

This small boat's basic hull design incorporates the following attributes :

Safe and
Inexpensive
Multi-Purpose
Portable (no trailer)
Lightweight and
Easy to assemble.

It's Features are it's Name.
And it is easy to build using common tools and materials. No epoxy required.

SPECIFICATIONS

Length = 9 feet

Width = 31 inches

Draft = 3 inches

Weight = 50 pounds

Load Capacity = 300 pounds

Nests to 31"W x 48"L x 16"H

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Other Features :

FITS IN ALL TRUCKS & SUV's & MANY CARS.

CAN BE ASSEMBLED IN A COUPLE OF WEEKENDS.

EASY TO PADDLE, STABLE, AND ROOM FOR GEAR.

INTENDED FOR OCCASIONAL NON-COMPETITIVE USE.

OCCUPANT SIZE LIMITED TO 6' AND 210 POUNDS.

BUILD ONE FOR EACH FAMILY MEMBER !

GREAT FOR KIDS OF ALL AGES !

General Notes

The design of **S.I.M.P.L.E. 9** was to satisfy my need for a portable Kayak, with trolling motor assist, to fit in my car. It includes a wide beam, good freeboard, decent gear storage, seating for one, and safety buoyancy. It is lightweight, sturdy, easy to build, very portable and can utilize a standard trolling motor.

To have strength and yet be lightweight, the plans use some non-traditional methods of assembly , specifically the “Tape & Glue” construction process developed and incorporated by the designer.

This provides a durable, yet truly portable, finished boat, and the building process is easily mastered by the home handyman and amateur boat builder.

As a result, only hand tools, a jig-saw, a power drill and a carpenters square is all that will be required throughout the assembly process.

Be selective in your choice of materials. Use plywood that is preferably exterior rated.

Marine plywood may be too costly, so the use of 5 mm ACX grade is suggested, but be choosy .

It is important to note, the final choice of materials is the decision of the builder.

We have made specific recommendations, but if the builder has previous experience with different methods and materials, that is their choice, and we respect that decision.

Certainly, minor changes in design are encouraged, to provide a 'custom' boat to satisfy a builders specific needs. We do not make changes to the drawings.

This would be up to the individual builder, and their responsibility. Also, it is very important that none of the basic design parameters be drastically modified, as this may adversely affect overall boat safety or performance.

Seating choice is also up to the builder, but a folding stadium type seat is recommended.

It should also be noted that the hull modules can be glued and screwed together, for those that do not have limitations of storage or transportation.

The hull exterior can also be completely fibreglassed for durability, allowing yet thinner and lighter (4 mm) plywood hull building material .

Any questions or comments regarding the construction and/or design of this project will be responded to in a timely fashion.

Thank you for your interest and purchasing these plans, and good luck with your project.

And don't forget to visit www.PortableBoatPlans.Com for new designs and updates.

Happy Boating !

Ken Simpson , Designer

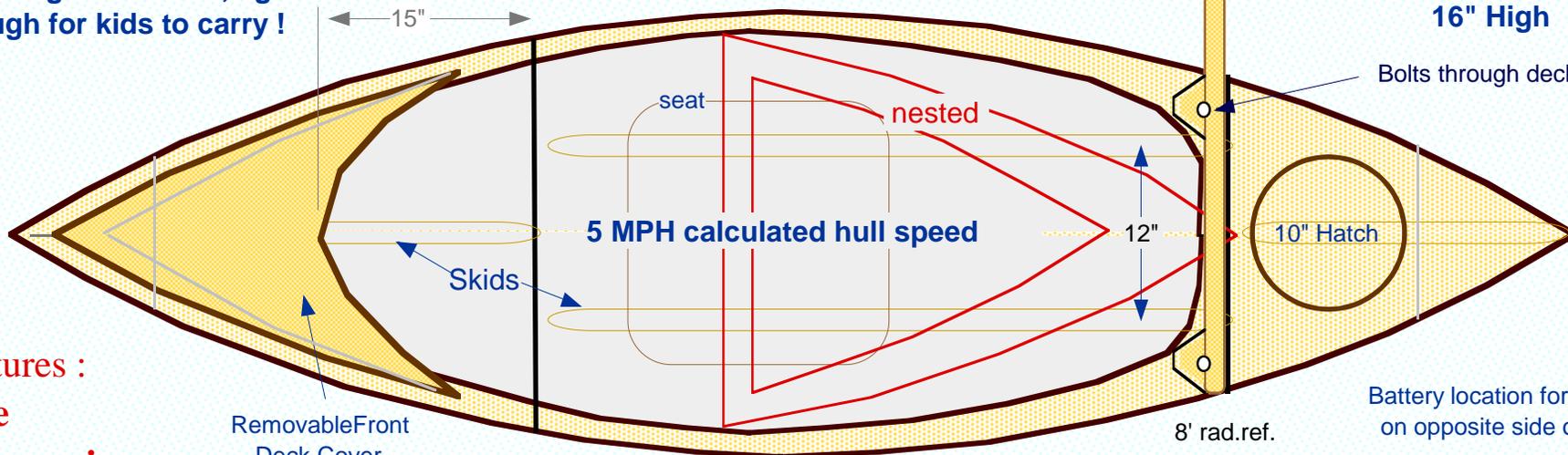
SIMPLE 9' Kayak

DESIGN LAYOUT A Ken Simpson Design

Big enough for adults, light enough for kids to carry !

Optional 2x4 Side Motor Mount

Nested for transport :
31" Wide
48" Long
16" High



- Features :
- Safe
 - Inexpensive
 - Multi-purpose
 - Portable
 - Lightweight
 - Easy to build

NOT for Rough Water Use !

Optional Tandem Seating Arrangement

optional canopy

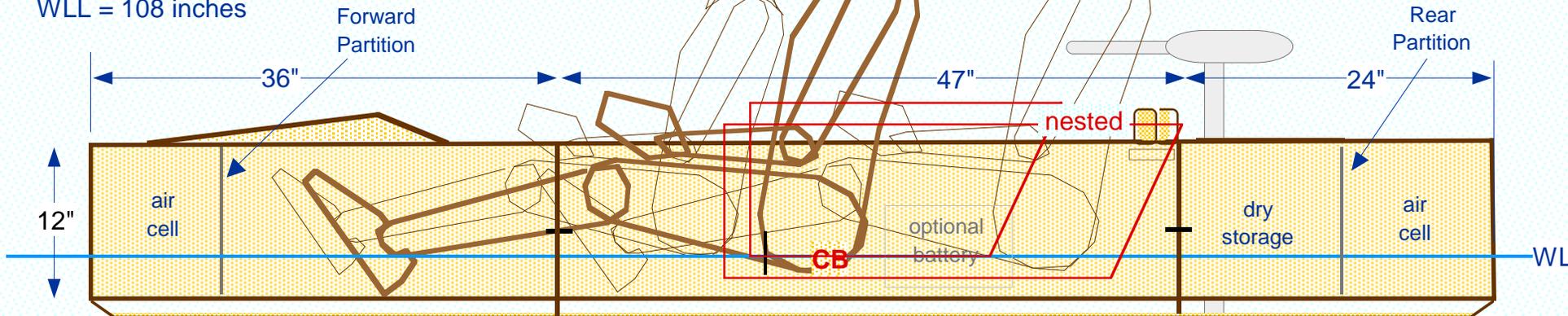
Adult

Seating only for one with optional motor.

5 MM Plywood (0.200 inch)

Max Adult size is 6 feet and 200 pounds.

WLL = 108 inches



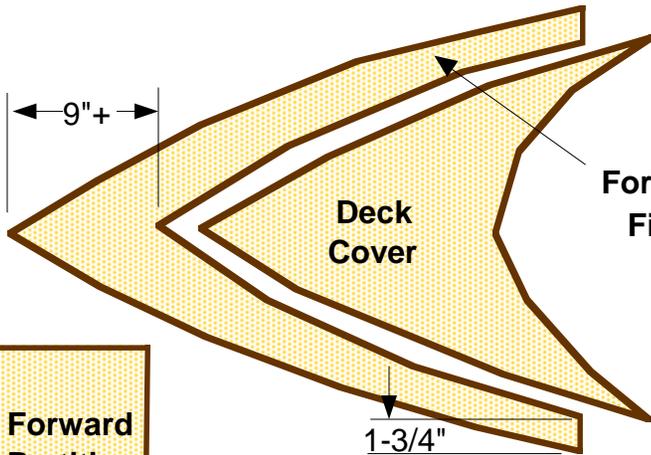
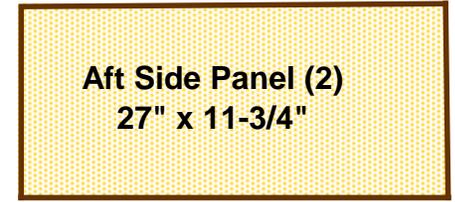
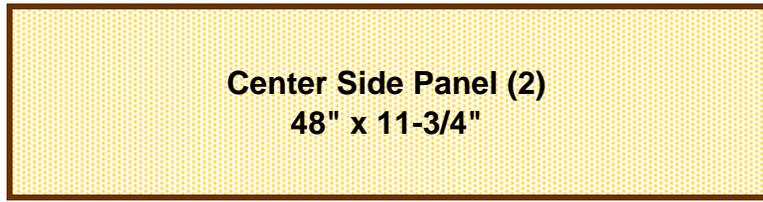
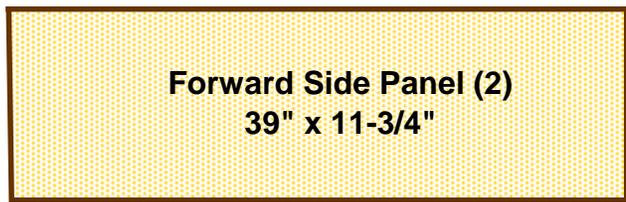
Flotation chambers are sufficient to keep water-filled boat afloat.

Always wear a PFD.

The Center Module can be shortened a few inches to fit in your vehicle, or extended to 5 feet for more occupant capacity .

Can Utilizes Standard 12V Trolling Motor 30 to 40 # thrust

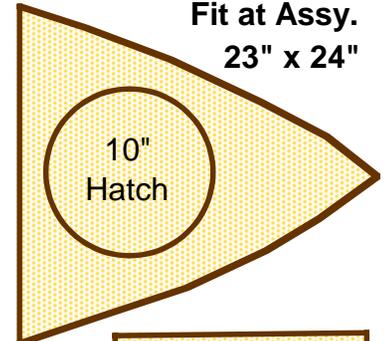
The hull shape is designed to provide a simple to build, easy to paddle and transport, roomy , stable, and durable small boat.



Forward Deck
Fit at Assy.

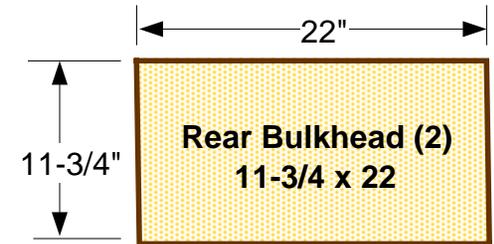
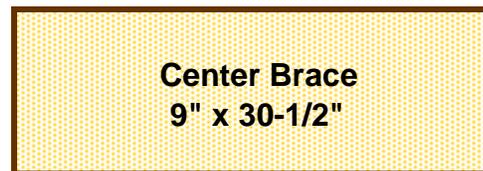
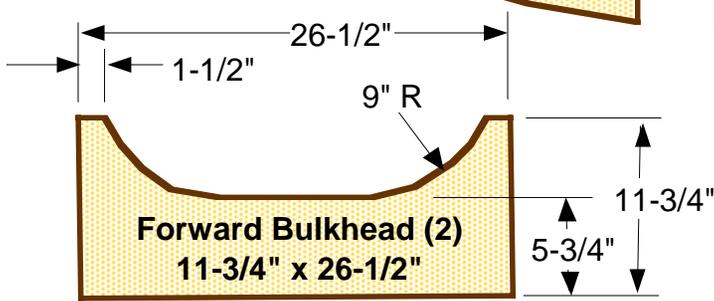
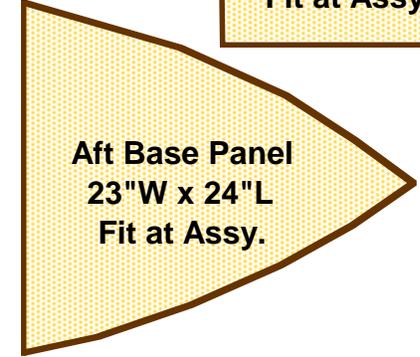
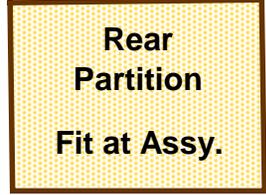
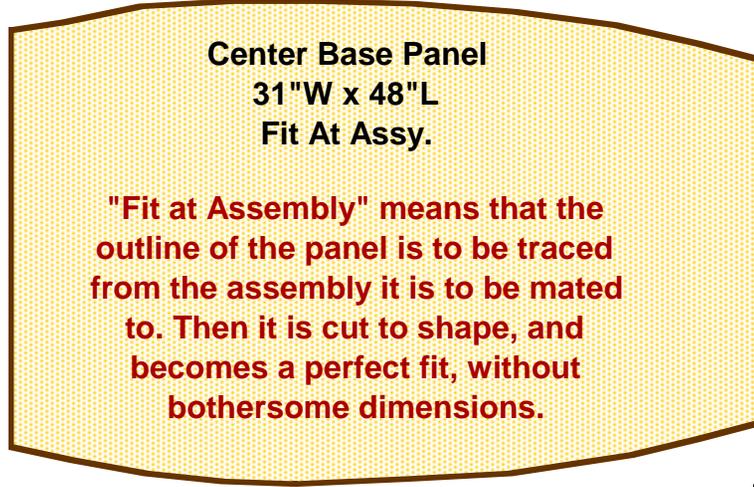
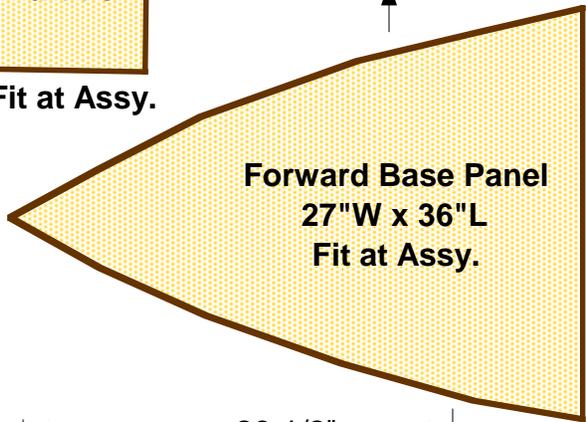
Center
Deck Panels
Fit at Assy.

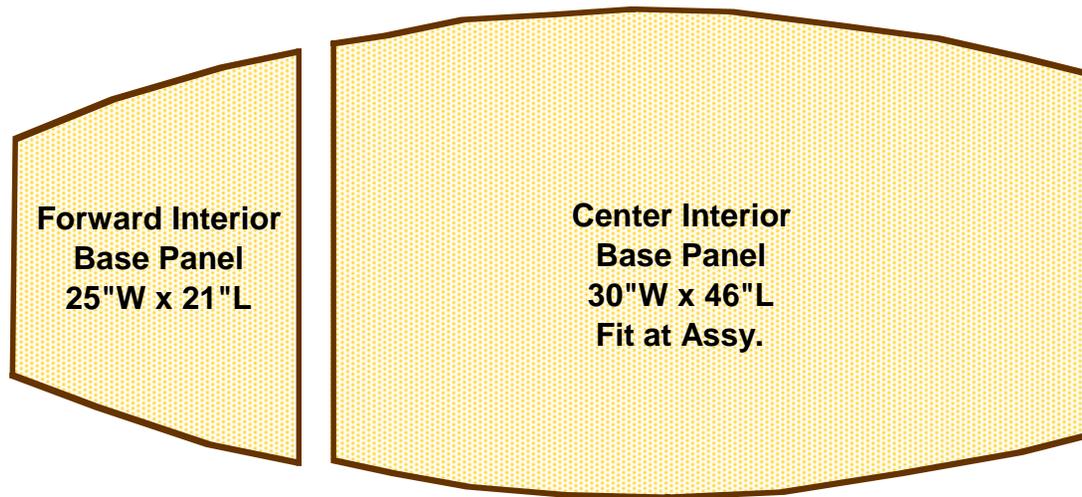
Aft Deck Panel
Fit at Assy.
23" x 24"



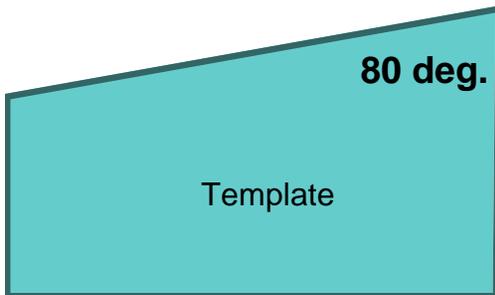
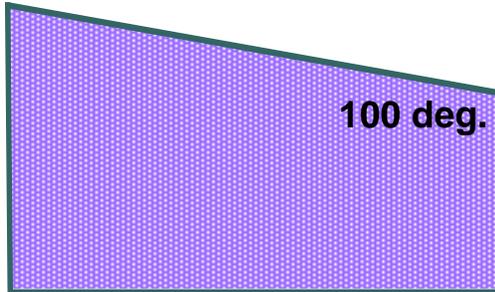
Fit at Assy.

1-3/4"



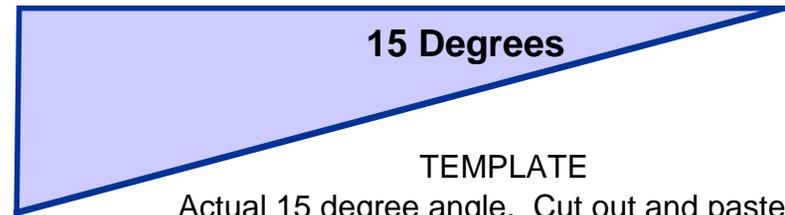


TEMPLATES Use these accurate templates to gage and align the cuts on the forward and rear bulkheads & supports.



Actual angles. Cut out and paste on cardboard & then cut to shape.

F.Y.I.
All sketches are hand drawn and may exhibit flaws, but the data depicted is accurate, and the dimensions are the most important.



TEMPLATE
Actual 15 degree angle. Cut out and paste on cardboard & then cut to shape.



TEMPLATE
Actual 10 degree angle. Cut out and paste on cardboard & then cut to shape.

SHEET 1

Center Side Panel

Center Side Panel

Forward Side Panel

Forward Side Panel

Aft Side Panel

Forward Partition

Aft Side Panel

Center Brace

Forward Interior Base Panel
24"W x 18"L

48"

PLYWOOD LAYOUT

3 Sheets

5 MM Ply

You may elect to layout the panels in a different pattern to suit your cutting needs. The pattern shown was developed to minimize plywood use.

The pattern shown was developed to minimize plywood use.

Center Deck Strips

Pre-cut on the **RED** lines first.

This will provide smaller plywood panels to work with, making it easier to mark and cut the individual hull panels.

SHEET 2

S.I.M.P.L.E. 9

Aft Base Panel

Deck Cover

27"

Forward Base Panel

Forward Deck

The outside curve of the base can become the inside curve of the deck.

31"

Center Base Panel

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Rear Partition

Center Interior Base Panel 30"W x 46"L

Aft Bulkhead

Aft Bulkhead

Forward Bulkhead

Forward Bulkhead

Aft Deck

Parts are close together on the plywood, so take care in cutting them out.

48"

PLYWOOD LAYOUT

5 MM Ply

"Fit at Assembly" means that the outline of the panel is to be traced from the assembly it is to be mated to. Then it is cut to shape, and becomes a perfect fit, without bothersome dimensions.

If you do not build the motorized version, use the leftover plywood at left to build some Paddles, and the Deck Cover.

F.Y.I.

All sketches are hand drawn and may exhibit flaws, but the data depicted is accurate, and the dimensions are the most important.

REMEMBER : MEASURE TWICE, CUT ONCE !

It is very important that you cut straight lines. To assist in this process, make sure you have marked the outline of the panel to be cut with a dark pencil. Next, clamp a straight edge to the plywood to be cut, and space it exactly, the distance of the blade to the edge of the saw, away from the marked cut line. See sketch below.

Murphy's Law of Boat Building:

THE GLUE DRIES BEFORE THE MISTAKE IS FOUND.



Some photos and sketches may be of a similar boat that uses the same panel construction methods.

Basic Building Materials:

3 sheets of 5 MM x 4'x8' Plywood (water resistant) Note: 6 MM Plywood can be substituted. * 3.25 oz. Glass Cloth
1 Gal. of Titebond III Waterproof Wood Glue * 1 Box (100) #6 x 3/4" SS Flat Head Wood Screws * 10 pcs. of 1x2x8' Lumber

Start by cutting each Bulkhead and Side Panel from the plywood Sheets. It is important you cut straight lines, so use a solid straightedge to guide the jigsaw. Place the good side of plywood down while cutting, which reduces splintering on the boats outside edges. Lightly sand all edges after cutting. Insure that the two Center Bulkheads are identical, as these form the final hull shape.

The following process will be the same for all panel assemblies..

CENTER Module

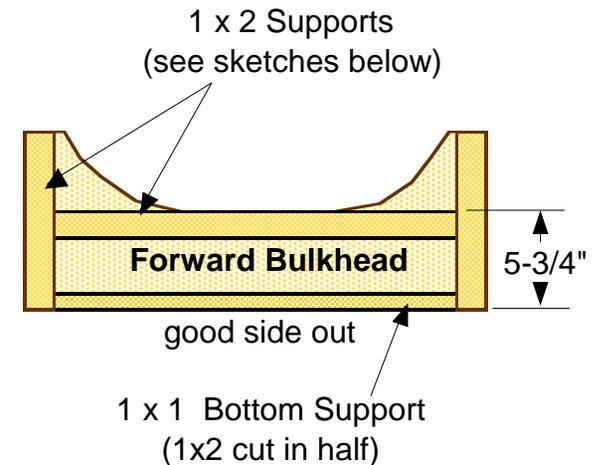
Apply 1 x 2 lumber as shown on edges and 1x1 on top & bottom of the two (2) Forward Bulkheads.

Using **TiteBond III Glue** and #6x3/4" Screws, glue and screw the supports in place., as shown in the following sketches. Do not cut the 10 degree edge angle until the glue is cured (at least 4 hours). Lay bulkheads on a flat surface to prevent warpage.

It is best if you clamp the 2 bulkhead assemblies together, and cut the angle as shown. This way, both hull sections will fit together perfectly.

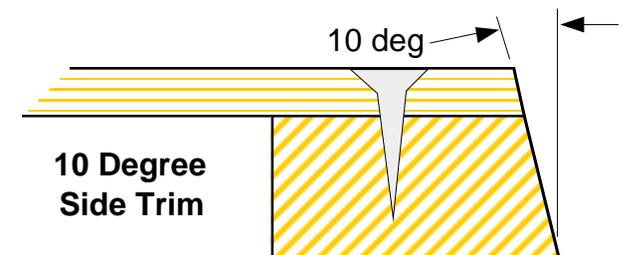
When this is done, unclamp, and move on to the next step of placing the side panels in position.

STEP
1
Supports



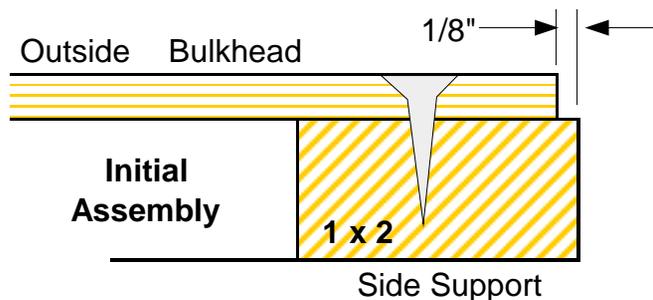
Glue and screw supports to inside surface of Forward Bulkheads. (Prevents bending during assembly)

Always wear latex gloves when gluing or painting.



See Note next page

STEP
2
Trim Angle

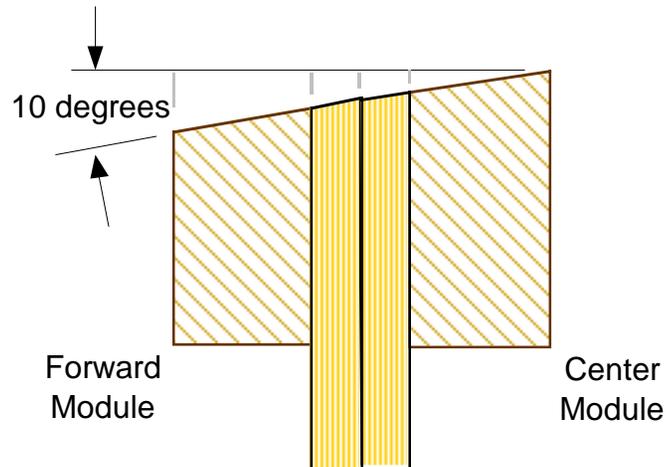


Top View

Remember, 1 x 2 lumber is actually 3/4" x 1-1/2" size.

REMEMBER : MEASURE TWICE, CUT ONCE !

STEP
2
continued



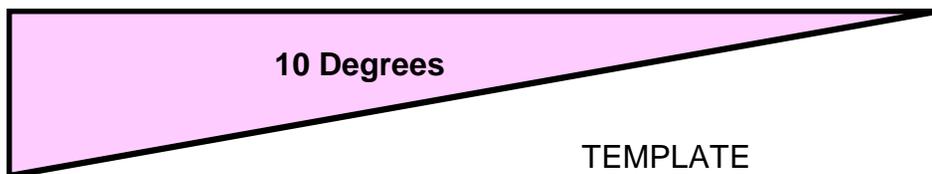
Trim the Bulkheads together.

The photos at right signify the importance of planning ahead.

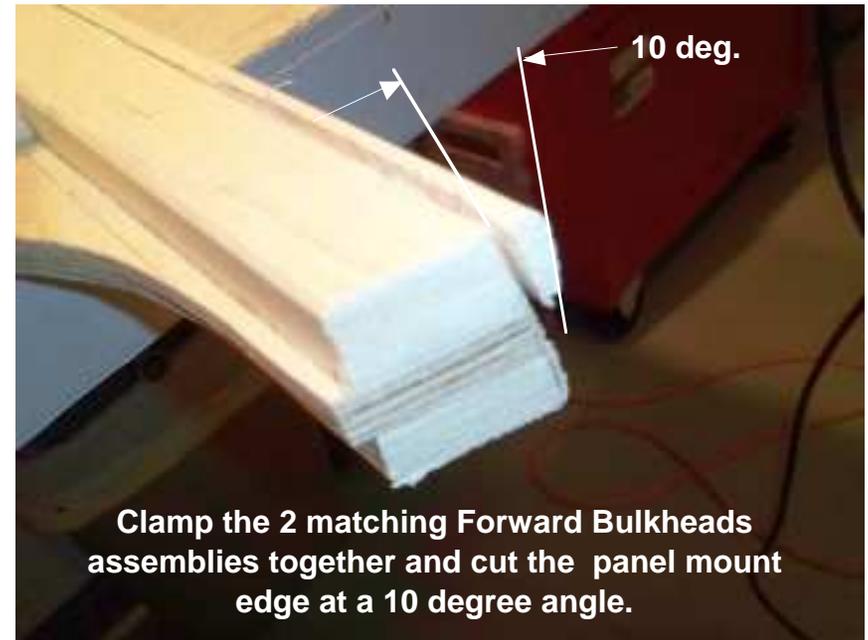
By cutting the angles together a perfect match is formed.

Being careful to insure panel to bulkhead alignment will provide good module to module fit.

Mark the panels either '**Forward**' & '**Center**', so as not to confuse them at assembly.

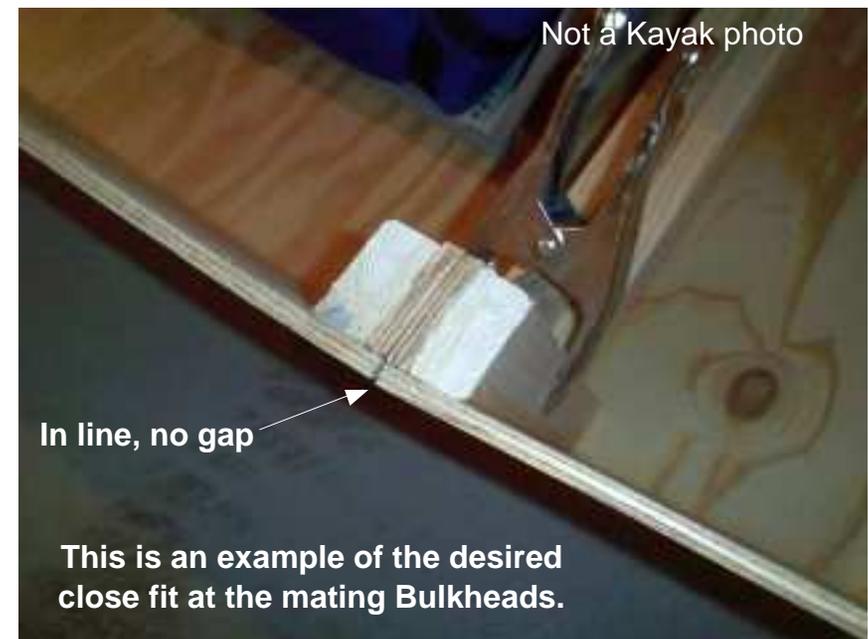


TEMPLATE
Actual 10 degree angle.



Clamp the 2 matching Forward Bulkheads assemblies together and cut the panel mount edge at a 10 degree angle.

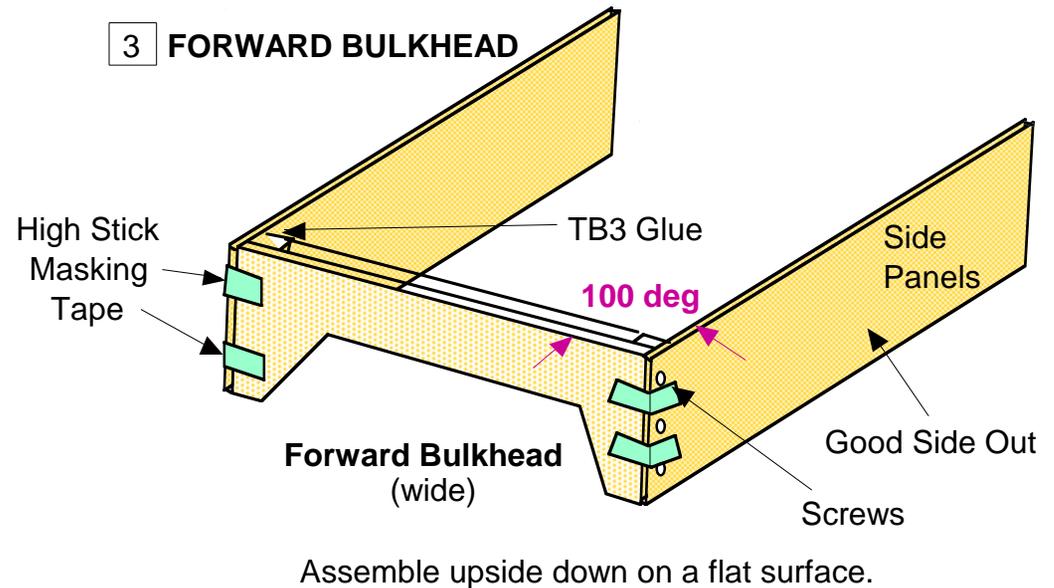
ALWAYS PLAN AHEAD !



In line, no gap

This is an example of the desired close fit at the mating Bulkheads.

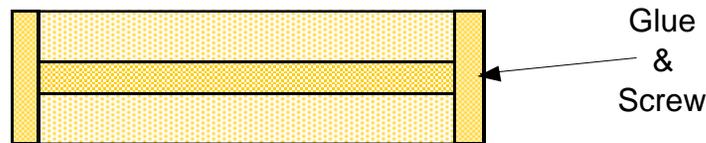
Apply TB3 (TiteBond III) glue to the edges of the Bulkhead, smooth out with finger. Allow to dry for a couple of minutes. Do the same for the end surface of the Side Panel to be glued. This allows the glue to penetrate the wood and form a bonding joint. Next, apply a thick bead of TB3 glue to the edge of the Bulkhead, press a side panel in place, and hold with High-Stick Masking Tape (tan color). The Panel goes on the outside of the bulkhead, and the 'good side' should be out. Insure a square corner. Small #6 x 3/4" SS Screws should be used to hold the panel in position during the curing process. Do the same for the opposite side panel. Allow to cure for at least **6** (six) hours at room temperature. Bond strength is required for the next assembly step.



Drawings may not be to scale.

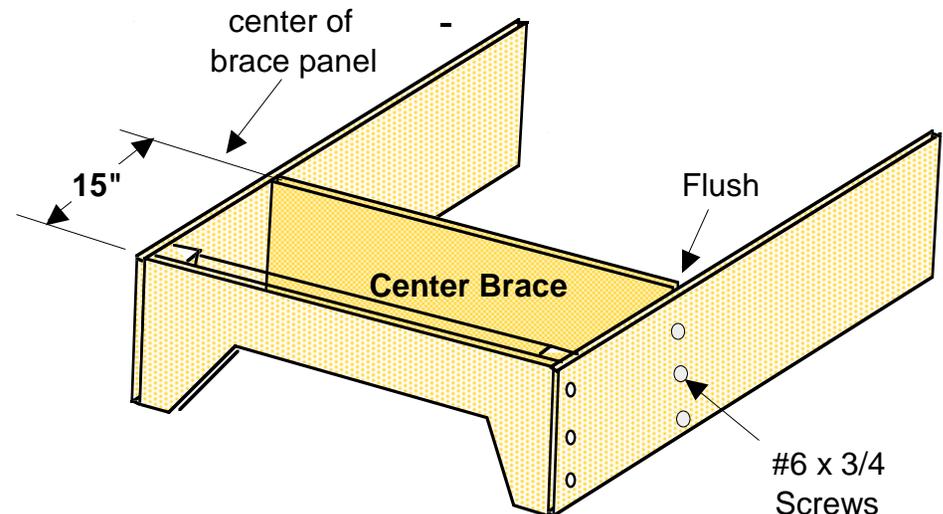
4 CENTER PANEL BRACE

Apply 1 x 2's to the sides and center of the Center Brace as shown below. This strengthens and makes the Brace ridged.



Next, position the Center Brace as shown at right. Make it flush to the top of the side panels. Hold in place temporarily using #6x3/4" screws.

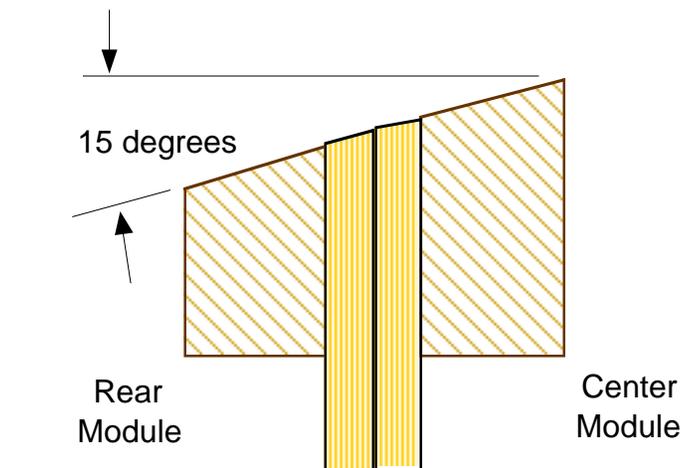
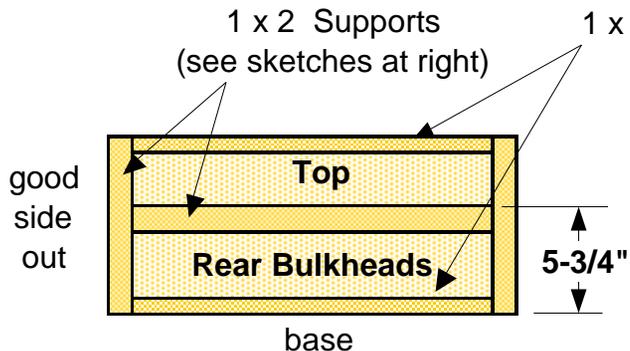
Do NOT glue in place.



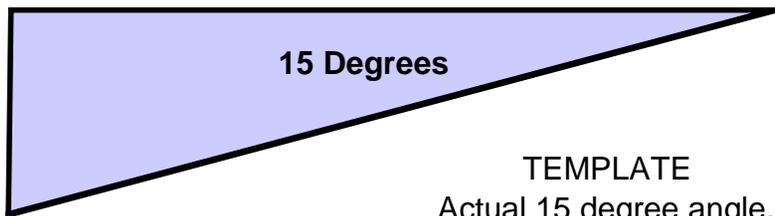
Later, the holes made by the screws must be filled with TB3 glue (or equiv.).

The assembly can be constructed upside down as shown, or not. Whichever is easier for you.

5 REAR BULKHEAD

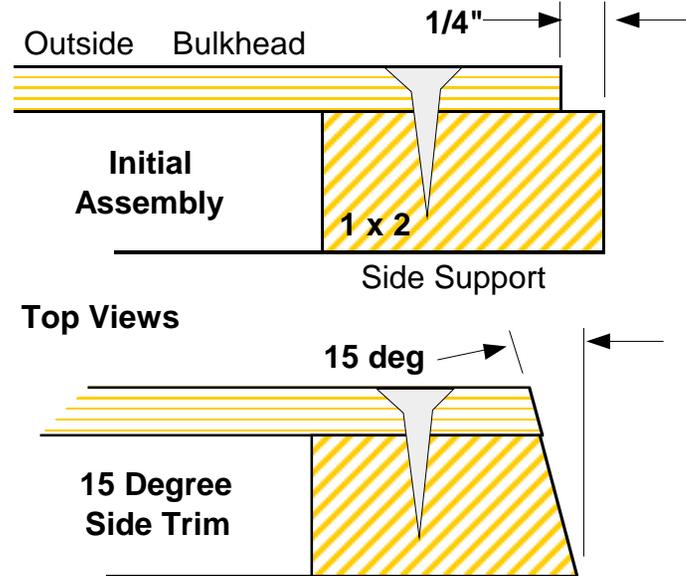


Trim the Bulkheads together.



Trim the two Rear Bulkheads together, using the same method as the Forward Bulkheads. Insure the Bulkheads are flat.

Mark the **Top** of the bulkhead assembly, as it will be difficult to tell during the next step.

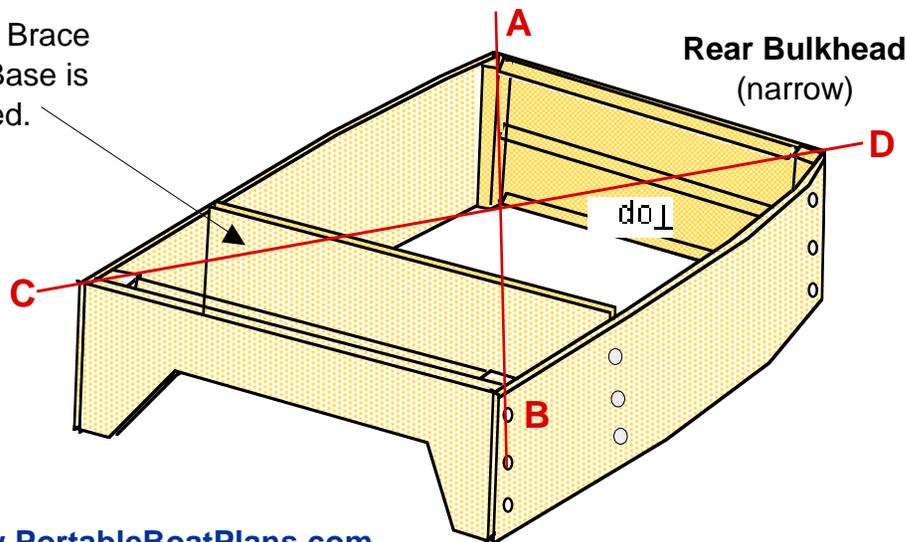


The Rear Bulkhead is constructed and assembled to the Side Panels much the same way as the Forward Bulkhead.

Special care must be taken in bending the Side Panels to mate with the Bulkhead, to insure a good fit and proper bend. Do one side at a time. Apply Glue and Screw the Side Panel to the Bulkhead assembly.

Measure corners from A to B & C to D, as these dimensions **must be identical**, to provide a symmetrical assembly.

Leave the Center Brace in place until the Base is fully assembled.



6 CENTER BASE PANEL

The preferred method of cutting the Base Panel, to fit the shape of the Center Module assembly, is to set the assembly on the sheet of plywood (good side down, location defined on plywood layout drawing), and trace the outline of the side panels and the bulkheads. Then cut on the lines to match the hull. This provides a perfect fit for the Center Module assembly.

Next, follow the glue and screw instruction as previously described for the side panels. The primary difference will be along the side panel edges. Here you should lay a generous bead of glue on the edge just prior to lowering the Base Panel in place. Then apply screws in the bulkhead areas, and high-stick masking tape (tan color) along the edges until the glue dries. Check for glue voids and fill as necessary.

After the glue is cured, about 6 hours, remove the masking tape and turn the assembly over. Apply a bead of glue to all the inside base corners, and smooth out with finger to remove any excess glue. Allow to cure.

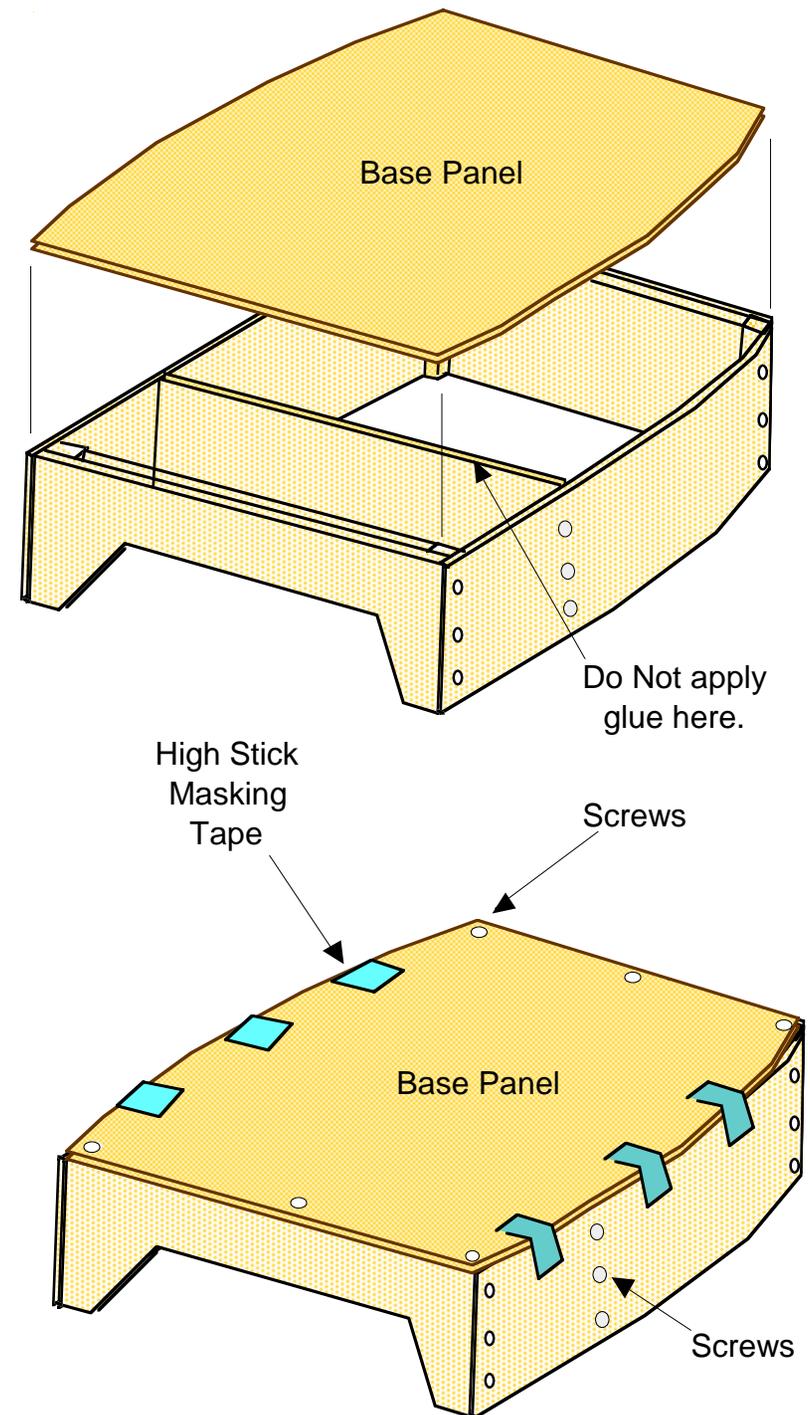
Finally, you can remove the screws holding the Center Brace in place. Fill the screw holes with TB3 Glue, flush to the inside and outside. Allow to cure.

Now lightly sand all edges to remove any splinters or excess glue. Inspect for any glue voids in the seams, and fill as necessary.

Then prepare to fit, cut and assemble the Internal Base Panel, and finally the Center Deck Strips to the Module.

SEE NOTE ON PAGE 18 REGARDING BASE ASSEMBLY.

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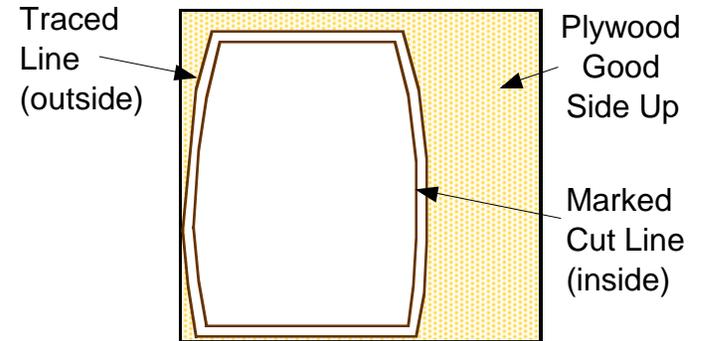


7 CENTER INNER BASE

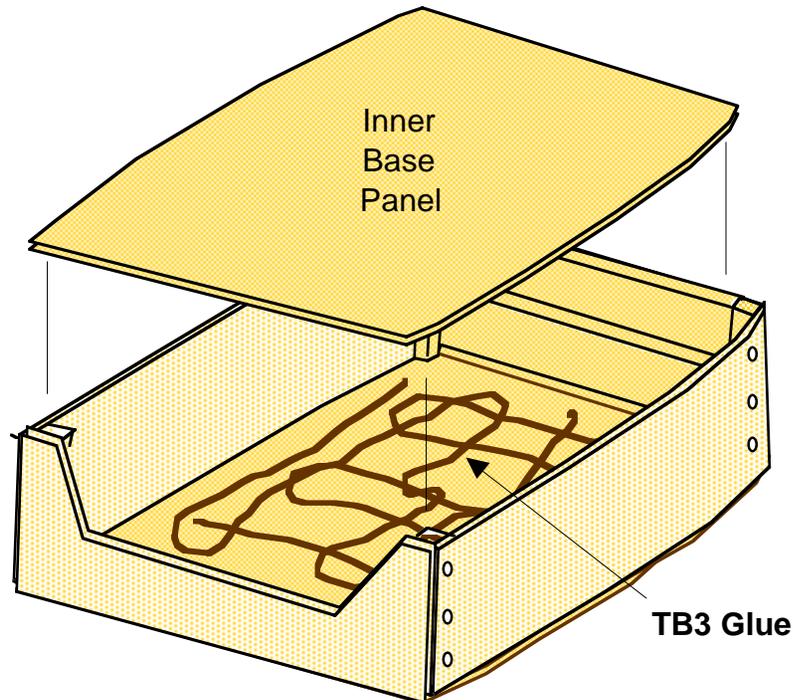
Trace the outside of the bottom of the Center Module onto the plywood, good side up (page 5). Then draw a parallel line 1/4 inch all around on the inside (sketch at right).

Cut out the Inner Base Panel on this inside line. Remember, good side of plywood up.

Apply a heavy twisting bead of TB3 glue to the base panel, as shown below. Lower one end and then the other to lay flat on the base. Weigh down with heavy objects (books, bricks, etc.) and let cure overnight. It is important you do this on a flat surface, like a garage floor, to maintain alignment.



Traced Base Panel



Once the glue has cured, remove the weights and then apply a bead of TB3 to seal all the edges of the inner base panel to the side panels and bulkheads. Allow to cure.

These interfaces will have the 'Tape & Glue Process' applied later in the assembly.

The next step will be to place a 1x1 support along the top edge of the side panels. This requires a bend in the support to follow the curve of the panels.

Follow the 'kerf' instructions on the next page.

Repeat this process for the Forward Inner Base Panel.

8 CENTER DECK STRIP SUPPORTS

To make the side panels ridged, it is necessary to add 1 x 1 Supports to the inside edge, as shown at right.

You will have to Kerf (slot) the edge of the 1 x 1 with a saw cut 1/2 inch deep, about every 3 inches, as shown in the sketch below. I use a hacksaw, as the blade is thin. This will allow you to bend the Support to conform to the shape of the gunwale (top edge) of the side panels.

But first, place the Center Brace, as shown, in the hull to hold the shape while attaching the Supports. Wedge it lightly in position, without deforming the panels (no screws required).

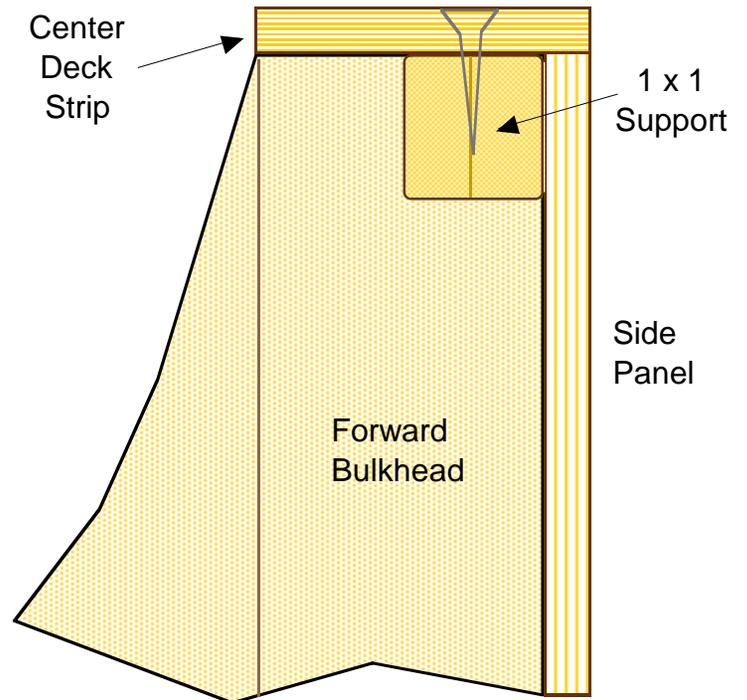
Then, prepare the surfaces to be glued, Hull and Supports, and fasten with #6x3/4" screws from the outside. Make sure the screw heads are flush or below the panel surface. Spring clamps may also be used to hold the Strips in place. Allow the glue to cure before removing the Center Brace.



1 x 1 Support with saw cuts about every 3 inches

Spring clamps can be used instead of the screws. Allow the glue to fully cure before removing the clamps.

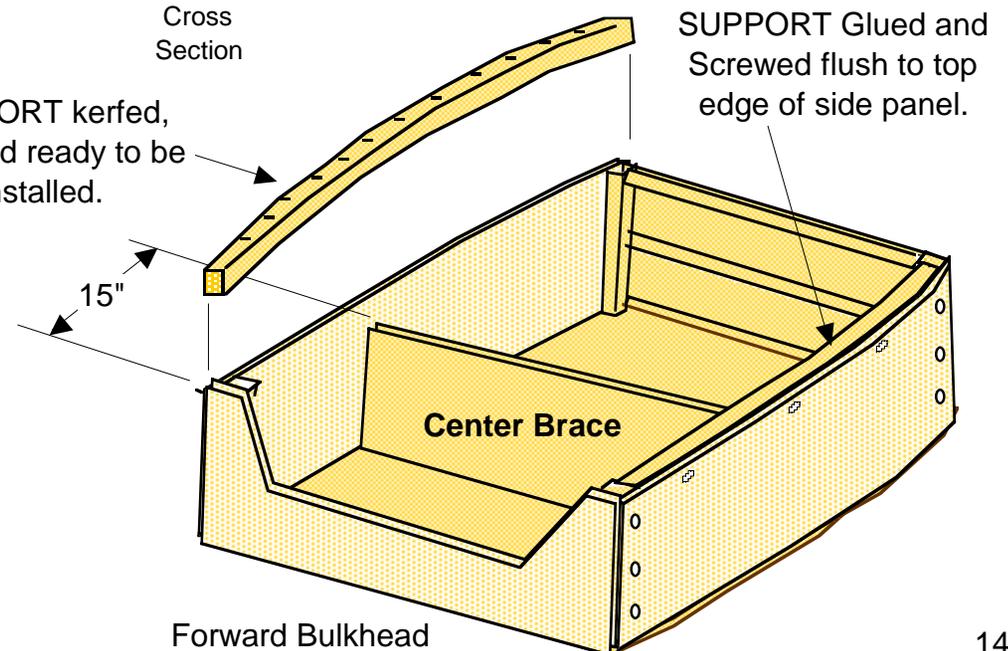
Slide out the Center Brace and prepare to mark, cut and assemble the Center Deck Strips, as outlined on the next page.



Actual Size Cross Section



SUPPORT kerfed, bent and ready to be installed.



Forward Bulkhead

9 CENTER DECK STRIP

You should have 2 strips of plywood, 48 inches long, left over from the second sheet of plywood. These are the Center Deck Strips.

Lay each, good side up, on the gunwales and pencil trace the outside outline, and the bulkhead ends, of the center module onto the plywood. Mark a line on each piece to correspond to the dimensions shown at right. Mark one panel Port (left), the other Starboard.

Now, move the Deck Strip so that these dimension lines are in line with the outside edge, and pencil trace the curved side panel line. You have now defined the outside of each Center Deck Strip. Next, mark the inside edge to your specifications.

NEXT

Cut the Deck Strips from the marked plywood. Lightly sand the edges, and recheck the fit. Glue and screw per the previous instructions.

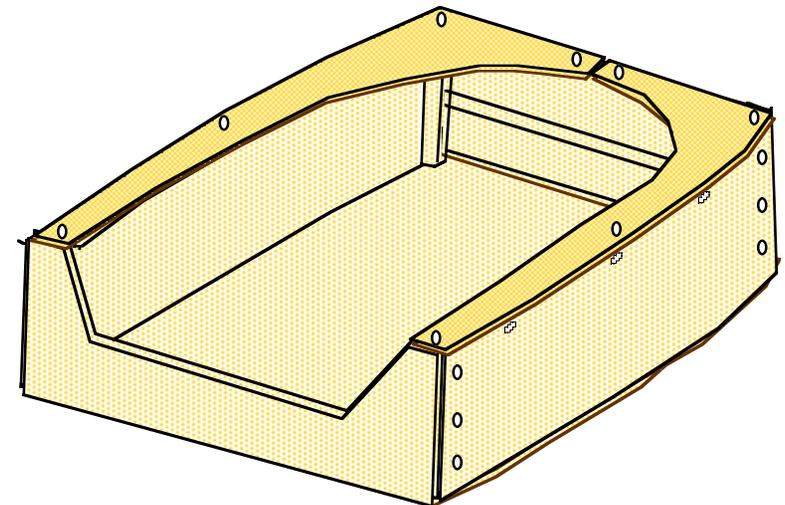
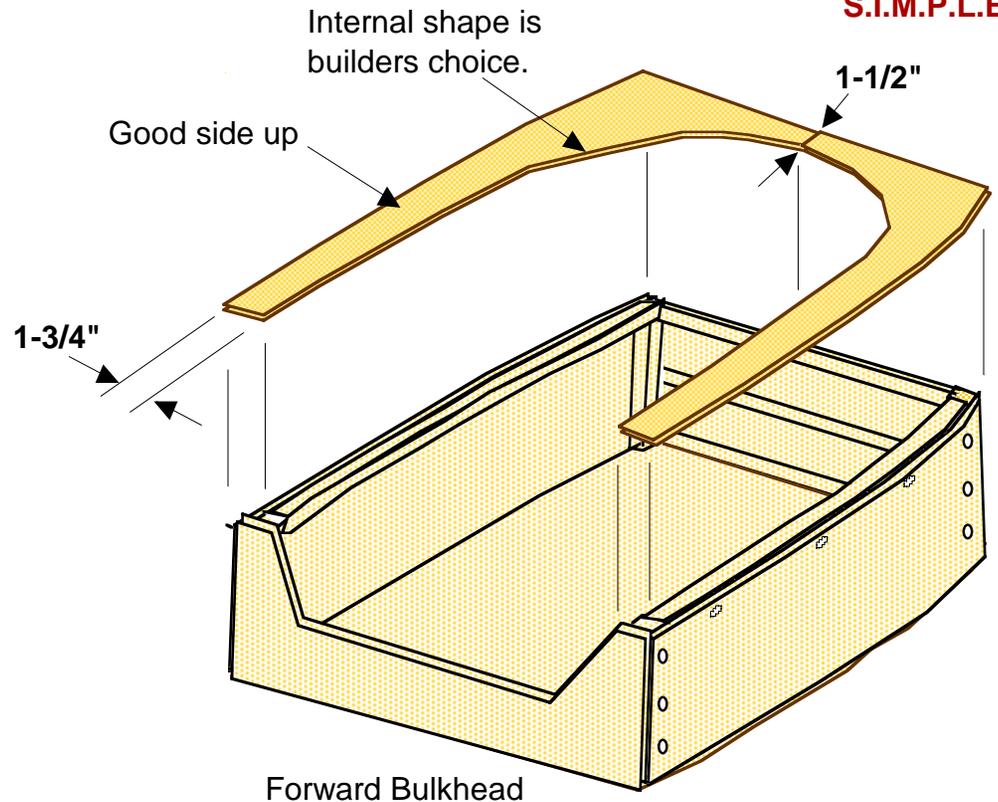
Spring clamps may also be used to hold the Strips in place while curing.

Now review all glued interfaces and fill any voids as necessary. Lightly sand all corners and edges.

This completes the initial assembly of the Center Module !

Set aside and review the information for the next assembly, the Forward Module.

FYI : All Modules will be given the application of the "Tape & Glue Process" at the same time. It can be a messy process, but water will clean it up before drying, unlike epoxy.

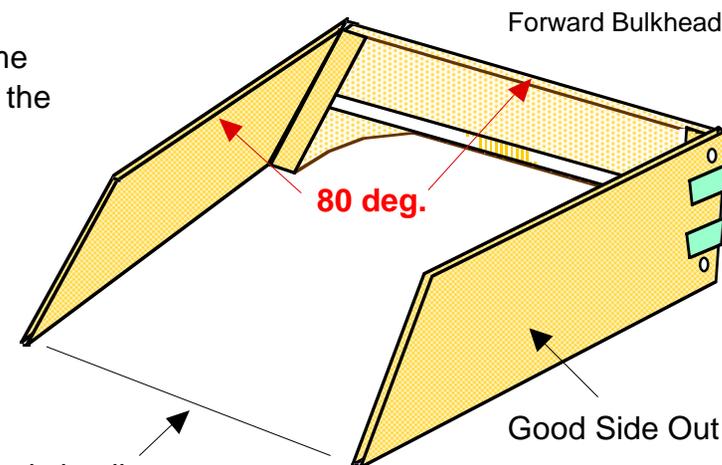
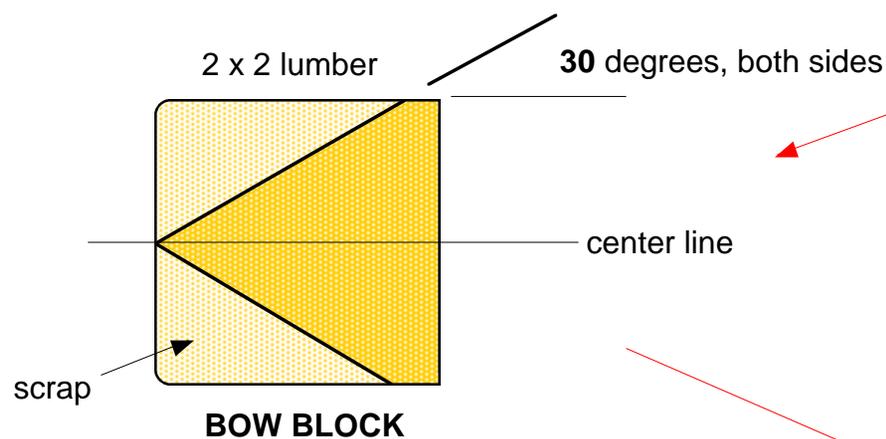


10 FORWARD MODULE Assembly

Construct the Forward Module Side Panels to the Bulkhead in exactly the same way as you did the Center Module. Because you cut the Bulkheads together, the fit should be perfect. Insure that both Side Panels are in alignment.

11 BOW ASSEMBLY - Bow Block

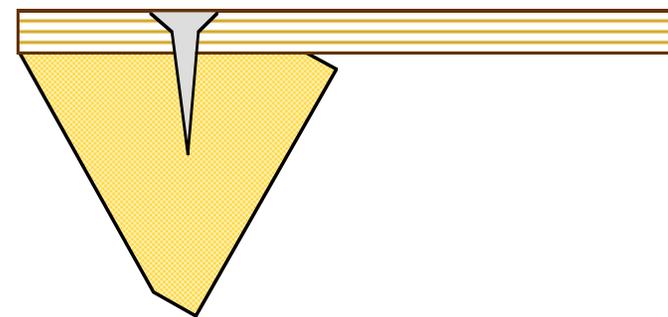
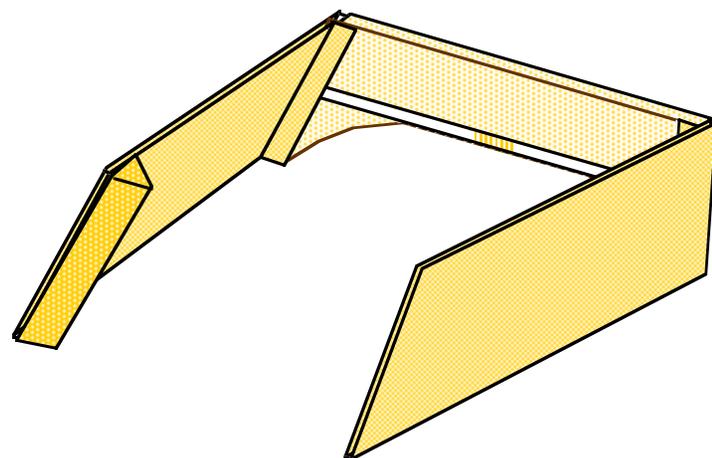
First, cut a 12 inch length of 2 x 2 per the sketch below.



Panels in alignment, not skewed up or down.

Allow glue to cure prior to the next assembly step.

The assembly can be constructed upside down as shown, or not. Whichever is easier for you.



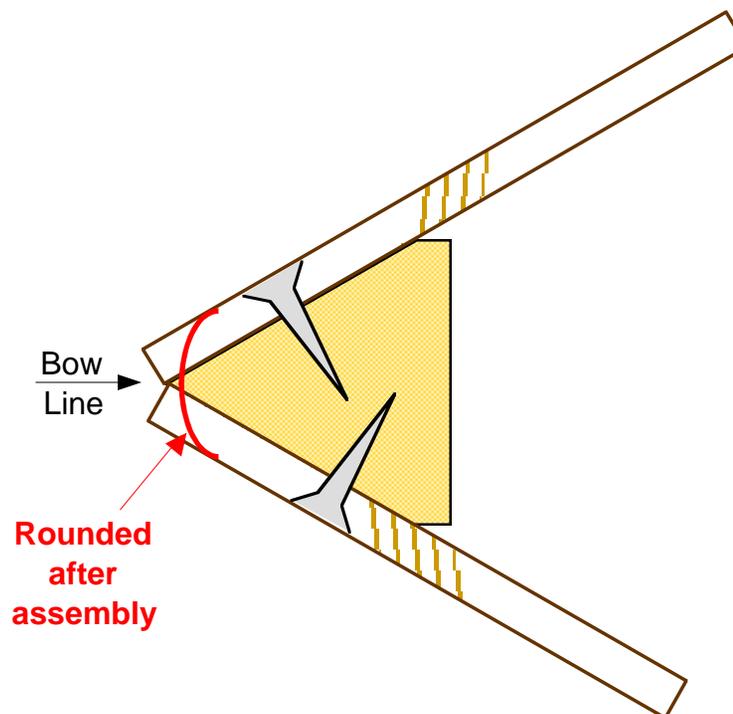
Glue and screw the Bow Block to one Side Panel, above flush to one end, as shown in sketch at right. Trim the ends flush to length only after assembly is complete.

11 BOW ASSEMBLY - continued

Next, bring the 2 Side Panels together at the bow, being careful not to overbend either panel. Check to make sure they fit evenly and that the bow line is not canted to one side or the other. Pre-drill the pilot screw holes. 3 on a side should be sufficient. Hold in position with masking tape. See sketch at right.

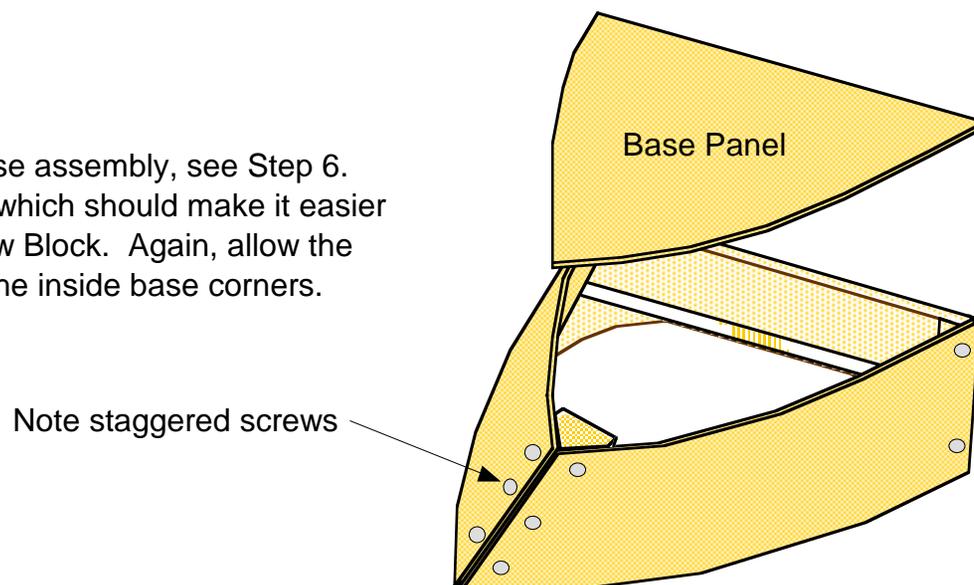
When satisfied with the fit, release the panels and apply glue to each part as outlined earlier. Bring the Side Panels together, and glue & screw in place. Allow to cure overnight.

Trim the Bow Block flush to the top and bottom of the side panels. Prepare for next step, the Forward Base Panel assembly.



12 FORWARD BASE PANEL

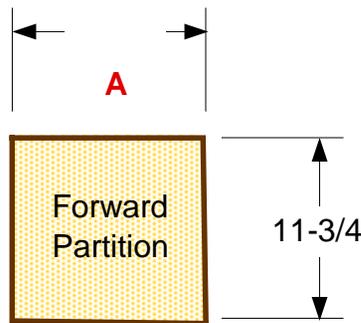
Essentially, do the same as you did for the Center Base assembly, see Step 6. There will be a little more curve to the Forward Base, which should make it easier to install. Place screws at the Bulkhead and at the Bow Block. Again, allow the glue to cure, and then turn over and apply glue to all the inside base corners. Lightly sand all edges for splinters and excess glue.



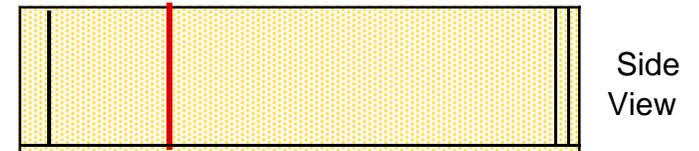
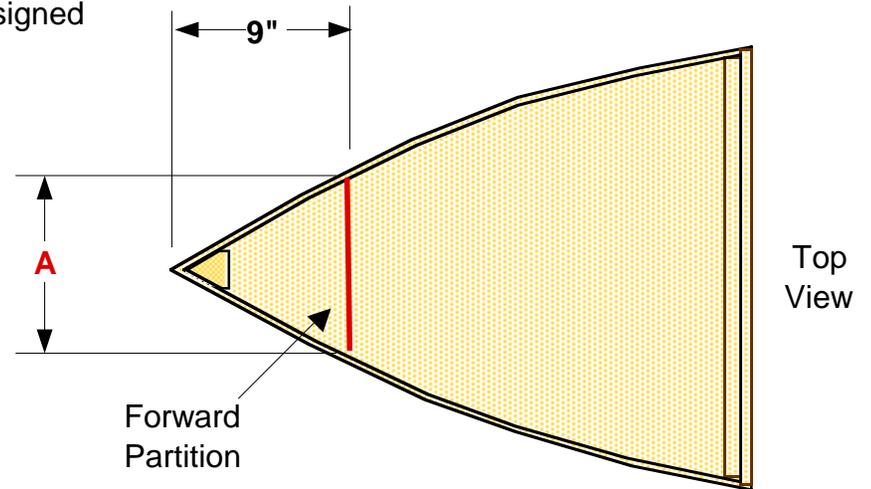
13 FORWARD PARTITION PANEL Measurement

It will be necessary to take a few measurements to develop the Partition Panel. Every one will be different, because no 2 pieces of plywood are the same, and as a result the side panels will bend differently. Pencil mark the designed location (9" & 4") on the inside of the Side Panels, per sketches.

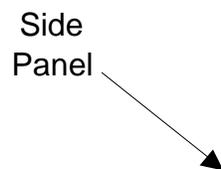
Measure the dimension **A** and apply to the sketch below. Then mark and cut out the panel.



Measure and place the dimensions in the sketch at left.



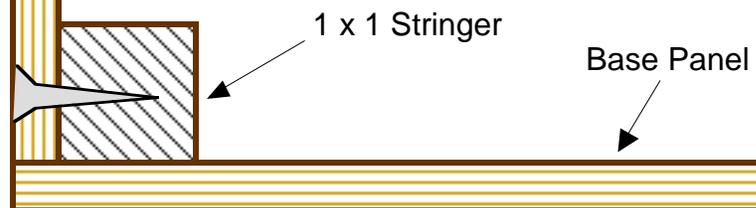
Cross Section



Alternate method of securing the Base Panels

For those that may find the Tape & Glue Process somewhat daunting, use this method instead. You may have to 'kerf' the stringers for proper curvature fit.

If you chose this method. it will be necessary to notch the Center Brace to clear the stringers.



Glue and screw the Stringer in position prior to the addition of the partition.

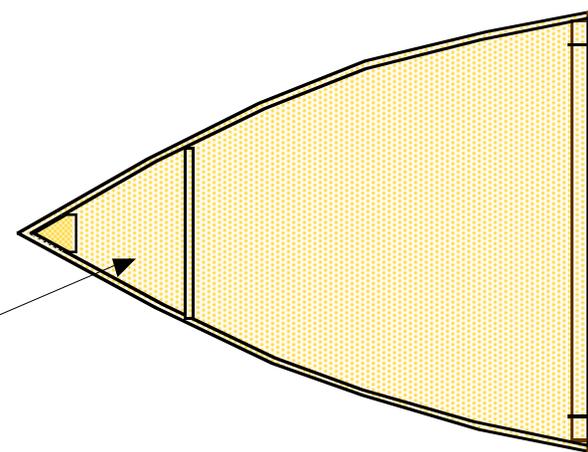
You can also use this method on the gunwales.

14 FORWARD PARTITION Assembly

Apply TB3 glue to the side edges and bottom edge of the panel. Place it in the bow as previously marked. Hold in place with masking tape. Apply more glue to the joints, inside and outside, as required. Allow to cure.

Lightly sand all corners and edges to eliminate any splinters or excess glue.

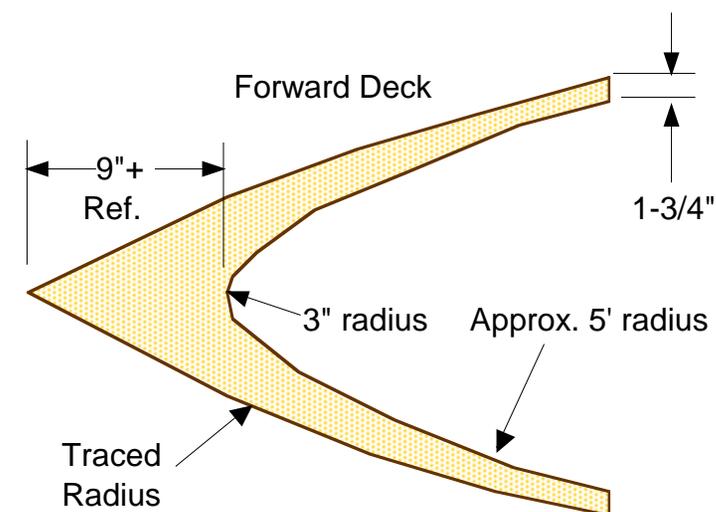
Apply Waterproofing **only** to the inside of the Buoyancy Chamber, in preparation of the next steps. Follow the **Manufacturers** Instructions for application and drying times.



15 FORWARD DECK

Place the Forward Module assembly upside down on the second plywood sheet and trace the complete outline. Also mark where the bulkheads end (at cutout). Remove the module assembly, and complete the internal radius between the 3" radius and the 1-3/4" ends (approx. 5 foot radius).

Cut out the panel, being especially careful to maintain smooth radii.

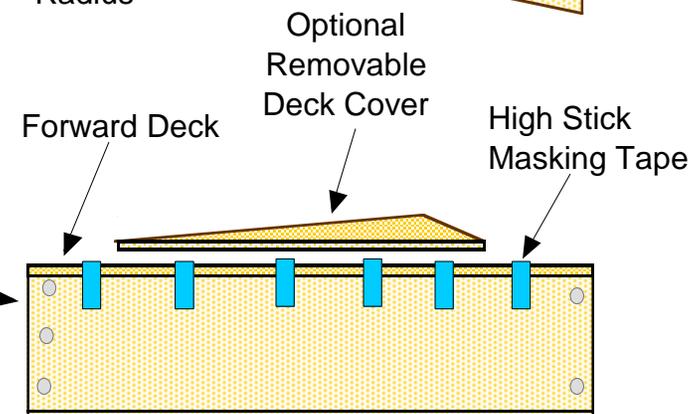


FORWARD DECK Assembly

Assembly of the Forward Deck is very similar to the assembly of the Base Panel. Apply glue to all the module edges, including the chamber panel, and lower the deck in place. Hold down with a generous amount of masking tape, and screws at the bulkhead ends and the bow block. Allow to cure completely.

Round the bow area until it is smooth and uniform. Remove the masking tape, and lightly sand all edges.

The Deck Cover should be cut to fit over the opening, finished, and held in place with Velcro tabs or small twist-clamps. Builders option.

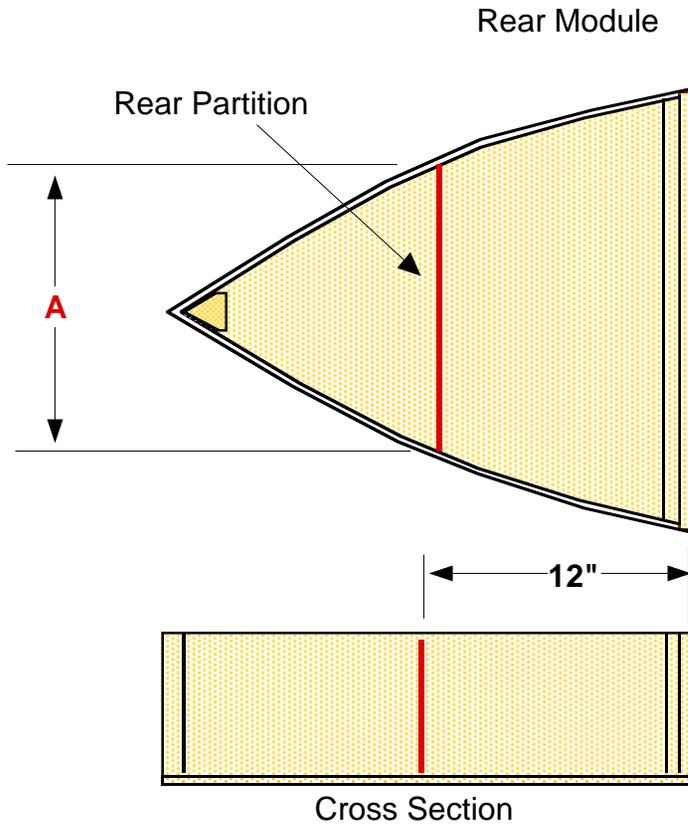


This completes the initial assembly of the Forward Module .

16 REAR MODULE ASSEMBLY

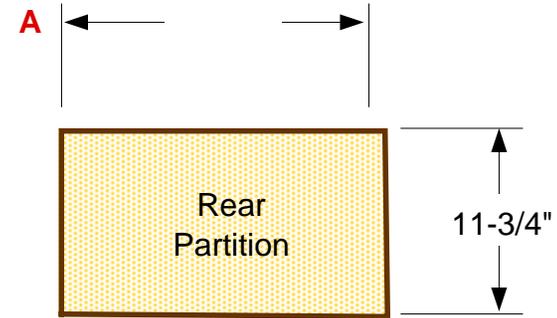
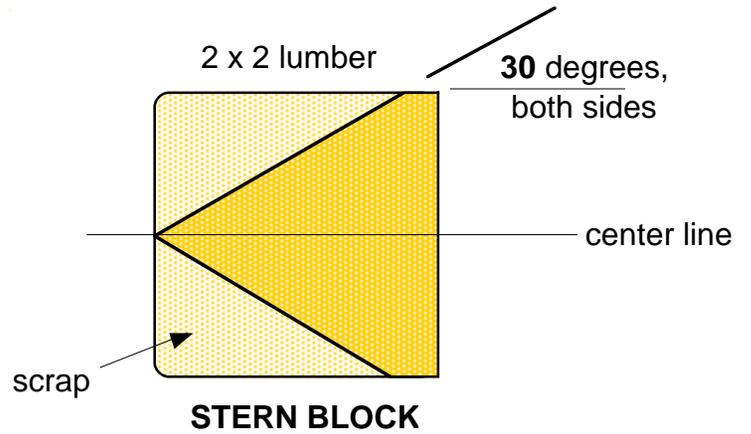
For all intents, the Rear Module is assembled in exactly the same way as the Forward Module, with the following exception.

The Rear Partition has different dimensions, as below.

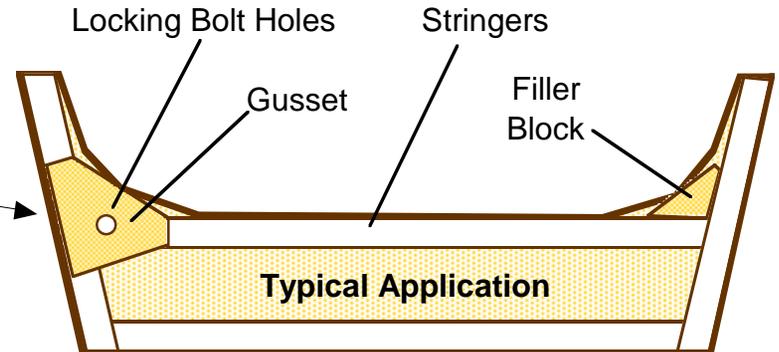


Top View

Side View



Measure and place the dimensions in the sketch above.



Refer to **Page 25** for adding Gussetts and Filler Blocks to the Locking Bolt locations.

After the partition glue has cured, apply Waterproofing to the entire inside of the Rear Module assembly, in preparation of the next steps. Follow the **Manufacturers Instructions** for application and drying times.

17 REAR DECK

Place the Rear Module assembly upside down on the second plywood sheet and trace the complete outline. Also mark where the partition is located.

Cut out the panel, being especially careful of the side radii.

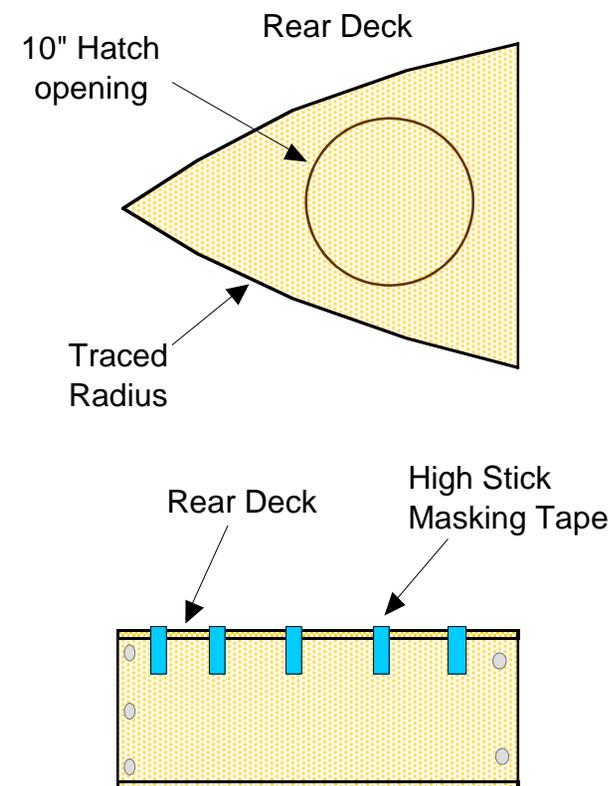
REAR DECK Assembly

Assembly of the Rear Deck is very similar to the assembly of the Base Panel. Apply glue to all the module edges, including the chamber panel, and lower the deck in place. Hold down with a generous amount of masking tape, and screws at the bulkhead ends and the stern block.

If the bend over the chamber panel is too stiff, add weights along each edge of the deck panel to force it to mate with the side panels. Allow to cure overnight.

Remove the masking tape, and lightly sand all edges.

This completes the initial assembly of the Forward Module .

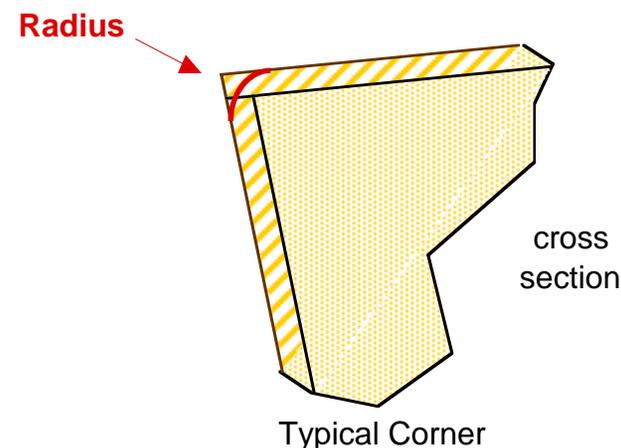


18 TAPE & GLUE PREPARATION

This completes the assembly of the Hull Modules. The next step is to inspect for errors, and sand all surfaces and seams of all Modules.

If glue voids are found, fill them with TB3 and allow to cure.

Sand all edges and corners to be Taped & Glued to a radius of about 1/8 to 1/4 inch. This will make it easier to apply the fiberglass tape around the edges and corners.



TAPE & GLUE PROCESS

Version: 09-10-09

The following small boat assembly process was developed out of the need for an easy, lightweight, cost effective and health friendly method of providing a structurally sound and sealed small hull assembly. Let it be said up front that it is not the solution to everyone's needs. In fact, to do it right, the boat should be designed with this process in mind.

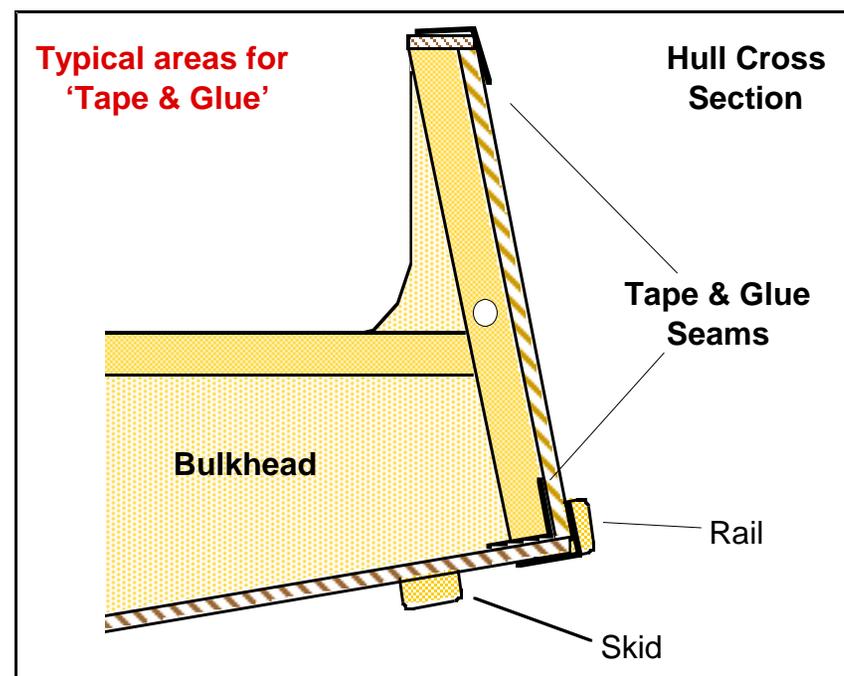
Basically, 'Tape & Glue' is a method for sealing and strengthening all seams of a small boat to the elements. It is not unlike Stitch & Glue, except it is not used to actually construct the boat. 'T&G' (as it will be referred to) is applied after the boat is fully assembled, minus a few appendages, such as skids and rubrails. For this reason alone, it is best if the boat is designed to utilize the 'T&G' process. It should also be stated that the outer seams are naturally subject to damage from rocks and beaching the boat, so protective skids or rails at or near the joint are strongly recommended. The 'Tape & Glue' process has been used on boats such as an eleven foot Canoe, a nine foot pram, an eight foot rowboat and a 10 foot sailboat. Each of these applications used the same materials and process, and all have performed safely.

To best take advantage of 'T & G', the hull design should be capable of being constructed by gluing and screwing the various parts together, to make a self-supporting structure. Additionally, the base panels, and any decking, should always overlap the side panels and end bulkheads. This means the various hull elements should fit together in such a way that heavy structural elements (stringers, gussets and forms) will be minimized, reducing hull weight while maintaining hull strength and integrity.

Then, Taping and Gluing the various inside and outside hull seams with *glue impregnated fiberglass cloth tape* will add the necessary structural bond and joint sealing that will complete the build cycle. This is a relatively easy process. It does not use toxic materials, and cleans up with water prior to curing.

If you have question regarding this process, email me and I will respond promptly to your input :

kensimpsonaz@yahoo.com



T & G CONSTRUCTION SUPPLIES:

* Fiberglass Cloth, 3.25 oz., 50 inch wide, cut into 2-1/2" to 3" x 50 inch strips for seam sealing.

Available at: Duckworks Boat Builders Supply

* TiteBond III Waterproof Wood Glue - 16 oz (\$8)
(available in larger 1 Gal. container (\$30))

Options:

Epoxy Resin - Gallon : Duckworks BBS

Glass Cloth Tape, 4" , Roll : Duckworks BBS

Note: About 200 ft. of 2-1/2 inch cloth tape is required for average small boat assembly.

* Not recommended for bonding:

Polyester Resin (poor bond to wood), OK for molding fiberglass.

FINISHING:

The choice of finishing is that of the builder. However, it is not just a matter of sanding and sealing all the wood surfaces, and applying a coat of durable paint, it is also about personalizing the boat. Color or natural finish? Fancy trim or camouflage? The important elements are the needs of the builder; you built it, you enjoy it, you earned it !

Insure that all surfaces are protected, that skids are applied as needed, and that hull weight is always kept in check.

Recommend a minimum of 2 layers of tape per joint.

Optional Glue Mixing & "Tape & Glue" Instructions

TiteBond-III, which is easy to work with, does not require any thickening agent, unless used in a very hot environment. You should mix only enough woodflour to prevent excessive vertical running.

If necessary, Wood Flour can be purchase from *Duckworks Boat Builders Supply* in pound containers .

It acts as a thickening agent that produces a more viscous glue that will not run easily. Mix only enough by volume (container of choice) of glue to wood flour to minimize running. Mix thoroughly.

Tape & Glue Process:

Apply Glue in thick beads, first in the corner of a joint, and then about 3/4 inch away from each side of the corner.

Smooth glue evenly over the panel surface in the area the Glass Tape is to be applied, and let dry for a few (2 to 3) minutes. Cut strips of Glass Tape (2-1/2" wide) the length of the joint, and centrally place in the corner of the joint.

Smooth out over the length of the Tape. Apply Glue over the Tape, wetting Tape completely. Again smooth evenly over the entire Tape surface. Remove any bubbles. Insure edges are wet and that the Tape is completely saturated with TB3 Glue. Repeat the process for all exposed outside & inside corners and joints.

Allow to cure 4 hours minimum. Repeat the process for any additional layers that may be required.

Note: Temperature and humidity may affect mixing ratios and glue cure time. Do not rush the process.

Always wear Latex Gloves during the gluing process.

TAPE and GLUE Process Pictures



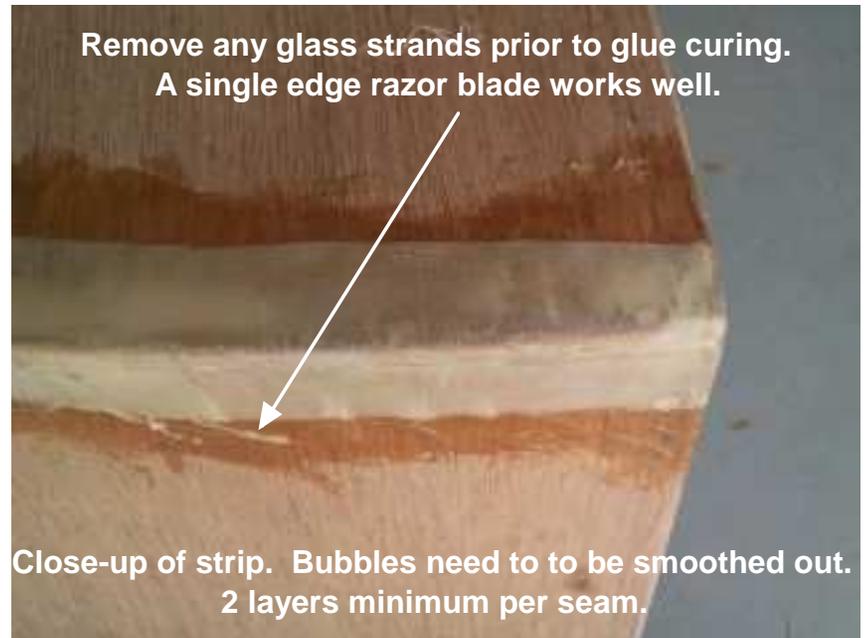
Cutting of strips is easy, 2-1/2 to 3 inches wide.



Strip laid on hull for length fitting

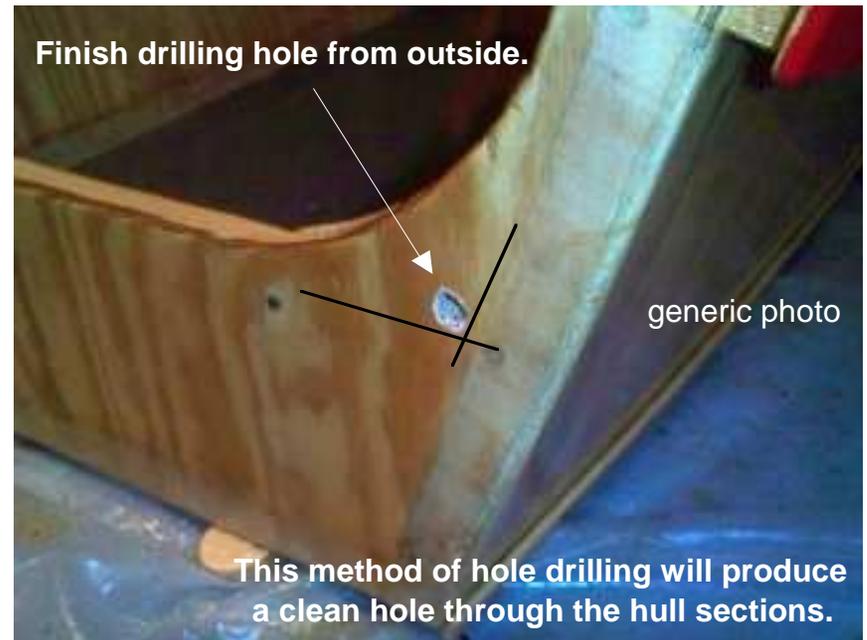
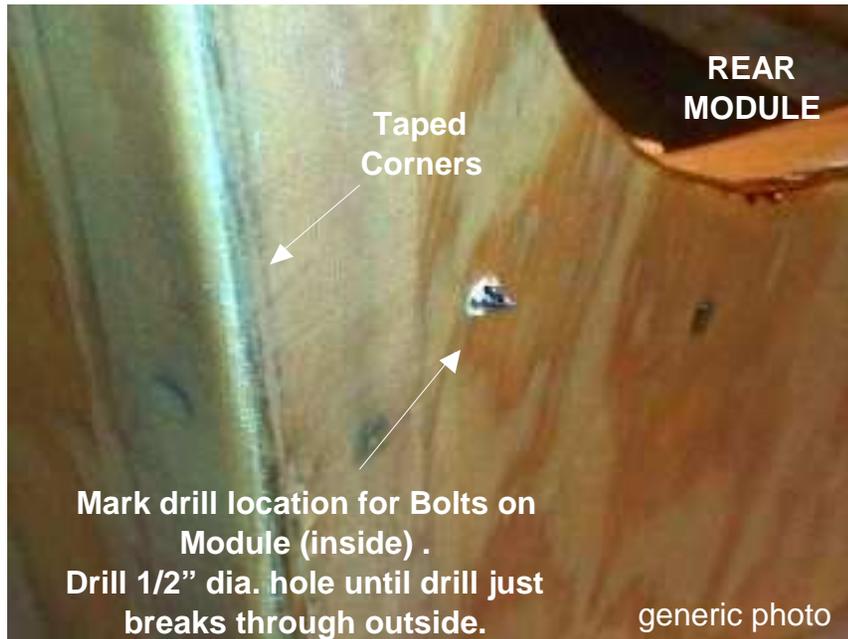


Typical bead of glue. Smooth with finger to wet surface.
Apply at Bottom (as shown), Edge and Side Panel.

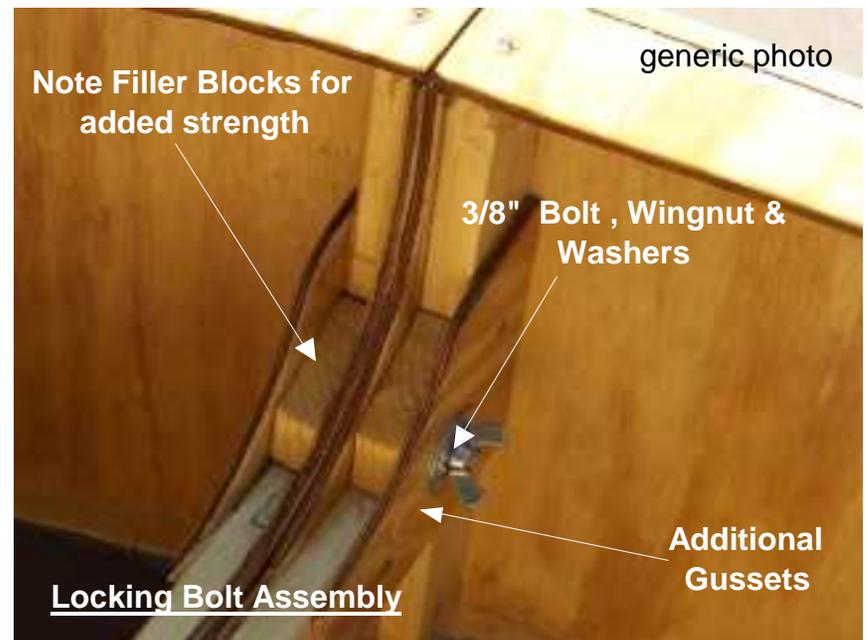


Close-up of strip. Bubbles need to to be smoothed out.
2 layers minimum per seam.

Suggestion for Drilling Locking Bolt Holes.



The location of the Locking Bolt Holes is at the intersection of the horizontal and vertical bulkhead supports (Page 27)



FINISHING



The intent is to water seal the entire hull with Thompsons.

The buoyancy chambers are first, as the decks need to be applied later.



Marine Spar Varnish. 1 quart required for 2 coats of entire hull.

This does a good job, but is quite expensive, about \$22.

Note: "GLOSS"

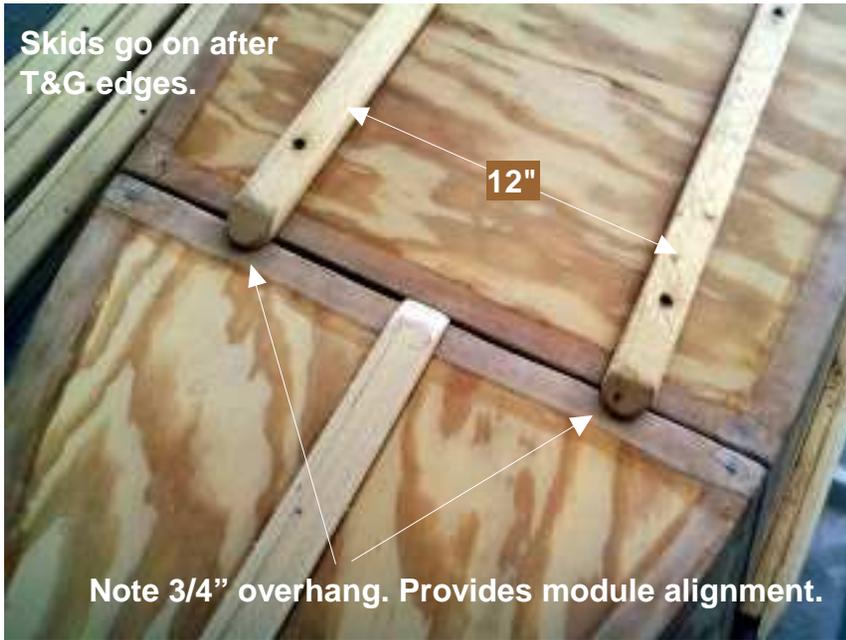
ACE Hardware brand is less expensive, about \$16.

SEALING and FINISHING - These are recommendations, you may have other materials or processes you prefer to use

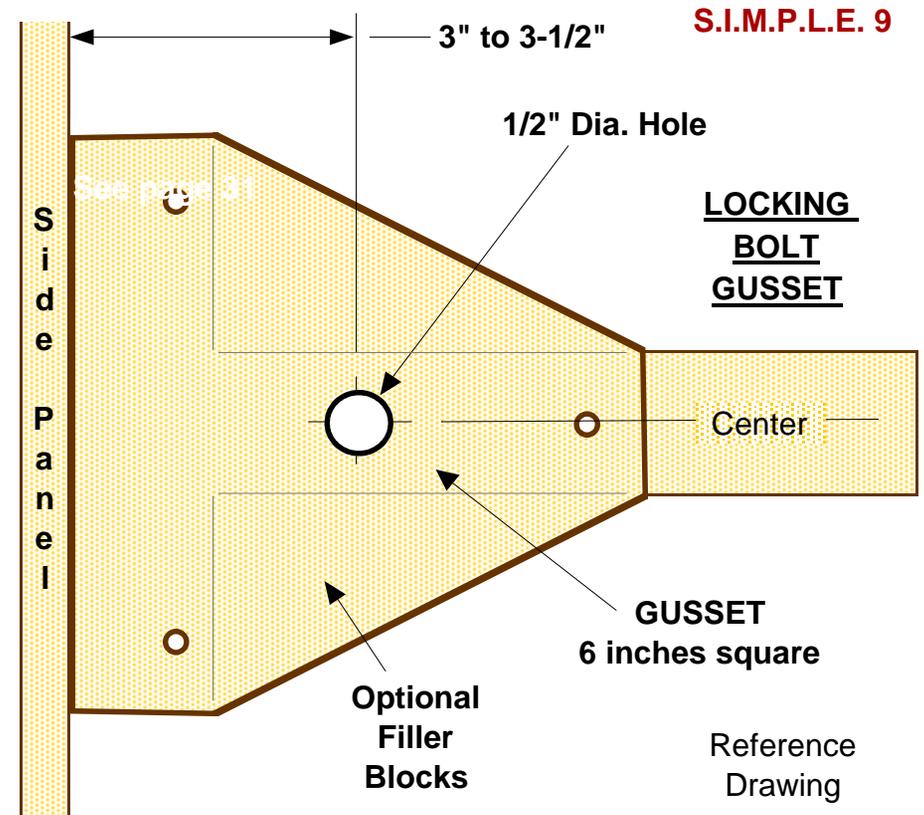
Applying **1 x 2 Skids**. Mark their location (12" apart on Center Module, single Skeg on center of Forward & Aft Modules). Apply TB3 glue and screw from the inside. Refer to detail photos for additional information. I try to use a harder grade lumber for the skids, and a softer (easier to bend) grade for any optional rubrails. Do this prior to sealing with Thompsons.

Now it is time to treat the entire hull, inside and outside, with **Thompson's Water Seal**. I spray it on, using a spray bottle purchased at the Dollar Store. It's faster and uses less sealer, and is not messy. This is done to prevent the plywood from absorbing moisture. It is important you follow the **Manufacturers Instructions for Application and Drying Time**. When complete, and after drying, you **must** lightly sand all treated surfaces of the hull. I usually use 150-180 grit for this operation. Sanding helps the adhesion of the surface finish being applied next.

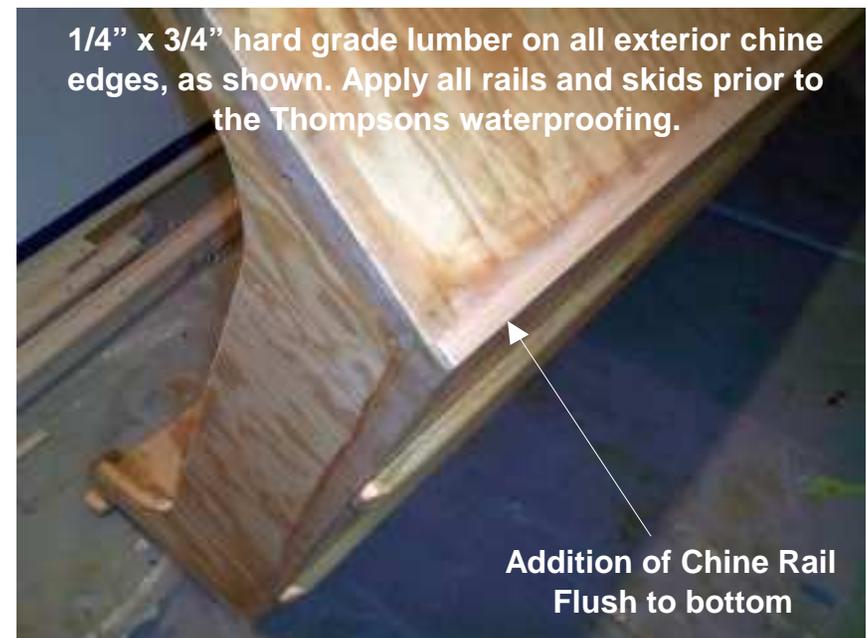
Finally, apply the finish of choice to the hull surfaces. Select a finish that is at least water resistant (non-porous). Also check exterior surfaces after each use for any water penetration, such as surface checking (roughness) or lifting of the finish. Repair as necessary. Constant maintenance will vastly extend the usefulness, safety, and life of your boat.



These photos are of another boat of similar construction, and are for reference only.



Reference Drawing



PADDLE, KAYAK-STYLE

Easy to Make, Inexpensive and Adaptable.

S.I.M.P.L.E. 9
Sept. 2010

THE DESIGN GOAL FOR THIS PADDLE WAS TO DEVELOP A LOW COST, EASY TO MAKE, ADAPTABLE PADDLE FOR A KAYAK, CANOE OR ANY OTHER SMALL BOAT THAT REQUIRES MANUAL PROPULSION.

THE END RESULT IS A DOUBLE-PADDLE THAT COSTS ABOUT \$15 TO MAKE, AND CAN BE LENGTHENED, OR SHORTENED, TO SUITE THE APPLICATION. BECAUSE IT IS BUILT IN TWO SECTIONS, IT CAN EVEN BE USED AS A SINGLE PADDLE FOR CANOES OR FOR JUST LEAVING THE DOCK, OR POSITIONING THE BOAT FOR LAUNCH.

THE DESIGN IS NOT INTENDED FOR ROUGH WATER USE, SUCH AS RIVER RAFTING, BUT IT CAN BE RUGGEDIZED BY ADDING A DOWEL TO THE ENTIRE INSIDE OF THE HANDLES, AND BY INCREASING THE THICKNESS OF THE PADDLES.



The following instructions are simple, but will provide sufficient information to produce a successful build.

You can make changes to any of the dimensions to suite your particular application. Keep in mind that material strength and waterproofing are the key elements to long term use. Repair any damage that may occur immediately, as water penetration into the plywood will dramatically weaken the paddles over time.

The use of marine or water resistant plywood is strongly recommended, as is TiteBond III Waterproof Glue.

Good Luck with your project !



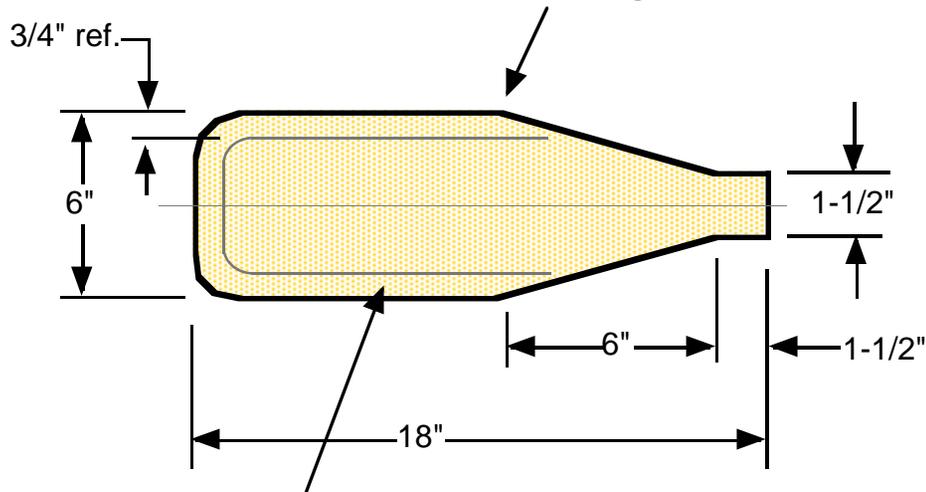
LIST OF MATERIALS:

- 1 - 10' Length of PVC Electrical Pipe, 1-1/4" OD, 1" ID, Underground Rated (\$3)
- 1 - Plywood, 1/4" x 1' x 2' Scrap (\$3)
- 1 - Lumber, 1/4" x 3/4" x 8' Long (\$2)
- 1 - Dowel, 1" Dia. x 2' Long (\$4)
- 1/4 - Yard 3.25 oz. Glass Cloth Scrap (\$6)

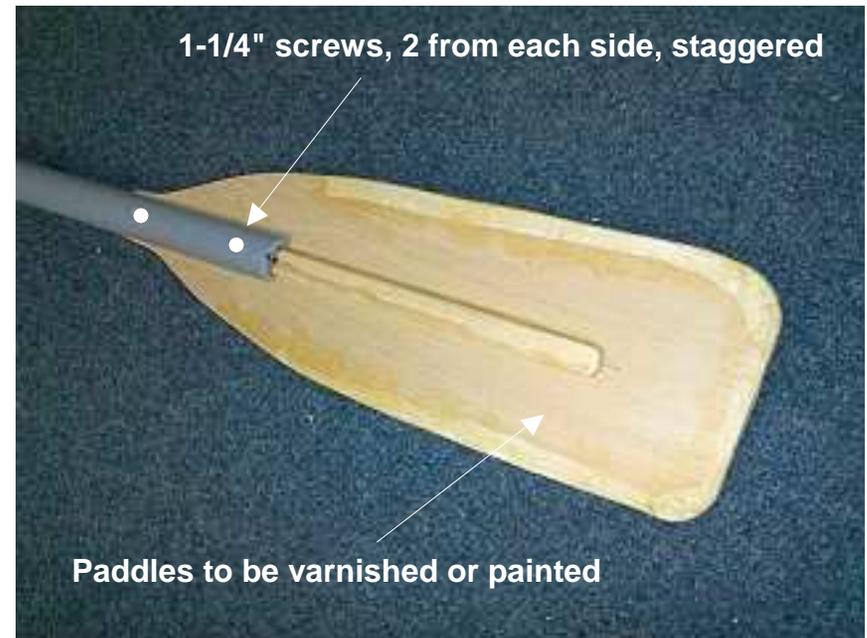


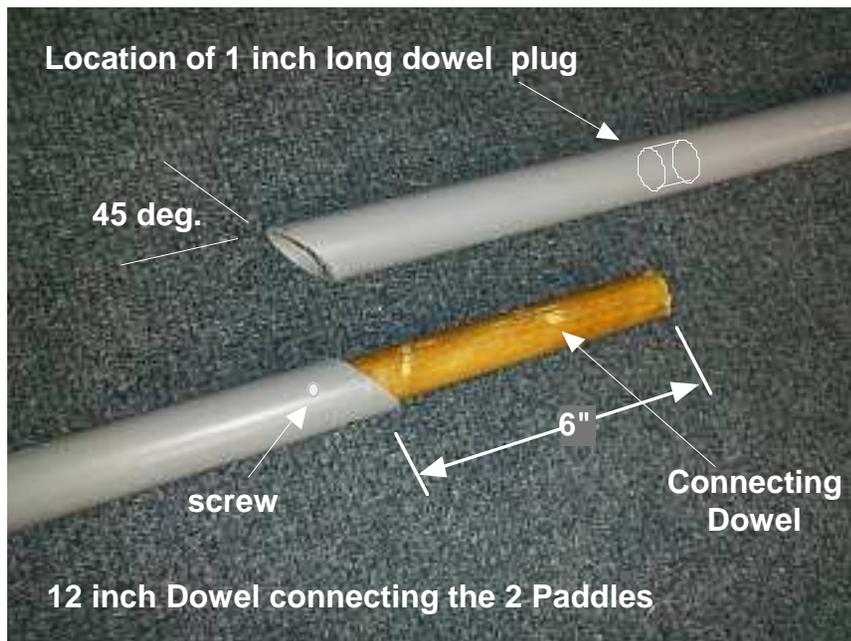
PADDLE Dimensions (make 2)

Round all corners and edges.



Apply 1-1/2" wide glass cloth tape to outside edges per sketch above. Use the T&G method of application.
Download free from www.PortableBoatPlans.com





The paddle handle is made from the PVC Pipe. Cut a 6 foot length (your option), and then cut a 1/4" slot, 6" long, on one end. I used a jigsaw with a long blade.

Next, cut a similar slot on the other end, parallel to the first slot on end #1.

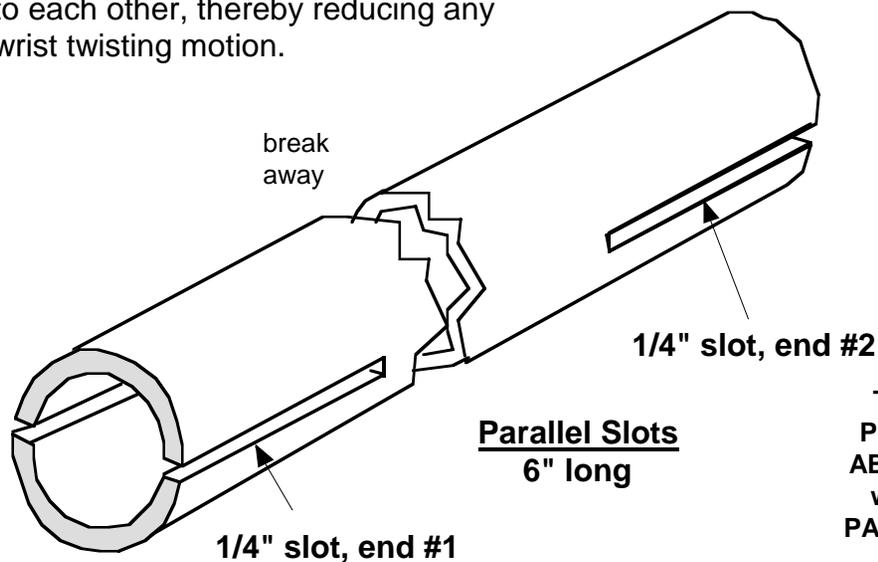
See sketch lower left & photo previous page.

To allow the paddle to be more easily stored, cut the handle 33 inches from one end, at a 45 degree angle. This will create 2 lengths, one 39 inches long, the other 33 inches long. The different lengths will end up the same when the connecting dowel is glued in place. The purpose for the 45 degree angle cut is to properly align both paddles during use.

Now cut a 1 foot length of dowel and glue it 6 inches into the angled end of the 33 inch long handle. Small screws can be used to hold it in place.

See photo at left.

Depending on your specific application, the paddle slots can be cut at an angle to each other, thereby reducing any wrist twisting motion.



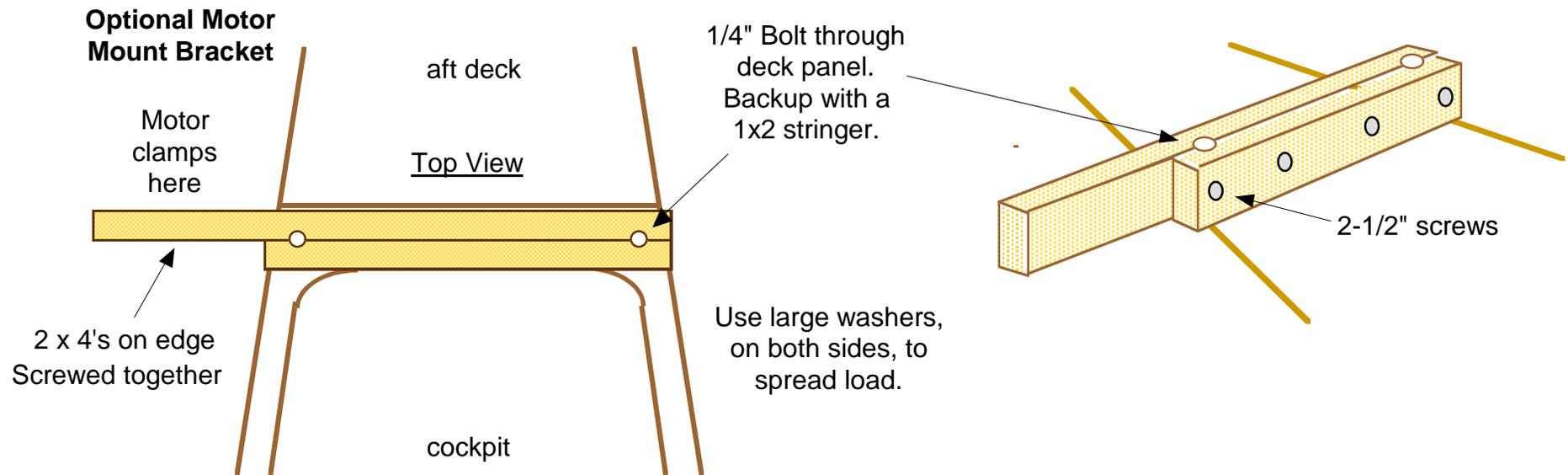
It would also be best if the paddles could float if misplaced (dropped overboard). The plastic tubing is heavier than water, but if filled with air they will float. So, cut 1 inch long dowel plugs (3) and glue them in place in the tubes, just aft of the paddles, and aft of the center connecting dowel opening. Use plenty of glue to hold in place.

See photo at upper left.

The POKE ABOUT with PADDLE



That's all there is to making a working paddle, ideally suited to any little boat. Seal and varnish (or paint) the wood for protection.

**SPECIAL NOTE:**

This boat can be built in three different heights. The standard, as the plans depict, has side panels 12 inches high. This provides a comfortable, roomy and easy to paddle casual design. For those that want a lighter, more compact and aggressive design, side panels only 9 inches high can be utilized. Merely subtract 3 inches from the height of the side panels and bulkheads to realize the lower shape. The plywood layouts should remain the same, with some ply leftover. Finally, for those that want more freeboard, side panels as much as 15 inches high could be created. This would produce a craft more difficult to paddle, but the motorized versions could traverse choppy waters with ease and safety. This would require another sheet of plywood to complete. The choice is yours, so consider all aspects of use prior to starting the build. Good luck with your project !

This is an experimental design drawn up by an untrained amateur. The Designer accepts no liability for any loss or damage sustained during construction or use. Builders may use these plans to construct small numbers of boats freely for their own use. Commercial manufacturers must ask the designer to negotiate permission.