JAE12G2

A Zippkits R/C Boat

Building Instructions

www.zippkits.com
Toll Free (866) 922-ZIPP

The JAE 12G2 was designed and developed as a result of a joint venture between IMPBA Hall of Fame member Rod Geraghty, David Hall, Ron Zaker Jr. & Martin Truex Jr.

The main difference between this hull and all the others is the use of sharp edges on the bottom of the sponsons and tub, as opposed to curved surfaces. This helps break any surface tension of the water and makes for a faster boat.
This design approach has been built, developed and tested a great deal.

In addition to a marine engine, you can use any air cooled 12, 15, 18, 20 (small block) car or truggy engine, with excellent results.

The kit is not hard to assemble, as all of the hard stuff has been done for you.
That is no excuse to do a poor job with assembly. The better you build this boat, the better it will run. Often the difference between an excellent building job and a poor one is a simple sanding block.

A note about overhangs:

This boat is designed to shear water and prevent any capillary action of water. To do this the tub, ski and sponsons have rear overhangs. These shear the water off and must be left in place and not rounded in any way.
The boat also has side overhangs on the sponsons. These help the boat get up on plane quicker. If you are using a powerful engine, you can sand these off, but leave all corners sharp.

Take the time to read this entire manual, so that you are familiar with all the buildings steps and their proper order. Take your time; make sure you understand everything before you do it and you will be rewarded with an impressive running hull…

> This kit is not a toy. Although R/C boating is a fun and rewarding hobby, it can be dangerous if not done with common sense and safety in mind. Just about anyone should be able to build this kit, but it should not be operated by children without close adult supervision.

The manufacturer assumes no liability for damages or other loss in the use of this product, as we have no control over the construction or end use of this product.

Tools and supplies needed to build

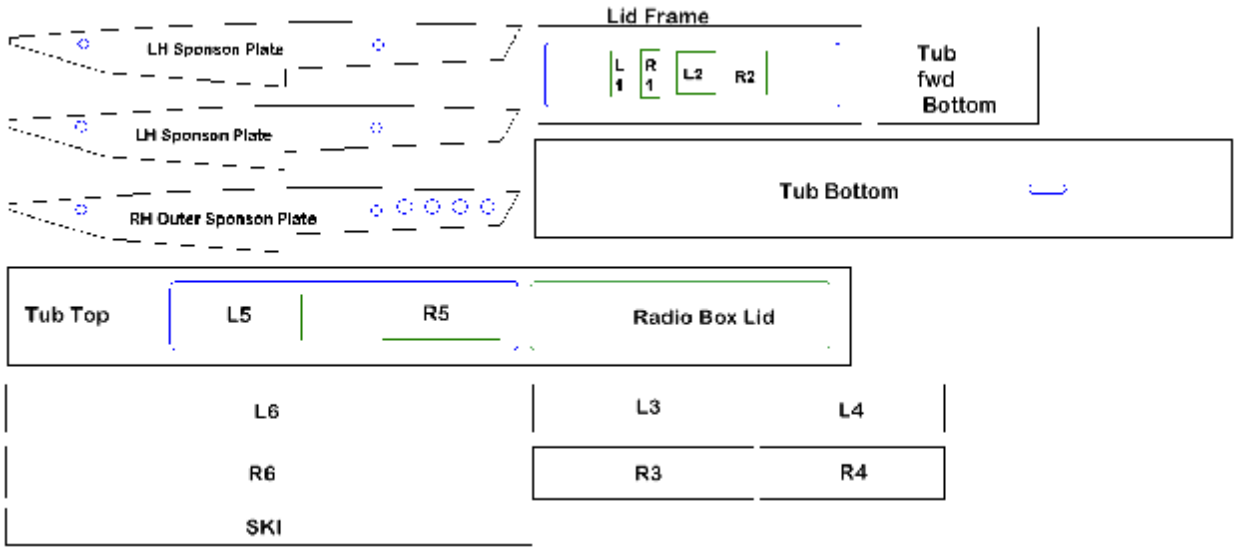
- **Sanding blocks with 80 and 150 grit paper**
- **Drill with bits**
- **Square**
- **Flat file**
- **FLAT Workbench**
- **1/2 ounce Medium CA glue and accelerator**
- **Good quality 5 and 30 minute epoxy**
- **Epoxy finishing resin**
- **Spring clamps, paper clamps, c clamps, etc.**
- **Razor blade or X-Acto knife**
- **Masking tape**
- **Waxed paper**
- **Wood filler**
- **Primer**
- **Paint**

Additional items needed to complete

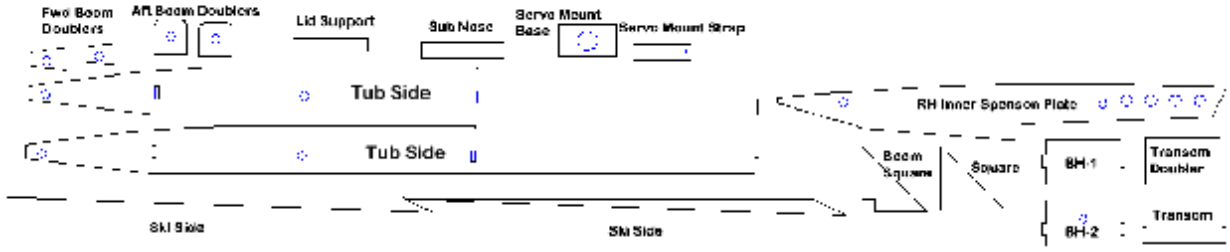
- **.12-.20 air or water cooled Nitro engine**
- **.150 Collet and flywheel for engine**
- **Starting belt**
- **.150x16 inch cable w/welded 3/16 stub shaft (Zipp 3475)**
- **Header to fit engine**
- **Tuned pipe**
- **2 channel surface radio with 2 servos (Hitec HS-225MG and HS-85 recommended)**
- **Throttle and rudder pushrods (2-56 Size) (Zipp 3462)**
- **2-56 Clevises (Zipp 3459)**
- **2 pushrod seals (Zipp 3404)**
- **4 ounce Fuel Tank (Sullivan SS-4)**
- **Z21 Strut (Zipp 3495)**
- **.187 drive dog (Zipp 3485)**
- **440 prop (Zipp 4007)**
- **10-32 Prop nuts (Zipp 3489)**
- **Engine Mounts (Solinger 12 recommended, Zipp 3481)**
- **Cable grease**
- **Rudder (Zipp 3477)**
- **12 inch length of 1/4 brass tubing (Zipp 3474)**

Let’s identify the parts so that we can easily find them when needed. Mark the parts that are inside other parts.

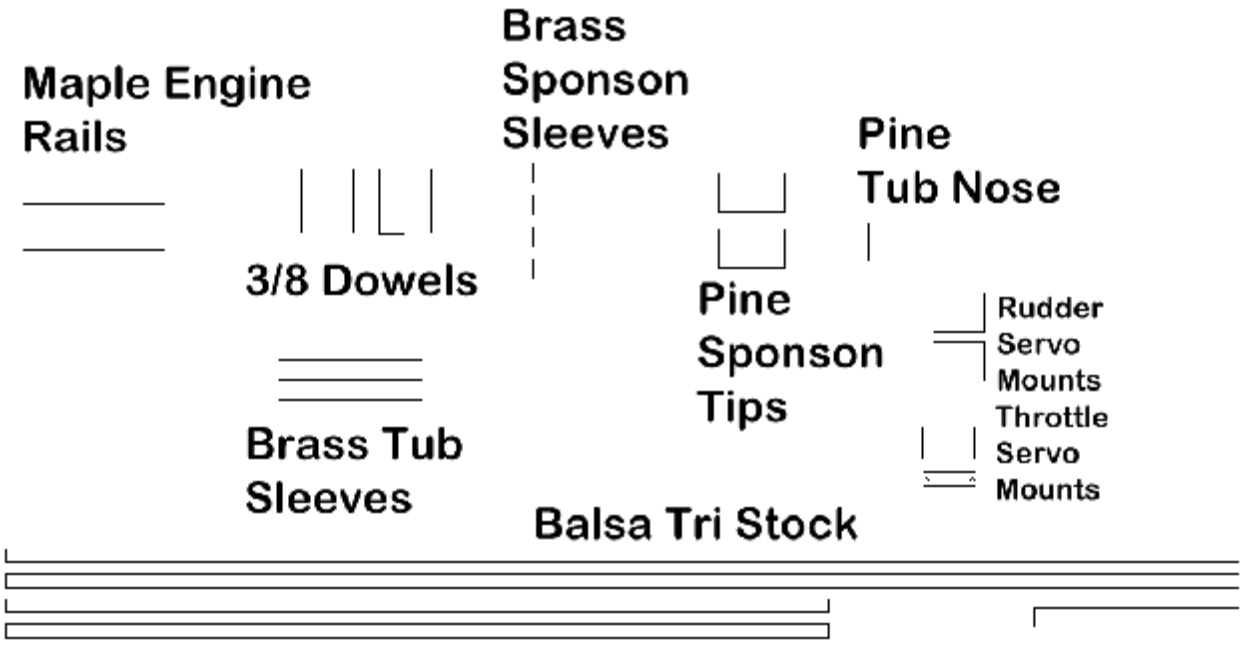
1/16 plywood parts:



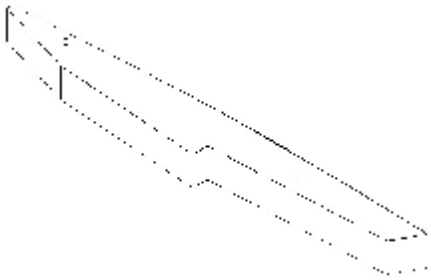
1/8 plywood parts



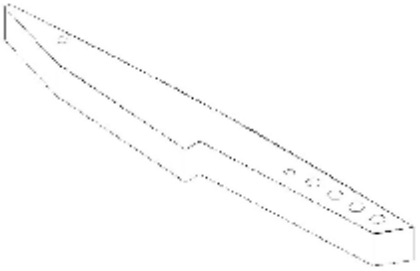
Miscellaneous parts



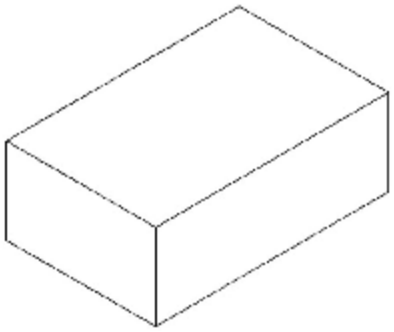
Foam parts



Left sponson has 2 holes



Right sponson has 6 holes



Foam nose block

Do an inventory of all the parts, to be sure that everything is there. If anything is missing or damaged, contact us as soon as possible, so that we can get replacements to you quickly.

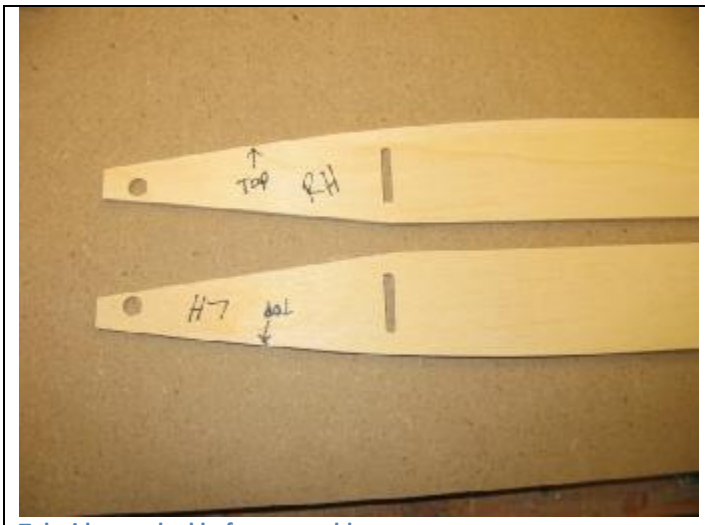
Tub Jig

We recommend that you make a jig for the tub.

This can be as simple as two straight pieces of ½ to ¾ inch thick wood.

It can be as elaborate as 1/8 by 2 inch aluminum angle with adjustment slots for different tub widths.

Either way, you need something to clamp the tub sides to.
Every critical component on this hull depends on a straight, square tub.
Do whatever it takes to get it done correctly.

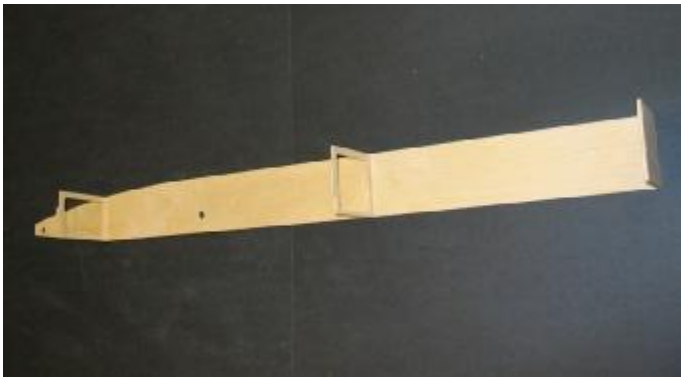


Tub sides marked before assembly.

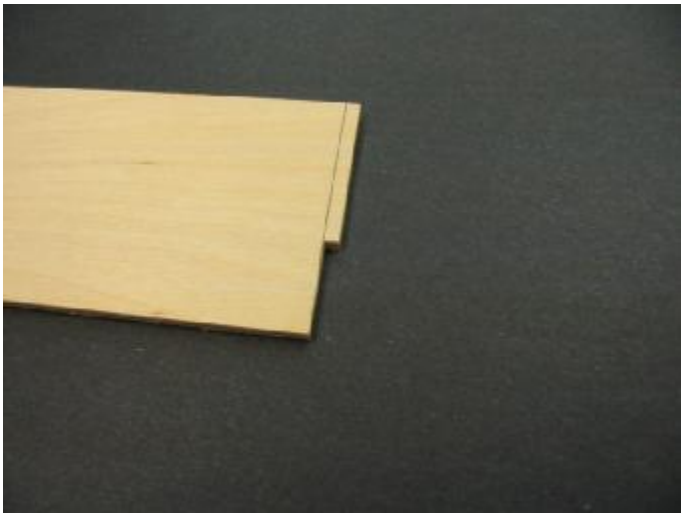
Tub

Let's build the tub.
First, mark the insides of the tub right and left. The sponson boom hole is toward the bottom of the tub side.
Make these marks in the front portion of the sides, where it won't be seen later.

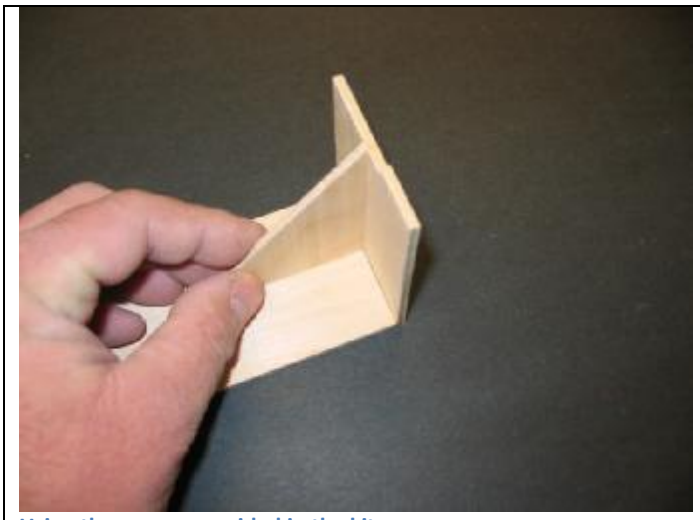
Check the fit of the bulkheads in the right tub side.
Use a file to touch up the inside corners on the bulkheads, to square off the tiny radius left by the cutting bit.


Bulkheads glued in place (this is the 21FE).

Once you are happy with the fit of the bulkheads in the tub side, glue them in with CA. Use the square provided in the kit to ensure each bulkhead is perfectly square.


Tub side marked for transom alignment.

Make a mark on both tub sides (inside) with a line that is an extension of the transom cutout.
Use this line to align the transom correctly on the tub side.



Using the square provided in the kit.

Assemble the tub sides on a flat surface Check the fit of the bulkheads in the left tub side. If all is well, glue the bulkheads in place one at a time, using the square from the kit.

Tub sides glued to bulkheads.

Flip the tub over and lightly sand the bottom.

Tub jig.

Now is the time to use your tub jig. If you don't have the ability to make an aluminum jig, see below.

Use a pair of thick wooden sticks. Leave these clamped to the sides while gluing the aft bottom in place.

Tub sub nose being glued in place. Tub extends just past jig.

Waxed paper prevents one piece tub/jig assembly. 21FE shown.

TD being glued in place.

Put a layer of waxed paper over the jig.

Put the tub aft bottom in the jig and set the tub onto it.

Fully clamp the jig sides to the jig.

Glue the tub sub nose to the very front of the tub. This supports the nose for sheeting, and provides a solid base for the tub nose block.

Using epoxy, glue the tub aft bottom in place. Make sure that the bottom extends to the front bulkhead. It should cover the full 1/8 inch bulkhead. Later on, we will sand this to match the angle of the tub sides. Leave a small overhang at the rear of the tub. Do not sand this off.
The aft bottom sheet is pre cut to the correct length. Make the front of this flush with the front of the first bulkhead, and the rear overhang will be correct.

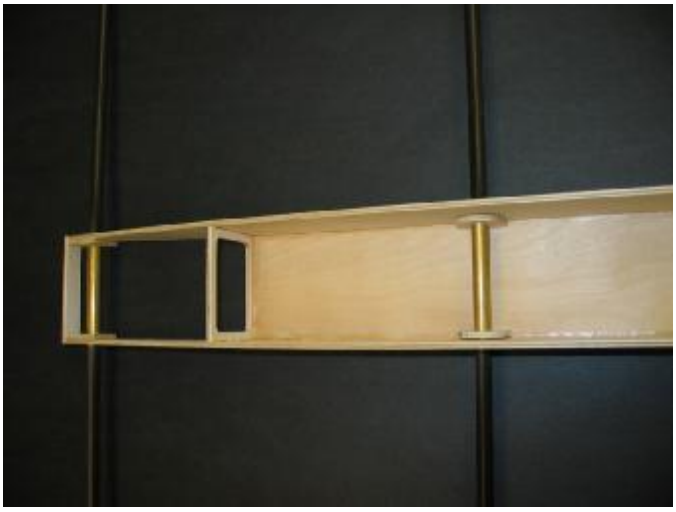
Glue in the transom doubler with epoxy. Make sure that it fits flat against the transom, and that it sits firmly on the tub bottom.
Clamp until cured.

Tub sleeves sanded, ready to glue in.

When the tub bottom has cured, lets move on to boom tube alignment.
This is probably the most critical step in the assembly, so take all the time needed to get this right.

Remove the tub from the jig.

Grab the two brass boom tube sleeves, and use 80 grit paper to rough the last ¼ inch or so of each end.

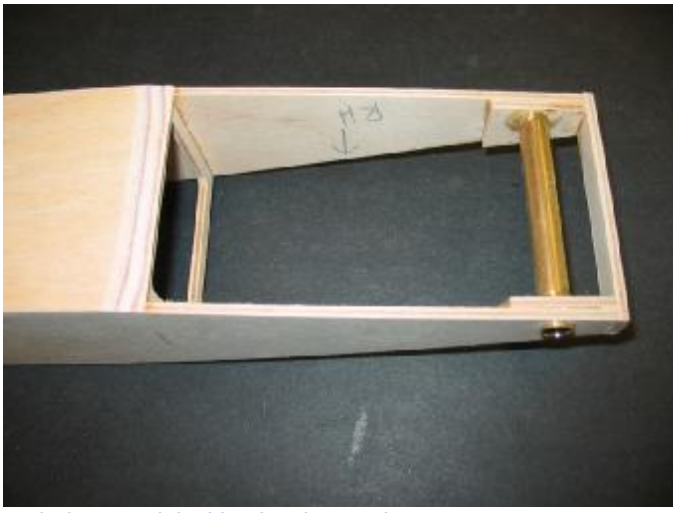


Tub sleeves, doublers and booms in place. 21FE shown.

Put the rear tube doublers in place and slip a boom tube sleeve and carbon boom tube through the tub and doublers.

Measure the carbon tube on each side of the tub, and center it. Make some pencil marks on the tube, on the outsides of the tub so that you can quickly center the tube later.

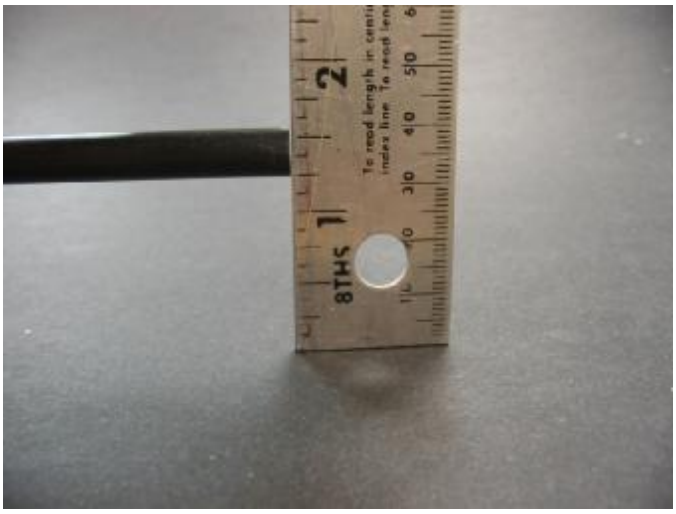
Do the same for the forward boom tube and doublers.



Fwd. sleeve and doubler detail. 21FE shown.

The forward boom tube doublers line up with the forward boom tube holes. They only align correctly one way, so be sure that the orientation is correct before you mix any glue.

Weight the tub so that it is flat on the bench.



Measuring boom tube distance above flat bench.

Tub sleeves sanded flush with tub side.

Clamp the doublers in place **without glue** and measure the ends of the tubes. Both sides of the tubes should be the same distance from the bench.

If not, loosen the clamps and adjust the doublers until they are.
If the doublers or holes now have to be sanded to fit, you must sand them and repeat the measuring process.

This is a critical step in the assembly, and if done incorrectly, your hull will never handle properly.

When you are happy with the height of the tubes above the bench, check to see that the tubes are square front to back with the boom square provided in the kit.
When you have checked and double checked that the boom tubes are straight and square to the world, remove the clamps, but leave everything in place.
Mix up some 30 minute epoxy, and coat the doublers where they will be in contact with the tub sides and bottom.
Align the rails and clamp in place.
Quickly check your measurements and square several times, and make any tiny adjustments before the epoxy starts to cure.
Use any excess epoxy to build a small fillet around the sleeves and doublers. Clamp in place.
Set aside for at least 3 hours.
Repeat for the front boom tubes. Be sure everything is perfect before you walk away…

Once everything has cured, sand the brass tub sleeves flush with the tub sides.

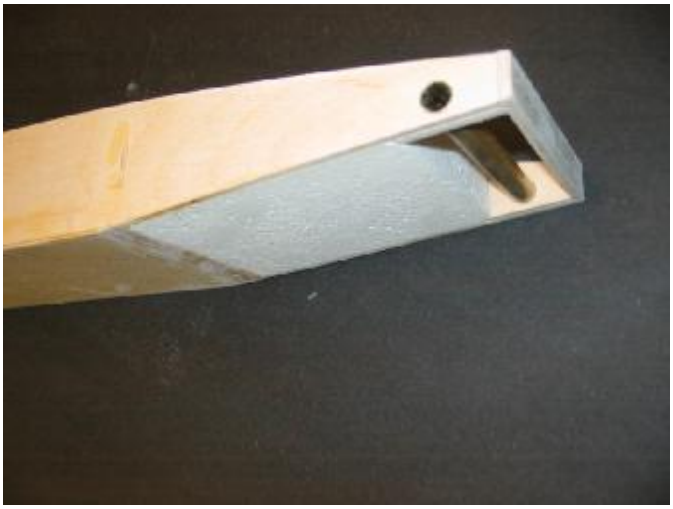
Radio box lid support glued in place behind bulkhead 2.

Glue in the lid frame support. This gets attached to the rear of bulkhead 2, and is flush with the lower portion of the sides.

Foam nose block being test fit.

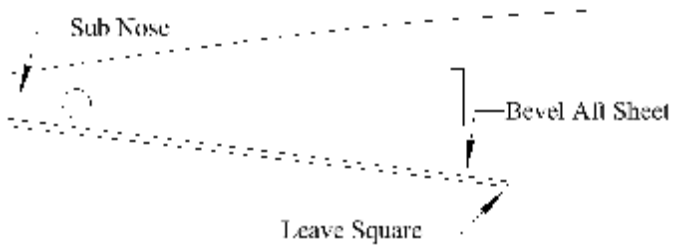
Check the fit of the foam nose block. If all is well, glue the foam nose block in place with epoxy or poly glue. Allow to cure.

Sand the foam flush with the tub sides. Be careful not to sand the tub sides too much.



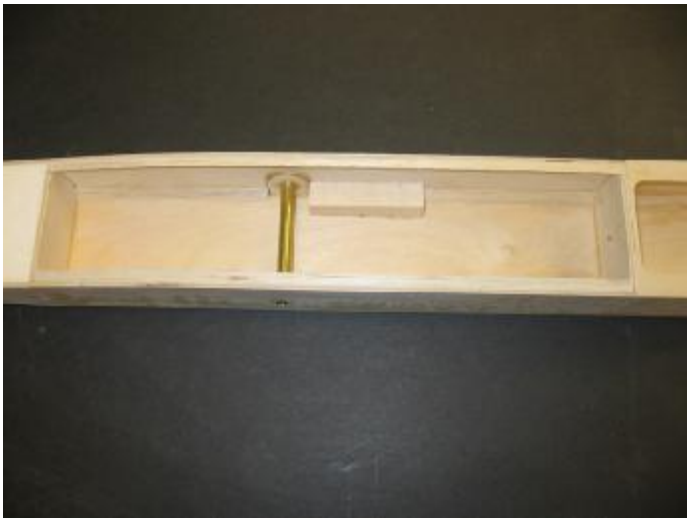
Foam sanded to match tub sides. Note angle sanded on aft sheeting.

This foam is needed for floatation, in case you shear off both sponsons…



This is what makes a JAE a JAE… Sponsons are similar.

Glue the forward bottom in place with epoxy. Be sure to sand the angle into the aft sheet so that it matches the tub sides. The forward bottom sheet should cover the bevel on the aft sheeting and be left square. Do not sand the rear of the forward sheeting; it needs to have a sharp edge for the water to shear off.
See drawing.



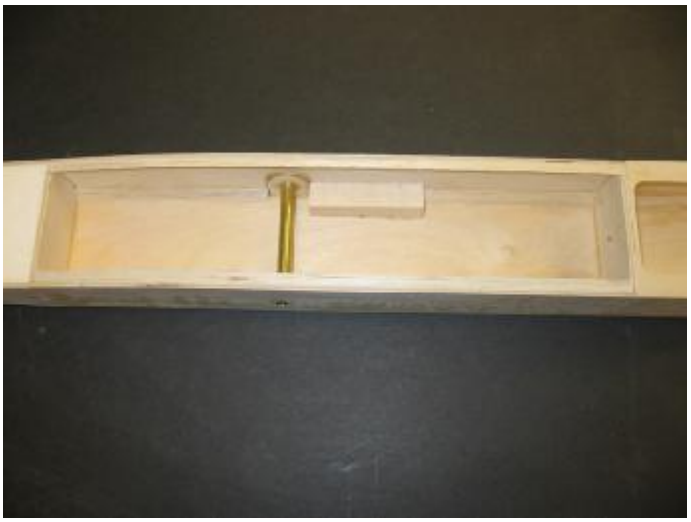
Engine rails glued in touching the aft doublers.

Using epoxy, glue the two maple engine rails in place, touching the aft boom tube doubler. Allow to cure.

Fit and glue the ¼ balsa tri stock inside the tub bottom.
Cut the ¼ balsa tri stock as follows:
(2) 10 inches
(4) 9 inches
(2) 5 inches
(2) 4-1/4

Cut the longest pieces first. See cutting guide in back of this manual.

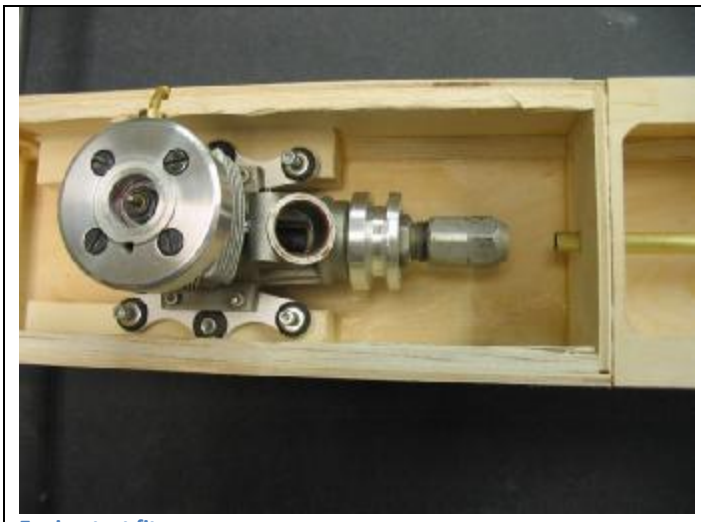
These are slightly long. Trim for an exact fit in the radio box and engine area.



Engine bay with lower tri stock in place.

Use the piece of 5/16x4 balsa tri stock to reinforce the transom on each side, inside the tub.

Install your engine on its mounts, then set the engine and mount in place on the engine rails. The glow plug should be about 3-1/2 inches forward of the bulkhead, but this in not at all critical.



Engine test fit.

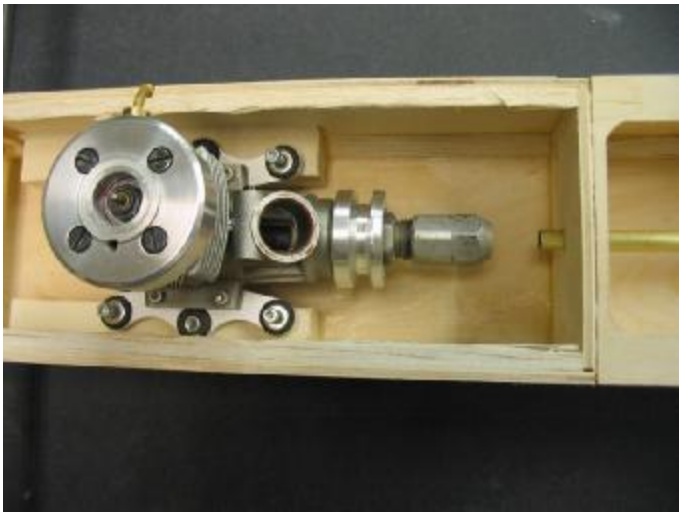
Find a nail or a metal rod that slips into the collet.

Use this to make sure that the engine is aligned with the hole in the rear bulkhead.

It should line up perfectly. If not, find out why and correct it.

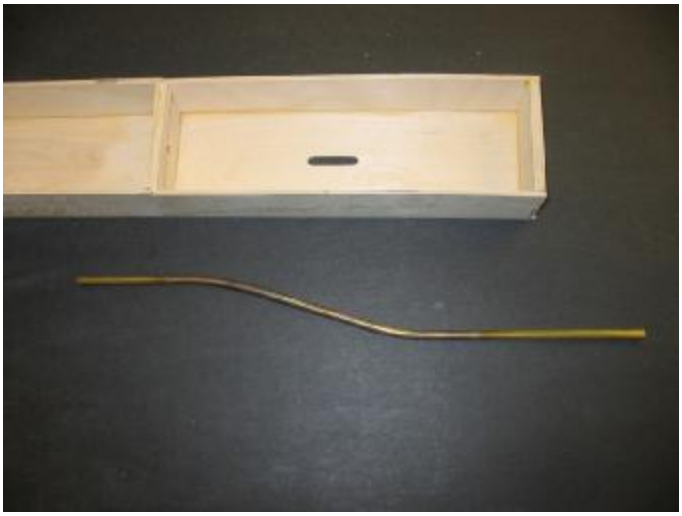
Mount the engine.

Once you are happy with the engine placement, screw the engine mounts in place with the screws provided with the mounts. Drill pilot holes to avoid splitting the engine rails. If using the Solinger mounts, drill 3/32 pilot holes.



Engine mounted on Solinger mounts.

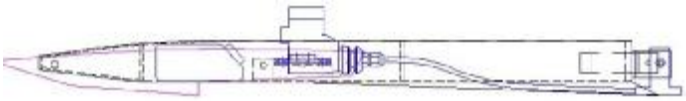
With the engine in place, we can move on to the shaft tube.



Rough initial bending of shaft tube.

This is another area that will need to be done perfectly for a good running hull. Bending the shaft tube is a piece of cake, if you know the secret.
The ¼ inch brass tubing needs to be annealed.
This will make it easy to bend by hand, without kinks.

To anneal the tube, simply heat it with any propane torch, until it changes color. You will see the brass color change to a sort of blue. It only takes a couple of seconds, so watch for it.



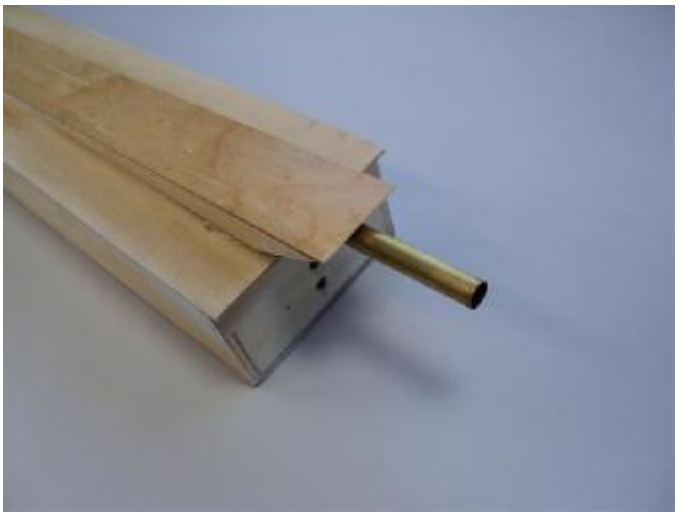
When you see the tubing change color, move the flame slowly down the tube until the whole thing is done.
Put a screwdriver in one end of the tubing to hold it while you heat it.
Try not to anneal the last inch or so.

You can either set the hot tube on a heat proof surface (concrete will do), or you can quench it with water until cold.

Shaft tube in place.

When the tubing has cooled off we will be bending it into an “S” shape.
Why an “S” shape?
Tests have proven that a tube with two bends has less drag than a tube with one. The reason is that two bends support the flex cable better, reducing cable whip, and drag.
Measure from the end of the engine collet to the rear bulkhead.
Remove the engine.

Put the shaft tube through the hole in the rear bulkhead, and the hole in the tub bottom.
Put the end that you didn’t anneal towards the engine.
Let the tube stick through the rear bulkhead by the same amount that you measured, minus about 3/8 inch.
Mark the shaft tube here for reference.



Bottom.

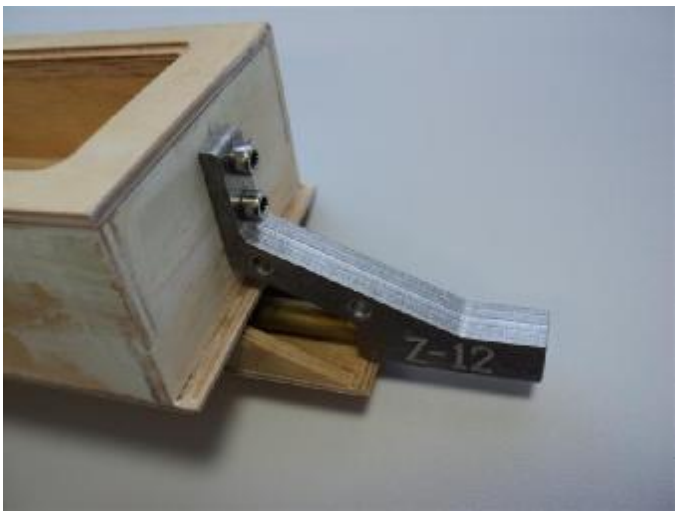
Now study the side view of the shaft tube, and carefully and slowly bend the “S” shape into the tube.

Try to make sure that the tube sticks through the bulkhead the proper amount, and the rear of the tube is about ¼ inch from the tub bottom.

Take your time, and go a little at a time.
If you try to rush it, and kink the tube, you will have to start over with a new tube.

Shaft tube thru ski.

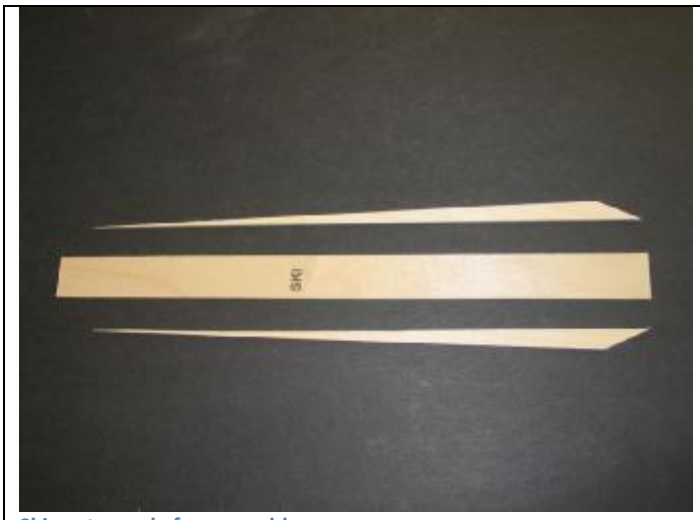
Take your time with the shaft tube.



Strut on ski.

When you finish, you should have a nice "S" tube that starts about 3/8 inch behind the engine collet, and continues past the rear of the boat (we will trim it later).

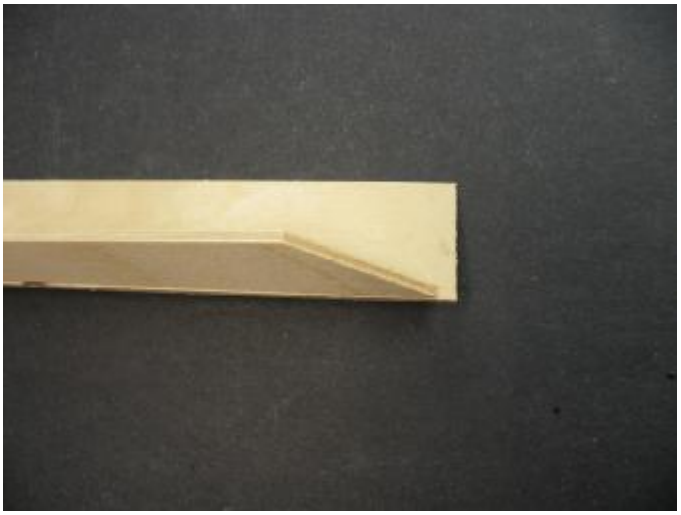
Glue the shaft tube in place with epoxy and filler (to thicken). Be sure to get inside and outside the tub, and both sides of the bulkhead. Allow to cure.



Ski parts ready for assembly.

Ski

Assemble the 3 parts of the ski using epoxy or CA.

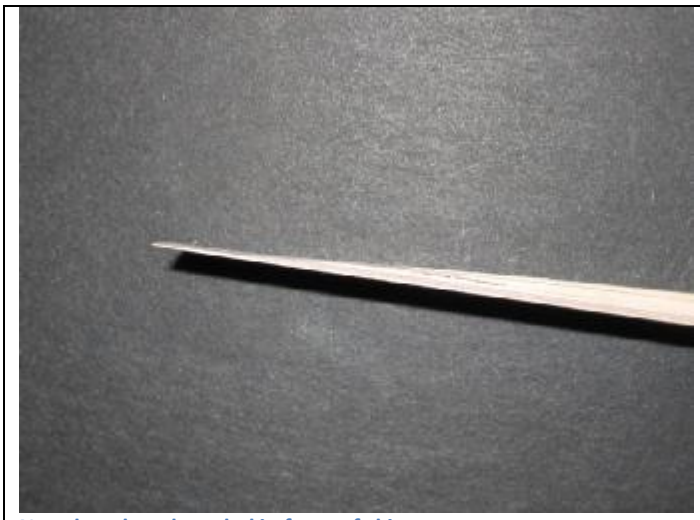


Ski side glued to bottom (rear).

Glue the ski bottom onto the sides. Match the bottom sheeting to the rear end of the sides, and let the front overhang. Clamp or tape this assembly until cured.

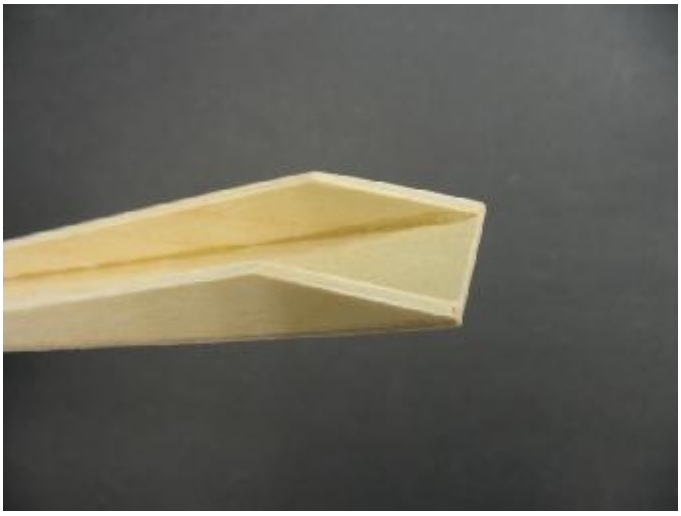
Ski side glued to bottom .

Sand the front of the sheeting so that it feathers to nothing at the front.



Note long bevel sanded in front of ski.

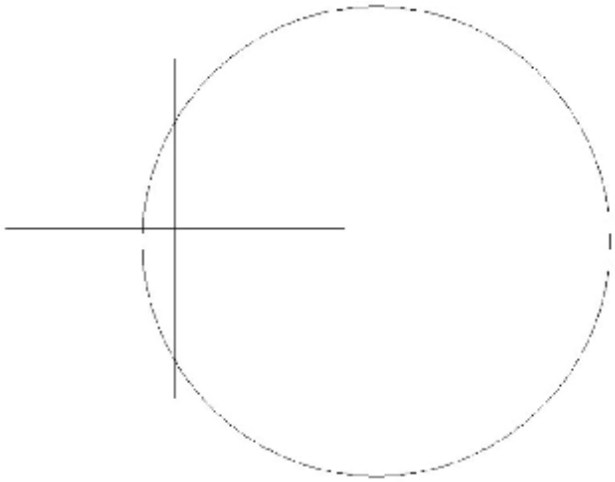
Sand a sharp bevel on the front of the ski bottom sheet, so that it blends into the tub bottom. Do not glue the ski to the tub yet.



Rear of assembled ski.

Servos

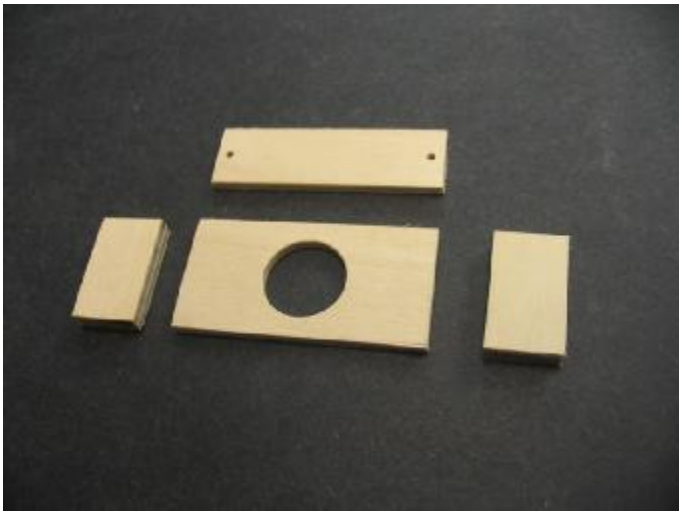
Bolt the rudder in place. This should be as far to the right as possible, and be sure that you have at least ¾ inch of rudder below the bottom of the ski.
Make a mark on the transom where the rudder pushrod will exit.
Sight this from behind the boat.
(see drawing).



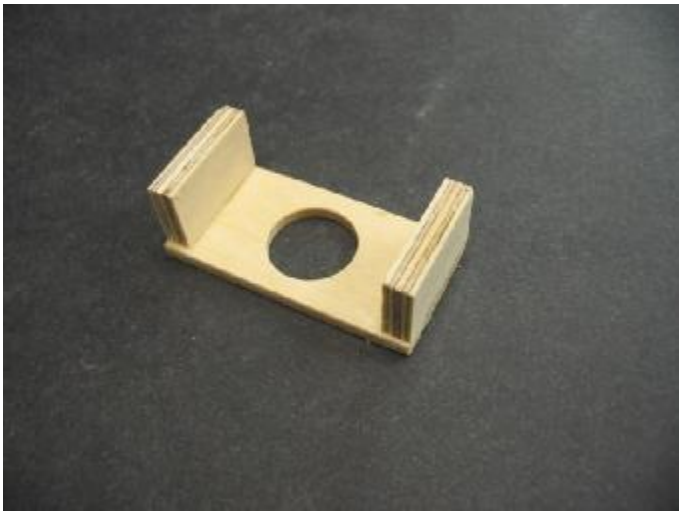
Drill in the center of this hole.

Drill a ¼ inch hole, inboard of your mark.

Mark on transom. Old style strut shown.



Rudder servo tray parts. Sides are ¼ ply.



Servo tray assembled. Make sure you match servo length.

Assemble the rudder servo tray. This is made from the servo mount base, strap and the two 5/8x7x8 inch plywood blocks. Check the length of your servo, and glue the blocks in place.
This tray will fit the Hitec HS-225MG servo.

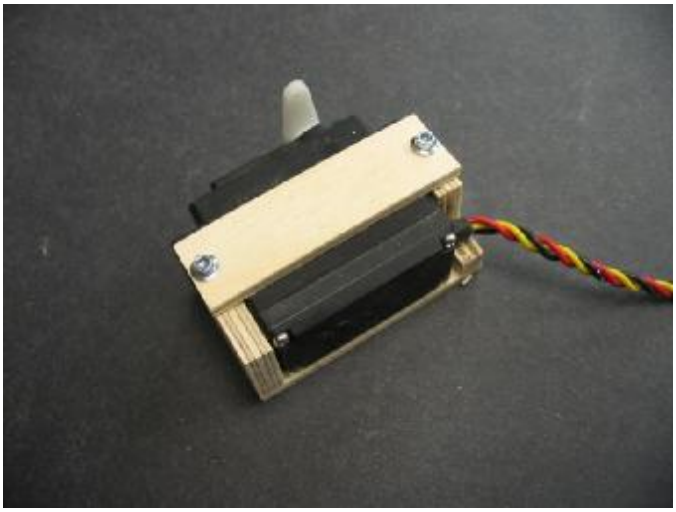
Use epoxy or medium CA to build the tray.

Check the fit of the servo in the tray. You will have to cut a recess for the servo wire in one block.
Make sure that the servo is a tiny bit taller that the mount, otherwise, the strap won't tighten the servo.

Use two servo screws (not supplied) to attach the strap.

Side trimmed for servo wire clearance,

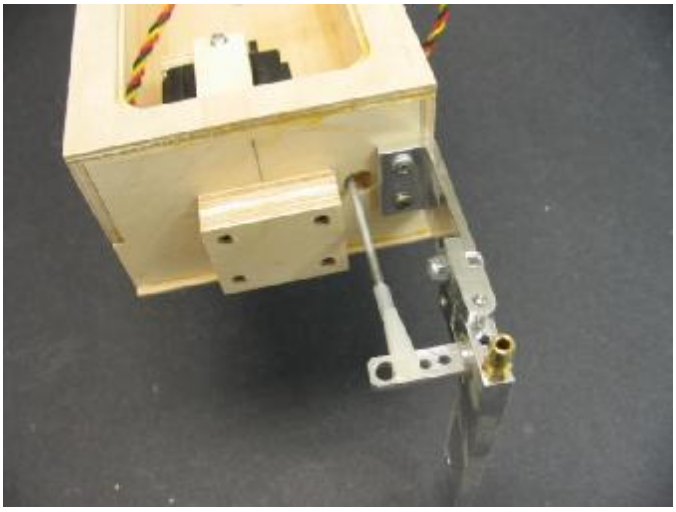
Cut your 2-56 pushrod to length so that the rudder servo is about a half inch from the transom.
Install your solder clevis or “Z” bend, attach the pushrod to the mounted servo, and put the pushrod through the hole you made.



Completed servo tray. Snappy!

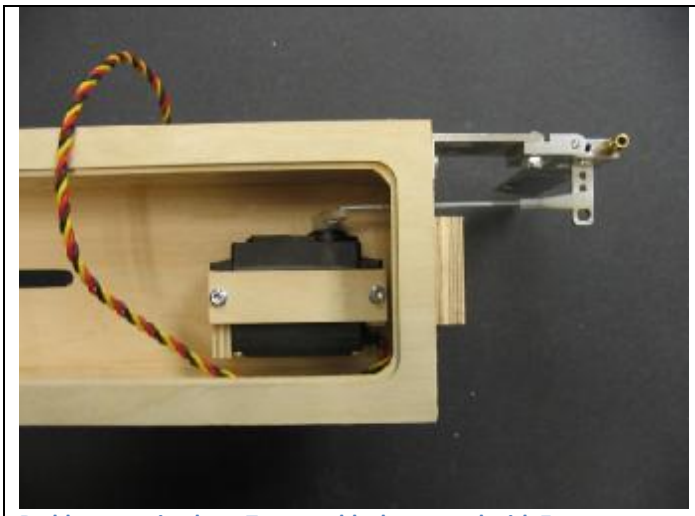
We like to use a steel clevis or “Z” bend on the servo end, and a threaded clevis on the rudder end. This allows you to adjust the pushrod length from outside the radio box.

Screw on the rudder clevis so that about 1/8 inch is inside the clevis (for adjustment), and attach it to the rudder control arm.
Make sure that the servo arm is straight up.



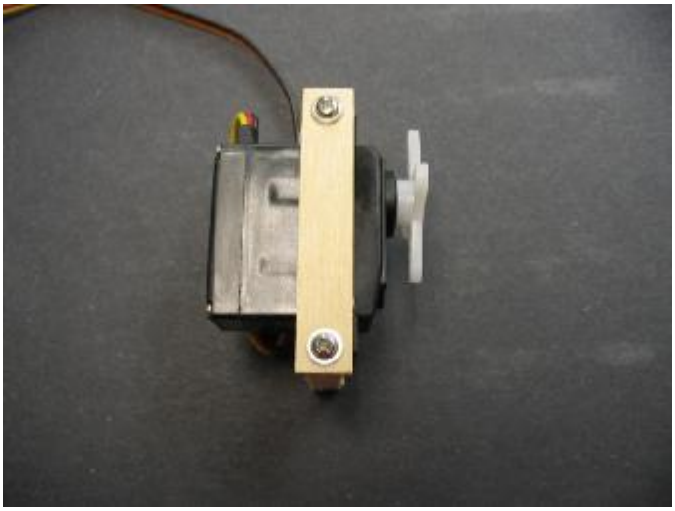
Lots of good info in this picture. Disregard transom block.

Glue the servo tray to the tub floor, adjusting the position of the tray so that the rudder is straight.
Don’t get any glue on the servo or wire.
Allow to cure.



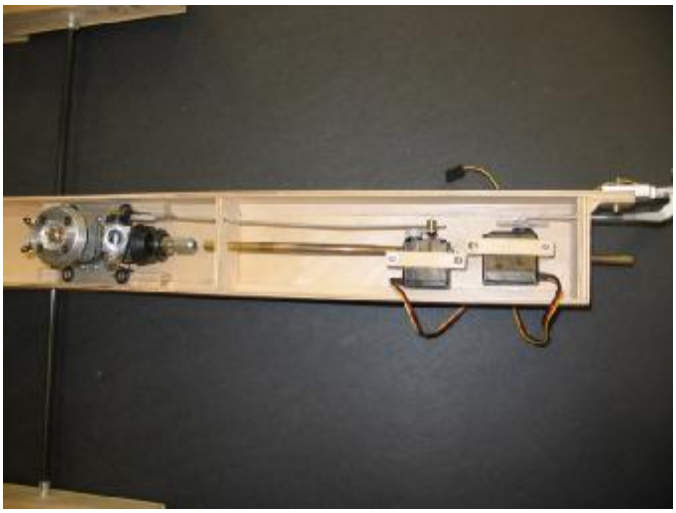
Rudder servo in place. Transom block not used with Z strut.

Bolt the throttle servo to its mount using two servo screws. Be sure to drill pilot holes so that the mount doesn't split.



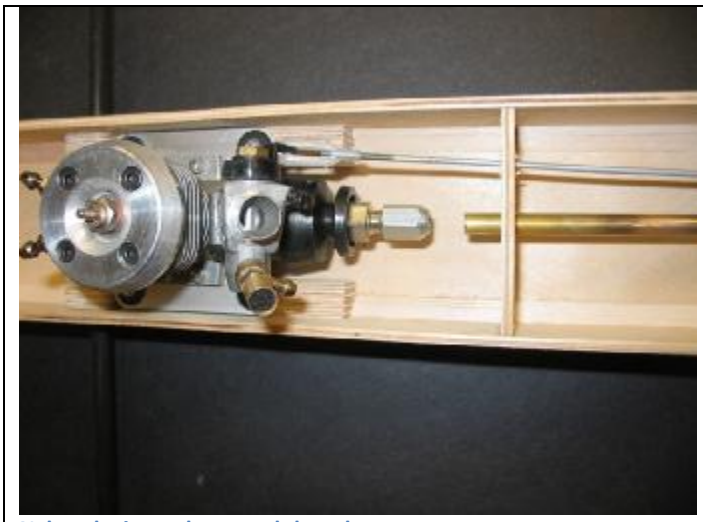
Throttle servo ready to glue to tub.

Glue these to the tub.
Be sure that the servo is on the correct side for the engine you are using.



Throttle servo mounted in tub. Make sure it's on the correct side…

We like to use a nylon clevis on the throttle end, and an EZ connector on the servo end of the throttle. You may need to use a small set screw instead of the screw that comes with the EZ connector to make it fit under the lid.



Nylon clevis used at metal throttle arm.

Remove the servos and pushrods.

Remove everything from the boat in preparation for sealing.

Upper tri stock in place. Note 5/16 tri on transom (servo mounts not shown). Block not used with Z strut.

Fit and glue the balsa tri stock to the top of the tub sides. Try to get them flush, or slightly above the sides.

Use epoxy finishing resin (or West Systems epoxy) to seal the inside of the tub. Be sure to seal around the boom tube sleeves, pushrod holes and all around the servo mounts.
Use any excess epoxy to seal the ski (inside and out), as well as one side of the radio box top. Set these on waxed paper while they cure.

Use a metal acid brush, bent near the bristle end to seal the upper part of the inside of the tub.

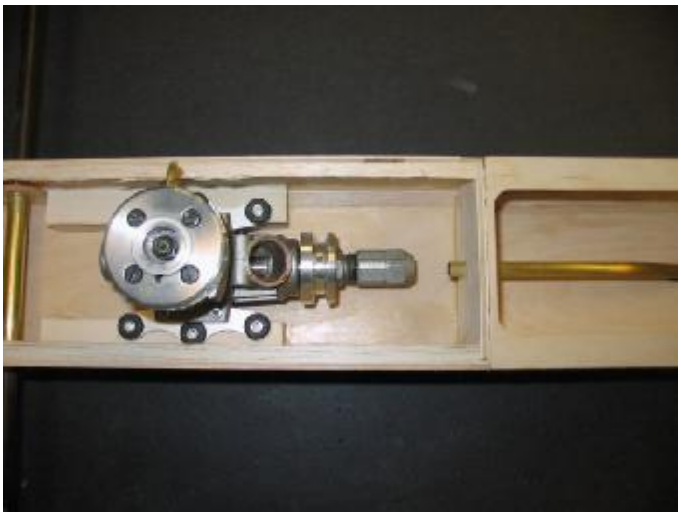
Allow to cure overnight.

Acid brush bent for “all up and under”.

Sand the top of the tub, so that the sheeting has a flat surface for gluing.

Glue the aft lid frame in place. This frame provides the “lips” for the radio box lid. This fits in the lower portion of the aft end of the tub, sitting on the lid frame support glued to the back of bulkhead 2.

Allow to cure.

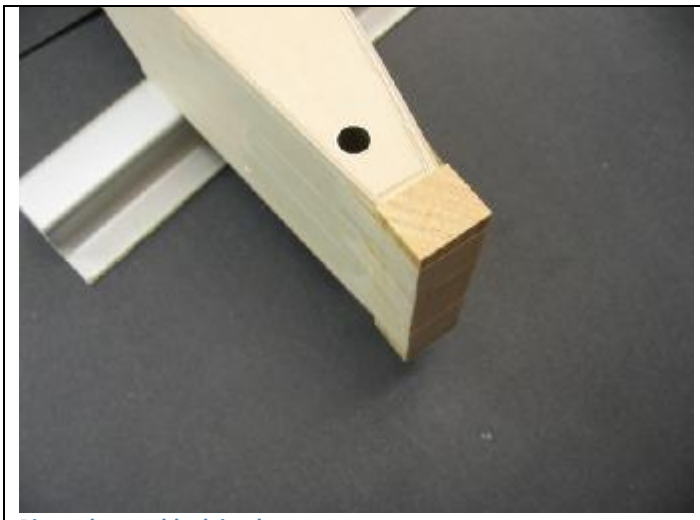


Lid frame glued in place. 21G2 shown.

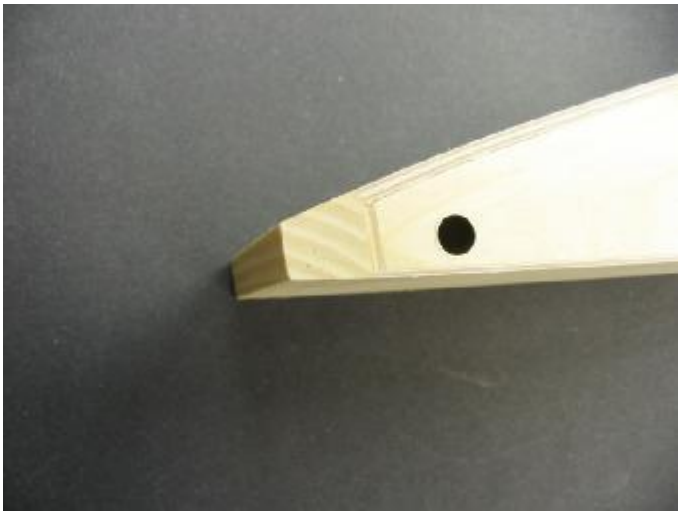
Sand the frame, and glue the tub top sheeting in place with 30 minute epoxy. Make sure that the sheeting is flush with the transom and is centered. Look at the “lip” all around the radio box and make sure that it is centered as well.
Tape and weight until cured.

Tub top in place. Note that it is centered on radio box lip.

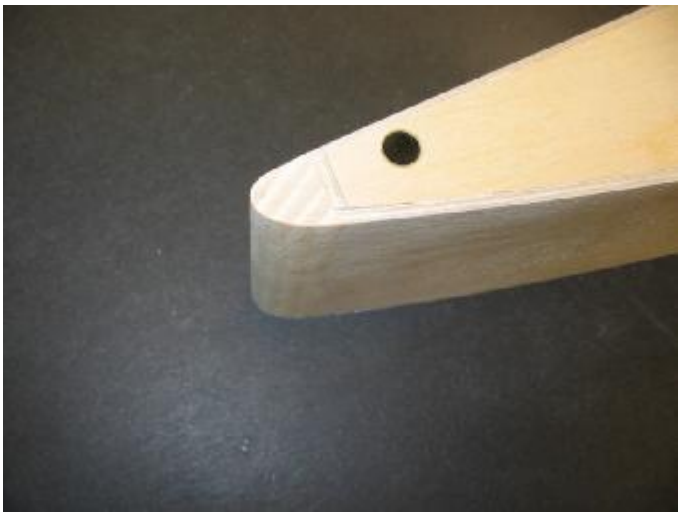
Once the top sheeting has cured, sand the front of the tub flat and square. Glue the pine tub nose block to the front of the tub.



Pine tub nose block in place.



Sand to match tub.



Round off.

Shape the block to match the tub.

Finish the nose block with a round, blunt nose.

Nice and blunt.

Sponsons

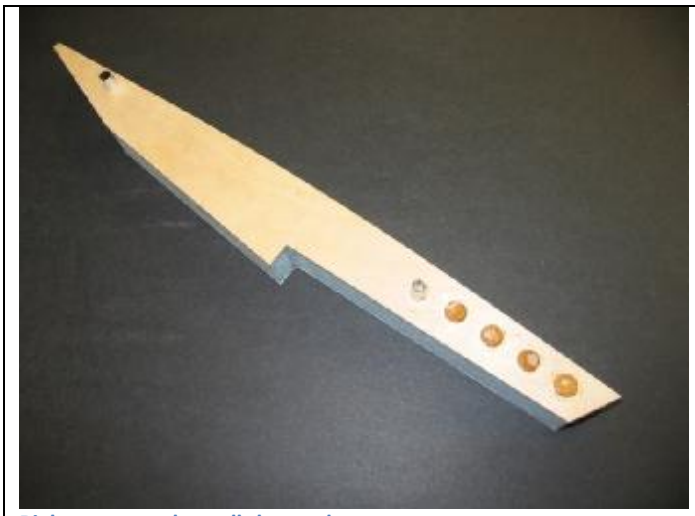
The sponsons are assembled in a specific order for a reason. It is not the fastest way, but it's the only way it can be done right.

Gather all of the parts for the right sponson.

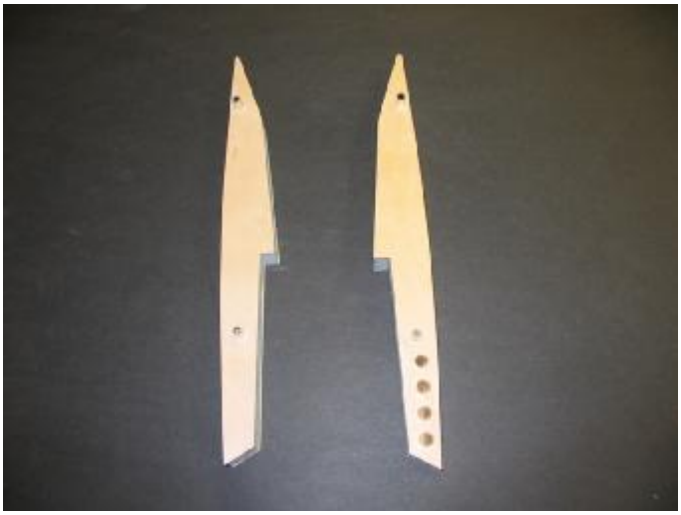
The right sponson holds the turn fin, so it has dowels in it,
Grab the right foam sponson.

Test fit the 3/8 inch wood dowels in the 4 rear holes. Also test fit the 2 brass tubes. They should be a nice fit, without slop. Prepare the sponson inside and outside plates by lightly sanding the edges.

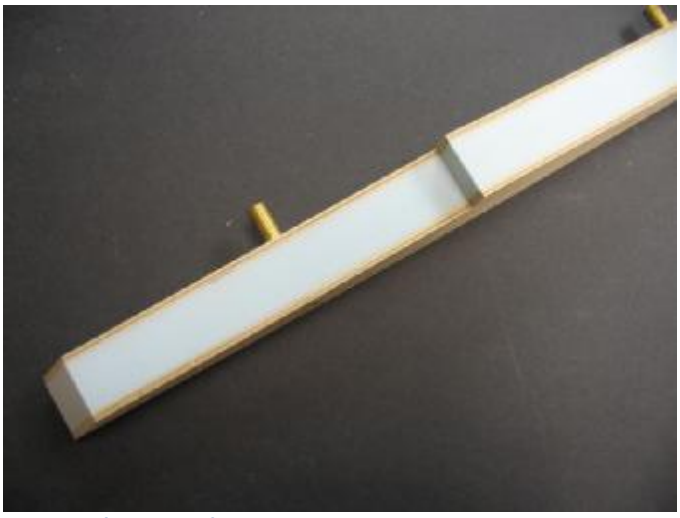
Mix up some 30 minute epoxy, and coat the inside of the sponson plates.
Also put some epoxy on the brass boom



Right sponson does all the work…



Be sure to make a right and left sponson…



Sponson sleeves in place.

tube sleeves. Shove the tubes in until they stick out the other side.
We don't want any epoxy to get into the boom tube sleeves.
Do the same for the 4 wood dowels.
Put the inside plate in place, being sure that the tubes and dowels protrude on the other side. They should all stick up above the side plates.
Work quickly.
Put the other sponson plate in place, aligning the brass sleeves and dowels.
Make sure that the sleeves and dowels go through both sponson plates.
The tubes and dowels should protrude through, and be flush with the outside plate

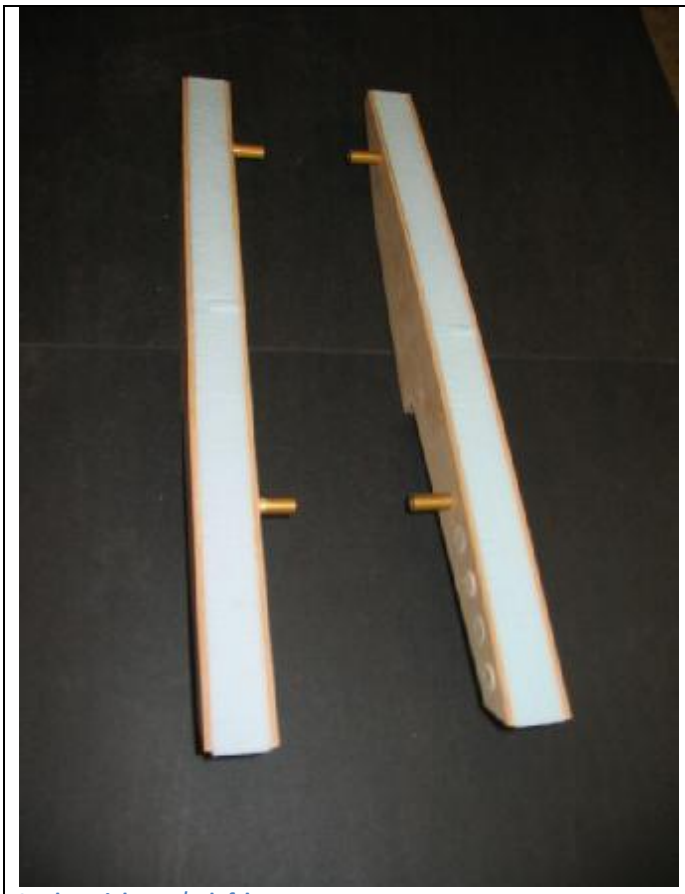
Use tape and small weights to hold the sponson and allow to cure on waxed paper.

While the right sponson is curing, you can glue the left sponson. Everything is the same, except the left sponson has only the two tubes.
Make sure that the left sponson is a mirror image of the right

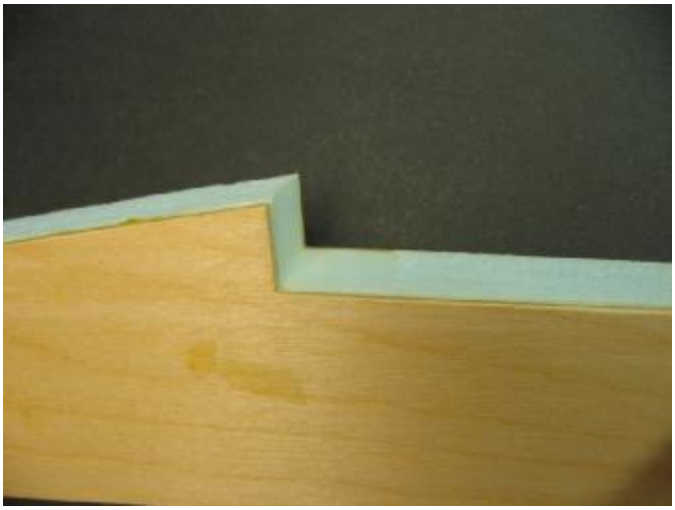
With the right sponson on it's right (outside) side, and the left sponson on it's left (outside) side, **both sets of brass sleeves should be sticking out.**
Glue the tubes and plates as before, and weight or clamp until cured.

Be sure of this, as this is one of those critical points.

When the sponson sides are cured, let's do



Look, a right *and* a left!



Sharp inside corner.

the sheeting. This is where the strange order comes in. The sheeting is done in this order because it has to overlap in a specific way.

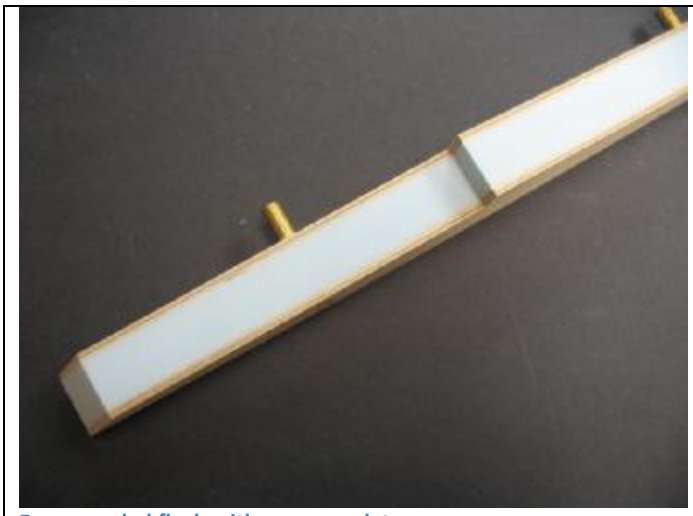
Follow along and you won't have any trouble. If something doesn't seem to fit, stop and find out why. Epoxy is impossible to remove from foam…

Grab all the sheeting pieces, including the ones you marked earlier.

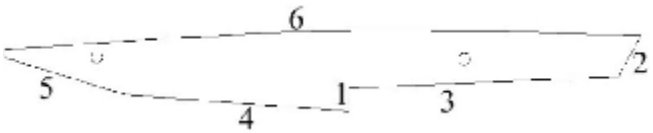
Use a file to sharpen the inside corner of the sponson step as shown.

Use your sanding block with 80 grit paper to sand the foam flush with both sponson plates.

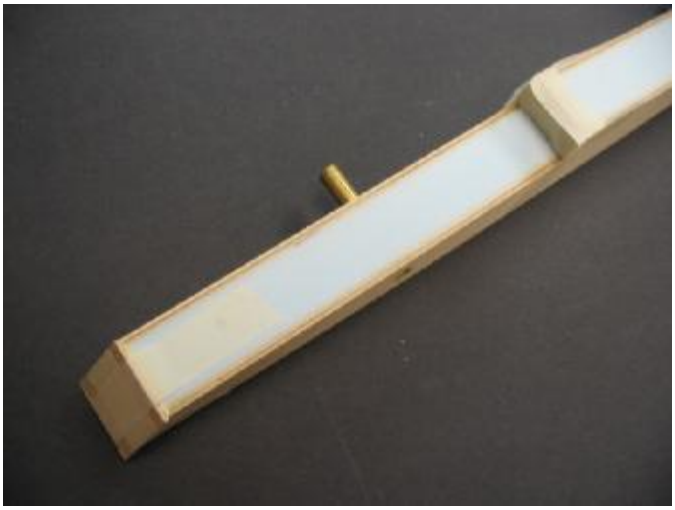
Using epoxy, glue R-1 in place on the



Foam sanded flush with sponson plates.



Sponson sheeting order. Needed for correct overhangs.



1 and 2 glued in place. Note masking tape.

sponson step. Use masking tape to hold it in place while it cures.
It's okay to repeat the steps on the other sponson.

Glue R-2 to the sponson rear.
Once these have cured, sand the bottom and sides of R-2 and R-1 flush.

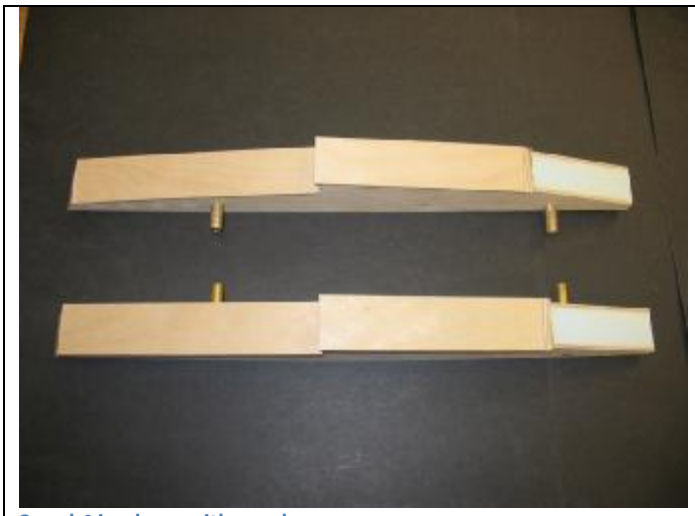
Glue R-3 in place, leaving equal overhang on both sides, and an overhang on the rear.

Glue R-4 with equal overhang on the sides, and leave an overhang in the rear.

Note that the bottom overhangs don't get sanded off if you plan to use a low power engine.

If you are using a high performance engine, glue the bottom sheets so that all of the overhang is on the outside of the sponson, opposite the sponson tubes. This will make it much easier to sand them off.

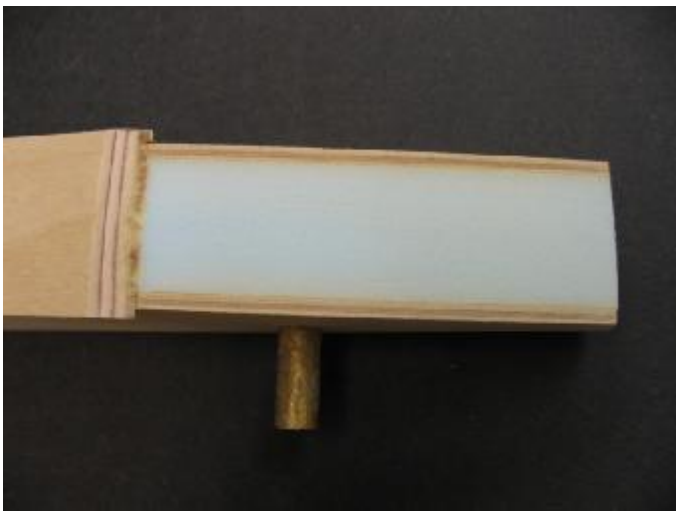
Once R-4 is cured, sand the front of R-4 flush with the forward bottom. This is exactly like the forward tub bottom. Do not round any corners.



3 and 4 in place, with overhangs.

Glue R-5 in place with equal side overhang. Match the rear to just cover the bevel you sanded in R-4. Leave the rear of this square, just like the tub bottom.

Sand the top of R-2, and glue the sponson top on (R-6).



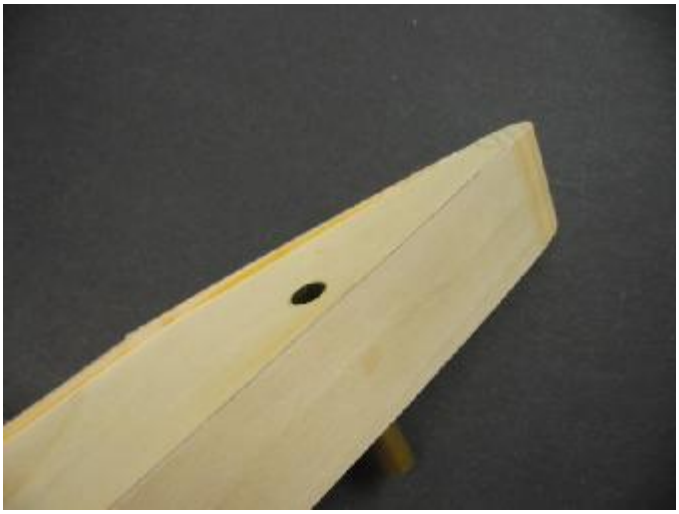
Note sharp bevel for 5. Just like tub and ski.

When cured, sand the front until it is flat and square. Glue the pine sponson tip in place with epoxy.

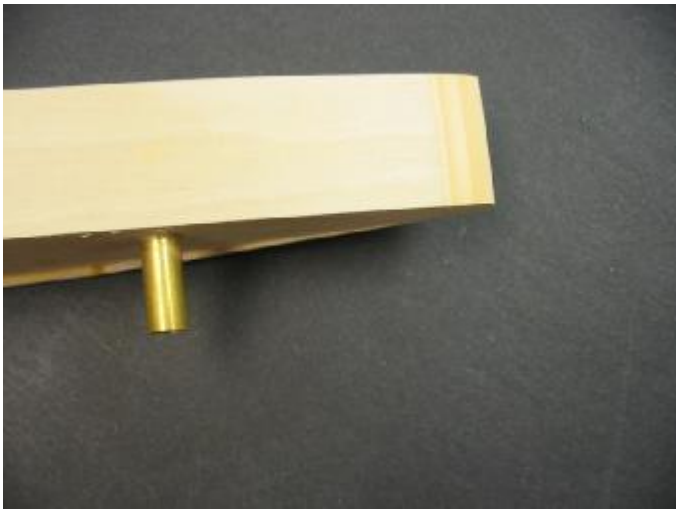
Sponson sheeted.

When cured, sand the nose block to a nice blunt tip. Also sand the top sheeting, R-2 and the tips flush with the sides. Do not sand off the overhang on the sponson bottom unless you are using a high power engine.

Pine sponson nose block in place.



Nose rounded.



Taper side overhangs to nothing at the nose.

For the bottom sheeting at the nose, taper the bottom sheet so that there is no side overhang at the nose block.

If you have not done so, repeat on the other sponson.

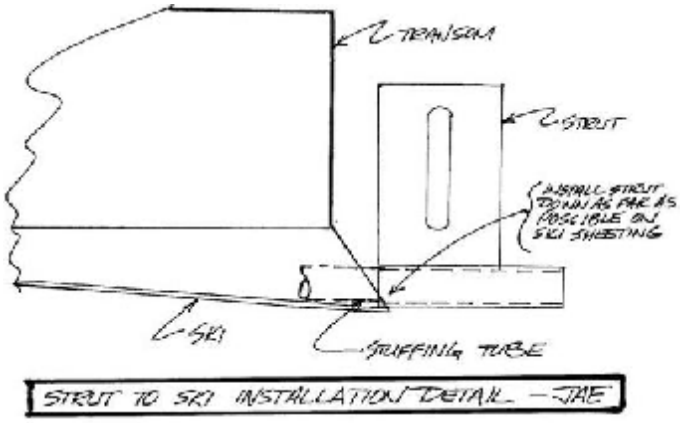
Strut

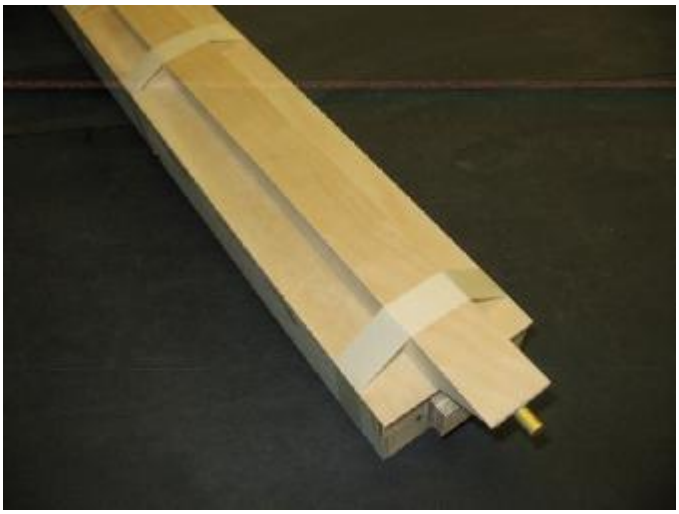
Mount your strut to the transom using center marks to align it. Make it so that when the strut is in the middle of its travel, the bottom of the strut is about 1/2 inch below the tub bottom.
You may have to adjust the shaft tube some more.

The strut needs to be at the very bottom of the ski for the proper propeller depth.
See drawing below and trim the front of the strut if needed.

Test fit the ski to the tub.

Strut sitting on ski with shaft tube cut flush.





Ski being test fit.

The rear of the ski should line up with the rear of the transom, and the front should blend into the tub bottom. Sand the front of the ski sheeting so that it blends to nothing. Be sure the shaft tube is just touching the ski sheeting, and level with the tub bottom. Measure from both sides and make small alignment marks for the ski.

Using 30 minute epoxy, seal the bottom of the tub in the area of the ski, and epoxy the ski in place. Be sure that the inside of the ski is sealed with epoxy.
Tape and weight the ski, check alignment, and allow to cure.

Turn Fin

Sharpen the outside of the turn fin.

Mark the center of the turn fin dowels.
Drill 3/32 pilot holes on your marks.

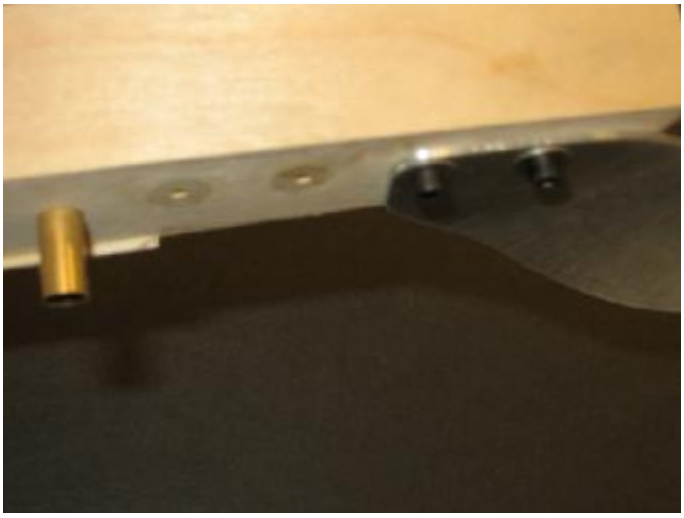
Attach the turn fin with the supplied sheet metal screws and washers.

If you have a bottom overhang on the sponson, sand it flush where the fin contacts it.

Note that you can later fine tune the fin with the oversized holes.

Remove the turn fin in preparation for finishing.

Turn fin mounting.



Note bottom sheet overhang sanded off under turn fin.

Finishing

Sand the tub and sponsons, but be sure to leave the overhangs.
Fill any holes or imperfections with wood filler.
Sand everything with 150.

Seal the tub and sponsons with epoxy finishing resin or West Systems epoxy.
Be sure that all wood is sealed.
Scrape off as much epoxy as you can. It will make sanding easier.
Also seal the other side of the radio box top.

When cured, sand with 150 and recoat with epoxy. This coat will use far less resin than the first.

When this cures, wet sand the bottom of everything with 220.

If you are painting sand the entire boat with 220. Now is the time for primer. Wet sand the primer with 400, and use spot putty to fill any imperfections. Wet sand with 400 and lay on a heavy coat of primer. Wet sand with 600-800 and paint.

Use fuel proof paint or fuel proof clear.

Assemble the boom tubes with the tub and sponsons.
Make the boom tubes flush with the outside end on the brass sleeves in the sponsons.

When everything is looking good, drill a 3/32 hole through the brass boom tube sleeve and the boom tube. Put the supplied 2-56 screw and locknut in place. Do this for all 4 corners.

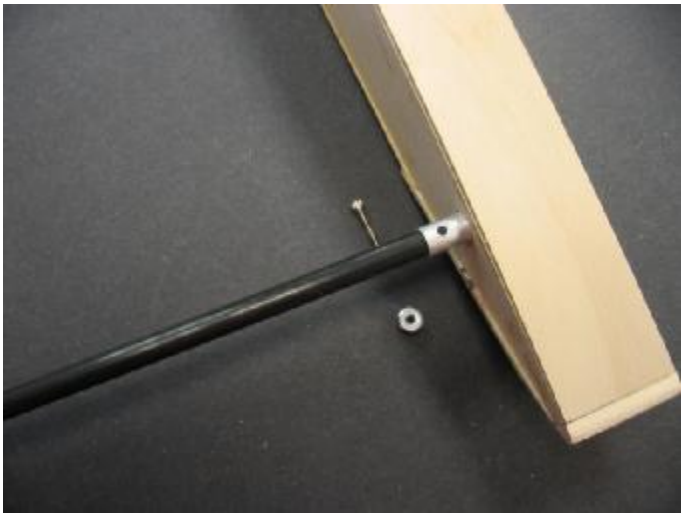
Center the sponsons in the tub.

Use boom tube clamps against the tub to keep the tubes in place.

Mount your engine back into the engine rails.
Trim the shaft tube so that it is about ½ inch longer than the ski bottom if using a conventional strut.

Bolt the strut to the transom. You may have to trim the shaft tube to fit inside the strut.

The strut needs to be at the very bottom of the ski for the proper propeller depth.



Slide your drive dog onto your flex shaft, then your prop. Leave about half of the threads showing past the prop.
Tighten the drive dog set screw.

Remove the prop and measure the exact location of the set screw from the end of the shaft. Remove the drive dog and file or grind a flat spot on the shaft about 1/8 inch wide. Put the drive dog back on the shaft, aligning the set screw in the flat you made.

Push the flex shaft into the shaft tube, and into the collet. Make sure that the shaft goes all the way into the collet. Measure the distance from the back of the strut to the front of the drive dog. Subtract 3/16.

Cut this amount off of the flex shaft. This

allows you to put the shaft all the way into the collet, and still have a 3/16 gap between the strut and drive dog. This is needed because the flex shaft will twist slightly at high speeds, and actually get shorter.

Setup

Set the strut so that it is level with the tub bottom, and touching the ski bottom. You may have to cut some of the strut so that it sits on the very end of the ski sheeting.

Turn on the radio.
Make sure that the steering trim is in the center. Move the steering servo arm so that it is straight up. Put the servo arm screw in.

Mount the throttle servo arm so that it is at about 2 o'clock with the trigger at neutral. Put the servo arm screw in.

Install the servos and pushrods again, only this time, glue pushrod seals in place with Goop. Mount your receiver and battery pack with double sided tape or Velcro. Assemble the fuel tank and mount with Velcro as well.

Mount the rudder and attach the pushrod. Screw the clevis in or out to center the rudder. Check for correct rudder movement.

Attach the throttle pushrod clevis to the carb arm, and put an EZ connector in the

servo arm. Set the carb so that it is slightly open with the trigger at neutral.
Open the throttle and check to see if you get full open. If not, move the EZ connector out farther on the servo arm, farther in on the carb arm, or adjust your throttle end point in your radio until it does.

Also push the trigger (brake) to make sure that the throttle closes fully. You may have to back out the tiny throttle stop screw on the carb.
Take the time to get this right. If you don't, your boat won't shut off and will be embarrassing and dangerous.

Mount your switch through the lid with a waterproof switch cover.

Make sure that your tuned pipe is mounted to the tub.
Make sure your prop is sharpened and balanced.

Grease the flex shaft with cable grease or high quality marine grease.
Put your starting belt in place, and then install the flex cable.

Hook up your fuel and pressure lines.

Center Of Gravity

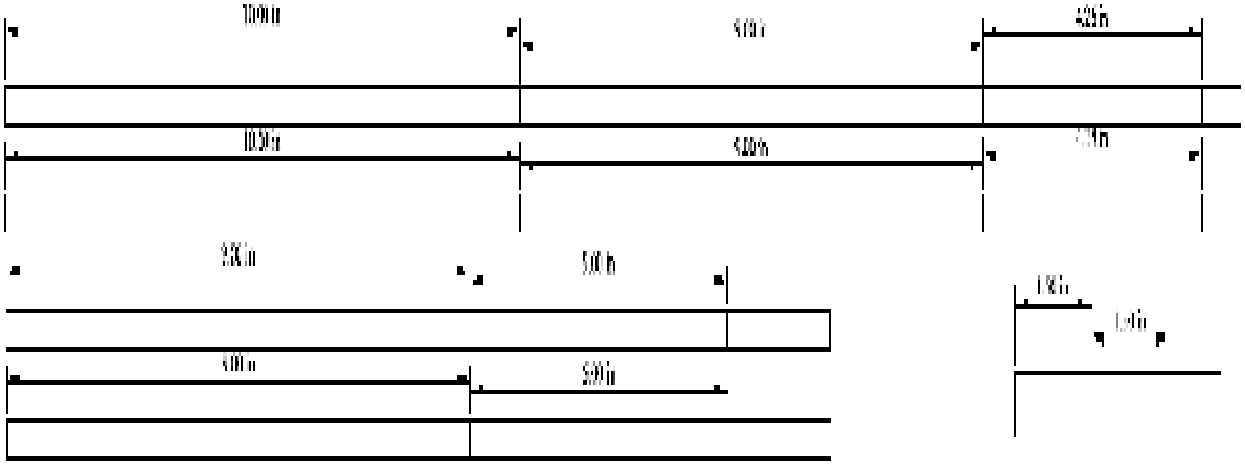
This hull has a wide range as far as the CG is concerned. If you are using an unusual setup and suspect that your CG will be substantially different than designed, try for 40% forward from the rear of the ski.
This 40% is of the total length (rear of ski to tip of sponsons).

The designers strongly recommend that you run you boat first, and don't be too concerned with the CG unless the boat handles funny.

	Even then, 99% of the time an ill handling boat is either built crooked or has a turn fin issue. ## Running It's better to start with a rich needle setting, and "sneak up" on the best setting. If too lean, it will simply quit. No fun with a boat. Start rich. The main thing is to get the boat running smoothly and turning well. After that, try different props, pipe lengths and needle settings. For a bunch of help tuning and running, go to some of the R/C boating web sites. One of the most popular is International Waters (www.intlwaters.com). Good luck and happy boating!

Balsa tri stock cutting guide.

From the 4 pieces of ¼ tri stock, cut as shown.
Also cut the 5/16 tri stock as shown.



Additional information

International Waters Website

www.intlwaters.com

Excellent forum for information on nitro powered boats

Solinger R/C

www.solingerrc.com

Custom parts for the JAE

CNC mounts, rudder, etc. All designed for the JAE

Note that Zippkits is a Solinger Dealer

NovaRossi US

www.novarossi.us

Source for the extremely fast NovaRossi 12 and 21

If you have a need for speed, this is the engine you need…