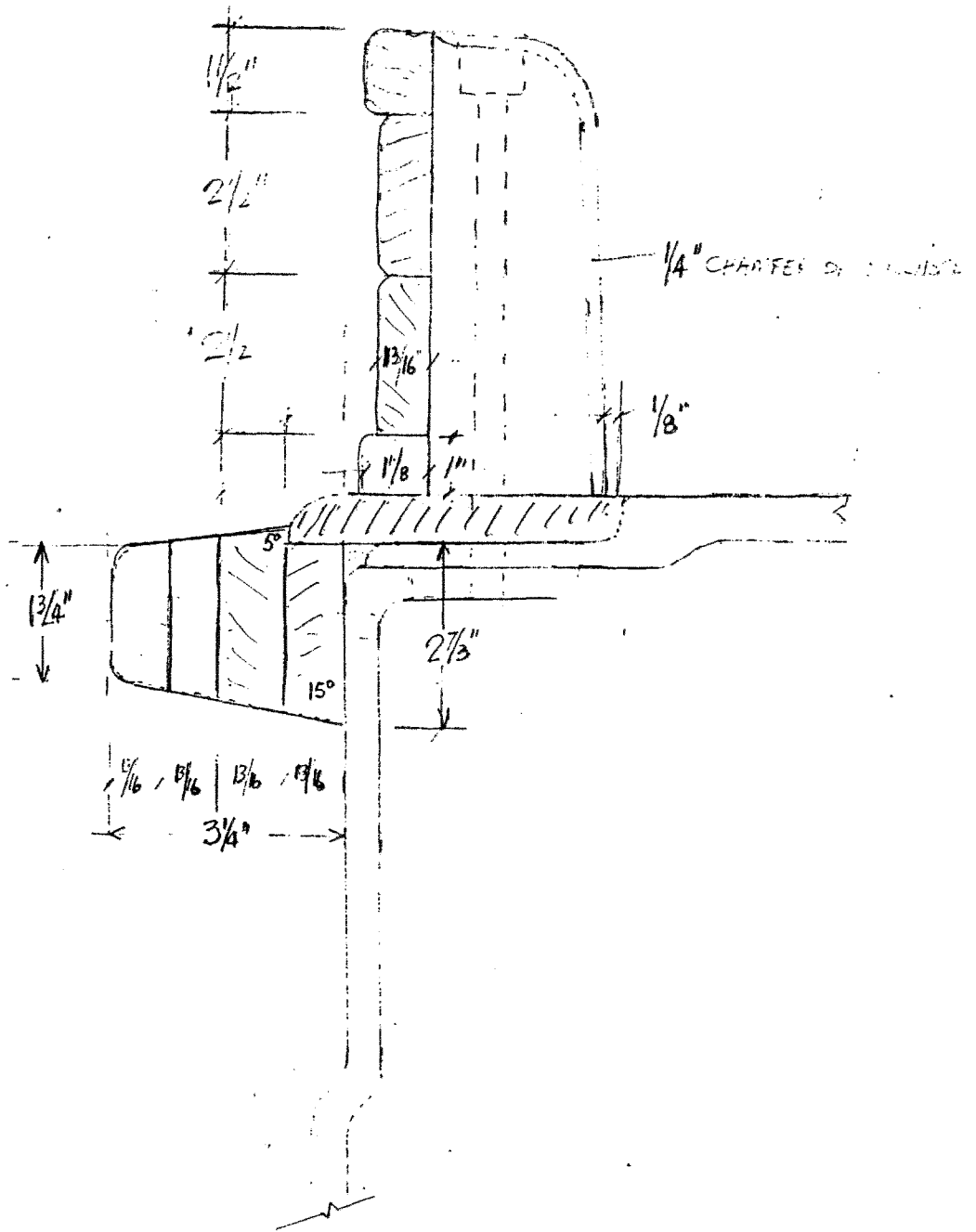


NOTE

THE 7/2" VERTICAL DIMENSION ON THE PLAN-
 SHE REMAINS CONSTANT - BEVEL STRAIGHTEN
 EDGES TO ALLOW TO ROCK 1/4" AND TO
 CARRY OUT THE TUBING TO THE TOP TEE.

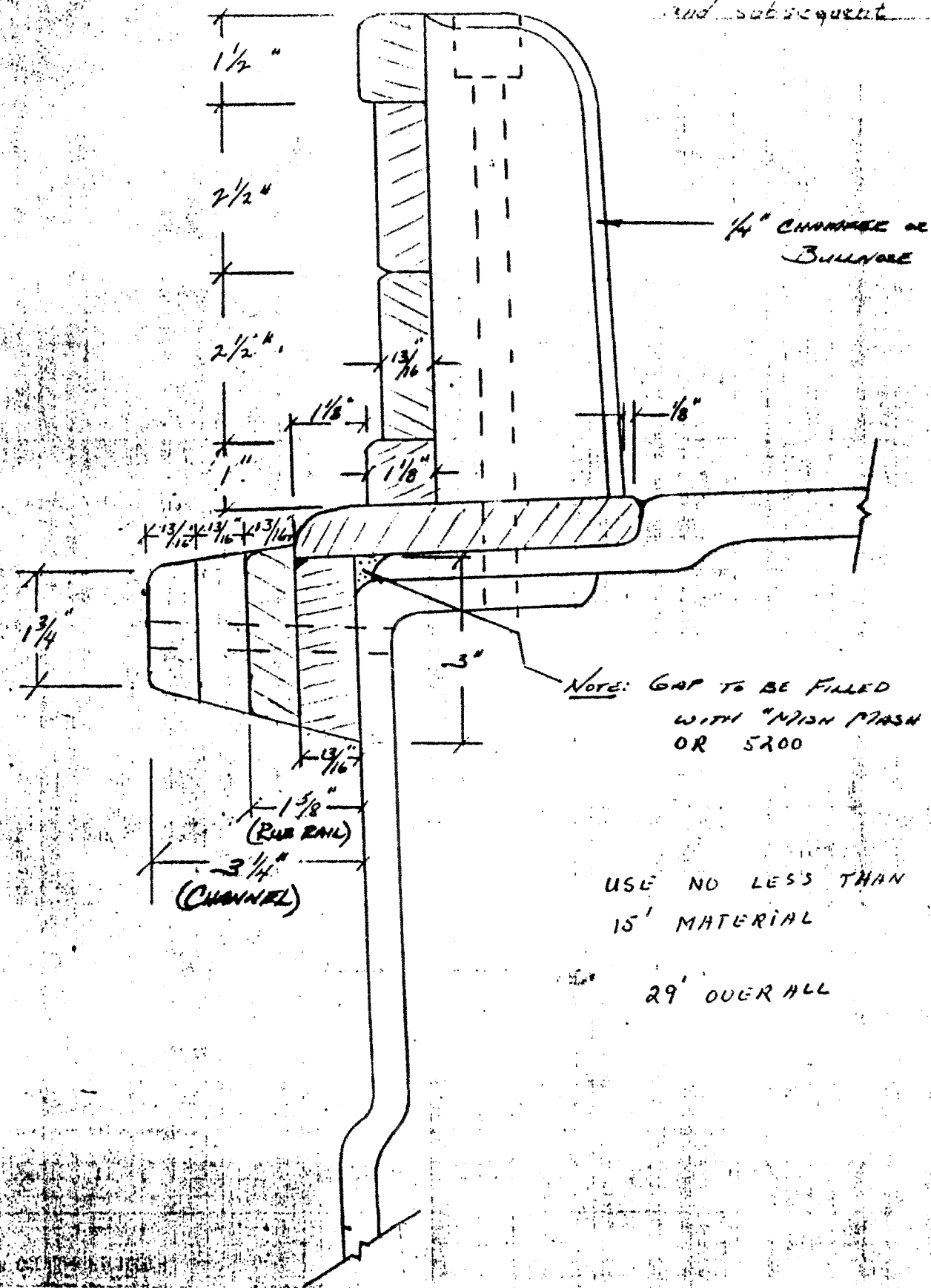


E



BULKHEAD CHANNEL LIE
(RUB RAIL VERSION)

1/8" ON HOLES AND SUBSEQUENT



1/4" CHANNEL OR
 BULLWARE

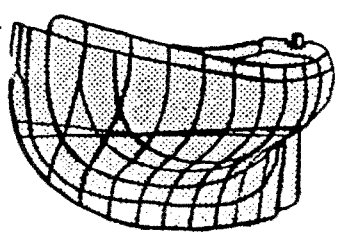
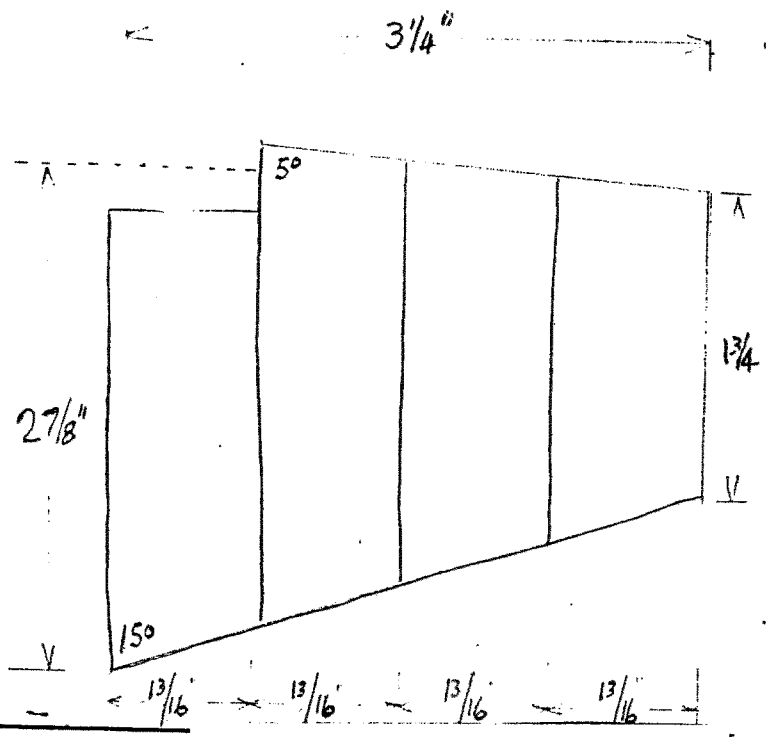
NOTE: GAP TO BE FILLED
 WITH "MISH MASH"
 OR 5200

USE NO LESS THAN
 15' MATERIAL

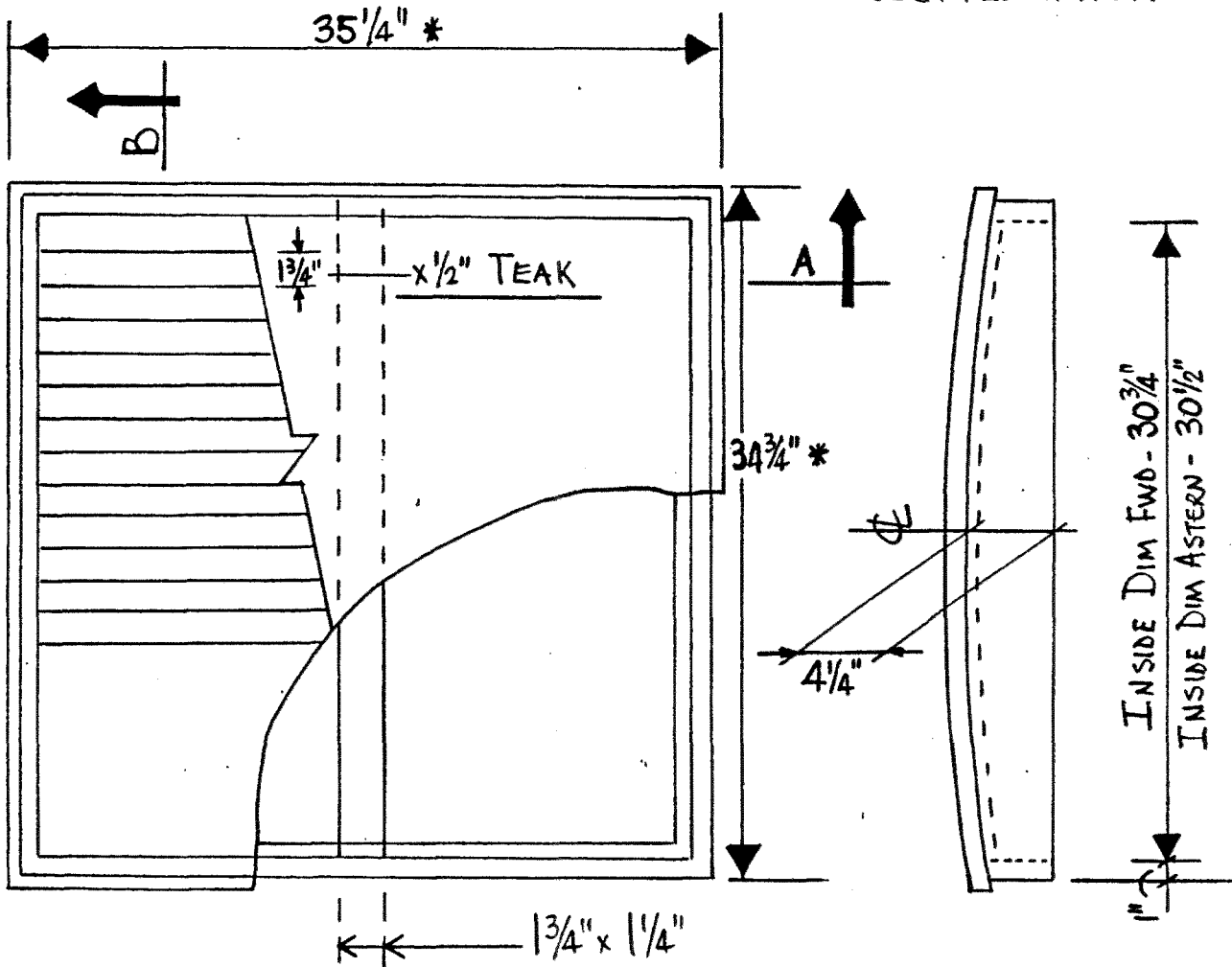
29' OVER ALL



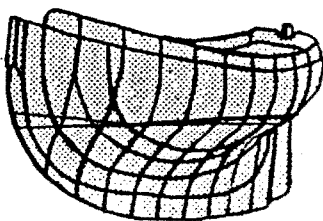
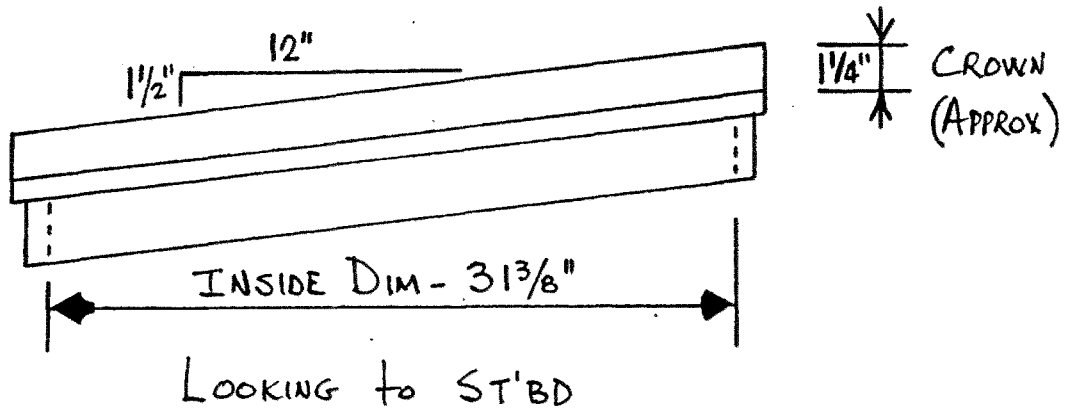
FLY RAIL AND CHANNEL DETAIL - NON WALE STYLE VERSION
TO BE USED WITH STAINLESS STEEL CORRUGATED



SCUTTLE HATCH



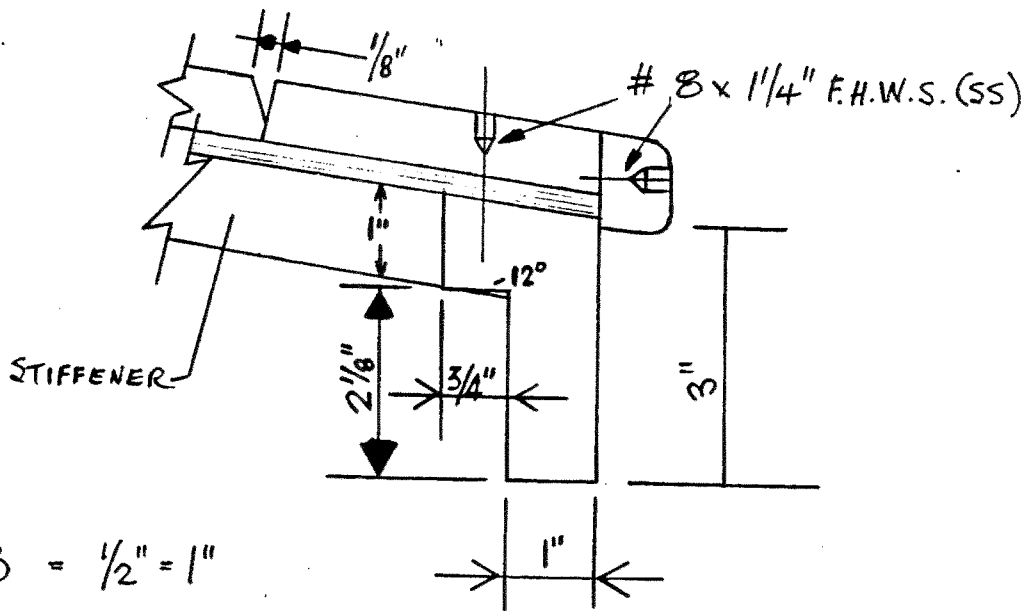
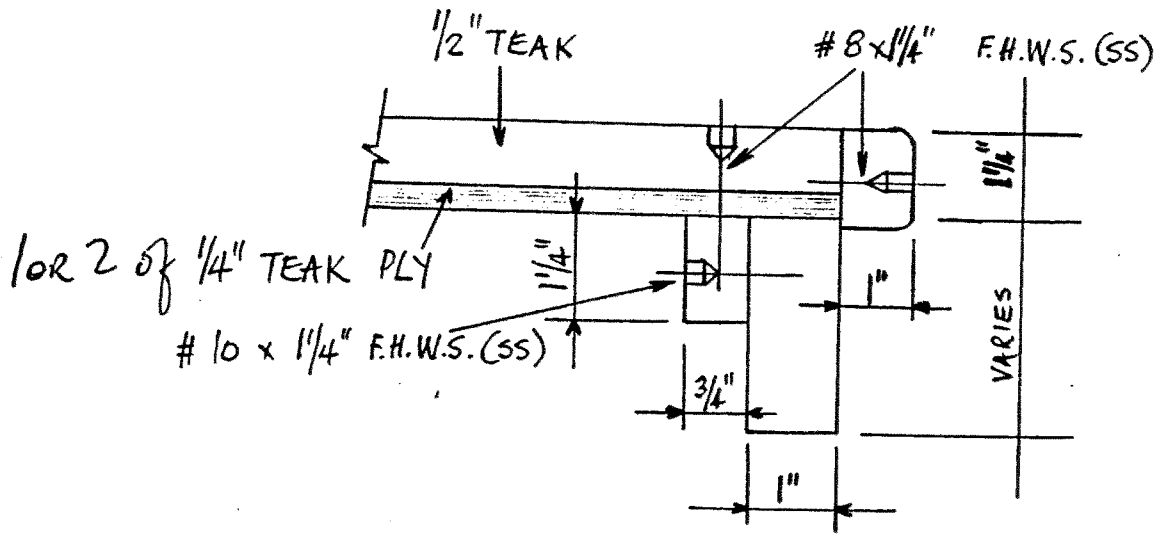
TOP VIEW



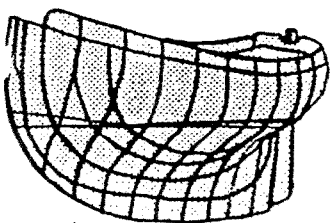
SECT A

1/2" = 1"

SCUTTLE



SECT B = 1/2" = 1"



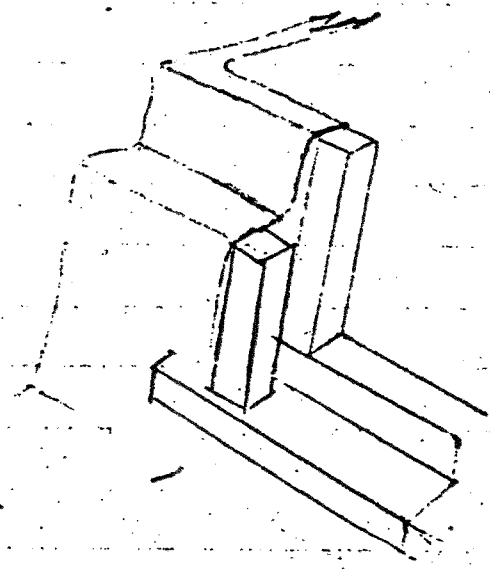
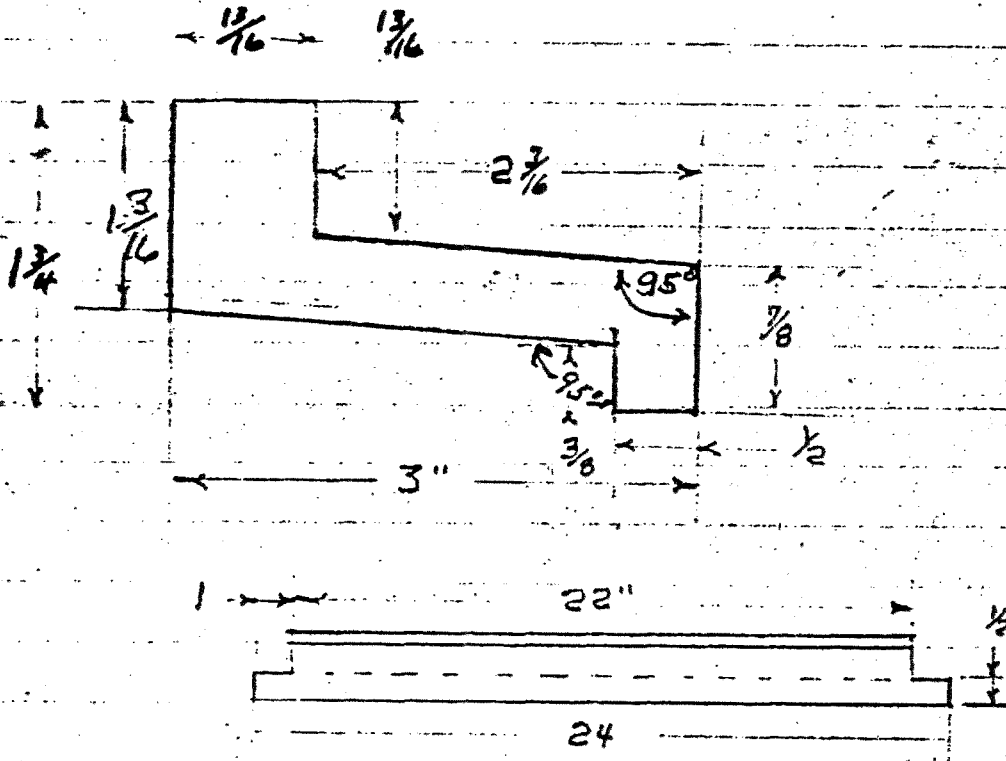
(SUPPLIED AS STUDY MATERIAL ONLY



Scuttle

Cutting list

1 - 1 3/4 x 3 x 24 1/2

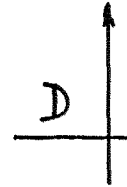
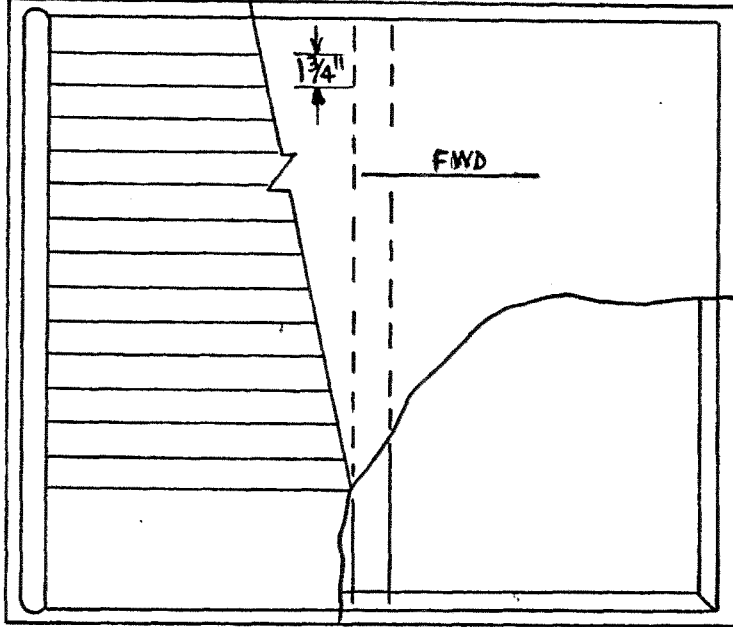
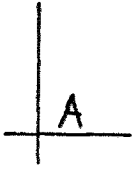


36/37
HATCHES

33 1/4" + EYEBROWS

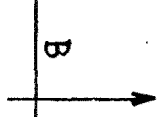
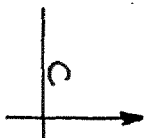
COMPANION SLIDE

20 7/8" EYEBROWS



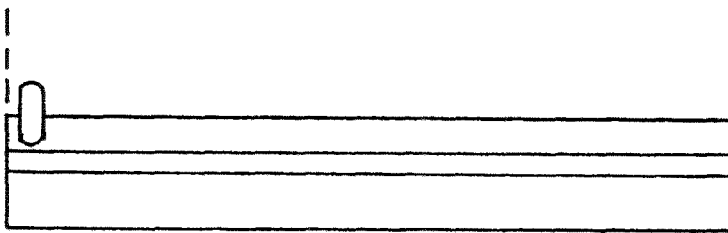
27 3/8"

LOOKING ASTERN

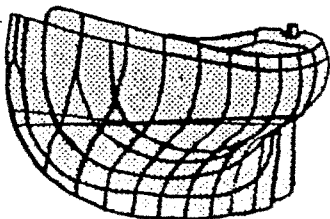


1 3/4" STIFFENER

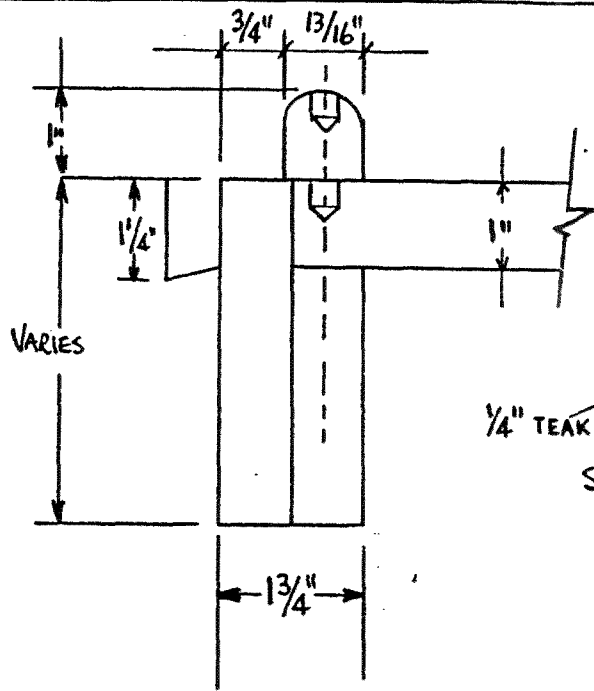
TOP VIEW



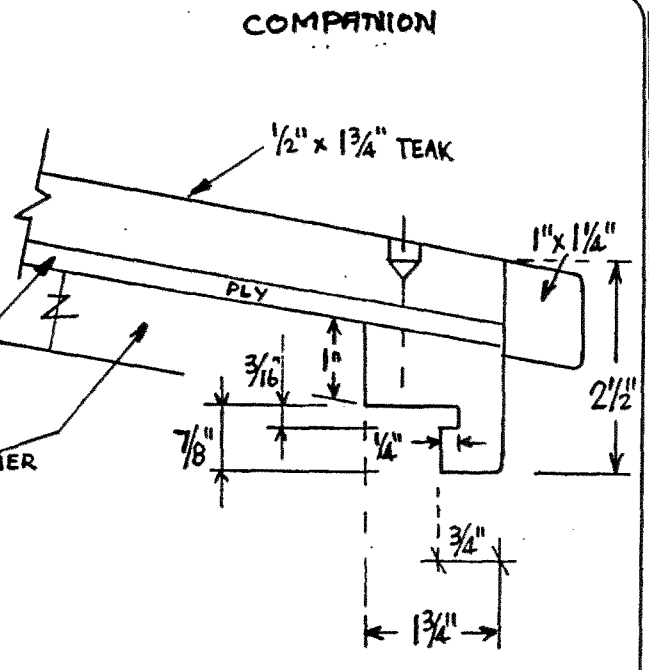
LOOKING TO PORT



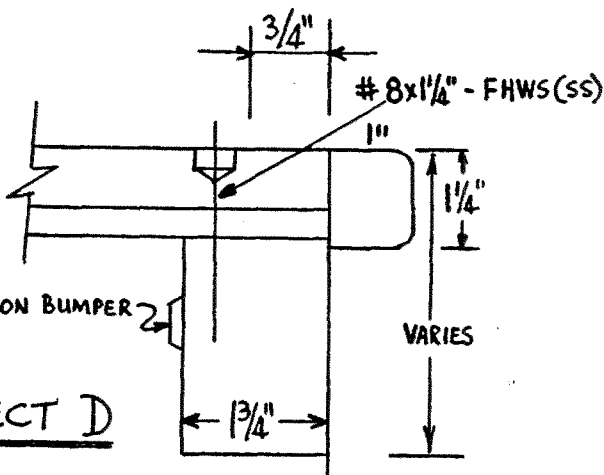
B



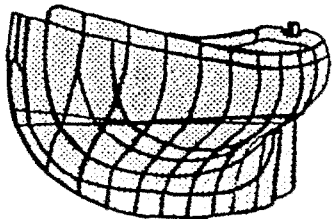
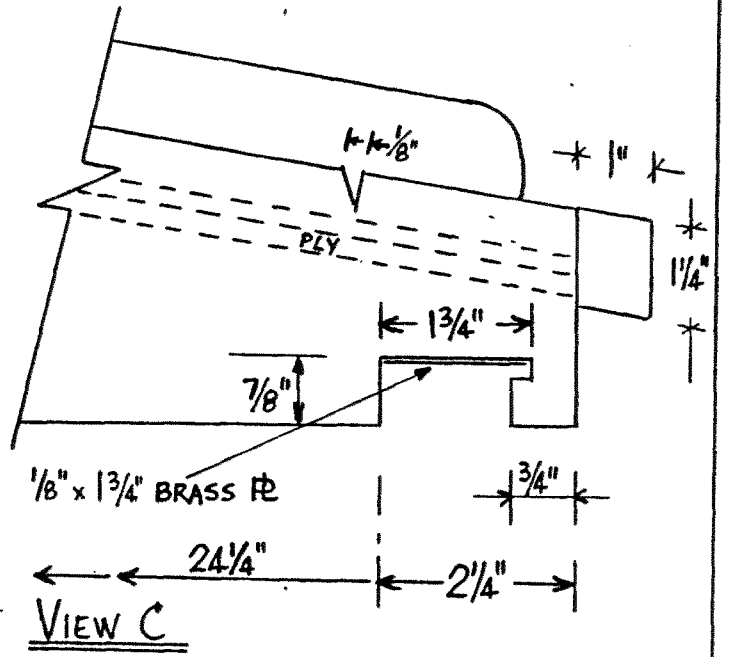
SECT A

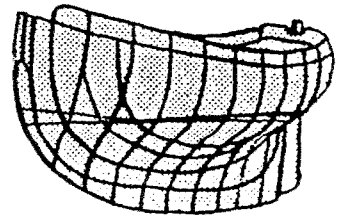
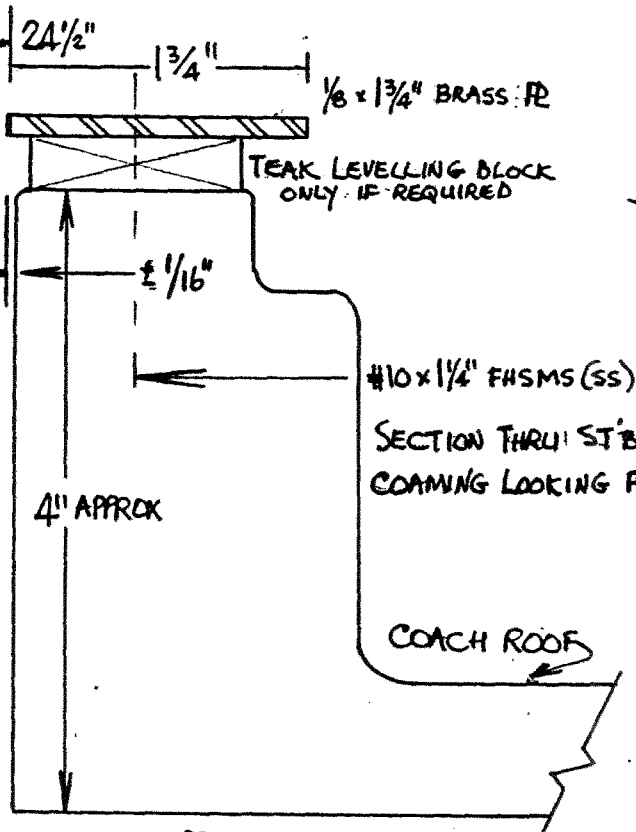
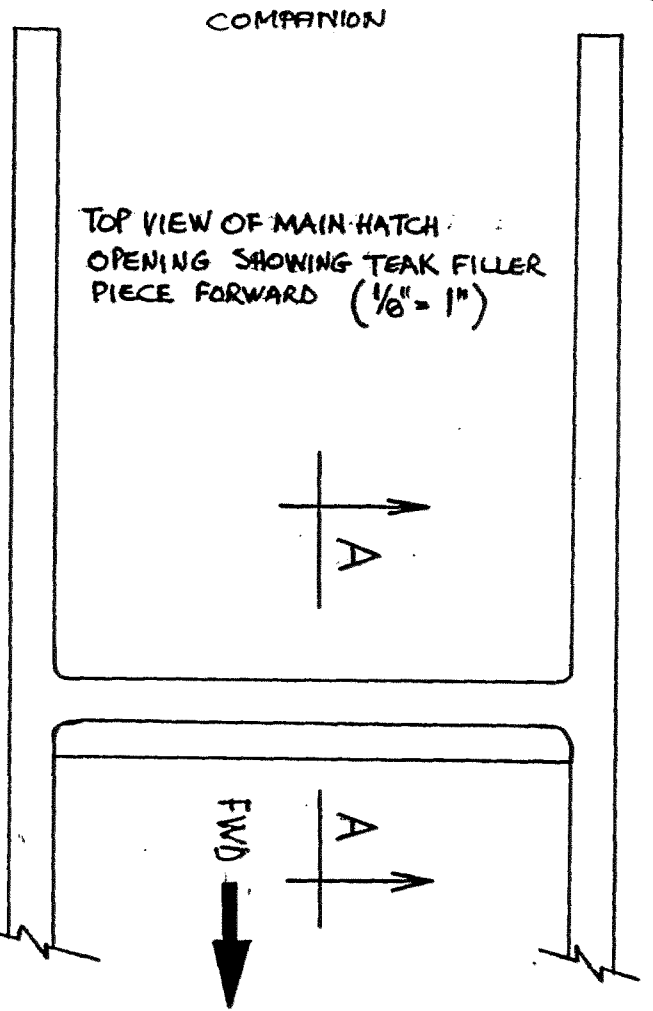
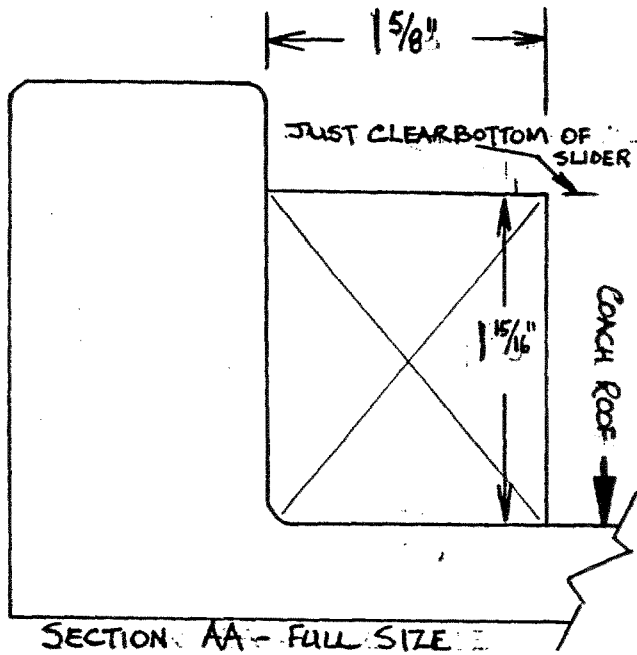


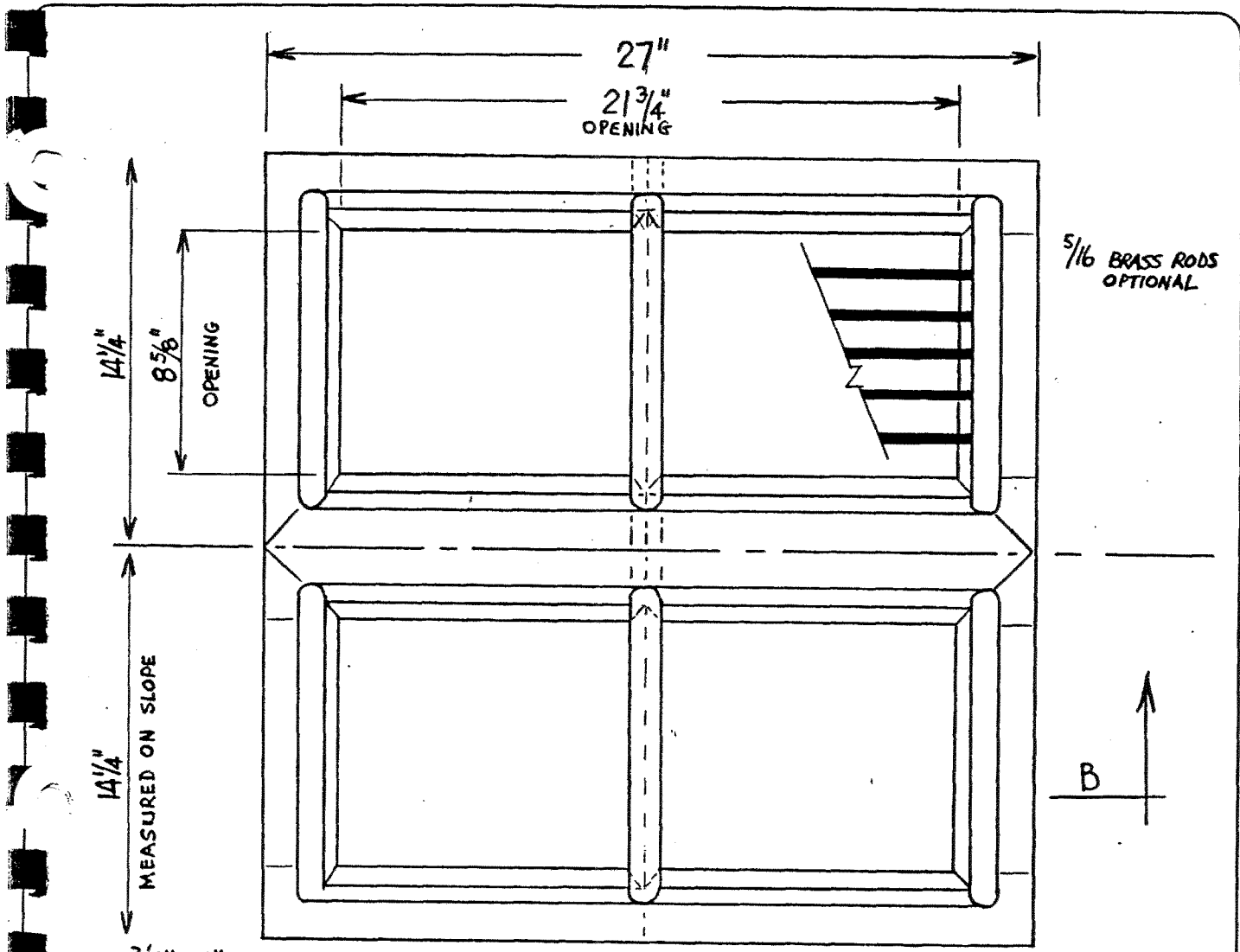
SECT B



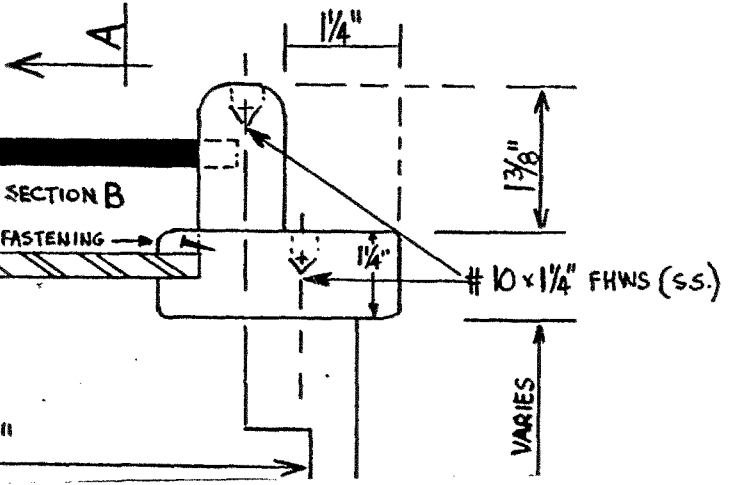
SECT D



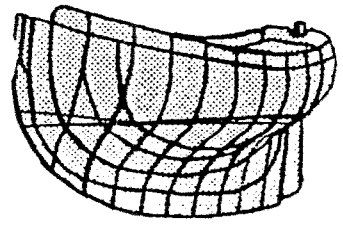




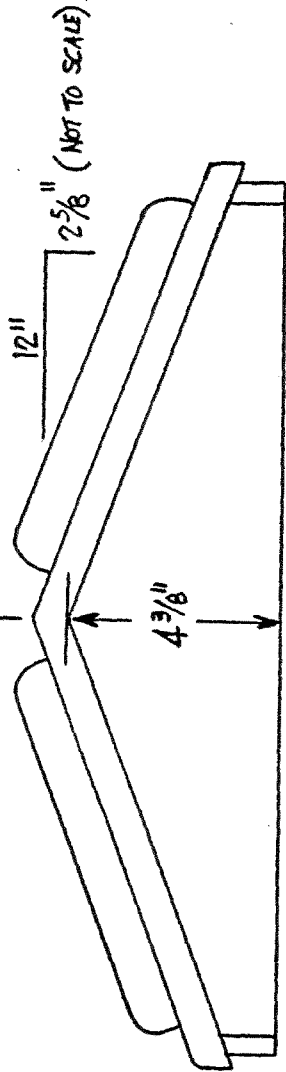
TOP VIEW



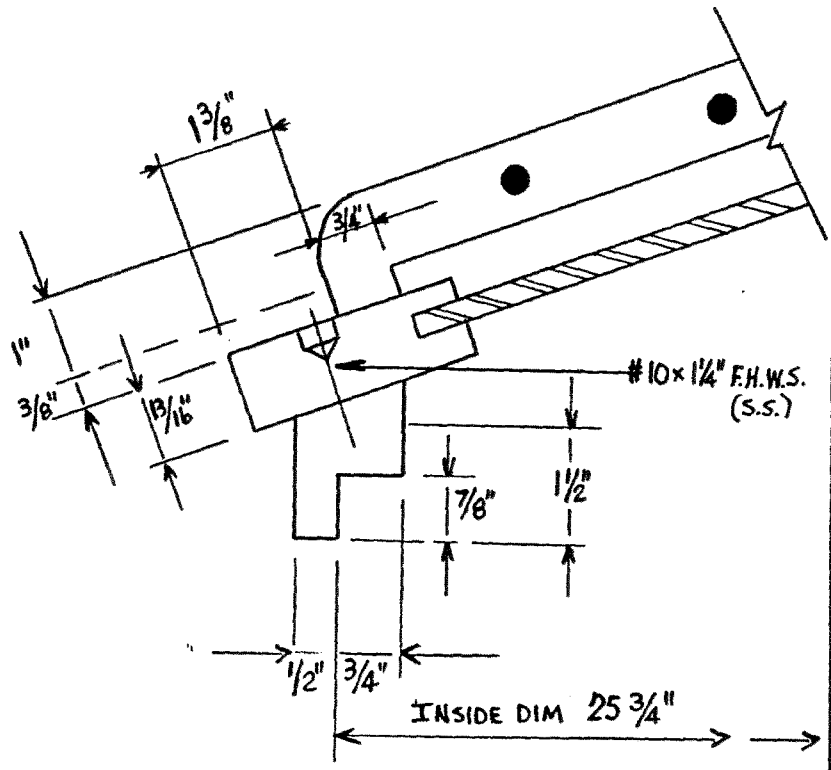
INSIDE DIM 25 3/4"



TEAK WOOD - RESORCINOL GLUE



END VIEW



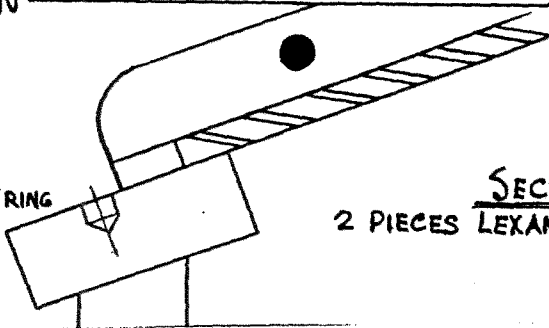
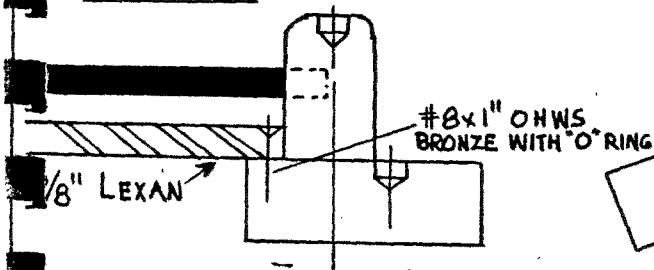
SECTION A

1/2" = 1"

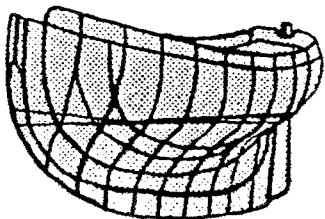
4 PIECES - 1/4" GEORGIAN POLISHED WIRED GLASS (±10"x10")

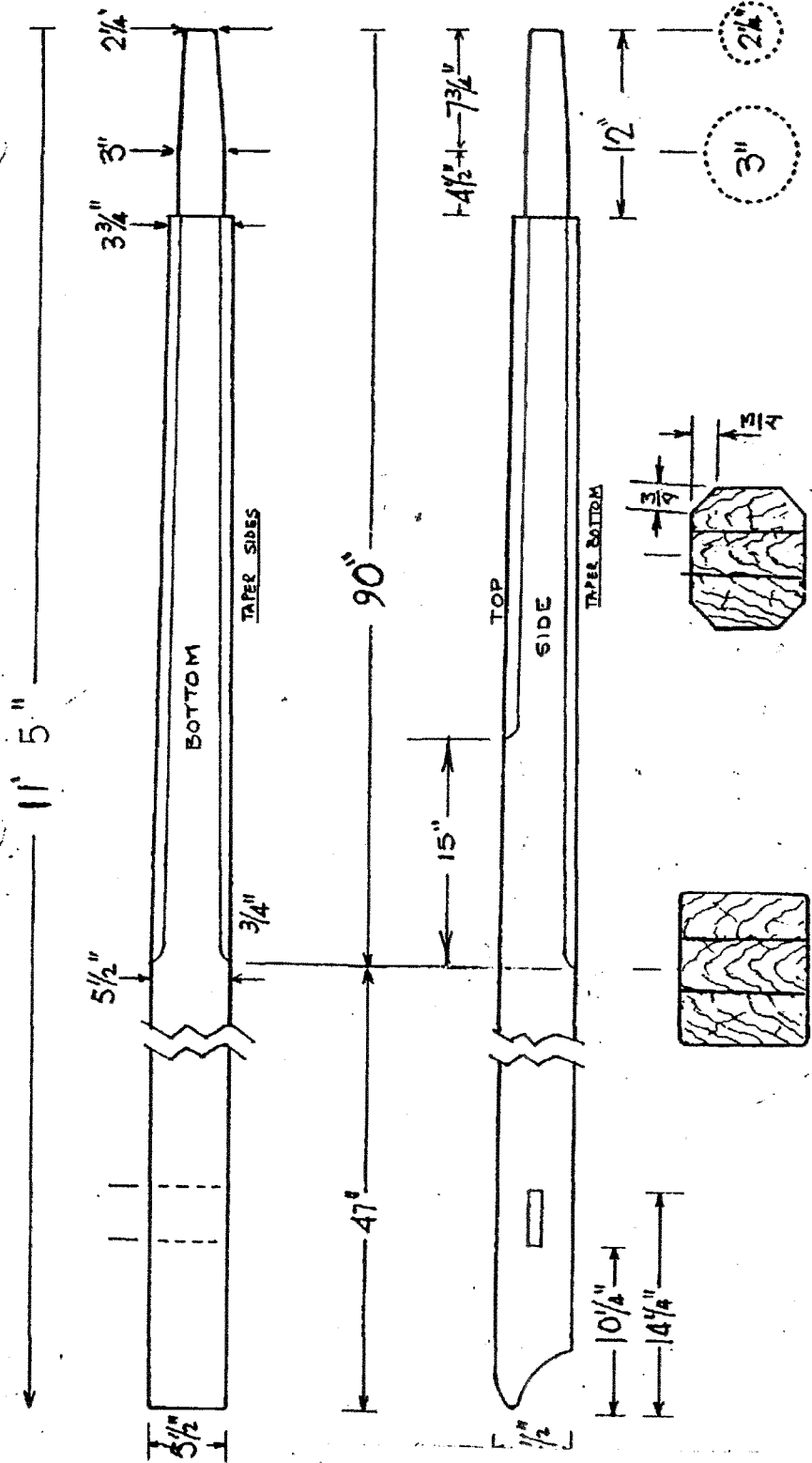
OPTIONAL LEXAN (INSTEAD OF WIRE GLASS)

SECTION B

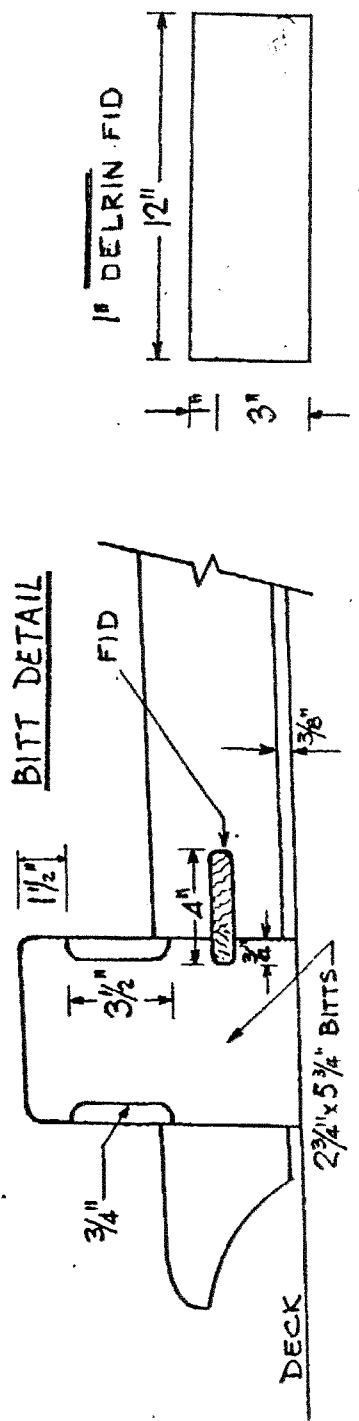


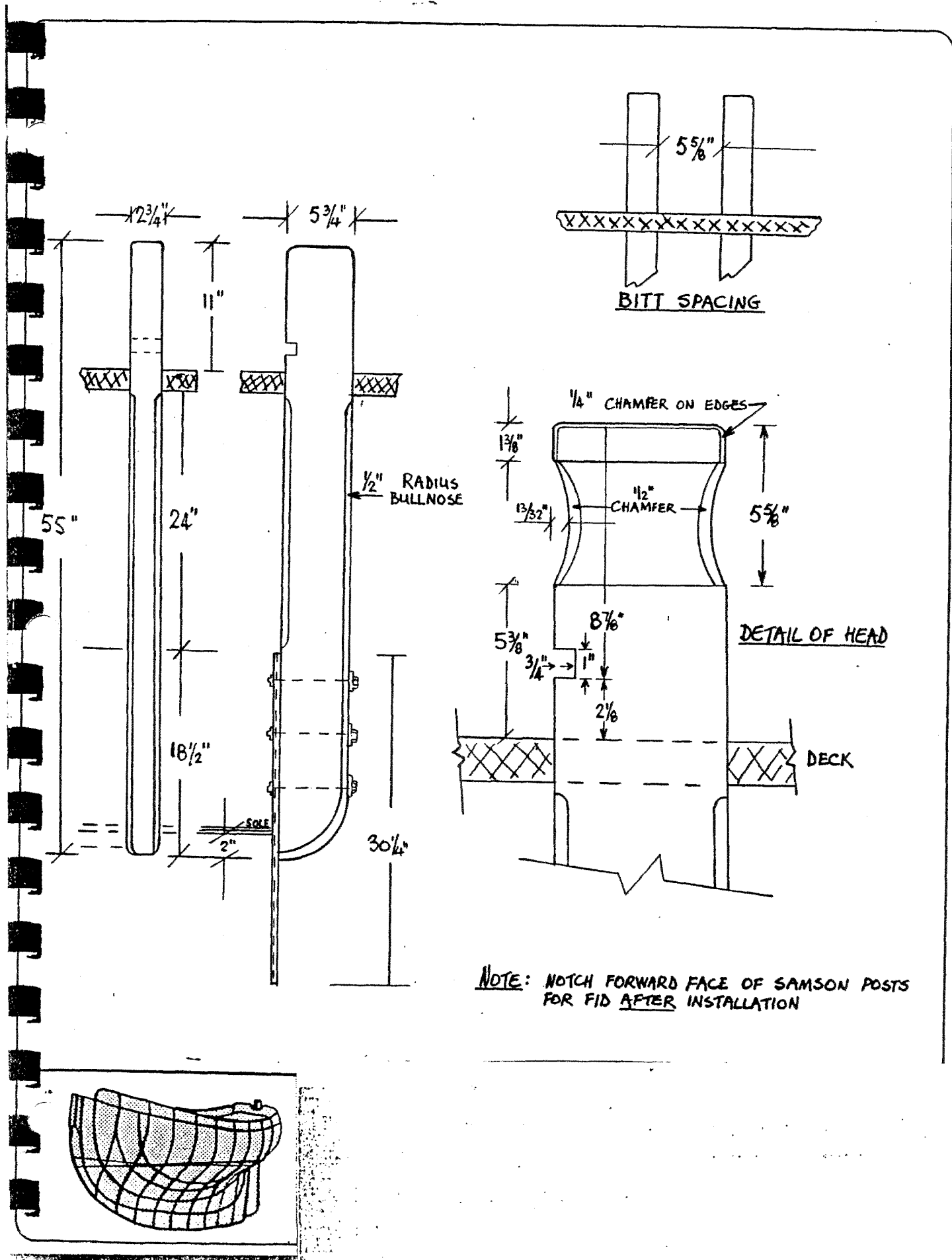
SECTION A
 2 PIECES LEXAN - 10 1/4" x 23"





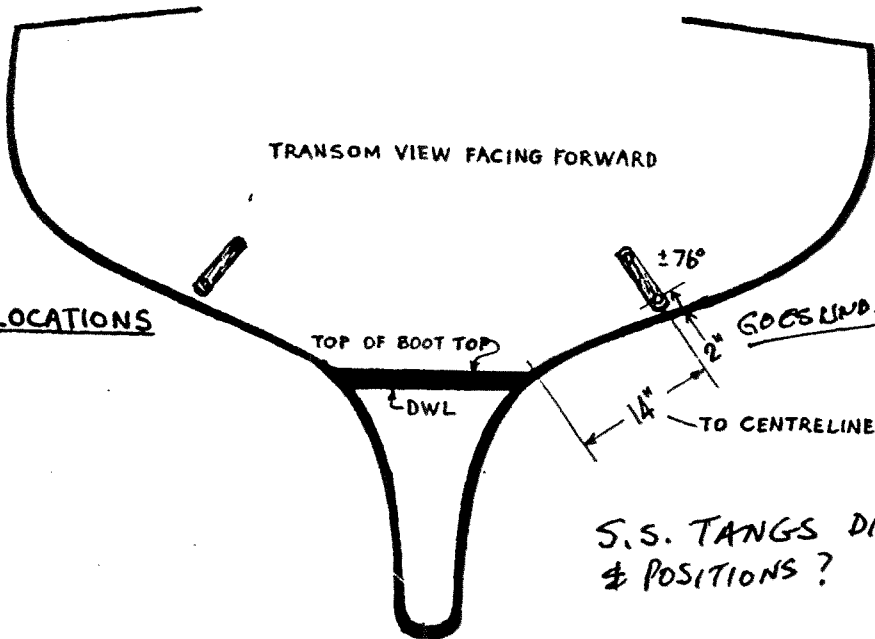
3 LAMINATES VERTICAL GRAIN DOUGLAS FIR





NOTE: NOTCH FORWARD FACE OF SAMSON POSTS FOR FID AFTER INSTALLATION

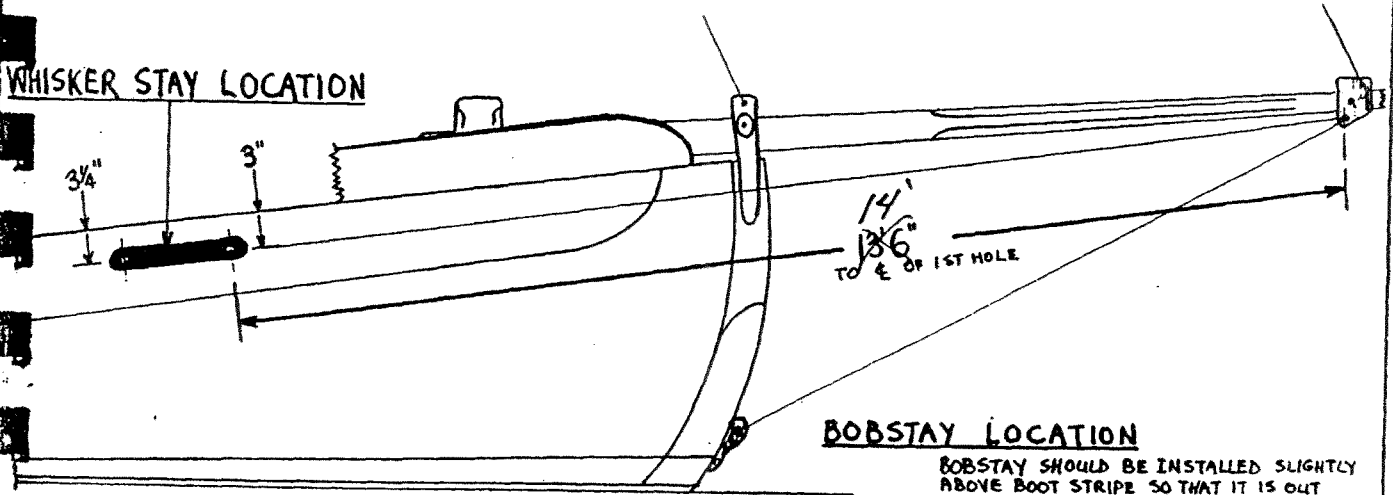
B.C.C. CUSTOM BRONZE - STAY LOCATIONS



RANSOM STAY LOCATIONS

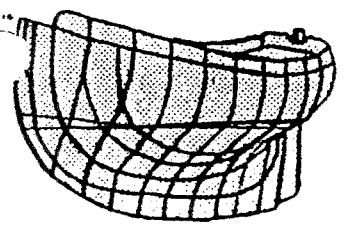
S.S. TANGS DIMENSIONS & POSITIONS ?

WHISKER STAY LOCATION



BOBSTAY LOCATION

BOBSTAY SHOULD BE INSTALLED SLIGHTLY ABOVE BOOT STRIPE SO THAT IT IS OUT OF THE WATER WHEN BOAT IS AT REST.

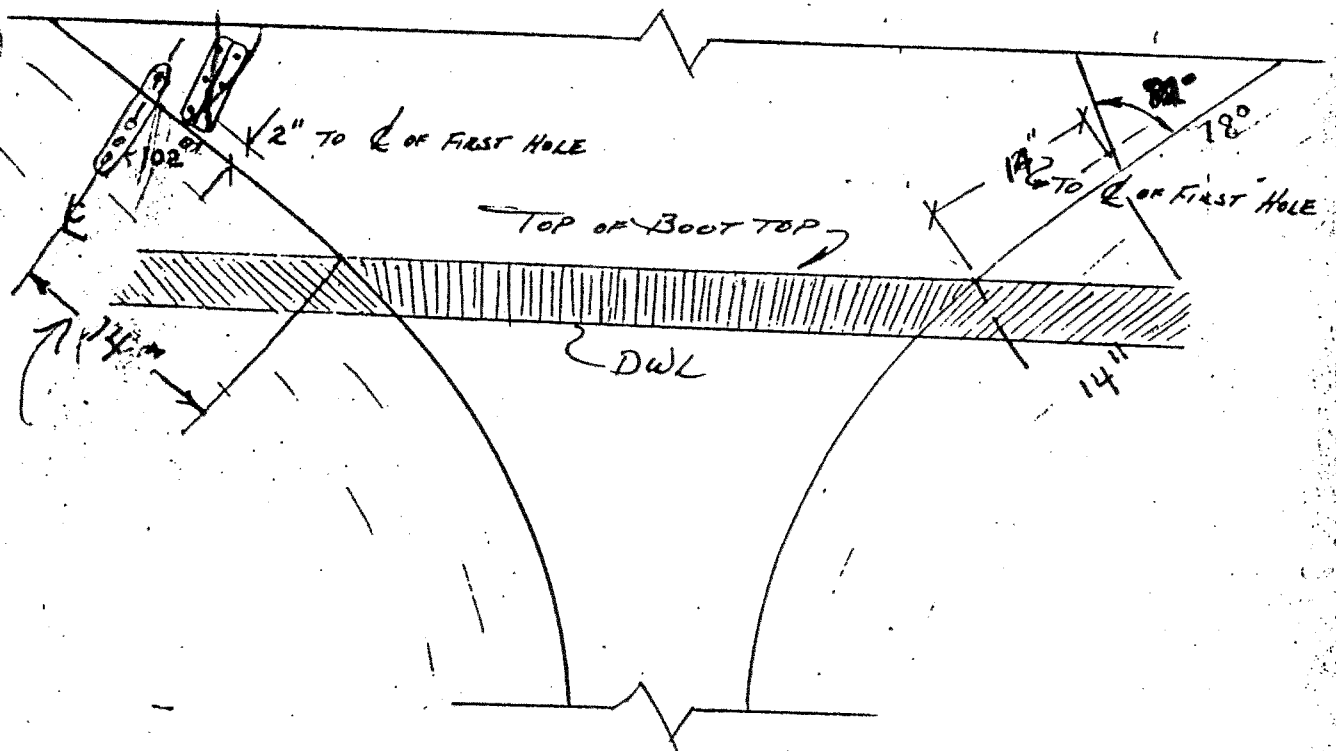


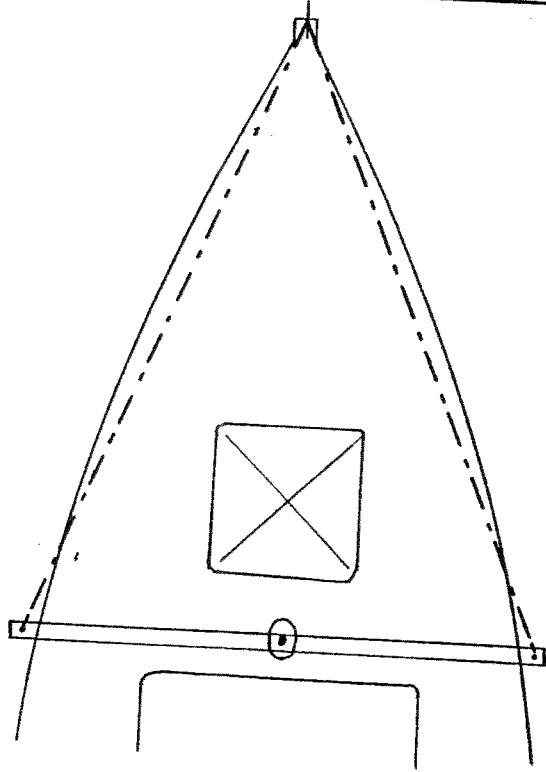
LOCATION OF BOEMKIN STAY TANGS

MATERIALS

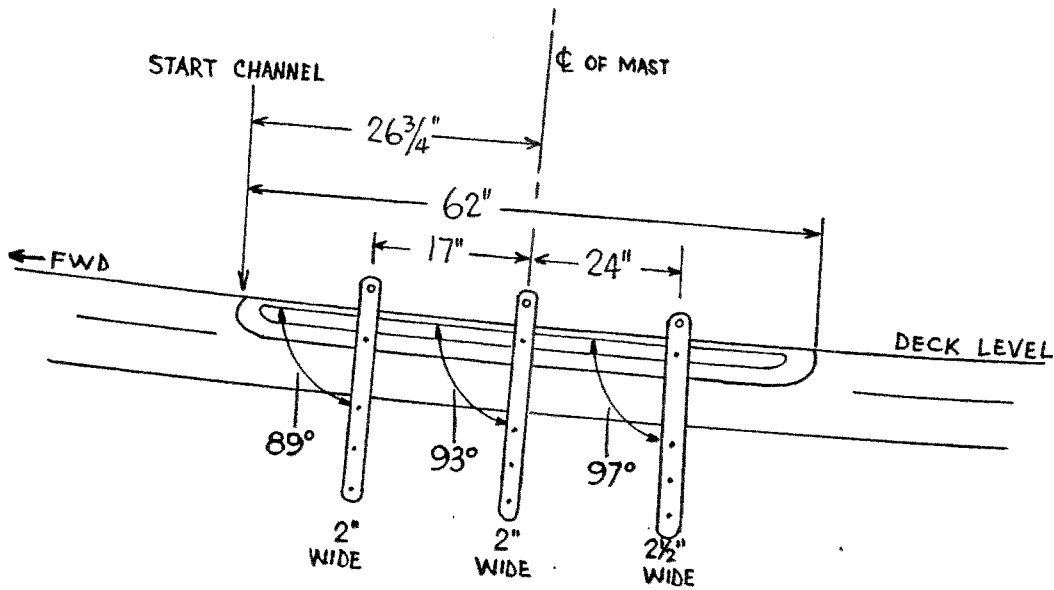
- 12- $\frac{3}{8}$ " x $1\frac{1}{2}$ " S.S. F.N.M. SCREWS, HEX NUTS & LOCK WASHERS
- 2- BACK UP PLATES & TANGS
- BEDDING - 3M #101 OR LIFE CAULK (WHITE)

TRANSOM VIEW FACING FORWARD

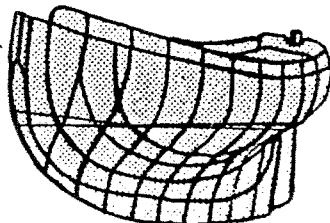




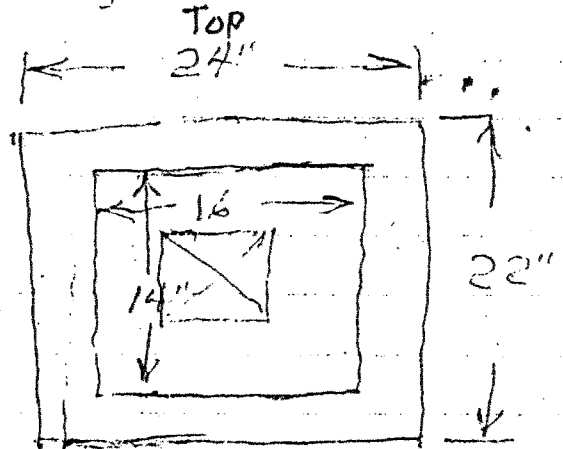
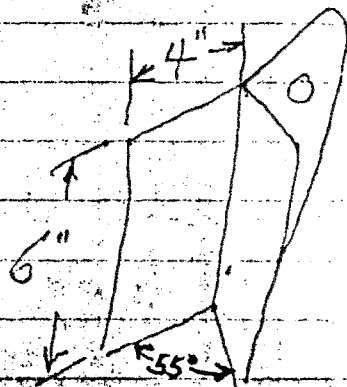
LOCATE CENTRE CHAINPLATE BY USING STRAIGHT EDGE ACROSS DECK. USE CENTRE OF MAST MARK ON DECK. MEASURE FROM CENTRE OF BOW TO EACH CORNER. WHEN BOTH MEASUREMENTS ARE EQUAL THEN YOU HAVE LOCATED THE CENTRE CHAINPLATES POSITIONS.



FWD LOWER LIPPER AFTER LOWER LIPPER



Bob Stay Filing



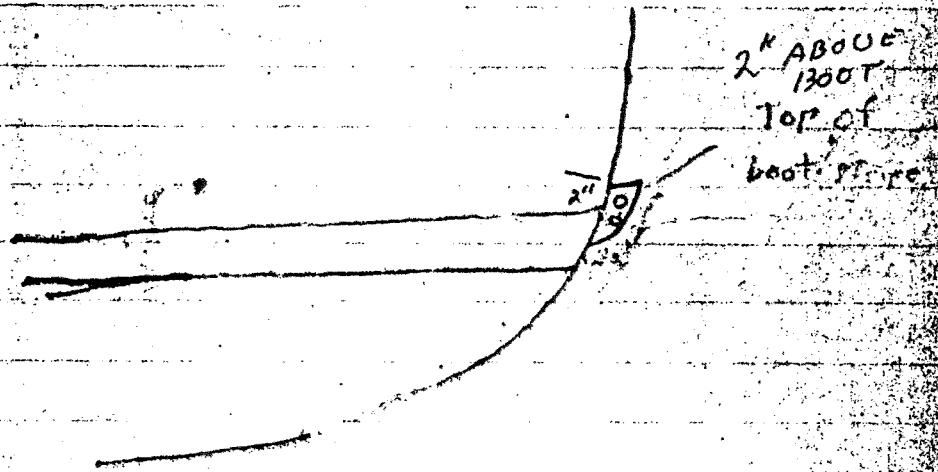
cut

1 - 1/2 mat 16" x 14"

1 - 24 oz 16" x 14"

1 - 1/2 mat 24" x 22"

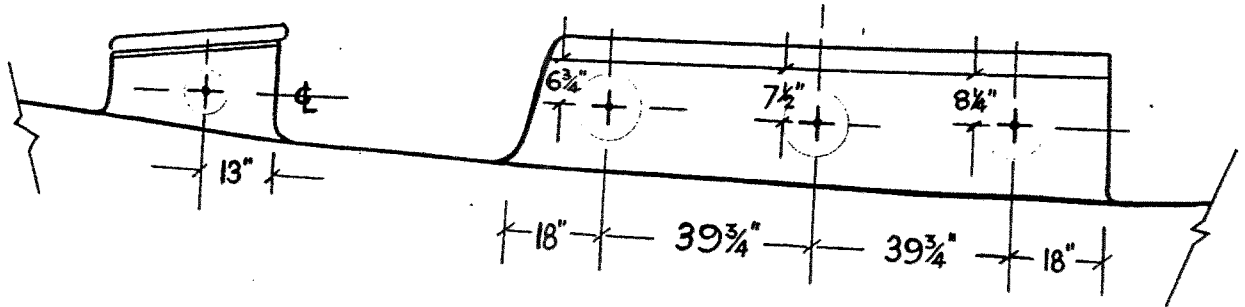
1 - 24 oz 24" x 22"



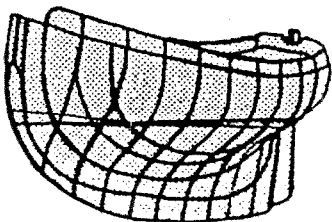
MATERIALS

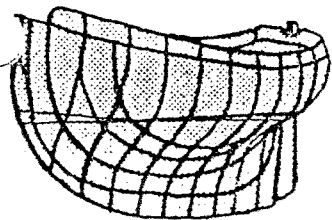
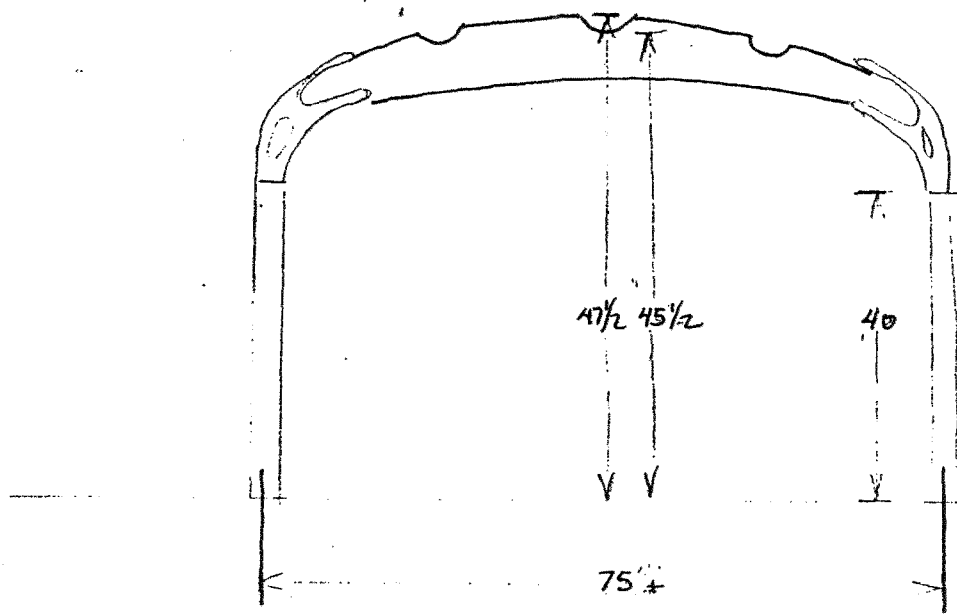
- 6 - 7" DIAM PORTS FOR COACHROOF
- 2 - 5" DIAM DEADLIGHTS FOR SCUTTLE } ABI OR EQUIVALENT
- 60 - 1/4" x 1/2" SILICONE BRONZE R.H. BOLTS

NOTE: VERTICAL DIMENSIONS MEASURED DOWN FROM EDGE OF COACHROOF NON SKID SURFACE

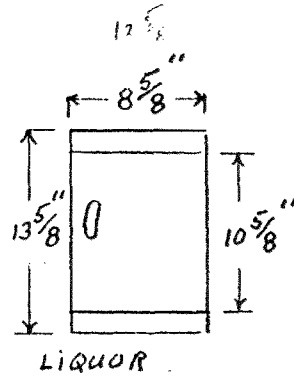
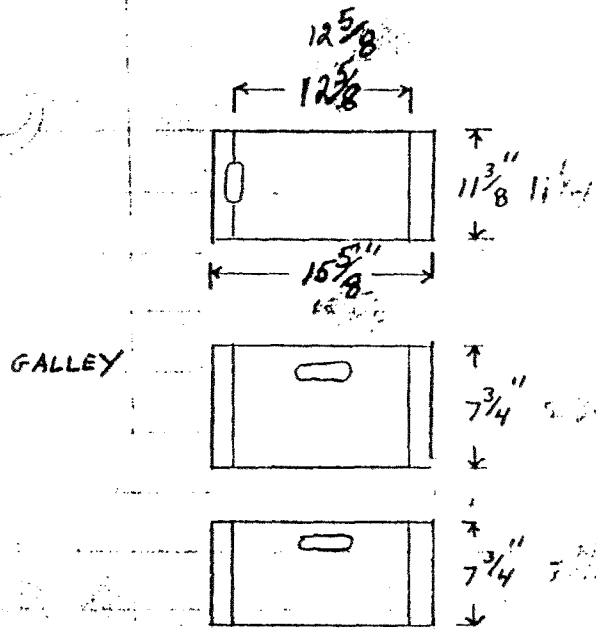


FOR 7" PORTS, CUT HOLES 7 5/16" DIAM
FOR 5" PORTS, CUT HOLES 5 7/8" DIAM

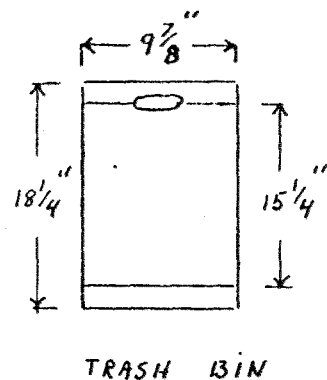
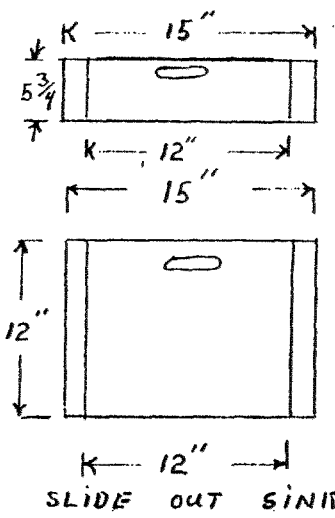
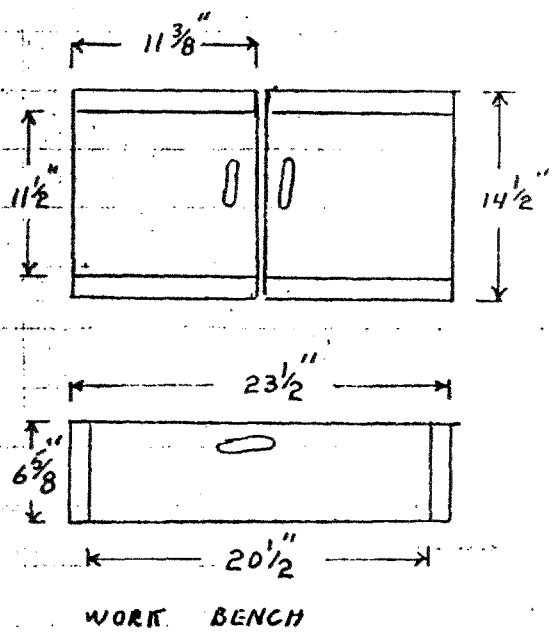




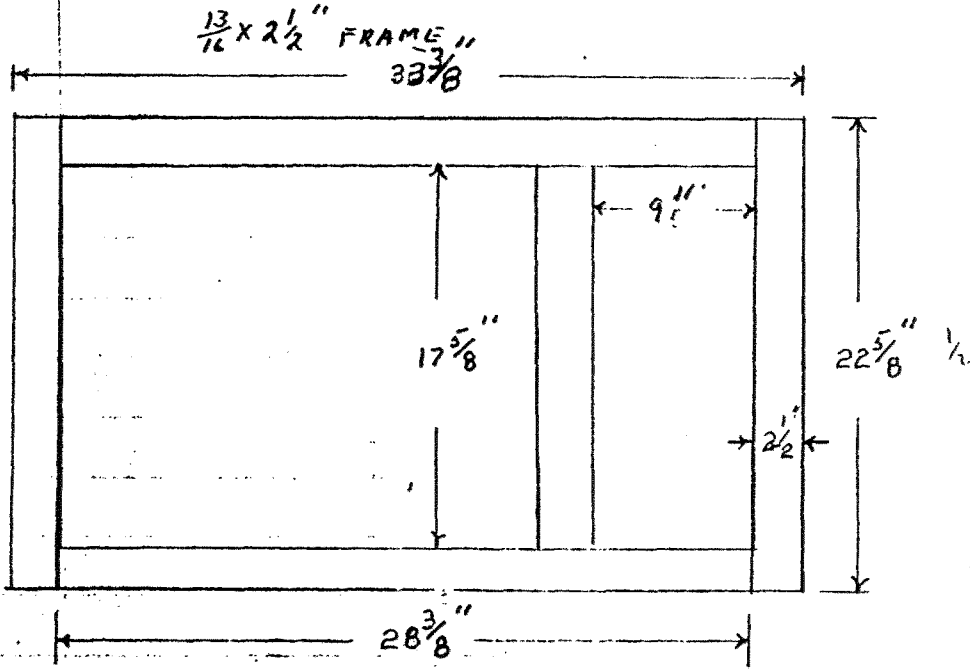
STANDARD DOOR SIZES



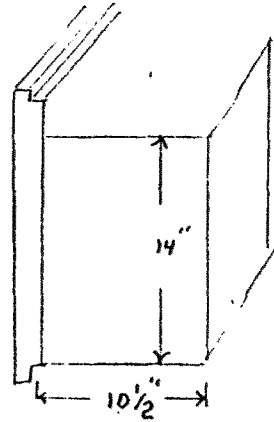
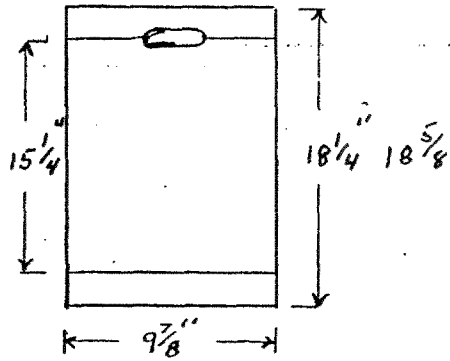
2. OPTIONAL DRAWERS



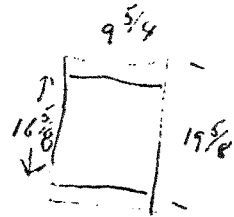
ENGINE DOOR WITH TRASH BIN



$16\frac{3}{4}$
 $14\frac{1}{4}$



93



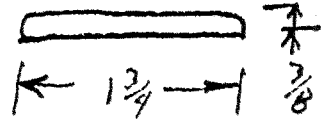
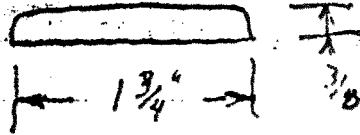
ceiling strips

• 325' lin feet

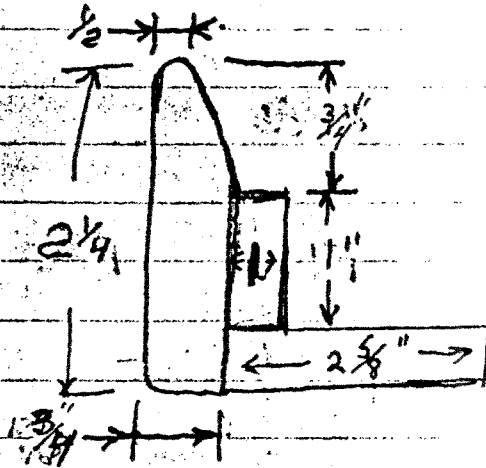
Space $\frac{1}{32}$ "

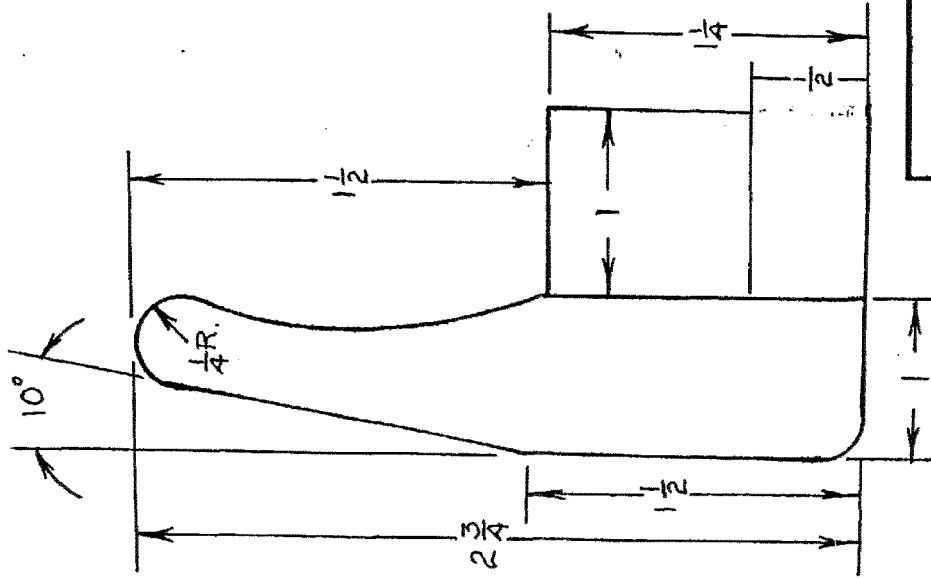
battins for headliner

45' lin feet



Hand Rail





BCC HANDRAIL SECTION

SCALE: NONE

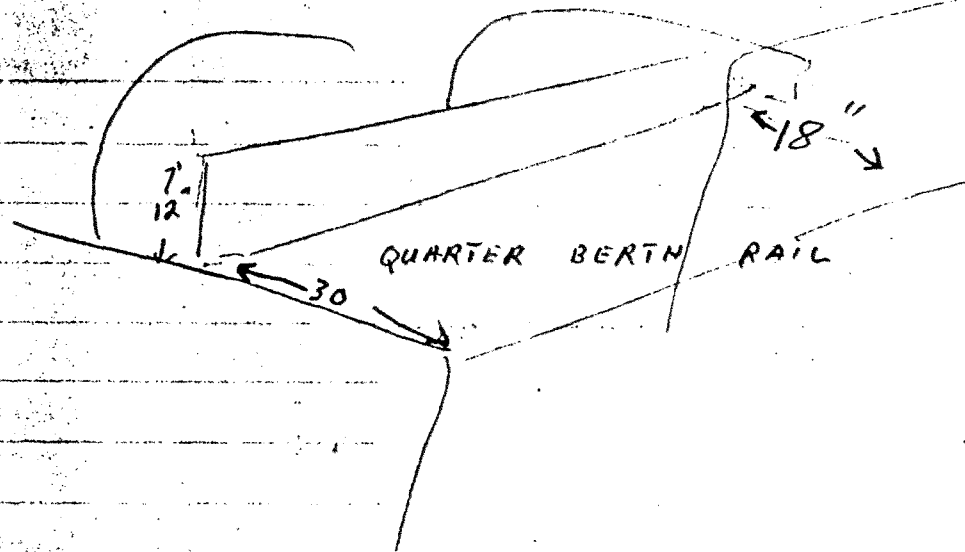
APPROVED BY:

DRAWN BY RDO

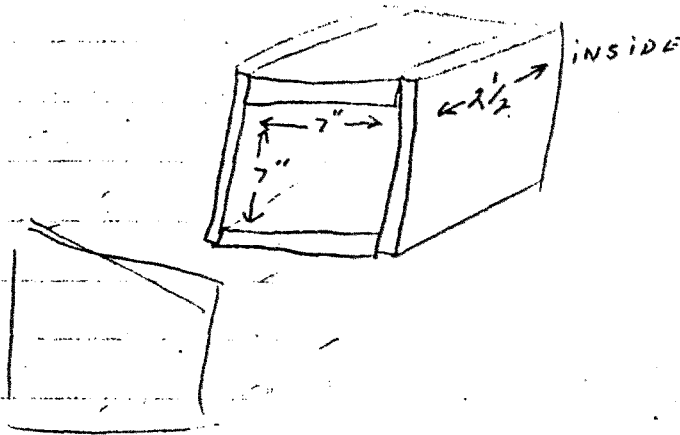
DATE: 10-93

REVISED

DRAWING NUMBER



COMPASS BOX

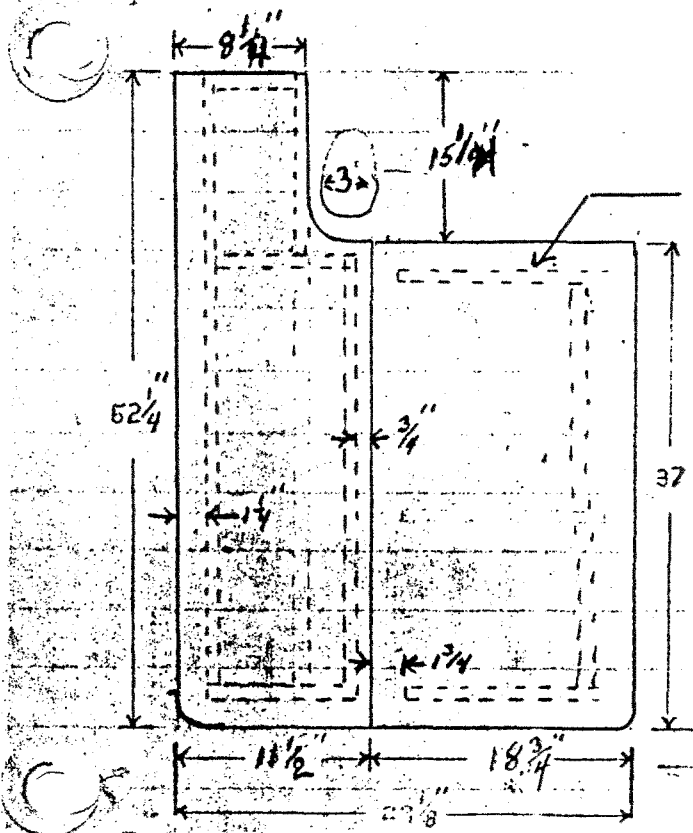


B-28

TABLE

53

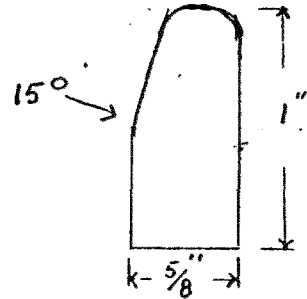
13/16" SOLID TEAK



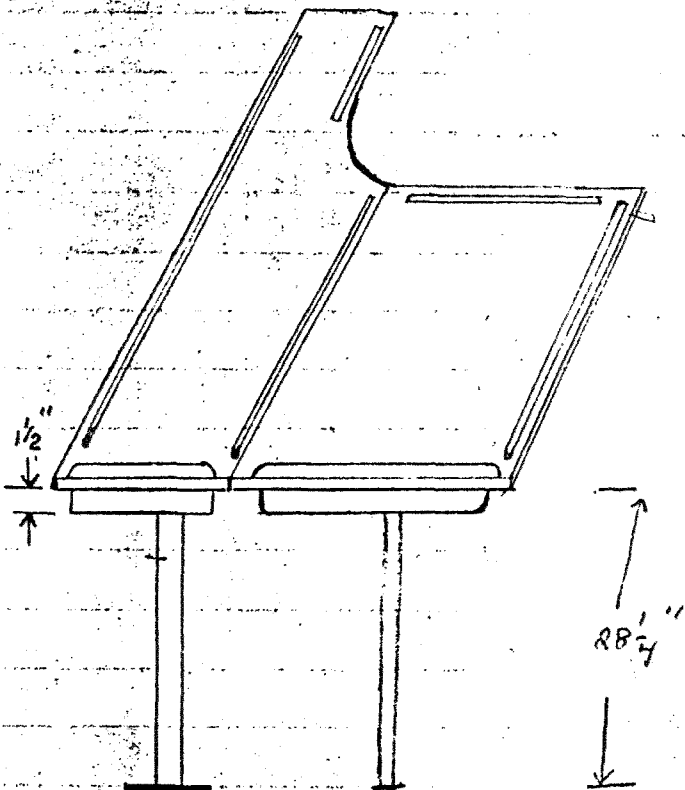
SEA RAIL

17' PER TABLE

- 5'
- 3'
- 3'
- 3'



CHANGE THESE MEASUREMENTS



ADD LEG



TOP OF TABLE TO SOLE

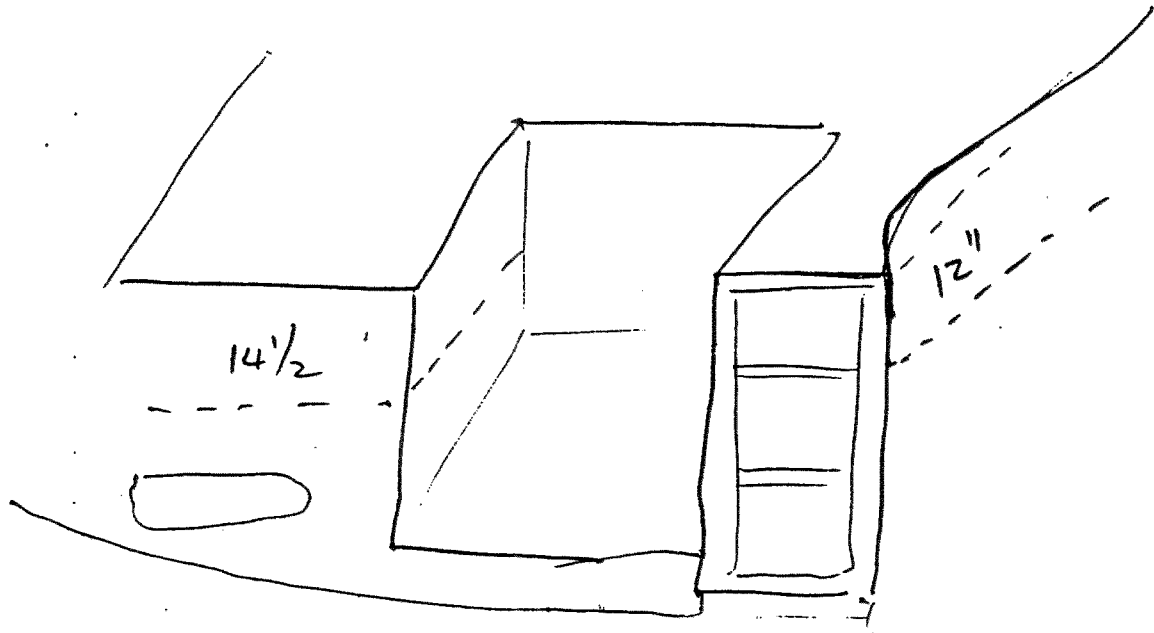
TABLE LEG PIPE

27 7/8"

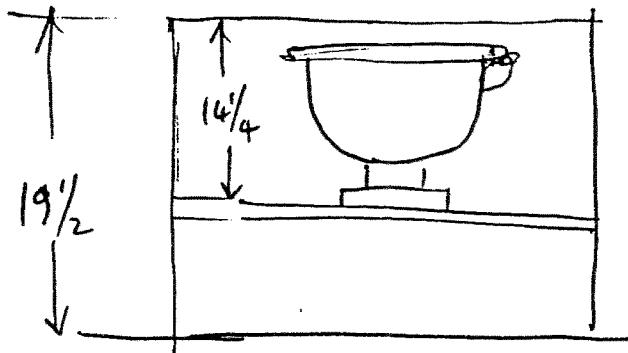
18 1/4"

INTERIOR FURNITURE

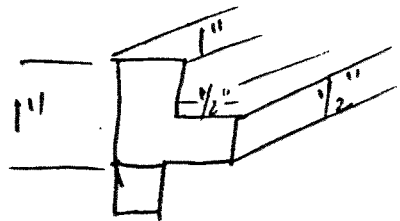
Galley Shelves



Raritan Head



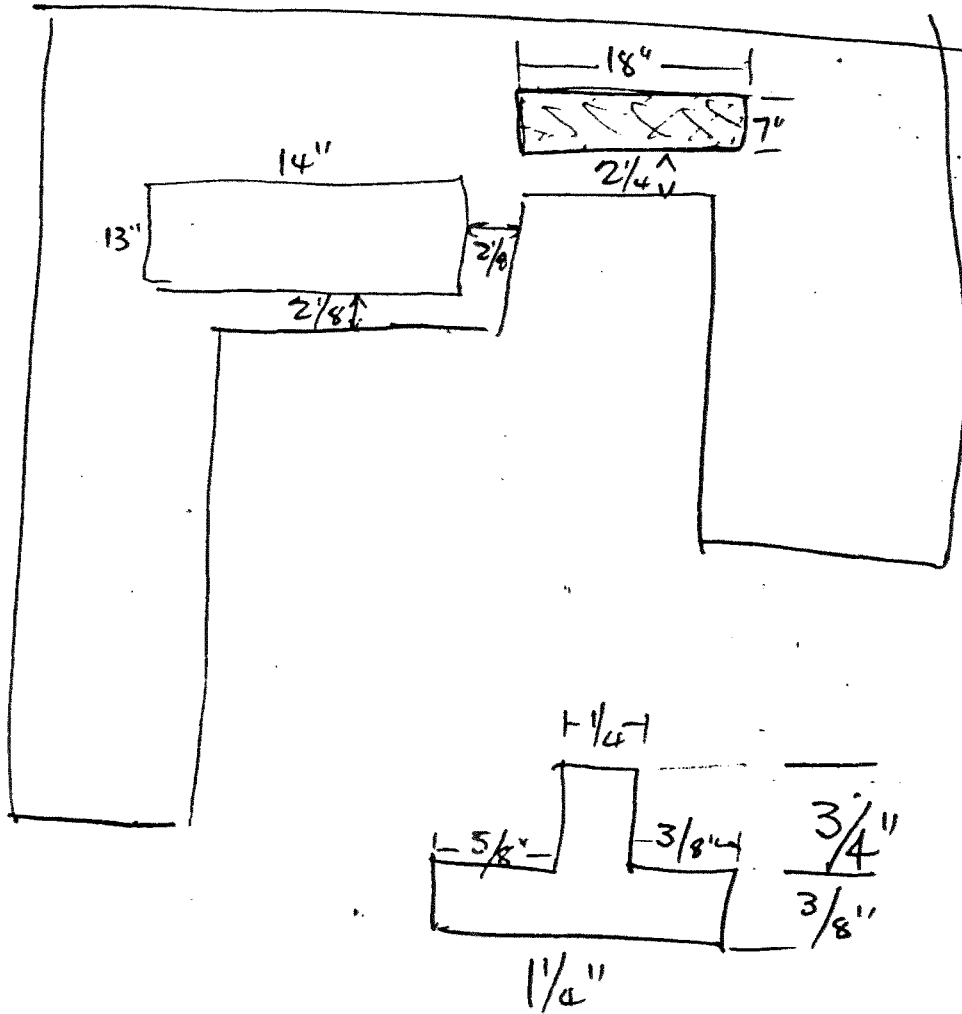
↓
14 1/2" From bottom of lid to top of head sole



47 ↑ 48 ↓

INTERIOR

Galley top cut outs FURNITURE



47
48

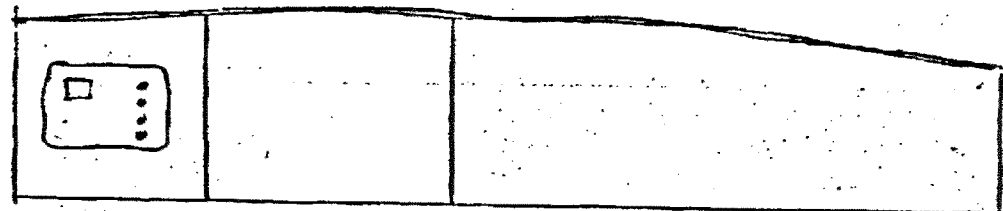
FOR INFORMATION ONLY O ✓

← 1 1/4" STICK 12"

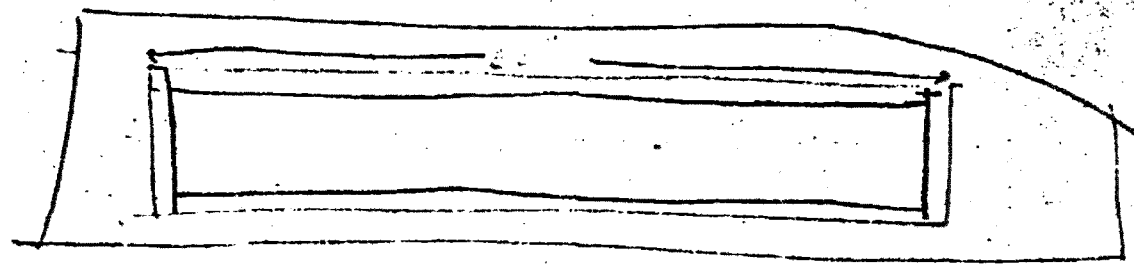
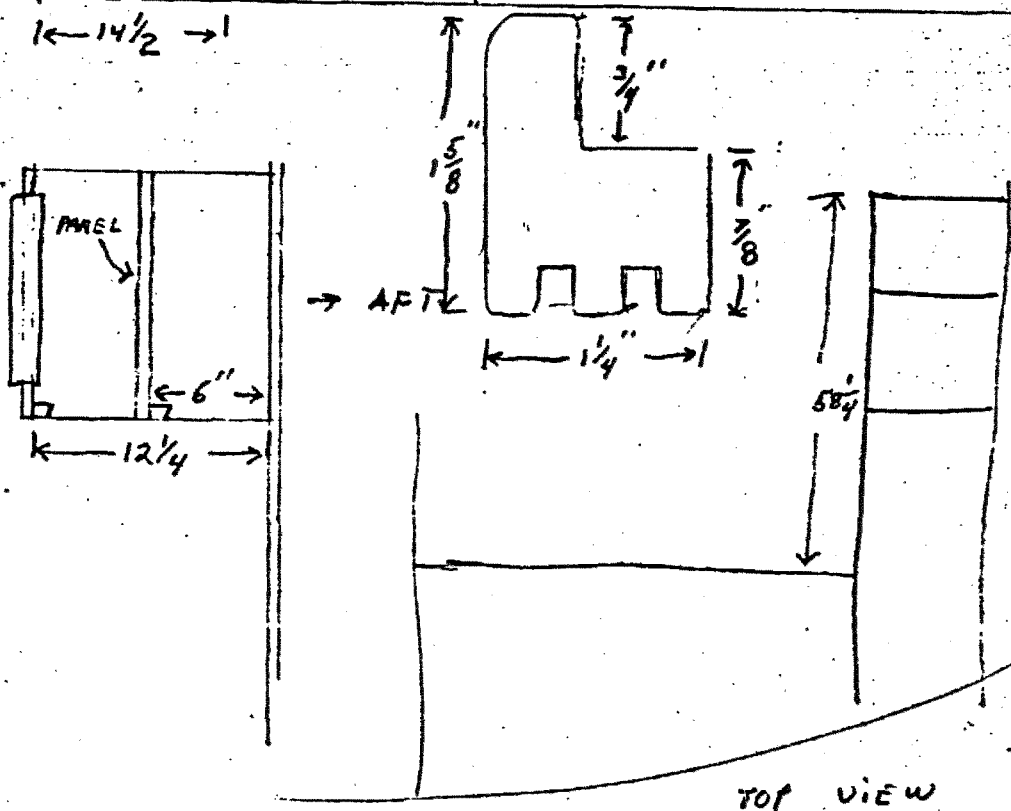
GALLEY CABINETS



BRIDGE DECK

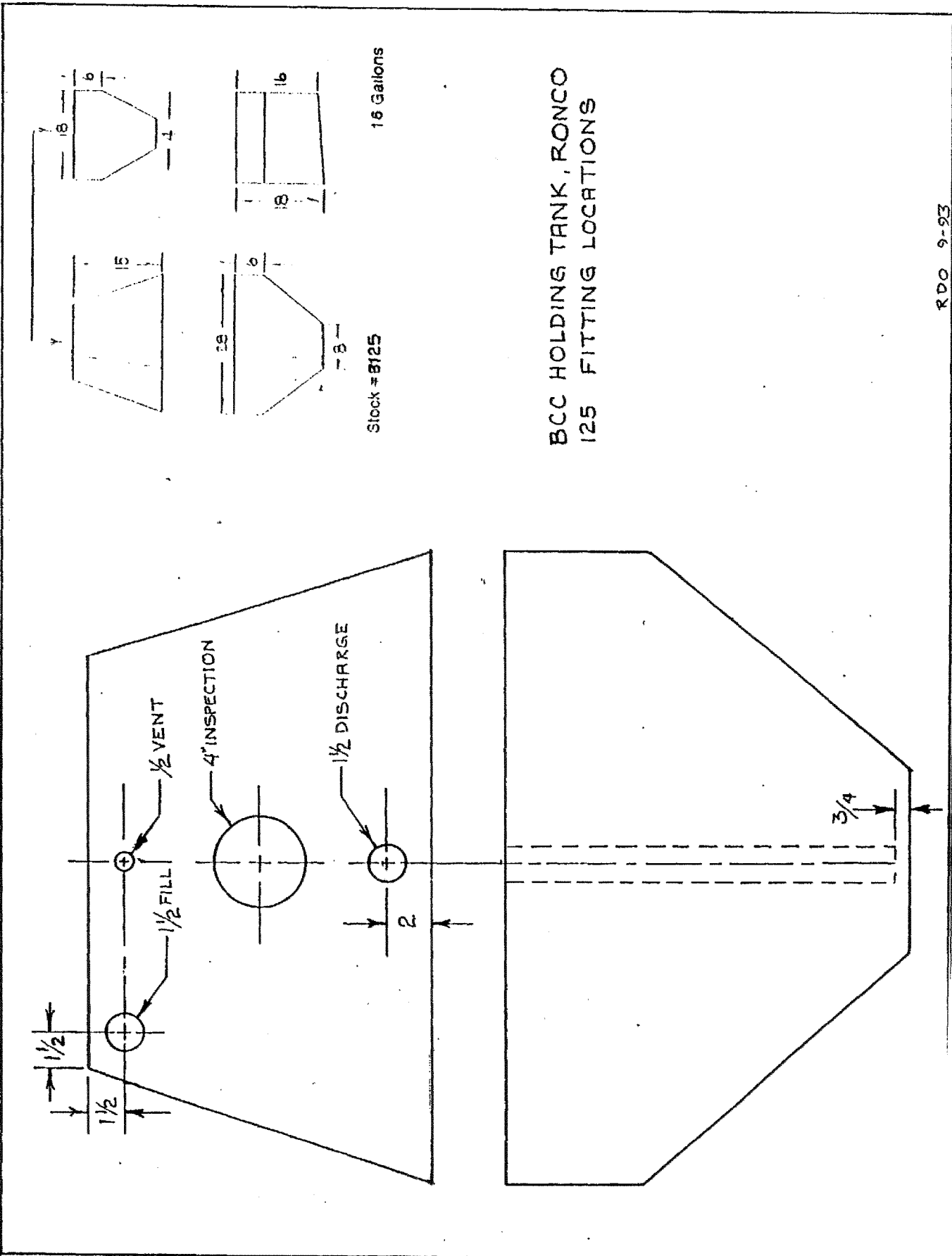


← 14 1/2 →



BEHIND STOVE

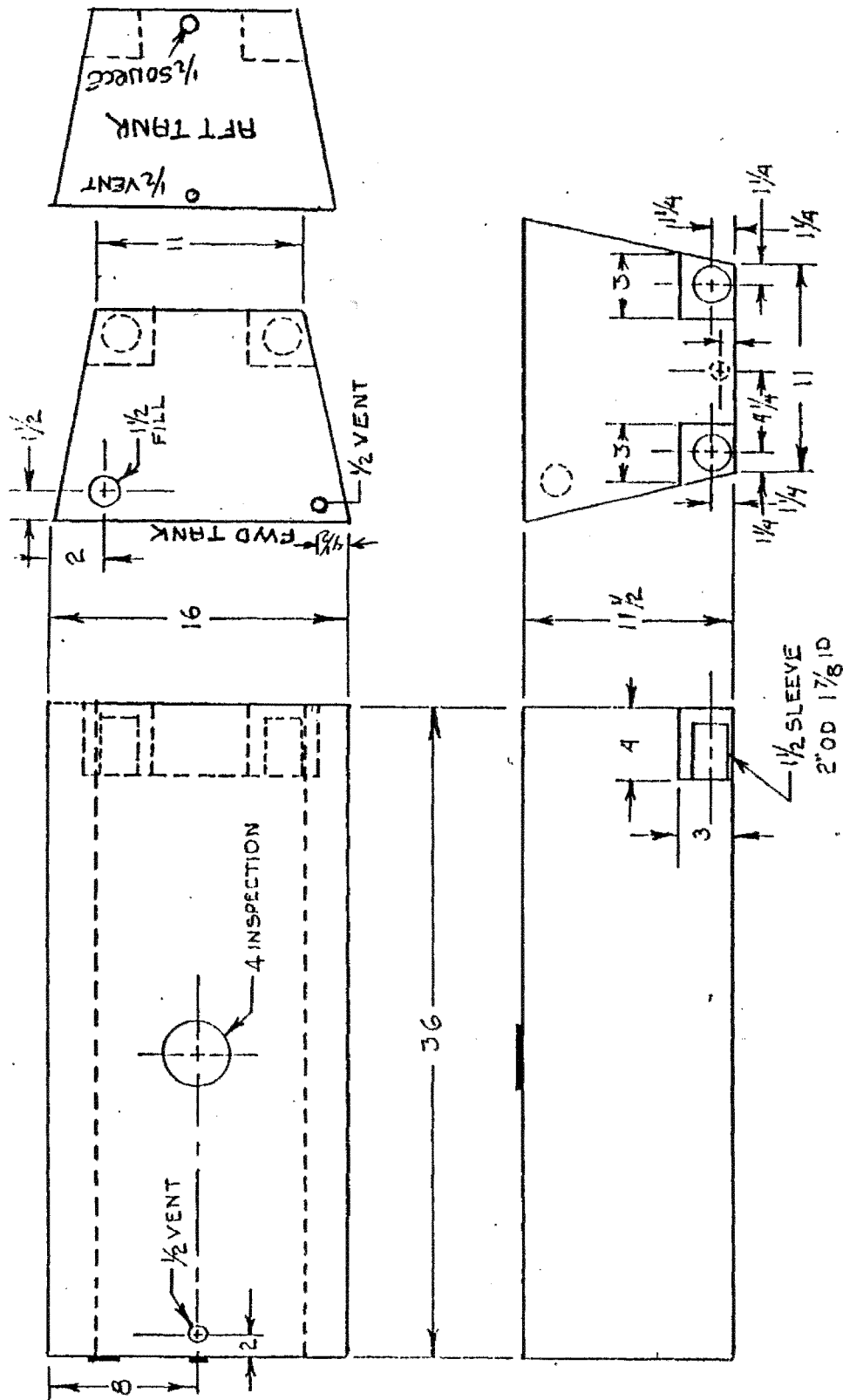
(51) A



Stock # 8125

16 Gallons

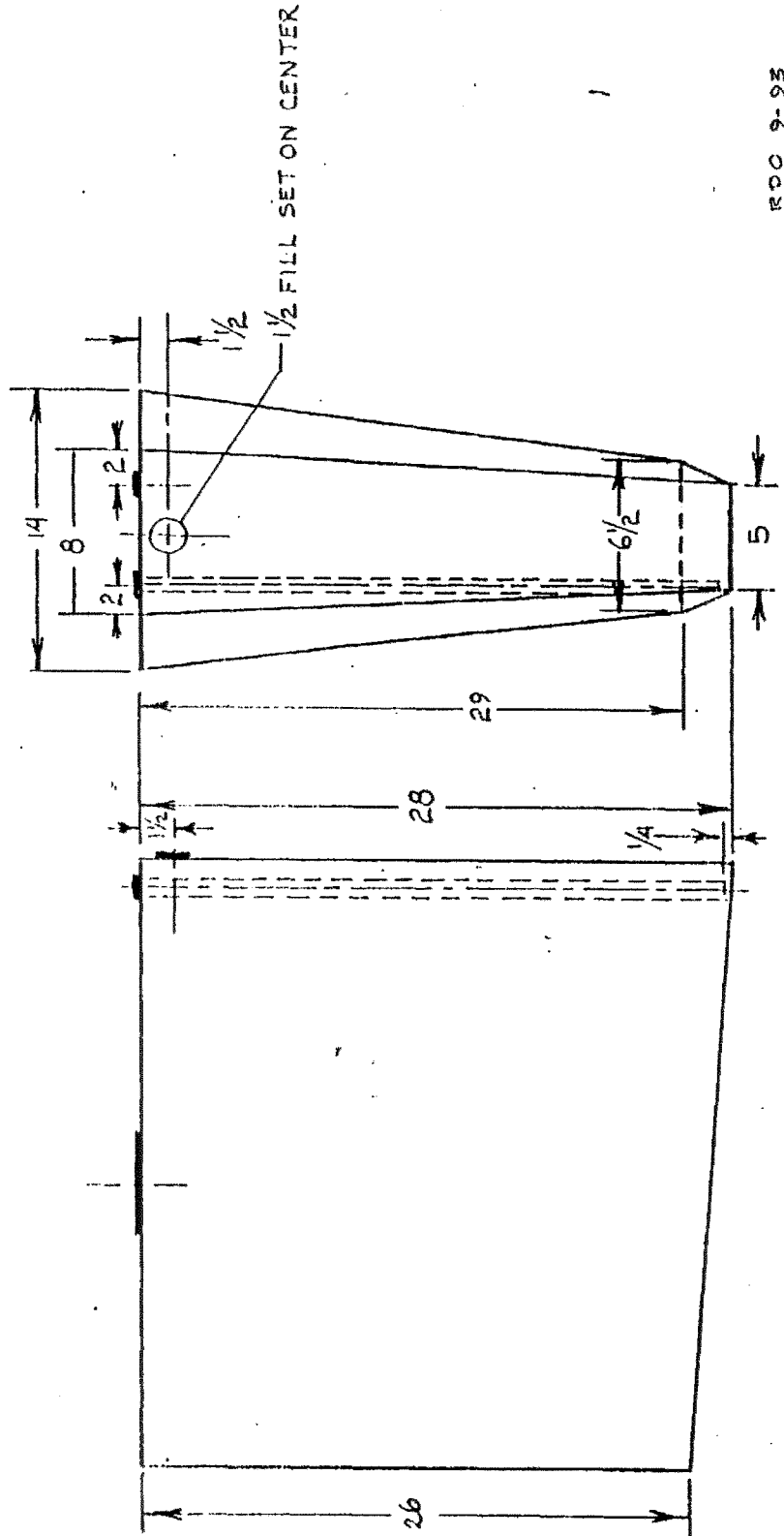
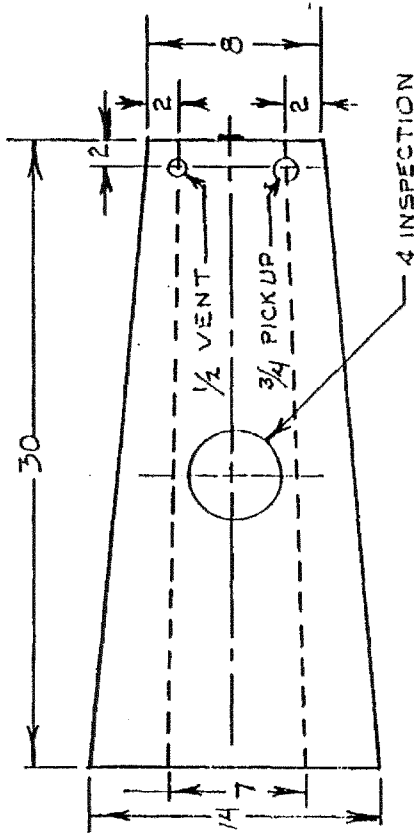
BCC HOLDING TANK, RONCO
125 FITTING LOCATIONS



BCC RECT. WATER TANK, 2 REQUIRED
 RONCO B357

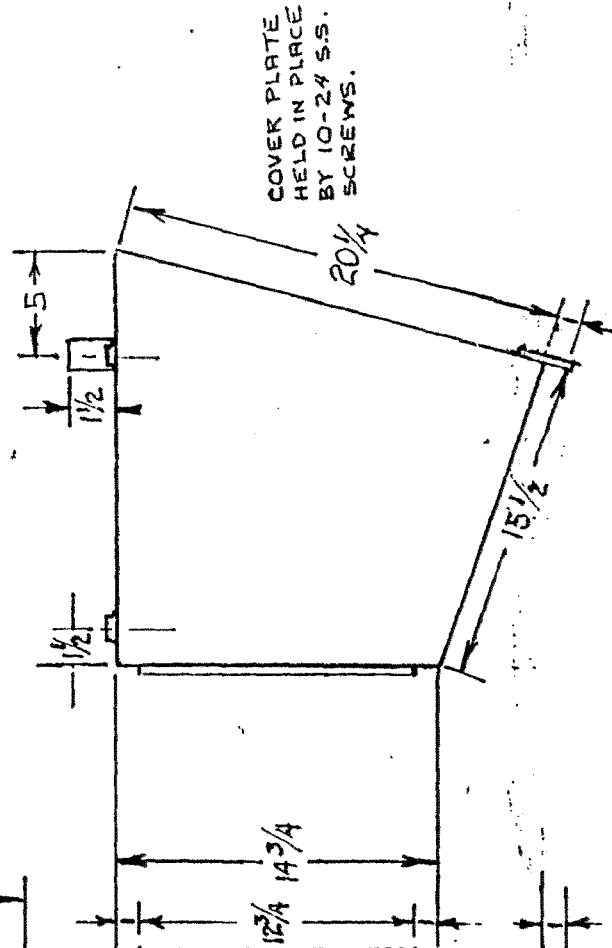
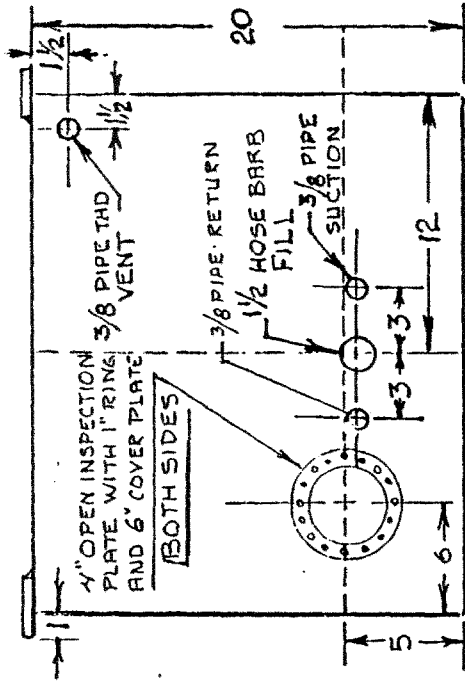
TANKS TO CONNECT AT 1 1/2" SLEEVE. WITH
 FORWARD TANK BEING "A" AFT TANK "B"
 TANK "A" TO HAVE 1 1/2" FILL AND 1/2 VENT TOP
 CORNERS OPPOSITE END OF SLEEVES
 TANK "B" TO HAVE 3/4" SOURCE BOTTOM MIDDLE
 1/2 VENT TOP CENTER

BCC WEDGE WATER TANK
RONCO B338



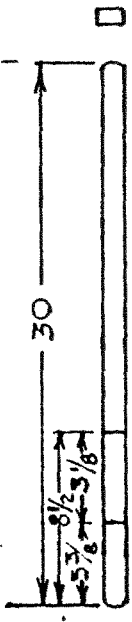
PRESSURE TEST WITH INSPECTION
 PLATE COVERS INSTALLED.
 CERTIFY PRESSURE TESTED

ALUMINUM .125



COVER PLATE
 HELD IN PLACE
 BY 10-24 S.S.
 SCREWS.

SCALE: 1/8" = 1"	APPROVED BY:	DRAWN BY RDO
DATE: 11-93		REVISED
32 GALLON FUEL TANK BCC		
		DRAWING NUMBER

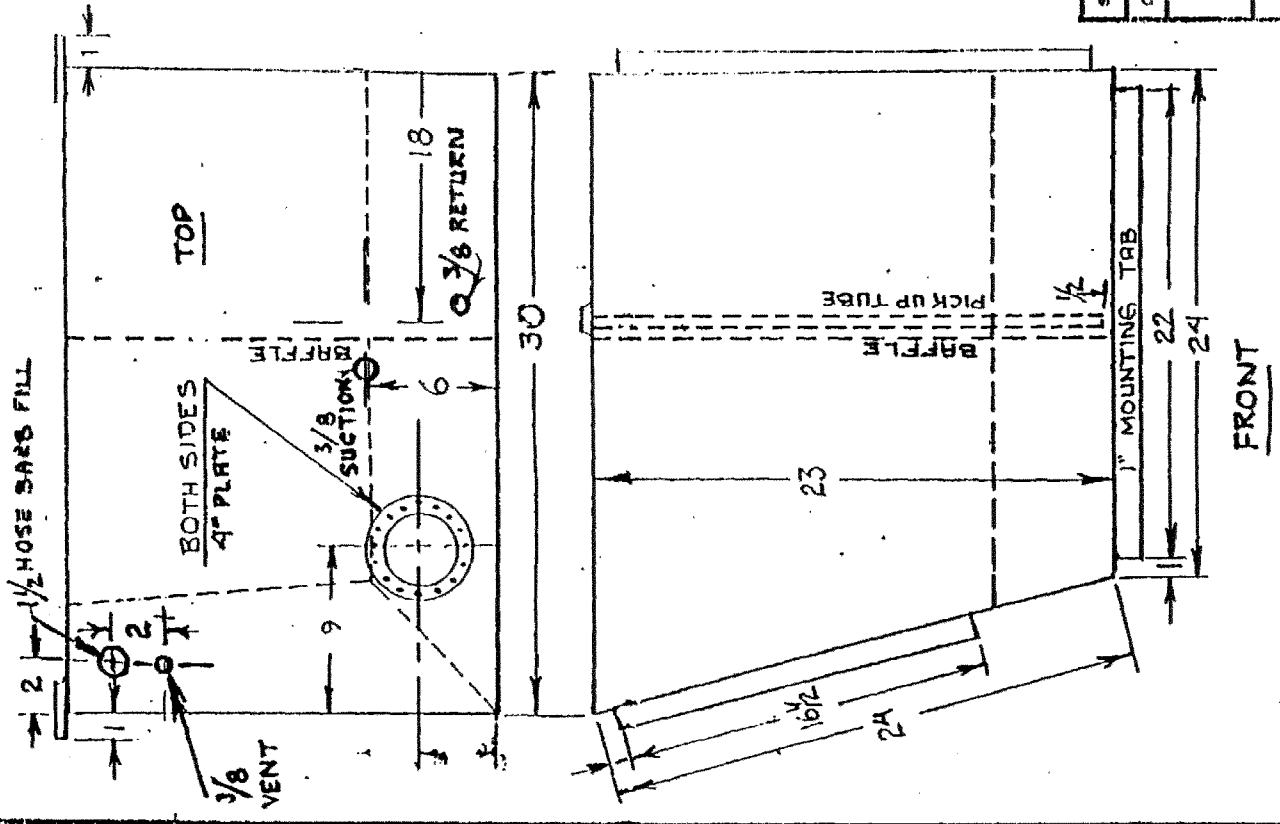


WOODEN FUEL STICK 1/2 x 7/8 x 3/8
 5 gal. 10 gal.

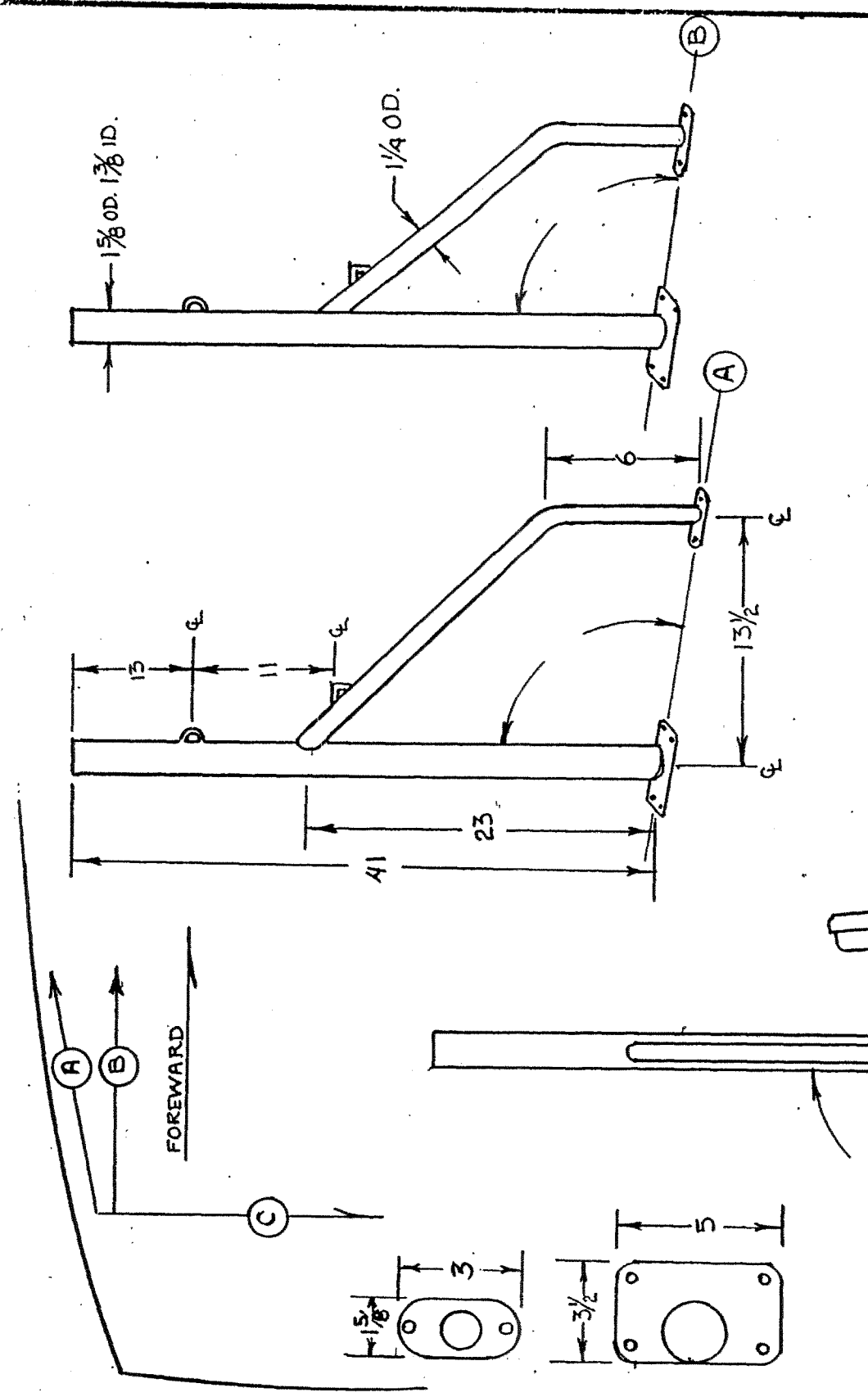
PRESSURE TEST WITH INSPECTION
PLATES INSTALLED.
CERTIFY ON LABEL PRESSURE TESTED

.125 ALUMINUM

COVER PLATE HELD
IN PLACE BY 10-24
MACHINE SCREWS
S.S. EQUALLY
SPACED



SCALE: $\frac{1}{8} = 1"$	APPROVED BY:	DRAWN BY RDO
DATE: 11-93		REVISED
40 GALLON FUEL TANK BCC.		
INSTALL SENDER AT DEEPEST POINT		DRAWING NUMBER



SCALE: NONE	APPROVED BY:	DRAWN BY RDO
DATE: 10-94		REVISED
BCC 28 BOOM GALLOWS, 1 EACH SIDE		
		DRAWING NUMBER

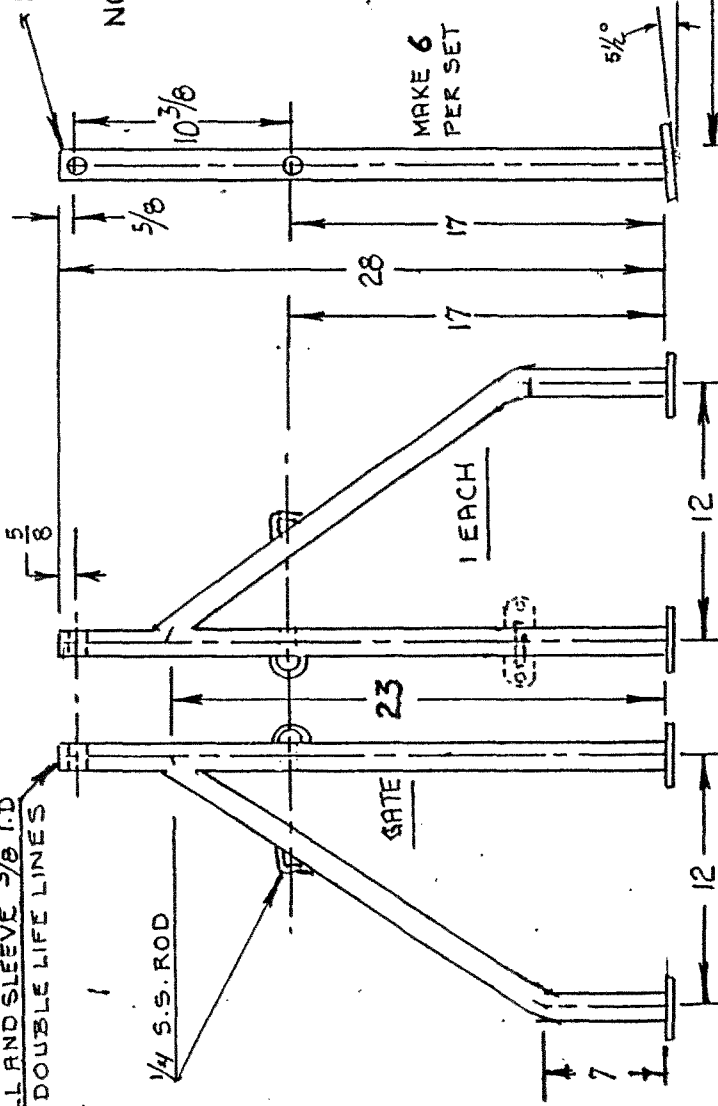
DRILL AND SLEEVE $\frac{3}{8}$ I.D.
FOR DOUBLE LIFE LINES

$\frac{1}{4}$ S.S. ROD

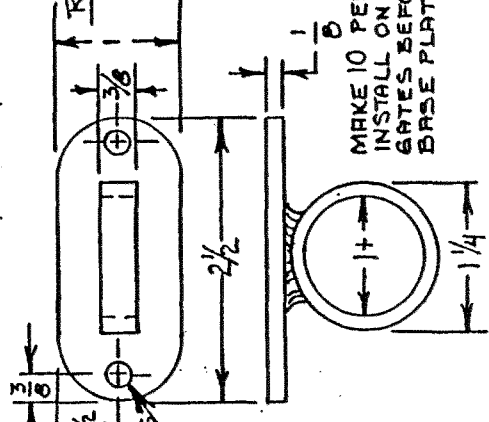
$\frac{5}{8}$

NOTE: STANCHIONS AND GATE BASES
WELDED WITH $5\frac{1}{2}^\circ$ OUTBOARD
ANGLE. ONLY 2 STANCHIONS
HAVE BASE AT 90°

MAKE 6
PER SET

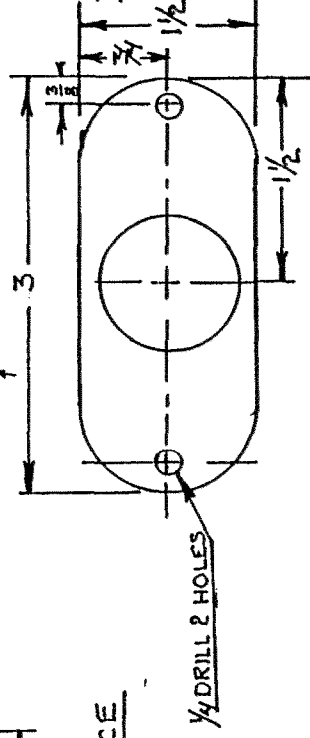


RING BRACE



MAKE 10 PER SET.
INSTALL ON LESS OF
GATES BEFORE WELDING
BASE PLATE

BASE PLATE



SCALE: NONE

DATE: 11-93

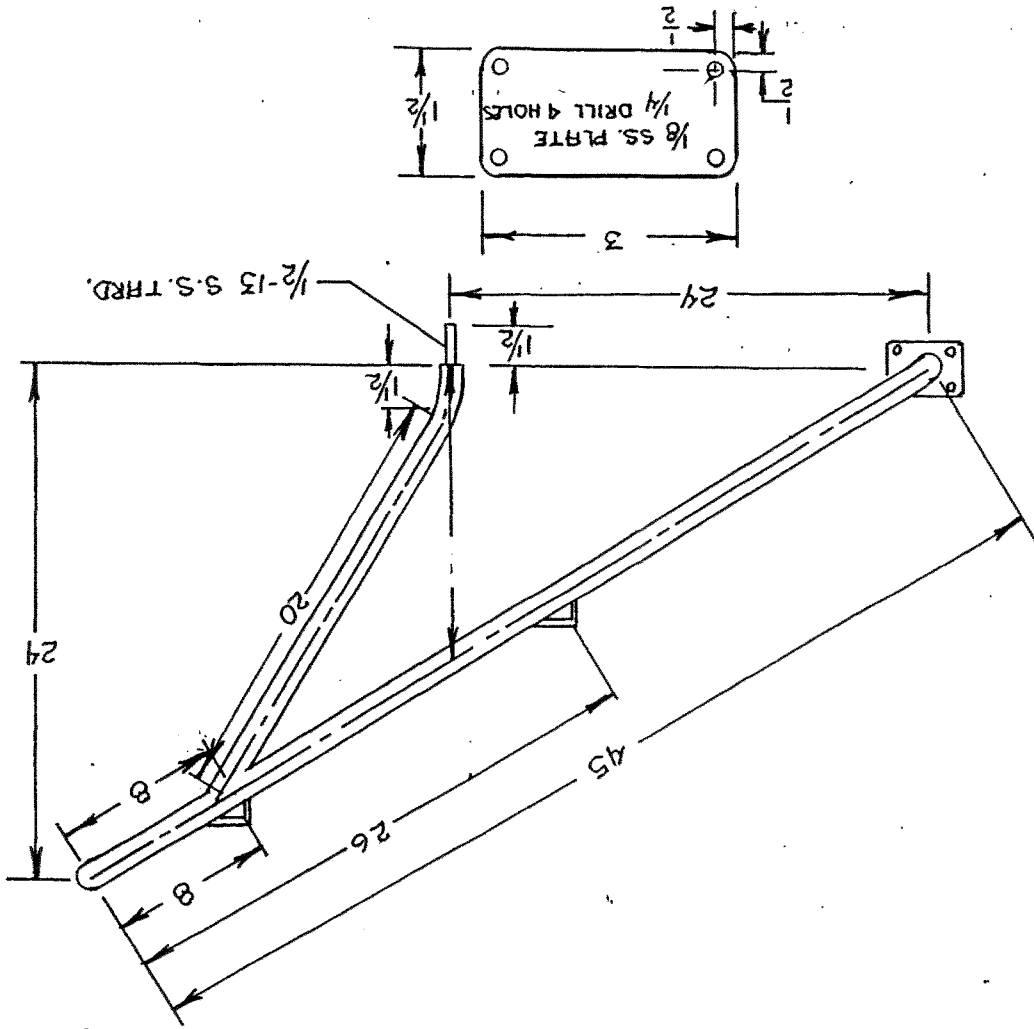
APPROVED BY:

DRAWN BY RDO

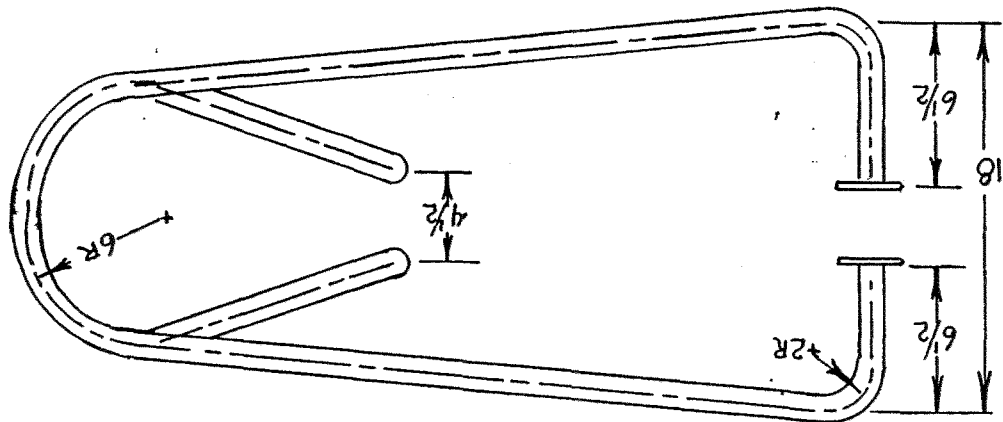
REVISED

BCC LIFELINES & GATE

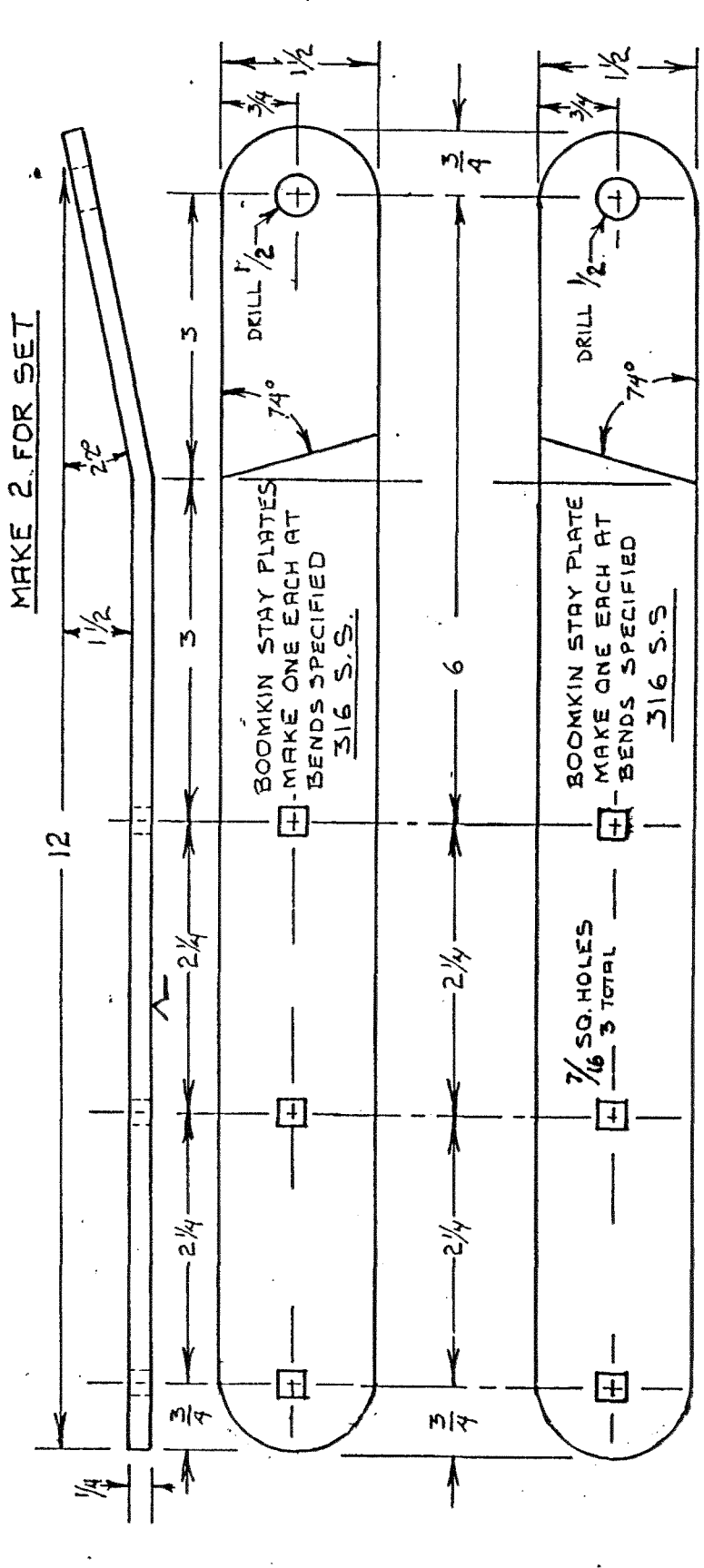
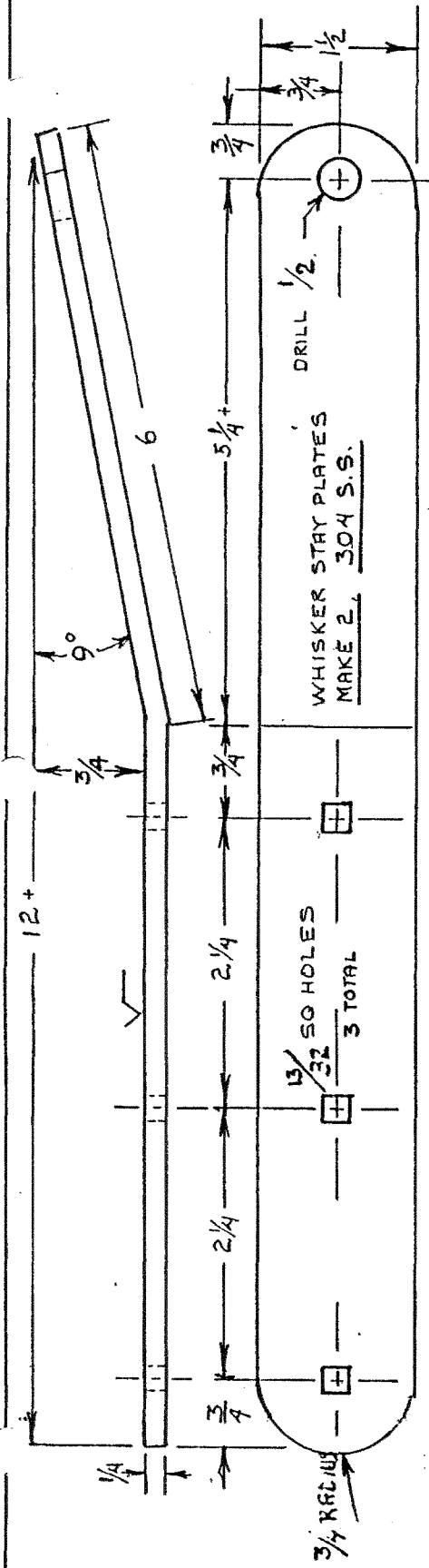
DRAWING NUMBER



SCALE: $\frac{1}{8} = 1''$		APPROVED BY:		DRAWN BY R.D.G.	
DATE: 11-93				REVISED	
BCC BOW PULPIT					
304 POLISHED S.S. TUBE					
				DRAWING NUMBER	



NOTE: ALL TUBING DIMENSION ARE FROM CENTER LINES.
BUFF ALL OVER

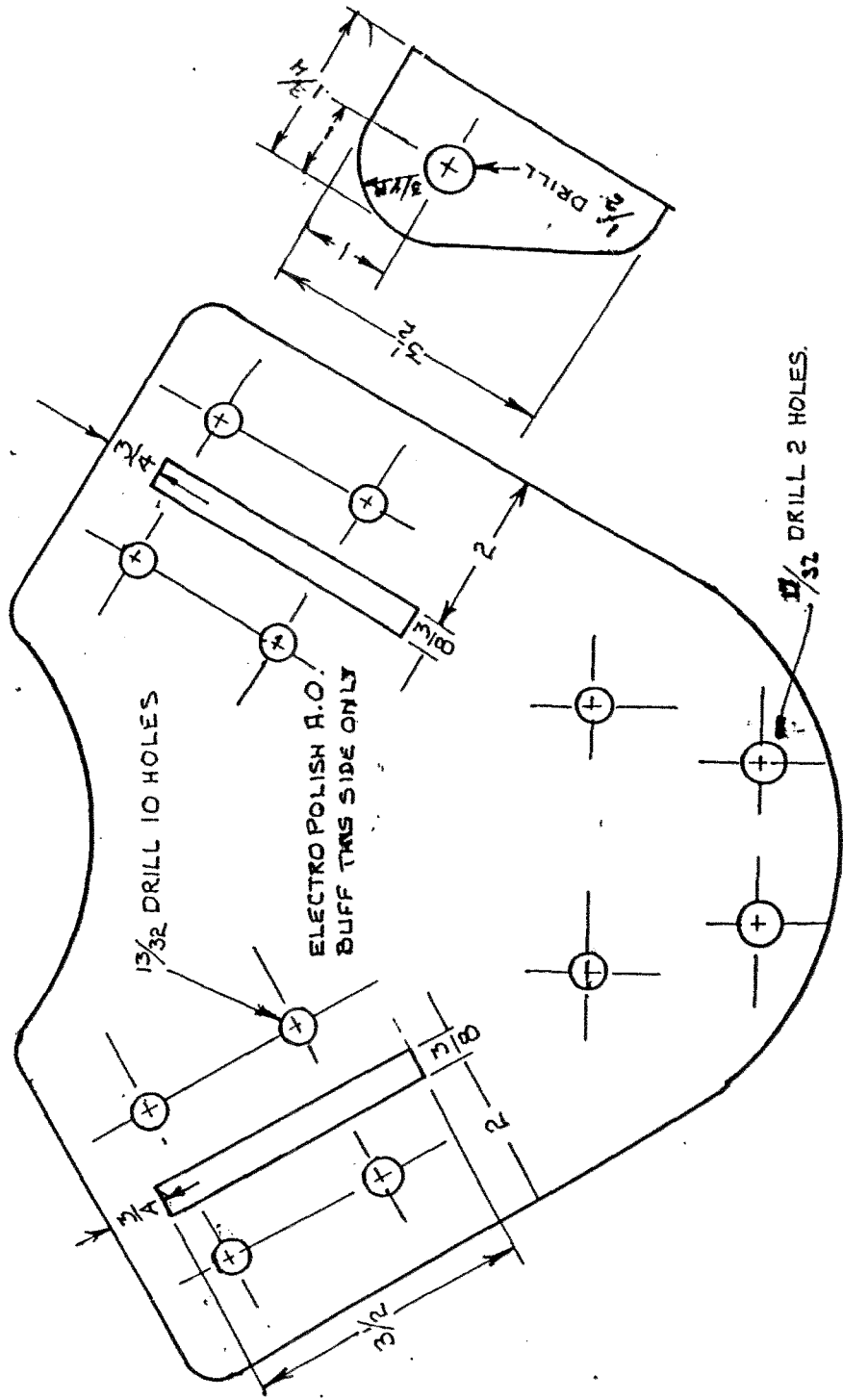


BCC BOOMKIN STAY PLATE

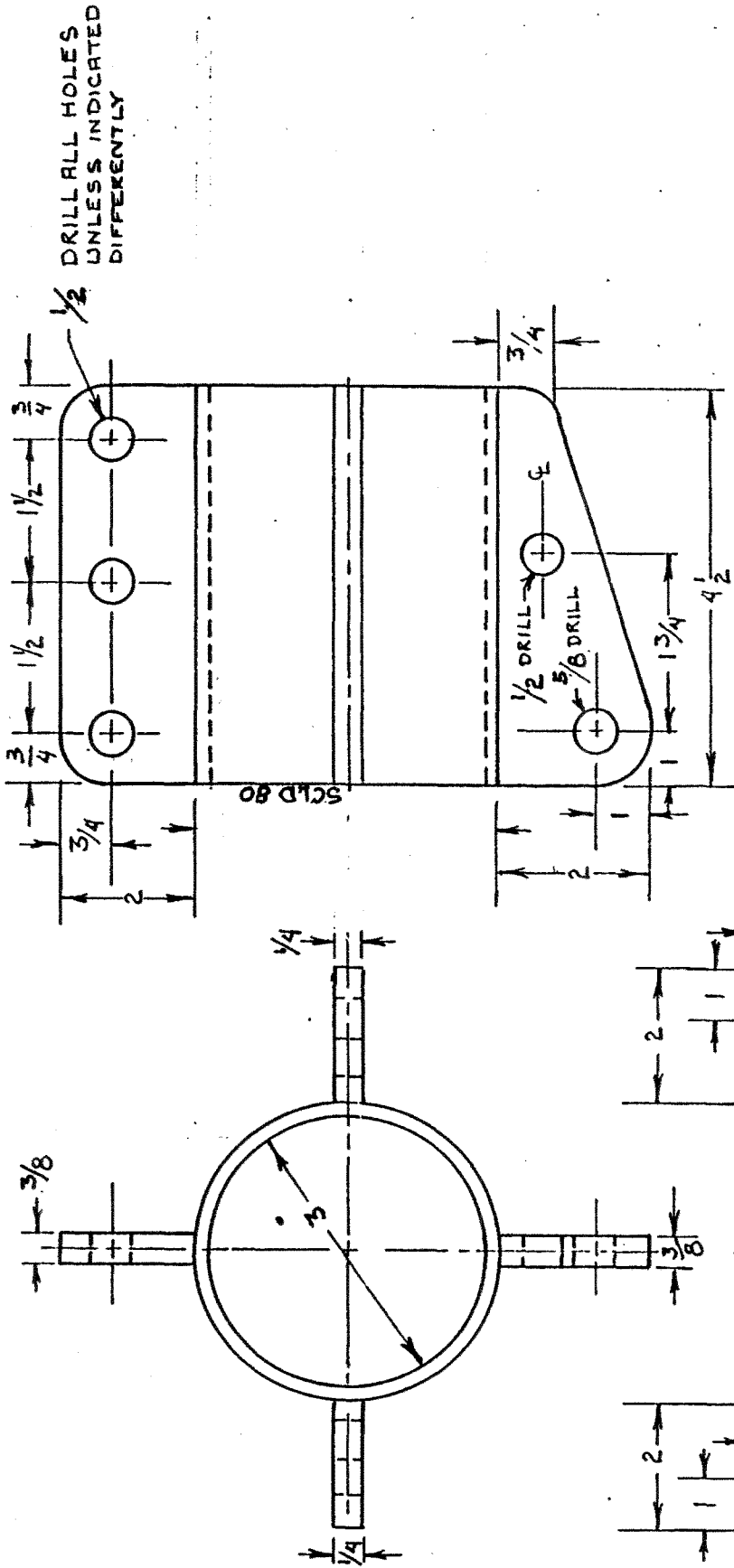
1/4 THICK 304 STAINLESS

1 ONLY FOR SET

NOT TO SCALE



LOCATE ALL HOLES AS TO DIMENSIONS
ON BOOMKIN BACKSTAY PLATE DRAWINGS
THE TWO PLATES ARE A MATCH

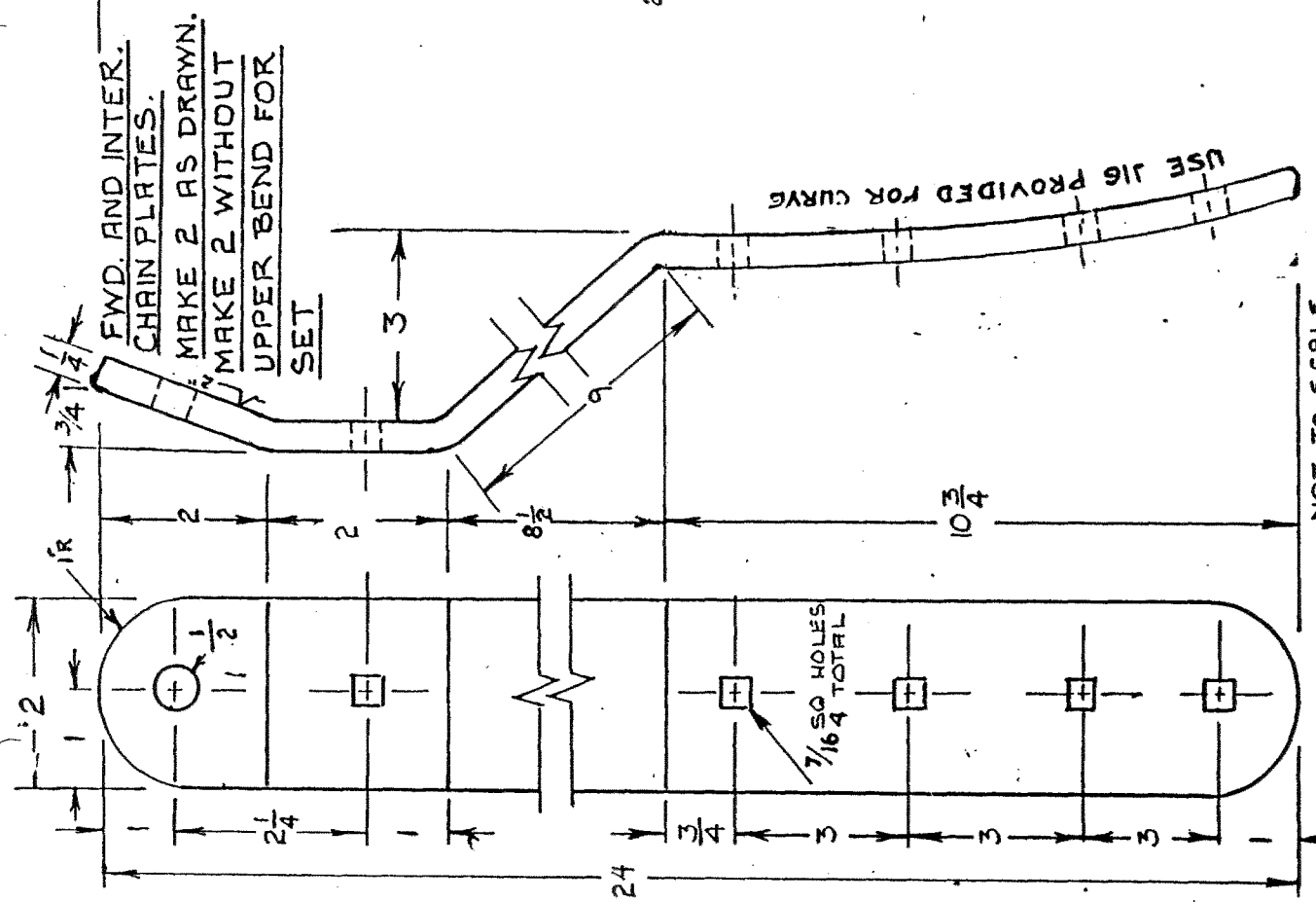


BCC CRANSE IRON

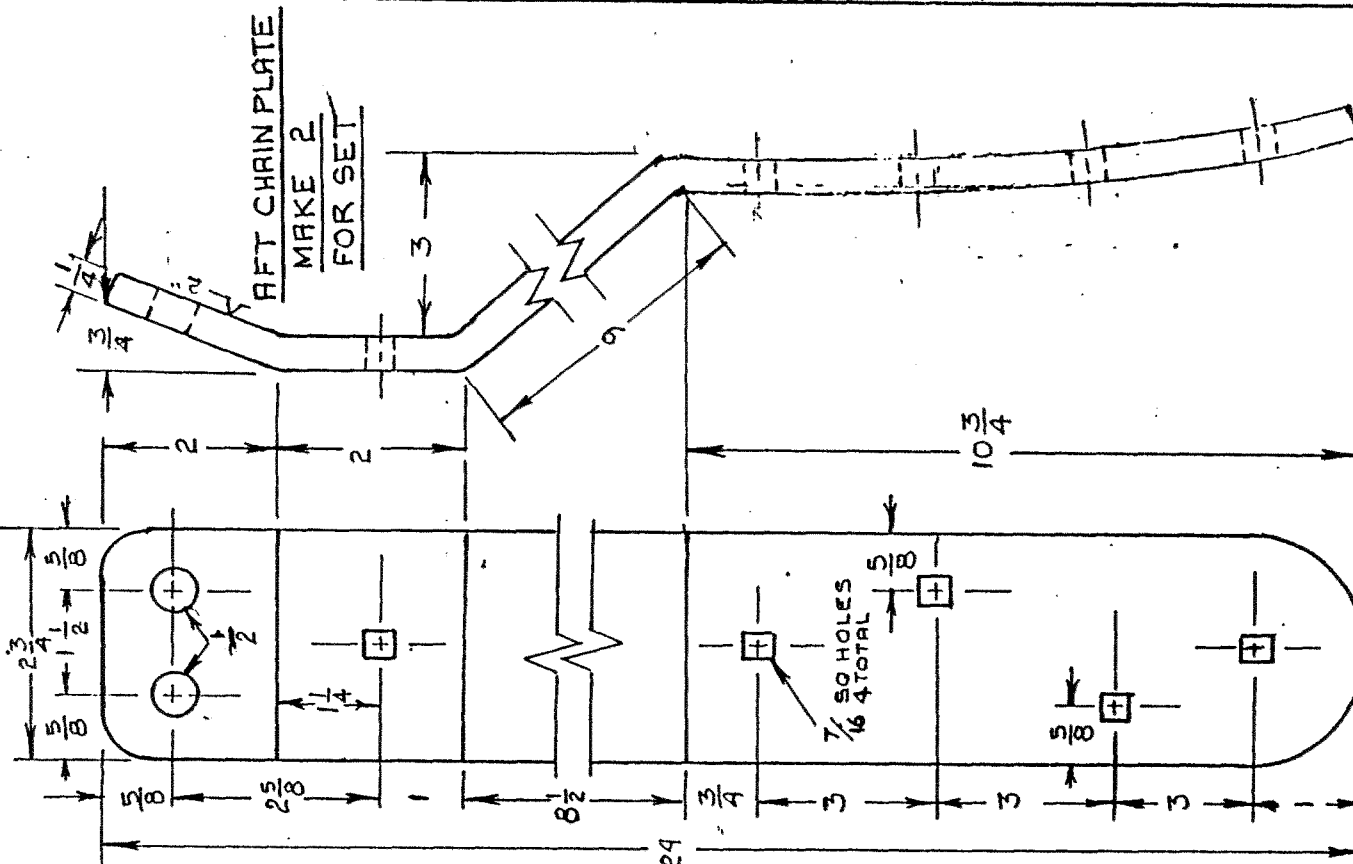
304 S.S. ELECTRO POLISH A.O.
 BUFF ALL SURFACES EXCEPT INSIDE
 3" HOLE. RADIUS AS REQUIRED,
 3" PIPE THICKNESS 1/4 TO 3/16

MAKE 1 FOR EACH BOAT

NOT TO SCALE



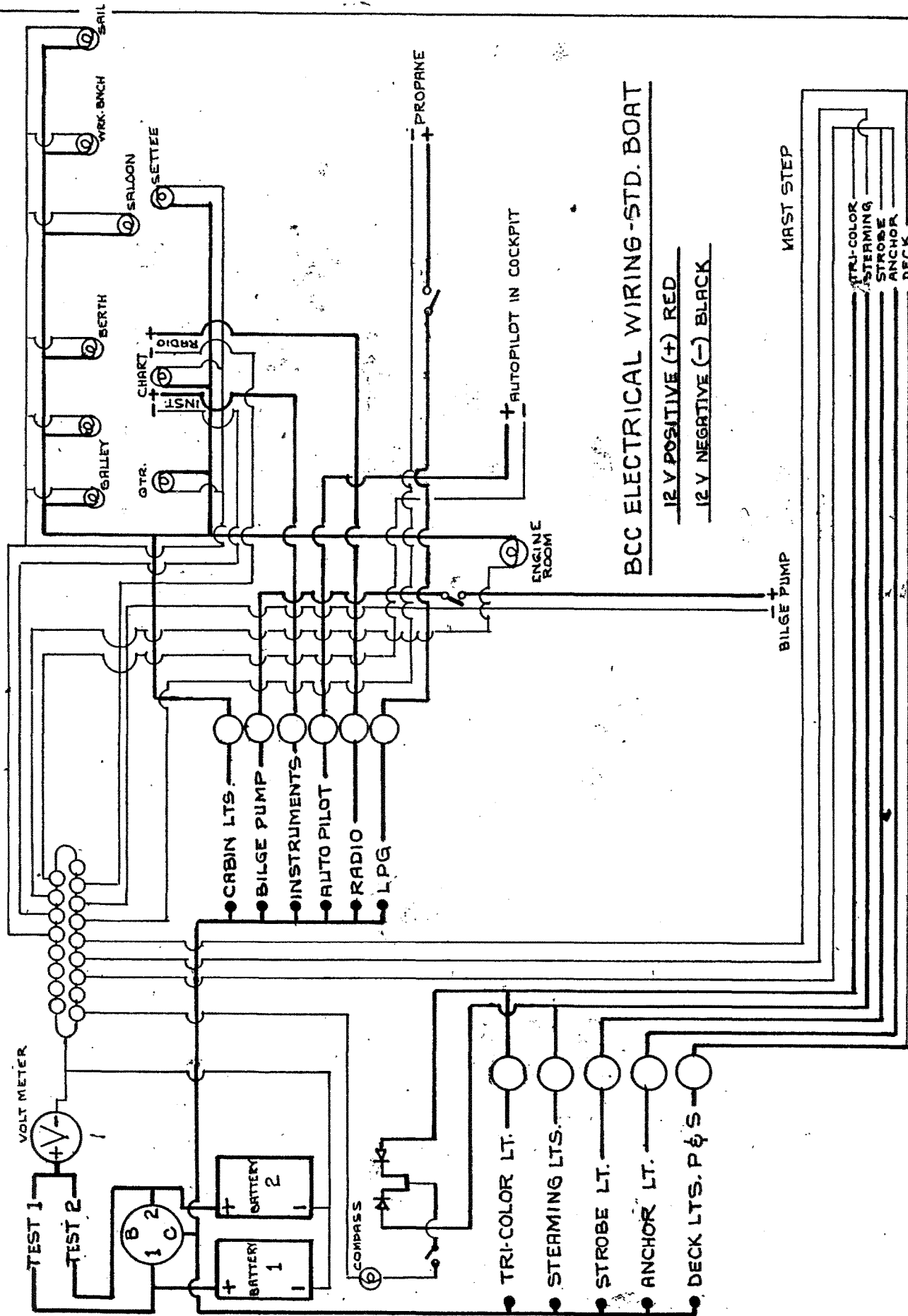
FWD. AND INTER.
CHAIN PLATES.
MAKE 2 AS DRAWN.
MAKE 2 WITHOUT
UPPER BEND FOR
SET



AFT CHAIN PLATE
MAKE 2
FOR SET

304 STAINLESS STEEL

NOT TO SCALE
ELECTRO POLISH A.O. BUFF SURFACE



ITEM	DESCRIPTION	MATERIALS-ITEMS	QUANTITY	SUPPLIER	SUPPLIER #	QNTY	HRS
File Name: BCONST3 BASED ON \$141							
COST FACTOR INPUTS							
TEAK	\$12.00						
MAHOGANY	\$4.00						
LABOR RATE	\$40.00						
HULL	Fiberglass hull	1.5oz Mat, 7.5 Oz Clth	2300-2500#	Crystaliner		1	2
		24oz, Roving		Crystaliner			
	Ivory Gel Coat	NPG		Crystaliner	3360	1	
	Boot Top	NPG		Crystaliner		1	
	Wale Strake	NPG		Crystaliner		1	
	Skin Coat	Hydrex 33-253	158#	Sher- Fab	H-3302-53HP	1	
	Barrier Coat	Interlux 2001 Epoxy	5 gls	Aegis	Interlux 2001	5	16
RUDDER	Construction	Glass and Foam	1	Foss Foam	BCC	1	
	Detailing			Crystaliner	BCC	1	
	Gudgeon Set	Bronze	\$42,\$42,\$72	Port Townsd	BCC	1	18
	Pintle Set	Bronze	\$28,\$63,\$69	Port Townsd	BCC	1	
	Bushings	Nylatron Tubing	3	Plastic Sales	1" ID, 1 1/4 OD	1	
	Machining		6	Marmachine	BCC	6	
	Tiller Block	7 x 7 x 2 1/2 Teak	1 BF	Strata/Pemb		1	
	Cheek Blocks	9 x 84 X 1 1/2 Teak	10 BF	Strata/Pemb		10	4
	Fasteners	3/8 x 4 1/2 SL. BRZ	5	Lavender		5	
		3/8 x 3 1/2 SL. BRZ	11	Lavender		11	
		3/8 x 2 1/2 SL. BRZ	8	Lavender		8	
	Compress Tube	3/8 ID x 5/8 OD.x 2	3	Lavender		3	
	Misc	Rags, Varnish, 5200				1	
FIBERGLASS PARTS	Lazarette Htch	Fiberglass	1	Crystaliner		1	
	Misc Parts	Hinges, Clasps, pump	units	Crystaliner		1	
	Detailing			Crystaliner			
BALLAST AND MAST STEP	Ballast	Cast Lead Blocks	4600#.	L2Z	(909) 849-8117	4600	3
	Dam	3/4 Plywood	1	Scrap			
	Bonding	Resin, 91/2# = 1 gl.	12 gls	Crystaliner		12	16
		1 1/2 oz mat, 24 oz Ro	2 Layers	Crystaliner		2	
	Mast base	3/8 x 7" x 14" Alumin	1	Marmachine		1	
	Mast step	Polyethelene Pad	2 x 10 x 12	Bayside Pltic		1	1
		1/2 x 4 SS. thred rod	4	Lavender		4	
BOBSTAY TANG	Tang	SS. Tang	1	Marmachine		1	2
	Bond	15 x 13, 1.5 oz mat	1	Crystaliner		1	
		16 x 14, 24 oz roving	1	Crystaliner			
		23 x 21, 1.5 oz mat.	1	Crystaliner			
		24 x 22, 24 oz. roving	1	Crystaliner			
		Resin	1 gallon	Crystaliner		1	
STERN TUBE	Shaft dam	3/4 plywood dam	1				1
SHAFT DAM	Stern Tube	1 7/8 OD, 1 3/8 ID, 15"L	1	Skypole	714-548-5596	\$1.00	
	Knob end	1 7/8 ID, 2 1/4 OD, 2"	1	Skypole			
	Machine			Nimmo	714-548-4723	\$1.00	
	Bond in place	resin and vermiculite	7 gls	Crystaliner		\$1.00	4

ITEM	DESCRIPTION	MATERIALS-ITEMS	QUANTITY	SUPPLIER	SUPPLIER #	QNTY	HRS
		1.5 oz mat, 24 oz rovin	1 layer	Crystaliner		\$1.00	1
ENGINE	Engine	3 GM30 F	1	Boatswains		1	55
	Water intake	Groco 3/4 Seacock	1	Groco	BV 750	1	
		Groco 3/4 Thru Hull	1	Groco	TH750	1	
	Exhaust port	1 1/2 Threaded	1	Marine Hdwr	1 1/2	1	2
		Machining		Nimmo		1	
		Exhaust Ball Valve	1	Groco	BV-150	1	
	Engine Pan	Fiberglass Pan	1	Crystaliner		1	2
		8" X		Crystaliner		1	
	Morse Controls	Control = MV-2	1	Fox Marine	306950	1	
		Throttle Cable, 33C	1	Fox Marine	032377-008	1	
		Shift Cable, 33C	1	Fox Marine	032377-010	1	
	Fuel Filter	Racor Water Separator	1	Fox Marine	200FG2-FFW	1	
	Filter, Raw Wtr.	Perko, Wate Filter	1	Fox Marine	493004 PLB	1	
	Aqua Lift	Salisbury SBM-20	1	Salisbury SBM20	Boatswains Lkr	1	
	Vented Loop	Anti syphon Valve	1	Scott	VL- 06	1	
	Shaft, S.S.	1" x 42" (+/-), AQ 19	1	Marine Hdwr	QAL-AQ19	1	
	UPS					1	
	Shaft Bearing	Shaft Bearing,"Bloater"	1	Port Supply	381475	1	
	Shaft Log	Shaft Log (Strong)	1	Tides Marine	SS-1000	1	
	Prop, 2 Blade	Prop, 16" x 11" RH-2B	1	Abxnder Rbts	Austral	1	
	Fuel Tank	32 Gls, Aluminum	1	Berry Marine	BCC Tank	1	
	Deck Fill	Bronze " DIESEL"	1	ABI	1732 BR	1	
	Batteries	West CCA-550	2	Port Supply	141838	2	
	Batteries	Lifeline	2	Sea & Air Dist	GPL-24 12V 80	2	
		Battery Box, Cables	2	SLM CO.		2	
	Engine Hour Mtr	Hour Meter	1	Port Supply	107573	1	2
	Misc. Hoses,	Hoses, Clamps	misc.	Orange Cst.		1	
DECK	Gel Coat	NPG 5893		Crystaliner	5893	1	
	Fiberglass	1.5 oz. mat, 7.5 oz clth, 1.5oz mat, 24 oz Rov., 1.5 oz mat, 1/2" Ply, 1.5 oz mat, 24 oz rov.					
	Detailing			Crystaliner	1	1	
	Fasteners	1/4 x 1 1/4 SSFHMS	160 +/-	Lavender		160	18
	Sealant	5200 3M Marine Seal	12	Port Supply	227546	12	
	Misc.	Thinners, Rags, etc.				1	
S.S. HARDWARE	Chain Plates	S.S. Chain plates	Set of 6	Marmachine	BCC	1	20
	Boomkin Plates	S.S. Boomkin plates	Set of 2	Marmachine		1	
	Boomkin Tangs	S.S. Boomkin tangs	Set of 2	Marmachine		1	
	Whisker Plates	S.S. Whisker plates	Set of 2	Marmachine		1	
	Crance Iron	S.S. Crance Iron	1	Marmachine		1	
	Gammon Iron	S.S. Gammon Iron	1	Marmachine		1	
	Fasteners	3/8 x 2 1/2 Carr Bits	24	Lavender		24	
		3/8 x 4 1/2 Carr Bits	8	Lavender		8	
		3/8 x 3 Carr. Bits	10	Lavender		10	
		1/2 x 3 Carr. Bits.	2	Lavender		2	
		3/8 x 6 Carr. Bits.	6	Lavender		6	
		5/16 x 5 1/2 FHMS	8	Lavender		8	
		Nuts, Washer, etc.		Lavender		1	
DECK HARDWARE	J/b Winch	Bronze, Self-Tailing	2	Harkin	B 32.2 STB	2	3.5
		Bronze winch base	2	Port Townsd	BCC	2	

ITEM	DESCRIPTION	MATERIALS-ITEMS	QUANTITY	SUPPLIER	SUPPLIER #	QNTY	HRS
COVER BOARDS	Mahogany	10" x 11' x 13/16 S2S	10 bf X 4=	40 bf + 30%=	52 bf	52	38
	Teak (option)	" " " " "	" "	" "	52 bf	52	
	Mahogany	11" x 11' x 13/16 S2S	11 bf X 2 =	22 bf + 30%=	29 bf	29	
	Teak (option)				29 bf	29	
	Mahogany	10" x 8' x 11/16 S2S	7 bf X 1 =	7 bf + 30%=	9 bf	9	
	Teak (option)					9	
	Fasteners	#10 x 1" SSSMS FH	100	Lavender		100	
	Misc.	Delivery, 5200 (12), Rags, thinners, etc.				1	
BULWARKS	Mahog. Boards	6" x 16' x 13/16 S2S	8 bf X 2 =	16bf + 30% =	16 bf	16	86
	Teak (option)				16 bf	16	
	Mahog. Boards	6" x 14' x 13/16 S2S	7 bf X 2 =	14bf + 30%=	18 bf	18	
	Teak (option)				18 bf	18	
	Mahog. Cap	8" x 16' x 1 1/8 S2S	16 bf X 1 =	16bf + 30%=	21 bf	21	
	Teak (option)				21 bf	21	
	Mahog. Fashion	8" x 4' x 1 1/8 S2S	4 bf X 1 =	4bf + 30%=	3 bf	3	
	Teak (option)				3 bf	3	
	Mahog. Stanc	8" x 10' x 2 3/4 S2S	20 bf X 1 =	20bf + 30%=	26 bf	26	
	Teak (option)				26 bf	26	
	Mahog. Knights	8" x 3' x 2 1/8 S2S	5 bf X 1 =	5bf + 30%=	6 bf	6	
	Teak (option)				6bf	6	
	Fasteners	Thd, Rd. 1/2-13x9"ss	32	Lavender		32	
	Hawse Pipes	Deep, Fore and Aft	4	Port Townsd	BCC	4	
		Shallow, Midship	2	Port Townsd	BCC	2	
Misc.	Shipping \$20., 5200x 6, Acetone, Rags, etc				1		
TAFFRAIL	Mahog. Crown	7" x 78" x 1 1/2 resawn to 3/8 =6bf		6bf + 30%=	8 bf	8	20
	Teak (option)				8 bf	8	
	Mahog. Corners	13" x 5' x 1 5/16 S2S	8 bf X 1 =	8bf + 30%=	10 bf	10	
	Teak (option)				10 bf	10	
	Mahog. Ctrs.	8" x 7' x 2 1/8 S2S	12 bf X 1 =	12bf + 30% =	15 bf	15	
	Teak (option)				15 bf	15	
	Mahog. Knees	7" x 19" x 1 3/4 S2S	2 bf X 1 =	2bf + 30% =	3 bf	3	
	Teak (option)				3 bf	3	
	Fasteners	5/16-18x10" SSFHMS	8	Lavender		8	
	#10 x 3" SSFHWS	6	Lavender		5		
Misc.	Glue, 5200, Thinners, Rags, etc.				1		
EYEBROW	Teak sides	1 5/16" x 10' x 1/2 S2S	2 bf X 2 =	4bf + 30% =	5 bf	5	18
	Teak cabin end	10" x 5' x 1/2 S2S	4 bf X 1 =	4bf + 30% =	5 bf	5	
	Teak corners	6" x 4" x 36" S2S	6 bf X 1 =	6bf + 30% =	8 bf	8	
	Fasteners	#10 x 1 SSSMS	80	Lavender		80	
	Misc.	5200, glue, rags, plugs, thinners, etc				1	
COCKPIT COAMING	Mahogany	12"x78 x1 1/4 resawn to 3/8=9bfx2=		18bf + 30%=	24 bf	24	35
	Teak (option)				24 bf	24	
	Mahogany end	10" x 24" x 4" Rough	6.5bf X 1 =	6.5 + 30% =	8.5 bf	8.5	
	Teak (option)				8.5 bf	8.5	
	Fasteners	#10 x 1 1/2 SSSMS	10	Lavender		10	
		#10 x 3" SSSMS	20	Lavender		20	
Misc.	Glue, 5200, Thinners, Rags, Plugs, etc				1		

ITEM	DESCRIPTION	MATERIALS-ITEMS	QUANTITY	SUPPLIER	SUPPLIER #	QNTY	HRS
HANDRAIL	Teak handrail	9 loop	2	H & L	409T	2	6
	Teak handrail	2 loop	2	H & L	402T	2	
	Fasteners	1/4-20 X 4 BRMS-RH	26	Lavender		26	
	Misc.	5200, Thinners, Rags				1	
BOOMKIN	Mahogany	5" x 72" x 2 1/8 S2S =	6.5 bf X 2 =	13bf + 30%=	17 bf	17	10
	Teak (optional)				17 bf	17	
	Mahogany	3/4" x 4 1/2" x 30" =	1 bf X 2 =	2 bf + 30%	3 bf	3	
	Teak (optional)				3 bf	3	
	Boomkin Plate	Top and Bottom, SS	Set of 2	Marmachine	BCC	1	
	Boomkin Tangs	Port and Starboard	Set of 2	Marmachine	BCC	1	2
	Misc.	5200, Rags, Thinners, Tape, etc.				1	
BITTS	Mahogany	2 3/4"x5 3/4"x55"S2S	6 bf X 2 =	12bf + 30% =	16bf	16	10
	Teak (option)				16 bf	16	
	Inserts	SS. Fid Slot Insert	2	Nimmo		2	
	Fid, Delrin	1" x 4" x 12"	1	Plstic Sls Inc		1	
	All Thread 1/2"	1/2" x 7" w/nuts & wsh	6	Lavender		6	
	Bronze Cap	BCC Logo	2	Portownsd	BCC	2	
BOWSPRIT	Vert. Grain DF	2" x 6" x 12' Rough	3	Strata		3	14
HATCHES (3) HM	Slider Hatch	9" x 5' x 1 3/4 S2S =	4.5 bf X 1 =	4.5bf + 30% =	6 bf	6	20
		48" x 48" x 1/4" tk ply	1		1/2 Sheet	0.5	
		3" x 36" x 1/2" S2S	10	4bf + 30% =	5.5 bf	5.5	
		1 1/2" x 65" x 1/8" Br.	2	Copr/Bras-sls	212788-4, 5E3	2	2
		Lock, Corbin	1	Moultrup	0737-7/8	1	1
		10" x 6" x 13/16 S2S	5 bf X 1 =	5bf + 30% =	6.5 bf	6.5	1.5
	Scuttle Hatch	9" x 6' x 13/16 S2S =	✓ 4.5bf X 1 =	4.5bf + 30% =	6 bf	6	20
		4" x 6' x 1 3/4" S2S =	✓ 4bf X 1	4bf + 30% =	5.5 bf	5.5	
		3" x 30" x 1 3/4" S2S =	✓ 1 bf	1bf + 30% =	1.5 bf	1.5	
		48" x 48" x 1/4" tk ply	1		1/2 sheet	0.5	
		3 1/4" x 36" x 1/2" S2S	12	5bf + 30% =	6.5 bf	6.5	
		Hinges, Pair	4 pair	ABI	1996 BR	4	1
		Hatch Latch, Pair	4 Pair	ABI	2012 BR	4	1
		Hatch Adjuster	2 each	Moultrup	71-B3-12	2	
	Skylight	3" x 8 5/8" x 13/16 S2S	4 ea.=1 bf			1	30
		3" x 28" x 13/16 S2S =	4ea.=2.5 bf	2.5bf + 30% =	3.5 bf	3.5	
		3/4" x 24" x 3/8" S2S =	4 ea.			4	
		1" x 12" x 13/16 S2S =	2 ea.			2	
		6" x 60" x 1 1/4" S2S	4 bf X 1 =	4 bf + 30% =	5 bf	5	
		Brass Rods, 5/16"x24	10	Cpr-Bras- Sls	209624-6	10	
		Hinges, Pair	4 Pair	ABI	1996 BR	4	1
		Hatch Latch, Pair	4 Pair	ABI	2012 BR	4	1
		Hatch Adjuster	2 each	Moultrup	71-B3-12	2	
	Fasteners	#10 x 1" BRWS-FH	100+	Lavender		100	
	Misc.	Glue, Thinners, Rags, etc				1	
BOOM GALLOWS	Stanchions	2" SS Stanchions	1 Pair	Railmakers	BCC	1	

ITEM	DESCRIPTION	MATERIALS-ITEMS	QUANTITY	SUPPLIER	SUPPLIER #	QNTY	HRS
	Knees,	Bronze Castings	Pair	Port Townsd	BCC Gallows	1	
	Boom Support	9" x 84" x 1 3/4 Mohog	10.5 bf x 1=	10.5 + 30%=	14 bf	14	15
	(Teak Option)				14 bf	14	
	Fasteners, 5200, Rags, Thinners, Washers and Nuts, etc,					1	
ROUGHED INTERIOR	Coach Sids/end	4' x 8' x 1/2" Teak Ply	4	Webber	7250 / 4233	4	6
	#3 Main Bulkhead	4' x 10' x 3/4" Mrn Ply	1 Sheet	Kelly Wright	2627(Webber)	1	5
		1.5 oz mat, 24 oz roving, 7.5 oz cloth x 12" wide				1	
	#2 Sail Lkr Blkhd	4' x 8' x 3/4" AA Ply	1.5 Sheet	Kelly Wright	2625	1.5	2.5
		Fiberglass mat, cloth, and roving				1	
	#1 Chain Lkr Bkhd	4' x 4' x 3/4" AA Ply	1	Kelly Wright	2625	0.5	1.5
		Fiberglass mat, cloth, and roving				1	
	#7 Lazarette Blkhd	4' x 8' x 1/2" AA Ply	1	Kelly Wright	2615	1	2.5
		Fiberglass mat, cloth, and roving				1	
	#6 Engine Blkhd	4' x 10" x 3/4" Mrn Ply	1	Kelly Wright	2627(Webber)	1	3.5
		1.5 oz mat, 24 oz roving, 7.5 oz cloth x 12" wide				1	
	Roughed Interior	4' x 8' x 3/4" AA Mrn P	5	Kelly Wright	2625(Webber)	5	125
		4' x 8' 1/2" AA	2	Kelly Wright	2615	2	
		4' x 8' x 1/2" MDO	3	Kelly Wright	3545	3	
		4' x 8' x 1/2" Tk, 1 Side	4	Kelly Wright	4241	4	
		4' x 8' x 1/2" Tk, 2 Side	6	Kelly Wright	4233	6	
		4' x 8' x 1/4" Tk, 1 Side	1	Kelly Wright	4230	1	
	Cabin Sole	2" x 4" x 12" Clear Fir	2	Strata		2	10
		Plywood included abov					
	Fasteners	Misc. #10 x 1" FHMS				1	
	Misc.	foam, Bonding, Resin, Thinners, Glue, Rags, etc				1	
FINISHED INTERIOR	Fbrgl's blkhd pnls	White Panels	11	Crystalliner		11	60
		Mish-Mash		Crystalliner		1	
	Fbrgl's Overhead	White Panels	2	Crystalliner		2	15
		Battens	7	3" X 7" X 1/2"		7	5
	Interior hull paint	Tibbetts Acrylic Latex	3 gallons	Commercial Chemical Corp. SA		3	30
GALLEY	Sink, 17 x 17 od	Just Sink 14x14 ID	1	Reagal	SX 1717 AGR	1	6
	Thru Hull 1 1/4	Grocco 1 1/4	1	Mullen	TH 1250	1	
	Seacock, 1 1/4	Grocco 1 1/4	1	Mullen	SV 1250	1	
	Fresh Water	Fynspray WS-62B	1	Port Supply	190611	1	4
		Spigot Fynspray WS-66 B	1	Port Supply	205534	1	4
		Valve Tempo 305WY3	1	Ornge Cst Tril	305 WY 3	1	2
	Plumbing	1/2" hose x 15'	15	CM Hose		15	
	Salt Wtr to Galley	Whale Gusher Pump	1	Port Supply	135137	1	4
		Spout Fynspray Spout WS66B	1	Port Supply	205534	1	1
	Plumbing	Hoses, fittings , etc.				1	
	Formica Top	1 sheet	1	Cal Panel Vr	Ant.Wht 1258	1	
	Teak trim & slide	5 bf teak	5 bf	Pemberthy		5	7
	Door & Drawers	1 door, 2 drawers	5bf	16"x12", 16x8x2	Teak	5	10
		Catch, cupboard	6	Merit	9510-1-5/8	6	3
		Sides and bottoms	3	Plastic/FG		3	3
	Stove, Propane	Force 10, 2 bmr + oven	1	Force 10	60200	1	20
	Propane tanks	Alum 10# tanks	2	Seaward	93137	2	5
		Solenoid (Trident)	1	Port Supply	553594	1	
		Control Panel	1	Port Supply	411579	1	
		Hoses, fittings , etc.				1	
	Stove cover	S.S. 15" x 24" x 1/8"	1			1	1
	Stove Guard	S. S. Tube	1	Railmakers		1	

ITEM	DESCRIPTION	MATERIALS-ITEMS	QUANTITY	SUPPLIER	SUPPLIER #	QNTY	HRS
	Dish Rack	Teak,	2 bf	Pemberthy		2	2
		Add 3 Drawers	3	Pemberthy		3	6
		Catch, cupboard	3	Merit	9510-1-5/8	3	2
INTERIOR TEAK	Channels	1" x 30'	30 feet	H & L	2036 T	30	40
	Channels	1/2" x 9'	9 feet	H & L	2033 T	9	
	inside 90 degree	1/2'	12	H & L	2035 T	12	
	inside 90 degree	1"	5	H & L	2038 T	5	
	Outside 90 degr	1"	3	H & L	2037 T	3	
	Fiddle	3" x 1" x 50'	12.5 bf	12.5 x 30% =	16.25 x \$8.50	16.25	12
	Handrail	3" x 1" x 30'	7.5 bf	7.5 x 30% =	10 bf x \$8.50	10	8
	Trim	2" x 1" x 50'	8.5 bf	8.5 x 30% =	11 bf x \$8.5	11	65
	Counter Corners	2" x 2" x 7'	2.5 bf	2.5 x 30% =	3 bf x \$8.5	3	6
	Curved Coach	1/2" x 5" x 10'	4 bf	4 x 30% =	5 bf x \$8.5	4	4
	Coach Corners	1" x 6" x 6'	3 bf	3 x 30% =	4 bf x \$8.5	3	6
	Companion Trim	2" x 2" x 10'	4bf	4 x 30% =	5bf x \$8.50	5	6
	Sole	1" x 3" x 14'	42bf	42 x 30% =	54bf x \$8.50	54	17
	Berth Lee Board	1" x 12" x 7'	7 bf	7 x 30% =	9 bf x \$8.50	9	3
	Doors-Drawers	Work Bench 15x12 x2,	21 x 7 = 5bf	6 x 30% =	8 bf x \$8.50	8	4
		Trash Bin, 19 x 16	2bf	2 x 30% =	3 bf x \$8.50	3	2
		Liquor Cab, 14 x 11	2 bf	2 x 30% =	3bf x \$8.50	3	2
		Catch, cupboard	5	Merit	9510-1-5/8	5	2
	Engine Cover	40" x 24" x 1/2" Teak	1/2 sheet	Kelly Wright	4233	0.5	8
	Catches, Cabinet	Postitive Catch	10	Merit	9510-1-5/8	10	8
	Drop Boards	12" x 24" x 1"	2	2bf x 30% =	3bf x \$8.50 =	3	4
	Misc	Glue, Screws, Pegs, Rags, etc.				1	
LADDER	Sides	5" x 10' x 1" Teak	4 bf	4 x 30% =	5bf x \$8.50 =	5	7
	Treads	6" x 14" x 4 each	2.5 bf	2.5 x 30% =	3 bf x \$8.50 =	3	
	Hinges	Removable hinges	2 pair	A & B	1996BR	2	
	Hook	Brass Hook	1	Port Supply	116103	1	
	Ceiling Plate	2-3/8 x 1, 3/4" slots (2)	1	Nimo Machine		1	
	Misc.	Glue, pegs, screws, etc				1	
TABLE	Top	1/2" x 60" x 48" Teak Ply	3/4 sheet	Kelly Wright	4233	0.75	14
	Frame and fiddles	13/16 x 1-1/2 x 40" Tk	5 bf	Pemberthy	5 x 30% = 6.5	6.5	
	Leg and Base	2-1/2 SS Pipe x 27-7/8 L	1	Railmakers		1	2
CEILING STRIPS	Quarter Berth	3/8" x 1-3/4" x 42" Ash	34	Pemberthy	120 feet	140	28
	Port Settee	3/8" x 1-3/4" x 84" Ash	16	Pemberthy	112 feet	135	
	Strbd Settee	3/8" x 1-3/4" x 64" Ash	11	Pemberthy	59 feet	70	
	Ice Box Back	3/8" x 1-3/4" x 30" Ash	8	Pemberthy	20 feet	25	
	Work Bench	3/8" x 1-3/4" x 52" Ash	14	Pemberthy	52 feet	65	
	Batten Foam/FG	1-1/2" x 1/2" foam	misc			1	8
	Fasteners	#10 x 3/4" Oval Brass	2 boxes	Lavender		2	
	Cedar Hng Lkr	Cedar Strip Pkgs	2	Barr		2	12
HEAD	La Vac Head	Head	1	Haft	T700 1000 F	1	25
	Vented Loop	1-1/2 Loop	1	Forespar	903000	1	
	Diverter Valves	Two way valves	2	Port Supply	411819	2	
	Intake Seacock	3/4" With 90 degree	1	Goroco	BV750	1	
	Thru Hull, 3/4"	Thru Hull	1	Goroco	TH750	1	

Don

From: Roger Olson <info@samlmorse.com>
To: Don <dkircher@compuserve.com>
Sent: Sunday, December 05, 1999 12:18 PM
Subject: Re: Side Hatches

INSTALLING THE SIDE COCKPIT LOCKER

I use a straight edge that will reach across the cockpit. I align it up with the groove in the side cockpit foot well. The forward one is at the first groove or about two inches aft of the fwd face of the well. The aft one is equal distance forward. These lines are perpendicular to the fore and aft line of the boat or parallel with the cockpit foot locker 'thwartship faces.

I pencil in the back line on the cockpit seat using this straight edge. I measure back from the same cockpit face to the coamings or where I want the cockpit locker to be cut. Allow for the jig saw and hinges. Mark this with a pencil.

I then draw a vertical line down the same cockpit wall along the grooves that match the side marks and mark down 3 inches. At this point I draw a horizontal line between them. This will be the lip. I make a 1" radius at the corners so when the lid is open it will not have sharp corners.

I hope you know how to start a jig saw cutting without drilling a hole. Call me if not. Carefully cut out the entire lid.....**DO NOT DRILL ANY HOLES TO START YOUR CUT!**

After the lid is cut out sand the edges of all the saw cuts using about 40 grit sand paper.

Now you will make the two sides with grooves for the drain. Using two pieces of teak that is 3" wide and 2 1/2" thick and about an inch or two longer than the depth of your cockpit opening lengthwise (or one piece twice the depth +/- 3"), Using the 3" wide as the top, mark over one inch and then another 1/4". So on both pieces, along one edge you have marked a lengthwise line 1" from the edge and another at 1 1/4". or you now have a mark where you will cut a 1/4" groove (This 1 1/4" will extend into the opening, if you think this is too much you can reduce it to 3/4" + 1/4". Note that the 3/4" will take the weather stripping for the seal)

Set the table saw for two inches deep and cut out the 1/4" groove in both pieces (if one long piece, cut in half after the groove is cut.)

At one end of the piece mark down from the top (where the groove is) 1 5/8" (this will leave about 3/8" of groove depth at this end). Run a line along the side from this 1 5/8" mark to the top edge at the other end. **THE TWO PIECES MUST BE OPPOSITE EACH OTHER.** Note that the piece has one side wider than the other from the groove. The wide side will go under the deck so you must have two opposites. Using a tapered guide or the band saw cut along this line. (The shallow end of the groove will be at the back of the locker and the deep end at the front.) Finish this surface smooth.

The 1" narrow side of the top will have some weather stripping so it is best to cut a shallow groove in it. I use a 3/4" weather strip so I come in an 1/8" from both sides and cut a groove about 1/8" or less deep.

12/5/99

Now fit into place so the groove is flush with the edge of the opening. You will have to cut the front, deep edge of the grooved piece to fit the inside surface.

Now, on the deck and lid, mark over a 1" margin along the cut out and the lid edge and clamp a straight edge on this line. Now sand away all the non-skid. Then mask this line and gel coat it and the edge cut on both the cut out and lid.

Now the teak pieces can be screwed to the underside of the deck so the groove is flush with the edge. Bed with 3M5200. (Note that you may have to remove some fiberglass used when bonding the lazarette bulkhead to the deck. Same goes for the lid to fit flush)

The back piece is only about 1" thick and has a shallow groove to match the sides and a recess for the weather stripping. This is fit between the two sides with the same groove for the weather stripping. Screw to the underside of the deck. You will have to chisel out a little on the side peices so the drain and weather strip will match the side pieces.

The front piece is about 4" high and must be cut to match the curve of the face or the lid will not fit properly. I start with a 1 1/2 " piece, mark it and cut on a band saw. After a good fit is made screw it in place from the outside into the teak piece. You can leave the screws exposed or you can countersink and gelcoat over.

Sand and round all edges. Add the lid, hinges and latches as needed.

Note:

I personally think you should fiberglass a piece inside the locker first so it is a watertight compartment. I add a small electric bilge pump in the deep corner. If you will carry propane in here you should use a hand pump.

Call for more details

Roger

BCC HULL _____ FINAL CHECK LIST

	ITEM	SPECS	ACTUAL	LOCATION	CHECKED BY
1	BCC CHECK LIST PRIOR TO SHIPMENT	A	B	C	D
2	Hull # 104, Charles Smith				
3	Date: <u>Hull #104 Donald R. Retz</u>				
4					
5	MAST (Add all measurements for #104)				
6	Total height of mast	44' 09"			
7	Height to center of halyard sheaves	43' 09"			
8	Height of mast from base to headstay eye	44' 02 1/2"			
9	Height to backstay hole (center)	44' 08"			
10	Height to upper shroud hole (center)	43' 02"			
11	Height to upper spreaders	32' 01"			
12	Height to staysail stay tang hole (center)	31' 09"			
13	Height to intermediate shroud hole (center)	31' 10"			
14	Height to lower spreaders	20' 11"			
15	Height to lower shroud hole (center)	20' 08"			
16	Height to bottom of tri-sail track	6' 04"			
17	Is sail stop installed on bottom of track?	YES			
18	Height to top of tri-sail track	30' 00"			
19	Is sail stop installed on top of track?	YES			
20	Height to bottom of downwind pole track	9' 09"			
21	Height to top of downwind pole track	24' 00"			
22	Height to pole car lift (center)	24' 03"			
23	Height to pole topping lift tang hole (cntr)	29' 08"			
24	Height to center of goose neck	9' 10"			
25	Is sail stop installed bottom of main track?	YES			
26	Halyard winches, 1 on strbd, 2 on port	YES			
27	Cleats for all winches	YES			
28	Cleats for pole topping lift	2			
29	Reefing cleats down haul under goose neck	2 or 3			
30	Mast steps at approx. 18"	19			
31	Windex bracket at mast head	YES			
32	Length of backstay and headstay clevis (cntr)	3"			
33	Length of upper shroud plates (center)	3 1/2"			
34	Length of intermediate shroud plates (center)	3 1/2"			
35	Length of staysail clevis and plates (center)	4.75" + 1.5"			
36	Staysail block on shackle	YES			
37	Length of lower shroud plates (center)	5 3/4"			
38	Length of chainplates clevises (center)	3"			
39	All clevis pins and cotter pins provided	20			
40	Tri-color light marked and works	YES			
41	Strobe light marked and works	YES			
42	Anchor light marked and works	YES			
43	Steaming lights (P & S) marked and works	YES			
44	Deck Lights marked and works	YES			
45	VHF antenna cable and bracket	YES			
46	Whisker pole size and type	3" X 15'			
47	Radar wire hole outlet	24' 05"			
48					
49	BOOM				
50	Length of boom	15' 00"			
51	Reef winch on starboard boom	YES			
52	Two reef blocks and cleats installed	YES			
53	Third reef block and cleat installed	YES			
54	Boom bail on end installed	YES			
55	Boom bail mid-boom installed	YES			
56	Outhaul car and hardware	YES			

BCC HULL _____ FINAL CHECK LIST

	ITEM	SPECS	ACTUAL	LOCATION	CHECKED BY
57	Lazy jack eyes and cleats, 18", 44". X 3	YES			
58					
59	STANDING RIGGING (center eye to 2/3 open)				
60	Roller furling installed or provided	YES			
61	Headstay 9/32 - 1X19	40' 04 3/4"			
62	Backstay 9/32 - 1X19	42' 03"			
63	Staysail stay 9/32 - 1X19	26' 06"			
64	Upper shroud, port & stbd. 1/4 - 1X19	37' 09"			
65	Intermediate shroud, port & stbd 1/4 - 1X19	26' 07 1/2"			
66	Lower fwd, port & stbd. 1/4 - 1X19	15' 04"			
67	Lower aft, port & stbd. 1/4 - 1X19	15' 08 1/2"			
68	Bob stay 3/8 - 1X19	8' 00 1/2"			
69	Whisker stay port & stbd. 1/4 - 1X19	14' 00 1/2"			
70	Boomkin stay, 5/16 - 1X19	3' 10"			
71					
72	SAILS (measured from end to end)				
73	Mainsail luff	32' 06"			
74	Mainsail leach	34' 06"			
75	Mainsail foot	14' 08"			
76	Jib top luff	38' 00"			
77	Jib top leach	30' 09"			
78	Jib top foot	19' 00"			
79	Jib top UV cover	opt			
80	Jib top luff foam	opt			
81	Yankee luff	38' 00"			
82	Yankee leach	28' 00"			
83	Yankee foot	16' 00"			
84	Yankee pennant	10"			
85	Staysail luff	24' 00"			
86	Staysail leach	21' 06"			
87	Staysail foot	9' 10"			
88	Staysail pennant	10"			
89	Reacher luff	36' 10"			
90	Reacher leach	34' 00"			
91	Reacher foot	24' 02"			
92	Reacher pennant	10"			
93	Eye bolt on sprit 20" aft with snap shackle	YES			
94	Storm jib luff	21' 03"			
95	Storm jib leach	16' 00"			
96	Storm jib foot	9' 01"			
97	Storm jib pennant	15"			
98	Tri-sail luff	14' 06"			
99	Tri-sail leach	19' 00"			
100	Tri-sail foot	11' 06"			
101	Tri-sail pennant				
102					
103	RUNNING RIGGING				
104	Main halyard with snap shackle	78'			
105	Jib top halyard with snap shackle	80'			
106	Staysail halyard with snap shackle	55'			
107	Staysail tack pennant snap shackle	YES			
108	Reacher halyard with snap shackle	82 ft.			
109	Reacher tack pennant snap shackle	YES			
110	Main sheet	96'			
111	Jib top sheet	90'			
112	Yankee sheet	84'			

BCC HULL _____ FINAL CHECK LIST

	ITEM	SPECS	ACTUAL	LOCATION	CHECKED BY
113	Staysail sheet	60'			
114	Reacher sheet	115'			
115	Storm jib sheet	45'			
116	Tri-sail sheet	50'			
117	First Reef line, Outhaul	40'			
118	Second Reef Line, Outhaul	60'			
119	Third Reef Line, Outhaul	80'			
120	Reef Luff Down haul	20'			
121	Boom preventer with snap shackle	YES			
122	Lazy jacks, 1=8' 9", 2=19', 3=16' 7", 4=14", 5=14"	SET			
123	Sheet blocks installed	5			
124	Two singles and one double block provided	3			
125	Bulwark sheet block slides provided	2			
126					
127	ENGINE AND ENGINE ROOM				
128	Engine tested for _____ time				
129	Double hose clamp on seacocks	YES			
130	Hose clamps tight	YES			
131	Engine aligned to shaft	YES			
132	Throttle and gear lever adjusted	YES			
133	Idle adjusted	YES			
134	Diesel tank checked	5 gals. test			
135	Diesel fuel provided				
136	Oil filled	YES			
137	Reduction gear oil filled	YES			
138	Fresh water cooling filled	YES			
139	Anti-syphon checked	YES			
140	Racor fuel filter checked	YES			
141	Salt water strainer checked	YES			
142	Seacocks in ON position before shipping	YES			
143					
144	PLUMBING, GALLEY, HEAD AND WATER				
145	Water tanks cleaned	YES			
146	Inspection plates tightened	YES			
147	Forward water tanks tested for leaks	YES			
148	Aft water tank tested for leaks	YES			
149	Water tank switch correct and labled	YES			
150	Fresh water pump works	YES			
151	Salt water pump works	YES			
152	Sink drain seacock closed	YES			
153	All hoses checked for leaks	YES			
154	Head seals ok	YES			
155	Holding tank tested for leaks	YES			
156	Diverter valves set for holding tank	YES			
157	Head discharge seacock closed	YES			
158	Head intake seacock closed	YES			
159	Anti-syphon is black and installed in silicone	YES			
160	Holding tank vent checked	YES			
161	Cockpit drains will be shipped OPEN	YES			
162					
163	PROPANE TANKS AND STOVE				
164	One tank filled	YES			
165	Second tank filled	YES			
166	Third tank filled	YES			
167	System check for leaks	YES			
168	Stove checked for proper operation	YES			

**MAINSAIL SPECIFICATIONS FOR THE BRISTOL CHANNEL
CUTTER**

(in feet -- "measured" data)

LUFF	33.33
FOOT	15.33
LEECH -AFT HB CORNER	35.5
TACK ANGLE	86.0
DIAGONAL (CLEW/HEAD)	35.66
HEAD (INCHES)	6.0
AREA EXCLUDING ROACH	254.58

These specifications are either "calculated" from the basic I, J, P, and E dimensions or representative of "measurements" taken from prints or actual boats (as indicated by the "calculated" or "measured" statement that appears on the table above). In either case, it may be desirable to modify these measurements to meet the needs of particular boats. That is normal practice at Sailrite where every kit is designed and plotted on a custom basis.

**GENOA SPECIFICATIONS FOR THE BRISTOL CHANNEL
CUTTER**

(in feet -- "measured" data)

LUFF	38.0
FOOT	20.42
LEECH	33.0
PERCENTAGE LP	1.0
LENGTH PERPENDICULAR	17.75
GENOA AREA	336.57
DECK ANGLE	4.79

These specifications are either "calculated" from the basic I, J, P, and E dimensions or representative of "measurements" taken from prints or actual boats (as indicated by the "calculated" or "measured" statement that appears on the table above). In either case, it may be desirable to modify these measurements to meet the needs of particular boats. That is normal practice at Sailrite where every kit is designed and plotted on a custom basis.

SAIL WITH SELECTED OPTIONS

[Return to Sailrite's Home Page](#)

-- STORMTRYSAIL 83 sq ft CROSSCUT

Complete Kit Price \$473.76

Cut	CROSSCUT
Fabric	9.2 OZ STORM ORANGE DACRON 36-IN
Luff Treatment	ROPE/EXTERNAL SLIDES
Sail Bag	NONE
Tools	NONE
Other Options	NONE

Call SAILRITE (800)348-2769 to order this sail or use the Electronic Order Form below. Note that there are also buttons to EMail this quote (to SAILRITE or to a friend) and to review the bill of materials in detail line by line.

[Electronic Order Form](#)

[EMail Quote](#)

[Quote Another Sail](#)

SAIL WITH SELECTED OPTIONS[Return to SAILrite's Home Page](#)**-- GENOA 331 sq ft CROSSCUT****Complete Kit Price \$885.64**

Cut	CROSSCUT
Fabric	7.3 OZ HIGH MODULUS DACRON 54-IN
Luff Treatment	DACRON LUFF BOLTROPE
Luff Attachment	BRONZE PRESS-ON SNAPS
Leech Treatment	NONE
Sail Bag	NONE
Suncover	NONE
Window	NONE
Numbers	NONE
Other Options	NONE
Tools	NONE

Call SAILRITE (800)348-2769 to order this sail or use the Electronic Order Form below. Note that there are also buttons to EMail this quote (to SAILRITE or to a friend) and to review the bill of materials in detail line by line.

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SAIL WITH SELECTED OPTIONS[Return to SAILRITE's Home Page](#)**-- MAINSAIL 255 sq ft CROSSCUT (NO LEECH ROACH)****Complete Kit Price \$781.89**

Cut	CROSSCUT (NO LEECH ROACH)
Fabric	8.3 OZ HIGH MODULUS DACRON 54-IN
Luff Treatment	DACRON ROPE
Foot Design	STANDARD(ROPE IN SLOT)
Leech Treatment	LEECHLINE
Battens	NONE
Reef Points	TWO ROWS OF REEF POINTS
Sail Bag	NONE
Sail Cover	NONE
Window	NONE
Numbers	SIX
Other Options	NONE

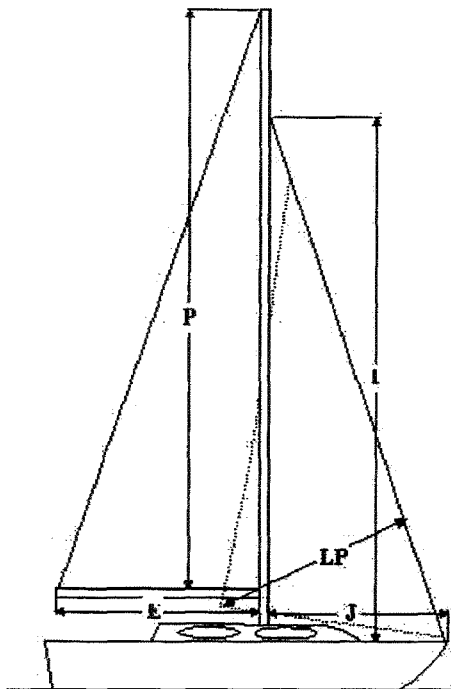
Call SAILRITE (800)348-2769 to order this sail or use the Electronic Order Form below. Note that there are also buttons to EMail this quote (to SAILRITE or to a friend) and to review the bill of materials in detail line by line.

[Electronic Order Form](#)[EMail Quote](#)[Quote Another Sail](#)

STORM FORESAIL SPECIFICATIONS FOR THE BRISTOL CHANNEL CUTTER

(in feet -- calculated from I,J,P,E data)

LUFF	19.92
FOOT	13.42
LEECH	15.87
PERCENTAGE LP	60%
AREA	106.07



US Sailing has published "RECOMMENDATIONS FOR OFFSHORE SAILING" which recommends a storm jib area not greater than 5% of the square of the foretriangle height (I). And the luff length is not to be greater than 65% of that height. We achieve roughly that area (with a reasonable aspect ratio) by making the luff length 50% of the (I) and the LP 60% of the (J). That is the default rule that the system has used in determining the above sail parameters (along with a deck angle of 19 degrees).

**STAYSAIL SPECIFICATIONS FOR THE BRISTOL CHANNEL
CUTTER**

(in feet -- "measured" data)

LUFF	23.0
FOOT	12.75
LEECH	27.0
PERCENTAGE LP	0.72
LENGTH PERPENDICULAR	12.78
AREA	146.33
DECK ANGLE	-28.7

These specifications are either "calculated" from the basic I, J, P, and E dimensions or representative of "measurements" taken from prints or actual boats (as indicated by the "calculated" or "measured" statement that appears on the table above). In either case, it may be desirable to modify these measurements to meet the needs of particular boats. That is normal practice at Sailrite where every kit is designed and plotted on a custom basis.

**ASYMMETRICAL SPINNAKER SPECIFICATIONS FOR THE
BRISTOL CHANNEL CUTTER**

(in feet -- calculated from I,J,P,E data)

LUFF	39.84
FOOT	29.29
LEECH	33.87
PERCENTAGE LP	165%
AREA (ESTIMATED)	875.28

These specifications are either "calculated" from the basic I, J, P, and E dimensions or representative of "measurements" taken from prints or actual boats (as indicated by the "calculated" or "measured" statement that appears on the table above). In either case, it may be desirable to modify these measurements to meet the needs of particular boats. That is normal practice at Sailrite where every kit is designed and plotted on a custom basis.

BCC HULL _____ FINAL CHECK LIST

	ITEM	SPECS	ACTUAL	LOCATION	CHECKED BY
1	BCC CHECK LIST PRIOR TO SHIPMENT	A	B	C	D
2	Hull # 104, Charles Smith				
3	Date:				
4					
5	MAST (Add 4" to all measurements for #104)				
6	Total height of mast	44' 09"			
7	Height to center of halyard sheaves	43' 09"			
8	Height of mast from base to headstay eye	44' 02 1/2"			
9	Height to backstay hole (center)	44' 08"			
10	Height to upper shroud hole (center)	43' 02"			
11	Height to upper spreaders	32' 01"			
12	Height to staysail stay tang hole (center)	31' 09"			
13	Height to intermediate shroud hole (center)	31' 10"			
14	Height to lower spreaders	20' 11"			
15	Height to lower shroud hole (center)	20' 08"			
16	Height to bottom of tri-sail track	6' 04"			
17	Is sail stop installed on bottom of track?	YES			
18	Height to top of tri-sail track	30' 00"			
19	Is sail stop installed on top of track?	YES			
20	Height to bottom of downwind pole track	9' 09"			
21	Height to top of downwind pole track	24' 00"			
22	Height to pole car lift (center)	24' 03"			
23	Height to pole topping lift tang hole (cntr)	29' 08"			
24	Height to center of goose neck	9' 10"			
25	Is sail stop installed bottom of main track?	YES			
26	Halyard winches, 1 on strbd, 2 on port	YES			
27	Cleats for all winches	YES			
28	Cleats for pole topping lift	2			
29	Reefing cleats down haul under goose neck	2 or 3			
30	Mast steps at approx. 18"	19			
31	Windex bracket at mast head	YES			
32	Length of backstay and headstay clevis (cntr)	3"			
33	Length of upper shroud plates (center)	3 1/2"			
34	Length of intermediate shroud plates (center)	3 1/2"			
35	Length of staysail clevis and plates (center)	4.75" + 1.5"			
36	Staysail block on shackle	YES			
37	Length of lower shroud plates (center)	5 3/4"			
38	Length of chainplates clevises (center)	3"			
39	All clevis pins and cotter pins provided	20			
40	Tri-color light marked and works	YES			
41	Strobe light marked and works	YES			
42	Anchor light marked and works	YES			
43	Steaming lights (P & S) marked and works	YES			
44	Deck Lights marked and works	YES			
45	VHF antenna cable and bracket	YES			
46	Whisker pole size and type	3" X 15'			
47	Radar wire hole outlet	24' 05"			
48					
49	BOOM				
50	Length of boom	15' 00"			
51	Reef winch on starboard boom	YES			
52	Two reef blocks and cleats installed	YES			
53	Third reef block and cleat installed	YES			
54	Boom bail on end installed	YES			
55	Boom bail mid-boom installed	YES			
56	Outhaul car and hardware	YES			

BCC HULL _____ FINAL CHECK LIST

	ITEM	SPECS	ACTUAL	LOCATION	CHECKED BY
57	Lazy jack eyes and cleats, 18", 44". X 3	YES			
58					
59	STANDING RIGGING (center eye to 2/3 open)				
60	Roller furling installed or provided	YES			
61	Headstay 9/32 - 1X19	40' 04 3/4"			
62	Backstay 9/32 - 1X19	42' 03"			
63	Staysail stay 9/32 - 1X19	26' 06"			
64	Upper shroud, port & stbd. 1/4 - 1X19	37' 09"			
65	Intermediate shroud, port & stbd 1/4 - 1X19	26' 07 1/2"			
66	Lower fwd, port & stbd. 1/4 - 1X19	15' 04"			
67	Lower aft, port & stbd. 1/4 - 1X19	15' 08 1/2"			
68	Bob stay 3/8 - 1X19	8' 00 1/2"			
69	Whisker stay port & stbd. 1/4 - 1X19	14' 00 1/2"			
70	Boomkin stay, 5/16 - 1X19	3' 10"			
71					
72	SAILS (measured from end to end)				
73	Mainsail luff	32' 06"			
74	Mainsail leach	34' 06"			
75	Mainsail foot	14' 08"			
76	Jib top luff	38' 00"			
77	Jib top leach	30' 09"			
78	Jib top foot	19' 00"			
79	Jib top UV cover	opt			
80	Jib top luff foam	opt			
81	Yankee luff	38' 00"			
82	Yankee leach	28' 00"			
83	Yankee foot	16' 00"			
84	Yankee pennant	10"			
85	Staysail luff	24' 00"			
86	Staysail leach	21' 06"			
87	Staysail foot	9' 10"			
88	Staysail pennant	10"			
89	Reacher luff	36' 10"			
90	Reacher leach	34' 00"			
91	Reacher foot	24' 02"			
92	Reacher pennant	10"			
93	Eye bolt on sprit 20" aft with snap shackle	YES			
94	Storm jib luff	21' 03"			
95	Storm jib leach	16' 00"			
96	Storm jib foot	9' 01"			
97	Storm jib pennant	15"			
98	Tri-sail luff	14' 06"			
99	Tri-sail leach	19' 00"			
100	Tri-sail foot	11' 06"			
101	Tri-sail pennant				
102					
103	RUNNING RIGGING				
104	Main halyard with snap shackle	78'			
105	Jib top halyard with snap shackle	80'			
106	Staysail halyard with snap shackle	55'			
107	Staysail tack pennant snap shackle	YES			
108	Reacher halyard with snap shackle	82 ft.			
109	Reacher tack pennant snap shackle	YES			
110	Main sheet	96'			
111	Jib top sheet	90'			
112	Yankee sheet	84'			

BCC HULL _____ FINAL CHECK LIST

	ITEM	SPECS	ACTUAL	LOCATION	CHECKED BY
113	Staysail sheet	60'			
114	Reacher sheet	115'			
115	Storm jib sheet	45'			
116	Tri-sail sheet	50'			
117	First Reef line, Outhaul	40'			
118	Second Reef Line, Outhaul	60'			
119	Third Reef Line, Outhaul	80'			
120	Reef Luff Down haul	20'			
121	Boom preventer with snap shackle	YES			
122	Lazy jacks, 1=8' 9", 2=19', 3=16' 7", 4=14", 5=14"	SET			
123	Sheet blocks installed	5			
124	Two singles and one double block provided	3			
125	Bulwark sheet block slides provided	2			
126					
127	ENGINE AND ENGINE ROOM				
128	Engine tested for _____ time				
129	Double hose clamp on seacocks	YES			
130	Hose clamps tight	YES			
131	Engine aligned to shaft	YES			
132	Throttle and gear lever adjusted	YES			
133	Idle adjusted	YES			
134	Diesel tank checked	5 gals. test			
135	Diesel fuel provided				
136	Oil filled	YES			
137	Reduction gear oil filled	YES			
138	Fresh water cooling filled	YES			
139	Anti-syphon checked	YES			
140	Racor fuel filter checked	YES			
141	Salt water strainer checked	YES			
142	Seacocks in ON position before shipping	YES			
143					
144	PLUMBING, GALLEY, HEAD AND WATER				
145	Water tanks cleaned	YES			
146	Inspection plates tightened	YES			
147	Forward water tanks tested for leaks	YES			
148	Aft water tank tested for leaks	YES			
149	Water tank switch correct and labled	YES			
150	Fresh water pump works	YES			
151	Salt water pump works	YES			
152	Sink drain seacock closed	YES			
153	All hoses checked for leaks	YES			
154	Head seals ok	YES			
155	Holding tank tested for leaks	YES			
156	Diverter valves set for holding tank	YES			
157	Head discharge seacock closed	YES			
158	Head intake seacock closed	YES			
159	Anti-syphon is black and installed in silicone	YES			
160	Holding tank vent checked	YES			
161	Cockpit drains will be shipped OPEN	YES			
162					
163	PROPANE TANKS AND STOVE				
164	One tank filled	YES			
165	Second tank filled	YES			
166	Third tank filled	YES			
167	System check for leaks	YES			
168	Stove checked for proper operation	YES			

COMMISSIONING INSTRUCTIONS for Bristol Channel Cutter

**THE YACHT WILL ARRIVE WITH ALL SEACOCKS CLOSED. BE CERTAIN
TO CHECK THEM BEFORE AND AFTER LAUNCHING**

MAST AND RIGGING: All turnbuckle threads should be coated with "Lanocote" provided, before installing.

Bowsprit:

1. Install the bowsprit. Using the "Delrin" fid, slide the bowsprit into the slot in the Sampson Posts. Seal the fid where it goes through the slot in the bowsprit with "Dolphinite" provided. The bowsprit slot is sealed but extra precaution to prevent the ingress of water won't hurt.
2. Attach port and starboard whisker stays with turnbuckles at whisker plates not at crane iron.
3. Hand tighten the whisker stays until the bowsprit is centered inside the gammon iron.
4. Attach the bobstay with the turnbuckle at the crane iron. Snug by hand so there is just the beginning signs of a bend.

Boomkin stays

1. Install the boomkin stays with the turnbuckles at the top. Put clevis pins in so heads are up and cotter pins are spread to prevent snags.
2. Hand tighten both boomkin stays equally until there is only the slightest signs of a downward bend.

Preparing the mast before installation

1. Attach the spreaders. Shorter ones at the top, longer ones at the bottom. Use the short clevis pins with heads up. Use washers on the bottom and spread the cotter pins so they won't snag the sails or halyards.
2. Attach the rigging as marked. Consider that all cotter pins must be between the mast and clevis to prevent snags. All turnbuckles are at the chainplates.

3. The upper shroud fits into the slot at the ends of the spreaders. Pull shrouds taught and seize the shroud wire to the slot with the monel wire provided.
4. Attach any additional hardware (lights, antennas, wind direction arrows, etc.) at this time.
5. Install the halyards (Jib= 80', Main= 75', staysail= 55'). The main goes through the starboard sheave. The jib top goes through the port sheave. The center sheave is an extra.
Note: The reacher halyard is run through the block on the bail at the mast head.
6. Attach the staysail block with shackle provided and run the halyard.

Installing the mast: Since the new rigging will stretch, slightly spread the cotter pins to permit easy removal for future adjustments

1. The Mast step comes with the step centered so adjustments can be made fore and aft.
2. Slide the mast boot over the end of the mast prior to installation.
3. Before the mast is stepped, place a gold or silver coin on the step for good luck, avoid using copper coins. (Optional for superstitious sailors).
4. After the mast is in its step, loosely attach all the rigging with clevis pin heads outside and cotter pins inside. The intermediate shroud goes outside the top lifeline and attaches to the aft hole in the aft chainplate (the intermediate does not attach to the spreaders). The lower aft shroud passes under the 2nd lifeline.

Note: Install the shroud clevis pins with the short length of hose so the pins are forced inboard (*See illustration*). This will prevent the Jib sheets from catching under the pins.

5. Raise a plumb bob up the main halyard to measure the rake of the mast at the goose neck. Adjust both headstay and backstay so there is 4" to 6" of aft rake. Attempt to keep the mast centered in the mast collar on deck. It may require moving the mast step slightly fore or aft. Tighten both stays until there is minimum deflection of the wire.

NOTE: Longer stays and shrouds are tightened the most because they are longer and will stretch more than the shorter ones.

6. Check that the mast is centered thwartship. This is accomplished by using the same plum bob suspended from the main halyard at the top of the mast.

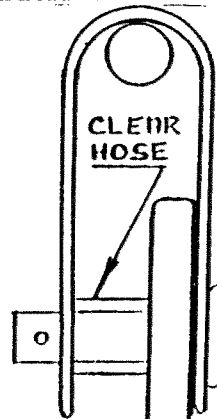
Measure to the center of the upper shroud clevis pins on the chainplates.
Adjust the upper shrouds until the distance is the same on both sides of the boat then tighten similar to stays.

7. Adjust the staysail stay so there is a slight curve to the mast.
8. Tighten the intermediate shrouds equally. Sight up the sail track to be certain the mast is kept straight thwartship. This is a shorter shroud so don't tighten it as tight as the stays.
9. Hand tighten the lower forwards. Keep the track straight thwartship and maintain the slight curve fore and aft. All lower shrouds will be slightly hand tight only because they are so short. (*see illustration*)
10. Equally hand tighten the lower aft shrouds.
11. Re-tighten the whisker stays when finished.

NOTE 1: The rigging will stretch after a few heavy sails and all the rigging will require readjusting.

NOTE 2: Be certain all cotter pins are inside so they will not snag a sail or sheet.

NOTE 3: It is a good idea to insert a 3/8" piece of clear 1/2" hose over the clevis pin on the inside of the clevis. This will permit the pin head to set flush against the outside of the clevis.



NOTE 4: If you are installing lazy jacks, attach the top length to the intermediate shroud before stepping the mast. See section on lazy jacks.

NOTE 5: After mast is rigged and adjusted, seal the mast at the deck collar. Snugly wrap or stuff rubber between the mast and collar. Fill the top surface with silicone or polysulfide to seal. Put plenty in the sail slot. Slide the mast boot over the collar then secure with silicone and hose clamps provided.

Lazy Jacks: If you are installing lazy jacks attach #1 to the intermediate shroud toggle on both sides of the mast with a bowline before the mast is stepped.

1. Next, untie the coil of lazy jacks so they will fall free when the mast is stepped. Pull #2 down and clip the snap onto the thimble of #3. This will make the lazy jacks accessible after the mast is stepped.
2. Attach #5 to the eye straps on both sides at the aft end of the boom. A figure 8 knot can be used.
3. After the mast is stepped, undo the snap from the thimble and snap it to #5.
4. Pull #3 down and attach the end without the thimble to the second eye strap on both side of the boom. Use a figure 8 knot.
5. Pull #4 down and attach one end to the remaining eye strap forward on both sides of the boom. The other end passes through the 4" cleat on both sides of the forward end of the boom.
6. Adjust the lazy jacks so the boom with sail will just raise above the boom gallows when the main sheet is released. This will prevent the boom from banging the boom gallows when the sails are dropped. To set the boom into the gallows pull the main sheet taught.

THE ENGINE: Read the engine instruction manual before attempting to start the engine. Your boat is equipped with a PYI stern bearing. A stainless steel disc runs against a carbon disc. The space between these two surfaces is lubricated with water. **When you launch your boat, pull back on the spring hose to permit some water to enter between these two surfaces then release.** If a high pitched sound comes from the bearing it means it is dry, usually after a haul out.

1. The engine is tested in the workshop before delivery. There should be about 5 gallons of diesel in the tank and the engine should start immediately.
2. Check the oil level, the fresh water level and amount of diesel in the tank before starting.
3. Open the raw water intake seacock next to the engine. Check that the exhaust valve is open in the lazarette.
4. Pull the shift control knob out while the throttle lever is in the vertical position
5. Push the lever slightly forward, just past the first detent.

6. Start the engine. Make certain water is coming out of the exhaust within a minute after starting.
7. After the engine is warm, bring the throttle lever back to the neutral, vertical position. Push the button in to activate the gears. When you push the lever forward the gears are engaged with the throttle. Similarly, reverse is when the lever is pushed back. Break in the engine according to the manufacture's recommendations.

NOTE: The engine is aligned to the prop shaft in the workshop. Since this alignment is done while the boat is supported on a cradle there may be some minor movement to the engine after the boat is launched. Also, the engine will settle in its mounts after a month or two and re-alignment to the shaft may be required.

THE HEAD AND HOLDING TANK

1. The "La Vac" head: Read the instruction manual before using the head. The intake of raw water is controlled by the seacock next to the head starboard side. Keep it closed when not in use. When the handle is 90 degrees to the seacock it is closed. When it is in line it is open.
2. The exit or discharge seacock is next to the head but on the port side under the cabinet. It works the same as the intake seacock.
3. The yacht will arrive with the intake and exit seacocks closed. The diverter valves will be set to pump waste into the holding tank. Check the drawing to see how the two diverter valves work.

PROPANE FUEL SYSTEM: The boat comes with the propane tanks in the lazarette or in deck boxes next to the mast. The propane locker or boxes house the solenoid, regulator, gage and tanks.

To test the system, first make certain the propane appliances are all turned off. Turn on one propane tank at a time, saving the other to replace an empty that must be refilled. The switch to the solenoid is located inside the boat on the aft bulkhead. When the switch is "ON" the solenoid is open and propane is fed to the appliance. After turning on the tank valve note the pressure on the gage then turn off the valve. Leave the system for 15 minutes. After the time has passed re-check the pressure on the gage, it should remain at the same pressure. If the pressure drops then there is a leak in the system. Before proceeding further check the entire system for leaks using soapy water and a brush. **NEVER USE A FLAME.**

NOTE: If your system has an alarm you should always test it prior to use. To test the system set the alarm to "ON" for two minutes. Next switch it to test. The unit will illuminate each window in sequence at stop at "SAFE". Switch the unit back to "ON" and

it will read "SAFE". If any other window remains illuminated "**DO NOT USE THE PROPANE SYSTEM UNTIL THE CAUSE HAS BEEN FOUND**"

ELECTRICAL: The boat will arrive with two new 105 amp batteries. There is a battery switch on the aft bulkhead that selects which battery you are using. Both can be used together if one is low. The electrical panel has breaker switches for various functions. The basic boat's electrical system is drawn on the schematic enclosed. For engine electrical wiring refer to the manufactures manual.

BATTERY CHARGER, REGULATOR, RHEOSTAT: Located on starboard side on quarterberth bulkhead. There is a push pull button above the regulator. When it is pushed in the regulator is charging the two house or main batteries. When it is pulled out it is charging the extra battery.

When the engine is running at speed (approx. 1800 RPM's) set the regulator to charge or rheostat. When charging, regulator on the alternator will regulate the amperage input. When set on rheostat turn it to maximum then back off about 1/4. Never use a full charge unless batteries are dead.

REFRIGERATION: If your boat has both engine drive and DC refrigeration, on the instrument panel you must select Refrigeration 1 for engine drive and Refrigeration 2 for DC. Next switch the refrigeration switch, located below the instrument panel, accordingly.

MAINTENANCE AND SERVICE: Refer to the particular service manual for the item concerned.

ENGINE: See the service manual for routine service and maintenance.

Fuel Tank: The diesel fuel tank is made of 1/8" aluminum sheet metal and should be trouble free for the life of the boat. While cruising in foreign waters it is advisable to use an anti-fungicide additive in the diesel to prevent algae growth.

If it becomes necessary to clean the diesel tank, it must be removed from the bulkhead and leaned forward against the engine so the service plate can be reached. This will require the removal of the hoses from the tank. Remove the service plate and clean

the tank using a non-toxic solution. Replace the inspection plate using a non-hardening gasket seal. Replace the tank and the hoses as required.

Raw Water Strainer: The Perko strainer can be cleaned without removal. Shut off the raw water intake seacock. Remove the two wing nut on top of the strainer and remove the stainless steel strainer for cleaning. After it has been cleaned, replace it.

Secure the top by tightening the wing nuts by hand; do not over-tighten. Open the seacock and inspect for leakage. If the top of the strainer is not securely tightened it may permit air to be sucked into the cooling system instead of raw water. This will damage the pump impeller if it is run dry too long so be certain raw water is coming out of the exhaust while the engine is running.

Racor Fuel Filter: (*See pamphlet enclosed*). There are two fuel filters for the engine. One is attached to the engine (*referred to in the engine manual*) the other is adjacent to raw water strainer. This Racor filter has both filtering and water separation capabilities. Visually inspect the transparent bowl often to see if there is water in the bottom. If there is, slowly unscrew the bottom knob until all the water is drained into a container for discard. If there is a vacuum in the bowl the water will not drain. It will be necessary to break the vacuum by removing the lid. Close the drain valve hand tight. Pour a little diesel into the top of the filter to replace the lost diesel.

Changing the Element: Remove the clamp and lid. Lift out the old element and discard. Before installing a new 2000SM element, top off with diesel fuel until the unit is full. Install the new element using a right hand turning motion. Replace the lid and hand tighten. Replace the clamp hand tight. It may be necessary to bleed the lines if air entered the fuel line to the engine. If this happened follow the procedure in the engine manual.

THRU-HULLS AND SEACOCKS: There are 5 below water GROCO thru-hulls and seacocks. The engine intake, and two cockpit drains are in the engine room. The sink drain is directly below the sink. The head intake is adjacent to the head on the starboard side. The head discharge is adjacent to the head but under the drawer on the port side. These seacocks need little attention initially but when the boat has its annual haul out all seacocks should be disassembled, cleaned and greased with waterproof silicone grease. Reassemble using a lanolin grease or "Lanocote" provided on all threads. This will prevent the threads from freezing up in the future.

The seacock can be lubricated in the water. First, close the valve. Then remove the small bolt on the side of the seacock and squeeze in as much silicone, water bearing grease you can. Replace the bolt and work the handle back and forth to spread the grease.

If the seacock is weeping water it will require minor adjustment. Turn the valve to the closed position. Using the proper size wrench, loosen the outside lock nut on the opposite side of the handle. You may have to hold the handle from turning. Tighten the inner nut until the weeping stops. Move the handle back and forth between the open and

close position to be sure it works without too much resistance. Tighten the lock nut so it will not move out of proper adjustment.

ZINCS: The boat will arrive with a 1" shaft zinc on the propshaft between the prop and the stern tube, and a #20 tear drop zinc on the bottom gudgeon. These are sacrificial and should be replaced each haul out. Since all thru-hulls are silicone bronze and the shaft is stainless steel there should be little if any galvanic action within the boat. However, because stray electrical currents or more noble metals nearby may increase galvanic action, the zincs may require more frequent replacement. Both zincs are replaced by removing the bronze screws which hold the zincs in place.

PYI STERN TUBE BEARING: This is a water lubricated bearing. When first launching or after a haul out the surface between the stainless steel and carbon bearing must be wet or a loud, high pitched sound will be heard. After the boat is in the water, pull back on the spring hose to permit water to enter this area then release. Read the instructions provided on the PYI pamphlet.

SAMPSON POSTS: The Sampson Posts or "Bits" pass through the deck and are bonded to the bulkhead below. They are sealed where they pass through the deck with seam packing cotton and white silicone. Each year it would be a good idea to test this seal with ample amount of water to ensure there is no weeping.

If water is entering the interior through this seal it is necessary to totally replace the seal. This requires removing the bowsprit, packing cotton and silicone. Using a cotton caulking tool, drive new cotton around the bits in a spiral until it is 1/8" to 3/16" from the top. The cotton must be packed tight because the bits will compress the cotton on the aft end when the bowsprit fid is put into compression. Next, seal with white silicone. Let dry and replace the bowsprit.

PROPANE SYSTEM: The propane system should be checked regularly for leaks. Use the method described in "Commissioning" above. If your boat has the propane tanks located in the vented canister in the lazarette, check that the drain on the bottom is open and cannot hold water or debris.

PORTLIGHTS: The bronze portlights require little to no maintenance. The rubber gasket should last for many years if the portlight is kept in proper adjustment. If the gasket must be replaced, pull out the old and clean the slot of old adhesive. Use silicone sealant as an adhesive when installing the new gasket.

The portlight is properly adjusted when there is equal pressure all the way around the gasket. This is accomplished by adjusting the top hinge screws and the portlight dogs.

TEAK SHEET BLOCKS: The blocks will require a little grease on the roller bearings every few years, depending on their use. If they are used regularly they will never require lubrication. To lubricate, remove the side plate screws using a small screwdriver. The

plate is threaded on to the bearing shaft so it must be unscrewed counter clockwise. If you intend to do this often it is advisable to make a tool for the purpose. Use a piece of hardwood with two nails driven through at the same spacing as the screw holes in the plate. Cut the nails off about 3/16 to 1/4 from the hardwood surface. After the plate is removed on one side, push the rod out the opposite side. Remove the bearings, clean, grease and replace in the reverse order.

HATCHES: The hatches need little if any maintenance. Where weather stripping is used it will sometimes stick to the frame instead of the hatch. To prevent this, use a little auto wax on the bearing surface.

HARKEN ROLLER FURLING: The unit is designed to take the punishments of salt water and should work, trouble free for years. However, don't become complacent about it. Service it regularly and replace the bearings at the first sign of wear. Follow the manufacture's instruction provided.

LEWMAR SHEET WINCHES: The boat comes with three sizes of winches. The boom sheet winch is a **B6B**. The halyard and staysail sheet winches are **B8B**. The jib sheet self-tailing winches are **B32.2STB**.(see pamphlet enclosed)

BULWARKS: The wooden bulwarks come with three coats of teak oil as standard. Since the bulwark stanchions and quarter knees have exposed end grain it is necessary to keep it sealed. If left exposed to the elements it will only be a matter of time until they will crack. Warm days will dry the wood causing it to shrink and crack. Humid days will cause moisture absorption and cause it to swell. If the wood begins to crack, saturate the wood with fresh water until the cracks close. Let dry and seal with ample coats of oil, C etol, varnish or paint.

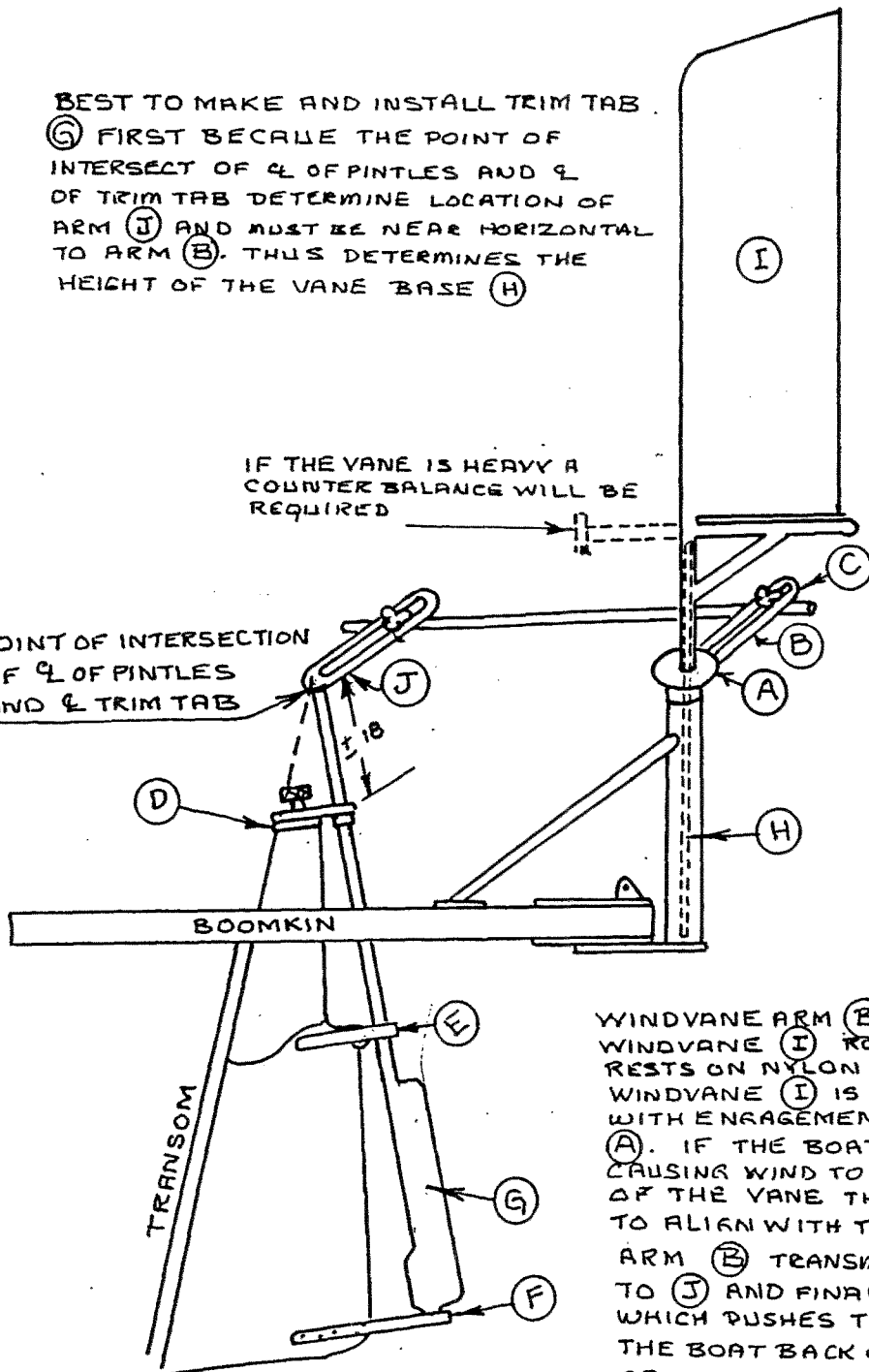
WATER TANKS: There are two polyethelene water tanks, one is under the sole just forward of the engine, the other is under the sole. When filling the tanks be sure to reduce the pressure as the water nears the top. If the tanks are "topped up" under pressure the vent pipe will not handle the volumn and there will be an overflow through the inspection plates into the bilge.

ANCHOR CHAIN: If you ordered anchor chain with your boat we will deposit the chain into the chain locker only. The bitter ends will not be fastened to anything so don't attempt to anchor until you terminate the end.

BEST TO MAKE AND INSTALL TRIM TAB.
 (G) FIRST BECAUSE THE POINT OF INTERSECT OF \angle OF PINTLES AND \angle OF TRIM TAB DETERMINE LOCATION OF ARM (J) AND MUST BE NEAR HORIZONTAL TO ARM (B). THIS DETERMINES THE HEIGHT OF THE VANE BASE (H)

IF THE VANE IS HEAVY A COUNTER BALANCE WILL BE REQUIRED

POINT OF INTERSECTION OF \angle OF PINTLES AND \angle TRIM TAB



WINDVANE ARM (B) BOLTS TO S.S. ROD (H). WINDVANE (I) ROTATES ON (H) AND RESTS ON NYLON WASHER AT (A). WINDVANE (I) IS LOCKED INTO POSITION WITH ENGAGEMENT OF PLUNGER AT (A). IF THE BOAT GOES OFF COURSE CAUSING WIND TO PUSH ON ONE SIDE OF THE VANE THE VANE WILL ATTEMPT TO ALIGN WITH THE WIND THUS MOVING ARM (B) TRANSMITTING THE MOVEMENT TO (J) AND FINALLY TO TRIM TAB (G) WHICH PUSHES THE RUDDER TO PUT THE BOAT BACK ON COURSE. SENSITIVITY IS ADJUSTED BY MOVING THE LINKAGE ARM IN OR OUT OF THE SLOTS. WHEN MOTORING, TIGHTEN AT (D) AND RELEASE PLUNGER AT (A) SO VANE WILL FEATHER IN THE WIND.

TRIM TAB WINDVANE

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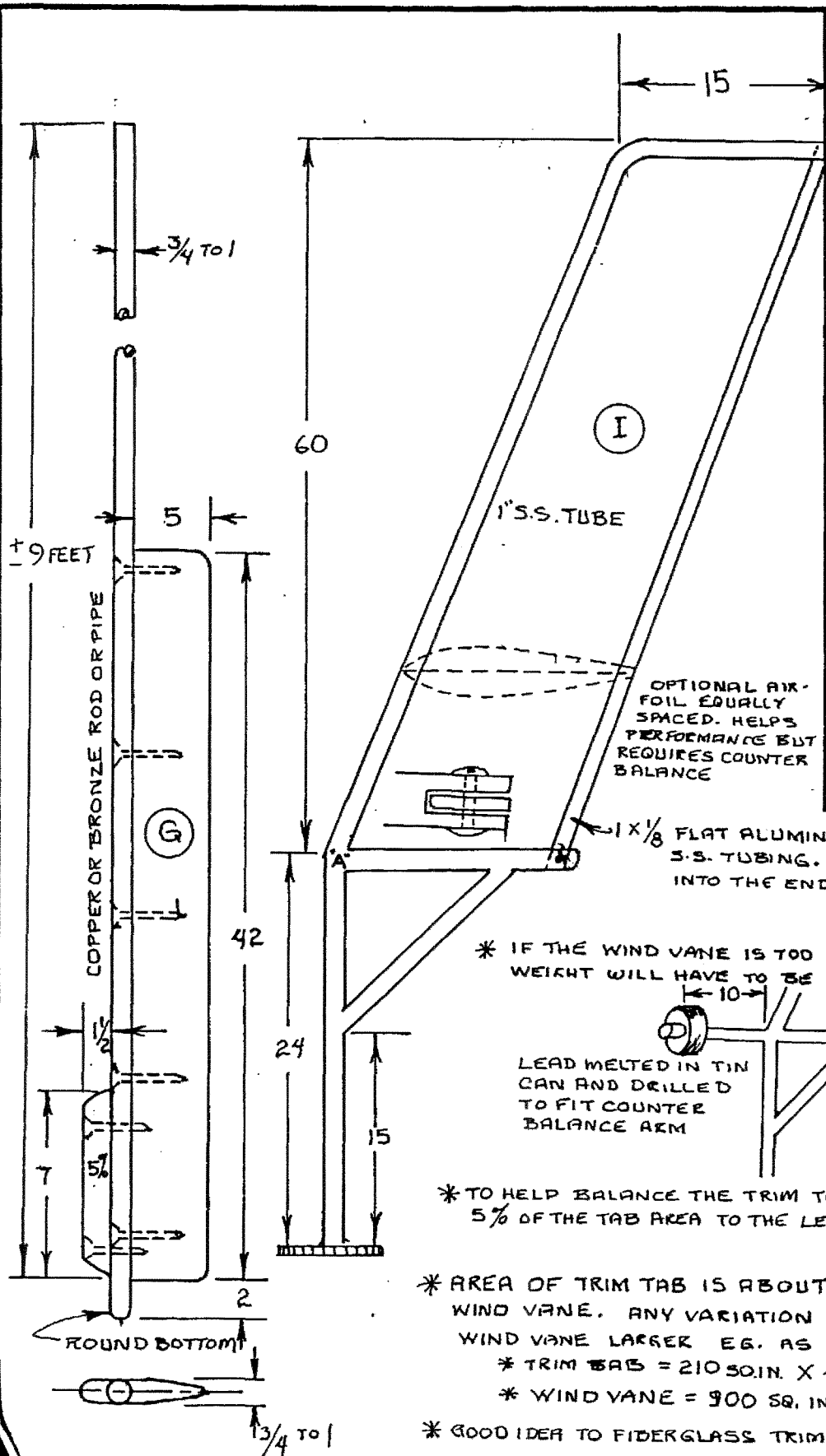
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WIND VANE I		* ALL DIMENSIONS APPROXIMATE	
TRIM TAB G			
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I

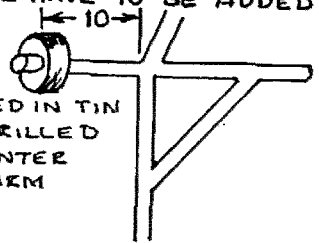
G

G

OPTIONAL AIR-FOIL EQUALLY SPACED. HELPS PERFORMANCE BUT REQUIRES COUNTER BALANCE

1 x 1/8 FLAT ALUMINUM BAR BOLTED TO 3-S.S. TUBING. SET INTO SLOTS CUT INTO THE ENDS

* IF THE WIND VANE IS TOO HEAVY A COUNTER WEIGHT WILL HAVE TO BE ADDED TO "A"



LEAD MELTED IN TIN CAN AND DRILLED TO FIT COUNTER BALANCE ARM

* TO HELP BALANCE THE TRIM TAB ADD ABOUT 5% OF THE TAB AREA TO THE LEADING EDGE

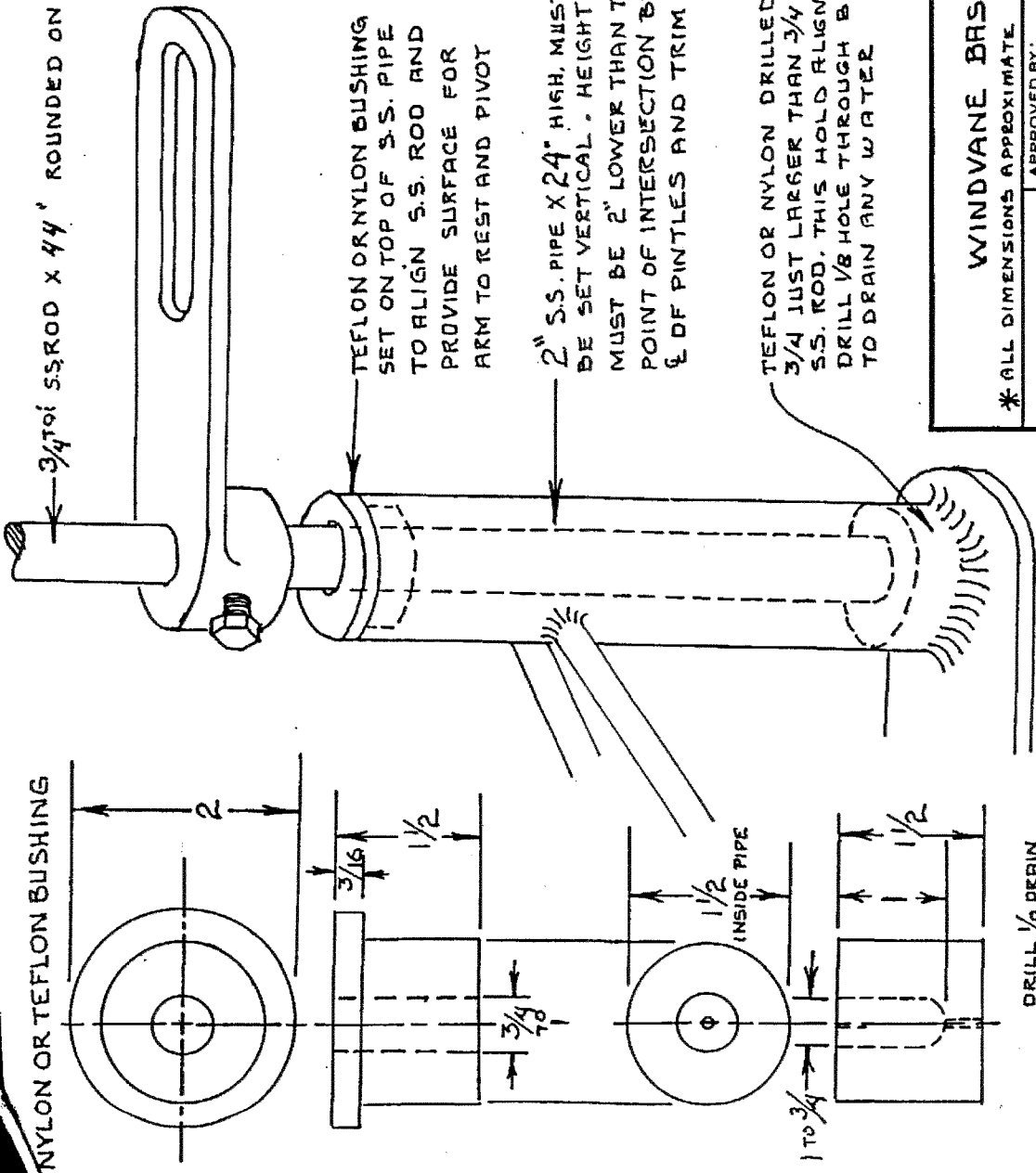
* AREA OF TRIM TAB IS ABOUT 1/4 THE AREA OF WIND VANE. ANY VARIATION SHOULD MAKE THE WIND VANE LARGER EG. AS DRAWN:

* TRIM TABS = 210 SQ. IN. X 4 = 840 SQ. IN.

* WIND VANE = 900 SQ. IN.

* GOOD IDEA TO FIBERGLASS TRIM TAB WHEN FINISHED

NYLON OR TEFLON BUSHING



S.S. PLATE BOLTED TO BOTTOM OF BACKUP PLATE TO BKSTY TANG.

WINDVANE BASE AND ARM

* ALL DIMENSIONS APPROXIMATE

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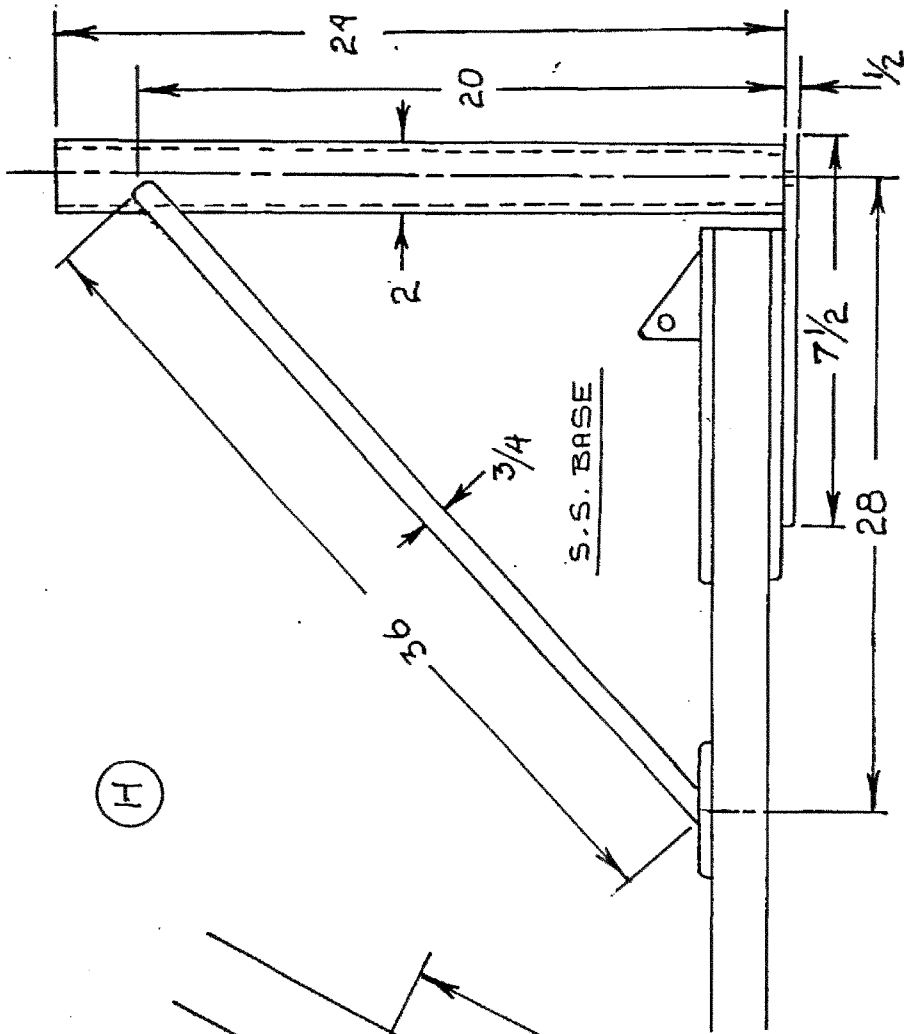
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(H)

(H)

WINDVANE BASE SUPPORT

* ALL DIMENSIONS ARE APPROXIMATE

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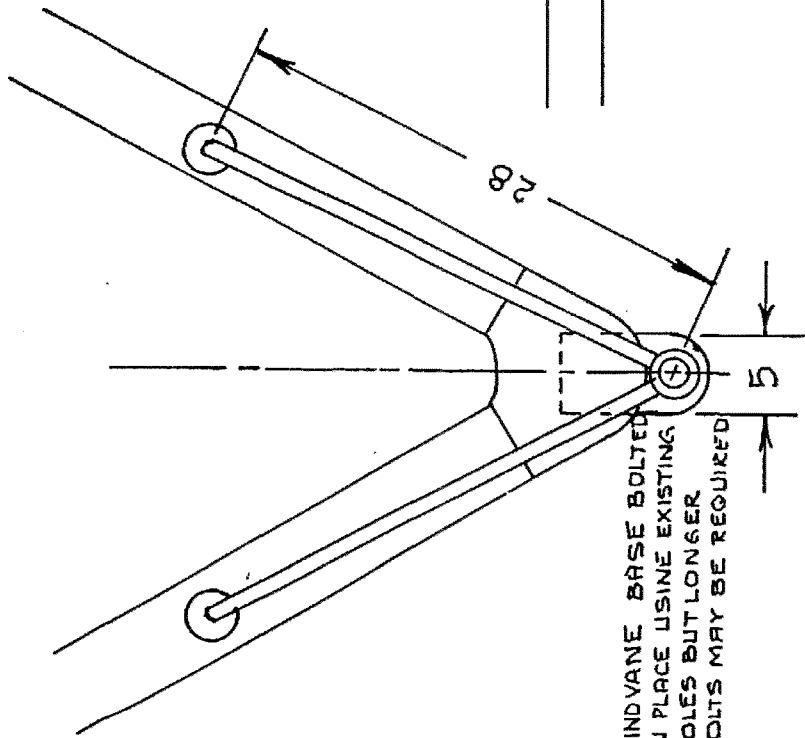
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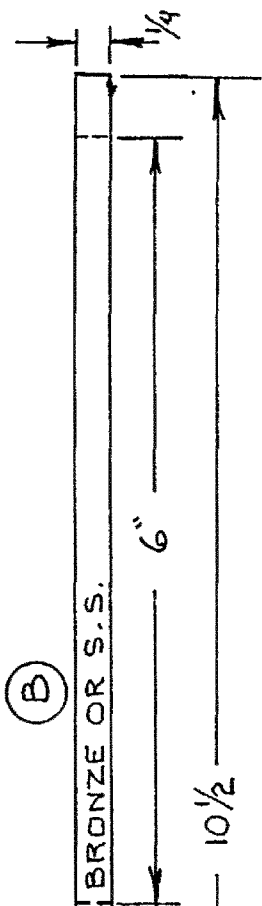
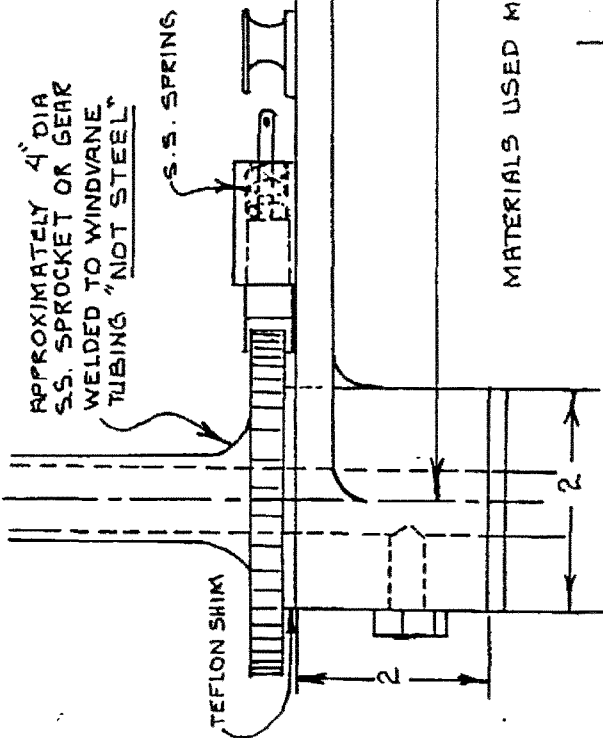
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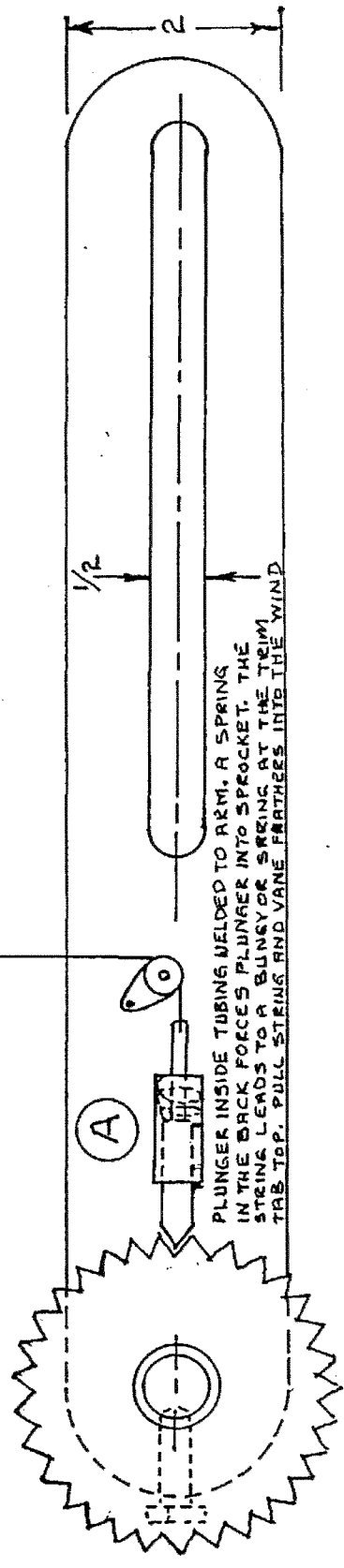
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WINDVANE BASE BOLTED
IN PLACE USING EXISTING
HOLES BUT LONGER
BOLTS MAY BE REQUIRED



MATERIALS USED MUST BE NON-CORROSIVE AND WELDABLE



THE ARM CAN BE MACHINED FOR THE SLOT OR BE SEVERAL PIECES BRAZED OR WELDED TOGETHER THEN GROUND FLAT

WINDVANE ARM (B) AND PLUNGER (A)

ALL DIMENSIONS ARE APPROXIMATE

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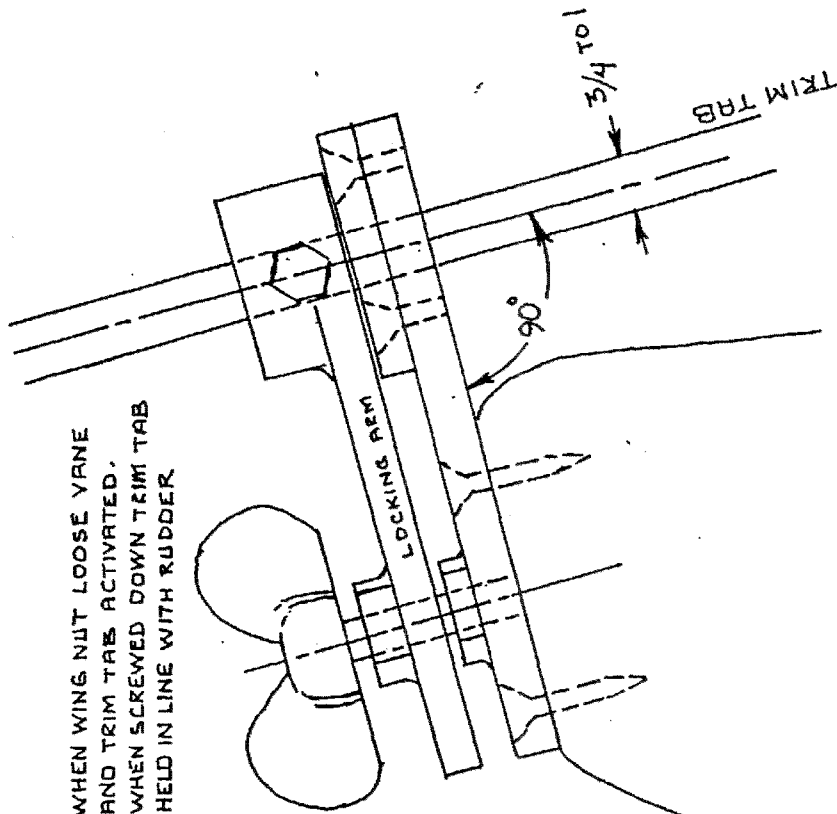
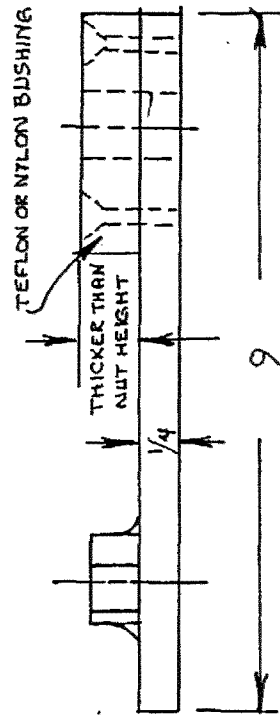
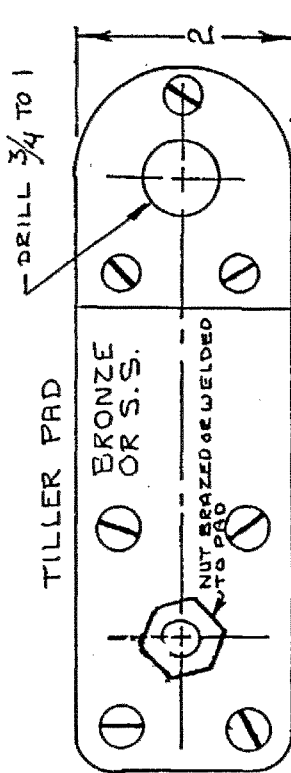
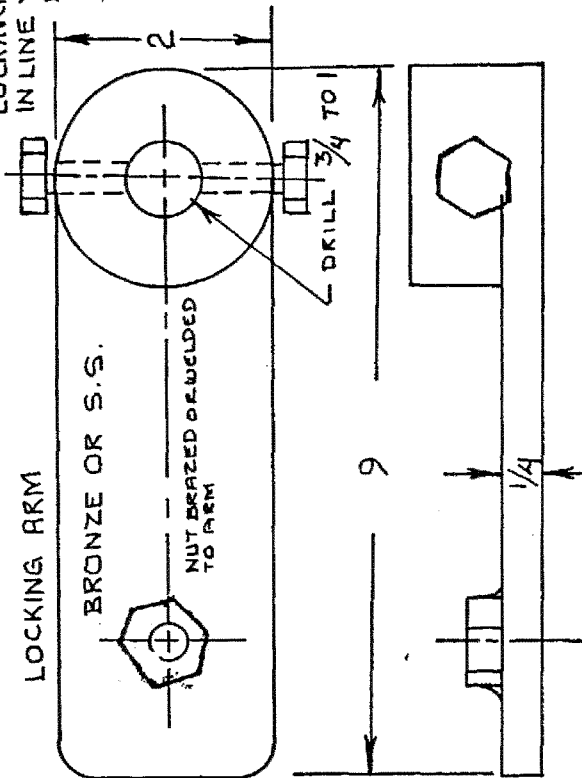
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LOCKING BOLTS HOLD TRIM TAB
IN LINE WITH RUDDER. ADJUSTMENT CAN
BALANCE THE HELM BY LOOSENING

WHEN WING NUT LOOSE VARNE
AND TRIM TABS ACTIVATED.
WHEN SCREWED DOWN TRIM TAB
HELD IN LINE WITH RUDDER



TILLER PAD AND TRIM TAB LOCKING ARM D

ALL MEASUREMENTS IN LENGTH TO BE DONE AFTER
TRIM TAB ATTACHED TO THE RUDDER

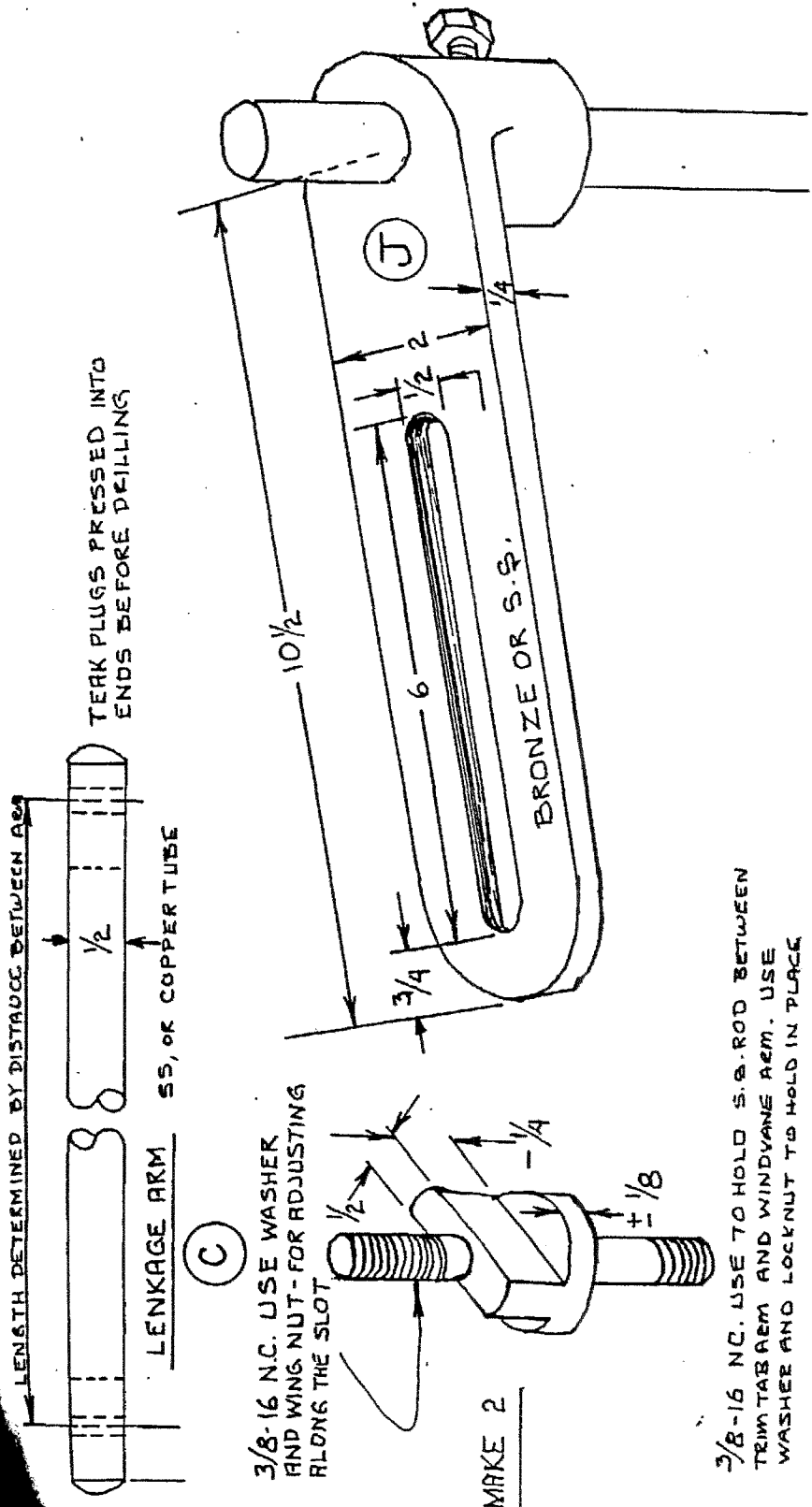
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TEAK PLUGS PRESSED INTO ENDS BEFORE DRILLING

LENGTH DETERMINED BY DISTANCE BETWEEN ARM

LENKAGE ARM SS, OR COPPER TUBE

(C)

3/8-16 N.C. USE WASHER AND WING NUT - FOR ADJUSTING ALONG THE SLOT

MAKE 2

3/8-16 N.C. USE TO HOLD S.S. ROD BETWEEN TRIM TAB ARM AND WINDYANE ARM. USE WASHER AND LOCKNUT TO HOLD IN PLACE

TRIM TAB ARM (J) AND LENKAGE ROD (C)

* ALL DIMENSION APPROXIMATE

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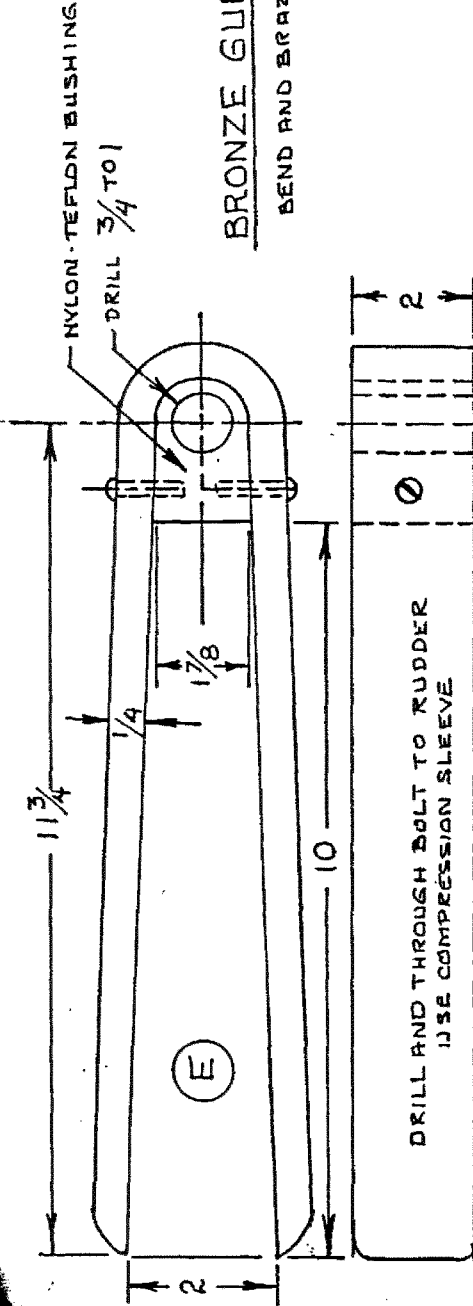
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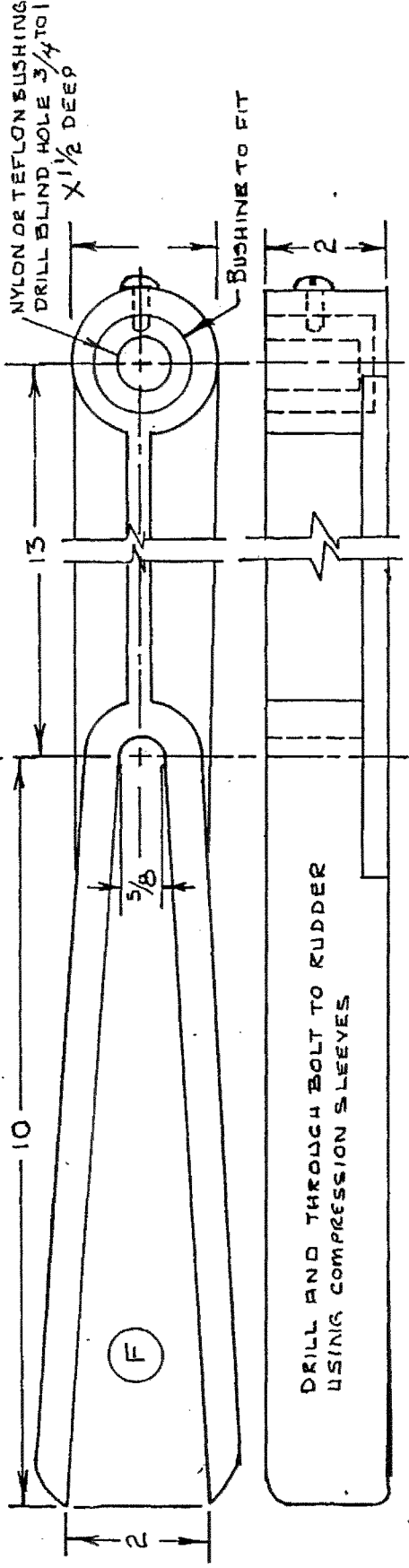
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BRONZE GUDGEONS
BEND AND BRAZE



DRILL AND THROUGH BOLT TO RUDDER
USE COMPRESSION SLEEVE

DRILL AND THROUGH BOLT TO RUDDER
USING COMPRESSION SLEEVES

TRIM TAB GUDGEONS (E) AND (F)

* ALL DIMENSIONS APPROXIMATE

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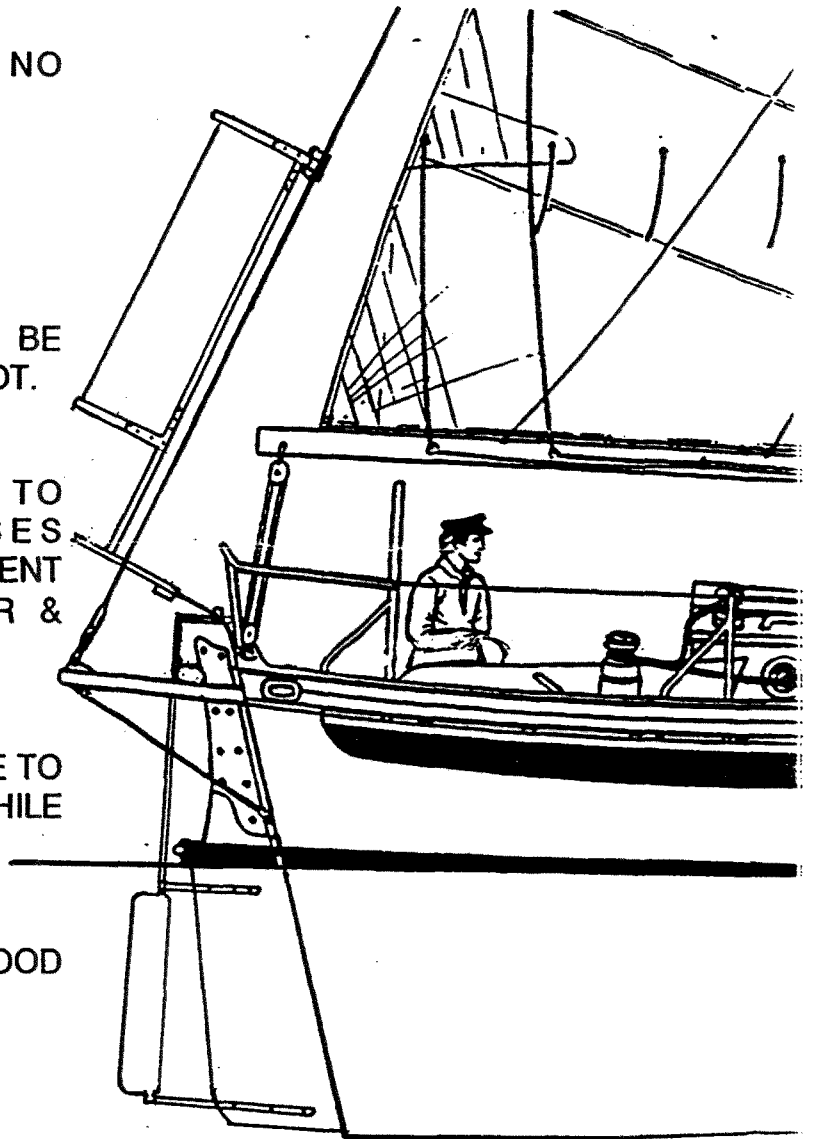
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- B.C.C. OWNERS -
Introducing
Freehand Steering System

- * WINDVANE - REQUIRES NO ELECTRICITY.
- * SIMPLE TO USE.
- * LOWER HALF - TRIM TAB CAN BE USED WITH EXISTING AUTOPILOT.
- * AUTOPILOT CONNECTS TO TRIM-TAB TILLER, USES SIGNIFICANTLY LESS CURRENT DRAW, AND SAVES ON WEAR & TEAR.
- * TILLER BECOMES REMOVEABLE TO OPEN COCKPIT AREA, EVEN WHILE UNDERWAY.
- * REEFABLE TO 1/8" PLYWOOD STORM VANE.



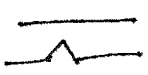
For further information contact:

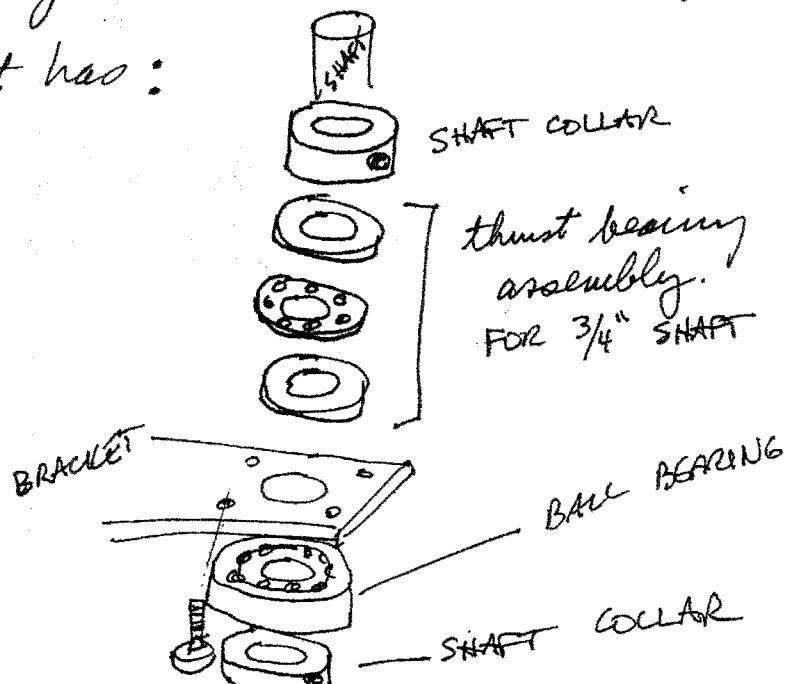
~~M. ANDERSON - 788 W. 16th Street, Costa Mesa, CA 92627 (714) 642-3844~~

726 21st ST. Newport Beach, Ca 92662 7146730

David & Susan -

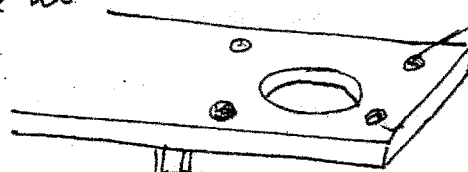
5/21/00.

Here's the vane info. I made my gudgeons of $\frac{1}{4} \times 2$ bronze plate on top. Drilled $\frac{13}{16}$ " hole, then ripped out "fork" on table saw. Heated & bent "tines of fork" to conform to rudder hydrofoil. Drilled $\frac{7}{8}$ " hole for shaft & $\frac{1}{4}$ -20 support bolt holes for bearing. ~~Top bracket~~ Then had welder tack weld $\frac{1}{8} \times 1$ " flanges to bottom. Mounted to rudder with $\frac{3}{8}$ " bolts. Used sleeves to prevent ~~a~~ crushing rudder. Top bracket is $\frac{1}{4} \times 2$ ", partial cut with table saw at 45° angle , then heated & bent. Drill holes first. Holes aligned by shifting gudgeons up or down on rudder. Bearings held in with bolts as per photo. Top bracket has:



Bottom bracket has:

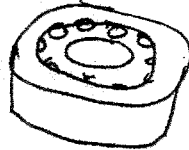
shaft goes thru ball bearing & rests on top of thrust bearing, supported in plastic block.



TAPPED FOR 1/4-20 THREADS

GUDGEON

I used washers to shim bearing away from gudgeon to prevent binding.

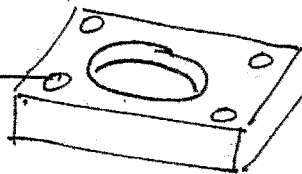


BALL BEARING



THRUST BEARING ASSEMBLY
USED SMALLER SIZE
~ 7/8" O.D.

7/32 HOLES



PLASTIC BLOCK WITH BLIND 7/8" HOLE TO ACCEPT THRUST BEARING

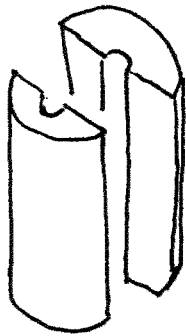
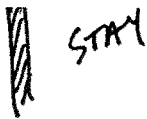


1/4" MACHINE SCREWS

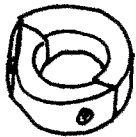
- NUTS ON TOP TO LOCK IN PLACE.

Tab tiller arm is 3/4" nut welded to 1/4 x 2" bar, then drilled thru with 3/4" hole. 5/16" set screw tapped into nut.

DON - see over



1" DELRIN ROD SPLIT
WITH 9/32" CENTRAL
HOLE



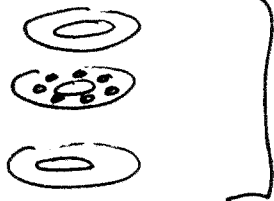
1" SPLIT SHAFT COLLAR



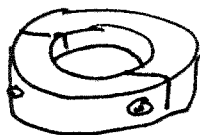
1" ID DELRIN/SS
BALL BEARINGS



DISC
PLATE
3/16" BRASS



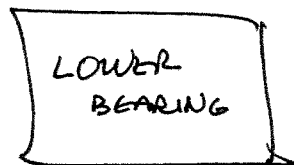
1" THRUST BEARING



1" SPLIT SHAFT COLLAR



SWAGE



DISC,
BALL BEARINGS
& THRUST
BEARINGS
SLIDE OVER
STAY

BALL BEARINGS
CLAMPED TO
VANE UPRIGHT
BY LOWER
BRACKET, HELD
IN BY THE
VANE UPRIGHT
BOLTED TO
DISC.

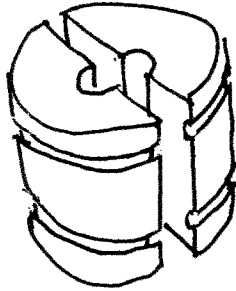
DISC NOT
DIRECTLY
ATTACHED TO
BALL BEARINGS.

DISC RIDES
ON THRUST
BEARINGS.

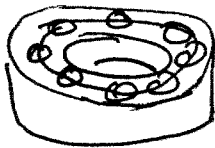
BRACKETS &
L PLATES
ALL
1/16" BRASS



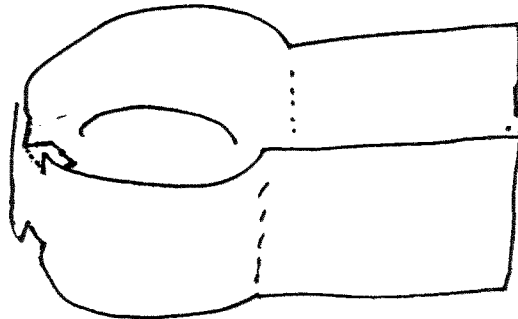
STAY



SPLIT 1" DELRIN ROD
9/32" CENTRAL HOLE
GROOVED FOR SEIZING WIRE



1" ID DELRIN SS
BALL BEARING.



UPPER
BRACKET
WITH TABS
TO RETAIN
BEARING.

LOWER SWAGE FITTING IS
1" O.D. DELRIN ROD ACTS
AS A "STAY EXPANDER"
TO FILL AXLE HOLE OF
BALL BEARING.

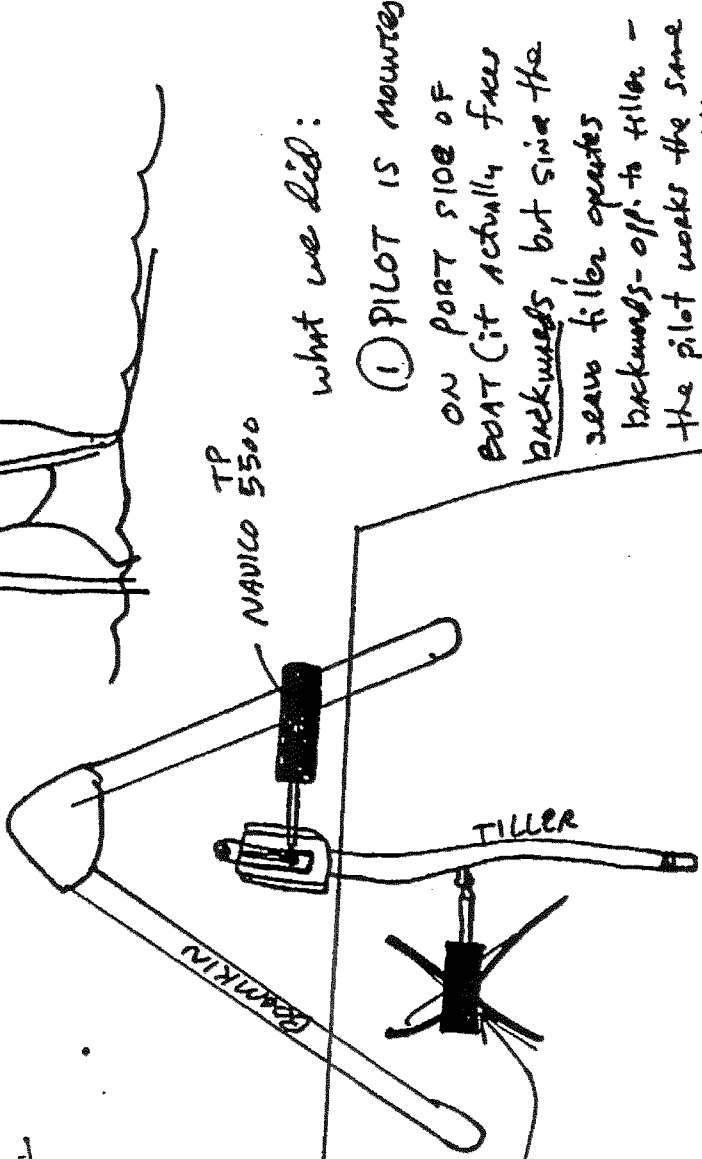
UPPER
BEARING

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Tear rise (old fittings) - tiller lot fits into socket on tear rise

BRONZE "L" Bracket mounted on starboard side of port beamkin

PILOT Attachment is underneath wing nut clamp - so it doesn't interfere w/ windvane

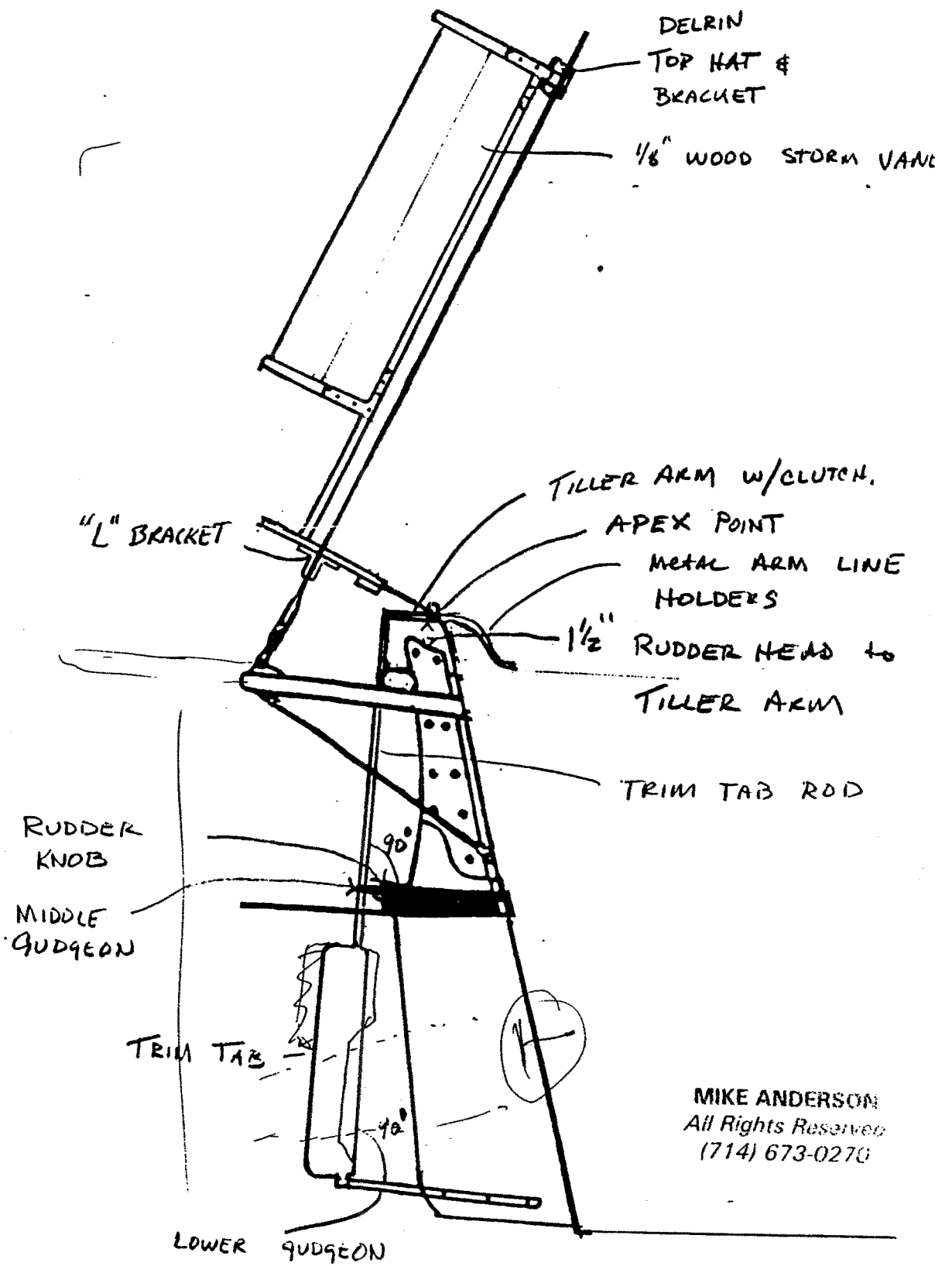


what we did:

- ① PILOT IS MOUNTED ON PORT SIDE OF BOAT (it actually faces backwards, but since the servo filler operates backwards - off to tiller - the pilot works the same as if mounted on tiller on STAR side, as per MFE's instructions)
- ② TURN "SENSITIVITY" ADJUSTMENT

MFE's recommendation - not cut leverage on BCC's tiller!

Fig. 1



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FREEHAND STEERING SYSTEM
INSTALLATION INSTRUCTION

Lower Unit

- 1) Clamp trim tab with all gudgeons in place. The key dimension for locating the height is 1 1/2" from the rudder head to the trim tab tiller. (see figure 1.)
- 2) Arrange all three gudgeons at 90 degrees to the rod, then clamp. The middle gudgeon locates off the rudder knob. Spin trim tab to check for clearance. Check alignment.
- 3) Drill 5/16" holes, from both sides of the gudgeons. Remove trim tab and ream holes with a 3/8" drill bit. This will allow enough room for the compression sleeve and epoxy glue.
- 4) Glue in compression sleeves and bolt in gudgeons. Use polysulfite or dolphinite for bedding. Cut off left over bolts with hacksaw. The top gudgeon is screwed directly to the aft side of the rudder.

Upper Unit

- 1) Remove delrin top hat from vane. Remove four machine screws so you have two halves. Re-mount around backstay, but keep it loose for now.
- 2) Rest the vane in the boom gallows while installing. Remove half of the "L" bracket (underneath ball bearing plate.) Remove backstay.

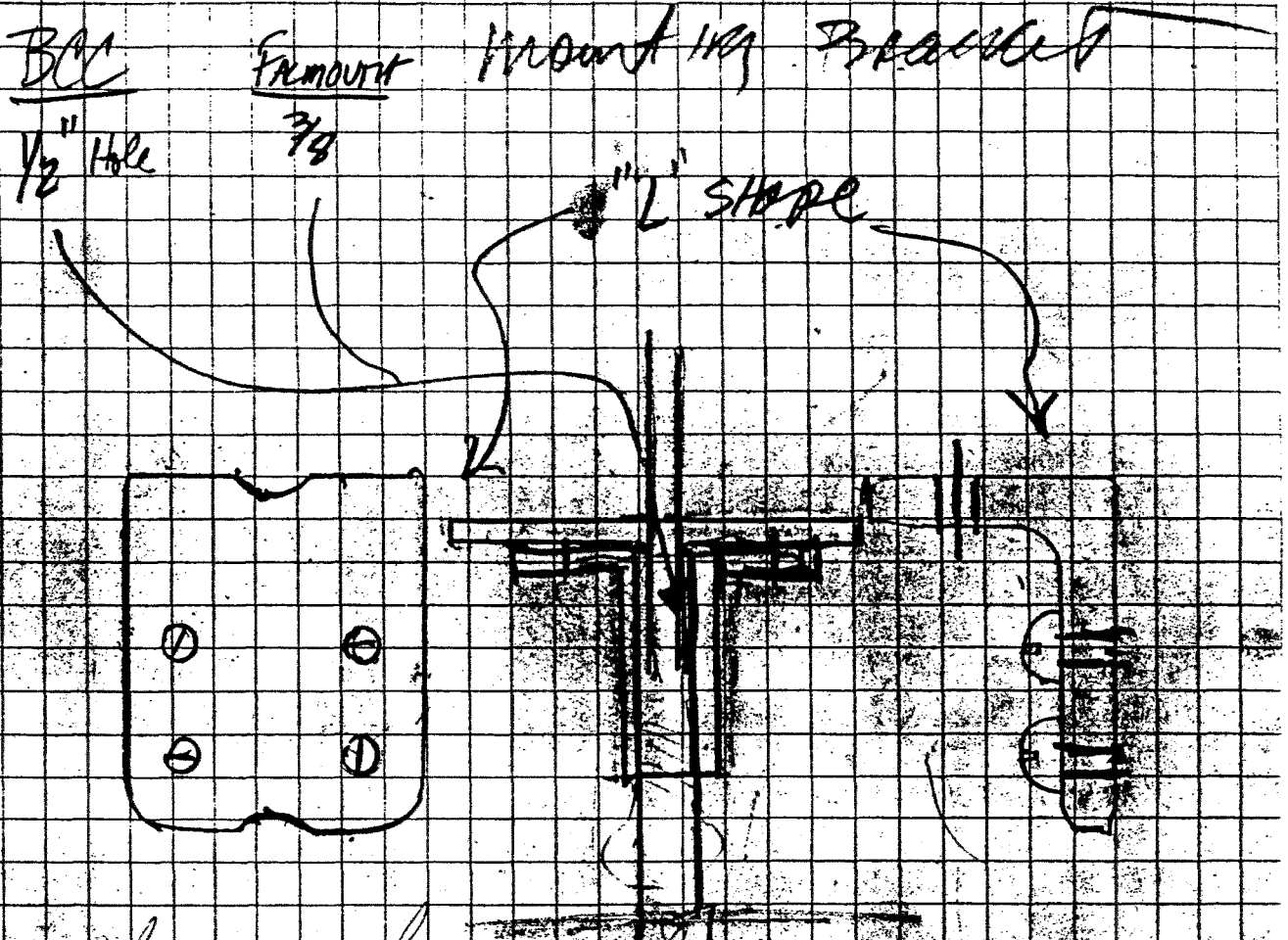
- 3) Slide backstay through center of wheel and re-attach "L" bracket. Then slide the whole unit as far down as you can. Re-attach backstay. Stand the unit up and re-attach upper bracket around top hat.
- 4) Clamp metal arms line holders to the taffrail with line on wheel. After location is determined then screw down. (see fig 2.)
- 5) Tiller modification. Start by sliding the tiller aft to within an inch of the trim tab rod, lift the tiller upward till it touches the taffrail, draw a line on the tiller of the angle of the rudder hole. Lower the tiller all the way down and strike another line of that angle. Screw the ash tiller cheeks to the sides of the tiller forward of these lines . Now your tiller cannot go any further aft. To keep it from going foward, simply drill a 7/16" through the middle of the tiller, just aft of the trailing edge of the rudder. Then, tie a knot at one end of a 3/8" line, run it through the tiller and tie another knot.

The most important thing to remember while erecting your vane is to eliminate friction from all areas, including and especially your rudder bushings. The vane's response time is directly proportional to the ease of its working areas.

For a detailed account of its use and its relation to sail balance see Larry Pardeys "The Truth About Windvanes", from their book THE SELF SUFFICIENT SAILOR. Also, on their video "Voyaging", they have about 8 minutes on their windvane and its use.

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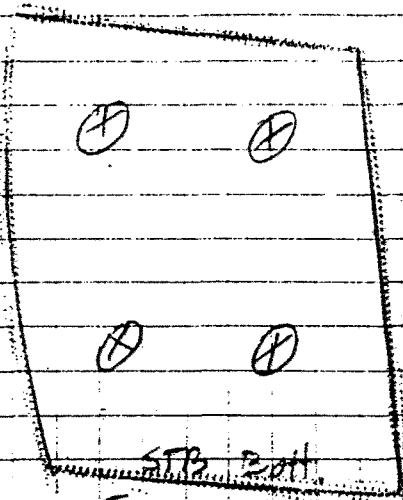
CASTING - BILL
BRISTOL BRONZE ACAT
c/o ROGER WINIARSKI
(401) 625-5224



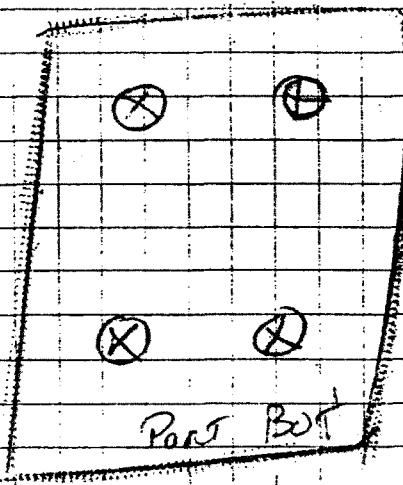
These suckers
clamp together
to grab backstay
Falmouth
Sledge fitting
15 3/8 D.A.
D.H. 3/8 Hole with

Brass wheel
sits on top,
riding on
bearings

- All Parts Full Size -



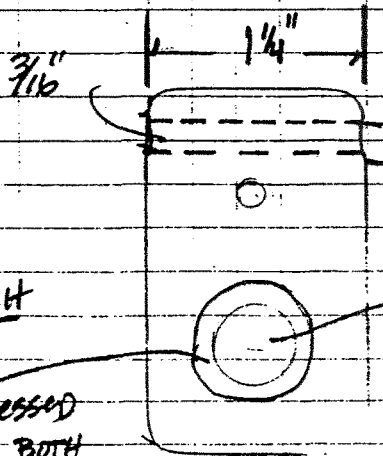
TILLER CHECKS



TRIM TAB
TILLER
ARM

$\frac{3}{16}$ "
SLOT

< $\frac{1}{4}$ " >

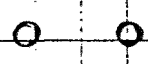


CLUTCH

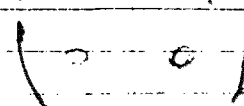
$\frac{3}{8}$ "
CAP. BOLT

$\frac{1}{2}$ " RECESSED
ON BOTH
HALVES -

- HOLDS SPRING -

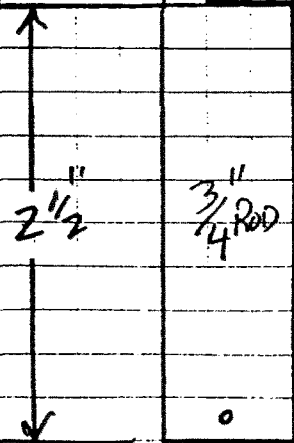
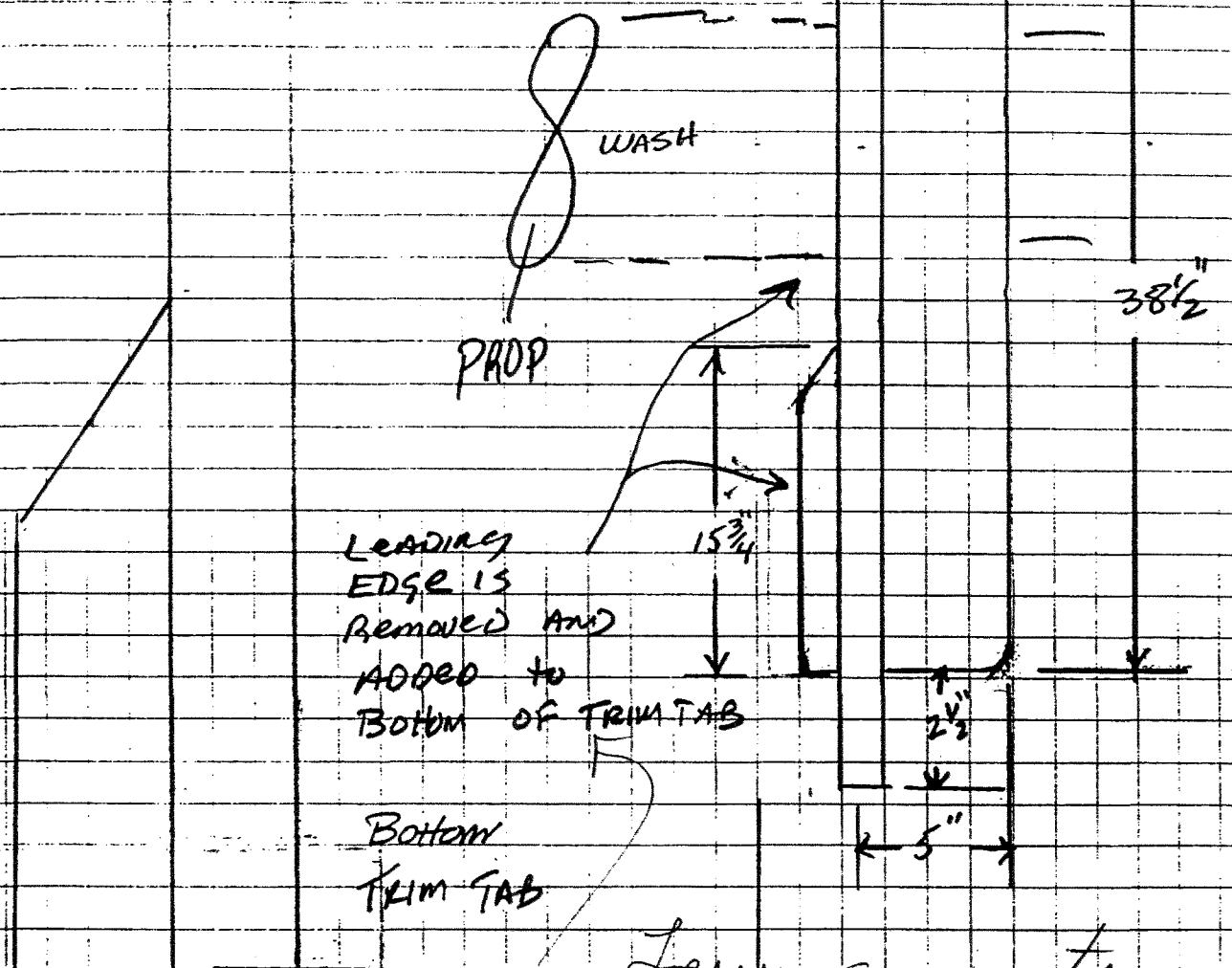


$\frac{3}{4}$ "



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7A VIA - NOV

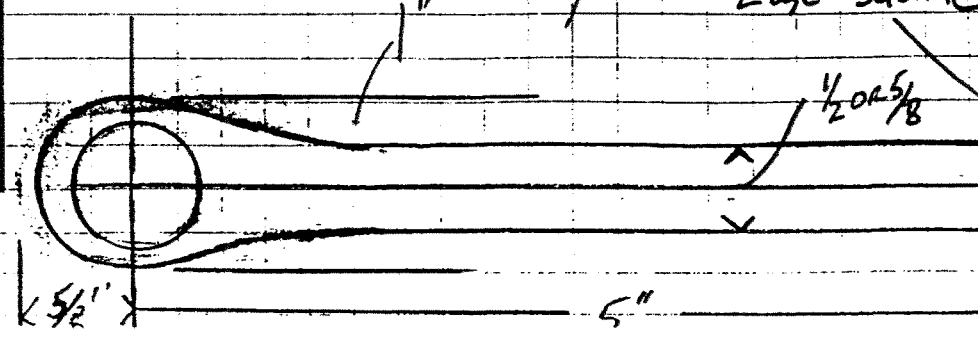


Jerry suggests pulling it up

1" top

LEAVE LEFT EDGE SQUARE

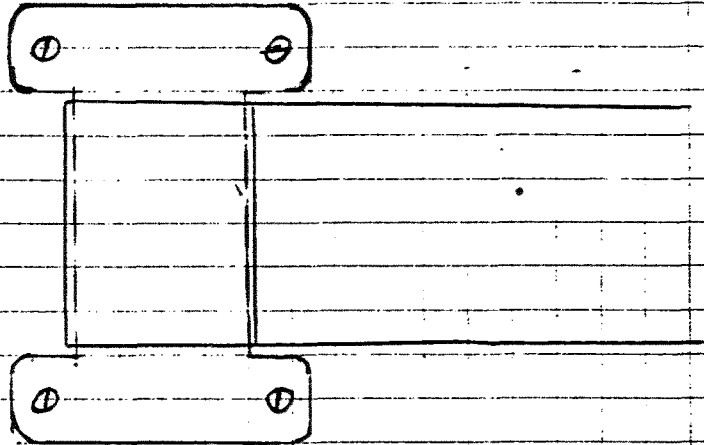
The text 'Jerry suggests pulling it up' is written in a cursive style. Below it, '1" top' is written with a vertical dimension line. To the right, 'LEAVE LEFT EDGE SQUARE' is written in all caps.



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F.S.S. - TOP HAT - DELRIN

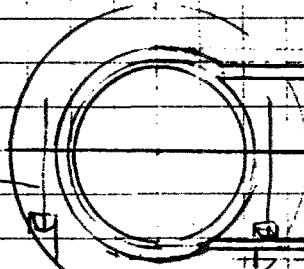
SIDE
VIEW



TO SCALE.

TOP
VIEW

DRILL &
TAP 10X24
M.S.



ALUMINUM
BAND

WOOD

TOP HAT IS MADE
TO SEPERATE AND
IS SCREWED TOGETHER
AROUND EACH SIDE.

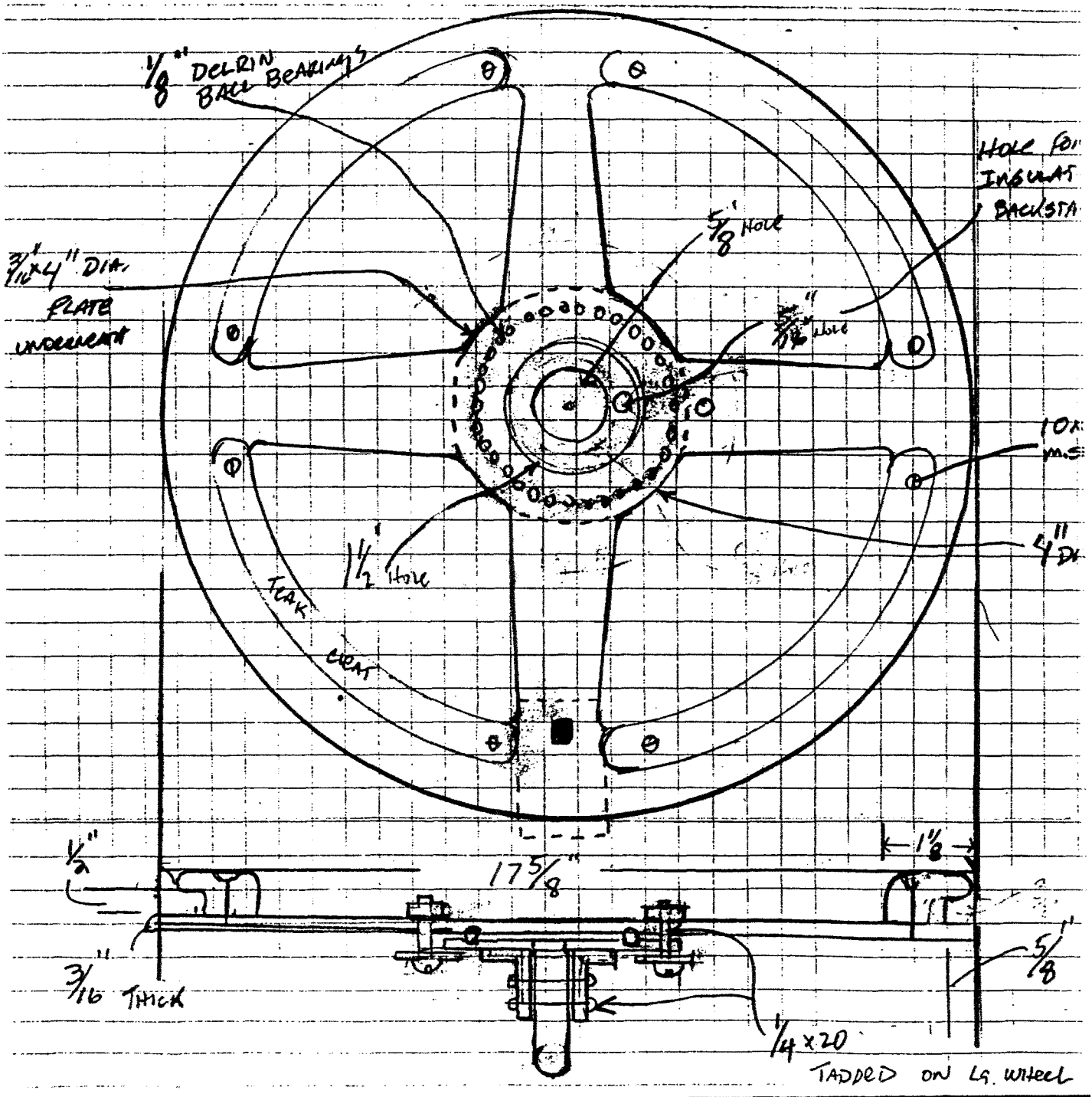
CIRCUMFERENCE SHOULD BE
TRUE, NO BINDING HERE,
OR YOU CREATE FRICTION.
THE KEY TO A GOOD
WORKING VAVE IS REDUCE
FRICTION ON ALL MOVING
PARTS.

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$\frac{3}{16}$ " ALUMINUM WHEEL
AND BASE PLATE

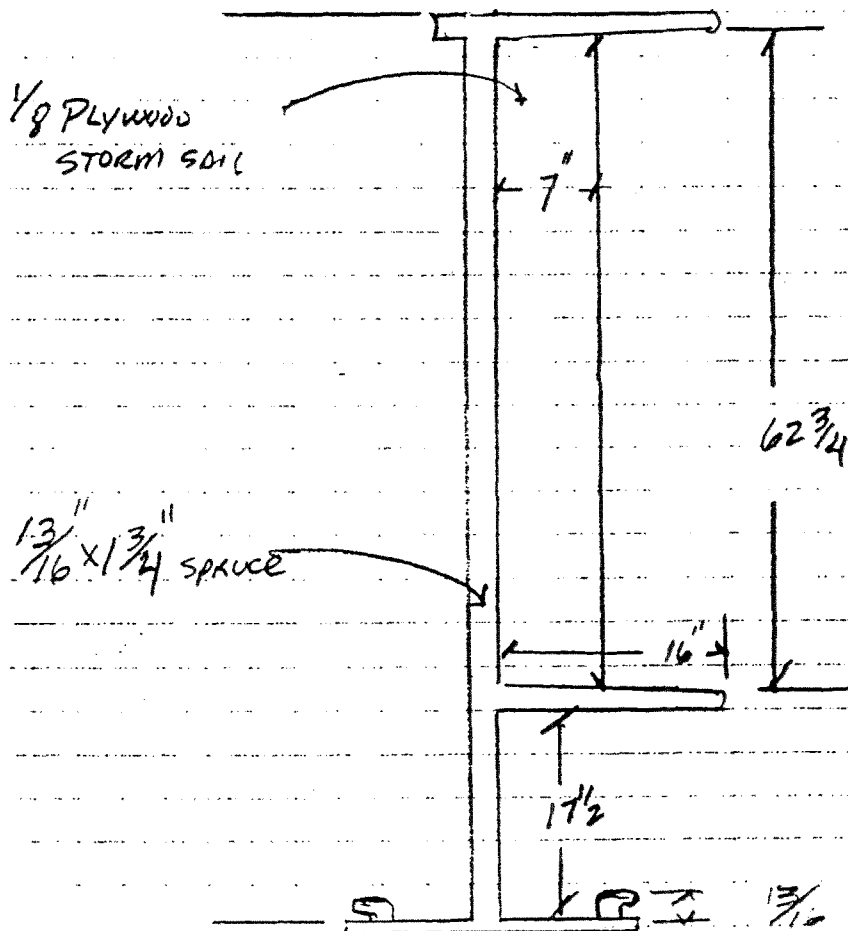
- APPROX. 5 LB counterweights
(DIVE WEIGHT)

; NOT TO SCALE;



FREEMANID STEERING SYSTEM

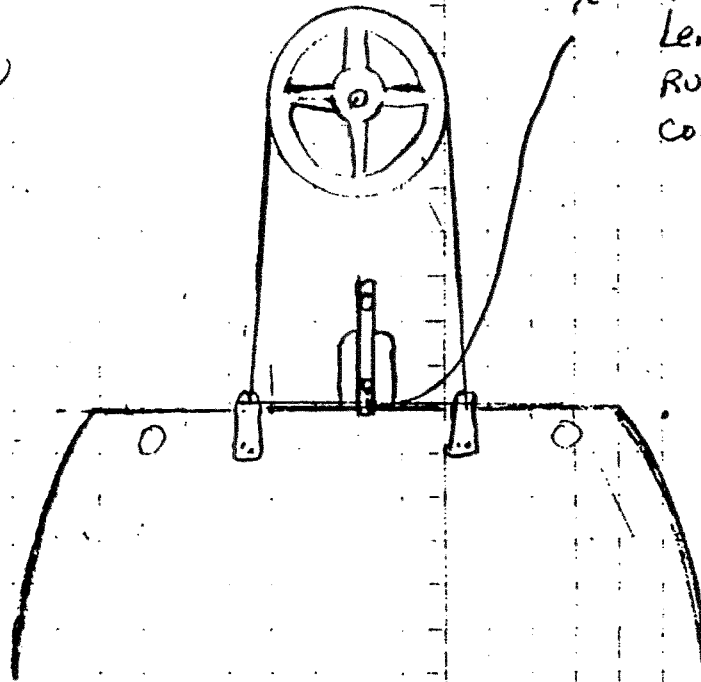
UPPER HALF



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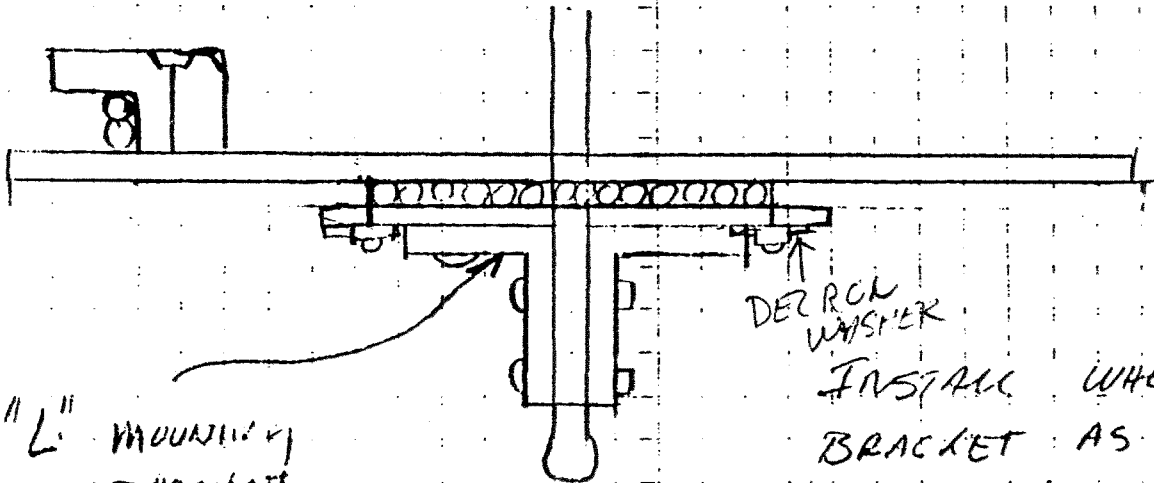
FIG. 2.

HARKIN



* APEX POINT =
LEADING EDGE OF
RUDDER MOUNTS
CONTROL LINE.

4 LB
DIVE
WEIGHT



"L" MOUNTING
BRACKET

DECK
WASHER

INSTALL WHEEL
BRACKET AS LOW
ON BACKSTAY AS
POSSIBLE,

NEED ONLY TO REMOVE
1/2 OF BRACKET

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